中国疾病预防控制中心寄生虫病预防控制所



2009

NATIONAL INSTITUTE OF PARASITIC DISEASES CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION 上海 • SHANGHAI



▲ 2009 年 10 月 14 日~11 月 2 日在上海召开"发展中国家寄生虫病防治培训班" The training course on parasitic disease control in developing countries was held in Shanghai on October 14 – November 2, and 23 people from 15 countries participated in the training



▲ "中国热带病药物与诊断创新网络第一次会议"于 2009 年 10 月 24~25 日在上海召开 "The First Meeting on China Tropical Disease Drugs and Diagnosis Innovation Network" was held in Shanghai on 24-25 October, 2009. IPD together with other 11 units including the National Center for Drug Screening and the Second Military Medical University, cooperated to set up "China's Tropical Disease Drugs and Diagnosis Innovation Networks"



▲ 2009 年 11 月 16 ~ 21 日在我所举办大湄公河次区域疟疾控制和消除培训班 Training class of malaria control and elimination in the Great Mekong Subregion was held in IPD on 16-21 November, 2009, and 18 scientists from Laos, Vietnam, Cambodia, Thailand, Myanmar and China participated



▲ "第三届上海市世界卫生组织合作中心主任会议"于 2009 年 11 月 20 日在我所召开 On November 20, 2009, the Third Directors' Meeting of Shanghai World Health Organization Collaborating Centre was held in IPD



▲ 受 WHO/TDR 委托,"环境、农业和传染病专家咨询组第二届年会" 于 2009 年 10 月 16-28 日在上海举办 (上图为全体参会者,下图为开幕式) Commissioned by WHO / TDR, IPD orgnized "the Second Annual Meeting of the Thematin Reference Group on Environment, Agriculture and Infectious Diseases" in Shanghai, on 26-28 October, 2009 (Above: all participants, Down: the opening cerenmony)



▲ 中国疟疾控制和消除项目优先研究领域和策略专题研讨会于 2009 年 2 月在上海召开 Then workshop on Research Priority and Strategy in Malaria Control and Elimination Programme was held in Shanghai in Feburary, 2009



▲ 2009 年 6 月 13 日,我所疟防专家完成为期 3 个月的援建喀麦隆、 刚果(金)抗疟中心任务,顺利回国 On June 13, 2009, malaria experts from IPD finished 3-month assignment to establish malaria control center in Cameroon and Congo



▲ 全球基金疟疾防治项目六轮二期启动协议于 2009 年 11 月签订 In November, 2009, the Global Fund Malaria Control Project was continued, and Initiation Protocol of the second phase of the sixth round of the Global Fund was signed



▲ 中国疾病预防控制中心捐赠仪式暨 四川阿坝包虫病防治技术项目培训会于 2009 年 5 月 22 日举办 "Traning group on hydatidosis control" and "Ceremony of Chinese Center for Disease Control and Prevention" was held on 22 May 2009 in Aba of Sichuan Province, P. R. Chian

中国疾病预防控制中心 寄生虫病预防控制所

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ANNUAL REPORT

2009

NATIONAL INSTITUTE OF PARASITIC DISEASES CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION

上海 ● SHANGHAI

编辑出版 中国疾病预防控制中心寄生虫病预防控制所 编辑校对 瞿麟平 戴菁 张争艳 英文审校 瞿麟平 张争艳 余森海 地 上海市瑞金二路 207 号, 邮政编码: 200025 址 电 **话** 021-64377008×1311 传 真 021-64332670 E-mail: yjbipd@126.com 刷 上海市七〇四研究所印刷厂 印 Publishing: National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention (IPD, China CDC) Address: 207 Rui Jin Er Rd., Shanghai, 200025 Tel: 86-21-64377008 Ext.1311 Fax: 86-21-64332670 E-mail: yjbipd@126.com Printing: The Printing House of the 704th Institute, Shanghai

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§ 1.2009 年工作总结及 2010 年工作要点

2009年工作总结

2009 年是以实践促发展的一年,我所积极开展深入学习实践科学发展观活动,深刻领 会和全面把握科学发展观的科学内涵、精神实质和根本要求,并紧密结合我所实际,立足 寄生虫病防治全局,把落实科学发展观与推动疾控和科研等工作紧密结合起来,确保两手 抓、两不误、两促进,为构建和谐社会作贡献。

现将 2009 年的主要工作汇报如下:

1 积极开展深入学习实践科学发展观活动

根据上海市卫生局党委和中心党委的部署和要求,我所参加上海市卫生局系统第二批 深入学习实践科学发展观活动。确定了以"学习落实科学发展观,提升寄生虫病防治科研 能力,打造一流国家队"为活动的实践载体,所领导带头解放思想,深刻理解科学发展观 的深刻内涵和精神实质,围绕影响制约本所科学发展的5个专题,以改革创新的精神,围 绕如何建设一流的国家队,推动和谐寄生虫病所的建设展开了调研分析,并在搞好本所疾 控和科研业务发展、人才培养和队伍管理、科技研发工作、加强单位内部管理、节能与资 源共享等问题上形成了共识,提出了23项整改事项。活动期间,我所党政主要负责人和 学习实践办公室的有关同志随中国疾控中心领导赴四川省阿坝藏族羌族自治州,开展"学 习实践科学发展观,为边远少数民族地区人民健康服务"的主题活动,旨在提高当地包虫 病的防治水平,该活动取得了令人满意的效果。

与上海市共建是本所学习实践科学发展观活动的重点调研课题之一,也是突破本所发展的瓶颈,推动本所的科学发展上一新台阶的重要举措。经与上海市卫生局和中心的多次沟通,目前就共建的项目和内容形成初步意见,已上报卫生部。

2 加强内涵建设,提高国家队能力

2.1 提高突发事件应急处置工作能力

2.1.1 甲型 H1N1 流感疫情应对

今年4月甲型 H1N1 流感疫情发生后,我所及时成立甲型 H1N1 流感工作领导小组和疫情信息工作小组,建立中心应急办-寄生虫病所-上海市卫生局疫情信息管道,及时收集国内外关于甲型 H1N1 流感的各类信息(包括世界各国最新的防控信息和工作动态、科研动态等),编辑、转发 200 余期相关防治工作和疫情简报,报送上海市卫生局。

先后选派 3 批 16 人次参加了中心组织的防控技术培训。在所内举办了"甲型 H1N1 流感"疫情和应急处理培训班,对全所职工进行培训,选送青年技术骨干到病毒所培训病毒检测 流程和实验室检测技术。

2.1.2 甘肃输入性疟疾疫情调查和处置

1 月中旬,组织专家组赴甘肃武威对当地非洲回国人员输入性疟疾疫情进行调查,并 指导当地开展了相关调查和处置工作,包括病例核实诊断、指导重症疟疾病人救治、现场 带教开展流行病学调查和防疟宣教、疟疾防治知识培训与实验室检测等,并指导当地下一 步防控工作。

2.1.3 云南怒江州兰坪县旋毛虫病疫情处置

3月3日,在接到中心领导关于云南省兰坪县不明原因群体性疾病疑似旋毛虫病的指示后,我所组织有关专家组成调查组,第一时间赶赴云南省兰坪县,通过现场流行病学调查,结合病原学和血清学检测结果,及时判定此次疫情为旋毛虫病暴发疫情。并于事后及时开展了当地旋毛虫保虫宿主调查工作,同时为进一步摸清云南省兰坪县旋毛虫病流行状况及潜在流行因素,拟定了《云南省怒江州兰坪县旋毛虫病流行情况及潜在流行因素调查 方案》上报卫生部疾控局。

2.1.4 举办青年技术骨干现场流行病学培训班

在所内举办了青年技术骨干现场流行病学培训班,面向现场,注重案例实践,从现场 流行病学基本知识到制订疫情处理方案、调查和分析数据、撰写报告等方面对青年技术骨 干进行了系统培训,进一步提升青年技术骨干的现场流行病学工作能力。

2.2 血吸虫病防治

2.2.1 配合卫生部疾控局,做好省部联动等重点工作技术支持

组织专家挂点,选派专业人员驻点,积极为湖北省部联动各联系点提供技术支持。组 织专家和专业人员多次赴仙桃、阳新、江陵、洪湖、监利和公安等县进行指导,帮助各县 制定省部联动血防试点工作方案,核查试点县数据。为联系点县防治应用课题的论证和组 织实施提供专家咨询和指导意见。多次配合卫生部疾控局、中心领导开展现场调研和督导 工作,积极推动省部联动工作。

配合卫生部疾控局组织专家组对云南省达到血吸虫病传播控制标准开展现场评估考 核,认为云南省全省已达到血吸虫病传播控制标准,顺利实现了血防中长期规划的中期目 标。

为加深各地对"以传染源控制为主的综合防治策略"的理解,更好地推进该策略的实施,配合卫生部疾控局在湖北公安、四川彭山分两期举办了全国血吸虫病县级血防办主任 培训班,对各省血吸虫病重点防治县(市、区)血防办主任开展了培训。 2.2.2 积极开展各类现场专题调研和调查工作

为了解和解决目前各地血防工作存在的问题,我所组织相关专家就不同地区不同专题 开展了现场调研和技术指导,如赴江苏无锡开展血吸虫病防治策略现场调研;赴江西进贤 开展了洲滩禁牧现场调研;赴湖南岳阳开展洲滩林业血防开发现场调研、赴四川省眉山市 东坡区开展血吸虫病健康教育现场工作调研等;受卫生部疾控局委托,组织专家组对湖南、 湖北、江西、安徽、江苏、四川和云南7省进行了血吸虫病疫情资料回顾性调查、以传染 源控制为主的综合防治策略评价试点及渔船民流动人口管理等工作开展了现场联合督导, 及时掌握各地防控工作动态和需求,并解决各地防治工作中存在的问题。

2.2.3 加强调查分析,为血防重点地区提供疫情预警信息和技术支持

在总结分析近三年全国血吸虫病螺情、人群病情的基础上,对 2009 年血吸虫病疫情

进行了分析和预警,及时发现高风险地区,并提出防控措施和对策。在此基础上,组织专家开展了深入调查,进一步分析相关风险因素的成因,查找目前以传染源控制为主的综合防治措施实施中的主要薄弱环节。

2.2.4 发挥技术优势,开展各类培训,提高各地防治工作水平

在湖南岳阳举办全国血吸虫病诊断技能考核竞赛,在四川举办农业血防技术培训班, 进一步提高各地血防专业人员的防治工作水平,规范各项防治工作。

受卫生部疾控局委托,组织完成了以传染源控制为主的综合防治策略评价项目 36 个 试点村的年度工作总结和血吸虫病防治条例后评估报告,组织开展了血吸虫病防治地区疫 情回顾性调查、血吸虫病防治新策略及现场推广应用研究总结和成果申报、全国血吸虫病 诊断试剂现场评估的质控考核和总结等工作。全国血吸虫病诊断参比实验室的建设工作也 正在进行中,年内将组织专家对各省级血吸虫病诊断参比实验室开展准入评审。 2.3 疟疾防治

围绕落实党和国家领导人对疟疾防治工作的重要批示精神,启动全国消除疟疾进程 的前期工作、输入性恶性疟诊治与管理、贵州疟疾春季休止期根治、中部五省疟疾联防、 西藏疟疾流行特征与对策研究、三峡库区疟疾传播风险评估、援非疟疾防治等工作,积极 开展疟疾防控工作指导和技术支持,并顺利推进第五、六轮全球基金疟疾项目工作,经积 极努力,成功获得了全球基金以国家策略为基础的项目支持。

2.3.1 为有效应对各类输入性恶性疟疫情,组织召开了输入性恶性疟诊治与管理研讨会, 起草《输入性恶性疟防治指南》,并制作了输入性恶性疟宣教材料。启动了《输入性疟疾 的诊治与管理》一书的编写工作。为进一步加强输入性疟疾疫情报告,组织专家对四川、 广西两省输入性疟疾病例的报告和管理情况开展了现场调研,在此基础上,组织编写《输 入性疟疾疫情报告工作方案(试行)》,并下发各疾控机构执行。

2.3.2 经多次调研,组织专家指导贵州省制定了该省 2009 年疟疾防控方案,并在贵阳组织 召开了贵州省疟疾疫情和防控方案研讨会,进一步确定了贵州省 2009 年疟疾春季休止期 治疗实施方案。组织专家分赴贵州省三都、平塘、罗甸和榕江四个重点县开展疟疾休止期 服药驻点督导和巡回督导。受卫生部疾控局委托,对贵州所反映的因疫情报告体系不健全 导致的疟疾疫情被低估情况进行了实地调研和核实。

2.3.3 在青岛召开中部五省疟疾联防 2009 年工作年会,进一步深化五省疟疾联防联控工作 机制和巩固我国中部疟疾防控成果。组织专家赴山东、湖北、江苏、河南、安徽等五省开 展疟疾联防工作现场检查,并提出指导和建议。

2.3.4 为落实党和国家领导人对我国疟疾防治工作的重要批示精神,组织召开了我国消除 策略研讨会,专题研究疟疾防治工作,研究落实批示的后续工作安排;配合卫生部,组织 专家起草《中国消除疟疾行动计划(2010-2015)》和相配套的实施方案及考核办法,为全 面推进疟疾消除进程提供行动指南,同时,组织专家完成了消除疟疾试点方案的起草,并 在浙江、上海、河南、广东等省顺利启动了消除疟疾试点工作。

组织专家赴云南中缅边境开展疟疾防控情况调研;修订《抗疟药使用原则和用药方 案》,拟订了今年"全国疟疾日"宣传活动口号,制作了相关宣传材料。受卫生部派遣, 选派两位专家赴喀麦隆和刚果(金)完成了为期90天的疟疾防治中心援建任务。

2.4 包虫病防治

作为中央补助地方包虫病防治项目办公室的挂靠单位,我所从加强项目办内部管理入 手,确定内部分工,初步建立了工作机制,配合卫生部疾控局开展了一系列技术支撑和业 务指导工作。

2.4.1 全力推动中央补助地方包虫病防治项目

召开中央补助地方包虫病防治项目外科救治工作现场研讨会,会议对《包虫病外科救 治项目培训视听教材》进行了修订,观摩了新疆包虫病外科救治远程会诊系统的运作流程, 对中央补助地方包虫病防治项目外科治疗项目的开展起到了促进作用。

配合卫生部疾控局,在新疆乌鲁木齐召开了 2008 年度中央补助地方包虫病防治项目 工作会议。会议对新增项目县的参会人员进行了系统培训,为推动 2008 年度中央补助地 方包虫病防治项目各项工作的顺利开展打下了坚实基础。

2.4.2 组织编制《包虫病防治项目实施指南》

召开《中央补助地方包虫病防治项目实施指南》修订会议,对该指南进行了修订和完善,讨论形成了《中央补助地方包虫病防治项目考核评估方案》,将为科学、规范地开展中央补助地方包虫病防治项目工作打下了基础。

2.4.3 举办非项目区包虫病防治技术培训班

在青海省西宁市举办了全国非项目区包虫病防治技术培训班,使学员们初步掌握了包 虫病防治的基础知识和现场流行病学调查程序和步骤,为今后在非项目区开展包虫病防治 工作及防止包虫病的蔓延奠定了基础。

2.4.4 发挥专家优势,积极推动包虫病防治工作进程

配合卫生部领导,组织专家对四川省包虫病防治工作情况开展现场调研;启动《包虫 病防治规划》的起草工作,组织各省完成流行县基本数据的收集工作;为落实部领导对当 前包虫病防治工作的指示精神,进一步推动包虫病防治工作,积极整合自身优势,充分挖 掘自身潜力,启动了寄生虫病所包虫病防治研究工作规划,开展多部门联合攻关,力争在 较短的时间内,突破解决 1-2 个防治技术的关键问题。

组织专家对西藏包虫病防治项目工作提供技术支持和帮扶培训;对各省中央补助地方 包虫病防治项目工作情况开展现场督导;赴四川省甘孜州、阿坝州分别对包虫病项目和防 治试点工作开展现场技术指导和调研工作。收集完成《2008 年度包虫病防治工作报告》、 编发《包虫病防治项目简报》等。

2.5 寄生虫病综合防治示范区和土源性线虫病防治工作

寄生虫病综合防治示范区项目已实施三年,为认真总结示范区经验,配合今年对各示范区的考核评估,召开了寄生虫病综合防治示范区数据资料整理工作会议,指导各示范区做好数据、资料的收集和整理。为了解全国寄生虫病综合防治示范区建立以来的工作开展情况及取得的成绩和经验,配合卫生部疾控局组织专家组对贵州开阳等10个2006年建立的示范区开展了考核评估。

为更科学、更规范地开展土源性线虫病防治工作,组织专家制订了《全国土源性线虫 病防治技术方案》。对"贵州逾1600万人染蛔虫病"新闻报道所反映的情况进行了了解和 核实,收集了贵州省土源性线虫病流行现况的有关数据资料,完成了"贵州省土源性线虫

病流行现状概况"。

为总结建国 60 年来我国寄生虫病防治的历程和经验,有全国 200 多位寄生虫病防治 和科研专家参与编写的《中国寄生虫病防治与研究》已基本定稿。

2.6 其他寄生虫病防治工作

2.6.1 新疆喀什地区黑热病监测工作和甘肃动物源型黑热病防治试点工作

在分析了新疆喀什地区黑热病疫情的基础上,研讨、制定了喀什地区监测工作方案, 明确了各相关单位的工作任务和职责。在新疆喀什举办了喀什地区黑热病防治和白蛉监测 鉴定技培训班,并随即启动了媒介监测工作,监测结果发现,果园、农田和荒地中白蛉密 度并无明显季节消长变化,人房和畜圈白蛉数量变化随着时间消长变化较明显。目前正在 开展当地人群病情调查和野生动物感染情况调查的现场工作。

受卫生部疾控局委托,我所在甘肃省兰州市召开陇南川北重点地区黑热病防治策略研 讨会,提出了后续防治计划和相关调查工作安排。完成了2万条药浸项圈的制作和佩戴工 作,积极探索黑热病防治工作的新模式。

2.6.2 积极启动并推进广州管圆线虫病监测及传播预警试点工作

配合卫生部疾控局启动"广州管圆线虫病症状监测与传播预警试点工作",我所及时 组织制订了相应工作方案,并提前在云南大理组织举办"广州管圆线虫病监测方案及诊断 标准"培训班,为试点工作的顺利启动奠定了基础。目前,正在对各地监测病例开展统计 和分析工作。

3 加强科学研究与科研管理,促进学术交流

3.1 面向疾控需求,组织科技攻关

为加强科技对疾控的支撑作用,一方面加强现有科研项目的管理和实施,另一方面积 极争取新的国家级项目及科技攻关,如针对我国包虫病防治面临的问题,组织专家和科研 人员专题讨论,凝练包虫病防治关键科学问题,明确主攻方向。努力拓宽渠道,全面推进 科研项目申请工作,全年共申请到国内外课题10余项,其中传染病重大专项2项,科技 支撑计划1项,国家自然科学基金2项(1项为参与),中国疾病预防控制中心青年科研 基金1项,上海市科委标准专项1项,自治区科技支疆项目1项,国际来源课题4项。共 获准科研项目资助额达2125.2万元。

认真做好在研课题的管理,确保科研项目顺利开展。全年在研项目共41项,包括973 计划1项(参与),863计划1项,传染病重大专项6项(参与4项),科技支撑4项, 国家科技基础条件平台2项,国家自然科学基金8项(参与3项),上海市科委项目2项, 卫生公益专项4项,中国疾病预防控制中心青年科研基金1项,自治区科技支疆项目1项, 中国准备第二次国家信息通报能力建设项目1项,纵向合作课题1项,国际来源课题9项。 全年共有10项课题结题,其中863计划1项,卫生公益专项2项,国家科技基础条件平 台1项,上海市科委2项,国际来源课题4项。在研项目总经费7073.62万元。

由我所牵头的 2 项科研成果,"中国血吸虫病防治策略的研究"和"建立长江流域、 我国湖区 GIS 血吸虫病预警系统研究"分别荣获中华预防医学会科技进步一等奖和三等 奖。此外,还组织申报了中华医学科技进步奖 1 项、国家科技进步奖 1 项。全年 3 项发明

专利获得授权,新申请5项发明专利。

3.2 促进学术交流

举行了中华预防医学会医学寄生虫分会换届会议暨学术研讨会,共来自全国 24 个省 (直辖市和自治区)46 个大专院校、疾病预防控制机构、科研院所、相关医院共计 225 人参加了会议。大会共收到学术论文 131 篇,与会代表对近年来医学寄生虫学领域科研和 疾病控制的进展、动态、经验、成就和发展趋势进行了广泛的交流。通过交流和讨论不仅 加深了相互了解,更新了知识,也为以后的合作奠定了基础。会议期间完成了医学寄生虫 分会的换届选举工作。

组织举办了上海市寄生虫分会大会、中国热带病诊断与药物创新网络等学术活动,促进了多学科领域专家的高层交流。

挂靠在本所的卫生部寄生虫病标准专业委员会动员各方面力量参与卫生标准起草工作,落实卫生标准制修订计划和规范、在工作中积极发挥委员的作用,完成了《疟疾控制与消除标准(国标)》、《广州管圆线虫病诊断标准(行标)》的制订,并已报批,确定了《钩虫病诊断标准》。

3.3 建立了实验室生物安全管理责任制度

认真执行和落实各项管理制度,完善生物安全实验室的设施。落实"谁主管、谁负责、谁 当班、谁负责"的责任制,强化两级管理,细化完善实验室废弃物处理规范,组织开展了 危险化学品安全等自查工作和安全应急预案的演练,加强实验室安全培训,举办了以"持 续安全,和谐发展"为主题的实验室安全周活动。主管部门和生物安全委员会定期和不定 期开展了全所实验室生物安全检查,以确保本所实验室的生物安全。

4 国际合作与交流日益频繁,影响力进一步提高

受卫生部或商务部委托,我所分别承办了"大湄公河次区域疟疾控制和消除培训班" 和"发展中国家寄生虫病防治培训班",来自20个国家的38名学员参加了培训。受 WHO/TDR和WHO驻华代表处委托,我所承办了"环境、农业和传染病专题咨询委员会 及合作伙伴第二次年会",我所还积极承办了"全球消除疟疾专家组第四次会议"和"上 海市世界卫生组织合作中心第三次主任会议"等。通过办班和办会,使我所有机会在国际 舞台上展现我国寄生虫病防治工作的成功经验,也为今后的国际合作打下了基础。全年在 研国际合作项目6项,申请待批的8项。全年出访28批35人次,来访11批68人次。

5 加强人才培养力度,全面提升队伍素质

坚持树立人才资源是第一资源的观念,继续实施本所人才发展规划,经举选拔面试、 专家听取报告、现场交流指导、无记名投票和所人才工作领导小组审议,今年又有9位同 志被列为2009年人才培养对象。至此,已经有7名高层次人才、10名紧缺人才和14名优 秀青年人才纳入我所的人才培养规划,使寄生虫病防治事业后继有人,也为我所事业的发 展注入新的活力。

6 围绕中心工作,完成其他各项工作

6.1 为 2010 年上海世博会的疾病预防控制工作作贡献,我所选派专家积极参与世博会公共 6 卫生传染病专家组,并提供技术支持。与上海出入境检验检疫局合作申请与承担了上海口 岸病原与媒介监测与检测项目,承担食源性寄生虫病检测和研究工作。

6.2 与上海科技馆合作,向"迎世博科技周"提供了寄生虫标本进行展示,上海市副市长 沈晓明、原上海市副市长左焕琛出席了本次科技周参观活动。

6.3 2009 年我所被评为"第九届上海市卫生系统文明单位"(已连续 22 年 11 届)、"第十四 届上海市文明单位",单位的文明建设跨上一个新台阶。

6.4 本所《1号楼大修及环境改造工程》项目继 2009 年获首期拨款后,再次经中国疾病预防控制中心、卫生部和财政部批准,获 2010 年度项目专款,保证了工程的一体性,年内完成项目前期的各项准备工作,顺利开工。完成北小楼大修改造工程,已投入使用。

6.5 2009 年完成 153 名在职职工的住房补贴发放工作,发放金额达 1400 万余元,完成了 93%的职工住房补贴发放工作。

6.6 高度重视清查"小金库"工作,成立了所清查"小金库"领导小组,制定了自查工作步骤,明确了自查重点和分工,落实了责任,完成卫生部部署和中心"小金库"专项治理和财务检查的工作任务、各种统计表、工作报告、整改报告等。

6.7 经上海市公安局检查、考核和评比,我所继 2007 年和 2008 年后再次获得 2009 年度的 "上海市治安安全合格单位"荣誉称号。

新形势下的寄生虫病防治工作对我们提出了更高的要求,我们要有改革创新和知难而 进的精神,坚持科学发展,同心同德,开拓进取,不断提高我所的疾控、科研和管理能力, 努力开创寄生虫病防治事业的新局面。

2010年工作要点

2010 年是机遇与挑战并存的一年,我们要在党的十七届四中全会精神的指引下,以邓 小平理论和三个代表重要思想为指导,深入贯彻落实科学发展观,并以建所 60 周年为契 机,进一步弘扬疾控精神,提升疾病控制能力和科研水平,坚持继承和创新相结合、科学 性和实效性相结合,努力构建和谐寄生虫病所,更好地为人民健康服务。

1 积极推动全国寄生虫病防治工作进程,提高疾控能力

围绕各项重点防治工作任务,以疾控机构的绩效考核工作为契机,积极推动全国寄生 虫病防治工作进程,不断提高自身水平和能力,在总结现有防治工作经验的基础上,主要 开展下列防治工作:

1.1 血吸虫病防治

进一步加大对湖北省部联动联系点挂点技术支持和督导力度,并为其他省的联动工作 提供指导意见;组织开展新一轮的全国血吸虫病监测点工作;加强对重点地区防治工作的 技术指导和疫情监测预警分析,指导各类突发疫情防控和应急处置;组织开展不同地区传 播风险因素的调查和预警工作;因地制宜地推动以传染源控制为主的综合治理措施的落 实,积极探索血防工作可持续发展之路;组织各省开展血吸虫病诊断参比实验室建设,提 升各级血吸虫病诊断能力。

1.2 疟疾防治

落实中央及各级领导对疟疾防治工作的批示精神,配合卫生部疾控局推动全国消除疟 疾工作进程和全国消除疟疾行动计划的实施,为各消除试点提供技术指导和支持工作,并 组织专家制定消除疟疾行动计划的实施方案和考核办法;整合现有的各类项目资源,为实 现全国消除疟疾目标服务。积极组织开展对重点省疟疾防控工作的现场督导和调研,组织 开展全国疟疾疫情监测工作。

1.3 包虫病防治

积极推动《包虫病防治规划》的出台,并组织制定配套的规划实施方案和技术方案; 进一步加强中央补助地方包虫病防治项目办公室内部建设,组织各项目省完成包虫病防治 项目工作,并加强对重点省区包虫病防治工作的督导和技术支持力度。同时,挖掘自身潜 力,整合资源优势,加大对包虫病现场防治关键技术问题的协作攻关力度,力争有所突破。 1.4 其他寄生虫病防治

全面总结寄生虫病综合防治示范区实施经验,并因地制宜地推广已取得一定成效的寄 生虫病防治策略和措施,努力推动全国重点寄生虫病防治规划进程;组织实施新疆喀什黑 热病监测工作;继续推进丝虫病、广州管圆线虫病等寄生虫病的症状监测与传播预警试点 工作,并提供技术指导。

继续开展主要寄生虫病疫情监测和全国血吸虫病、疟疾和土源性线虫病监测点工作, 并加强监测工作质量控制和督导;同时加强对疾控工作的管理,尤其是加强对各防治项目 的质量控制、实施过程监控和效果考核,不断提高疾控工作的质量和成效,进一步提升自 身能力水平,积极在全国寄生虫病防治工作中建功立业。

2 加强科研管理,提高科研水平,为防治工作提供技术支撑

针对国家寄生虫病防治需求,瞄准科学前沿,拓宽渠道,积极组织申请国家、部委和 上海市等科研项目,包括申请国家自然科学基金、"973"计划项目、"863"计划项目、传 染病重大项目、科技部科技支撑项目、卫生部公益性项目、中心青年科研基金项目、上海 市卫生局、市科委项目和国际来源的科研项目及各类纵向合作课题。除血吸虫病、疟疾等 重要寄生虫病外,还将针对我国包虫病防治面临的关键科学问题,组织专家和科研人员联 合攻关,力争 3-5 年取得重大突破,为我国包虫病防治提供强有力的技术支撑。

加强在研科研项目的管理和调研,严格按照卫生部要求和相关规定,保障我所牵头和参与的第一批传染病重大专项顺利实施,保障第二批传染病重大专项顺利启动。

组织"十二·五" 传染病重大专项等的申请,积极促进科研成果申报。

促进学术交流,邀请国内外专家和知名学者来所开展讲座 5-8 次。为深入贯彻落实科 学发展观,用一流的科技支撑一流的疾控,探索加强科研与疾控相结合,实验室与现场相 结合的管理机制,积极组织所内学术交流和研讨,以提高本所职工的业务水平,增强创新 意识,提高科技能力和水平。

3 围绕防治工作的新目标,强化防治与科研的联合工作机制

2004年以来,卫生部先后发布了《全国血吸虫病预防控制中长期规划纲要(2004-2015年)》、《全国血吸虫病综合治理项目规划纲要(2009-2020年)》、《2005-2015年8

全国疟疾防治规划》、《中国消除疟疾行动计划(2010-2020 年)》和《2006-2015 年 全国重点寄生虫病防治规划》和《健康中国——2020 战略规划》等寄生虫病防治规划,提 出了消灭血吸虫病、消除疟疾、控制包虫病、黑热病和重点寄生虫病的宏伟目标,我国寄 生虫病防治工作面临着严重的挑战。

同时,防治工作向更高一级防治目标迈进中,需要先进科学技术的支撑,一系列重大 科学问题亟需解决,如:各种寄生虫病的快速诊断、预防疫苗、特异药物筛选、血吸虫病 传播阈值、流行区扩散的监测技术、疟疾鉴别诊断、长短潜伏期和疟原虫检测技术等。因 此,我所作为国家级寄生虫病防治专业队伍,必须强化防治与科研的联合工作机制,以一 流的科研支撑一流的防治工作。

在新的一年中,我所将建立以诊断平台、药物平台、种质资源平台和信息平台为纽带 的联合工作机制,定期召开专题研讨会,交流工作进展和经验,充分展示各自的实力、水 平和需求,探讨工作中存在的问题。并充分发挥疾控部门专家的作用,在开展现场防治工 作的过程中,积极发现现场防治工作中存在的科学问题,并积极探索解决问题的办法,鼓 励按规范化标准收集各类数据、标本、样本,提升防治工作中的科学水平。充分利用已建 立的或在建设中的诊断平台、药物平台、种质资源平台和信息平台,开展相关的科技研究, 推动现场科学问题的解决。在此基础上,积极组织和动员资源,向国家提出《寄生虫病防 治应用性科学研究规划》,根据重大科学问题,整体规划全国寄生虫病防治工作中的科学 研究工作,并整体协调、分工实施、分步实施。

4 全力以赴推动共建工作

共建工作是本所今年的重点工作之一,也是突破事业发展瓶颈的关键,全力推进共建 工作,争取开展疾病预防控制相关领域的重点实验室、热带病诊防中心、热带病科学情报 中心、卫生应急处置能力和队伍装备等项目的建设、努力实现优势互补,共创双赢的目标, 为所的事业发展注入新的活力和动力,力争实现跨越式发展。

5 围绕建所 60 周年开展相关活动

为总结 60 年来我所的发展历程,继承科研传统,进一步弘扬疾控精神,推进我国消除寄生虫病的进程,扩大我国寄生虫病防治成果在国际上的影响力,定于 6 月中旬结合在上海召开的"贫困传染病研究与控制学术会"和"WHO-TDR33 届理事会"举行建所 60 周年暨 WHO 疟疾、血吸虫和丝虫病合作中心成立 30 周年庆典活动,届时将通过举办所史展、征文、演讲比赛和制作画册等活动,进一步凝结队伍,推动我所的各项工作再上一个新台阶。

6 推进人才队伍建设

人才是推动本所事业发展的关键,本所将在认真总结前期人才培养经验的基础上,拟 定下一轮人才培养方案,进一步完善和改进本所人才培养模式和标准,鼓励人才创新创业, 切实发挥高层次在本领域的引领作用;

加强紧缺人才导向性培养,在调研基础上,充实本所急需培养的紧缺人才目录,并提

出培养形式,积极探索团队培养模式。结合防治现场,派青年骨干赴疟疾、血吸虫病、包 虫病现场驻点,加快疾控青年人才培养的步伐。

完善专业技术人员继续教育制度,根据上级有关规定,由部门负责人列出需要岗位培训内容,严格课时数和培训内容;试行高级专业技术人员带教培养制,量化各项带教指标。

7 围绕中心任务, 做好本所建设的服务保障工作

7.1 继续深入开展文明单位创建活动,落实"市文明单位"创建的各项措施,推动单位管理上新台阶。要宣传动员职工参与世博,服务世博,践行文明礼仪,为世博会的顺利举办作出我们的贡献。

7.2 配合世博会组委会做好寄生虫病传播风险防控和相关卫生保障等工作,一是在食源性 寄生虫病检测和咨询方面有所突破,二是加大安全保卫工作的检查力度,组织志愿者队伍, 做好世博会期间的安全保卫和实验室生物安全工作,保持上海市治安安全合格单位的称 号。

7.3 继续加强实验室管理和建设,推动实验室认可工作,完成 2-3 项检测项目认证,强化 卫生部寄生虫病原与媒介生物学重点实验室建设,争取申报国家级重点实验室创造条件。
7.4 高质量的完成 1 号楼大修及外环境改造工程,做好工程的质量监督和施工协调,使本 所的内外环境有耳目一新的变化。同时要做好国有资产的管理,新增资产要及时建立二级 资产管理账,报废资产要严格按照规定及时办理销帐手续。

7.5 强化开发力度,探索新的开发奖励机制,启动一批新的开发项目,完成1-2项新项目, 争取1-2项专利转让。

7.6 进一步做好在职职工的住房补贴发放工作,全面完成老职工的住房补贴发放,继续做 好新职工住房补贴的按月发放工作,同时完成新进所和新升职职工的补贴预算申请。

7.7 认真做好 2010 年度实验仪器购置项目,年内完成 300 万元仪器设备的公开招标工作。 对我所的实验设备、装备需求展开调研,积极争取新一年度的专项资金。

我们要在新形势下把握机遇,直面挑战,全所职工唯有同心同德、开拓进取,才能打 造一支高水平的疾控和科研队伍,为推动全国寄生虫病防治工作做出更大贡献。

§1. REPORT ON THE WORK IN THE YEAR 2009& KEY POINTS OF THE WORKING PLAN FOR THE YEAR 2010

SUMMARY OF THE WORK IN 2009

2009 was the year that practice promoted development. In close connection with our reality and based on the parasitic diseases control situation, we have actively carried out in-depth study and practice the Scientific Concept of Development activities, deeply understood and fully grasped the scientific content, essence and fundamental requirements of the Scientific Development Concept, and promoted the Scientific Concept of Development and promotion of disease control and scientific research work together to contribute to building harmonious society.

1 Actively carrying out in-depth study and practice the Scientific Concept of Development activities

According to the arrangements and requirements of Shanghai Health Bureau and China CDC Party Committee, we have participated in the second batch of Shanghai Municipal Health Bureau system the Scientific Concept of Development study activities. With the theme of "learning the Scientific Concept of Development to enhance capacity in parasitic disease control and research and to create first-class team", the leading group taking the initiative to emancipate the mind and deeply understand the Scientific Development Concept, investigated the 5 constraints on development, how to build the first-class team, and how to promote harmonious IPD construction, reached an agreement on disease control, research development, personnel training, team administration, internal management, energy saving and resource sharing, and proposed 23 corrective matters. During the event, with the leadership of the Chinese Center for Disease Control the leaders of IPD went to Aba Tibetan and Qiang Autonomous Prefecture of Sichuan Province to carry out the activity with the theme of "to study and practice the Scientific Concept of Development and serve for the health of ethnic minority people in remote regions" aimed at raising the ability of local hydatid disease control. The activity achieved satisfactory results.

The co-construction with Shanghai was one of the key topics in the study and practice of the Scientific Concept of Development activities, and also an important measure to break through the bottleneck of development and step on a new level. After communicating with the Shanghai Municipal Health Bureau and China CDC for some times, preliminary opinions on co-construction project and content were formed and reported to the Ministry of Health.

2 Strengthening the quality and raising the capacity of the national team

2.1 Improving the ability to response to emergency

2.1.1 Response to A/H1N1 influenza outbreak

In April 2009 after the outbreak of influenza A/H1N1 epidemic, we promptly set up the leading group and work group for Influenza A/H1N1 control and information collection in time, and set up epidemic information channel including China CDC emergency office, IPD and Shanghai Health Bureau to collect, edit and share messages (including the latest information on control and research dynamic, etc.).

3 batches of 16 people were assigned to participate in the control techniques training organized by China CDC. IPD held the A/H1N1 flu epidemic and emergency response training courses to train the staff, and sent young cadres to be trained on virus detection technology in laboratory.

2.1.2 Imported malaria epidemic investigation and disposal in Gansu Province

In mid-January, experts were organized to carry out investigation of imported malaria from Africa in Wuwei, Gansu and to guide local implementation of the relevant investigation and disposal, including the verification of case diagnosis, instructing treatment of patients with severe malaria, guiding epidemiology investigation and anti-malaria knowledge propaganda in the field, malaria control training and laboratory testing, and to guide the next step of malaria control.

2.1.3 Disposal of trichinosis outbreak in Lanping County, Yunnan Province

March 3, after receiving the China CDC's instruction of the suspected trichinosis outbreak in Lanping County, Yunnan Province, IPD organized experts to go there as soon as possible. Through epidemiological investigation, pathogenic and serological test, it was confirmed as trichinosis outbreak. Subsequently the local investigation on reservoir hosts of *Trichinella spiralis* was carried out, while to further ascertain the epidemic situation and potential epidemiological factors of trichinosis in Lanping County, an investigation scheme was reported to the Disease Control Bureau of the Ministry of Health.

2.1.4 Field epidemiology training for young technicians in IPD

Field epidemiology training for young technicians was held in IPD, which focused on case analysis. The content of the class included basic knowledge of field epidemiology, how to make an epidemic disposal scheme, data analysis, report composition and so on aiming at the further improvement of young technicians' ability to the field work.

2.2 Schistosomiasis control

2.2.1 Cooperated with the Disease Control Bureau of Ministry of Health, providing technical support for the key projects

We actively provided technical support for the contact spots of MOH-Hubei Province co-operative scheme. Experts and professionals were assigned to Xiantao, Yangxin, Jiangling, Honghu, Jianli and Gong'an County to help to make work plan, verify data, and provide suggestion on subject demonstration and administration. Cooperated with the leaders of the Disease Control Bureau, MOH, and China CDC, we carried out field investigation and supervision several times to promote MOH-Hubei Province co-operative activities.

Cooperated with Disease Control Bureau, MOH, expert group went to Yunnan Province to carry out on-site assessment of schistosomiasis transmission situation in Yunnan Province according to the criteria on transmission control. The results showed that Yunnan Province had reached the criteria, and successfully realized the medium-term planning goals in mid- and long-term schistosomiasis control program.

To deepen the understanding of the integrated control strategy focused on infection source control, to promote the implementation of the strategy, cooperated with the Disease Control Bureau, MOH, we held training classes for county schistosomiasis control office directors in Gong'an, Hubei, and Pengshan, Sichuan.

2.2.2 Carrying out field investigations and researches on special topics

In order to understand and solve the existing problems in schistosomiasis control, IPD organized relevant experts to carry out field investigation and technical guidance on different topics in different areas, such as investigation in Wuxi, Jiangsu Province on schistosomiasis control strategies; in Jinxian, Jiangxi Province on graze forbidden in marshland; in Yueyang, Hunan Province on schistosomiasis control in marshland forest, in Meishan, Sichuan Province on health education about schistosomiasis, etc. Commissioned by the Bureau of Disease Control, MOH, IPD organized expert group to Hunan, Hubei , Jiangxi, Anhui, Jiangsu, Sichuan and Yunnan Province to carry out investigation on the prevalence of schistosomiasis, to evaluate integrated control strategies with an emphasis on control of infection sources and cooperate to superintend the management of floating population, in order to master the dynamics and requirement of schistomiasis control, and to solve problem.

2.2.3 Strengthening investigation and analysis to provide schistosomiasis early warning information and technical support to the endemic areas

Based on the summary of snail distribution, prevalent in human population in China in the last three years, IPD analyzed and forecasted schistosomiasis epidemic in 2009. High-risk areas were discovered in time, and control measures were proposed. On this basis, the experts carried out extensive investigations to further analyze the causes of the related risk factors and to find the main weakness in the implementation of integrated control measures.

2.2.4 Taking advantage of techniques by carrying out various training to improve the level of disease control

The national contest of schistosomiasis diagnostic skills and the agricultural schistosomiasis control technique training course were held in Yueyang, Hunan Province and Sichuan Province, respectively to further improve and regulate disease control.

Commissioned by the Bureau of Disease Control, MOH, the annual work summary of 36 pilot villages for the project to evaluate the integrated strategies with an emphasis on control of infection sources and the report on the follow-up evaluation of "Schistosomiasis Control

Regulation" were completed. Retrospective investigation in schistosomiasis endemic areas, the summary and accomplishment report of the research on the new schistosomiasis control strategy and its field application, the assessment and summary of quality control of national schistosomiasis diagnostic reagents field evaluation were carried out. The construction of national reference laboratory for schistosomiasis diagnosis was in progress, and the experts were organized during the year to assess the qualification of the provincial reference laboratory.

2.3 Malaria control

In order to implement the instructions of the party and state leaders on the importance of malaria control, the following activities were initiated: preparatory work of the national malaria elimination, diagnosis, treatment and management of imported falciparum malaria, radical treatment in resting stage in Spring in Guizhou, cooperative malaria control in 5 provinces of central China, research on malaria epidemiology in Tibet and countermeasures, malaria transmission risk assessment in the Three Gorges Reservoir Area, assistance to the African countries with malaria control, etc. Malaria control guidance and technical support was actively provided, and successfully promoted the fifth and sixth round Global Fund Malaria Project, and gained the support of the Global Fund Project based on national policy.

2.3.1 To effectively deal with imported falciparum malaria epidemic, IPD organized seminars on diagnosis, treatment and management of imported falciparum malaria, drafted "Guidelines of Imported Falciparum Malaria Control", produced the materials about imported falciparum malaria for public, and started the edition of the book named "Diagnosis, Treatment and Management of Imported Malaria". To further strengthen the report of imported malaria epidemic, experts were organized to Sichuan and Guangxi Province to investigate the report and management of imported malaria cases. On this basis, "Scheme of Imported Malaria Epidemic Report (Trial)" was edited, and issued to disease control agencies for implementation.

2.3.2 After repeated investigations, the experts were organized to Guizhou Province to constitute local malaria prevention and control program in 2009. A seminar on Guizhou Province malaria epidemic and control program was held in Guiyang, on which the treatment schemne in resting stage in spring, 2009 in Guizhou Province was confirmed. Experts were dispatched to key counties of Sandu, Pingtang, Luodian and Rongjiang in Guizhou Province to supervise and direct medication in resting stage. As the underestimation of malaria epidemic in Guizhou Province caused by poor reporting system reflected by local CDC, IPD carried out related field research and verification commissioned by the Disease Control Bureau, MOH.

2.3.3 The annual meeting of cooperative malaria control in 5 provinces of central China, 2009 was held in Qingdao to deepen the working mechanism of joint prevention and control and to consolidate the results. Experts went to Shandong, Hubei, Jiangsu, Henan and Anhui Province to carry out inspections and provided guidance and recommendations.

2.3.4 According to the instruction about malaria control from state leaders, the seminar on malaria elimination strategies was held to research malaria control work and follow-up work

arrangement. Cooperated with the Ministry of Health, IPD organized experts to draft "Action Plan to Eliminate Malaria in China (2010-2015)" and the supporting implementation scheme and assessment methods, in order to provide guidance in the comprehensive promotion of malaria elimination. Meanwhile, experts completed the drafting of the pilot program to eliminating malaria and the pilot projects to eliminate malaria were successfully launched in Zhejiang, Shanghai, Henan, and Guangdong.

Experts were organized to carry out investigation of malaria control in Yunnan-Myanmar border. They revised "Use Principles and Medication Scheme of Antimalarial Drugs", proposed the slogan of this year's "National Malaria Day", and made the relevant propaganda materials. Sent by the Ministry of Health, two experts dispatched to Cameroon and Congo (DRC) completed the 90-day task to help the establishment of malaria control center.

2.4 Hydatid disease control

As an attached unit to the office of hydatid disease control project, financially supported by the central government, IPD started from strengthening the internal management of the project office including a clear division of labor, establishment of working mechanism and cooperated with the Disease Control Bureau, MOH to conduct a series of technical support and operational guidance.

2.4.1 Making every effort to promote central government subsidies to local hydatid disease control project

The on-site seminar on surgical treatment in central subsidies to local hydatid disease control project was held, on which "audio-visual training materials about surgical treatment of hydatid disease" was amended and the functioning process of remote consultation system for the surgical treatment in Xinjiang was observed. The seminar promoted the development of the project.

With the cooperation of Disease Control Bureau, MOH, the work meeting of central subsidies to local hydatid disease control project in 2008 was held in Urumqi, Xinjiang. The participants from new project counties were systematicly trained to lay a solid foundation of the implementation of the project in 2008.

2.4.2 Editing "Guidelines for the Implementation of Hydatidosis Control Program"

A meeting to amend "Guidelines for the Implementation of Central Government Subsidies to Local Hydatid Disease Control Project" was held, on which the evaluation and assessment scheme for the project was confirmed as well. The meeting provided a basis for scientific and standard implementation of the project.

2.4.3 Organizing training courses on hydatidosis control techniques for the staff from the non-project area

National training course on hydatidosis control techniques for the staff from the non-project area was held in Xining, Qinghai Province, on which the participants mastered the basic knowledge of hydatidosis control and procedures of field epidemiological investigation. The course laid a basis for hydatid disease control in non-project areas and the prevention of the spread of the disease.

2.4.4 Taking advantage of the experts to actively promote the process of hydatid disease control

Cooperated with the Ministry of Health, IPD organized experts to carry out field research on hydatidosis control in Sichuan Province. The drafting of "Plan of Hydatid Disease Control" was initiated by organizing the provinces to collect data of the epidemic counties. In order to realize the instruction of leadership of MOH and further promote hydatid disease control, IPD actively taking advantage of itself and discovering its potential, initiated research plan of hydatid disease control and carried out multi-sectoral joint research, in pursuit of a breakthrough in 1-2 key problems in control techniques in a relatively short time.

IPD organized the experts to provide technical support and training on Tibet hydatidosis control program. On-site supervision on the work of Central Subsidies to Local Hydatid Disease Control Project was carried out. On-site technical guidance and investigation on the project and pilot work in Ganzi and Aba, Sichuan Province was carried out. "Report on the Work of Hydatidosis Control in 2008" and "Hydatid Disease Control Project Briefing" were completed. 2.5 Integrated national control program on parasitic diseases in demonstration sites and soil-transmitted parasitic diseases control

The integrated national control program on parasitic diseases in demonstration sites has been carried out for three years. In order to sum up the experience of the demonstration and to meet this year's examination and assessment, the work meeting of data collation was held to guide the demonstration areas to collect and collate data. In order to evaluate the situation, achievements and experience of the demonstration areas, IPD cooperated with Disease Control Bureau, MOH, and organized expert group to carry out the examination and assessment in 10 demonstration areas established in 2006.

In order to standardize soil-transmitted nematode disease control, IPD organized experts to edit "national scheme of soil-transmitted nematode disease control techniques". To verify the news "over 16 million people infected with ascariasis in Guizhou", "Report on Endemic Situation of Soil-transmitted Nematode Diseases in Guizhou Province" was worked out by collecting relative data and information.

To sum up development and experience of parasitic diseases control since 1949, over 200 experts in parasitic diseases control field and scientific research all over the country finished "Parasitic Disease Control and Research in China".

2.6 Other parasitic diseases control

2.6.1 Kala-azar surveillance in Kashgar region, Xinjiang and animal-source kala-azar control for experiments in Gansu

After analyzing kala-azar epidemic in Kashgar region, the monitoring scheme was set down through discussion to define tasks and responsibilities of the relevant units. The training course on kala-azar control and sandfly surveillance and identification was held in Kashgar region followed by the initiation of intermedia surveillance. The results showed that, there was no significant seasonal fluctuation of sandflies density in orchards, farmland and wasteland, while the fluctuation in human and animal house was more apparent. The survey of endemic situation of local people and wildlife is under way.

Commissioned by the Disease Control Bureau, MOH, a seminar on kala-azar control strategies in southern Gansu and northern Sichuan was held in Lanzhou, Gansu Province, on which follow-up control plan and related investigation was proposed. The manufacture and equipment of 20,000 medicated collars was completed to actively explore new modes of kala-azar control.

2.6.2 Actively initiating and advancing angiostrongyliasis surveillance and transmission forecasting pilot work

Cooperated with the Bureau of Disease Control, MOH, IPD started "angiostrongyliasis Symptom Surveillance and Transmission Forecasting Pilot Work" by setting down relative work plan, holding training course on angiostrongyliasis surveillance and diagnosis criteria in Dali, Yunnan Province. Currently, case statistics and analysis is being carried out.

3 Strengthening scientific research and research management and promoting academic communication

3.1 Organizing scientific and technological research to meet disease control requirements

To strengthen the support of science and technology to disease control, on the one hand we enhanced the management and implementation of existing research projects, and on the other hand actively applied for new national projects. For example, facing the problems in hydatidosis control in the country, experts and researchers were organized to discuss and define the main directions of scientific research. The application channels were significantly expanded. More than 10 research projects were approved in 2009, among which 2 by the Key Special Project for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases, 2 by National Natural Science Foundation of China (1 for participation), 1 by Key Projects in the National Science & Technology Pillar Program, 1 each by the Youth Fund of China CDC, the Science and Technology Program of Xinjiang Uygur Autonomous Region, and the Science and Technology Commission of Shanghai Municipality, and 4 for international cooperation. A total of 21.25 million Yuan was funded.

The on-going projects were well managed. A total of 41 research projects were undertaken in 2009, among which one was supported by the National Basic Research Program (973) (participation), one by Hi-tech Research and Development Program of China (863), 6 by the Key Special Projects for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases (4 for participation), 4 by Key Projects in the National Science & Technology Pillar Program during the 11th Five-Year Plan Period, 2 by National Science and Technology Infrastructure Working Program, 4 by Health & Public Welfare Vocational Research Program, 8 by National Natural Science Foundation of China (3 for participation), 1 by Science and Technology Program of Xinjiang Uygur Autonomous Region, 1 by Project for the Second National Communications Capacity-building, 2 by Science and Technology Commission of Shanghai Municipality, 9 by international cooperation programs from international funding organizations, 1 by Youth Fund of China CDC, and 1 was domestic joint cooperative program. Among these projects, ten were completed. A total of 70.73 million Yuan was gained.

Great efforts have been made to apply research awards. "Study on a new strategy for the control of schistosomiasis in China" and "Study on the establishment of GIS system for schistosomiasis early warning in the Yangtze river valley and marshland and lake regions of China" were awarded the first medal and third medal of Chinese Preventive Medical Science & Technology Award, respectively. This Year three patents were authorized and five patents were registered for.

3.2 Promoting academic communication

The election meeting and Seminar of Parasitology Branch of CAPM was held. A total of 225 participants from 46 colleges, CDCs, research institutions and hospitals covered 24 provinces and municipalities and autonomous regions attended the meeting. The general assembly received a total of 131 academic papers. The participants exchanged progress, dynamic, experience, achievements and development trend in medical parasitology research and disease control in recent years, which promoted mutual understanding and knowledge update and laid the foundation for future cooperation. During the session the election of parasitology branch committee was completed.

Parasitology branch meeting in Shanghai and tropical diseases diagnosis and drug innovation in China network were held to promote a high-level communication among the multi-disciplinary experts.

The professional standard committee of parasitic diseases, MOH, affiliated to IPD, mobilized all forces to participate in the drafting of standards, implemented plans and criteria of hygienic standard edition, and took advantage of each committee member, to complete the edition of "Standards of Malaria Control and Elimination (GB)" and "Diagnostic Standards on Angiostrongyliasis (WS)" and review "Diagnostic Standards on hookworm disease".

3.3 Establishment of laboratory bio-safety management responsibility system

The management system was implemented and the biosafety laboratory facilities were improved. The responsibility system of "those who are in charge on the responsibility; those who are on duty in taking responsibility" was implemented. The two-level management was strengthened. Laboratory waste disposal norms were detailed and improved. Self-inspection of dangerous chemicals and drilling of safety emergency plan were carried out. Training on laboratory safety was strengthened. The activity of Laboratory Safety Week with the theme of "sustained security, harmonious development" was held. The Administrative Department and Biological Safety Committee carried out bio-security check-up regularly and irregularly to ensure the laboratory biosafety in IPD.

4 More frequent international cooperation and exchanges

Commissioned by the Ministry of Health or the Ministry of Commerce, IPD hosted "Training Workshop on Malaria Control and Elimination in Greater Mekong Sub-regions" and "Training Course on Parasitic Disease Control for Developing Countries". A total of 38 people from 20 countries attended the courses. Commissioned by WHO/TDR and the WHO Representative Office in China, IPD hosted "the Second Annual Meeting of Reference Group and Partners on Environment, Agriculture and Infectious Diseases". Additionally, IPD have also actively organized "the Fourth Global Meeting of Expert Group on Malaria Elimination", "the Third Meeting of Directors of World Health Organization Collaborating Centres in Shanghai" and so on. Through these activities, IPD demonstrated China's successful experiences in parasitic disease control in the international arena and laid the foundation of further international cooperation. A total of 6 international cooperation projects were undertaken. Eight proposals were submitted and under verification. There were 28 batches of 35 people/times visiting abroad and 11 batches of 68 foreign visitors coming.

5 Strengthening personnel training to comprehensively upgrade the quality of national team

Adhering to the concept that human resource is the primary resource, IPD continued to implement talent development plan. After several procedures, nine were listed as training target in 2009. So far, there are already 7 high-level personnel, 10 scarce talents and 14 outstanding young talents in the personnel training plan to keep plenty talents in the development of IPD.

6 Other activities

6.1 In order to contribute to disease control in Shanghai World Expo 2010, IPD assigned experts to be actively involved in public health infectious disease expert group providing technical support. Cooperated with Shanghai Entry-Exit Inspection and Quarantine Bureau, IPD applied for and assumed the pathogens and media monitoring and detection projects in Shanghai port, undertaking food-borne parasitic disease examination.

6.2 Cooperated with Shanghai Science and Technology Museum, IPD provided parasite specimens on display in "World Expo Science and Technology Week". Shanghai Vice Mayor Shen Xiaoming and former Shanghai Vice Mayor Zuo Huanchen attended the activity.

6.3 In 2009 IPD was elected as "the Ninth Round of Shanghai Municipal Health System Civilized Unit" (consecutive 11 rounds in 22 years) and "the 14th Round of Shanghai Civilized Unit".

6.4 "No.1 Building Overhaul and Environmental Improvement Project" following the first fund in 2009 was once again financed, approved by the China CDC, Ministry of Health and Ministry

of Finance to ensure the integration of the project. Before the end of 2009, the preparatory work was completed and the project was initiated. The north small building renovation was completed, which had been put into use.

6.5 Housing allowance was paid to 153 in-service staff in 2009, and the payment was over 1,400 million yuan. So far, housing subsidies of 93% employee had been paid.

6.6 Attaching great importance to clean up "small treasuries", the leading group of "small treasuries" clean-up was set up, the procedures, key points and assignation of self-examination was defined. The "small treasuries" special governance and financial checking tasks assigned by China CDC and MOH was completed including a variety of statistical tables, work reports, and rectification reports.

6.7 After the inspection, examination and election by Shanghai Public Security Bureau, IPD was honored as "Shanghai Public Security Safety Compliance Unit" in 2009.

Under the new situation, parasitic disease control is facing new challenges. We should keep the spirit of reform and innovation, keep forward in defiance of the difficulties, adhere to scientific development, forge ahead as one, and constantly improve the capacity of disease control, scientific research and management to create a new situation of parasitic disease control.

WORK PLAN IN 2010

It has both opportunity and challenge in the year of 2010. Under the guidance of the spirit of 17 Fourth Plenary Session of the Party and Deng Xiaoping Theory and "Three Represents", we will thoroughly implement the Scientific Outlook on Development. Taking the moment of the 60th anniversary as a turning point, we will further promote the spirit of disease control, enhance the capability of disease control and research, and adhere to the inheritance and innovation of combining scientific and practical efforts, to build a harmonious IPD with better services for health of people.

1 Promoting the process of national prevention and control of parasitic diseases to improve capability of disease control

Focusing on the key tasks to disease control and taking the opportunity of agency performance assessment, we will actively promote the process of national prevention and control of parasitic diseases, and constantly develop our own levels and abilities. In summarizing the existing experience of diseases control, Institute will mainly undertake the following efforts on prevention and control of diseases:

1.1 Schistosomiasis control and prevention

We will strengthen technical support and supervision to the spots of the Department at Hubei Province, and provide guidance to other provinces; launch a new round of national schistosomiasis monitoring; strengthen technology guidance of diseases prevention and control, epidemic monitoring and early warning analysis in key areas, and guide epidemic prevention and control to all types of emergencies and response to emergency; develop investigation and early warning of risk factors of spread in different areas ; promote the main sources of infection control measures for the implementation of comprehensive management in local conditions, and explore the sustainable development of schistosomiasis control; carry out laboratory construction of provincial schistosomiasis diagnosis that will enhance the capability of schistosomiasis diagnosis at various levels.

1.2 Malaria control and prevention

To implement the government spirit of malaria prevention and control, in coordination with propelling the progress of national Malaria elimination and enforcing the activities of national Malaria elimination plan by the Disease Control Bureau Ministry of Health, we will provide technical guidance and support for the elimination pilot, and organize experts to develop implementation action plans and assessment methods for eliminate malaria programs; integrate existing types of project resources, to achieve the objectives of National Malaria elimination. We are going to develop field supervision and research on malaria prevention and control in the key province, and launch the national monitoring on epidemic of malaria disease.

1.3 Echinococcosis control

We should promote the release of "echinococcosis prevention and control plan", and formulate implementation of correlative program plans and technical prorocols; further strengthen to internal construction of subsidizing local authorities office for echinococcosis prevention programs by central government, and complete the project of provincial echinococcosis control, as well as strengthen the supervision and technical support for echinococcosis prevention and control in key provinces. At the same time, development of their own potentialities, integration of resources and advancing of cooperative research on technical problems at key field for echinococcosis prevention and control will help us for breakthroughs. 1.4 Other parasitic diseases control and prevention

Making a comprehensive summary of the experience in pilot areas for implementing comprehensive control parasitic diseases, and promoting parasitic diseases control strategies and measures that have been success under local conditions, we will advance the national planning process of parasitic diseases control; organize monitoring on the implementation of leishmaniasis in Kashi, Xinjiang; continue to advance monitoring and dissemination of early warning on parasitic diseases such as filariasis, angiostrongyliasis, and provide technical guidance.

Monitoring on major parasitic diseases and surveillance pilot of schistosomiasis, malaria and soil-borne nematodes will be carried out, and we will strengthen monitoring and supervision of quality control; meanwhile, we will strengthen the management of the disease control, particularly the quality control, process monitoring and effect assessment of prevention and control project so that continuously to improve the quality and effectiveness of disease control as well as our abilities, to contribute to prevention and control of parasitic diseases

2 Strengthening research management and improving scientific research to provide technical support for the prevention and control

For the state needs of prevention and control of parasitic diseases, aiming at science frontier and expanding channels, we will actively apply research projects to state, ministries and Shanghai organizations, including National Natural Science Foundation of China, National Basic Research Program(973), Hi-tech Research and Development Program of China(863), Key Special Projects for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases, Key Projects in the National Science & Technology Pillar Program during the 11th Five-Year Plan Period, Health & Public Welfare Vocational Research Program, Youth Fund of China CDC, Program from Shanghai Municipal health bureau Science and Technology Commission of Shanghai Municipality, International cooperation programs from international funding organizations and domestic joint cooperative programs. Experts and scientists will be organized to research jointly on key issue of prevention and control of Echinococcois, in addition to schistosomiasis, malaria and other major parasitic diseases, and they will strive to achieve a major breakthrough in 3-5 years thus to provide better technical support for prevention and control of Echinococcois.

We will strengthen the management of research projects strictly in accordance with requirements of the Ministry of Health and relevant regulations to ensure the implementation of the first Key Special Projects for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases that Institute lead or participate in, and the smooth initiation of the second batch of Key projects on infectious diseases.

Applying for 12th Five-Year Key Special Projects for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases, we will promote the reports of research accomplishments.

Foreign experts and renowned scholars are going to be invited to conduct 5-8 seminars to promote academic exchanges. Further implementing the Scientific Outlook on Development, we should support first-class diseases control with first-class technology, and enhance management of combining scientific research with disease control and combination of laboratory and field. In order to enhance the staff professional level, awareness of innovation and capability of science technology, more Institute academic exchanges and discussions are going to be organized.

3 Aiming at new targets of the prevention and treatment to strengthen mechanism of combining prevention and treatment with research.

Since 2004, the Ministry of Health has issued "National Mid-and-long Term Outline of Schistosomiasis Prevention and Control(2004-2015)", "National Outline of Comprehensive treatment of Schistosomiasis(2009-2020)", "2005-2015 National Malaria Prevention and Control Program", "China Plan of Action for the Elimination of Malaria (2010-2020)" and "2006-2015 22

National Plan for Major Parasite Diseases Prevention and Control" and "Health in China - 2020 Strategic Plan" and other parasitic diseases control plans, putting forward the grand goal of elimination of schistosomiasis and malaria, controlling of Echinococcosis, Leishmaniasis and major parasitic diseases, though it is a big challenge for prevention and control of parasitic diseases in China.

Meanwhile, it needs advanced science and technology to fight for higher goals of prevention and control, and a series of key scientific problems should be solved, such as: rapid diagnosis of various parasitic diseases, vaccines, screening of specific drugs, transmission threshold of schistosomiasis, monitoring technology of spread in endemic areas, malaria differential diagnosis, length of incubation period and Plasmodium detection technology, etc. Therefore, as a national professional team of parasitic diseases control, Institute should strengthen the mechanisms of combining prevention and control with research, and support first-class prevention and control with first-class research.

In year of 2010, our Institute will establish a mechanism with joint platforms of diagnosis, pharmaceutics, germplasm resources and information. In order to show our abilities, levels and needs, we will convene symposia, exchange work progress and experience and discuss problems existing in work. Actively taking advantage of experts from department of Disease control, we should positively find out and solve science issue while launching field prevention and control, and according to standardized criteria, all kinds of data, specimens and samples are encouraged to be collected thus to promote level of prevention and control. Diagnostic platform, pharmaceutics platform, germplasm resources platform and information platform in use or abuilding are fully used for scientific research, to promote solution of field scientific problems. On this basis, we will actively organize and mobilize resources to put forward "Plan of Applied Research of Parasitic Diseases program", and according to key scientific issues, research on national parasite control will be planned, with coordination, division and step-by-step implementation.

4 Going all out to promote the co-construction

As a key task of our Institute this year, co-construction also play a important rule in the outbreak of career, and co-construction will be advanced mainly with the construction of key laboratories in related field of disease control, Centre for Tropical Diseases Prevention Clinic, Centre for Tropical Diseases information, ability of response and team equipment to emergency. We will achieve complementary advantages and win-win goal so as to renew the development of career and implement the leap-forward development

5 Carrying out related activities to celebrate the 60th anniversary of Institute

To sum up the development history of Institute in the past 60 years, inherit the research tradition, further promote the disease control, advance the process of national elimination of parasitic diseases and expand international influence of parasitic diseases control results,

celebration of the 60th anniversary of Institute and the 30th anniversary of Cooperation Center for WHO malaria, schistosomiasis and filariasis will be held together with "Academic Session of poverty Infectious Diseases Research and Control" and "The 33th WHO-TDR Council meeting" in mid-June. Exhibition of development history of Institute, articles solicitation, speech contests and pamphlet making will be conducted to condense team force and promote the career of Institute to a new stage.

6 Promote the development of qualified personnel

Talents is the key factor of promoting the development. Institute will seriously sum up the previous experience on the basis of personnel development, to protocol the plan of next round of personnel development, refine and improve the standard and the development pattern and encourage their innovation and undertaking, so as to play a leading role in the related fields.

Enforcing the directed development of talents for urgent needs, we will enrich the list of talents for urgent needs of Institute, based on survey. We will also advance the development pattern and explore the team development model. Combining of prevention and treatment in field and sending young people to epidemic areas of malaria, schistosomiasis, echinococcosis will accelerate the pace of CDC personnel development.

According to the relevant provisions from superior, we will improve the continuing education system of professional technicians, such as listing content of on-the-job training, drafting class house and content, and trying out development system of teaching by senior professional technicians with quantified targets.

7 Around the central task to complete service and ensurence of construction

7.1 Carrying out in-depth activities to build civilization units, we are going to implement the construction of "Shanghai Civilization Unit" and promote the management to a new stage. Making contribution to World Expo, we should mobilize stuff to participate in the Expo, support services and practice civilized manners.

7.2 In coordination with the Expo Organization Committee, parasitic disease control and health security will be developed, with outbreak of food-borne parasitic diseases detection and consultation, as well as security strengthening and volunteers organization to ensure security and laboratory bio-safety during the World Expo and to maintain "Shanghai public security unit".

7.3 Enhancing laboratory management and construction to promote laboratory certification with 2-3 testing programs certification, Institute will strengthen construction of Key Laboratory of Vector Biology Ministry of Health to support application for National Key Laboratory.

7.4 No.1 Building renovation and outside environment reconstruction project will be completed in high quality with good supervision and coordination to refresh the internal and external environment. At the same time, management of state assets should be well done, and it is necessary to timely establish secondary asset management accounts for new assets, as well as crossing of account for the scrapped assets in strict accordance with the provisions. 7.5 Deepening development and exploring new development bonus system, we are going to start up a batch of new development projects, complete 1-2 new projects and strive for 1-2 transfer of patents.

7.6 Housing allowance will be paid to staff in service, retiree and new staff, meanwhile, we will complete budget application for new staff and promoted staff.

7.7 Fulfilling Laboratory Instrument purchase in 2010, we will accomplish public tender of equipments valued three million RMB. In order to go after special funds in new year, we need to survey laboratory instrument and equipment in Institute.

Under the new situation, we should seize the opportunities, face new challenges, and all staff forge ahead with one heart and one mind to make a high level team for disease control and research, to make a greater contribution to promote nationwide prevention and control of parasitic diseases.

§2. 疾病控制

在卫生部疾控局和中国疾控中心的领导下,2009年全所积极有效地开展了各项寄生虫 病防治工作。现将2009年寄生虫病防治工作总结如下:

1 血吸虫病防治

1.1 血防重点工作

协助制定了省部联动 2010 年工作规划,举办了全国血吸虫病县级血防办主任培训班。 完成了以传染源控制为主的综合防治策略评价项目年度工作总结及血吸虫病防治条例后 评估报告,协助开展了云南省血吸虫病传播控制达标现场评估。

1.2 积极开展各类现场专题调研和调查工作

开展了多项专题调研和技术指导,对综合防治策略评价试点和渔船民流动人口管理进 行了现场联合督导。

1.3 加强调查分析,为血防重点地区提供疫情预警和技术服务

组织开展了血吸虫病防治地区疫情资料回顾性调查,对 2009 年血吸虫病疫情进行了 分析和预警。

1.4 发挥技术优势,帮助提高各地血防工作水平

举办了全国血吸虫病诊断技能考核竞赛和农业血防技术培训班,召开了血吸虫病免疫 诊断试剂平行试验和实验室论证及现场评估总结会。

2 疟疾防治

2.1 消除疟疾行动

组织召开了我国消除策略研讨会、疟疾防治工作座谈会等专题会议。起草、修订了《中国消除疟疾行动计划(2010-2015)》、《抗疟药使用原则和用药方案》等文件,启动了消除 疟疾试点工作。

2.1.1 快速处理突发疫情,规范输入性疫情报告制度

高效处理了甘肃武威输入性疟疾疫情。组织召开了输入性恶性疟诊治与管理研讨会, 开展了输入性疟疾现场调研。

2.2.2 加强重点地区疟疾防控,开展专题研究

对贵州疟疾疫情进行了实地调研,开展了休止期服药督导。举办了"西藏地区疟疾流 行特征与对策研究"课题组会议,参加了中部五省联防工作例会和"三峡库区疟疾流行潜 势研究"2008年总结会议。选派专家赴喀麦隆和刚果(金)参加疟疾防治中心援建任务, 开展了中缅边境疟疾防控情况调研。

3 其他寄生虫病防治

3.1 包虫病防治

成立了中央补助地方包虫病防治项目办公室,定期编写简报。举办了全国非项目区包 虫病防治技术培训班,起草了《中央补助地方包虫病防治项目考核评估方案》。开展了四 川和西藏地区包虫病防治现场调研,启动了《全国包虫病防治规划》的起草工作。

3.2 黑热病防治

组织召开了"新疆喀什地区黑热病监测工作研讨会",启动了媒介监测工作。召开了 陇南川北重点地区黑热病防治策略研讨会,继续开展动物源型黑热病防治试点。

3.3 土源性、食源性寄生虫病防治

召开了寄生虫病综合防治示范区数据资料整理工作会议,完成了示范区考核评估。召 开了全国土源性线虫病监测年度工作会议暨食源性寄生虫病与土源性线虫病培训班,制订 了《全国土源性线虫病防治技术方案》。完成了"贵州省土源性线虫病流行现状概况"调 查报告。

3.4 广州管圆线虫病防治

制订了广州管圆线虫病症状监测与传播预警试点工作方案,建立了广州管圆线虫病网 络直报系统,启动了为期3年的监测试点。

4 其他防治工作

4.1 突发事件应急处置

4.1.1 甲型 H1N1 流感疫情应对

成立了甲型 H1N1 流感工作领导小组和疫情信息工作小组,编辑、转发了 200 余期疫 情简报,举办了所"甲型 H1N1 流感"疫情和应急处理培训班。选派三批 16 人次参加了中 心防控和实验室技术培训。

4.1.2 甘肃输入性疟疾疫情调查和处置

处理了甘肃武威输入性疟疾疫情,开展了流行病学调查和实验室检测等工作。 4.1.3 云南怒江州兰坪县旋毛虫病疫情处置

开展了疫情处理和旋毛虫保虫宿主调查工作,拟定了《云南省怒江州兰坪县旋毛虫病 流行情况及潜在流行因素调查方案》。

4.2 重要寄生虫病疫情监测和信息管理

4.2.1 积极开展常规监测工作

继续开展全国血吸虫病、疟疾和土源性线虫病常规监测工作,定期编制《全国急性血 吸虫病、疟疾疫情周报》、《全国包虫病、黑热病疫情月报》,完成了2008年血吸虫病、疟 疾和包虫病防治工作年报表。

4.2.2 寄生虫病专报系统建设和试运行

举办了专报系统试运行测试和全国寄生虫病专报系统培训班。

4.3 能力建设

举办了首届青年技术骨干现场流行病学培训班。

§2. DISEASE CONTROL

Under the leadership of Disease Control Bureau, MOH and Chinese Center for Disease Control and Prevention, parasitic disease control activities were effectively carried out in 2009.

1 Schistosomiasis

1.1 Key projects

The 2010 working plan of province-ministry cooperative project was formulated with the association of the Institute. Training courses on county level directors of schistosomiasis control divisions were held. The integrated control strategies with an emphasis on control of infection sources and the regulation on schistosomiasis control were both evaluated. The assessment on reaching the criteria of transmission control was carried out in Yunnan Province.

1.2 Implementing special investigations

A number of special investigations were carried out, and technical guidance was provided. A co-supervision on pilot spots for the evaluation of integrated control strategies and management of floating fishermen and boatmen were implemented.

1.3 Providing early warning and technical services for schistosomiasis endemic areas

A retrospective survey on the information of schistosomiasis epidemic was carried out in the areas and the status of schistosomiasis of 2009 was analyzed and forecasted.

1.4 Making use of technical advantages to improve the general level of schistosomiasis control

The contest on schistosomiasis diagnosis skills and a training course on agricultural schistosomiasis control were held. The summarizing meeting on parallel experiment, laboratory demonstration and spot of schistosomiasis immuno-diagnostic reagent evaluation was held.

2 Malaria

2.1 Elimination program

To launch the pilot project on national malaria elimination, workshops on malaria control and elimination were held and a series of documents including "Malaria elimination program (2010–2015)", "Principles on the use of anti-malaria drugs " were drafted out.

2.2 Quick response to emergency and standardizing report system of imported malaria

An imported malaria outbreak in Wuwei County, Gansu Province was effectively handled. A symposium on the diagnosis and management of imported malaria was held and field investigation on imported malaria cases was carried out. 2.3 Strengthening malaria control in selected endemic areas

A field investigation in Guizhou Province and annual supervision on radical treatment during resting stage in spring were carried out. The meeting on "epidemiological characteristics and countermeasures in Tibet", annual meeting on cooperative malaria control in 5 provinces of central China and the summary meeting on transmission potential of malaria in the Three Gorges Area were held. Two experts were designated to help the establishment of malaria control centers in Cameroon and Congo (Kinshasa). A survey of current status of malaria epidemic in the border of Myanmar and China was conducted.

3 Other parasitic diseases

3.1 Echinococcosis

An office for echinococcosis control by financial subsidies from central government to local governments was established in 2009, which compiles periodical newsletters on the project. A national technical training course on echinococcosis control in areas uncovered by the project was conducted. Under the leadership of MOH, a proposal of assessment on this project was drafted out. Field investigations in Sichuan and Tibet were conducted and a document on national echinococcosis control program was drafted.

3.2 Leishmaniasis

A symposium on leishmaniasis surveillance in Kashi, Xinjiang Uygur Autonomous Region was held to launch vector monitoring in local areas. A workshop of leishmaniasis control strategy in key areas of South Gansu and North Sichuan was held. The control pilot of euzoonotic type leishmaniasis was being continued.

3.3 Food-borne and soil-transmitted parasitic diseases

A meeting on data analysis of the demonstration project of integrated parasitic diseases control, annual meeting on national soil-transmitted nematode infections and a training course on soil-transmitted and food-borne parasitic diseases were held. The national technical protlcol of soil-transmitted nematode control was drafted out. Moreover, an investigation on current situation of soil-transmitted nematodes in Guizhou Province was finished and reported.

3.4 Angiostrongyliasis

The pilot project of angiostrongyliasis symptom surveillance and early warning of epidemic was formulated. A national on-line-report network of angiostrongyliasis was established to initiate a 3-year surveillance pilot project.

4 Other control activities

4.1 Emergency response

4.1.1 H1N1 influenza epidemic

Teams of leadership and information report were set up, which edited over 200 brief reports on epidemic situation and held a training course on the H1N1 epidemic and response in NIPD. Persons taking part in the training course on control and laboratory technology held by China CDC totaled about 16.

4.1.2 Outbreak due to imported malaria

The malaria outbreak of imported cases in Wuwei County, Gansu Province was well handled, followed by epidemiological survey and laboratory diagnosis.

4.1.3 Trichinosis emergency

After a trichinosis outbreak in Lanping County, Nujiang Prefecture of Yunnan Province, follow-up response was carried out, including reservoir investigation and emergency handling, and an "Investigation protocol on trichinosis epidemic status and potential risk factors in Lanping County, Nujiang Prefecture of Yunnan Province" was worked out.

4.2 Surveillance and information management

4.2.1 Routine surveillance

The national surveillance programs on schistosomiasis, malaria and soil-transmitted nematode infections were continued. The weekly reports of acute schistosomiasis and malaria, and monthly reports of echinococcosis and leishmaniasis were compiled on time through the year. Additionally, annual reports in 2008 on schistosomiasis, malaria and echinococcosis control were compiled.

4.2.2 Information system of parasitic disease control

A national training course was set up and the system was tested.

4.3 Capacity building

The first training course on field epidemiology was held for young backbones in the Institute.

§3. 科研工作与外事工作

1 科研工作

1.1 在研课题

认真做好在研课题的管理,确保科研项目顺利开展。2009年在研项目共41项,包括: 973计划1项(参与),863计划1项,传染病重大专项6项(参与4项),科技支撑4 项,国家科技基础条件平台2项,国家自然科学基金8项(参与3项),上海市科委项目 2项,卫生公益专项4项,中国疾病预防控制青年科研基金1项,自治区科技支疆项目1 项,中国准备第二次国家信息通报能力建设项目1项,纵向合作课题1项,国际来源课题 9项。已组织完成半年度、第三季度在研课题考核,按要求及时完成上报各类专项课题的 中期考核和年度报告。全年共有10项课题结题,其中863计划1项,卫生公益专项2项, 国家科技基础条件平台1项,上海市科委2项,国际来源课题4项。在研项目总经费7073.62 万元。

1.2 课题立项

努力拓宽渠道,全面推进科研项目申请工作。全年组织申请了 973 计划、科技支撑计 划、传染病重大专项、国家自然科学基金、中国疾病预防控制青年科研基金、上海市地方 配套基金、上海市科委标准专项,上海市科委科研项目、上海市卫生局局级课题、上海市 卫生局青年课题、上海市世博专项、自治区科技支疆项目、中日间日疟合作研究项目、湄 公河疟疾控制项目、TDR 专项、WHO 卫生技术合作项目等;此外,提出 2010 年基础研 究重大战略需求建议1项。通过科研工作者的努力,2009 年共申请到国内外课题 10 余项, 其中传染病重大专项2项,科技支撑计划1项,国家自然科学基金2项(1项为参与), 中国疾病预防控制青年科研基金1项,上海市科委标准专项1项,自治区科技支疆项目1 项,国际来源课题4项。此外,还有数项课题正在评审中。2009 年共获批科研项目资助额 达 2125.2 万元。

1.3 科研成果

1.3.1 获奖项目

积极做好科研成果奖励申报,由我所牵头的2项科研成果,"中国血吸虫病防治策略的研究"和"建立长江流域、我国湖区 GIS 血吸虫病预警系统研究"分别荣获中华预防医学会科技进步一等奖和三等奖。此外,还组织申报了中华医学科技进步奖1项、国家科技进步奖1项。

1.3.2 专利

加强知识产权保护,鼓励发明专利申报,全年3项发明专利获得授权,新申请5项发明专利。

1.3.3 论文、论著

共发表论文 88 篇,其中被 SCI 专业期刊收录的 23 篇,主编 7 本专业书。

1.4 保种工作

保障科研基础工作的顺利进行,督促 17 项保种课题按计划执行,利用有限的工作经费,完成了 09 年度利什曼原虫、旋毛虫、食蟹猴疟原虫、钩虫、丝虫、隐孢子虫和中华按蚊等保种工作。

完成各类科技统计的上报,科技调查的反馈,科研合作协议的签署、科研资料的归档 等科研管理工作及领导交办的各项任务。

2 对外合作与交流工作

2.1 国际交流

2.1.1 出访

本年度共有 28 批 35 人次分别出访巴西、老挝、柬埔寨、菲律宾、阿根廷、斯里兰卡、 意大利、澳大利亚、新西兰、德国、瑞士、美国、印度尼西亚、英国、越南、埃及、加纳 等 17 国。

2.1.2 来访

共接待来自巴基斯坦、老挝、尼泊尔、斯里兰卡、印度尼西亚、越南、加纳、肯尼亚、 毛里求斯、纳米比亚、塞拉利昂、塞舌尔、乌干达、安提瓜一巴布达和格林纳达、朝鲜、 柬埔寨、泰国、缅甸、美国、日本、德国、菲律宾、瑞士、澳大利亚、哥伦比亚、印度、 英国、日本等 29 个国家和国际组织的外宾 11 批 68 人次访问我所。

2.1.3 国际合作项目

在研国际合作项目 6 项: 大湄公河地区抗疟药药效监测(WHO) 日本血吸虫病免疫学试验现场评估(WHO) 晚期日本血吸虫病年龄别伤残权重评价(WHO) 海南和云南省恶性疟抗药性分子标志监测(日本) 川藏高原基于社区的包虫病防治模式研究(WHO) 中国血吸虫病诊断试剂标准化研究(WHO) 申请待批国际合作项目: 8 项

2.2 国际培训班

2.2.1 受卫生部委托,朝鲜医学科学院的 2 名专业人员于 2009 年 7 月 2-21 日在我所接受 "PCR 技术用于疟疾媒介按蚊种类鉴定"培训。学员们学习了分子生物学常用生物学软件 的基本原理、DNA 提取的基本原理、PCR 的基本原理、胶体金免疫层析试条的原理、单 克隆抗体制备方法等理论知识,还进行了实验室观摩和实际操作。

2.2.2 受商务部委托,"发展中国家寄生虫病防治培训班"于 2009年10月14日-11月2 日举行。参加本次培训班的专业技术人员共23人,分别来自巴基斯坦、老挝、尼泊尔、 斯里兰卡、印度尼西亚、越南、加纳、肯尼亚、毛里求斯、纳米比亚、塞拉利昂、塞舌尔、 乌干达、安提瓜一巴布达和格林纳达等 15 个发展中国家。培训班内容包括中国疟疾流行 现状和控制策略、中国全球基金疟疾项目的管理和评估、中国血吸虫病控制策略、地理信 息系统在血吸虫病控制中的应用、中国消除丝虫病经验、血吸虫病免疫诊断技术、土源性 寄生虫病控制和监测、广州管圆线虫病研究和控制、食源性寄生虫病预防控制等。通过学 习学员们更新了人体寄生虫病的防治专业基础理论知识,提高了专业技能,特别是制订寄 生虫病防治规划、设计现场防治研究课题的能力。培训取得了预期效果,受到学员的一致 好评。

2.2.3 受卫生部委托,我所于 2009 年 11 月 16-21 日在上海举办了"大湄公河次区域疟疾 控制和消除培训班"。学员为分别来自越南、缅甸、泰国、老挝和柬埔寨 5 个大湄公河次 区域国家疟疾防治机构的主任及专家,每国 3 人,共计 15 人参加培训。培训目的是加强 该地区内各国在疟疾控制和消除方面的经验交流和信息共享,为各国在疟疾防控领域的进 一步合作打下基础。培训内容涉及大湄公河次区域的疟疾消除地区行动计划、疟疾控制与 消除的指标体系、疟疾治疗方案、抗药性监测等内容。培训班在大家的共同努力下取得了 圆满成功。

2.2.4 受 WHO/TDR 和 WHO 驻华代表处委托,我所承办的环境、农业和传染病专题咨询 委员会及合作伙伴第二次年会于2008年10月26-28日在上海召开。来自WHO、WHO/TDR、WHO/CHN、联合国环境署、联合国粮农组织、世界银行、瑞士、丹麦、澳大利亚、英国、哥伦比亚、苏丹等组织和国家的 35 名代表出席会议。委员会各委员与合作伙伴,共同商讨了下一年度的业务范畴和工作计划。

2.2.5 护照管理

有效护照总计 32 本,根据相关规定统一交至上海市卫生局管理。

2.3 培训

2.3.12人赴美国新墨西哥大学生物系进化及基础免疫学中心进行合作研究,为期3个月。 2.3.21人获 WHO/TDR"热带病创新知识管理网络(TropIKA)职业发展奖学金",赴英国 培训,为期77天。

2.3.32人赴印度尼西亚参加"疟疾控制策略推广实施小组培训班",为期25天。

2.3.42人赴越南参加"杀虫剂抗性监测的生物地域性网络的建立培训班",为期6天。 2.3.51人赴瑞士巴塞尔大学攻读博士学位,为期6个月。

3 教育培训工作

完成制定 2009 年博士后、博士和硕士生招生计划,我所共计划招收 12 名。

完成我所 2009 年优秀毕业研究生推荐工作, 2 名研究生荣获殊荣。

完成2009年硕士、博士生入学复试工作,共录取硕士、博士生8名。

完成上报中心填写"中心博士后公共卫生与预防医学流动站的评估表"的工作。

完成上报中心第二届学位评定委员会和各分委会换届改选的名单。汤林华、周晓农为 中心学位评定委员会委员。我所学位分委会由13名委员组成,汤林华任分委会主席、周晓 农为副主席。 2009年6月8日-12日举行了研究生学位论文答辩会,硕士研究生王立英、褚秀娟、张 少森、钱门宝、张璟,公共卫生硕士生郑琪和博士研究生李石柱、武松顺利通过了论文答 辩。所学位评定分委会召开会议,以无记名投票方式表决,全票通过了上述各位研究生的学 位申请。中心学位评定委员会于2009年7月31日召开了评审会,我所8位研究生全部获得学 位证书。

8月24日至9月28日,举办为期一个月"专业寄生虫学与专业英语"培训班。本所2009 年进所的新职工,一年级博士、二年级硕士及本所部分优秀人才基金的职工共11人参加了培 训并达到了预期的结果。

为了规范博士后管理工作,中心教育培训处于 2009 年 3 月 17-18 日在北京召开了"中 心博士后管理工作会议",在会上我所介绍了博士后管理工作情况。

组织申报国家博士后管理委员会第四十五批博士后科学基础面上资助项目1项,并获 得一等资助。

2009年6月11日举行了博士后出站报告会,刘琴博士后作了"博士后科研工作总结报告",评审专家一致同意该博士后的工作总结、同意出站并建议发放博士后证书。该博士后于2009年7月获得了全国博士后管理委员会颁发的博士后证书。

我所2008年"西部之光"访问学者姜唯声按计划已完成了一年的进修任务,达到了预期目标,总结材料已上报中心人力资源处。

4 生物安全

4.1 高度重视实验室生物安全

从所领导、管理部门到室主任、生物安全员、职工,重视实验室生物安全工作,认真执行和落实各项管理制度,完善生物安全实验室的设施,加强管理,执行实验室生物安全管理规定。主管部门科技业务处和生物安全委员会经常组织安全检查。室主任和生物安全员配合做好实验室生物安全管理。实验室每天还由专人做好下班前5分钟安全检查。实验室严格执行冰箱双人双锁,其内存放危险试剂的记录格式规范。2009年祖国60年国庆期间,我所严格保障了实验室的生物安全。

4.2 实验室安全周活动

为使实验室工作人员牢固树立实验室安全责任意识,加强实验室安全管理,确保实验 室安全,根据《中国疾病预防控制中心关于举办第三届实验室安全周活动的通知》(中疾 控实发[2009]145号)的要求,我所于2009年4月20-24日举办了"实验室安全周活动"。安 全周活动主题为:持续安全,和谐发展。参加人员为本所在职职工和研究生。配合这一主 题,本所主要开展了以下活动:① 张贴宣传画:张贴中心统一制作的主题宣传画。② 动 员、举办安全知识和应急处理讲座:潘嘉云所长主持了动员会,蔡继红书记做动员,卢湾 公安分局高级工程师沈敏康为全所职工与研究生开展了"迎世博,防恐防火防盗知识"的 讲座,街道办事处同志进行了社区急救常识的培训。③ 操作演练:由保卫处、药物室、 健教中心、媒介室全负责,全所职工进行了应急处理与消防演练。④ 举办实验室生物安 全员学习班:各实验室生物安全员学习了中国疾病预防控制中心实验室管理制度汇编 (2007年修、制定)。⑤ 安全检查: 自查及督查相结合。科技业务处制订了寄生虫病所2009 年实验室安全周自查方案, 自查由各处室室主任、行政助理和生物安全员及安全生产监管 小组对本所进行安全检查, 所领导小组、安全生产工作小组和所生物安全委员会成员围绕 安全周主题进行监督检查。⑥ 座谈: 围绕安全周主题, 召开各业务科室负责人, 生物安 全员, 义务消防队员, 安全生产小组成员及科技业务处、应急办、后勤服务处、所办、保 卫处、党办等部门负责人座谈会, 对活动开展情况进行交流, 落实整改措施。本次实验室 安全周活动的开展取得了较好的预期效果。宣传画、展板以及现场演习等使许多实验室人 员安全责任意识、安全防范意识、生物安全观念进一步加强。专题培训使实验人员生物安 全知识、防范知识进一步增加。

4.3 加强本所自查工作

实验室自查以下内容包括实验室内危险品是否分类存放、记录是否规范、气体钢瓶是 否固定摆放,有否贴标签、冰箱管理是否规范、生物安全柜、洁净工作台的使用情况、工 作人员的个人防护、医疗废物垃圾袋、垃圾容器的使用与医疗废物的清理等

4.4 实验室废弃物处理的规则细化和责任落实

细化完善实验室废物处理规范,组织相关人员学习;统一购置了感染性废物专用塑料 袋、利器盒,对废物分类、登记并统一收集处理,责任落实到具体业务处室和个人。

4.5 继续加强实验室安全培训

本年度进行生物安全相关培训,共计80余人次。培训包括"实验室监督检查员培训班" 和"实验室认可内审员及实验室资质认定内审员培训"。8月份,所组织新职工和研究生开 展防火和生物安全培训班。通过相关内容的培训,进一步提高了实验室生物安全和实验室 质量的管理水平。

4.6 实验室相关的管理工作

① 加强领导,责任到位:落实防范责任制在所领导的指导下,落实了"谁主管、谁负责、谁当班、谁负责"的责任制,强化单位内部的二级管理制度。完成了2009年的《安全工作责任书》的签约工作。② 继续开展创建安全合格单位:继续贯彻创安全合格单位责任制制度,建立奖惩制度,实行安全保卫"一票否决"制度,抓制度建设,加强防范能力。 ③ 根据上级有关部门的要求,结合中心安全宣传周活动,组织了安全应急预案的演练。 ④ 组织职工学习了《中心的消防安全规定》和《内保条例》,利用宣传画廊和图片等形式, 开展安全教育活动。⑤ 开展多种形式的安全教育活动,要求职工学三会"会报警、会灭初 期火灾、会自救和帮助他人逃生。⑥ 组织制订或修订实验室仪器设备标准操作规程和试 验方法标准操作规程,包括制订和完善生物安全二级实验室、SPF实验动物室等实验室守 则。制订或完善仪器设备标准操作规程。⑦ 制订或完善实验方法标准操作规程。⑧ 加强 实验室管理:执行实验室登记制度、仪器使用登记制度等。加强贯彻"实验室废物处理规 范及管理规定"和"废物处理流程图"的规定,并严格执行。⑨ 加强实验室化学危险品 管理。重新对各实验室试剂和化学品进行分类登记、存放,规范使用;对管制的化学危险

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品严格采购、领用,实行统一专柜双人双锁管理及使用登记制度(包括使用量、时间和使用人)。⑩ 完善生物安全实验室的设施,实验室必需用品的配备。继续加强实验室医疗废弃物的管理,每个涉及潜在医疗废弃物的实验室均配备统一的脚踏式生物安全垃圾桶,同时配备充足的感染性材料废物袋、利器盒等。保证实验人员和他人的安全。

5 中华预防医学会医学寄生虫分会工作

5.1 2009 年 4 月 25 日,组织召开了"中华预防医学会医学寄生虫分会常务委员会议",讨论换届改选的相关事宜。

中华预防医学会医学寄生虫分会第三届委员会主任委员汤林华研究员,副主任委员余 新炳教授、郑江研究员、潘卫庆教授,常务委员朱昌亮教授、周晓农研究员、闻礼永研究 员、诸葛洪祥教授、郭增柱教授、黎学铭研究员和官亚宜研究员,共11人参加会议。余 新炳教授主持会议,汤林华研究员简要回顾了第三届委员会的工作情况,强调了此次换届 工作的重要性。周晓农研究员传达中华预防医学会分支机构换届基本程序和医学寄生虫分 会换届工作方案。与会委员讨论并通过了中华预防医学会医学寄生虫分会第四届委员会的 建议名单和换届工作方案。中华预防医学会医学寄生虫分会第三届委员会共有委员 45 人, 32 名委员留任。在新一届委员会共有 49 名委员,其中更新和增补 18 名。

5.2 2009 年 11 月 21-22 日,在上海举行了中华预防医学会医学寄生虫分会换届会议暨学术 研讨会,共来自全国 24 个省、直辖市和自治区 46 个大专院校、疾病预防控制机构、科研 院所、相关医院共计 225 人参加了会议。学术活动分为大会报告、分组交流和书面交流, 与会代表对近年来医学寄生虫学领域科研和疾病控制的进展、动态、经验、成就和发展趋 势进行了广泛的交流。大会共收到学术论文 131 篇,安排 21 个大会报告,27 个分组报告。 大会专题报告包括中国疟疾从控制走向消除,血吸虫基因组、转录组和蛋白质组研究进展、 华支睾吸虫分泌蛋白酶结构与功能的初步研究、疟疾防治基础研究,我国旋毛虫病的流行 现状与趋势,弓形虫病传播的风险及控制对策,血吸虫病监测与策略,广州管圆线虫特异 性基因检测和生物学特性的相关机制研究等。分组交流包括蠕虫病组、原虫病和媒介生物 学组,与会代表积极发言与讨论,通过交流和讨论不仅加深了相互了解,更新了知识,也 为以后的合作奠定了基础。

11 月 21 日,由中华预防医学会刘霞主任主持召开了医学寄生虫分会换届会议,完成 了医学寄生虫分会的换届选举工作,产生了中华预防医学会医学寄生虫分会第四届委员会 委员组成,并选举产生了主任委员、副主任委员和常委。分委会由 49 人组成,来自全国 24 个省、自治区、直辖市的 46 个单位。顾问:郑江、高兴政;主任委员:汤林华;副主 任委员 4 人:余新炳、潘卫庆、周晓农、温浩;常务委员 14 人;委员 30 人。

在会上新一届分会委员对下一步工作的计划及打算进行了讨论。近期拟开展或完成的 工作包括建立中华预防医学会寄生虫分会网站,建立定期与委员进行信息沟通的机制,完 成会员登记工作,组织多种形式的学术交流活动,举办多学科多病种有针对性继续教育培 训班,同时,发挥会员作用,为继续办好《中国寄生虫学和寄生虫病杂志》,开展科教咨 询做贡献。 5.3 为展示近六年来医学寄生虫分会取得的成绩、开展的主要活动,以展板的形式参加了 中华预防医学会第三届学术年会期间的交流,取得较好的效果。

5.4 完成中华预防医学会及中国疾病预防控制中心传染病基地项目继续教育项目7项,分别 包括:全国寄生虫病中间宿主螺类生物学与控制,全国广州管圆线虫病诊断标准及监测技 术培训班,全国血吸虫病免疫诊断技能考核竞赛,全国家畜血吸虫病防治技术培训班,第 五轮中国全球基金疟疾项目管理培训会,全国医学寄生虫学与寄生虫病防治、科研新进展 学术会议,食源性寄生虫病与土源性线虫病培训班。共计900余人参加。

6 卫生部寄生虫病标准专业委员会

在卫生部有关司局的领导下,在卫生部卫生监督中心有关部门的直接指导下,在挂靠 单位中国疾病预防控制中心寄生虫病预防控制所的支持下,卫生部寄生虫病标准专业委员 会在动员各方面力量参与卫生标准起草工作、落实卫生标准制修订计划和规范、合理使用 经费等方面采取了一系列的保障措施;同时在工作中积极发挥委员的作用,努力争取按时 完成各项工作。

6.1 制修订项目完成情况

报批项目两项:疟疾控制与消除标准(国标)、广州管圆线虫病诊断标准(行标)。

6.2 制订《2009年标准制修订计划》

根据《寄生虫病卫生标准"十一五"规划》及其工作重点,经过充分讨论确定了《2009 年标准制修订计划》1项,即《钩虫病诊断标准》。

6.3 标准宣传与培训

利用举办全国培训班或会议的机会,积极宣传寄生虫病标准和标准知识,增加了专业人员对它们的了解。

2009 年 3 月 22-25 日,在云南省大理市举办的全国广州管圆线虫病监测试点方案培训 班上,向来自全国 15 个省(市、区)疾病预防控制中心、医院的业务骨干等 58 人介绍标 准知识和《广州管圆线虫病诊断标准》。

在 2009 年 5 月举办的卫生部包虫病防治技术培训班上,对来自内蒙、宁夏、甘肃、 青海、新疆以及四川省的 31 个包虫病防治项目县的 98 名疾控和卫生管理人员进行了《包 虫病的诊断标准》的培训。

7 其他

7.1 完成07、08年度10项全球基金硕士专项课题进展评估,分别前往江苏省寄生虫病所防治研究所和河南省疾病预防控制中心进行课题督导。

7.2 完成并上报上海市卫生局"科学研究与技术开发机构调查表"、"国家级科技计划项目 执行情况调查表"和"国家级科技计划项目跟踪调查表"共9份。

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§3. PROJECT MANAGEMENT & EXTERNAL AFFAIRS

1 Scientific Research

1.1 On-going projects

The on-going projects were well managed. A total of 41 research projects were undertaken in 2009, among which one was supported by the National Basic Research Program (973) (participation), one by Hi-tech Research and Development Program of China (863), 6 by the Key Special Projects for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases (4 for participation), 4 by Key Projects in the National Science & Technology Pillar Program during the 11th Five-Year Plan Period, 2 by National Science and Technology Infrastructure Working Program, 4 by Health & Public Welfare Vocational Research Program, 8 by National Natural Science Foundation of China (3 for participation), 1 by Science and Technology Program of Xinjiang Uygur Autonomous Region, 1 by Project for the Second National Communications Capacity-building, 2 by Science and Technology Commission of Shanghai Municipality, 9 by international cooperation programs from international funding organizations, 1 by Youth Fund of China CDC, and 1 was domestic joint cooperative program. Among these projects, ten were completed. A total of 70.73 million Yuan was gained. Each program was undertaking according to original schedule in 2009.

1.2 Approved Projects

The application channels were significantly expanded. More than 10 research projects were approved in 2009, among which 2 by the Key Special Project for the Prevention and Control of AIDS and Viral Hepatitis and Other Major Infectious Diseases, 2 by National Natural Science Foundation of China (1 for participation), 1 by Key Projects in the National Science & Technology Pillar Program, 1 by Youth Fund of China CDC, 1 by Science and Technology Program of Xinjiang Uygur Autonomous Region, 1 by Science and Technology Commission of Shanghai Municipality, and 4 for international cooperation. A total of 21.25 million Yuan was funded, and some fund applications are pendent.

1.3 Research outcomes

1.3.1 Research awards

Great efforts have been made to apply research awards. "Study on a new strategy for the control of schistosomiasis in China" and "Study on the establishment of GIS system for schistosomiasis early warning in the Yangtze river valley and marshland and lake regions of China" were awarded the first prize medal and third prize medal of Chinese Preventive Medical Science & Technology Award, respectively.

1.3.2 Patent

Five patents were registered for.

1.3.3 Publications

Eighty-eight papers were published and 23 of them were embodied by SCI. Seven professional books written by NIPD staff were published.

1.4 Laboratory Maintenance of Parasites

Seventeen projects of laboratory maintenance of parasites were smoothly completed.

2 International collaboration and communication

2.1 International exchange

2.1.1. Visit abroad:

35 person/times visited Brazil, Lao PDR, Cambodia, Philippines, Argentina, Sri Lanka, Italy, Australia, New Zealand, German, Switzerland, USA, Indonesia, UK, Vietnam, Egypt and Ghana.

2.1.2 Visits of foreign guests:

68 foreign visitors from Pakistan, Lao PDR, Nepal, Sri Lanka, Indonesia, Vietnam, Ghana, Kenya, Mauritius, Namibia, Sierra Leone, Seychelles, Uganda, Antigua and Barbuda, Grenada, DPRK, Cambodia, Thailand, Myanmar, USA, Japan, German, Philippines, Switzerland, Australia, Columbia, India, UK, Sudan, and WHO/HQ, WHO/WPRO, WHO/SEARO, WHO/TDR, RBM, FAO.

2.1.3 International cooperation projects:

A total of 6 international cooperation projects were undertaken. Eight projects proposals were submitted and under verification.

2.2 International Training Course

2.2.1 Two DPRK professionals supported by MOH, were trained for anopheles species identification with PCR" in NIPD, July 2-21, 2009. The training covered both basic theory and practice of PCR technology.

2.2.2 Supported by the Ministry of Commerce, "Training Course on Parasitic Disease Control and Prevention for Developing Countries" were conducted from Oct 14 to Nov 2, 2009 in NIPD. A total of 23 professionals from 15 developing countries (Pakistan, Laos, Nepal, Sri Lanka, Indonesia, Vietnam, Ghana, Kenya, Mauritius, Namibia, Sierra Leone, Seychelles, Uganda, Antigua and Barbuda, and Grenada) were trained. The content of the training included management system for malaria information and situation in China, Application of GIS in schistosomiasis control, Angiostrongliasis research and control in China, Control and surveillance of soil-transmitted parasitic diseases, Experience of lymphatic filariasis elimination in China, Immunodiagnostic technique of schistosome infection, and so on.

2.2.3 Sponsored by MOH, "Training Workshop on Malaria Control and Elimination in the Great Mekong Sub-regions" was held in the NIPD on 16-21 November 2009. Fifteen professionals from Cambodia, Thailand, Vietnam, Myanmar, and Lao PDR attended the training. The course

was focused on regional malaria elimination action plan, indicators of malaria control and elimination, and guidelines for malaria treatment.

2.2.4 Sponsored by WHO/TDR, the Second Annual Meeting of Reference Group and Partners on Environment, Agriculture and Infectious Diseases was held on 26-28 October, 2009. A total of 35 participants from WHO, WHO/TDR, WHO/CHN, FAO, World Bank, Switzerland, Denmark, Australia, Nigeria, Columbia and Sudan attended the meeting.

2.2.5 Passport management

According to related regulations, thirty-two passports were delivered over to Shanghai Health Bureau.

2.3 Overseas training

2.3.1 Two professionals visited the Center for Evolutionary and Theoretical Immunology, University of New Mexico, USA and did collaboration research there for 3 months.

2.3.2 One professional was awarded TDR TropIKA Career Development Fellowship and studied in UK for 77 days.

2.3.3 Two Professionals attended the Broadening Involvement Team Training Workshop in Malaria Control (BITTW), 1–28 November 2009 in Indonesia for 25 days.

2.3.4 Two Professionals attended Interregional Workshop on Monitoring of Insecticide Resistance for the Establishment of a Bi-regional Network in Vietnam for 6 days.

2.3.5 One Professional studied in Basel University, Switzerland for 6 months to pursuit PhD Degree.

3 Education and Training

The recruit plan of 2010 has been worked out. A total of 12 new post-graduate candidates will be enrolled in 2010. 8 fresh post-graduate candidates were enrolled in 2009. 2 post-graduates were evaluated as "excellent" by China CDC.

The evaluation form for public health and preventive medicine of post doctorial floating station was submitted to China CDC.

Prof Tang Linhua and Prof Zhou Xiaonong were voted as member of degree review committee of China CDC in the second turn over. The degree review committee of our Institute consists of 13 experts. Prof Tang Linhua is the chair and Prof Zhou Xiaonong is the vice chair.

8 post-graduates passed paper defence, among which, 5 were awarded master degree, 1 awarded MPH and 2 awarded PhD.

A one-month-long course of parasitology and professional English for postgraduates enrolled in 2009 was held from Aug 24–Sep 28. The PhD students enrolled in 2008 and new staffs, total 11 persons, attended the course.

Relevant staff of the Institute attended the "Working Meeting of Post Doctor Management", which was organized by Department of Education and Training of China CDC from 17–18 March, 2009 and introduced the current situation of post doctor management in our Institute. 40

A national post doctorial organizer committee funded program was applied and the first-rank financial support was gained.

Dr Liu Qin completed her post doctorial research and made final report on 11 June, 2009. The national post doctor organizer committee awarded post doctorial certification to her in July.

Jiang Weisheng, "Western Light" supported visiting scholar, accomplished his training in due time.

4 Biosafety

4.1 Paying much attention to laboratory safety

4.2 Laboratory Safety Week

To enhance laboratory safety consciousness of the entire laboratory staff, they must firmly establish a sense of responsibility for laboratory safety. To enhance laboratory safety management and ensure laboratory security, Laboratory Safety Week activities were held on 20-24 April, 2009, with the theme "sustainable security and harmonious development". The staff and postgraduates have joined together. The main activities held were as follows: ① putting up posters, ② organizing seminars on safety training and emergency response, ③ operation exercise, ④ organizing training course for biosecurity staff, to learn the compilation of laboratory management system of Chinese Center for Disease Prevention and Control (2007 Revision, Draft), ⑤ safety check: self-examination combined with supervision, ⑥ forum.

4.3 Strengthening the self-examination in laboratory

4.4 Refining laboratory waste disposal and assigning the responsibility to implement the rules

4.5 Going on enhancing laboratory safety training

4.6 Laboratory related management

5 Academic work

5.1 Standing Committee Meeting of Parasitology Branch of CAPM was held on April 25, 2009. The new round of election issues were discussed on the meeting. A total of 11 standing members attended the meeting. Prof Tang Linhua reviewed the work of the third committee and emphasized the new round of election. Prof Zhou Xiaonong announced the election procedure of CAPM and the plan of the fourth committee election. The proposed candidates and the plan were passed by the standing members. There would be totally 49 members in the 4th committee, 31 current members would continue to serve for the committee and additional 18 members would be enrolled.

5.2 The election meeting and Seminar of Parasitology Branch of CAPM was held on November 21-22, 2009 in Shanghai. A total of 225 participants from 46 colleges, CDCs, research institutions and hospitals covered 24 provinces and municipalities and autonomous regions attended the meeting. 131 papers, 21 presentations and 27 group reports were shared on the seminar and group discussion. The seminar covered malaria control and elimination, schistomiasis genomics, protein structure and function of *Clonorchis sinensis*, schistomiasis surveillance, transmission risk of *Toxoplasma gondii* and its control measures, and *Angiostrongylus cantonensis*. The seminar provided a platform for scientists in this field to exchange information, share experience and refresh knowledge so as to improve the development of the national parasitic disease control.

Dr Liu Xia, the director of CAPM moderated the meeting of election. 49 members from 46 relevant institutes covered 24 provinces/autonomous region/ municipalities were elected. They were Consultants Prof Zheng Jiang and Prof Gao Xingzheng, Chair Prof Tang Linhua, Vice Chair Prof Yu Xinbin, Prof Pan Weiqing, Prof Zhou Xiaonong, and Prof Wen Hao, 14 standing members and other 30 members.

The new committee members discussed future working plan on the meeting, including the construction of website of parasitology branch, establishing the periodical communication among all members, membership registration, academic exchanges, and training/workshops. All members agreed to contribute more to the Chinese Journal of Parasitology and Parasitic Diseases so as to better serve for the researchers in this field.

5.3 Achievements of the past 6 years on the posters and exhibition board were shown on the third annual meeting of CAPM.

5.4 Seven further education projects were carried out, namely: national biology and control measures of schistosomiasis intermediate host, diagnostic standard and surveillance techniques of angiostrongyliasis, national contest on immunological techniques of schistosomiasis diagnosis, national training workshop on livestock schistosomiasis control measures, the fifth round GFATM malaria program management training, national seminar on medical parasitology and parasitic disease control and progress, training on food-borne and soil-borne parasitic diseases. A total of 900 professionals attended.

6 Professional Standards

Under the leadership of the relevant departments in the Ministry of Health, the direct guidance of the relevant departments in the National Center for Health Inspection and Supervision and the support of the affiliated units in the National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, Professional Standards Committee for parasitic diseases of MOH mobilized all forces to draft the standards, and implement the plan of

revision of hygienic standard and adopted a series of security measures to normalize the funds application. It tried its best to fulfill all tasks on time.

6.1 Completion of programs

Criteria on malaria control and elimination (GB), Diagnostic criteria on angiostrongyliasis (WS) has been submitted to MOH.

6.2 Plan of revision of standards in 2009

According to the 11th Five-Year plan on Parasitic Diseases health standards and its focus, after a full discussion "Diagnostic criteria of hookworm disease" was suggested to be reviewed in 2009.

6.3 Propaganda and training of standards

During national training courses or conferences were held, we propagandized the standards for parasitic diseases actively, and made the professional comprehend the standards better.

Training course on "National Program of Angiostrongyliasis Monitoring in the Pilot" was held on March 22-25 2009 in Dali, Yunnan Province. We introduced the knowledge of standards and the diagnostic criteria of angiostrongyliasis to 58 professionals, who came from 15 provincial (municipal, regional) CDC and hospitals.

Training course on echinococcosis control was held in May, 2009. We introduced the diagnostic criteria on echinococcosis to 98 CDC and Health Management personnel, who came from 31 echinococcosis endemic regions of Inner Mongolia, Ningxia, Gansu, Qinghai, Xinjiang and Sichuan.

7 Others

7.1 The evaluations on 10 special programs of the Global Fund for Master were fulfilled in the year of 2007 and 2008. The progress of the related programs in Jiangsu Provincial Institute of Parasitic Diseases Control and Henan Provincial Center for Disease Control was supervised, respectively.

7.2 Nine questionnaires including "Survey on Scientific Research and Technological Development Institutions", "Questionnaire on implementation of National Science and Technology Plan Project" and "Tracking Survey on National Science and Technology Projects" were completed and submitted to the Shanghai Health Bureau.

§4. 研究论文摘要

血吸虫病

我国血吸虫病防治的成就及面临的问题

郑江

新中国成立以来,我国坚持了因地制宜的综合性防治血吸虫病策略,取得举世瞩目的 成绩。至 2008 年底,全国有血吸虫病流行的 12 个省(市、区)中 5 个已阻断传播,454 个流行县(市、区)中有 265 个已阻断传播,97 个已控制传播;全国血吸虫病病例数由防 治初期的 1 000 余万例降至 41.3 万例。目前,尚未控制传播的 92 个县(市、区)均分布 在湖沼和高原山区,防治工作难度很大。由于环境和社会经济因素影响,综合性防治策略 无法实施。以控制传染源为主的策略虽可迅速降低血吸虫病的感染率和感染度,但由于钉 螺分布广泛,传染源种类众多,难以控制再感染。应改变传统的生物医学防治模式,坚持 以社会措施为主导的综合防治策略,将血吸虫病防治纳入当地的社会经济发展规划,改变 传统的生活、生产习惯,逐步减少血吸虫病感染的机会,以消除血吸虫病传播的危险因素, 直至控制和阻断血吸虫病的传播。只有这样,血吸虫病防治才能持续发展。

血吸虫免疫逃避机制的研究现状*

曹建平 胡媛 沈玉娟 周何军 陈勤 刘述先

血吸虫免疫逃避机制是血吸虫抵抗宿主而得以存活的重要因素,目前较肯定的机制主要是抗原改变和免疫调节。抗原改变主要是血吸虫抗原的变异、模拟和伪装,使宿主的免疫临视功能敏感度下降;免疫调节主要是血吸虫通过合成神经分子、蛋白酶、细胞因子及其他小分子物质,阻断宿主补体的激活,抑制宿主的免疫细胞功能,从而下调宿主的免疫功能,这两种机制均有利于血吸虫在宿主体内的存活。

肝星状细胞在血吸虫病肝纤维化形成及调控中的作用

蔡玉春 陈家旭

肝星状细胞(hepatic stellate cell, HSC)是肝脏组织的一种间质细胞,具有多种生理功能, 对肝纤维化的形成与转归起到关键作用。HSC 同样在血吸虫病肝纤维化形成及其调节中起 到重要作用。该文就 HSC 的生物学特性、活化及其在血吸虫病肝纤维化中的作用作一综 44

^{*}基金项目: 国家自然科学基金(30872212, 30771880); 国家高技术研究发展计划(国家 863 计划)(2006AA027A44); 国家重大科技专项 (2008ZX10004-011); 上海市科委生物医药重点科技攻关项目(064319026)

述。

我国血吸虫病的防治策略及其效果

周晓农 汪天平1 林丹丹2 吴晓华

该文在回顾国际上血吸虫病防治策略演变历史的基础上,结合我国血吸虫病防治策略 因社会经济发展、科技水平提高而调整的历史,分别就以钉螺控制为主的综合防治策略与 以人畜化疗为主的综合防治策略的背景与实施效果作了综述,就我国 2004 年提出的预防 控制血吸虫病中长期目标,阐述实施以传染源控制为主的综合性防治策略的现实意义与试 点效果,提出了今后我国血吸虫病防治新策略实施过程中面临的新挑战以及今后发展前 景。

2 安徽省寄生虫病防治研究所
 2 江西省寄生虫病防治研究所

血吸虫基因组、专录组和蛋白质研究进展

胡薇 冯正 韩泽广

血吸虫病是全世界最严重的寄生虫病之一。血吸虫具有一些独特的生物学性状: 雌雄 异体,复杂的生命周期,逃避宿主免疫应答,以及显著的依赖于宿主的内分泌和免疫信号 来完成其发育、成熟和产卵。近 10 年来,日本血吸虫和曼氏血吸虫的转录组、基因组和 蛋白质组方面都开展了诸多的研究:基因组草图已经完成,不同发育阶段和性别的基因表 达和蛋白表达谱已分析获得了巨大的信息。新的血吸虫基因组、转录组和蛋白质组数据有 助于全面理解无脊椎动物进化、血吸虫营养和新陈代谢,依赖宿主的发育和成熟,宿主和 寄生虫的相互作用和免疫逃避以及潜在的疫苗候选者与药物靶点等。

新型吡喹酮薄膜衣片治疗日本血吸虫病的副反应及疗效研究

许静 郭家钢 吴晓华 郑江 周晓农 曾小军¹ 杨卫平² 杨光斌³

[目的] 了解新型吡喹酮薄膜衣片治疗日本血吸虫病的副反应状况及治疗效果。[方法] 在湖北、江西、安徽血吸虫病流行区选择 6-65 岁的常住居民进行问卷调查、间接血凝免疫 诊断试剂筛查,血检阳性者进行改良加藤法检查以确诊。对血检阳性者及部分自愿服药的 正常人共计 509 人给服吡喹酮并调查药物的味道,对 339 名服药前无副反应相关症状的化 疗对象随访副反应情况,对 104 例粪检阳性者在化疗后 3 个月进行疗效考核。[结果] 84.7% 的人(144/170)认为新型吡喹酮薄膜衣片没有味道或者很轻,而吡喹酮素片对照组 92.9% (315/339)的人认为药物味道较重。新型吡喹酮薄膜衣片化疗组在化疗后 1-2 小时副反应 率为 20.30% (27/133),其中神经肌肉系统、消化系统、心血管系统、过敏反应的副反应 率分别为 15.79% (21/133)、9.77%(13/133)、2.26%(3/133),与吡喹酮素片对照组均有统计 学意义, 吡喹酮薄膜衣片化疗组过敏反应发生率为 2.26%(3/133), 与素片对照组无统计学 意义。化疗后第 2 天吡喹酮薄膜衣片化疗组和素片对照组的副反应率分别下降为 3.01% (4/133)、38.53%(126/327), 存在统计学意义。在化疗后 2 周新型吡喹酮薄膜衣片化疗组、 素片对照组的副反应率已无统计学意义。化疗后 3 个月新型吡喹酮薄膜衣片化疗组的粪检 阴转率为 84.91%, 与素片对照组粪检阴转率无统计学意义。[结论] 新型吡喹酮薄膜衣片 降低了味道及化疗对象的副反应发生率, 其疗效与吡喹酮素片对照组等效。在进一步扩大 现场验证的基础上, 可在血吸虫病流行区推广使用。

1 江西省寄生虫病防治研究所

2 安徽省血吸虫病防治研究所

3 湖北省疾病预防控制中心

血吸虫病流行区各类传染源感染现况调查

余晴 汪奇志! 吕大兵! 汪峰峰! 吴维铎! 汪天平! 郭家钢

[目的] 了解血吸虫病不同主要流行类型地区各类传染源感染现况,为进一步加强以传 染源控制为主的综合防治措施提供科学依据。[方法] 2007 年 10-11 月在安徽省选择山丘 型血吸虫病流行村和湖沼型流行村各 1 个(共 16 个自然村)开展现况调查,调查当地钉 螺感染情况,对 1521 名常住居民、采用简单随机抽样方法对 197 头家畜(牛 80 头、猪 46 头、犬 45 只、猫 18 只、羊 8 只)、32 只野生动物(野鼠)进行病原学检查(kato-katz 法、 尼龙绢集卵孵化法),计算血吸虫病感染率和感染度。[结果] 垄上村、渔业村的钉螺感染 率 2007 年分别为 2.26%, 1.06%, 均高于 2006 年的 0.55%, 0.72%。人群感染率与感染度 (每克粪便中虫卵数 egg per gram, EPG)几何均数: 垄上村为 3.8%和 0.14 个虫卵/g 粪便, 渔业村为 3.4%和 0.13 个虫卵/g 粪便。不同性别血检阳性率: 垄上村血检阳性率男性 17.5% (44/252), 高于女性的 11.0%(25/227)(y2=4.026, P=0.045); 渔业村血检阳性率男性 21.4% (66/309),女性 19.4% (25/129),两者差异无统计学意义 (χ2=0.217, P>0.05);不同 性别粪检阳性率: 垄上村粪检阳性率男性 5.2% (14/268), 女性 2.1% (5/236), 两者差异 无统计学意义 (χ2= 3.336, P>0.05); 渔业村粪检阳性率男性 5.7% (14/245), 女性 1.2% (3/250)(y2=7.603, P=0.006)。 垄上村检查 6 头牛,未发现阳性, 垄上村无羊; 渔业村 牛的感染率为 10.8% (8/74), EPG 算术均数为 135.00 个虫卵/g 粪便; 公牛血吸虫感染率 9.1% (6/66), 母牛 25.0%(2/8), 两者差异无统计学意义 (χ2=0.586, P=0.444); 羊共检查 8 头, 检出 6 头阳性(6/8), EPG 算术均数为 254.82 个虫卵/g 粪便。犬野粪孵化阳性率和 感染度: 垄上村为 23.81% (5/21) 和 1.21 个虫卵/g 粪便; 渔业村为 55.6% (24/36) 和 20.00 个虫卵/g 粪便。 野鼠感染率: 渔业村共检查 10 只, 无阳性感染; 垄上村为 13.64% (3/22)。 [结论] 耕牛仍是血吸虫病湖沼型流行区的主要传染源,但随着以传染源控制为主的综合防 治策略深入开展,羊、犬和野鼠等动物在血吸虫病传播中的流行病学意义应予重视。

¹ 安徽省血吸虫病防治研究所

日本血吸虫紫外线致弱尾蚴免疫小鼠攻击感染后的组织细胞反应*

陈家旭 刘述先 曹建平 徐裕信 宋光承 郭俭*

[目的]观察日本血吸虫紫外线致弱尾蚴疫苗(UVC)免疫动物攻击感染后的局部组织 免疫病理变化。[方法]将70只C57BL/6小鼠随机分为疫苗免疫组和感染对照组。疫苗组 小鼠接种紫外线致弱日本血吸虫尾蚴后5周,再经腹部皮肤攻击感染正常日本血吸虫尾蚴 (800±50)条;感染对照组经皮肤感染同量尾蚴。于攻击感染后6~120h的不同时间点各剖 杀小鼠5只,取攻击部位皮肤及/或肺组织,进行病理学观察。[结果]UVC疫苗免疫小鼠 攻击感染日本血吸虫尾蚴后,皮肤炎症反应较感染对照出现早、反应强烈、持续时间长, EOS 百分比高,但肺部出血斑点出现时间(72h)迟于感染对照组(48h)。72~120h,疫苗组 小鼠肺部局灶性炎症明显,肉芽肿样结节形成,肺泡壁多正常,而感染对照组小鼠肺组织 炎症轻,但肺泡壁水肿明显,且有较多红细胞渗出。[结论]紫外线致弱尾蚴疫苗免疫增强 了小鼠皮肤及肺组织的细胞反应及其杀虫作用。

*基金项目: 国家科技支撑计划

日本血吸虫紫外线致弱尾蚴免疫鼠诱导的抗病免疫效应

陈家旭 刘述先 徐馀信 宋光承

[目的]观察日本血吸虫紫外线致弱尾蚴(UVC)疫苗免疫小鼠诱导的抗肝虫卵肉芽肿 及纤维化效应。[方法]将60只C57BL/6小鼠随机分为UVC疫苗免疫组和感染对照组。 疫苗免疫组小鼠经皮肤接种UVC后5周,每鼠攻击感染(30±2)条正常日本血吸虫尾蚴; 感染对照组经皮肤感染同量尾蚴。于攻击感染后7周解剖小鼠;取肝左叶制备连续石蜡切 片,测定肝脏单卵肉芽肿大小;用 ELISA 法检测血清透明质酸(HA)及层黏连蛋白(LN)含 量,PCR-ELISA 法检测肝组织 TGF-β1mRNA 的表达水平。[结果]UVC疫苗免疫组小鼠 肝组织单卵肉芽肿直径为(176.25±38.67)μm,显著小于感染对照组的(304.38±53.23)μ m(P<0.01),与感染对照组相比,UVC疫苗免疫组小鼠肝虫卵肉芽肿直径减小了42.10%。 UVC疫苗组小鼠血清中HA、LN含量均显著低于感染对照组,肝纤维化程度明显减轻。[结 论]UVC疫苗免疫小鼠诱导的抗肝虫卵肉芽肿及其纤维化效应同疫苗免疫诱导的细胞免疫 应答的增强及高水平的IFN-γ以及肝TGF-β1mRNA表达水平的降低密切相关。

血吸虫病流行区居民对封洲禁牧依从性的调查

曹淳力 王婧¹ 鲍子平 祝红庆 蔡顺祥² 李以义³ 李东⁴ 何家昶⁵ 孙乐平⁶ 蒙 先洪⁷ 钟波⁷ 冯锡光⁸ 苏正明² 李君³ 辜小南⁴ 汪昊⁵ 茹炜炜⁶ 姜唯声⁴ 李石 柱 王强 周晓农 郭家钢 赵根明¹

[目的] 调查我国血吸虫病流行区居民对封洲禁牧措施的依从性。[方法] 根据人群血吸 虫感染率≥10%、~<10%和~<5%的3个层次,在湖南、湖北、江西、安徽、江苏、四川 省和云南省的血吸虫病流行村分层整群抽样,随机抽取2204名居民进行问卷调查,调查 封洲禁牧、舍饲圈养措施的认可和落实情况。[结果]78.4%的居民认可封洲禁牧措施,3.7% 的居民不支持。关于家畜舍饲圈养与血防两者之间的关系,83.9%的调查对象认为两者之 间有关联,3.1%认为没有关联,并且山区明显高于湖区(×2=26.001, p<0.05);在不同 感染率地区中,认为有关联的居民分别占调查人数的81.7%、85.1%和84.9%;对3层不同 感染率地区居民中认为没有关联关系的结果进行统计学分析,差异有统计学意义(× 2=45.121,P<0.05),感染率≤5%~<10%和感染率≤1%~<5%地区的两组差异无统计学意 义(×2=0.171,P>0.05),感染率≥10%的与其他两组差异有统计学意义(×2=45.045, P<0.05)。家畜敞放的主要原因分别是舍饲圈养成本高(36.2%)、不习惯(26.4%)和没有 地方舍饲圈养(25.4%)。[结论] 应根据各地的经济水平、地理环境、农业生产状况、居民 文化程度和生产习惯等社会经济情况,因地制宜地落实和巩固封洲禁牧舍饲圈养措施。

8 云南省地方病防治所

氰氨化钙杀血吸虫卵和杀蛆蝇效果

魏望远!祝红庆 刘宗传!吕功良!丁良!郭家钢

[目的]观察氰氨化钙对日本血吸虫卵和简易厕所粪坑内蛆的杀灭作用。[方法]采用对 照方法,观察室内和现场牛粪与氰氨化钙(W/W)和粪坑中氰氨化钙与粪液(W/V)不同比例 杀灭血吸虫卵和蛆的效果。[结果] 1%(W/W)氰氨化钙与集卵牛粪沉渣拌匀 2 h 后均不能孵 出毛蚴;室内按氰氨化钙与牛粪(W/W)2%堆积牛粪 10 cm 和 20 cm 厚加一层氰氨化钙,分 别于 5、7 d 抽样孵化,未发现毛蚴;现场用原粪加 2%(W/W)氰氨化钙搅拌堆积,2 d 后抽 样不能孵出毛蚴。1%(W/V)氰氨化钙撒入粪液搅匀,3 d 蛆死亡率 100%,效果维持 15 d, 苍蝇密度比对照组显著降低。[结论] 氰氨化钙对血吸虫卵中的毛蚴和蛆蝇有较强的杀灭作 用。

¹ 复旦大学公共卫生学院

² 湖北省疾病预防控制中心血吸虫病防治研究所

³ 湖南省血吸虫病防治研究所 4 江西省寄生虫病防治研究所

⁵ 安徽省血吸虫病防治研究所

⁶ 江苏省血吸虫病防治研究所

⁷ 四川省疾病预防控制中心寄生虫病预防控制所

¹ 湖南省血吸虫病防治所

血吸虫病健康教育作品评选方法的建立与应用

曹淳力 梁幼生¹ 郭家钢 王雷平¹ 孙乐平¹ 吴晓华 胡广汉² 汪伟¹ 茹炜炜¹ 马 俊华³ 徐兴建⁴ 高扬⁵ 周晓农

[目的] 促进省级血防健康教育(血防健教)作品的设计与制作,提高全国血防健教工作水平。[方法] 将血防健教作品分为声像、实物和印刷 3 种类型;通过展评,由群众和专家投票确定入围作品,再通过专家集中评分的方法,按健教作品的所得分数确定评选等级。 [结果] 全国 10 个省选送了 103 件血防健教作品参加评比,其中实物类作品 46 件,印刷类作品 31 件,声像类作品 26 件。共评选出获奖作品 32 件,其中一等奖 3 件,二等奖 6 件, 三等奖 9 件,优秀作品 14 件。获一等奖的作品为《血防水杯》、《小学生血防健教画报》 和《血防健教方言小品》。[结论] 群众和专家相结合的血防健教作品综合评选方法公正、 科学,为血防健教作品评选建立了新方法。

- 2 江西省寄生虫病防治研究所
- 3 云南省大理州血吸虫病防治研究所
 4 湖北省疾病预防控制中心血吸虫病防治研究所
- 5 江苏省扬州市血吸虫病地方病防治工作领导小组办公室

晚期血吸虫病社会负担研究

邓瑶1 贾铁武 何未龙2 欧阳善文2 贺世豪3 周晓农

[目的] 调查晚期血吸虫病(晚血)的社会负担,为晚血防治及救助政策的制定提供科学 依据。[方法] 在湖南省汉寿县有现症晚血患者分布的村及湖北省江陵县 20%的村,对患者、 村民、村干部进行问卷调查;对县一级晚血负责人员进行深度访谈。[结果] 现场调查中, 66.1%的村干部认为晚血对村人均收入存在不同程度的影响;56.2%的村干部认为晚血对本 村劳动就业有不同程度的影响;26.1%的村民认为晚血对自身心理会产生不同程度的影响; 80%以上的村民及村干部均认为晚血对本村社会安定各方面无影响。患者当年接受晚血救 助的金额平均每人约 4 100 元;晚血救助各方面满意度均>85%;除现有救助外,77%的患 者仍然存在某些亟待解决的需求。深度访谈结果显示晚血对当地社会各个方面存在一定影 响。[结论] 晚血对当地社会经济、政府形象及大众心理等方面均存在一定影响,减轻该负 担应依靠当地政府对防治工作的重视、依靠防治工作的有效开展和依靠晚血救助政策的不 断完善与有效实施。

1 江苏省血吸虫病防治研究所

¹ 江苏省血吸虫病防治研究所

² 湖南省汉寿县疾病预防控制中心

³ 湖北省江陵县疾病预防控制中心

2008 年全国血吸虫病疫情通报

郝阳1 郑浩 朱蓉 郭家钢 吴晓华 王立英1 陈朝1 周晓农

本文通报了 2008 年全国血吸虫病疫情。至 2008 年底,全国估计血吸虫病人 412 927 例,报告急性病例 57 例,其中1 例为境外输入的曼氏血吸虫病例,与 2007 年相比分别下 降了 19.97%和 32.53%。全年共救治晚期血吸虫病人 21 222 例,比 2007 年增加了 15.04%。 全国现有钉螺面积 372 263.11 hm2,其中新增钉螺面积 1 197.89 hm2,均在历史无螺区内 发现。全国流行地区现有耕牛存栏数 1 468 669 头,较 2007 年减少了 1.86%,耕牛感染率 (1.34%)较 2007 年(2.12%)下降了 36.79%,但耕牛仍是疫区血吸虫病传播的主要传染源。以 湖沼型流行区为主的江苏、安徽、江西、湖北、湖南 5 省以及以山丘型流行区为主的云南 省均达到疫情控制标准,四川省达到了传播控制标准,基本实现了《全国预防控制血吸虫 病中长期规划纲要(2004~2015 年)》制定的中期目标。

1 卫生部疾病预防控制局

2008 年全国血吸虫病疫情控制考核评估报告

郝阳1 易冬华² 张险峰³ 熊继杰⁴ 袁文宗⁵ 胡守敬⁶ 吴晓华 朱蓉 郭家钢 黄希 宝⁷李岳生⁸ 陈红根⁹ 汪天平¹⁰ 董兴齐¹¹ 李华忠¹² 郑灿军¹² 陈朝¹ 王立英¹ 周晓农

按照全国考核评估方案的要求, 在湖南、湖北、江西、安徽、云南等 5 个省 14 个县(市、 区)中, 抽取 42 个流行村作为被考核村。共抽查居民 9 067 人, 查出了 154 例血吸虫感染 者,居民平均感染率为 1.70%,以村为单位最高为 4.10%; 共抽查家畜 3 323 头,查出血 吸虫感染家畜 46 头,家畜平均感染率为 1.38%、以村为单位最高为 4.00%。5 省 2008 年 内均未发生急性血吸虫病突发疫情。5 省均已建立了以行政村为单位,能反映当地血吸虫 病病情、螺情等变化的基本档案资料。对照《我国控制和消灭血吸虫标准》(GB15976-2006), 5 省均达到了我国血吸虫病疫情控制标准。

- 2 湖南省血吸虫病防治领导小组办公室
 3 湖北省血吸虫病防治领导小组办公室
- 4 江西省血吸虫病防治领导小组办公室
- 5 安徽省血吸虫病防治领导小组办公室
- 6 云南省血吸虫病防治领导小组办公室
- 7 湖北省疾病预防控制中心血吸虫病防治所
- 8 湖南省寄生虫病防治研究所
- 9 江西省寄生虫病防治研究所
- 10 安徽省寄生虫病防治研究所
- 11 云南省地方病防治所

¹ 卫生部疾病预防控制局

¹² 中国疾病预防控制中心

2006 年全国急性血吸虫病疫情

郑浩 李石柱 徐志敏 吴晓华 周晓农 郭家钢

[目的] 描述和分析 2006 年全国急性血吸虫病(急血)疫情分布和流行趋势。[方法] 根 据全国传染病疫情监测信息系统(网络直报)和突发公共卫生事件报告管理信息系统上报的 急血病例,用描述流行病学方法对上报急血病例和突发疫情报表数据进行分析。[结果] 2006 年全国共报告急血 207 例,其中确诊病例 161 例,临床诊断病例 46 例;湖区 5 省报 告 203 例,山区 2 省报告 4 例。全年非正式启动突发预案处理 1 次(2 例),共报告输入性 病例 14 例。[结论] 长江流域的江湖洲滩地区是急血发病的重点地区,应做好重点人群防 护工作。

高原山区血吸虫病防治效果评价指标的研究

罗天鹏1 周晓农 邱宗林1

[目的]研究云南高原山区以传染源控制为主的血吸虫病综合防治策略的成本-效果和成本-效益,为血吸虫病防治策略的制定或调整提供科学依据。[方法]在高原平坝型(坝区)和高原峡谷型(山区)血吸虫病疫区各选择 2 个村,分别作为实验组和对照组。实验组实施改水、改厕、禁牧等综合治理措施,对照组实施常规防治措施。分析 2005~2007 年间 2 类疫区以及实验组与对照组的防治效果、成本-效果和成本-效益。[结果]实验组 2 个村 3 年后人群感染率分别下降 93.36%和 96.44%;对照组 2 个村分别下降 83.24%和 84.38%,实验组优于对照组;坝区实验组与对照组成本-效果差别不大,山区实验组优于对照组。坝区成本-效益显著高于山区,实验组和对照组效益/成本比值(BCR)相差不大。[结论]与常规防治策略相比,以传染源控制为主的综合防治策略具有较好血防效果和效益,在人群感染率较高时,适用于高原山区。

1 云南省大理州血吸虫病防治研究所

血吸虫病传播气候预警模型的应用与前景

杨国静! 孙乐平! 洪青标! 杨坤! 邓瑶! 李石柱 吕山 周晓农

本综述提出了与血吸虫病传播有关的气候敏感因子的基本概念,分析了气候敏感因子 与血吸虫病各传播环节间的关系,介绍了已建立的气候敏感因子对血吸虫病传播影响的预 警模型,包括决定性模型和数理统计学模型。此外,从不同情景下的血吸虫病传播范围与 强度预测、各类预测模型的校准、模型预测的不确定性等3个方面,提出了今后研究的重 点与方向。

¹ 江苏省血吸虫病防治研究所

江苏省血吸虫病监测预警系统的研究Ⅱ基于 Google Earth 的实时操作与表达 平台的建立^{*}

孙乐平¹ 梁幼生¹ 田增喜² 戴建荣¹ 洪青标¹ 高扬² 黄铁昕¹ 杨国静¹ 杨坤¹ 汪伟¹ 李伟¹ 周晓农

[目的] 研究血吸虫病监测预警系统的实时操作与表达平台,实现监测预警信息的实时 共享和有效利用。[方法] 利用 Google Earth(谷歌地球)和 Picasa 3.1 图片管理软件,建立监 测预警点地标库和网络相册管理系统,将现场监测的疫情资料、图片资料和实验检测结果 导入管理系统,建立信息管理文档,将信息管理文档发送至终端用户,实现网上实时查询 和表达。[结果] 江苏省监测预警系统通过成功构建操作与表达平台,实现了异地实时查询 和共享,具有图文显示直观清晰,操作简便快速的优点,初步应用后现场图片的总浏览次 数已达 331 次,平均每个监测预警点信息被浏览 7.36 次,在江苏省血吸虫病防治工作中发 挥了重要作用。[结论] 基于 Google Earth 开发的江苏省血吸虫病网络实时监测预警平台的 方法,可作为血吸虫病监测预警系统中优选研制途径。

鄱阳湖区以传染源控制为主的血吸虫病综合防治策略研究

陈红根1 曾小军1 熊继杰2 姜唯声1 洪献林3 胡神助3 郭家钢

[目的] 探索以传染源控制为主的湖区血吸虫病综合防治新策略,观察其防治效果。[方法] 在鄱阳湖区血吸虫病重度流行区进贤县三里乡爱国村、新和村和光辉村全面实施以机代 牛、封洲禁牧、改水改厕和人居环境改造为主要内容的传染源控制措施,并辅以人畜化疗 和健康教育,连续4年定期监测人群血吸虫和肠道寄生虫感染情况、钉螺感染率、水体危 险性、虫卵对环境污染状况变化。[结果] 综合防治措施实施4年后,人群血吸虫感染率显 著下降,原属一类疫区的爱国村由试点前2004年的11.35%下降至2008年的0.18%,下降 幅度为98.41%;二类疫区的新和村和三类疫区的光辉村均下降至0。人群血吸虫感染度亦 呈逐渐下降趋势。人群蛔虫和鞭虫感染率分别由2005年的27.57%和61.98%下降至2008 年的3.82%和7.47%。虫卵对环境的污染明显减轻。试点区草洲感染螺点数2004年为49 个,2008年无感染螺点;感染螺平均密度、钉螺感染率、感染螺点数和水体危险性均大幅 度下降。[结论] 以传染源控制为主的血吸虫病综合防治措施可在短期内控制血吸虫病传染 源,取得净化草洲、有效防制人群再感染的效果,亦有利于改变疫区农民的生产结构和生 产方式,并减轻其他肠道寄生虫病流行。

¹ 江苏省血吸虫病防治研究所

² 江苏省人民政府血吸虫病地方病防治工作领导小组办公室

基金项目: 江苏省卫生厅科研项目(X200701); 江苏省医学领军人才项目(LJ200608); 国家重大科技专项(2008ZX10004-11)

¹ 江西省寄生虫病防治研究所

² 江西省血吸虫病防治领导小组办公室

³ 江西进贤县血吸虫病防治站

我国血吸虫病的监测与预警

周晓农

建立有效、快速反应的监测与预警机制,是一个地区做好传染病预防控制的前提。本 文结合传染病监测与预警机制以及监测、预警与响应等基本概念,就近年来我国在血吸虫 病监测与预警等方面的研究动态与相关进展作一系统分析与探讨,以提升我国血吸虫病的 监测与预警水平。

江西省鄱阳湖区血吸虫病传播风险及其原因分析

郝阳1 王立英 周晓农 陈红根2 黄希宝3 梁幼生4 张世清5 钟波6 周艺彪7 孙 乐平4 冯赟1 朱蓉 张利娟 余晴 辜小南2 林丹丹2

[目的] 分析江西省鄱阳湖区血吸虫病传播风险及其原因,为进一步推进以传染源控制为主的策略提供科学依据。[方法] 收集鄱阳湖区新建、南昌、都昌、星子、余干和鄱阳等6县2005~2008年血吸虫病疫情资料、国家级监测点资料及传染源控制措施实施情况,分析疫情变化趋势及与传染源控制因素的相关性。[结果]2005~2008年鄱阳湖区人畜感染率持续下降,但钉螺感染率呈升高趋势,且感染螺环境出现率维持在较高水平。相关性分析表明:感染螺环境出现率、钉螺感染率、感染螺面积均与当年及上一年的当地牛存栏数呈正相关关系,且后者相关系数高于前者;牛感染率与居民感染率呈正相关关系。[结论] 鄱阳湖区血吸虫病传播风险仍然较高。当地敞放的牛仍为血吸虫病传播的主要传染源,是造成钉螺感染水平较高的主要原因。

卫生部疾病预防控制局
 江西省寄生虫病防治研究所
 湖北省疾病预防控制中心
 江苏省寄生虫病研究所
 安徽省寄生虫病研究所
 四川省疾病预防控制中心
 复旦大学公共卫生学院

2009 年全国血吸虫病疫情预警分析报告

张利娟 朱蓉 汪天平1 操治国1 林丹丹2 贾铁武 张世清1 郭家钢 周晓农

[目的] 掌握我国血吸虫病流行变化趋势与规律,为 2009 年血吸虫感染高危地区提供预警信息。[方法] 收集 2009 年 80 个国家级监测点及 36 个综合防治试点钉螺解剖数据进行预警分析,并结合 2007~2008 年监测点和综合防治试点人群、家畜病情资料进行比较。 [结果] 2009 年感染性钉螺与 2007~2008 年分布基本一致,主要分布于江西省的鄱阳湖西 南岸疫区以及湖南、湖北省的洞庭湖及长江沿岸的部分疫区。2008 年人群感染率为 0.67%, 较 2007 年的 0.92%有所下降,其中湖南、湖北及江西 3 省仍有大部分疫区村人群感染率 >1%。2008 年家畜感染率为 1.62%,较 2007 年的 2.90%有所下降,其中湖南、湖北及江西 3 省仍有部分疫区村家畜感染率>3%。[结论] 鄱阳湖西南岸以及洞庭湖和长江沿岸的部分 疫区感染螺分布集中,人群和家畜感染率总体呈下降趋势,但湖南、湖北及江西3省部分 疫区疫情仍处于较高水平。

1 安徽省血吸虫病防治研究所

2 江西省寄生虫病防治研究所

基金项目: 国家自然科学基金重大项目(30590373); 国家科技支撑计划(2007BAC03A02); 国家重大专项项目(2008ZX10004-011)

2008 年全国血吸虫病疫情监测

张利娟 朱蓉 党辉 郭家钢

[目的] 分析 2008 年全国血吸虫病疫情监测数据,了解监测点疫情变化趋势,为及时 调整血吸虫病防治策略提供依据。[方法] 按照《全国血吸虫病监测方案》要求,收集 2008 年全国 80 个血吸虫病监测点螺情、病情和相关因素的调查数据,分析监测结果。[结果] 2008 年全国血吸虫病监测点居民血检阳性率和感染率分别为 9.86%和 0.67%,家畜感染率为 1.62%,较 2007 年均有明显下降,但监测点家畜圈养仅占 6.07%。共查出感染性钉螺面积 177.70 hm²,新发现钉螺面积 7.64 hm2,活螺平均密度为 0.32 只/0.1 m²,钉螺感染率为 0.15%。[结论] 2008 年全国血吸虫病监测点人畜病情及螺情均较 2007 年有所下降;家畜依 然是血吸虫病的主要传染源,需进一步加强家畜管理,同时应关注螺情监测和钉螺控制。

我国血吸虫病主要流行区《血吸虫病防治条例》执行情况调查

王婧! 曹淳力 郭家钢 赵根明!

[目的] 了解《血吸虫病防治条例》贯彻落实情况。[方法] 抽样调查江苏、安徽、江西、湖北、湖南、四川、云南等省血吸虫流行区血吸虫病及血防条例的知晓情况,改水改厕实施情况以及人畜粪便管理的相关内容。[结果] 98.9%的居民知晓血吸虫病, 89.8%的居民知晓《血吸虫病防治条例》,知晓途径主要为宣传标语或资料(43.56%); 95.1%的居民支持人畜粪便的管理, 45.3%的居民使用自来水, 47.6%仍然使用井水作为日常用水;使用水冲式厕所的居民占 51.1%,使用简易厕所的居民占 40.0%;山区改水改厕情况落后于湖区。[结论] 《血吸虫病防治条例》宣传仍需加强。

1 复旦大学公共卫生学院流行病学教研室

2008 年全国血吸虫病潜在流行区监测预警报告*

吴晓华 许静 李石柱 黄铁昕¹ 汪天平² 吴成果³ 黄希宝⁴ 缪峰⁵ 陈朝⁶ 王立 英⁶ 郭家钢 周晓农

[目的] 掌握血吸虫病潜在流行区血吸虫病潜在流行因素的动态变化,为建立血吸虫病

监测预警系统以应对突发疫情提供科学依据。[方法] 于 2008 年在湖北、江苏、安徽、山东、重庆等 5 省(市)10 个县(市、区)选择血吸虫病潜在流行区设立固定监测点和流动监测点,采用血清学、病原学方法调查当地人群、流动人口及家畜的血吸虫感染情况;在危险地带及可疑环境开展钉螺孳生分布调查,并在通江河道开展钉螺扩散调查。[结果] 对 9 县(市、区)665 岁当地居民 5225 人进行血清学检测,阳性 58 例,阳性率为 1.11%;其中 IHA方法检测 4224 人,阳性 35 例,阳性率为 0.83%,ELISA 检测 1001 人,阳性 23 例,阳性率为 2.30%。对 56 例血清学检查阳性者的粪样进行 Kato-Katz 法检测,结果均为阴性。对渔船民及其他流动人口 2204 人进行血清学检测,阳性 51 例,阳性率为 2.31%;其中 IHA检测 1603 人,阳性 26 例,阳性率为 1.62%,ELISA 检测 601 人,阳性 25 例,阳性率为 4.16%。对 29 例血检阳性者进行粪检,8 例检测到血吸虫虫卵。潜在流行区开展钉螺调查面积 48.31 hm2,未查获钉螺;钉螺扩散及可疑环境调查亦未发现有钉螺从流行区扩散至潜在流行区。[结论] 血吸虫病潜在流行区已经发现传染源输入,外源性钉螺扩散输入的可能性较大。因此,有效地降低血吸虫病传播风险,是潜在流行区工作的重点。

- 1 江苏省血吸虫病防治研究所
- 2 安徽省血吸虫病防治研究所
- 3 重庆市疾病预防控制中心
- 4 湖北省血吸虫病防治研究所 5 山东省寄生虫病防治研究所
- 5 山东省可王公州历名 6 卫生部疾病控制局

日本血吸虫童虫 cDNA 文库免疫学筛选及阳性克隆的初步鉴定*

段新伟1 傅颖慧2 卢艳 黄成玉1 鞠川 徐斌 许学年 冯正 胡薇

用日本血吸虫感染 14 d 的小鼠血清免疫筛选日本血吸虫童虫 cDNA 文库,将获得的 7 个阳性克隆进行核苷酸序列同源性分析,结果显示其中一个克隆所测序列与日本血吸虫 HSP70 有很高的同源性(分值 score=650),另有 2 个克隆所测序列分别与已报道的日本血吸虫 FABP(score=229)和含锌指结构的 CDGSH 型蛋白样蛋白(score=246)明显同源,其余 4 个未找到已知的同源序列,为新基因。4 个新基因序列已被 GenBank 接受(登录号 为

EU121231、202646、202647 和 202648)。

^{*}基金项目:国家科技支撑项目(2007BAC03A02);国家科技重大专项项目(2008ZX10004-11);;国家自然科学基金重大项目(30590373)

 ¹ 华东理工大学生物工程学院
 2 上海交通大学医学院

^{*}国家高技术研究发展计划 (863 计划)项目 (No。 2007AA02Z153); 热带医学研究中心/美国国立卫生研究院 (No。 5P50 A139461); 国家 重点基础研究发展计划 (973 计划)

项目 (No. 2003CB716804)

疟疾

3S 技术在研究自然环境因素对疟疾传播影响中的应用

张少森 周水森

自然因素与疟疾传播的关系密切,国内外对气温、降雨量、湿度和地形地貌等自然因素与疟疾传播的关系作了大量研究。近年来以计算机和空间技术为基础发展起来的 3S 技术[地理信息系统(GIS)、遥感(RS)和全球定位系统(GPS)]在疟疾研究的资料收集、数据分析和模型建立等方面广泛应用,本文对 3S 技术在自然因素与疟疾传播关系中的应用和研究进展进行综述。

疟疾胶体金免疫层析试条在间日疟流行区的诊断评价

汪俊云 王建军1 石锋 许娴1 杨玥涛 高春花 郑香 葛军2 汤林华

[目的] 在现场评价疟疾胶体金免疫层析试条(简称试条)的诊断性能。[方法] 2008 年 9~10 月采集安徽省间日疟流行区蒙城县 5 个乡镇医院门诊部所有就诊的发热病人血样, 用双盲法比较镜检法和试条测试的结果。[结果] 共采集发热病人血样 292 份,镜检法检出 疟原虫阳性 181 份,均为间日疟;试条检出疟原虫阳性 163 份,亦均为间日疟。两法检测 结果一致的血样占 92.8%(271/292),其中均为阳性的 163 份,均为阴性的 108 份。两法检 测结果不一致的 21 份血样中,镜检阳性的、试条检测阴性的有 18 份,镜检阴性的、试条 检测阳性的有 3 份。原虫密度在>1000 个/µ1、100~1000 个/µ1和<100 个/µ1时,试条检 测阳性率分别为 93.5%(115/123)、86.0%(43/50)和 62.5%(5/8)。[结论] 该快速诊断疟疾胶体 金免疫层析试条在疟疾流行区对间日疟有一定的诊断价值。

1 安徽省疾病预防控制中心

2 安徽省蒙城县疾病预防控制中心

皖北疟疾防治试点不同传染控制措施的效果评价*

夏志贵 王建军1 沈毓祖1 黄芳 周水森

[目的] 通过观察皖北疟疾防治试点不同传染源控制措施的效果,探索适用于该类地区的更加可行、有效的疟疾传染源控制对策。[方法] 以皖北的涡阳县、颍上县和固镇县为试 点,根据当地疟疾发病情况、自然村的病例和水体分布情况,每组 5 个自然村,共选取 3 组试点村,于 2007 年分别采取现症病人治疗(对策 1 组)、现症病人治疗加区域全民休止期 治疗(对策 2 组)、现症病人治疗加全民休止期治疗(对策 3 组)3 种传染源控制对策,评价防 治效果。[结果] 2007 年对策 1 组现症病人治疗率为 100%;对策 2 组和对策 3 组现症病人 56 治疗率分别为 96.55%和 81.25%, 休止期治疗全程服药率分别为 99.10%和 78.67%, 休止期 治疗全人群覆盖率分别为 17.25%和 40.23%。2007 年 3 组疟疾发病率分别较 2006 年下降 41.67%(x 2=1.32, P>0.05)、19.4%(x 2=0.77, P>0.05)和 60.00%(x 2=10.50, P<0.01)。[结 论] 在皖北疟区,采取单纯现症病人治疗或现症病人治疗+区域全民休止期治疗措施无显 著效果。在未分清休止期治疗对象的情况下,采取现症病人治疗措施并提高休止期治疗的 人群覆盖率是当地行之有效的传染源控制策略。

1 安徽省疾病预防控制中心

*基金项目:科研院所社会公益研究专项资助项目(No。2005DIB1J092)

我国恶性疟原虫 Pfcrt 和 Pfmdr1 基因多态性及与氯喹敏感性关系的研究

官亚宜 张国庆 胡铃 冯晓萍 蔡玥 姚俊敏 刘德全 汤林华

[目的] 了解我国恶性疟原虫分离株 Pfert 基因 K76T 及 Pf mdrl 基因 N86Y 和 D1246Y 的点突变特征及发生率,并分析上述分子标志与恶性疟原虫对氯喹敏感性的关系。[方法] 从我国恶性疟流行区云南和海南省采集恶性疟现症患者血样,根据恶性疟原虫 Pfert 基因 和 Pf mdrl 基因序列设计巢式 PCR 引物,以血样中的恶性疟原虫 DNA 为模板,进行巢式 PCR-RFLP 分析,并对部分 PCR 产物进行测序验证。采用世界卫生组织制定的体外微量法测定同一批血样中恶性疟原虫对氯喹的敏感性。[结果] 云南、海南省恶性疟原虫 Pf crt 基因 K76T 的突变发生率分别为 86.7%和 64.3%;云南、海南省恶性疟原虫 Pf mdrl N86Y 突变发生率分别为 46.5%和 3.4%。未发现云南、海南省恶性疟原虫分离株存在 Pf mdrl D1246Y 突变。体外微量测定法显示 Pfert 76T 突变发生率氯喹抗性株与敏感株间差异有统计学意义(×2=0.20, P=0.65)。[结论] 在云南省和海南省现场未发现恶性疟原虫 Pf mdrl D1246Y 点突变,抗氯喹恶性疟原虫的 Pf mdrl N86Y 突变发生率与敏感株间差异无统计学意义(×2=0.20, P=0.65)。[结论] 在云南省和海南省现场未发现恶性疟原虫 Pf mdrl D1246Y 点突变,抗氯喹恶性疟原虫的 Pf mdrl N86Y 突变发生率与敏感株间无显著差异。Pfert K76T 作为分子标志在我国恶性疟原虫氯喹抗性监测中具有应用价值。

大肠埃希菌表达的恶性疟原虫裂殖子表面蛋白 MSP1-42 的免疫原性分析

陈勤 梁婉琪1 曹建平 徐馀信 钱炳俊2 张大兵1 汤林华

[目的] 纯化大肠埃希菌 Rosetta gami(DE3)表达的可溶性裂殖子表面蛋白 1C 末端蛋白 (MSP1-42, 3D7 株),检测其体外抑制恶性疟原虫生长的效果。[方法] 利用大肠埃希菌 Rosetta gami(DE3)为宿主菌诱导表达 MSP1-42,用带组氨酸标签的镍柱纯化可溶性的 MSP1-42。6 只新西兰白兔随机分为免疫组和对照组,每组 3 只。用 MSP1-42 与弗氏佐剂 乳化后,皮下注射,抗原免疫剂量每次为 200 µ g/只,共免疫 4 次,每次间隔 2 周。佐剂 对照组以 PBS 代替抗原同法免疫。免疫前及末次免疫 2 周后取血,用酶联免疫吸附试验和 间接荧光抗体试验检测血清中特异性抗体及其与天然抗原的反应,用含 10%和 20%免疫血

清的培养基体外培养恶性疟原虫(海南分离株,Fcc1/HN),检测免疫血清体外抑制恶性疟原 虫生长的效果。[结果] 经镍柱纯化后获得纯度为 95%以上的 MSP1-42 蛋白;免疫组个体 在第 4 次免疫后血清特异性抗体的滴度依次为 1:640000、1:640000、1:160000,间接荧光 抗体试验检测表明 MSP1-42 免疫兔血清与恶性疟原虫表面蛋白有阳性反应;免疫血清能抑 制恶性疟原虫在体外生长,在 10%浓度时,3 只免疫兔血清的抑制率依次为(51.9±24.2)%、 (29.4±8.6)%和(86.7±7.4)%,在 20%浓度时,抑制率分别为(93.3±7.5)%、(65.3±10.6)% 和(96.4±1.0)%。[结论] 大肠埃希菌 Rosettagami(DE3)表达的 MSP1-42 蛋白免疫血清能识 别恶性疟原虫天然抗原,体外培养能抑制恶性疟原虫的生长。

2 上海交通大学农业与生物学院

利什曼病

我国内脏利什曼病的现状和对防治工作的展望

管立人

经过几十年的努力,我国对内脏利什曼病的防治取得了巨大成就。至 20 世纪 70 年代 末,大部分流行区的内脏利什曼病已告消除。目前,新疆、甘肃、四川、陕西、山西和内 蒙古等西部 6 省(区)仍有内脏利什曼病流行或散发,防治难度较大。为巩固成果,应进 一步加强对该病的流行因素、媒介蛉种的生物学和防制、野生动物宿主、以及降低患者治 疗后的复发率等方面开展调查和研究,以提高对该病的防治水平;同时,对已消除该病的 省(市、区)进行监测,了解再度流行的潜在危险。

喀什地区内脏利什曼病分布的时间-空间聚集性研究*

付青 伍卫平 童苏祥¹ 伊斯拉音·乌斯曼¹ 张松¹ 伊斯康德尔¹ 开塞尔²

[目的] 探讨喀什地区内脏利什曼病分布的时间-空间聚集性。[方法] 以地理信息系统为依托,运用时空统计软件的 Poisson 模型对喀什地区既往 11 年的发病数据进行分析,结合地理方位及遥感图片确定聚集区。[结果] 存在 3 个内脏利什曼病分布的高危聚集区及其对应的高发时间框。A 聚集区中心经纬度为(E76.08°, N39.52°),半径为 6.58km,在 1999年1月1日至 2003年12月31日的时间框内,聚集区内内脏利什曼病的累积发病率是周围地区内脏利什曼病累积发病率的 45.98倍 (P<0.0001); B 聚集区中心经纬度为(E79.20°, N39.91°),半径为 4.93km,在 2002年1月1日至 2006年12月31日的时间框内,聚集区内内脏利什曼病的累积发病率是周围地区的 9.58倍 (P<0.0001); C 聚集区中心经纬度为(E76.23°, N39.40°),半径为 7.63km,在 2000年1月1日至 2004年12月31日的时间框内,聚集区内内脏利什曼病的累积发病率是周围地区的 5.18倍 (P<0.0001)。[结论] 喀 58

¹ 上海交通大学-中国科学院上海生命科学研究院-美国宾州州立大学生命科学联合研究中心

什地区内脏利什曼病的发病为非随机分布,存在明显的时间-空间聚集性,3个高危聚集区 均位于绿洲地区,绿洲成为喀什地区内脏利什曼病防治和监测的重点地区。

钉螺遗传学及其生物学特性的研究进展

周晓农 李石柱 刘琴 张仪

钉螺的生物学研究一直受到研究者关注,近年来许多研究者运用种群遗传学、分子生物学等方法对钉螺遗传学特性,及其与钉螺分布和对血吸虫易感性等开展了系列研究,旨在探索阻断血吸虫生活史的新方法。但国内就钉螺遗传学研究特别是与日本血吸虫相容性的遗传特性方面的研究仍较薄弱,今后研究重点应借鉴国际上对曼氏血吸虫中间宿主—— 光滑双脐螺的大量研究结果与方法,特别是借助基因组学、转录组学和蛋白组学等现代研究方法,开展钉螺遗传特性及其与血吸虫关系的研究,以提升我国钉螺遗传学的研究水平。

"福寿螺"学名中译名的探讨

周晓农 张仪 吕山

针对目前国内对"福寿螺"的中文译名混乱之问题,通过收集有关"福寿螺"相似种的相关研究报道,比较分析可以传播广州管圆线虫病螺种及相似种的特征,发现我国大陆地区传播广州管圆线虫病的 Pomacea canaliculata 的属名尚无正式中文译名,其现用中文名易与相关螺种混淆。因此,建议将 Pomacea 译为"福寿螺属", Pomacea canaliculata 则译为"小管福寿螺"。

光滑双脐螺基因组计划研究进展

刘琴 周晓农

本文介绍了光滑双脐螺基因组计划的最新研究进展,包括基因组测序、新基因的发现、 基因差异表达以及类纤维素蛋白原研究等方面,为理解螺类生物学、综合鉴定水生螺类发 育阶段的基因表达、螺和寄生虫共进化机制及自然选择机制、鉴定灭螺药物靶点提供了理 论依据,同时也为湖北钉螺的研究提供了科学参考。

¹ 新疆维吾尔自治区疾病预防控制中心

² 喀什地区疾病预防控制中心

基金项目: 科技部社会公益研究项目, 上海市科委资助项目

中国大陆湖北钉螺种下分化研究进展

李石柱 王强 钱颖骏 张仪 周晓农

湖北钉螺是日本血吸虫的惟一中间宿主,在日本血吸虫病传播过程中起重要作用,其 种下分化及鉴别在血吸虫病防治、钉螺控制等方面具有重要意义。本文基于形态学、细胞 生物学、分子生物学等方面证据综述了湖北钉螺种下分化的研究进展,并对今后的研究方 向提出了建议。

湖北钉螺空间分布和遗传变异信息管理系统的初步设计与实现

李石柱 马琳! 王艺秀! 王强 胡缨 张仪 周晓农

[目的] 探讨基于空间分析基础上的湖北钉螺群体遗传变异,构建湖北钉螺空间分布和 遗传信息数据库及其管理系统,为相关研究、信息管理和开发利用提供先进的方法和手段。 [方法] 采集现场钉螺样本,以逸蚴法鉴定阴性钉螺。利用 Microsoft SQL2000 建立采集点 空间分布数据库、样本数据库和遗传信息数据库,用 Visual Basic 6.0 建立相应管理系统。 [结果] 完成现场钉螺收集,初步建立了 10 个省 73 个采集点的数据库,676 个记录的样本 数据库和部分遗传信息数据库,管理系统实现添加、查询、删除、统计和数据导出导入等 功能,界面清晰,操作简便。[结论] 建立的湖北钉螺空间遗传信息管理系统对湖北钉螺空 间分布和群体遗传研究具有一定的应用价值,但还需进一步补充和完善相关数据。

1 陕西师范大学生命科学学院

*基金项目:国家自然科学基金(30590373); 世界卫生组织热带病研究和培训特别规划项目(970990); 科技部重大支撑专项(2003DIA6N009, 2005DKA21104, 2007BAC03A02); 国家传染病防治重大专项(2008ZX10004-011)

牛源隐孢子虫上海分离株的巢氏 PCR 鉴定

袁忠英 沈玉娟 曹建平 刘晖1 陈盛霞2

[目的] 用巢式 PCR 鉴定 1 株自然感染的上海牛源隐孢子虫。[方法] 改良抗酸染色法 检查含隐孢子虫卵囊的牛粪,油镜下观察卵囊形态,测量大小。以牛粪中的隐孢子虫卵囊 DNA 为模板,根据隐孢子虫 18S rRNA 序列设计 2 对引物,巢式 PCR 扩增目的片段,测 序,同源性比对,并运用 MEGA4。0 软件构建系统发育树。[结果] 上海牛源隐孢子虫分 离株卵囊呈圆形或椭圆形,大小为(5.6±0.49) mm×(5.2±0.51) mm。扩增出的 18S rRNA 基因片段为 812 bp。上海牛源隐孢子虫分离株的 18S rRNA 与巴西的牛隐孢子虫 (*Cryptospridium bovis*, Gen B ank 登录号为 151935628)序列一致性为 100%,两者在种 系发育树上为同一分支,亲缘关系最近;与中国青海、蒙古国、美国、突尼斯等地的牛隐 孢子虫序列一致性均为 99%。[结论] 上海牛源隐孢子虫分离株为牛隐孢子虫(*C. bovis*)。

¹ 遵义医学院寄生虫学教研室

² 江苏大学基础医学与医学技术学院

鸡卵黄免疫球蛋白在医学领域中的应用

蔡玉春 陈家旭

卵黄免疫球蛋白(egg yolk immunoglobulin, IgY)是鸟类、两栖类和爬行类动物的主要免疫球蛋白。IgY 稳定性好,具有不激活补体系统、不与类风湿因子和蛋白 A、G 结合等免疫学特性,且产量高、易提取纯化。该蛋白己广泛应用于兽医学、功能食品和生物制品等方面,且在疾病预防控制和治疗方面开发潜力广阔。本文就从 IgY 在生物学特性、提取、纯化,以及其在免疫诊断和免疫治疗方面的应用作一综述。

不同诱虫灯和引诱剂诱捕白玲的现场实验

顾灯安 金长发 兰勤娴 左新平1 伊斯拉音·乌斯曼1 张仪

在新疆民丰县安迪尔乡现场观察不同诱虫灯、引诱剂及其联合使用诱捕白蛉的效果。 结果表明 CO₂ 与钨丝灯联合使用对白蛉具有较强的引诱效果,且易于分拣。

1 新疆维吾尔自治区疾病预防控制中心

三苯双脒、青蒿琥酯和蒿甲醚抗华支睾吸虫及其他吸虫研究进展

肖树华 薛剑 吴中兴1

吡喹酮是目前用于治疗血吸虫病和其他吸虫病的主要药物。近年的实验研究发现,治疗肠道线虫感染的新药三苯双脒具有抗华支睾吸虫、麝猫后睾吸虫和卡氏棘口吸虫 (Echinostoma caproni)的作用,特别是对感染华支睾吸虫的大鼠,其顿服接近治愈的剂量为 300 mg/kg,低于吡喹酮的治愈剂量 375~500 mg/kg。抗疟药青蒿琥酯和蒿甲醚不仅已被发 展为预防血吸虫病的药物,而且发现它们对多种吸虫有效,特别是对华支睾吸虫,其顿服 对大鼠华支睾吸虫感染的治愈或高效剂量为 75 mg/kg。本文系综述这些药物单用或联合用 药治疗大鼠、小鼠、仓鼠或犬的华支睾吸虫及其他吸虫感染的实验研究进展。

1 江苏省寄生虫病防治研究所

我国抗蠕虫药物研究的进展及面临的问题

肖树华

本文综述新中国成立以来我国抗蠕虫药物,包括抗线虫、吸虫和绦虫药物的研究进展 及其在寄生虫病防治工作中所起的作用,并就在抗蠕虫药物研究中所面临的问题提出一些 看法。

三苯双脒、青蒿琥酯和吡喹酮治疗感染华支睾吸虫金色仓鼠的疗效观察

薛剑 徐莉莉 强慧琴 张永年 肖树华

[目的]观察三苯双脒、青蒿琥酯和吡喹酮对感染华支睾吸虫金色仓鼠的疗效。[方法] 93 只仓鼠各感染 30 个华支睾吸虫囊蚴,分组后灌胃顿服给药治疗,观察各组疗效。①31 只感染仓鼠中,20只于感染后14d随机均分为4组,分别为青蒿琥酯300mg/kg组、三苯 双脒 100 mg/kg 和 200 mg/kg 组、吡喹酮 200 mg/kg 组,观察药物对华支睾吸虫童虫的作 用;另6只于感染后24d随机均分为2组,分别为三苯双脒200 mg/kg组和青蒿琥酯300 mg/kg 组; 余 5 只作对照组。② 22 只仓鼠于感染后 28 d 随机分成 5 组(每组 4~5 只), 分别为三苯双脒 25 mg/kg 和 50 mg/kg 组、青蒿琥酯 25 mg/kg 组、吡喹酮 50 mg/kg 组,以 及对照组。③40只仓鼠于感染后28d随机分成8组(每组4~6只),分别为三苯双脒50 mg/kg、100 mg/kg 和 200 mg/kg 组, 青蒿琥酯 100 mg/kg 和 200 mg/kg 组, 吡喹酮 100 mg/kg 和 200 mg/kg 组,以及对照组。各组受治鼠于治疗后 2 周剖杀,收集胆道系统内的残留华 支睾吸虫,计算各组的平均虫数和减虫率。[结果] 仓鼠感染华支睾吸虫囊蚴后 14 d, 三苯 双脒 100 mg/kg 和 200 mg/kg 组,以及吡喹酮 200 mg/kg 组的平均虫数均显著低于对照组 (P<0.05),减虫率分别为 90.6%、85.9%和 71.9%;青蒿琥酯 300 mg/kg 组平均虫数与对 照组差异无统计学意义(P>0.05)。感染后 24 d, 童虫已发育为成虫, 三苯双脒 200 mg/kg 组平均虫数显著低于对照组(P<0.01),减虫率为 89.8%;青蒿琥酯 300 mg/kg 组的减虫率 为 100%。感染后 28 d, 三苯双脒 25 mg/kg 组平均虫数显著低于对照组 (P<0.05), 减虫率 为 71.8%, 剂量增至 100 mg/kg 时, 减虫率为 100%; 青蒿琥酯 25 mg/kg 和 100 mg/kg 组的 减虫率分别为 20.0%和 56.4%, 剂量增至 200 mg/kg 时, 减虫率为 98.5%, 其平均虫数显著 低于对照组(P<0.01)。吡喹酮 100 mg/kg 和 200 mg/kg 组的减虫率分别为 78.9%和 83.5%, 其平均虫数均与对照组的差异有统计学意义(P<0.05)。[结论] 三苯双脒和吡喹酮对感染 华支睾吸虫童虫和成虫的仓鼠均有较好的疗效,青蒿琥酯仅对成虫有效。

从文献回顾分析抗蠕虫药物的现状与发展趋势

郑琪 陈盈 田利光 周晓农

[目的] 运用文献计量学方法对已发表的抗蠕虫药物文献进行分析,探讨抗蠕虫药物的现状和发展趋势。[方法] 收集在 PubMed 数据库上收录的 1997~2007 年医学专业学术期 刊抗蠕虫药物的相关文献,通过一定数据准入标准筛选符合要求的文献并构建 Access 数据 库。对数据库中相关文献进行如"研究类型"、"发表年代"、"涉及药物"等分类项归类。 用 SPSS17.0 软件对数据进行相应的线性回归和二次回归等统计学分析。[结果] 抗蠕虫药物相关论文年度发表数量呈逐年增长趋势,年相关论文发表量增加约 6 篇;应用性研究为

主要研究主题; 主要研究病种依次为血吸虫病、丝虫病、蛔虫病、棘球蚴病和钩虫病, 其 中血吸虫病相关文献数量最多, 与其他 4 种主要蠕虫病的相关文献数量差异均有统计学意 义 (*P*<0.05); 主要研究药物为阿苯达唑、吡喹酮、甲苯咪唑、伊维菌素和乙胺嗪; 抗蠕 虫药物相关文献在多种医学杂志上发表, 发表抗蠕虫药物文献数量第 1 位和第 10 位的期 刊分别占文献总数的 5.52%和 1.63%。[结论] 近 10 年来抗蠕虫药物愈来愈受到重视, 但其 种类不多, 亟需发展新药。

湖北钉螺线粒体基因组全序列测定研究

李石柱 王艺秀! 刘琴 吕山 王强 吴缨 张仪 周晓农

[目的] 测定并分析湖北钉螺(Oncomelania hupensis)线粒体基因组全序列。[方法] 利用特异引物和通用引物分别扩增湖北钉螺线粒体细胞色素 C 氧化酶 I (COI)、细胞色素 b (Cytb)、16SrRNA (16S)和细胞色素 C 氧化酶III (COIII)基因片段,在此基础上利用 长 PCR 技术扩增上述 4 个基因间的长片段,纯化克隆后采用引物步移法测序。[结果] 湖 北钉螺线粒体基因组全序列为 15 182 bp (GenBank 登记号为 FJ997214),为闭合环状分子, A+T 含量为 67。3%;包括 13 个蛋白基因、22 个 tRNA 基因、2 个 RNA 基因和一段 72 bp 的 A+T 富集区;蛋白质编码基因均以 ATG 为启动子,除呼吸链 NADH 脱氢酶的第一亚单位 (ND1)基因以潜在的 T 作为终止密码子外,其余基因均以典型的 TAA 或 TAG 为终止 子;基因重叠区有 2 处,分别为 4 bp 和 7 bp;基因间隔区共 21 处合计 145 bp,长度范围 为 1~30 bp; 22 个 tRNA 中,除 2 个 tRNASer 和 tRNAGln、tRNAIle 以外均能形成典型的 二级结构。[结论] 获得了湖北钉螺的线粒体基因组全序列。

1 陕西师范大学生命科学学院

环介导等温扩增技术检测牛源隐孢子虫的研究

袁忠英 沈玉娟 曹建平 周何军 卢潍媛 陈勤 倪奕昌 汤林华

[目的] 用环介导等温扩增技术检测牛源隐孢子虫。[方法] 提取牛粪中隐孢子虫卵囊 DNA。根据隐孢子虫 18S rRNA 序列及环介导等温扩增(loop-mediated isothermal amplification, LAMP)技术的原理,设计 4 条隐孢子虫特异引物,利用 LAMP 检测牛粪 中隐孢子虫卵囊 DNA 和蓝氏贾第鞭毛虫 DNA,以正常牛粪 DNA 为阴性对照。LAMP 产物经 SYBR Green I 显色及电泳后观察结果,绿色判为阳性,棕色判为阴性,对 LAMP 产物进行电泳分析,观察其特征条带的情况。[结果] 隐孢子虫卵囊 DNA 检测管经显色后呈 绿色,阴性对照及蓝氏贾第鞭毛虫 DNA 呈棕色。隐孢子虫 LAMP 产物经电泳后呈 LAMP 特征性梯状条带,阴性对照及蓝氏贾第鞭毛虫 DNA 无扩增产物。[结论] LAMP 方法敏感、特异、简便,可用于检测牛粪中隐孢子虫。

^{*} 国家卫生行业科研专项 (200802012); 传染病重大专项 (2008ZX1004-002, 2009ZX10602, 2008ZX10004-011)

我国隐孢子虫病的现状和防治对策

沈玉娟 陈勤 曹建平

隐孢子虫病是全球六大腹泻病之一,属新发传染病,是艾滋病患者死亡的主要病因之一。隐孢子虫卵囊污染水源、食物造成隐孢子虫病暴发,引起的腹泻在寄生虫性腹泻中占 首位或次位,已成为重要的公共卫生问题。该病目前尚无特效治疗药物和预防疫苗,在我 国各地普遍流行。该文就我国隐孢子虫病的现状和防治对策作一综述。

* 国家卫生行业科研专项(200802012),传染病重大专项(2008ZX10004-002,2008ZX10004-201,2008ZX10004-011)

犬钩虫第三期钩蚴免疫裸鼠再感染 AcL3 的组织病理学观察

郭俭 吴嘉彤 杨元清 薛剑 强慧琴 肖树华

[目的]观察裸鼠经犬钩虫第三期感染性钩蚴(AcL3)免疫后,其皮肤和肺内AcL3的形态变化及宿主的组织细胞反应,评价其作为疫苗筛选动物模型的可能性。[方法]取BALB/c—nu/nu小鼠,每两周由皮下免疫接种活的AcL3 500条,共3次,并于末次免疫后1周由皮肤攻击感染AcL3 500条。攻击感染后不同时间取感染部位皮肤和肺脏,观察宿主皮肤和肺内AcL3 的组织病理学变化。用未免疫的感染AcL3小鼠作对照。[结果]攻击感染后6、24、72h及7d,皮肤内的绝大部分虫体切面形态和组织结构与感染对照裸鼠皮肤内的相似,仅0.5%~2.2%的虫体切面示有变性、死亡,偶见有死虫肉芽肿,而肺组织内的AcL3及其周围的炎细胞反应与对照组相比较,亦无明显差异。[结论]用活的AcL3免疫裸鼠后,未见对攻击感染的AcL3有明显的免疫效应,不适宜作为钩虫疫苗筛选的动物模型。

国内寄生虫学领域主要科技期刊 2006 至 2007 年核心作者分析

陈勤 姬晓云 洪玉梅

[目的] 检查国内寄生虫学领域主要科技期刊的核心作者,了解国内寄生虫学领域的研究类型及特点,为编辑部组稿提供参考线索。[方法] 采用文献计量学方法对《中国寄生虫学与寄生虫病杂志》、《中国血吸虫病防治杂志》、《中国病原生物学杂志》、《国际医学寄生虫病杂志》、《寄生虫与医学昆虫学报》、《寄生虫病与感染性疾病》、《热带医学杂志》、《热带病与寄生虫学》等8本国内与寄生虫学相关的科技期刊2006—2007年载文作者的发文量和被引用情况进行统计分析,利用综合指数法确定核心作者。[结果] 所统计的8种主要科技期刊2006~2007年间共发表寄生虫领域相关的论文1807篇。其中发表论文3篇以上的候选核心作者94人,综合指数大于平均值即为核心作者,有28人。[结论] 利用综合指数分析初步筛选了寄生虫学专业2006-2007年的核心作者。

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结膜吸吮线虫病流行病学研究进展

周晓俊 张仪

结膜吸吮线虫病是人畜共患的一种眼部疾病。该病多分布在亚洲许多国家。近年来随 着全球变暖等气候变化,结膜吸吮线虫感染在国内外继续增多,流行范围不断扩大,以往 欧洲的意大利和法国曾经报道过犬、猫和狐狸有感染病例,也出现了人感染病例的报告, 引起研究者们的广泛关注。该文针对结膜吸吮线虫的流行病学特征、治疗和预防等的研究 进行了综述。

三苯双脒抗肠道蠕虫感染的进一部观察和实验研究的新进展。

肖树华

三苯双脒是我国研制的一种广谱抗蠕虫新药。自 2004 年三苯双脒肠溶片被中国食品 药品监督管理局审评通过后,2006~2007 年又进行了IV期临床试验观察,在众多不同年龄 的感染人群中,进一步证实成人和儿童分别用三苯双脒肠溶片 400 mg 和 200 mg 顿服治疗, 对蛔虫和钩虫感染均有很好的疗效。三苯双脒对儿童蛲虫感染的治疗效果亦较好。近年来 通过实验研究和临床观察证实三苯双脒对多种吸虫,包括华支睾吸虫、麝猫后睾吸虫、卡 氏棘口吸虫,以及粪类圆线虫和带绦虫等均有效。该文综述了三苯双脒的研究新进展。

新疆维吾尔自治区伽师县荒漠型黑热病暴发流行危险因素分析

杨诗杰 伍卫平 童苏祥 1 伊斯拉音·乌斯曼 2 顾灯安 开塞尔 2 付青 柳伟 周晓农

[目的] 探讨新疆维吾尔自治区伽师县荒漠型黑热病暴发流行的危险因素。[方法] 采用 病例对照研究,自制调查问卷,以 2008 年 1 月~2008 年 11 月网络直报的 47 例黑热病患 者为病例组,在同村按 1:3 匹配选择 141 名年龄相仿的健康儿童作为对照组,对性别、环 境和行为等 13 个潜在危险因素进行单因素和多因素条件 logistic 回归分析。[结果] 单因素 分析显示:户外露宿习惯、被叮咬、邻居有黑热病患者、黄昏时带孩子户外活动、驱避剂 的使用等凶素与本次迦师县荒漠型黑热病暴发流行关系密切,危险比(HR)值和 95%可信区 间(95%CI)依次为 73.846(10.070,541.510)、78.875(10.719,576.910)、15.149(5.876,39.054)、 63.912(8.996,454.048)和 0.020(0.005,0.008);多冈素回归分析显示:户外露宿习惯是危险 冈素,HR 值和 95%CI 为 80.963(5.119,1 280.596),而驱避剂的使用是暴发流行的保护因 素,HR 值和 95%CI 为 0.021(0.003,0.162)。[结论] 在目前传染源尚不叫确的情况下,养 成良好的生活习惯,尽量不在外露宿,安伞使用药浸蚊帐或纱窗,规范使用驱避剂和定期 在院内喷洒杀虫剂是预防控制黑热病感染的有效措施。

¹ 新疆维吾尔自治区疾病预防控制中心

² 喀什地区疾病预防控制中心

基金项目: 科技部社会公益研究项目, 上海市科委资助项目

坚持科学和可持续的防治策略实现全国消除丝虫病

孙德建 伍卫平 姚立农1

该文阐述了我国控制和消除丝虫病策略的确立以及防治措施的改进。我国经过半个世纪的 努力,至 2006 年实现了全国消除丝虫病的目标,成为 1997 年第 50 届世界卫生大会通过 的"消除作为一个公共卫生问题的淋巴丝虫病"决议以来,第一个宣告实现消除淋巴丝虫病 的国家。

1 浙江省疾病预防控制中心

尖吻蝮舌状虫成虫、虫卵的扫描与投射电镜超微结构观察*

陈韶红 陈盈 张永年 常正山

[目的] 了解尖吻腹蛇舌状虫成虫、虫卵扫描与透射电镜超微结构。[方法] 将尖吻腹蛇 舌状虫成虫、虫卵经清洗、固定、脱水、干燥、溅射黄金和环氧树脂包埋,经 LKB-E 超 薄切片机超薄切片双重染色后分别置于 S-520 扫描电镜与 Philp CM210 透射电镜下进行观 察。[结果] 扫描电镜下可见尖吻腹蛇舌状虫成虫虫体有 6~9 个腹环,腹环之间体表为波 纹皱褶。口两侧各有一对钩,虫体布满似乳突状小棘,只有成虫前端和末端两侧可见散在 的隆起的椭圆孔状感觉器,虫体末端腹面可见肛孔。透射电镜下尖吻腹蛇舌状虫成虫表皮 层为 3 层,即外皮层、内皮层、基板(膜)。透射电镜显示尖吻腹蛇舌状虫成虫表皮 原有 3 层结构,分别为卵外膜、透明层和髓质层。[结论] 尖吻腹蛇舌状虫成虫在扫描电镜 显示成虫体表布满乳突状小棘,只有头部和尾部两侧可见散在的感觉器,与幼虫全身布满 感觉器有区别。透射电镜下的尖吻腹蛇舌状虫成虫表皮层为 3 层即外皮层、内皮层、基板 (膜),与幼虫的六层结构有明显的不同。卵巢中的虫卵于离体的虫卵在扫描和透射电镜 下有明显不同。

*科技部自然资源平台项目资助(2005DKA21104)

提纯小管福寿螺 DNA6 种方法的比较研究*

危芙蓉 吕山 张仪

[目的] 以不同方法提纯小管福寿螺 DNA,用 PCR 检测以比较其效果。[方法] 将 80 只野外采集的小管福寿螺分 8 组,取出肺囊并剪碎后分别用 QIAGEN、天根、OMEGA 的 基因组 DNA 抽提试剂盒,及异硫酸氰胍抽提法、树脂抽提法和树脂-二氧化硅抽提法提纯 小管福寿螺基因组 DNA,用 PCR 扩增福寿螺 16s rDNA,测定目的条带相对浓度以评价各

方法的抽提效果。[结果] 各种方法提纯的基因组 DNA 均能用 PCR 扩增方法扩增出目的条带,但目的条带浓度有一定差异。其中,QIAGEN 公司和 OMEGA 公司的抽提试剂盒、树脂抽提法和树脂-二氧化硅抽提法提纯的模板 PCR 扩增量较高,与其余 4 种抽提方法比较有统计学意义。试剂盒抽提法的单价成本是手工抽提法的 8.4~57.1 倍。[结论] QIAGEN 和 OMEGA 公司的基因组 DNA 抽提试剂盒的提纯效果好,但成本较高,适用于少量样本的抽提。树脂抽提法和树脂-二氧化硅抽提法从提纯效果、成本等方面评价,较适用于大量样本抽提处理工作。异硫酸氰胍抽提法,抽提快,成本低但所用试剂对身体有毒害,较适用于大量样本或应急样本的处理。

* 基金项目: 国家重大科技专项项目,科技部国家自然科技资源基础平台项目,国家科技攻关计划

HL 杀灭湖北钉螺效果观察

朱丹 张仪 刘和香 张功华1 张世清1 操治国1 吴维铎1 李文新2 周晓农

[目的] 实验室和现场试验评价 HL 杀灭湖北钉螺的效果。[方法] 室内:采用泥缸喷洒 法、烧杯浸杀法和三角沉淀杯上爬法,用敲击法观察不同时间、不同浓度 HL 对湖北钉螺 的杀灭和抑制上爬作用。现场:选择安徽省芜湖县草滩进行现场喷洒试验,HL 剂量为 40、80、120 g/m2,设氯硝柳胺药物对照剂量为 2g/m2 和清水空白对照组,观察施药后 3、7 和 15d 检查钉螺存活情况。[结果] 室内喷洒试验:1、2、3d 的半数致死剂量(LD50)分 别为 269、117、65 g/m2;,室内浸杀试验:1、2、3d 的半数致死浓度(LC50)分别为 115、10.6、9.9 mg/L; 24 h 抑制钉螺上爬半数有效浓度(EC50)为 55.82 mg/L。现场使用 80 g/m2 HL 喷洒 15 d 钉螺死亡率大于 80%,现场使用 40 g/m3 HL 浸杀 3 d 钉螺死亡率大于 80%。[结论] HL 室内及现场均有较好的灭螺效果。

1 安徽省寄生虫病防治研究所

- 2 华中师范大学
- *国家 "863" 血吸虫病防治研究专项资助项目(2004AA2Z3550)

中国恶性疟原虫氯喹抗药性相关基因 Pfcrt72-76 位点基因型分析*

张国庆 官亚宜 胡铃 汤林华 冯晓萍 蔡玥 姚俊敏 刘德全

[目的] 了解我国云南和海南恶性疟原虫分离株 Pfcrt 基因 72-76 位点基因型,并分析 该位置不同基因型与恶性疟原虫对氯喹敏感性的关系。[方法] 从我国恶性疟流行区云南和 海南省采集恶性疟现症患者血样,根据恶性疟原虫 Pfcrt 基因序列设计引物,进行巢式 PCR 扩增和测序。采用 WHO 制定的体外微量法测定同批血样中恶性疟原虫对氯喹的敏感性。 [结果] 云南、海南省恶性疟原虫 Pfcrt 基因第 72-76 位编码的氨基酸单元型在氯喹敏感株 均为 CVMNK。其中海南的氯喹抗性株 Pfcrt 基因第 72-76 位编码的氨基酸为单一的 CVIET 单元型,云南氯喹抗性株中除一株为 CVIKT,另1 株为 SVMNT 外,均为 CVIET 单元型。 [结论] 我国云南、海南省恶性疟原虫氯喹敏感株 Pfcrt 基因第 72-76 位编码的氨基酸基因型为 CVMNK。抗性株主要为 CVIET 型, Pfcrt 基因第 72-76 位编码氨基酸基因型可作为 氯喹抗性分子标志。

东方巴贝斯虫核糖体蛋白 L26 全长 cDNA 克隆及蛋白特性分析*

刘琴 周丹娜^{1,2} 张颖^{1,2} 贺兰^{1,2} 周艳琴^{1,2} 赵俊龙¹

[目的] 克隆东方巴贝斯虫核糖体蛋白 L26 (RPL26) 全长 cDNA 序列,对编码的蛋白 特性进行分析,并探讨它们在研究系统发育中的应用。[方法] 运用 EST 测序获得的东方 巴贝斯虫 RPL26 的 5'特异性引物及文库载体 3'通用引物对东方巴贝斯虫 cDNA 文库进 行扩增,测序获得东方巴贝斯虫 RPL26 全长 cDNA 序列。用 Blastx 搜索相似性序列及保 守结构域,所获序列在 GenBank 中登记,并用 Neighbor-Joining (N-J) 法构建基于 L26 氨 基酸序列的系统发育树。[结果] 东方巴贝斯虫 RPL26 全长 cDNA 序列 (GenBank 登录号 为 FJ492804) 为 716 bp,开放阅读框为 414 bp,编码 137 个氨基酸组成的蛋白;同源性分 析结果表明东方巴贝斯虫 RPL26 序列较保守,与牛巴贝斯虫 (Babesia bovis),小泰勒虫 (Theileria parva)等的亲缘关系较近,在系统发育树中的遗传距离也较近。[结论] 首次获得东方巴贝斯虫 RPL26 基因,其可能作为分子指标应用于研究生物系统发育。

不同检测方法对粪类圆线虫钩虫检出率的比较

[目的] 用不同方法检查粪便中的粪类圆线虫和钩虫,掌握检测粪类圆线虫的方法。[方法] 在云南省勐海县选择土源性线虫感染率相对高的自然村 1 个,以户为单位随机抽样,采用改良加藤法(Kato-Katz 法)、Koga 法和 Baermann 法 3 种粪便检查方法对粪样进行检查,每人送检粪样 3 次。[结果] 粪类圆线虫阳性率 Kato-Katz 法为 0,Koga 法为 11.72%,Baerm ann 法为 12.55%。钩虫阳性率 Kato-Katz 法为 64.44%,Koga 法为 57.74%,Baerm ann 法 4.60%。[结论] Baerm ann 法仅适用于粪类圆线虫检测,Koga 法可用作钩虫和粪类圆线

^{*}国家自然科学基金(30070572, 30671575); 教育部新世纪人才支持计划(NCET-06-0668)

¹ 华中农业大学农业微生物国家重点实验室

虫检测,而 Kato-Katz 法仅适用于钩虫检测。

3 中国疾病预防控制中心寄生虫病预防控制所 4 云南省西双版纳州疾病预防控制中心

5公闱准助海安茨州顶仍挂制十3

我国淋巴丝虫病流行病学调查和防治对策研究概述

陈海宁

我国淋巴丝虫病(以下称丝虫病)分布在中部以南 16 个省、市、自治区 864 个县、市, 患病人数 3099.4 万。采取以乙胺嗪(diethylcabamazine)(商品名海群生)消灭传染源为主导的 防治对策,继之以系统监测,于 2006 年实现了全国消除淋巴丝虫病,并经世界卫生组织 论证确认。本文主要根据我国淋巴丝虫病流行各省、市、自治区卫生厅和国家卫生部发表 的《中国消除淋巴丝虫病报告》摘要作一概述。

HRPII 双抗夹心 ELISA 方法在恶性疟原虫体外敏感性检测中的应用

黄芳 冯晓平 周水森 汤林华

[目的] 验证富组蛋白 2 双抗夹心酶联免疫吸附法(Histidine-Rich Protein 2 Double-Site Sandwich Enzyme-Linked Immunosorbent Assay, HRPII-ELISA)在恶性疟原虫体外敏感性 检测中的适用性。[方法] 运用 HRPII-ELISA 测定氯喹、咯萘啶、青蒿琥酯、蒿甲醚及双 氢青蒿素等五种抗疟药物对体外培养的恶性疟原虫氯喹敏感株与氯喹抗性株的体外敏感 性,并对该方法所测得的量效曲线(dose-response curves)及 50%有效抑制浓度(IC50)与 WHO 推荐的 Riekmann 体外微量法比较。[结果] HRPII-ELISA 法测定的五种药物对恶 性疟原虫氯喹敏感株的 IC50 值依次为 4.7 nmol/L、2.90 nmol/L、3.38 nmol/L、4.64 nmol/L、2.72 nmol/L,对恶性疟原虫氯喹抗性株的 IC50 值依次为 110.4 nmol/L、3.85 nmol/L、4.39nmol/L、3.90 nmol/L、3.27 nmol/L;同时,将上述结果与体外微量法所得的结果进行 相关性分析, R2=0.96, P<0.001,两种方法结果基本一致。[结论] HRPII-ELISA 法可用于 恶性疟原虫对抗疟药物的体外敏感性检测。

广州管圆线虫生活史的实验室构建与观察*

刘和香 张仪 吕山 胡铃 周晓农

[目的] 实验室构建广州管圆线虫生活史,进一步了解其生长变化及其致病性,为广州 69

¹ 云南省寄生虫病防治所

² Department of Public Health and Epidemiology, Swiss Tropical Institute, Switzerland

⁴ 云南省西风版纳州疾病顶防控制中心 5 云南省勐海县疾病预防控制中心

管圆线虫病的防治提供基础资料。[方法] 福建省采集的广州管圆线虫 L3 经口、腹腔注射、 皮下注射和皮肤接触等途径感染 SD 大白鼠,观察感染效果。从 SD 大白鼠粪便中获得广 州管圆线虫 L1,感染人工繁殖的福建子代福寿螺,25.5~26.5 ℃条件下,分别置于无水环 境和水族环境饲养,观察广州管圆线虫在宿主体内的生长规律、发育进程、分布状况、不 同发育期幼虫形态特征及诱导的病理变化等。[结果] L3 经口感染的感染率较其它感染途径 为好;无水环境中的福寿螺在休眠状态不影响广州管圆线虫发育;实验室完成一个广州管 圆线虫生活史最短为 50 d;休眠状态螺体 L3 出现前期为 16.5 d,水族环境螺 L3 出现前期 为 18.5 d,鼠粪 L1 开放前期为 33.5 d。L3 主要分布于感染螺的肺、肌肉及肝脏等处,螺 肺囊可出现明显的 L2、L3 结节病理表现。折光颗粒、头部特征、鞘膜变化是各期幼虫形 态特征的主要鉴别指标。观察期感染鼠多数死亡,虫卵诱导的肺纤维化和肺动脉虫栓是主 要死因。[结论] 经口感染大白鼠及感染性螺置休眠状态是维持实验室广州管圆线虫生活史 较好的方式。广州管圆线虫生活史长短取决于中间宿主、螺肺的特殊结构和幼虫结节病理 表现为创立肺检法奠定了基础。

^{*}基金项目:国家"十五"科技攻关计划项目(No. 2003BA71ZA09-01)

§4. ABSTRACTS OF RESEARCH ARTICLES

SCHISTOSOMOIASIS

ACHIEVEMENTS AND CHALLENGES IN SCHISTOSOMIASIS CONTROL IN CHINA

ZHENG Jiang

Achievements for schistosomiasis control have been gained by implementation of integrated control strategies according to local conditions since the founding of the People's Republic of China. By the end of 2008, 5 of the 12 provinces reached the criteria of transmission interruption. Among 454 endemic counties, transmission was interrupted in 265 counties while 97 counties reached the criteria of transmission control. The number of schistosomiasis cases decreased from 10 million in history to 413 000. Currently, there still left 92 counties where the disease is endemic and mainly distributed in lake and mountainous regions. Limited by the environmental and socio-economic factors, integrated control strategies could not be carried out in these places. Although the strategies based on reducing the roles of humans and cattle as resources of infection decreased the infection rate and intensity quickly, re-infection occurred frequently due to the spread of snails and numerous animal reservoirs. Chemotherapy alone could not interrupt the transmission. By changing the traditional biomedical control model, applying integrated control strategy mainly with social measures, integrating disease control with local social and economic development programs, changing the traditional life styles and agricultural production patterns, and eliminating the risk factors for schistosmiasis transmission, schistosomiasis control can be developed sustainably and reach the criteria of transmission interruption finally.

THE STATUS OF RESEARCH ON MECHANISMS OF SCHISTOSOME IMMUNE EVASION

CAO Jian-ping* HU Yuan SHEN Yu-juan ZHOU He-jun CHEN Qin LIU Shu-xian

The immune evasion of schistosome is an important factor for schistosome survival in host. At present, the known mechanism is antigenic change and immune regulation. Antigenic changes mainly include schistosoma antigen variation, simulation and disguise, that reduce the sensitivity of host's immunologic surveillance function. Immunoregulation is that the schistosome blocks host's complement activation and suppresses the host's immune cell function by synthetizing neural molecules, protease, cytokines and other small molecules, thereby down-regulates host immune function. Both two mechanisms are beneficial for schistosome survival in host.

SIDE EFFECTS AND EFFICACY OF FILM COATED PRAZIQUANTEL FOR TREATMENT OF SCHISTOSOMIASIS JAPONICA

XU Jing GUO Jia-gang WU Xiao-hua ZENG Xiao-jun¹ YANG Wei-ping²

YANG Guang-bin³ ZHENG Jiang ZHOU Xiao-nong

[Objective] To understand the side effects and curative effect of film coated praziguantel for treatment of schistosomiasis japonica. [Methods] 6-65 years old inhabitants from epidemic areas of schistosomiasis japonica in Jiangxi, Anhui and Hubei provinces were under questionnaire survey and examined by indirect haemagglutination assay (IHA). The Serological positives were tested by Kato-Katz technique. Total 509 habitants of serological positives and healthy persons were given praziquantel. 339 targets with no relative symptoms were followed up for side-effect of drugs in 1 month and efficacy evaluation of praziguantel was carried out in 104 parasitological positives 3 months post-treatment. [Results] 84.7% (144/170) individuals thought film coated tablets were no smell or only with little smell while 92.9%(315/339) targets in control group fell that talbets smell bad and were difficult to swallow. The total side effects rate of film coated praziguantel in 1-2h post-treatment was 20.30%(27/133) and side effects rate in neuromuscular system, digestive system and cardiovascular system were 15.79%(21/133), 9.77%(13/133), 2.26%(3/133) individually which were lower than those of control groups significantly. And there was no significant difference in side effect rates of allergic reaction between 2 groups. The side effect rate of film coated tablets of praziquantel decreased to 3.01%(4/133) and was significantly lower than those of control group with 38.53%(126/327) 1 day after treatment. And there was no difference of side effects rate between two groups 2 weeks after treatment. The curative rate of film coated tablets of praziguantel was 84.91% 3 months post treatment and no difference with that of control group. [Conclusion] The smell and side effects rate of film coated tablets of praziquantel were decreased significantly and its efficacy for treatment of schistosomiasis japonica was equal to control tablets. The film coated tablets of praziquantel could be applied in field widely after a further verification.

^{*} Supported by National Natural Science Foundation (30872212, 30771880, 30371262), National 863 Bio-Tech Programme (2006AA02Z444), (Chinese) National Significant Science and Technology Project (2008ZX10004-011), and the Project by Committee of Science and Technology, Shanghai, China (064319026)

¹ Jiangxi provincial institute for parasite diseases

² Anhui provincial institute for schistosomiasis

³ Hubei provincial centre for diseases control and prevention.

PREVALENCE STUDY ON INFECTIOUS STATUS FOR SOURCE OF INFECTION IN THE ENDEMIC AREA FOR SCHISTOSOMIASIS JAPONICA IN CHINA

YU Qing WANG Qi-zhi LU Da-bing¹ WANG Feng-feng¹ WU Wei-duo¹ WANG Tian-ping¹ GUO Jia-gang

[Objective] To understand the infectious status for source of infection in the some epidemic regions of *Schistosomiasis japonica*, and to provide a scientific basis for further controlling infection sources in a comprehensive way. [Methods] Longshang village which lie in the area of hills and mountains and Yuye village which lie in the area of lakes and marshlands were chosen for fields investigation, The study was targeted at snails and 1512 residents, while 197 samples of livestock were randomized (80 cattle, 46 pigs, 45 dogs, 18 cats, 8 sheep) and 32 wild animals (field rats) were screened in Anhui Province between October to November in 2007. The infection rate and intensity of infection were calculated after pathogenic examination on the populations, livestock, wild animals (field rats). [Results] (1)The infection rate of snails in Longshang and Yuve village were 2.26%, 1.06% in 2007, whereas 0.55%, 0.72% in 2006 respectively; (2) The infection rate and geometric mean of egg per gram(EPG) of population, 3.8% and 0.14(EPG) were in Longshang village whereas 3.4% and 0.13 (EPG) were in Yuye village. The positive rate of blood examination of the different sex in Longshang village was 17.5%(44/252) of the men, which was higher than 11.0%(25/227) of the women(χ 2=4.026, P=0.045), whereas, in Yuye village was 21.4%(66/309) of the men and 19.4%(25/129) of the women, without significant differences ($\chi 2=0.217$, P>0.05); The positive rate of fecal examination of the different sex in Longshang village was 5.2%(14/268) of the men and 2.1%(5/236) of the women with no statistical significance ($\chi 2=3.336$, P>0.05); whereas, in Yuye village was 5.7% (14/245) of the men and 1.2% (3/250) of the women (χ 2=7.603, P=0.006). (3) The infection rate and the arithmetic mean of EPG of the cattle, 10.8%(8/74) and 135.00 (EPG) were in Longshang village, meanwhile, the infection rate of the bull was 9.1%(6/66) and 25.0% for cow (2/8) without statistical significance (χ^2 =0.586, P=0.444), whereas, the total number of cattle was 6 that had been examined and there was no positive case in Yuye village. The total number of sheep was 8 in Yuye village that had been examined and 6 sheep was positive, the arithmetic mean was 254.82(EPG) but there was no sheep in longshang village.(4)The positive rate of the incubation for dog's feces and intensity of infection, 55.6%(24/36) and 20.00(EPG) were in Yuye village whereas 23.81%(5/21) and 1.21(EPG) were in Longshang village.(5)The infection rate of the field rats, 13.64%(3/22) in Longshang village whereas the total number of mouse was 10 that had been examined and there was no positive case in Yuye village. [Conclusions] The farm cattle have been still the chief source of infection in the area of lakes and marshlands for schistosomiasis. Whereas, with the implementing in-depth of the strategy on controlling source of infection combined with other comprehensive measures for schistosomiasis

control, high priorities should be give to epidemiological facotors of the animals such as sheep, dogs, field mouse and so on in spreading schistosomiasis.

1 National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

TISSUE REACTIONS IN UV-ATTENUATED CERCARIAE IMMUNIZED C57BL / 6 MICE AFTER CHALLENGED WITH CERCARIAE OF SCHISTOSOMA JAPONICUM

CHEN Jia-xu LIU Shu-xian CAO Jian-ping XU Yu-xin SONG Guang-cheng GUO Jian

[Objective] To observe tissue reactions of skin and lung of UV-attenuated cercariae immunized C57BL / 6 mice after challenged with cercariae of Schistosoma japonicum. [Methods] Seventy mice of C57BL / 6 were divided into two groups, UV-attenuated cercariae immunized (UVC) group and infection control group randomly. The mice of the UVC group were challenged with (800±50) cercariae of Schistosoma japonicum five weeks after immunization. The mice of the infection control group were challenged with the same number of cercariae. Local skin and lung samples from the mice of each group were taken at certain time points from 6 to 120 hours after the infection for pathological observation. [Results] The skin inflammation in mice of UVC group post challenge infection appeared early, and the cellular reactions against schistosomula in the skin tissues were acute and persistent, in which the percent of eosinophils was high. However, in the infection control group, the skin inflammation emerged lately, and the cellular reactions against schistosomula were weaker than those in UVC group. The bleeding speckles on the lung's surface of mice in UVC group appeared lately at 72 h after the challenge. In contrast, the bleed spots appeared early by 48 h after the infection in the infection control group. From 72 h to 120 h after challenge infection, pulmonary inflammation was obvious, granulomas formed, but the most walls of pulmonary alveolus were normal in the mice of UVC group. However, in control group, the pulmonary inflammation was weak but there were a lot of red blood cells seeping into the pulmonary alveolus walls. [Conclusion] UVC vaccine increases cellular immune response of the host and enhances the role of killing schistosomula.

INVESTIGATION ON COMPLIANCE OF FORBIDDEN DEPASTURING LIVESTOCK ON MARSHLAND WITH ONCOMELANIA SNAILS IN SCHISTOSOMIASIS ENDEMIC AREAS

Cao Chun-li Wang Jing¹ Bao Zi-ping Zhu Hong-qing Cai Shun-xiang² Li Yi-yi³ Li Dong⁴ He Jia-chang⁵ Sun Le-ping⁶ Meng Xian-hong⁷ Zhong Bo⁷ Feng Xi-guang⁸ Su Zheng-ming² Li Jun³ Gu Xiao-nan⁴ Wang Hao⁵ Ru Wei-wei⁶ Jiang Wei-sheng⁴ Li Shi-zhu Wang Qiang Zhou Xiao-nong Guo Jia-gang Zhao Geng-ming¹

[Objective] To study the compliance of forbidden depasturing livestock on the marshland with Oncomelania snails in schistosomiasis endemic areas. [Methods] According to 3 levels of human infection rates as $\geq 10\%$, $\leq 5\% \sim <10\%$ and $\leq 1\% \sim <5\%$, 2 204 residents selected randomly from the schistosomiasis endemic villages sampled with the stratified cluster sampling method in Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Sichuan and Yunnan provinces, were investigated by questionnaire. The contents of the questionnaire included the recognizability and implementation of forbidden depasturing livestock on marshland with Oncomelania snails and breeding livestock in barn. [Results] A total of 78.4% residents agreed forbidden depasturing livestock on marshland with snails, but 3.7% residents disagreed it. A total of 83.9% residents considered the relationship between breeding livestock in barn and schistosomiasis control, but 3.1% residents thought that it was no relationship which was higher in the mountain region than in the lake region($\chi 2=26.001$, p<0.05). The main reasons of depasturing livestock on marshland with Oncomelania snails were the high cost of breeding livestock in barn (36.2%), unaccustomed (26.4%) and no vacancy for breeding livestock in barn (25.4%). [Conclusions] Forbidden depasturing livestock on the marshland with Oncomelania snails should be strengthened according to the local economic, nature environment, agriculture, residents' culture degree and agriculture habit.

6 Jiangsu Institute of Schistosomiasis Control, China

8 Yunnan Provincial Institute of Endemic Disease Control

ANTI-SCHISTOSOMIASIS EFFECT INDUCED BY UV-ATTENUATED CERCARIAE OF SCHISTOSOMA JAPONICUM IN C57BL/6 MICE

Chen Jia-xu Liu Shu-xian Xu Yu-xin Song Guang-cheng

[Objective] To observe the anti-schistosomiasis egg granuloma and hepatic fibrosis effects in C57BL/6 mice immunized with UV-attenuated cercariae(UVC) vaccine. **[Methods]** Sixty

¹ School of Public Health, Fudan University, China

² Institute of Schistosomiasis Control, Hubei Provincial Center for Disease Control and Prevention, China

³ Hunan Provincial Institute of Schistosomiasis Control, China

⁴ Jiangxi Provincial Institute of Parasitic Diseases, China 5 Anhui Provincial Institute of Schistosomiasis Control, China

⁶ Jian any Institute of Schisterenniasis Control, China

⁷ Institute of Parasitic Diseases, Sichuan Provincial Center for Disease Control and Prevention, China

C57BL/6 mice were divided into two groups, a UVC group and infection control group. The mice of the UVC group were challenged with cercariae of Schistosoma japonicum five weeks after immunizing with UVC. The mice in the infection control group were challenged with the same number of cercariae. The mice were sacrificed 7 weeks after the challenge infection to get the left livers. The consecutive paraffin sections of the livers were made and stained with haematoxylin and eosin, and the size of single egg granulomas was measured with micrometer. The levels of hyaluronic acid(HA) and laminin(LN) in sera of the mice were determined by ELISA. The expression of TGF-β1mRNA of the livers was examined by PCR-ELISA. [Results] The mean hepatic egg granuloma diameters of the two experimental groups, the UVC group and infection control group, were(176.25±38.67) µm and(304.38±53.23) µm, respectively. The hepatic granulomas were significantly smaller in the UVC group than those in the infection control group. The liver granuloma size of mice in the UVC group was decreased by 42.10% in diameter as compared with the infection control group. The levels of HA and LN in sera of mice of the UVC group were significantly lower than those of the infection control group(P < 0.01). The amount of TGF- β 1mRNA isolated from the livers of mice in the UVC group decreased significantly. [Conclusions] UVC vaccine acts as an effective inhibitor against egg granulomas of Schistosoma japonicum and reduces immunopathological damage caused by Schistosoma japonicum in the host.

EFFECT OF CALCIUM CYANAMID ON KILLING EGGS OF SCHISTOSOMA JAPONICUM AND MAGGOTS

Wei Wang-yuan¹ Zhu Hong-qing² Liu Zong-chuan¹ Lv Gong-liang¹ Ding Liang¹ Guo Jia-gang

[Objective] To observe the effect of calcium cyanamid on killing eggs of *Schistosoma japonicum* and maggots in cesspit of simple toilets. **[Methods]** Cow dung and calcium cyanamid(W/W), and liquid excreta in cesspit and calcium cyanamid(W/V) were mixed with different proportions, and the effects of calcium cyanamid on killing eggs of *Schistosoma japonicum* and maggots were observed in fields and indoor, respectively. **[Results]** Calcium cyanamid with the concentration of 1%(W/W) and cow dung dregs with eggs were mixed for two hours, and there was no miracidium hatched. Indoor, the cow dung dregs with thickness of 10 cm or 20 cm were put on a layer of calcium cyanamid with a proportion of 2%, for 5 and 7 days, respectively, and then sampled and hatched, and no miracidium was found. In fields, the cow dung and calcium cyanamid with concentration of 2%(W/W) were deposited for 48 hours, and then sampled, and there was no miracidium hatched. Calcium cyanamid with concentration of 1%(W/V) was poured into liquid excreta and homogenized, and after 3 days, all maggots were killed, and the effect lasted for 15 days. The density of flies in the toilet decreased 76

significantly compared with the control. **[Conclusion]** Calcium cyanamid can kill miracidium in eggs of *Schistosoma japonicum* and maggots effectively.

1 Hunan Institute of Parasitic Diseases

ESTABLISHMENT AND APPLYING FOR THE NATIONAL APPRAISAL SYSTEM OF MATERIALS OF HEALTH EDUCATION FOR SCHISTOSOMIASIS CONTROL

Cao Chun-li¹ Liang You-sheng² Guo Jia-gang¹ Wang Lei-ping² Sun Le-ping² Wu Xiao-hua¹ Hu Guang-han³ Wang Wei² Ru Wei-wei² Ma Jun-hua⁴ Xu Xing-jian⁵ Gao Yang⁶ Zhou Xiao-nong¹

[Objective] To promote the capacity of design and facture of materials of health education for schistosomiasis control so as to improve the ability of health education in nationwide. [Methods] The materials were divided into 3 types as video and voice, practicality and printing. The qualification materials were selected by grass roots professionals and experts, and then the qualification materials were graded by experts. The materials of health education were graded by scores. [Results] A total of 103 pieces of materials of health education were delivered from 10 provinces, and among those, there were 26 pieces as video and voice, 46 pieces as practicality and 31 pieces as printing. After appraising, 3 pieces acquired the first award, 6 pieces acquired the second award, 9 pieces acquired the third award, and 14 pieces acquired the excellence award. The first awards were the cup with schistosomiasis control information, the pictorial of schistosomiasis control for pupils, and dialet opusculum of schistosomias is control. [Conclusions] The appraisal system of materials of health education for schistosomiasis control by grass roots professionals and experts has the characteristics with equity and science. This system creates new methods for the selection of materials of health education for schistosomiasis control.

STUDY ON SOCIAL BURDEN CAUSED BY ADVANCED SCHISTOSOMIASIS

Deng Yao¹ Jia Tie-wu² He Wei-long³ Ou-yang Shan-wen³ He Shi-hao⁴ Zhou Xiao-nong²

[Objective] To study the social burden caused by advanced schistosomiasis so as to provide

¹ National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

² Jiangsu Institute of Parasitic Diseases, China

³ Jiangxi Provincial Institute of Parasitic Diseases, China

⁴ Dali Institute of Schistosomiasis Control, Yunnan Province, China

⁵ Institute of Schistosomiasis Control, Hubei Provincial Center for Disease Control and Prevention, China

⁶ Office of Leading Group for Schistosomiasis and Endemic Diseases Control in Yangzhou City, Jiangsu Province, China

the evidence for control and assistance approach of the disease in China. [Methods] All villages with registered advanced schistosomiasis patients in Hanshou County, Hunan Province and 20% of villages of Jiangling County, Hubei Province randomly sampled were selected as investigation sites. The patients, villagers and village cadres were investigated by questionnaire, and the persons in charge of advanced schistosomiasis at the county level were surveyed by in-depth interview. [Results] In the questionnaire survey, 66.1% of the village cadres thought advanced schistosomiasis influenced the per capital income of the village in varying degrees, and 56. 2% of them believed that the disease had some impact on employment in the village. Above 80% of the villagers and village cadres considered advanced schistosomiasis had little influence on social security, and 26. 1% of the villagers said advanced schistosomiasis had certain effect on their psychological states. As to the assistance strategy, the average amount of the money that each patient obtained from the assistance was 4 100 Yuan in 2007, and the satisfaction degree in all sides were above 85%. Nevertheless, 77% of the patients in the survey still had certain aspects of demands that were urgent to be solved besides the assistance at present. The result from the in-depth interviews showed the disease affected the local society in all the respects mentioned above. [Conclusions] Advanced schistosomiasis has certain impact on the local society. To reduce the social burden mostly depends on the concerns from the government and the effective performance of the control programme as well as the appropriate improvement and implementation of the assistance approaches.

3 Hanshou County Center for Disease Control and Prevention, Hunan Province, China 4 Jiangling County Center for Disease Control and Prevention, Hubei Province, China

SCHISTOSOMIASIS STATUS IN PEOPLE'S REPUBLIC OF CHINA IN 2008

Hao Yang¹ Zheng Hao Zhu Rong Guo Jia-gang Wu Xiao-hua Wang Li-ying¹ Chen Zhao¹ Zhou Xiao-nong

This report overviewed the national endemic status of schistosomiasis in China in 2008. During the whole year of 2008, a total of 412 927 cases of schistosomiasis were estimated and 57 acute cases were reported, among which one acute case infected with Schistosoma mansoni was imported from overseas. The reduction rates of total cases and acute cases were 19.97% and 32.53% when comparing to those in 2007, respectively. A total of 21 222 advanced cases were treated in 2008 with an increase rate of 15.04% comparing with that in 2007. About 372 263.11 hm2 of areas infested with *Oncomelania* snails were found in 2008, and about 1 197.89 hm2 newly detected areas were found in non-infested areas with *Oncomelania* snails in historical records. There were 1 468 669 head of the cattle with its infection rate of 1.34% in schistosomiasis transmission regions, with reduction rates of 1.86% and 36.79%, respectively, 78

¹ Jiangsu Institute of Parasitic Diseases, China

² National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

comparing to those in 2007. However, cattle were still remaining as the main infectious source for the transmission of schistosomiasis. Six provinces including Jiangsu, Anhui, Jiangxi, Hubei, Hunan, and Yunnan reached the national criteria of infection control. Sichuan Province reached the national criteria of transmission control. The country achieved the mid-term goal of schistosomiasis control written in the document of "Outline of mid-and long-term national programme on control and prevention of schistosomiasis(2004-2015).

1 National Institute of Parasitic Diseases; Chinese Center for Disease Control and Prevention, China

ASSESSMENT REPORT ON INFECTION CONTROL OF SCHISTOSOMIASIS IN CHINA, 2008

Hao Yang¹ Yi Dong-hua² Zhang Xian-feng³ Xiong Ji-jie⁴ Yuan Wen-zong⁵ Hu Shou-jing⁶
 Wu Xiao-hua Zhu rong Guo Jia-gang Huang Xi-bao⁷ Li Yue-sheng⁸ Chen Hong-gen⁹
 Wang Tian-ping¹⁰ Dong Xing-qi¹¹ Li Hua-zhong¹² Zheng Can-jun¹² Chen Zhao¹
 Wang Li-ying¹ Zhou Xiao-nong

According to the requirement of the national assessment for achieving the infection control criteria, 42 villages(among them, 25 villages belonged to the first stratum, and 17 villages belonged to the second stratum) in 14 counties from 5 provinces, including Hunnan, Hubei, Jiangxi, Anhui and Yunnan, were selected as sampling villages for the assessment. The results from the field assessment showed that 154 out of 9 067 people were found infected with *Schistosoma japonicum*, with an average infection rate of 1.7% ranged from 0.31% to 4.10%, and only Yongping Village from Weishan County and Tenglong Village from Eryuan County were not found any case. A total of 46 out of 3 323 head of cattle were infected with *S. japonicum*, with an average infection rate of 1.38% ranged from 0.26% to 3.79%, and no any infected individual detected in Nanling County. No outbreak occurred in those sampling villages. Therefore, it is indicated that the five sampling provinces have reached the national criteria on infection control of schistosomiasis.

¹ Department of Disease Contorl, Ministry of Health, China

² Hunan Provincal Office of Leading Group for Schistosomiasis Control, China

³ Hubei Provincal Office of Leading Group for Schistosomiasis Control, China 4 Jiangxi Provincal Office of Leading Group for Schistosomiasis Control, China

⁵ Anhui Provincal Office of Leading Group for Schistosomiasis Control, China

⁶ Yunnan Provincal Office of Leading Group for Schistosomiasis Control, China

⁷ National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

⁸ Institute of Schistosomiasis Control, Hubei Center for Disease Control and Prevention, China

⁹ Hunan Institute of Parasitic Diseases, China

¹⁰ Jiangxi Institute of Parasitic Diseases, China

¹¹ Anhui Institute of Parasitic Diseases, China

¹² Yunnan Provincial Institute of Endemic Disease Control and Prevention, China

¹³ Chinese Center for Disease Control and Prevention, China.

ACUTE SCHISTOSOMIASIS SITUATION IN CHINA, 2006

Zheng Hao Li Shi-zhu Xu Zhi-min Wu Xiao-hua Zhou Xiao-nong Guo Jia-gang

To understand the current status and epidemic trends of acute schistosomiasis in China,2006, all epidemiological data concerning acute schistosomiasis were collected from the communicable annual report system, and analyzed by using the descriptive epidemiology. In 2006, there were 207 acute cases including 161 confirmedly diagnosed cases and 46 clinical cases, and 1 outbreak of acute schistosomiasis in Hubei Province with 2 cases. Also, there were 14 imported cases reported in 2006.

EVALUATION INDICES OF SCHISTOSOMIASIS CONTROL EFFECT IN MOUNTAINOUS AREAS

Luo Tian-peng¹ Zhou Xiao-nong Qiu Zong-lin¹

[Objective] To study the cost-effectiveness and cost-benefit of the integrated schistosomiasis control strategy with emphasis on infectious source control in mountainous areas of Yunnan Province, so as to provide the evidence for the establishment or adjustment of the schistosomiasis control strategy. [Methods] Xinlian Village in dam areas and Qieye Village in mountainous areas were selected as an experimental group where the integrated strategy with an emphasis on infection source control was implemented. Yonglian Village in dam areas and Qiandian Village in mountainous areas were selected as a control group where conventional control measures were undertaken. The control effect was observed and compared between the two groups from 2005 to 2007, and both the cost-effectiveness and cost-benefit were studied. [Results] The infection rates of two villages in the experimental group decreased by 93. 36% and 96.44%, respectively, and the decreased percentages of the two villages in the control group were 83.24% and 84.38%, respectively. The difference was statistically significant between the experimental group and control group. The cost-effectiveness in the experimental group was significantly lower than that in the control group in the mountainous areas. While in the dam areas, the difference was not significant. The cost-benefit in the dam areas was significantly higher than that in the mountainous areas. The differences of cost-effectiveness ratio and benefit-cost ratio(BCR) between the experimental and control groups were not significant. [Conclusions] The integrated control strategy focusing on infectious source control has better control effects and benefits comparing to the conventional control strategy when the infection rate of residents is high, and the integrated control strategy is fit to apply in endemic regions of mountainous areas.

¹ Chinese Center for Disease Control and Prevention, China

APPLICATION AND PERSPECTIVE OF CLIMATIC FORECASTING MODELS RELATED TO SCHISTOSOMIASIS TRANSMISSION

Yang Guo-jing¹ Sun Le-ping¹ Hong Qing-biao¹ Yang Kun¹ Deng Yao¹ Li Shi-zhu Lv Shan Zhou Xiao-nong

The concept of sensitive climate factors related to schistosomiasis transmission was put forward and those sensitive climate factors were quantitatively correlated with the life cycle of *Schistosoma japonicum*. The models developed previously were summarized as a deterministic model and amathematic model. Finally, three research priorities were recommended as 1 predicting intensity and areas of schistosomiasis transmission under different scenarios, 2 validation and adjustment of forecast models, and 3 determining uncertainty of forecast models.

1 Jiangsu Institute of Parasitic Diseases, China

SURVEILLANCE AND FORECAST SYSTEM OF SCHISTOSOMIASIS IN JIANGSU PROVINCE II ESTABLISHMENT OF REAL-TIME OPERATION AND EXPRESSION PLATFORM BASED ON GOOGLE EARTH

Sun Le-ping¹ Liang You-sheng^{1*} Tian Zeng-xi² Dai Jian-rong¹ Hong Qing-biao¹ Gao Yang² Huang Yi-xin¹ Yang Guo-jing¹ Yang Kun¹ Wang Wei¹ Li Wei¹ Zhou Xiao-nong

[Objective] To establish a real-time operation and expression platform of the surveillance and forecast system for schistosomiasis, so as to share and utilize the surveillance and forecast information effectively. [Methods] The geographical coordinate map and network album management system were established by using Google Earth and Picasa 3.1. The current endemic status, figures and detecting results of the field surveillance were input into the established management system, and an information management file was set up, and then the information management file was transmitted to the terminal users, so as to achieve network real-time query and display. [Results] The operation and expression platform of the surveillance and forecast system for schistosomiasis in Jiangsu Province, which displayed figures and characters clearly and had advantages of fast, simple and convenient operations, was successfully established and was able to achieve off-site and real-time query and sharing. The preliminary application showed that the total browsing number had been up to 331 times, and the mean browsing number of each forewarning site was 7.36 times. The system played an important role in schistosomiasis control of Jiangsu Province. [Conclusions] The approach of the network real-time surveillance and forecast platform based on Google Earth can be used as the preferential approach in surveillance and forecast system for schistosomiasis.

¹ Jiangsu Institute of Parasitic Disease, China

² Office of Leading Group for Schistosomiasis and Endemic Diseases Control in Yangzhou City, Jiangsu Province, China

STUDY ON COMPREHENSIVE SCHISTOSOMIASIS CONTROL STRATEGY WITH EMPHASIS ON INFECTIOUS SOURCE CONTROL IN POYANG LAKE AREAS

Chen Hong-gen¹ Zeng Xiao-jun¹ Xiong Ji-jie² Jiang Wei-sheng¹ Hong Xian-lin³ Hu Shen-zhu³ Guo Jia-gang

[Objective] To explore a comprehensive schistosomiasis control strategy with emphasis on infectious source control in lake regions and observe its effect. [Methods] A strategy including replacing bovine with tractors for farming, forbidding grazing on marshlands, renovating of latrines and water supply, and modifying living environment was performed in 3 heavy endemic villages of Sanli Township, Jinxian County that was located to the south of Poyang Lake, and the chemotherapy and health education in villagers was integrated as usual measures. The infection of Schistosoma japonicum and intestinal parasites in villagers, the infection of Oncomelania snails, the risk of water body and egg contamination of intestinal parasites in soil were monitored for 4 consecutive years. [Results] Four years after the comprehensive intervention, the infection rate of S. japonicum in villagers decreased significantly, i.e., from 11.35% in 2004 to 0.18% in 2008 in Aiguo Village and the decreasing rate was 98.41%, while the infection rates decreased to 0 in Xinhe Village and Guanghui Village in 2008. The intensity of infection in villagers also showed a decreasing tendency. The infection rate of Ascaris lumbricoides and Trichuris trichiura dropped from 27.57% and 61.98% in 2004 to 3.82% and 7.47% in 2008, respectively in these villages. The egg contamination of intestinal parasites to soil was significantly lightened. It was also observed that the mean density of infected snails, the infection rate of snails, the number of spots with infected snails reduced on marshlands of the controlled area. [Conclusions] The comprehensive schistosomiasis control strategy can achieve a thorough control of infectious source of S. japonicum and thus get the effects on clearance of marshland and prevention of re-infection in human populations. The strategy also has advantages of improving the structure and mode of production in endemic villages as well as reducing the prevalence of intestinal parasites.

SURVEILLANCE AND FORECAST OF SCHISTOSOMIASIS TRANSMISSION IN CHINA

Zhou Xiao-nong

It is an essential issue to establish an effective and prompt response mechanism on surveillance and forecast in control and prevention of infectious diseases in one region. The

¹ Jiangxi Provincial Institute of Parasitic Diseases, China

² Jiangxi Provincial Office of Leading Group for Schistosomiasis and Other Endemic Diseases Control, China

³ Jinxian Anti-schistosomiasis Station, China

paper reviews the concept of surveillance and forecast mechanism in linkage with activities of surveillance, forecast and emerging response, summarizes the research advances in surveillance and forecast of schistosomiasis transmission, and analyzes the progress trends, in order to improve the level in surveillance and forecast of schistosomiasis in China.

CAUSES AND RISKS OF SCHISTOSOMIASIS TRANSMISSION IN POYANG LAKE REGION OF JIANGXI PROVINCE, CHINA

Hao Yang¹ Wang Li-ying¹ Zhou Xiao-nong Chen Hong-gen² Huang Xi-bao³ Liang You-sheng⁴ Zhang Shi-qing⁵ Zhong Bo⁶ Zhou Yi-biao⁷ Sun Le-ping⁴ Feng Yun¹ Zhu Rong Zhang Li-juan Yu Qing Gu Xiao-nan² Lin Dan-dan²

[Objective] To understand the causes and risks of schistosomiasis transmission in Poyang Lake region, and provide the scientific evidence for further promotion of the strategies on infectious sources control. [Methods] The information and data were collected from schistosomiasis control and national schistosomiasis surveillance sites in 6 counties, namely Xinjian, Nachang, Duchang, Xingzi, Yugang, Poyang, around Poyang Lake from 2005 to 2008, and the correlation between the transmission status of schistosomiasis and relevant factors to the infectious sources control was analyzed. [Results] The infection rates of residents and cattle declined overall from 2005 to 2008. However, the infection rate of Oncomelania snails showed a tendency of rising from 2005 to 2008, and the emergence rate of infected snail sites maintained at a high level on the whole. The emergence rate of infected snail sites, the infection rate of snails, and the areas with infected snails were positively correlated with the number of cattle in the same year and the previous year, respectively. The correlation coefficient of infected snail data with the number of cattle in the previous year was higher than that in the same year. The infection rate of cattle was positively correlated with the infection rate of residents. [Conclusions] The risk of schistosomiasis transmission remains at a high level. The local open-grazing cattle are still the main infectious sources for the contamination to the snail habitats which cause the transmission of schistosomiasis in the region.

¹ Department of Disease Control, Ministry of Health, China

² Jiangxi Institute of Parasitic Disease, China

³ Hubei Provincial Center for Disease Control and Prevention, China

⁴ Jiangsu Institute of Parasitic Disease, China

⁵ Anhui Institute of Parasitic Disease, China

⁶ Sichuan Provincial Center for Disease Control and Prevention, China

⁷ School of Public Health, Fudan University, China

FORECAST ON TRANSMISSION FOCI OF SCHISTOSOMIASIS JAPONICA IN CHINA, 2009

Zhang Li-juan Zhu Rong Wang Tian-ping¹ Cao Zhi-guo¹ Lin Dan-dan² Jia Tie-wu; Zhang Shi-qing¹ Guo Jia-gang Zhou Xiao-nong

[Objective] To understand the status and trends of *Schistosomiasis japonica* transmission, and provide forecast information on transmission foci of Schistosoma japonicum in high-endemic areas of China in 2009. [Methods] The forecast analysis was performed based on the data of infected Oncomelania snails collected from 80 national surveillance villages and 36 integrated intervention villages in 2009, and the data of S. japonicum infections both in residents and domestic animals for the comparison. [Results] The distribution of Oncomelania snails infected with S. japnicum in 2009 was generally in consistence with those in 2007 and 2008, and those infected snails were focally distributed in the southwest of Poyang Lake, Jiangxi Province, and in some areas around Dongting Lake or along the Yangtze River in Hunan and Hubei provinces. The infection rate of S. japonicum in residents decreased from 0.92% in 2007 to 0.67% in 2008, but the majority of endemic villages in Hunan, Hubei and Jiangxi provinces were at a high level with their human infection rates higher than 1%. The S. japonicum infection rate of domestic animals decreased from 2.90% in 2007 to 1.62% in 2008, while the majority of endemic villages in Hunan, Hubei and Jiangxi provinces were still at a higher level with their animal infection rates over 3%. [Conclusions] The transmission foci with higher infection rate of Oncomelania snails mainly distributes in the southwest of Poyang Lake, and in some areas around Dongting Lake or along the Yangtze River. The infection rates of S. japonicum both in human and animals are still higher in some areas of Hunan, Hubei and Jiangxi provinces although the infection rate decreased generally in recent years.

SURVEILLANCE OF SCHISTOSOMIASIS IN CHINA IN 2008

Zhang Li-juan Zhu Rong Dang Hui Guo Jia-gang

[Objective] To survey and understand the endemic situation of schistosomiasis among 80 national surveillance sites in China in 2008, so as to provide the evidence for decision-making of schistosomiasis control. **[Methods]** According to the National Surveillance Protocol for Schistosomiasis, the data of schistosomiasis in residents, domestic animals and *Oncomelania* snails and other relevant factors were collected and analyzed in the 80 national surveillance sites. **[Results]** Among the 80 national surveillance sites, the average positive rate of residents with sera examination and the average infection rate of the residents were 9.86% and 0.67%, respectively, and the infection rate of domestic animals was 1.62%, all remarkably decreased 84

¹ Anhui Institute of Schistosomiasis Control, China

² Jiangxi Institute of Parasitic Diseases, China

compared with the rates of 2007, but the proportion of domestic animals stable breeding was only 6.07%. The areas of infected snail habitats and the new snail habitats were 177.70 hm2 and 7.64 hm2, respectively. The mean density of living snails and infection rate of snails were 0.32/0.1 m2 and 0.15%, respectively. **[Conclusions]** The endemic situation of residents, domestic animals and snails decreased in 2008 compared with those in 2007, and domestic animals are still the main infection sources of schistosomiasis, the management of domestic animals need to be further strengthened, meanwhile the surveillance and control of snails should be focused on.

SURVEYS ON IMPLEMENTATION OF NATIONAL SCHISTOSOMIASIS CONTROL AND PREVENTION REGULATION IN MAIN SCHISTOSOME-ENDEMIC AREAS OF CHINA

Wang Jing¹ Cao Chun-li Guo Jia-gang Zhao Gen-ming¹

In order to acquire the information on the changes and improvement after the implementation of National Schistosomiasis Control and Prevention Regulation, a survey was performed. The awareness of schistosomiasis and the regulation, stool management and other related contents were carried out in the rural areas of Jiangsu, Anhui, Jiangxi, Hubei, Hunan, Sichuan and Yunan provinces. The results showed 98.9% of the residents knew about schistosomiasis, 89.8% knew the regulation, 95.1% supported the management of drinking water and lavatory, 45.3% used tap water as their ordinary drinking water supply, but there were 47.6% still drank well water, 51.1% used water closet and 40.0% used simple toilet. The work on improving water and sanitary conditions in mountain areas was left behind that in lake areas. It is indicated that there is still a lot we must do to promote the propaganda of the regulation.

1 National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

PREDICTION AND SURVEILLANCE OF SCHISTOSOMIASIS JAPONICA IN POTENTIAL ENDEMIC AREAS IN CHINA, 2008

Wu Xiao-hua Xu Jing Li Shi-zhu Huang Yi-xin¹ Wang Tian-ping² Wu Cheng-guo³ Huang Xi-bao⁴ Miu Feng⁵ Chen Zhao⁶ Wang Li-ying⁶ Guo Jia-gang Zhou Xiao-nong

[Objective] To explore the potential risk factors of schistosomiasis transmission in potential endemic areas so as to provide scientific basis for setting up the prediction and surveillance systems to prepare the response for emergence of schistosomiasis. **[Methods]** In 2008, fixed and mobile surveillance sites in potential endemic areas of 10 counties in Hubei, Jiangsu, Anhui, Shandong provinces and Chongqing Municipality were selected. Immunological assays and/or

stool examinations were carried out to investigate the infection situation of local people, mobile population and livestock. The distribution of Oncomelania snails was investigated in risk areas and suspicious areas, and spreading patterns of snails were observed in the rivers that directly connected with the Yangtze River. The imported snails were raised in cages located in the marshland of Chao Lake, Weishan Lake and the Yangtze River along Zhangjiagang City. [Results] A total of 5 525 of 6-65 years old local people were screened by immunological tests, and the positive rate of antibody was 1.11% (58/5 225). Among the whole, 4 224 individuals were examined by IHA and the positive rate was $0.83\%(35/4\ 224)$, while 1 001 persons were tested by ELISA and the positive rate was 1.10%(43/3913). A total of 56 antibody positives were examined by Kato-Katz technique and there were no positives. A total of 2 204 mobile population including fishermen and boatmen were tested by serological tests and the positive rate was $2.31\%(51/2\ 204)$. Among the mobile population, 1 603 individuals were tested by IHA while 601 persons tested by ELISA, and the antibody positive rates were 1.62%(26/1603) and 4.16% (25/601), respectively. Eight patients were found among the 29 antibody positives through the stool examination by Kato-Katz technique. Potential endemic areas with 48.31 hm2 were investigated for Oncomelania snail detection. The investigation on snail spreading patterns and surveillance on suspicious circumstances were carried out, with no Oncomelania snails found. The experiment of snails raised in cages in field showed the snails could survive and reproduce in the marshland of Chao Lake, Weishan Lake and the Yangtze River along Zhangjiagang City. [Conclusions] The imported infectious sources infected with Schistosoma japonicum have been found in the potential endemic areas, and the higher possibility of imported Oncomelania snails spreading to the endemic areas is predicted. Therefore, the effective measure to decrease the risks of schistosomiasis transmission is a key issue in potential endemic areas.

IMMUNOSCREENING AND IDENTIFICATION OF SCHISTOSOMA JAPONICUM JUVENILE CDNA LIBRARY*

DUAN Xin-wei¹ FU Ying-hui² LU Yan HUANG Cheng-yu¹ JU Chuan XU Bin XU Xue-nian FENG Zheng HU Wei

The cDNA library of *Schistosoma japonicum* (Sj) juveniles was immunoscreened with the anti-serum from day 14 post-infection mice. The inserts of the seven positive clones were sequenced and analyzed for their homology in GenBank database. Results showed that one was highly homologous to the SjHSP70 (score=650), two were significantly homologous to the SjFABP(score=229) and Sj CDGSH-type Zn finger-containing protein-like protein(score=246),

¹ Jiangsu Institute of Parasitic Disease, China

² Anhui Institute of Parasitic Diseases, Wuhu, China

³ Chongqin Centre for Disease Control and Prevention, China

⁴ National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

⁵ Shandong Institute of Parasitic Disease

⁶ The Bureau of Disease Control, Ministry of Health, China

^{*} supported by the National Science and Technology Support Program Projects(No. 2007BAC03A02), National Significant Science and Technology Projects(No. 2008ZX10004-11), and National Natural Science Foundation of China(No. 30590373).

and the other four were not homologous to genes in GenBank and thus identified as Sj novel genes. The sequences of the novel genes were submitted to GenBank and the accession numbers were obtained (EU121231, 202646, 202647 and 202648).

HISTOPATHOLOGICAL CHANGES IN ADULT *SCHISTOSOMA JAPONICUM* HARBORED IN MICE TREATED WITH A SINGLE DOSE OF MEFLOQUINE

Zhang Chao-wei Xiao Shu-hua Utzinger J Chollet J Keiser J Tanner M

New research has shown that mefloquine, an arylaminoalcohol used against malaria, is active against Schistosoma japonicum and Schistosoma mansoni in vivo. To enhance our understanding of the potential mechanism of action of mefloquine against schistosomiasis, we examined the dynamics of histopathological changes in adult S. japonicum. Mice infected with S. japonicum for 35 days were treated intragastrically with a single dose of mefloquine (400 mg/kg). One to 35 days after mefloquine administration, drug-induced histopathological alterations were studied. Twenty-four hours after treatment, S. japonicum showed signs of degeneration, including focal roughing and swelling of the tegument and/or muscles, dilatation of the gut, focal desquamation of gut epithelial cells, and a decrease in pigment particles. There was extensive degeneration of vitelline cells and appearance of pigment particles visible in the cytoplasm in female worms. The extent and severity of histopathological changes increased over time; 48 h posttreatment, two thirds of female worms and a quarter of male worms were classified as dead. Three to 14 days posttreatment, typical histological changes observed in surviving male worms were vesiculation, swelling of parenchymal tissues, and dilatation of gut. In females, there was disintegration and infiltration of inflammatory cells, forming dead worm abscesses and early stage of dead worm granuloma. Finally, 35 days posttreatment, only dead male and female worm granuloma were found. Our results provide further evidence of in vivo activity of mefloquine against adult schistosomes.

EFFECT OF SINGLE-DOSE ORAL MEFLOQUINE ON THE MORPHOLOGY OF ADULT SCHISTOSOMA JAPONICUM IN MICE

Xiao Shu-hua Chollet J Utzinger J Mei Jing-yan Jiao Pei-ying Keiser J Tanner M

It has been recently documented that the antimalarial drug mefloquine shows in vivo activity against schistosomes. In the present study, we assessed the effect of mefloquine on the

¹ Biotechnology School, East China University of Science and Technology

² School of Medicine, Shanghai Jiaotong University

^{*}Supported by the Hi-tech Research and Development Program of China (No. 2007AA02Z153), TMRC/NIH (No. 5 P50 A139461), The National Basic Research Program of China (No. 2003CB716804)

morphology of adult *Schistosoma japonicum* worms. Mice were infected with *S. japonicum* cercariae for 35 days and then treated with a single 400 mg/kg oral dose of mefloquine. Groups of mice were killed between 24 h and 14 days post-treatment and worms were recovered from the liver and mesenteric veins, fixed in 70% alcohol, stained with acid carmine, and examined under a light microscope. Worms obtained from nontreated mice served as controls. *S. japonicum* recovered from mice 24 h post-treatment had severely dilated guts and the entire worm body was swollen. Meanwhile, reproductive glands, including the testis, ovary, and vitelline gland, showed signs of degeneration. Damage further progressed, particularly among vitelline glands, which resulted in disturbance of ova formation and cessation of oviposition 3 days post-treatment. Three to 7 days after mefloquine administration, adherence of host leukocytes on the damaged tegument was observed. Our results confirm that mefloquine possesses antischistosomal properties, exhibiting a rapid onset of action and causing extensive morphologic damage to adult *S. japonicum*.

HISTOPATHOLOGICAL ALTERATION OF JUVENILE SCHISTOSOMA JAPONICUM IN MICE FOLLOWING TREATMENT WITH SINGLE-DOSE MEFLOQUINE

Xiao Shu-hua Zhang Chao-wei

This study aims to observe the histopathological alterations in schistosomula of Schistosoma japonicum induced by mefloquine. Mice were infected with S. japonicum cercariae, and after 14 days, a single dose of mefloquine (400 mg/kg) was administered orally. After 8 h, 24 h, 3 days, 7 days, and 14 days, groups of two to three mice were sacrificed, and livers were removed, fixed and processed routinely, and examined by light microscopy. After 8 h, 51.5% of the schistosomula examined showed degeneration, which included high dilatation of gut, desquamation of gut epithelial cells, swelling of tegument, muscles, and parenchymal tissues, and adherence of inflammatory cells to the damaged tegument of the juveniles. After 24 h, the percentage of dead worm and degenerated worm were 43.2% and 48.4%, respectively, and the intensity of damage increased, including severe swelling and vesiculation of tegument, collapse of damaged gut, and loss of definition in the internal structure. In addition, dead worms were infiltrated by eosinophil-predominated inflammatory cells. After 3 days, more than 96% of schistosomula were severely degenerated and dead, and some of them were focally or extensively infiltrated by inflammatory cells accompanied by necrosis of internal structure. Seven to 14 days after treatment, most dead schistosomula developed to dead worm granulomas with the percentages of 60.1-86.3%, while those of dead schistosomula were 26.7-8.4%. The results indicate that mefloquine exhibits an extensive and severe damage to juvenile S. japonicum harbored in mice.

FURTHER STUDY ON MEFLOQUINE CONCERNING SEVERAL ASPECTS IN EXPERIMENTAL TREATMENT OF MICE AND HAMSTERS INFECTED WITH SCHISTOSOMA JAPONICUM

Xiao Shu-hua Mei Jing-yan Jiao Pei-ying

Antischistosomal properties of mefloquine against Schistosoma japonicum have been further studied. A total of 260 mice were divided into four batches, and three batches of them were infected percutaneously with 40 S. japonicum cercariae. In the remaining batch, mice were infected with 20, 40, or 80 S. japonicum cercariae. Other 45 hamster, divided into two batches, were each infected two or three times with 50 S. japonicum cercariae at days 0 and 7 or 0, 14, and 21. The infected mice and hamsters were treated orally with single doses of mefloquine or praziguantel at various intervals post-infection, while infected but untreated mice and hamsters served as control. All treated animals were killed 4 weeks post-treatment for assessment of effect. In hamsters concurrently infected with 14- and 21-day-old or 14-, 21-, and 35-day-old schistosomes and treated orally with mefloquine at a single dose of 100 and 200 mg/kg, the total worm burdens were significantly lower than that of control (P < 0.05 or P < 0.01) with worm burden reductions of 45.4% and 89.9% as well as 82.5% and 90.6%, respectively. In the first batch of mice treated with mefloquine and four structurally related amino alcohol antimalarials 5 weeks post-infection at a single dose of 400 mg/kg, mefloquine, quinine, and quinidine possessed similar potential effect with total worm burden reductions of 80.9-90.3%, while halofantrine and lumefantrine showed moderate and poor effect with total worm burden reductions of 67.5% and 38.4%, respectively. In the second batch of mice infected with 20, 40, and 80 S. japonicum cercariae and treated orally with mefloquine at a single dose of 200 and 400 mg/kg 5 weeks post-infection, similar effects were seen in groups of mice with various infection intensity, the total worm burden reductions were 59.9-73.0% (200 mg/kg) and 85.0-89.1% (400 mg/kg). In the other two batches of mice infected with various stages of schistosomes and treated orally with mefloquine and praziquantel at a single dose of 200 or 400 mg/kg, potential and moderate effects of praziguantel against d0 worms (3-h-old) and adult worms (28- and 35-day-old) with total worm burden reductions of 83.6–95.6% and 42.4–69.3% were observed, but no effect against various stages of juvenile schistosome was seen. Under the two single doses used, mefloquine exhibited no effect against d0 worms, but showed moderate or potential effect against various stages of juvenile and adult schistosomes with total worm burden reductions of 56.3-89.1% (200 mg/kg) and 81.1-100% (400 mg/kg). The results indicate that mefloquine shows potential effect on hamsters concurrently infected with various stages of juvenile and adult S. japonicum; among the four structurally related amino alcohol antimalarials tested, quinine and its isomer quinidine exhibit potential effect against adult S. *japonicum* similar to that of mefloquine, while halofantrine and lumefantrine posses moderate and poor effect; no impact of infection intensity on the effect of mefloquine against schistosomes was observed in mice;

under the same dose level, the effect of mefloquine against development stages of juvenile and adult *S. japonicum* is superior to that of praziquantel.

THE IN VITRO EFFECT OF MEFLOQUINE AND PRAZIQUANTEL AGAINST JUVENILE AND ADULT SCHISTOSOMA JAPONICUM

Xiao Shu-hua Mei Jing-yan Jiao Pei-ying

Mefloquine, an antimalarial drug, has been found to be effective against various stages of schistosomes in vivo. The purpose of the study is to explore the in vitro effect of mefloquine against adult and juvenile Schistosoma japonicum and to compare its efficacy with praziquantel. Three-hour-old schistosomula were prepared by penetrating the mouse skin with schistosome cercariae, while schistosomes 7-, 14-, and 35-day-old were collected from mice infected with S. *japonicum* cercariae for 7, 14, and 35 days by perfusion. Schistosomes were placed to each of 24 wells of a Falcon plate and maintained in Hanks' balanced salt solution-20% calf serum. Besides observation on the direct in vitro effect of mefloquine and praziguantel, adult worms exposed to mefloquine and praziquantel for 1 and 4 h were transferred to the medium without the drugs and incubated continuously for another 72 h. The reversible effect of mefloquine and praziguantel was assessed by the recovery of the worm motor activity and parasite survival. The minimal effective concentration of mefloquine against adult schistosomes in vitro was 10 μ g/mL, which revealed that the worm motor activity was first stimulated, then decreased significantly, followed by bleb formation, focal swelling and elongation of the worm body, cessation of gut peristalsis, and death of 56.3% (18/32) worms within 24-72 h. Similar appearance was seen in the adult worms exposed to higher mefloquine concentration of 20 and 30 µg/mL, but all worms died within 4–24 h. The adult schistosomes exposed to praziquantel 1–30 μ g/mL showed fast spasmodic contraction of the worm body, followed by bleb formation along the tegument, feeble movement of oral sucker, and death of a part of males and females 72 h after incubation. When male and female schistosomes exposed to mefloquine 10 and 20 µg/mL for 1 and 4 h were transferred to the medium without the drug, no apparent recovery of worm motor activity and survival was seen. In case of worms exposed to praziquantel at the same concentration for 1 and 4 h before replacement of drug-free medium, a well recovery of worm motor activity, looseness of worm body, and reduction or disappearance of blebs along the tegument were observed. Mefloquine also exhibited in vitro effect against 3-h-old and 7- and 14-day-old schistosomula which was similar to that seen in adult worms, but all or parts of worms showed decrease in motor activity or even death (3-h-old and 7-day-old schistosomula) at a lower mefloquine concentration of 5 μ g/mL. In 14 day-old schistosomula exposed to praziquantel 1–30 μ g/mL, spasmodic contraction and significant decrease in motor activity of the worm body with movement of oral and ventral suckers were observed, but no death of worm was seen during a

3-day incubation period. The results indicate that in vitro mefloquine exhibits a direct killing effect against adult and juvenile *S. japonicum* which is different from that of praziquantel. Meanwhile, the juvenile schistosomes are more susceptible to mefloquine than the adult ones. Furthermore, the in vitro effect of mefloquine against adult schistosomes is irreversible, while that of praziquantel is reversible.

POTENTIAL IMPACT OF, AND ADAPTATION TO, CLIMATE CHANGE INFLUENCE ON SCHISTOSOMIASIS TRANSMISSION IN CHINA – A) EXPERIENCES FROM CHINA

ZHOU Xiao-nong YANG Kun¹ YANG Guo-jing¹ WU Xiao-hua T K Kristensen² R Bergquist³ J Utzinger⁴

Appraisal of the present and future impact of climate change and variability on the transmission of infectious diseases is a complex but pressing public-health issue. To explore adaptation strategies to reduce the impact of climate change on schistosomiasis transmission, we developed a biology-driven model to assess the potential impact of rising temperature on schistosomiasis transmission in China. We then applied different adaptation approaches based on the predicted impact and on local settings. We identified a temperature threshold of 15.4°C for development of Schistosoma japonicum within Oncomelania hupensis, and a temperature of 5.8°C at which half the snail sample investigated was in hibernation. Historical data suggest that the geographic range of O. hupensis is restricted by the mean January temperature of 0°C. On this basis, we then forecast an expansion of schistosomiasis transmission into currently non-endemic areas in the north with an additional risk area of almost 800 thousand km2 by 2050. Given these results, 3 pilot scenarios on adaptation to climate change were modelled in sensitive regions where potential expansion may occur in future, in order to prevent Oncomelania hupensis from migrating northward into the currently non-endemic area for Schistosoma japonicum. Two models of adaptation, including building a sinking pond for Oncomelania hupensis in the water courses, and surveillance for new infectious sources, were explored, and economic benefit was assessed. Further assessment of these adaptation strategies focused on their acceptability and feasibility local stakeholders. We conclude that the future impact of climate change on schistosomiasis could be controlled by adaptation intervention of this kind.

¹ Department of Schistosomiasis Control, Jiangsu Institute of Parasitic Diseases, Wuxi, PR China

² DBL-Institute for Health Research and Development, Charlottenlund, Denmark

³ Ingerod 407, Brastad, Sweden

⁴ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

LANDSCAPE GENETICS: THE CORRELATION OF SPATIAL AND GENETIC DISTANCES OF ONCOMELANIA HUPENSIS, THE INTERMEDIATE HOST SNAIL OF SCHISTOSOMA JAPONICUM IN MAINLAND CHINA

Li Shi-Zhu Wang Yi-Xiu Yang Kun Liu Qin Wang Qiang Zhang Yi Wu Xiao-Hua Guo Jia-Gang Robert Bergquist Zhou Xiao-Nong*

Two internal transcribed spacer (ITS1 and ITS2) sequences of the non-coding region of the rDNA and a 16S RNA gene fragment of the mtDNA of Oncomelania hupensis, the intermediate host snail of Schistosoma japonicum in mainland China, have been investigated with a view to illustrate the influence of the environment on genetic differentiation. Thirteen populations of O. hupensis snails, representing four types of ecological settings, were collected to compare genetic and spatial distances. The length of the ITS1-5.8S-ITS2 gene sequence showed a range from 752 to 796 bp with a guanine-cytosine (GC) content of 49.1-50.3%, while that of the 16S sequence ranged from 505 to 508 bp with a GC content of 33.5-35.1%. The 5.8S fragment was shown to be highly conserved and it was therefore removed in the subsequent analysis. In contrast, the ITS flanking sequences and the 16S fragment were found useful for further study as their degree of polymorphism amounted to 13.2% and 8.6%, respectively. The genetic relationship was investigated using tools based on maximum parsimony, minimum evolution and neighbour-joining algorithms. Four branches of O. hupensis were found to be clearly represented on the 16S phylogenetic tree, namely (i) the mountainous region population (from Sichuan and Yunnan provinces); (ii) the Karst region population (from Guangxi autonomous region); (iii) the population representing the region of swamps and lakes along the Yangtze River basin which stretches through the Anhui, Hunan, Hubei, Jiangxi, Jiangsu and Zhejiang provinces; and (iv) the littoral, hilly region population (from Fujian province). These four population branches were found to be correlated to environmental features based on the concept of landscape ecology attributing genetic differentiation to differences in ecological features. However, only three main branches could be found on the ITS1-ITS2 phylogenetic tree. The swamps and lakes population (from the Yangtze River basin) and the littoral, hilly population (from Fujian province) were clustered on the third branch in spite of these two populations not being spatially related, i.e. no firm genetic demarcation between their snail populations was found. Thus, it seems that the Fujian population does not constitute a separate branch but belongs to the third branch. This fact, together with the strong genetic evidence that the subspecies O. hupensis guangxiensis represents a discrete branch, support the hypothesis that genetic differentiation of O. hupensis in mainland China is ultimately structured by landscape ecology.

CHINA'S NEW STRATEGY TO BLOCK SCHISTOSOMA JAPONICUM TRANSMISSION: EXPERIENCES AND IMPACT BEYOND SCHISTOSOMIASIS

Wang Long-De¹ Guo Jia-Gang Wu Xiao-Hua Chen Hong-Gen² Wang Tian-Ping³ Zhu Shao-Ping⁴ Zhang Zhi-Hai⁵ Peter Steinmann⁶ Yang Guo-Jing⁷ Wang Shi-Ping⁸ Wu Zhong-Dao⁹ Wang Li-Ying¹⁰ Hao Yang¹⁰ Robert Bergquist¹¹ Jürg Utzinger⁶ Zhou Xiao-Nong

Despite sustained efforts for its control made over the past 50 years, the re-emergence of schistosomiasis in China was noted around the turn of the new millennium. Consequently, a new integrated strategy was proposed to stop the contamination of schistosome eggs to the environment, which emphasizes health education, access to clean water and adequate sanitation, mechanization of agriculture and fencing of water buffaloes, along with chemotherapy. Validation of this integrated control strategy in four pilot counties in the provinces of Anhui, Hubei, Hunan and Jiangxi revealed significant reductions in the rate of *Schistosoma japonicum* infection in humans and intermediate host snails. Importantly, this strategy showed an impact on diseases beyond schistosomiasis, signified by concomitant reductions in the prevalence of soil-transmitted helminth infections. In view of China's new integrated strategy for transmission control of schistosomiasis showing an ancillary benefit on other helminthic diseases, we encourage others to investigate the scope and limits of integrated control of neglected tropical diseases.

3 Anhui Institute of Parasitic Diseases

10 Ministry of Health, China

11 Ingerod 407, Brastad, Sweden

A STRATEGY TO CONTROL TRANSMISSION OF SCHISTOSOMA JAPONICUM IN CHINA

Wang Long-de Chen Hong-gen Guo Jia-gang Zeng Xiao-jun Hong Xian-lin Xiong Ji-jie Wu Xiao-hua Wang Xian-hong Wang Li-ying Xia Gang Hao Yang Daniel P. Chin Zhou Xiao-nong

[Background] *Schistosoma japonicum* causes an infection involving humans, livestock, and snails and is a significant cause of morbidity in China.

¹ School of Public Health, Peking University

² Jiangxi Institute of Parasitic Diseases

⁴ Leading Office of Schistosomiasis Control of Anxian County, China

⁵ Leading Office of Schistosomiasis Control of Hanchuan County, China 6 Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

⁷ Jiangsu Institute of Parasitic Diseases

⁸ Department of Parasitology, Xiangya School of Medicine, Central South University

 ⁹ Department of Microbiology and Parasitology, Sun Yat-sen University of Medical Sciences

[Methods] We evaluated a comprehensive control strategy in two intervention villages and two control villages along Poyang Lake in the southeastern province of Jiangxi, where annual synchronous chemotherapy is routinely used. New interventions, implemented from 2005 through 2007, included removing cattle from snail-infested grasslands, providing farmers with mechanized farm equipment, improving sanitation by supplying tap water and building lavatories and latrines, providing boats with fecal-matter containers, and implementing an intensive health-education program. During the intervention period, we observed changes in *S. japonicum* infection in humans, measured the rate of infection in snails, and tested the infectivity of lake water in mice.

[Results] After three transmission seasons, the rate of infection in humans decreased to less than 1.0% in the intervention villages, from 11.3% to 0.7% in one village and from 4.0% to 0.9% in the other (P<0.001 for both comparisons). The rate of infection in humans in control villages fluctuated but remained at baseline levels. In intervention villages, the percentage of sampling sites with infected snails decreased from 2.2% to 0.1% in one grassland area and from 0.3% to no infection in the other (P<0.001 for both comparisons). The rate of infection in mice after exposure to lake water decreased from 79% to no infection (P<0.001).

[Conclusions] A comprehensive control strategy based on interventions to reduce the rate of transmission of *S. japonicum* infection from cattle and humans to snails was highly effective. These interventions have been adopted as the national strategy to control schistosomiasis in China.

EXCRETORY/SECRETORY PROTEOME OF THE ADULT DEVELOPMENTAL STAGE OF HUMAN BLOOD FLUKE, SCHISTOSOMA JAPONICUM

LIU Feng CUI Shu-jian HU Wei FENG Zheng WANG Zhi-qin HAN Ze-Guang

Schistosomes are the causative agents of schistosomiasis, one of the most prevalent and serious of the parasitic diseases that currently infects 200 million people worldwide. Schistosome excretory/secretory (ES) proteins have been shown to play important roles in modulating mammalian host immune systems. In our current study, we performed a global proteomics identification of the ES proteins from adult worms of *Schistosoma japonicum*, one of the three major schistosome species. Our results unambiguously identified 101 proteins, including 53 putatively secreted proteins. By quantitative analysis, we revealed fatty acid-binding protein as a major constituent of the *in vitro* ES proteome. Strikingly the heat shock proteins HSP70s, HSP90, and HSP97 constituted the largest protein family in the ES proteome, implying a central role for these proteins in immunomodulation in the host-parasite relationship. Other important *S. japonicum* ES proteins included actins, 14-3-3, aminopeptidase, enolase, and 94

glyceraldehyde-3-phosphate dehydrogenase, some of which have been considered as viable vaccine candidates and therapeutic targets. A comparison with previous studies suggests that 48.5% of *S. japonicum* ES proteins are common to other parasite ES products, indicating that the molecular mechanisms involved in evading the host immune response may be conserved across different parasites. Interestingly seven host proteins, including antimicrobial protein CAP18, immunoglobulins, and a complement component, were identified among *in vitro S. japonicum* ES products likely originating from the schistosome tegument or gut, indicating that host innate and acquired immune systems could defend against schistosome invasion. Our present study represents the first attempt at profiling *S. japonicum* ES proteins, provides an insight into host-parasite interactions, and establishes a resource for the development of diagnostic agents and vaccines for the control of schistosomiasis.

SCHISTOSOMA JAPONICUM GENOME REVEALS FEATURES OF HOST-PARASITE INTERPLAY

Genome annotation analysis Zhou Yan^{1,2} Zheng Hua-jun^{1,2} Chen Yang-yi¹ Zhang Lei¹ Wang Kai¹ Guo Jing¹ Huang Zhen¹ Zhang Bo¹ Huang Wei¹ Jin Ke² Dou Tong-hai² Masami Hasegawa² Wang Li^{2,3} Zhang Yuan² Zhou Jie² Tao Lin³ Cao Zhi-wei³ Li *Yi-xue*³ *Tomas Vinar*⁴ *Brona Brejova*⁴ *Dan Brown*⁴ *Li Ming*⁴ *David J. Miller*⁵ *David* Blair⁵ Zhong Yang (Principal Investigator)^{2,3} Chen Zhu (PrincipalInvestigator)^{1,6} Functional genomics analysis Liu Feng^{1,2} Hu Wei⁷ Wang Zhi-qin¹ Zhang Qin-hua⁸ Song Huai-dong⁶ Chen Sai-juan⁶ Xu Xue-nian⁷ Xu Bin⁷ Ju Chuan⁷ Huang Yu-cheng⁷ Paul J. Brindley⁹ Donald P. McManus¹⁰ Feng Zheng (PrincipalInvestigator)⁷ Han Ze-guang (Principal Investigator)¹ sequencing and assembley Lu Gang^{1,6} Ren Shuang-xi¹ Wang Yue-zhu¹ Gu Wen-yi¹ Kang Hui¹ Chen Jie¹ ChenXiao-yun¹, Chen Shu-ting¹ Wang Li-jun¹ Yan Jie¹, Wang Bi-yun¹ Lv Xin-yan¹ Jin Lei¹ Wang Bo-fei¹ Pu Shi-yin¹ Zhang Xiang-lin¹ Zhang Wei¹ Hu Qiu-pin¹ Zhu Gen-feng¹ WangJun¹¹ Yu Jun¹¹ Wang Jian¹¹ Yang Huan-ming¹¹ Ning Ze-min¹² Matthew Beriman¹² Wei Chia-Lin¹³ Ruan Yi-jun¹³ Zhao Guo-ping (Principal Investigator)^{1,2,14} WangShen-gyue (Principal Investigator)¹ Paper writing Liu Feng^{1,2} Zhou Yan^{1,2} Wang Zhi-qin¹ Lu Gang^{1,6} Zheng Hua-jun^{1,2} Paul J. Brindley⁹ Donald P. McManus¹⁰ David Blair⁵ Zhang Qin-hua⁸ Zhong Yang^{2,3} Wang Sheng-yue¹ Han Ze-Guang¹ Chen Zhu^{1,6} Project leaders Wang Sheng-yue¹ Han Ze-Guang¹ Chen Zhu^{1,6}

Schistosoma japonicum is a parasitic flatworm that causes human schistosomiasis, which is a significant cause of morbidity in China and the Philippines. Here we present a draft genomic sequence for the worm. The genome provides a global insight into the molecular architecture

and host interaction of this complex metazoan pathogen, revealing that it can exploit host nutrients, neuroendocrine hormones and signalling pathways for growth, development and maturation. Having a complex nervous system and a well-developed sensory system, *S. japonicum* can accept stimulation of the corresponding ligands as a physiological response to different environments, such as fresh water or the tissues of its intermediate and mammalian hosts. Numerous proteases, including cercarial elastase, are implicated in mammalian skin penetration and haemoglobin degradation. The genomic information will serve as a valuable platform to facilitate development of new interventions for schistosomiasis control.

6 State Key Laboratory of Medical Genomics and Shanghai Institute of Hematology, RuiJin Hospital, School of Medicine, Shanghai Jiao Tong University

13 Genome Institute of Singapore, Singapore

MALARIA

GIS/RS/GPS APPLICATION IN THE STUDY OF RELATIONSHIP BETWEEN NATURAL FACTORS AND MALARIA TRANSMISSION

ZHANG Shao-sen ZHOU Shui-sen

Malaria transmission is highly related to the natural factors such as temperature, rainfall and topography. Recently, the GIS/RS/GPS techniques were developed based on computer science and spatial analysis technology, which were widely used in data collection and analysis, establishment of mathematics model. This paper reviews the applications and development of GIS/RS/GPS techniques in the studies of relationship between natural factors and malaria transmission.

FIELD EVALUATION OF GOLD-IMMUNOCHROMATOGRAPHIC ASSAY FOR DIAGNOSIS OF VIVAX MALARIA

WANG Jun-yun WANG Jian-jun¹ SHI Feng,XU Xian¹ YANG Yue-tao GAO Chun-hua ZHENG Xiang GE Jun² TANG Lin-hua

[Objective] To evaluate a gold-immunochromatographic assay(GICA) for malaria

¹ Shanghai-MOST Key Laboratory of Health and Disease Genomics, Chinese National Human Genome Center at Shanghai, China

² School of Life Science/Institutes of Biomedical Sciences, Fudan University

³ Shanghai Center for Bioinformation Technology, China

⁴ Cheriton School of Computer Science, University of Waterloo, 200 University Avenue West, Waterloo, Ontario N2L 3G1, Canada

⁵ Comparative Genomics Centre/School of Tropical Biology, James Cook University, Townsville, Queensland 4811, Australia

⁷ National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, 207 Rui Jin Er Road, Shanghai 200025, China

⁸ Shanghai Center for Biochip Engineering, 151 Li Bing Road, Shanghai 201203, China

⁹ Department of Microbiology, Immunology & Tropical Medicine, George Washington University Medical Center, USA

¹⁰ Molecular Parasitology Laboratory, Queensland Institute of Medical Research, Australia

¹¹ Beijing Institute of Genomics, Chinese Academy of Sciences/Beijing Genomics Institute, B-6 Beijing Airport Industrial Zone, China

¹² Pathogen Sequencing Unit, Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, UK

¹⁴ Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, China

diagnosis in an endemic area of vivax malaria. **[Methods]** Blood samples were collected from febrile patients in 5 township-hospitals of Mengcheng County, Anhui Province, between September and October 2008. The samples were examined by GICA and microscopy under double blind condition and the results were compared. **[Results]** Among 292 blood samples, 181 were found P.vivax-positive by microscopy, and 163 were positive by GICA. Altogether, the coincidence of the two methods stood for 92.8%(271/292), including 108 negatives and 163 positives. 21 samples with discrepancy covered 18 microscopy positive but GICA negative, 3 microscopy negative but GICA positive. The GICA positive rate in patients with a parasitaemia of >1 000 parasites/µl, 100-1 000 parasites/µl, and <100 parasites/µl was 93.5%(115/123), 86.0%(43/50), and 62.5%(5/8), respectively. **[Conclusions]** GICA is a useful diagnosis method for endemic area of vivax malaria.

PILOT OBSERVATIONS ON THE EFFECTS OF DIFFERENT MALARIA SOURCE-OF-INFECTION CONTROL MEASURES IN NORTH ANHUI PROVINCE, CHINA

XIA Zhi-gui WANG Jian-jun SHEN Yu-zhu HUANG Fang ZHOU Shui-sen

[Objective] To explore more feasible and effective strategies for malaria source-of-infection control in North Anhui Province through pilot observations of the effects of different control measures. [Methods] The study sites were selected from Guoyang, Yingshang, and Guzhen Counties. Based on local malaria incidence and spatial distribution of malaria cases and water bodies in natural villages, three groups of natural villages, 5 villages per group, were selected and received different interventions in 2007, i.e. case treatment alone for Group 1, case treatment plus treatment of the resting phase among designated residents for Group 2, and case treatment plus treatment of the resting phase among all residents for Group 3. The effects of control were then observed. [Results] In 2007, the case treatment rate for Group 1 was 100%, while that for Groups 2 and 3 was 96.55% and 81.25%, respectively. The overall medication rate during treatment of the resting phase was 99.10% and 78.67% for Groups 2 and 3, respectively, and their total population coverage was 17.25% and 40.23%, respectively. In 2007, the malaria incidence for the 3 groups had decreased by $41.67\%(\chi 2=1.32, P>0.05)$, $19.44\%(\chi 2=0.77, P=0.05)$, $19.4\%(\chi 2=0.75)$, 19.P>0.05), and $60.00\%(\chi 2=10.50, P<0.01)$, respectively, from levels in 2006. [Conclusions] In North Anhui Province, both of the interventions, single-case treatment and case treatment plus treatment of the resting phase among designated residents, had little effect. Absent distinguishing residents to receive treatment in the resting phase, an effective strategy is single-case treatment and increased coverage of the population receiving treatment in the resting phase.

¹ Anhui Provincial Center for Disease Control and Prevention, China

² Center for Disease Control and Prevention of Mengcheng County, China

RELATIONSHIPS BETWEEN CHLOROQUINE RESISTANCE AND POLYMORPHISMS IN *PFCRT* AND *PFMDR1* IN PLASMODIUM FALCIPARUM ISOLATED FROM CHINA

GUAN Ya-yi ZHANG Guo-qing HU LING FENG Xiao-ping CAI Yue YAO Jun-ming LIU De-quan LIN Lin-hua

[Objective] To investigate the prevalence of the point mutations in *Pfcrt* K76, Pfmdr1 N86Y and D1246Y in Plasmodium falciparum isolated from Hainan and Yunnan Provinces, and determine the correlation between the prevalence of mutations and the level of chloroquine resistance of *P.falciparum* isolates by in vitro microtest. [Methods] Blood samples were taken from the falciparum malaria cases in Yunnan and Hainan Provinces. Nested PCR were designed based on the sequence of *Pfcrt* and *Pfmdr1* to amplify the fragments of *Pfcrt* gene including the 76th condon as well as *Pfmdr1* gene including N86Y and D1246Y condon. Restriction fragment length polymorphism(RFLP) was used to detect the point mutations. DNA sequencing was carried out for some PCR products to verify the PCR-RFLP results. Chloroquine resistance of the same isolates was measured by the in vitro microtest recommended by the World Health Organization(WHO). [Results] For *P.falciparum* isolates from Yunnan and Hainan, the prevalence for Pfcrt 76T was 88.0% and 64.3%. The prevalence of Pfmdr1 86Y was 46.5% and 3.4% in *P.falciparum* isolates from Yunnan and Hainan, respectively. No point mutation in *Pfmdr1* at codon 1246 was found in isolates from the *P.falciparum* from Yunan and Hainan. There was a significant difference between susceptible and resistant isolates carrying Pfcrt 76T mutant codon(χ 2=24.70, P<0.01). There was no significant difference between susceptible and resistant isolates carrying *Pfmdr1* 86Y mutant codon(χ 2=0.20, P=0.65). [Conclusions] No point mutation in *Pfmdr1* at codon 1246 is found in *P.falciparum* from China; there was no significant difference between susceptible and resistant isolates carrying *Pfindr1* N86Y mutant codon; *Pfcrt* K76T may be used as a molecular marker in the surveillance of the changes of chloroquuine resisitance and the imported cases infected with resistant strains to an area.

IMMUNOGENICITY ANALYSIS OF 42 KDA C-TERMINAL REGION OF MEROZOITE SURFACE PROTEIN 1 OF PLASMODIUN FALCIPARUM EXPRESSED IN ROSETTA GAMI

Chen Qin¹ Liang Wan-qi² Cao Jian-ping¹ Xu Yu-xin¹ Qian Bing-jun³ Zhang Da-bing² Tang Lin-hua¹

[Objective] To purify soluble recombinant MSP1-42 protein of *Plasmodiun falciparum*(3D7 strain) expressed in Rosetta gami and evaluate its immunogenicity. **[Methods]** Soluble recombinant MSP1-42 protein expressed in Rosetta gami(DE3) was purified by Ni-NTA affinity chromatography. Three New Zealand white rabbits were immunized subcutaneously 98

with 200 µg of purified MSP1-42 antigen formulated in Freund's adjuvant, while three control rabbits received only adjuvant emulsified with PBS. All the rabbits received four immunizations with 2-week intervals. Sera samples were collected at pre-immunization and two weeks after the final immunization, and were analyzed for specific antibodies by ELISA and reacted with natural *P.falciparum*(Fcc1/HN) proteins by IFA. The inhibition of parasite growth in vitro was evaluated on heterologous parasite line(*P.falciparum*, Fcc1/HN) with 10% and 20% anti-MSP1-42 rabbit sera, respectively. **[Results]** The MSP1-42 antigen purified was homogeneous. High antibody responses were detected in the three immunized rabbits and the antibody titers were 1:640 000, 1:640 000 and 1:160 000, respectively. The anti-MSP1-42 rabbit sera prepared could recognize the natural proteins of *P.falciparum*(Fcc1/HN) and the inhibition of parasite growth in vitro of the three immunized rabbits sera at the concentration of 10% and 20% were(51.9 \pm 24.2)%, (29.4 \pm 8.6)%, (86.7 \pm 7.4)% and(93.3 \pm 7.5)%, (65.3 \pm 10.6)%, (96.4 \pm 1.0)%, respectively. **[Conclusions]** The MSP1-42 protein expressed in Rosetta gami is highly immunogenic and the anti-MSP1-42 rabbit sera prepared can interact with natural proteins of *P.falciparum* parasites and inhibit parasite growth in vitro.

APPLICATION OF THE INDIRECT FLUORESCENT ANTIBODY ASSAY IN THE STUDY OF MALARIA INFECTION IN THE YANGTZE RIVER THREE GORGES RESERVOIR, CHINA

WANG Duo-quan TANG Lin-hua GU Zhen-cheng ZHENG Xiang YANG Man-ni

[Background] China Yangtze Three Gorges Project (TGP) is one of the biggest construction projects in the world. The areas around the Three Gorge Dam has a history of tertian malaria and subtertian malaria epidemic, but there are no overall data about malaria epidemics before the completion of the project. The objective of this study was to get a reliable baseline on malaria infection in the Yangtze River Three Gorges reservoir area and to provide reference data for future studies about the impact of the project on malaria epidemics. **[Methods]** Two surveys of malaria infection were carried out in area, at six-month intervals in May and October 2008. About 3,600 dual specimens blood film samples for parasite diagnosis and filter paper blood spots for serology (using the immunofluorescence antibody test) were collected from the general population, including school populations, whenever possible. **[Results]** The overall percentage of positive response of the same population during post-transmission periods was about twice (1.40/0.72) of that in pre-transmission. Positive individuals under 15 years of age were detected in all the localities. **[Conclusions]** A certain extent of malaria infection existed in this area. Additional studies are needed to determine the length of malaria experience, and

¹ Shanghai Jiaotong University-Shanghai Institutes for Biological Sciences-Pennsylvania State University Joint Center for Life Sciences, School of Life Science and Biotechnology, Key Laboratory of Microbial Metabolism, Ministry of Education, Shanghai Jiaotong University, China 2 School of Agriculture and Biology; Shanghai Jiaotong University; China

chemotherapeutic intervention as well as the distribution of main vectors for transmission in this area.

MOLECULAR ASSESSMENT OF *PLASMODIUM FALCIPARUM* RESISTANCE TO ANTIMALARIAL DRUGS IN CHINA

Zhang Guo-qing Guan Ya-yi Zheng Bin Wu Song Tang Lin-hua *

[Objective] In China, Chloroquine (CQ) and sulfadoxine–pyrimethamine (SP) were abandoned for the treatment of falciparum malaria twenty years ago due to resistance. Subsequent field studies showed a trend of declining CQ and SP resistance in the country. The main purpose of this study was to analyze the molecular markers of antimalarial resistance and thereby to assess the possibility of reintroduction of CQ or SP for falciparum malaria treatment.

[Methods] *Plasmodium falciparum* field isolates were collected in 2006-2007 from Hainan and Yunnan provinces, China. Nested PCR-sequencing assays were applied to analyze the SNPs in four genes: *P. falciparum* chloroquine resistance transporter (*pfcrt*) gene, multi-drug resistance 1 (*pfmdr1*) gene, dihydrofolate reductase (*dhfr*) gene and dihydropteroate synthetase (*dhps*) gene.

[Results] We found the widespread presence of point mutations in the *dhfr* and *dhps* genes which are associated with SP treatment failure. The molecular analyses also showed the fairly high prevalence of point mutation in the *pfcrt* gene which is linked to CQ resistance.

[Conclusions] The results of the present study indicate that CQ and SP should not be reintroduced for falciparum malaria treatment in the near future in China.

*Supported by the Key Science-Technology Project of the National Tenth Five-year Plan of China (NO. 2004BA718B13) and a Young Faculty Research Grant from Chinese Center for Disease Control and Prevention (No. 2009A105).

ANOPHELES PSEUDOWILLMORI IS THE PREDOMINANT MALARIA VECTOR IN MOTUO COUNTY, TIBET AUTONOMOUS REGION

WU song PAN Jia-yun WANG Xue-zhong¹ ZHOU Shui-sen ZHANG Guo-qing LIU Qian² TANG Lin-hua

Background: Malaria is endemic in Linzhi Prefecture in the Tibet Autonomous Region (TAR), but the vector for malaria transmission had never been identified.

Methods:Adult *Anopheles* spp. were collected in Motuo County, Linzhi Prefecture on the Sino-Indian border in July and August, 2007. Multiplex PCR was adopted for species identification, and a nested PCR approach was used to detect sporozoites in the salivary glands of the mosquitoes.

Results: 3 675 mosquitoes of the *Anopheles maculatus* group were collected and processed 100

for species identification. Among them, 3602 (98.0%) were *Anopheles pseudowillmori* and 73 (2.0%) were *Anopheles willmori*. The Plasmodium vivax SSUrDNA fragment was amplified in two of 360 pooled *An. pseudowillmori* samples.

Conclusions: The local *An. maculatus* group comprises the species *An. pseudowillmori* and *An. willmori. Anopheles pseudowillmori* is considered the sole malaria vector in Motuo County in Linzhi Prefecture.

2 School of integrated Traditional and Western Medicine, Anhui College of Chinese Traditional Medicine, Hefei, PR China

LEISHMANIASIS

PRESENT SITUATION OF VISCERAL LEISHMANIASIS AND PROSPECT FOR ITS CONTROL IN CHINA

GUAN Li-ren

Since the founding of the People's Republic of China, considerable success was achieved in visceral leishmaniasis(VL) control. By the end of 1970s, VL was effectively controlled from most endemic areas. However, VL has still been prevalent in some areas or sporadical cases reported in some other areas of 6 provinces/autonomous regions in western China, including Xinjiang, Gansu, Sichuan, Shaanxi, Shanxi and Inner Mongolia. It is suggested that research activities be encouraged, including epidemiological factors, phlebotomine vector biology and control, wild animal hosts and disease relapse after treatment. Surveillance should be emphasized in the provinces/autonomous regions/municipalities where the disease has already been eliminated.

STUDY ON TIME-SPACE CLUSTERING REGARDING THE DISTRIBUTION OF VISCERAL LEISHMANIASIS IN KASHGAR RE-GION, XINJIANG

FU Qing WU Wei-ping TONG Su-xiang ISRAYIL·Osman ZHANG Song Iskender Kaisar

[Objective] To probe time-space clustering of distribution of visceral leishmaniasis (VL) in Kashgar Region. **[Methods]** Based on the geographic information system, Poisson model of time-space statistical software was applied to analyze past 11 years data of Kashgar Region. Clustering zones were conformed by geographic location and remote sensing images. **[Results]** There exist three high risk clustering zones and corresponding time frames of VL in Kashgar

¹ Yunnan Institute of Parasitic Diseases, Puer, PR China

Region. The center location of zone A is (E76.08°, N39.52°), the radius is 6.58km, the high risk time frame is from January 1st of 1999 to December 31st of 2003, within the zone and time frame, the relative risk (RR) of VL incidence is 45.98 times than that of outside of the scope (P<0.0001). Zone B's center location is (E79.20°, N39.91°), the radius is 4.93km, the high risk time frame is from January 1st of 2002 to December 31st of 2006, within the zone and time frame, the RR of VL incidence is 9.58 times than that of outside of the scope (P<0.0001). Zone C's center location is (E76.23°, N39.40°), the radius is 7.63km, the high risk time frame is from January 1st of 2004, within the zone and time frame, the RR of VL incidence is 5.18 times than that of outside of the scope (P<0.0001). **[Conclusions]** The incidence of VL in Kashgar Region is nonrandom distribution, there existed obvious time-space clustering, and all of three high risk clustering zones are located in oasis area, where is the focus area for control and surveillance of VL.

SNAILS

ADVANCES ON GENETICS AND BIOLOGICAL CHARACTERISTICS OF ONCOMELANIA HUPENSIS

ZHOU Xiao-nong LI Shi-zhu LIU Qin ZHANG Yi

This review focused on the research progress in genetic features of *Oncomelania hupensis*, including its relation to the snail distribution, susceptibility to *Schisotsoma japonicum*. Series studies were done on genetic characteristics for snail distribution and its infectivity with *S. japonicum* by using population genetics and molecular biology approaches to explore the new avenue to block the transmission of schistosomiasis. However, limited progress has been achieved in this field inside in China comparing with global achievements. It is therefore recommended that future studies have to be focused on genetic features related to schistosome infections by referencing the study model of *Biomphalaria glabrata / S. mansoni*, and with assistance of modern technology on biomics, in order to improve investigations on genetics of *Oncomelania hupensis* in the country.

PROPOSED CHINESE NAME OF POMACEA CANALICULATA

ZHOU Xiao-nong ZHANG Yi LV Shan

The way to translate species name of *Pomacea canaliculata* into Chinese has been of confusion for a long time. We collected the relevant references on investigations of snail, species similar to *Pomacea canaliculata* and made comparison on the characteristics of those 102

species which serve as intermediate snail host of *Angiostrongylus cantonensis*. It is proposed the genus name of *Pomacea* is translated as "福寿螺属", and species name *Pomacea canaliculata* be "小管福寿螺"。

PROGRESS OF RESEARCH ON GENOME PROJECT OF BIOMPHALARIA GLABRATA

Liu Qin Zhou Xiao-nong

This paper introduces the latest development of the genome project of *Biomphalaria glabrata* including the study of genome sequencing, discovering new genes, differential gene expression and fibrinogen-related protein, etc, which would provide theoretic evidence for understanding snail biology, identifying the gene expression of all the developmental stages, the co-evolutionary dynamics that exists in host-parasite interactions and identifying the drugs targets for molluscacide, as well as provide the scientific reference for the study of *Oncomelania hupensis*.

SUBSPECIES DIFFERENTIATION OF ONCOMELANIA HUPENSIS IN MAINLAND OF CHINA

Li Shi-zhu Wang Qiang Qian Ying-jun Zhang Yi Zhou Xiao-nong

Oncomelania hupensis which plays an important role in the transmission of schistosomiasis is the only intermediate host of *Schistosoma japonicum*. Here we review the progress of the snail classification and the subspecies differentiation based on the morphology, cytobiology, protein and molecular evidence and suggest the further study in this field.

PRELIMINARY STUDY ON SPATIAL DISTRIBUTION AND GENETIC VARIATION DATABASE OF *ONCOMELANIA HUPENSIS* IN MAINLAND CHINA

Li Shi-zhu Ma Lin¹ Wang Yi-xiu¹ Wang Qiang Hu Ying Zhang Yi Zhou Xiao-nong

[Objective] To construct a spatial genetic database of *Oncomelania hupensis* and a managing system for spatial distribution and population studies based on landscape genetics theory. **[Methods]** The uninfected *Oncomelania* snails were collected from the field. Collected sites database, specimen database and genetic information database were set up by using Microsoft SQL 2000, and the managing system was set up by using Visual Basic 6.0. **[Results]** The *Oncomelania* snails were collected from the field. The database were consummated with

676 specimens, 73 collected sites from 10 provinces, and the database could be used as a series of celerity tools with appending, querying, deleting, statistics and export functions. **[Conclusions]** The spatial genetic database and managing system of *Oncomelania hupensis* can be used to manage snail specimens for different studies with a clear interface and simple operation. It is worthy to renew the database for further spatial genetic studies.

1 College of Life Science, Shanxi Normal University, China

LANDSCAPE PATTERN ANALYSIS AND BAYESIAN MODELING FOR PREDICTING ONCOMELANIA HUPENSIS DISTRIBUTION IN ERYUAN COUNTY, PEOPLE'S REPUBLIC OF CHINA

Yang Kun¹ Zhou Xiao-nong Wu Xiao-hua¹ Peter Steinmann Wang Xian-Hong¹ Yang Guo-Jing¹ Jürg Utzinger Li Hong-Jun¹

Detailed knowledge of how local landscape patterns influence the distribution of *Oncomelania hupensis*, the intermediate host snail of *Schistosoma japonicum*, might facilitate more effective schistosomiasis control. We selected 12 villages in a mountainous area of Eryuan County, Yunnan Province, People's Republic of China, and developed Bayesian geostatistical models to explore heterogeneities of landscape composition in relation to distribution of *O. hupensis*. The best-fitting spatio-temporal model indicated that the snail density was significantly correlated with environmental factors. Specifically, snail density was positively correlated with wetness and inversely correlated with the normalized difference vegetation index and mollusciciding, and snail density decreased as landscape patterns became more uniform. However, the distribution of infected snails was not significantly correlated with any of the investigated environmental factors and landscape metrics. Our enhanced understanding of *O. hupensis* ecology is important for spatial targeting of schistosomiasis control interventions.

1 Jiangsu Institute of Parasitic Diseases, China

THE OTHERS

IDENTIFICATION OF CALF-ORIGIN CRYPTOSPORIDIUM BOVIS SHANGHAI ISOLATE BY NESTED PCR

YUAN Zhong-ying SHEN Yu-juan CAO Jian-ping LIU Huil CHEN Shen-xia

[Objective] To identify a strain of Cryptosporidium in the feces of naturally infected calf in Shanghai. **[Methods]** Stool sample was examined by modified acid-fast staining. The size and morphology of the oocysts were micros-copically determined. Genomic DNA was extracted 104

from the oocysts isolated from feces of a naturally Cryptosporidium-infected calf. According to the sequence of Cryptosporidium 18S rRNA gene, two pairs of primers were designed and syn-thesized. The PCR products was amplified by nested PCR and sequenced in double directions. Homology searches were done over the Web using the program Blast. Phylogenetic tree was constructed with NJ method by MEGA4.0 software. **[Results]** Oocysts of the Shanghai isolate were round or elliptical with a size of (5.6 ± 0.49) µm × (5.2 ± 0.51) µm. Nested PCR resulted in fragments of approximately 810 bp, and the 18S rRNA nucleotide sequence had 100% identity with C. bovis from Brazil (GenBank Accession No: 151935628). This isolate was clustered in the same clade with C. bovis from Brazil. It showed an identity of 99% with the sequences of C. bovis from Qinghai P rovince of China, Mongolia, USA, and Tunisia. **[Conclusions]** The calf-origin Cryptosporidium derived from Shanghai has been identified as C. bovis.

CHICKEN EGG YOLK IMMUNOGLOBULIN AND ITS APPLICATION IN MEDICINE

CAI Yu-chun CHEN Jia-xu

Egg yolk immunoglobulin (IgY) is a major immunoglobulin from birds, amphibians and reptiles. IgY does not activate mammalian complement system, and does not bind to mammalian rheumatoid factors, protein A or G. In addition, it has a high yield, and is easy to extract and purify. With these advantages, IgY has been widely used in veterinary science, functional food and bio-products, and proved potential application for disease control and treatment. This paper reviews biological characteristics of IgY, its extraction, purification, and application in immunodiagnosis and treatment.

FIELD TEST OF SANDFLY-CATCHING BY LIGHT TRAPS AND ATTRACTANTS

GU Deng-an JIN Chang-fa LAN Qin-xian ZUO Xin-ping YISILAYIN WUSIMAN1 ZHANG Yi

Three kinds of light traps, attractants and their combination were used to collect sandflies in Andier township, Minfeng County of Xinjiang. The combined use of carbon dioxide and tungsten lamp showed better attraction effect to sandflies, also an easier way for the separation of insects collected.

¹ Department of Parasitology, Zunyi Medical College, China

² School of Medical Science and Laboratory Medicine, Jiangsu University, China

¹ Xinjiang Uygur Autonomous Regional Center for Disease Control and Prevention, China

EXPERIMENTAL STUDY PROGRESS ON TRIBENDIMIDINE, ARTEMETHER AND ARTESUANTE AGAINST CLONORCHIS SINENSIS AND OTHER TREMATODES

XIAO Shu-hua¹ XUE Jian WU Zhong-xin¹

Currently praziquantel is one of the major drugs used in treatment of schistosomiasis and other trematode infections. Recent experimental studies indicate that a new anthelmintic, tribendimidine, is used in the treatment of intestinal nematodes, also possesses effect against several species of trematodes including *Clonorchis sinensis*, *Opisthorchis viverrini* and *Echinostoma caproni*. Tribendimidine is even more effective against *C. sinensis* in rats that a single 300 mg/kg oral dose cures almost all of the animals treated, a lower cure dose than praziquantel (375-500 mg/kg). The anti-malarial drugs artemether and artesunate are not only effective in the prevention of schistosomiasis, but also effective against several species of trematodes, especially *C. sinensis*. The single oral dose of both drugs to cure or achieve high efficacy in infected rats is 75 mg/kg. This review summarized research progress on tribendimidine, artesunate, and artemether in experimental animals infected with *C. sinensis* and other species of trematodes.

1 Jiangsu Provincial Institute of Parasitic Diseases, China

PROGRESS IN ANTHELMINTIC AGENT STUDY SINCE THE FOUNDING OF THE PEOPLE'S REPUBLIC OF CHINA AND CURRENT CHALLENGES

XIAO Shu-hua

This paper summarizes the progress in the study on anthelmintics, including nematocide, trematocide and cestocide since the founding of the People's Republic of China and the roles that these agents played in the control of parasitic diseases. Meanwhile, views are given to the challenges faced in the further study on anthelmintics.

THERAPEUTIC EFFECT OF TRIBENDIMIDINE, ARTESUNATE AND PRAZIQUANTEL ADMINISTERED TO HAMSTERS INFECTED WITH CLONORCHIS SINENSIS

XUE Jian XU Li-li QIANG Hui-qin ZHANG Yong-nian XIAO Shu-hua

[Objective] To observe the effect of tribendimidine, artesunate and praziquanel in treatment of hamsters (*Mesocricetus auratus*) infected with *Clonorchis sinensis*. **[Methods]** A total of 93 hamsters, each infected with 30 *C. sinensis* metacercariae, were treated intragastrically with 106

above-mentioned drugs at a single dose. (1) In order to observe the effect of the drugs against juvenile C. sinensis, 20 out of 31 infected hamsters were randomly divided into 4 groups (5 hamsters per group) 14 d post-infection: artesuante 300 mg/kg, tribendimidine 100 mg/kg or 200 mg/kg, and praziquantel 200 mg/kg. Other 6 hamsters were divided equally into 2 groups 24 d post-infection and treated with tribendimidine 200 mg/kg and artesunate 300 mg/kg, respectively. The remained 5 untreated hamsters served as control. 2 Twenty-two hamsters were randomly divided into 5 groups (4-5 hamsters per group) 28 d post-infection and treated with tribendimidine 25 mg/kg or 50 mg/kg, artesunate 25 mg/kg and praziquantel 50 mg/kg, respectively. Other untreated hamsters served as control. (3) Forty hamsters 28 d after infection were randomly divided into 8 groups (4-6 hamsters per group) and treated with tribendimidine 50 mg/kg, 100 mg/kg or 200 mg/kg, artesunate 100 mg/kg or 200 mg/kg, praziquantel 100 mg/kg or 200 mg/kg, respectively. The remained hamsters served as control. All hamsters were sacrificed 14 d post-treatment and worms were recovered from the bile duct and liver tissue. The mean worm burden and its reduction were calculated. The differences of mean worm burden between each treated group and the corresponding control were analyzed statistically. [Results] In hamsters infected with 14-d-old C. sinensis and treated orally with tribendimidine at a single dose of 100 or 200 mg/kg, the mean worm burdens were significantly lower than that of the control (P < 0.01) with a worm reduction of 90.6% and 85.9% respectively. The mean worm burden obtained from the infected hamsters treated with praziguanel at a single dose of 200 mg/kg was also significantly lower than that of the control (P < 0.05) with a worm reduction of 71.9%. However, the difference of mean worm burden between artesunate and control groups was not statistically significant. The juvenile parasites developed into adult worms 24 d after infection. By administering tribendimidine 200 mg/kg to the adult C. sinensis-infected hamsters, the mean worm burden was significantly lower than that of the control (P < 0.01) with a worm reduction of 89.8%. Whilst the administration of artesunate at a higher dose of 300 mg/kg, all hamsters were cured. Further tests indicated that tribendimidine in a lower dose of 25 mg/kg to the hamsters 28 d after infection resulted in a significantly lower mean worm burden compared to the control (P < 0.05) with a worm reduction of 71.8%. With an increased dose of tribendimidine 100 mg/kg, all hamsters were cured. The worm reduction was only 20.0% and 56.4% when 25 mg/kg and 100 mg/kg of artesunate were admini-stered. With 200 mg/kg artesunate, the worm reduction reached as high as 98.5% and the mean worm burden was significantly lower than that of the control (P < 0.01). Furthermore, administration of praziquantel at a dose of 100 mg/kg or 200 mg/kg at 28 d post-infection resulted in a significantly lower mean worm burden than that of the control (P<0.05) with a worm reduction of 78.9% and 83.5% respectively. [Conclusions] In hamster model, tribendimidine and praziquantel exhibit promising effect against both juvenile and adult C. sinensis, while artesunate is only efficacious against adult worms.

CURRENT SITUATION AND DEVELOPMENTAL TREND OF ANTHELMINTICS BY BIBLIOMETRICS

ZHENG Qi CHEN Ying TIAN Li-guang ZHOU Xiao-nong

[Objective] To understand the current situation and developmental trend of anthelmintics in English journals through a bibliometric anaylsis. [Methods] The literature was searched in Pubmed Database (1997-2007) using the following key words: "drug therapy", "anthelmintics", "humans", "pharmacology", and "parasitology". Access Database was constructed by relative literature through proper data admission method. The relative articles in the database were sorted by different categories, such as "research categories", "publishing year" and "research drug". Data were analyzed by using SPSS software. [Results] The annual number of anthelmintics articles increased steadily from year 1997 to 2007. The average number of annual increase was about 6. The major research category was applied research. The major diseases were schistosomiasis, filariasis, ascariasis, echinococcosis and hookworm disease. The number of articles on schistosomiasis was higher than that of other four diseases (P < 0.05). The major praziquantel. drugs involved were albendazole, mebendazole. ivermectin and diethylcarbamazine. Articles on the anthelmintics were published mostly in medical journals. From the total database, articles published at the top five journals occupied 5.52%, 4.39%, 3.76%, 3.26%, and 3.26%, respectively. [Conclusions] Increasingly importance has been attached to anthelmintics in the last decade. Meanwhile, the researchers focused on a few anthelmintics, and it is inevitable to develop new drugs.

COMPLETE MITOCHONDRIAL GENOME SEQUENCE OF ONCOMELANIA HUPENSIS (GASTROPODA: RISSOOIDEA)

LI Shi-zhu WANG Yi-xiu¹ LIU Qin LV Shan WANG Qiang WU Ying ZHANG Yi ZHOU Xiao-nong

[Objective] To sequence and analyze the complete nucleotide sequence of the mitochondrial genome of *Oncomelania hupensis*. **[Methods]** Four long fragments were amplified by long PCR using the primers designed based on mtDNA-CO I , Cytb, 16S rRNA and COIII gene sequences, and sequenced by conserved primer-walking. **[Results]** The mitochondrial genome (GenBank accession no. FJ997214) was a circular molecule of 15 182 bp with a total A+T content of 67.32%, and contained 13 protein-coding genes, 2 ribosomal RNA genes, 22 tRNA genes, and an A+T-rich region of 72 bp. All 13 protein-coding genes of the *O. hupensis* mtDNA used ATG as start codon. Canonical TAA and TAG termination codons were found in 12 protein-coding genes, and the remaining one (ND1) had an incomplete termination codon (T). Two short gene overlaps were found with a length of 4 bp and 7 bp, respectively. The length of 21 total intergenic region of mtDNA was 145 bp ranging from 1-30 108

bp. A total of 22 transferring RNA were found, all of which were typical cloverleaf structure except for two tRNASer, one tRNAGIn and one tRNAIle. [Conclusions] The complete sequence of *O. hupensis* mitochondrial genome has been determined.

1 College of Life Science, Shanxi Normal University, China

DETECTION OF CALF-ORIGIN *CRYPTOSPORIDIUM BOVIS* DNA BY LOOP-MEDIATED ISOTHERMAL AMPLIFICATION

YUAN Zhong-ying SHEN Yu-juan* CAO Jian-ping ZHOU He-jun LU Wei-yuan CHEN Qin NI Yi-chang TANG Lin-hua

[Objective] To detect calf-origin *Cryptosporidium bovis* by loop-mediated isothermal amplification (LAMP). **[Methods]** The DNA was extracted from calf faeces infected with *Cryptosporidium*. According to Cryptosporidium 18S rRNA sequence and the mechanism of LAMP, 4 *Cryptosporidium* specific primers were designed for LAMP detection of *Cryptosporidium* and *Giardia lamblia*, the DNA from normal calf faeces was used for the negative control. The LAMP products were stained by SYBR Green I and analyzed by electrophoresis. **[Results]** After staining, the LAMP products from *Cryptosporidium* oocysts DNA turned green while the negative control and Giardia lamblia brown. Electrophoresis analysis showed the LAMP product of Cryptosporidium was with characteristic ladders, while the negative control and *Giardia lamblia* without. **[Conclusions]** LAMP assay is a simple, sensitive and specific method for detection *Cryptosporidium* in cattle faeces.

* Supported by the Special Program for Scientific Research of Public Health, China (No. 200802012) and National Key Program for Infectious Disease of China (No. 2008ZX1004-002, 2009ZX10602, 2008ZX1004-011)

CURRENT SITUATION AND CONTROL STRATEGY OF CRYPTOSPORIDIOSIS IN CHINA

Shen Yu-juan Chen qin Cao Jian-ping

Cryptosporidiosis is one of the world's six major diarrheal diseases, belonging to emerging infectious diseases, and it's the main cause of death for AIDS patients. *Cryptosporidium* oocysts contaminate water, food, causing cryptosporidiosis outbreak. Diarrhea caused by *Cryptosporidium* oocysts is ranked the first or the second in the parasitic diarrhea, and has become a major public health issue. There is no drugs to treat cryptosporidiosis effectively and no vaccines to prevent it. Cryptosporidiosis is widely epidemic in China. This paper reviewed the current situation and control strategy of cryptosporidiosis in China.

^{*} Supported by the Special Program for Scientific Research of Public Health, China (200802012) and National Key Program for Infectious Disease of China (2008ZX10004-002, 2008ZX10004-201, 2008ZX10004-011)

PATHOMORPHOLOGY OBSERVATION ON NUDE MICE IMMUNIZED AND CHALLENGED WITH THIRD-STAGE INFECTIVE HOOKWORM (ANCYLOSTOMA CANINUM) LARVAE

GUO Jian WU Jia-tong YANG Yuan-qing XUE Jian QIANG Hui-qin XIAO Shu-hua

[Objective] To investigate the feasibility of vaccine screening animal model of nude mice, inflammatory responses in the lung, skin and underlying subcutaneous tissue and muscles of nude mice and morphology changes of third stage hookworm larvae of *Ancylostoma caninum* (AcL3) were observed. **[Methods]** Nude mice were immunized subcutaneously with three doses of 500 AcL3 at 2-week intervals, and then challenged percutaneously with 500 AcL3. Lungs and skins were excised from post-challenge nude mice at intervals between 6h and 7days, and then examined by light microscopy. Non-immunized nude mice served as negative controls. **[Results]** In both non-immunized mice and majority immunized mice the AcL3 exhibited no structural damage and infiltrating inflammatory cells were absent from the surrounding tissues. There were no changes in the skin and lung architecture. However, about 0.5%~2.2% AcL3 in the skin of immunized mice exhibited cuticular swelling, damage and even dead and the surrounding tissue was infiltrated by polymorphonuclear inflammatory cells. From 24h to 72h post-challenge, granulomata were observed surrounding dead AcL3. **[Conclusions]** Weak post-vaccination host immune response against challenge AcL3 seen in nude mice showed that it was unsuitable for them used as vaccine screening animal model.

IDENTIFICATION AND EVALUATION OF KERNAL AUTHORS FROM MAIN CHINESE PARASITOLOGICAL JOURNALS

CHEN Qin JI Xiao-yun HONG Yu-mei

[Objective] To identify the kernal authors of Chinese parasitological journals and analyze the characteristic of the parasitological research in China thus to give the editors clues of inviting the authors to write papers for the journals. **[Methods]** The kernal authors of 8 Chinese parasitological journals, i.e. Chinese Journal of Parasitology and Parasitic Diseases, Chinese Journal of Schistosomiasis Control, Journal of Pathogen Biology, International Journal of Medical Parasitic Diseases, Acta Parasitologica et Medica Entomologica Sinica, Parasitoses and Infectious Diseases, Journal of Tropical Medicine and Journal of Tropical Diseases and Parasitology during 2006-2007 were identified and evaluated based on the numbers of articles and the citation frequency of the authors with the method of synthetical index according to the document metrology. **[Results]** There were 1 807 articles published in these eight Chinese journals of parasitology during 2006-2007. Ninty four kernal author's candidates who had at least 3 articles published in the journals and twenty eight kernal authors whose synthetical indexes were greater than the average synthetical indexes were identified. **[Conclusions]** The 110

kernal authors of Chinese parasitological journals during 2006-2007 were identified and evaluated with the method of synthetical index.

THE PROGRESS OF EPIDEMIOLOGICAL STUDIES ON THELAZIASIS

ZHOU Xiao-jun ZHANG Yi

Tyhelaziosis is one of the parasitic zoonoses affecting eyes of humans and domestic animals. Tyhelaziosis is prevalent in many countries in Asia. In recent years, with climate change such as global warming, the epidemic of *Thelazia callipaeda*(T.cp) infection continues expanding epidemic at home and abroad. In Europe, T.cp has been found in the eyes of dogs, cats and foxes in Italy and France, and recently, also in humans. In this paper, we reviewed the epidemiological characteristics, treatment and prevention researches of the disease.

FURTHER CLINICAL OBSERVATION ON TRIBENDIMIDINE AGAINST INTESTINAL HELMINTH INFECTION AND THE NEW PROGRESS IN LABORATORY STUDY

XIAO Shu-hua

Tribendimidine is a new broad—spectrum anthelmintic agent developed in China. After tribendimidine enteric—coated tablet was approved by the Chinese State Food and Drug Administration in 2004, a phase IV clinical trial Was carried out during 2006-2007. Through the treatment of the larger sample of patients with intestinal helminthiasis and various ages, including children, the efficacy of tribendimidine enteric-coated tablet against *Ascaris lumbricoides* infection and hookworm infection was further confirmed. When the drug was administered orally to the adults and children patients at a single dose of 400 mg and 200 mg, espectively. Tribendimidine Was also showed promising efficacy against *Enterobius vermicularis* infection in children. In recent years, the results from the laboratory study and clinical trial indicate that tribendimidine exhibits promising effect against several species of trematodes , including *Clonorchis sinensis*, *Opistorchis viverrini*, *Echinoswma caproni*, *Strongyloides spp*. and *Taenia spp*. This paper summarizes the new pragresa on tribendimidine research.

SCANNING AND TRANSMISSION ELECTRON MICROSCOPE PRELIMINARY OBSERVATION ON ADULTS AND EGGS OF ARMILLIFER AGKISTRODONTIS

Chen Shao-hong Chen ying Zhang Yong-nian Chang Zheng-shan

[Objective] To observe on ultrastructure of adults and eggs of Armillifer agkistrodontis by scanning and transmission electron microscope. [Method] Adults and eggs of Armillifer agkistrodontis were embedded in epoxy resin after cleaning, fixing, drying, and treating with sputtering gold. The material was cut into thin sections with a LKB-E super slicer, double stained and viewed in S-520 scanning electron microscope and Philp CM210 transmission electron microscope. [Results] There were 6-9 abdominal annuli of adult A. agkistrodontis in scanning electron microscope, waved folds were seen between the abdominal annuli of the body surface. There was a pair of curved hamuli on both sides of the mouth, while small spines like mastoid process were all cover with the shape of the body. Scattered, raised oval pore-like sense organ was only seen on the both sides of the front and the end of the adult A. agkistrodontis, anal pore and genitalia were seen at the abdominal end. There were three cortical layers of adult A. agkistrodontis in transmission electron microscope, they were outer cortex, inner cortex and base plate (membrane). Eggs of A. agkistrodontis were oval in transmission electron microscope, they had a frame of three layers, outer membrane, transparent layer and medullary layer. [Conclusions] Small spines like mastoid process are all cover with the shape of the adult A. agkistrodontis, scattered sense organ was only seen on the both sides of the front and the end of the body, while it was different from larval A. agkistrodontis whose sense organ was all cover with the body. There were three cortical layers of adult A. agkistrodontis in transmission electron microscope, they were outer cortex, inner cortex and base plate (membrane), which was different from the six-layer frame of larval A. agkistrodontis. Eggs in the ovary were obviously different from vitro eggs in scanning and transmission electron microscope.

COMPARISON ON THE METHODS OF DNA EXTRACTION FROM LUNGS OF *POMACEA CANALICULATA* USED IN PCR ASSAY

WEI Fu-rong LU Shang ZHANG Yi

To compare the efficiency of methods of DNA extraction from lungs of Pomacea canaliculata used in PCR assay, 80 *P.canaliculata* collected in field were divided into 8 groups and the lungs of each snail were separated from the soft body. Six methods of DNA extraction from lungs of *P.canaliculata* were used to extract DNA from lungs, i.e. With Qiagen, Tiangen, and Omega commercial DNA extraction kits, guanidine thiocyanate method, Chelex 100 resin

^{*} Supported by Ministry of Science and Natural Resources Platform Project (2005DKA21104)

method and Chelex-silica particle method. The 16S rDNA of *C.canaliculata* was amplified by PCR and the concentration of PCR-products relative to marker was determined in order to evaluate the efficiency of each method. It was demonstrated that each method was valid to extract DNA from lungs used in PCR assay, but the concentrations of PCR-products were different. The concentrations of PCR-products obtained by Qiangen kit, Omega kit, Chelex 100 resin method and Chelex-silica particle method were significantly higher than those of other 4 methods of DNA extraction, in which Qiangen and Omega kits were suitable for small sample size. In term of efficiency and cost, Chelex 100 method and Chelex-silica particle method were feasible for large sample scale, while the guanidine thiocyanate method was preferred due to its fast extraction and low cost, but on account of its toxicity, it is used in urgent status or in large scale of sample extraction.

STUDY ON THE MOLLUSCICIDAL EFFECT OF HL AGAINST ONCOMELANIA HUPENSIS

Zhu Dan¹ Zhang Yi¹ Liu He-xiang¹ Zhou Xiao-nong¹ Zhang Gong-hua² Zhang Si-qing² Cao Zhi-guo² Wu Wei-duo² Li Wen-xin ³

[Objective] To evaluate the molluscicidal effect of the HL against *Oncomelania* snails in laboratory and field. **[Methods]** The experiment of HL against the snails by spray, immersion and climbing Test in laboratory. Spray method was performed in field to compare the effect of wettable powder of 50% niclosamide ethanolaminesalt. **[Results]** In laboratory, the LC50 of HL by spray method for 1, 2, 3 days was 269 g/m2 117 g/m2 and 65 g/m2, by immersion method for 1, 2, 3 days was 115 mg/L 10.6 mg/L and 9.9 mg/L, respectively. In the field, the death rates of the snails sprayed with 80 g/m2 of HL after 15 days or were 80%, immersion with 40 g/m3 after 3 days also were 80%. **[Conclusions]** The HL had molluscicidal effect against *Oncomelania* snails.

1 Anhui Institute of Parasitic, China

2 Huazhong Normal University, China

THE POLYMORPHISMS OF PFCRT 72-76 IN *PLASMODIUM* FALCIPARUM ISOLATED FROM CHINA AND THEIR RELATIONSHIPS WITH CHLOROQUINE RESISTANCE

ZHANG Guo-qing GUAN Ya-yi TANG Lin-hua HU Ling FENG Xiao-ping CAI Yue YAO Jun-min LIU De-quan

To investigate the polymorphisms of *Pfcrt* 72-76 in *Plasmodium falciparum* isolated from Hainan and Yunnan provinces, so as to determine the correlation between the prevalence of

polymorphisms and the level of chloroquine resistance of *P. falciparum* isolates. Blood samples were taken from the cases detected as *falciparum* malaria in Yunnan and Hainan provinces. Nested PCR was applied to amplify the fragments of *Pfcrt* gene including the 72nd to 76th condon. DNA sequencing was carried out for the nested PCR products. Chloroquine resistance of the same isolates was measured by the in vitro microtest. The chloroquine sensitivity of *P.falciparum* isolates from Yunnan and Hainan carried CVMNK genotype in *Pfcrt* 72-76, and the chloroquine resistant *P.falciparum* isolates from Yunnan,one carried CVIET genotype in *Pfcrt* 72-76. For the chloroquine resistant isolates from Yunnan,one carried carry CVIKT genotype, one carried SVMNT genotype, and the others carried CVIET genotype. The chloroquine sensitivity *P.falciparum* isolates from China carry CVMNK genotype in *Pfcrt* 72-76; most of the chloroquine resistant isolates CVIET genotype in *Pfcrt* 72-76; the polymorphisms in *Pfcrt* 72-76 may be used as a molecular marker in the surveillance of the changes of chloroquine resistance in *P. falciparum*.

CLONING AND CHARACTERIZATION ANALYSIS OF THE FULL LENGTH CDNA OF RPL26 OF *BABESIA ORIENTALIS*

Liu Qin Zhou Dan-na¹ Zhang Ying¹ He Lan¹ Zhou Yan-qin Zhao Jun-long¹

[Objective] To isolate the full length cDNA sequence of ribosomal protein L26 of *B.orientalis*, and analyse the characterization of the RPL26. **[Methods]** The full length cDNA sequence of RPL26 was obtained by amplification from the cDNA library of *B.orientalis* using the specific 5' primer of RPL26 EST and 3' universal primer. The protein sequence was analysed by bio-software and in GenBank by Blastx, and phylogenetic tree (N-J) was constructed based on amino acid sequences of RPL26 of *B.orientalis* and other organisms. **[Results]** The full length is 716 bp (GenBank accession number: FJ492804), and the open reading frame is 414 bp, encoding 127 amino acids. The Blastx analysis showed that the amino acid sequences of RPL26 was conserved during evolution, and phylogenetic tree showed that its genetic distance is close to B.bovis and T.parva. **[Conclusions]** The RPL26 of *B.orientalis* is obtained in the first time, and the RPL26 maybe useful in the study of phylogenetic relationships of organisms and ribosomal protein.

¹ National Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University

^{*} Supported by the National Natural Science Foundation of China (No. 30070572, 30671575); The Ministry of Education for New Century Excellent Talent Support Program (No. NCET-06-0668)

COMPARISON OF DIAGNOSTIC METHODS IN DETECTION OF *STRONGYLOIDES STERCORALIS* AND HOOKWORM

Du Zun-wei¹ Jiang Jin-yong¹ Peter Steinmann² Wang Jian¹ Zhou Hui³ Lv Shan³ Wang Xue-zhong¹ Dao Tian-you⁴ Dao Hong-xiang⁵ Zhu Jian-ping⁴ Zhang Lao-san⁵ Chen Shao-qiu⁵ Ni Kan⁵ Chen Ran⁵ Su Mei-hui⁵ Li Hong-bing⁴ Che Ying⁴ Zhou Xiao-nong³

A village with high infection rate of soil-transmitted nematodes in Menghai County, Yunnan Province was selected as the study area, and 239 individuals were randomly sampled for the experiment. Three stool samples were collected from each individual, and each stool sample was processed with the Kato-Katz, Koga and Baermann techniques for detection of *Strongyloides stercoralis* and hookworm. The detection rate of *Strongyloides stercoralis* was 0 using the Kato-Katz technique, 11.72% using the Koga technique and 12.55% using the Baermann technique, while the detection rate of hookworm was 64.44% using the Kato-Katz technique, 57.74% using the Koga technique and 4.60% using the Baermann technique. In conclusion, the Baermann technique is only suitable for detection of *Strongyloides stercoralis*, and the Kato-Katz technique only for detection of hookworm, while the Koga technique can be used for detection of *Strongyloides stercoralis* and hookworm.

3 National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China 4 Xishuangbanna Prefecture Center for Disease Control and Prevention, Yunnan, China

EPIDEMIOLOGICAL SURVEY OF *LYMPHATIC FILARIASIS* AND CONTROL MEASURE IN CHINA

CHEN Hai-ning

Lymphatic filariasis once widely distributed in 864 counties of 16 provinces, autonomous region and municipalities (P/R/M) in the country and the cumulative number of patients was nearly 31 million. The major strategy for control was to elimination the source of the infection, namely, chemotherapy by using diethylcabamazing, followed by systemic supervision. The objective of basic elinination of *filariasis* the whole country reached in 2006 as assessed by the world health organization. This is a short review on its epidemiology and control based on the "Country report on the elimination of *Lymphatic filariasis* in china" issued by the Ministry of health and relevant P/R/M.

¹ Yunnan Institute of Parasitic Diseases, China

² Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

⁵ Menghai county Center for Disease Control and Prevention, Yunnan, C

IN VITRO HISTIDINE-RICH PROTEIN 2 DOUBLE-SITE SANDWICH ENZYME-LINKED IMMUNOSORBENT ASSAY FOR USING IN ANTIMALARIAL DRUG SENSITIVITY TESTING

Huang Fang Feng Xiao-ping Zhou Shui-sen Tang Lin-hua

[Objective] To determine the feasibility of Histidine-rich protein 2 double-site sandwich enzyme-linked immunosorbent assay for using in antimalrial drug sensitivity testing in vitro. **[Methods]** The dose-response curves and the effective concentration that resulted in a 50% inhibitory of parasitemia (IC50) of chloroquine, pyronaridine phosphate, artesunate, artemether, dihydroartemisinin against *Plasmodium falciparum* strain FCC1/HN and FCCSM/YN cultured in vitro tested by HRPII-ELISA were compared with those determined by Rieckmann's in vitro micro-technique. **[Results]** The IC50s of above drugs to chloroquine sensitive *Plasmodium falciparum* were 4.7 n mol/L, 2.90 n mol/L, 3.12 n mol/L, 4.30 n mol/L, 2.18 n mol/L, 3.87 n mol/L, 4.31n mol/L, 3.90 n mol/L, 3.17 n mol/L. And the results of both techniques are similar or identical by correlation analysis (R2=0.96 , P<0.001). **[Conclusions]** The HRPII-ELISA was sensitive, rapid, easily interpreted and would be suitable for testing antimalarial drugs sensitivity in vitro.

ESTABLISHMENT OF AND OBSERVATION ON THE LIFE CYCLE OF ANGIOSTRONGYLUS CANTONENSIS IN LABORATORY SETTING

LIU He-xiang ZHANG Yi LV Shan HU Ling ZHOU Xiao-nong

[Objective] To establish and observe the life cycle of *Angiostrongylus cantonensis* in laboratory setting, and to further understand the growth-development process and pathogenicity of *A. cantonensis* in hosts, in order to provide basic information for the disease control. **[Methods]** SD rats were infected by third stage larvae (L3) of *A. cantonensis* collected from Fujian province via intragastric injection, peritoneal injection, subcutaneous injection and skin exposure. Snails of *Pomacea canaliculata* filial generation from Fujian province were infected with first stage larvae (L1) of *A. cantonensis*, and then were halved and placed in aquarium setting and environment without water, respectively. Both settings were kept with a room temperature of 25.5~26.5 °C. The growth-development process, morphology, distribution and pathogenicity of *A. cantonensis* larvae living in snails and rats were observed. **[Results]** The infection rate by intragastric injection was higher than that by other infection ways. Dormancy of snail located in setting without water little affected on growth and development of *A. cantonensis* larvae in snails. A single life cycle in laboratory could be completed for 50 days as shortest. L3 of the parasite developed in snail at dormant status in dry setting without water could be detected about 16.5 days post infection, while that in water setting could be detected about

18.5 days post infection. And its L1 could be hatched in rat feces about 33.5 days post infection. L3 was mainly distributed in lung, food muscle and liver of the infected snail. Pathological nodes in capsules containing larvae on lung wall of the infected snail were visible under microscope. The parasite characteristics of distribution of refractive granules, head features and sheath number were main features in morphologically distinguishing thelarval development stages in snails. Definitive host rats mainly died of pulmonary fibrosis due to worm eggs and worm clot. **[Conclusions]** Intragastric injection and dormant *P. canaliculata* were key way to maintain more effectively life cycle of *A. cantonensis* in laboratory. The period of a single life cycle maintained in laboratory setting depends on several features, e.g. mollusk intermediate host, lung structure of the snail host and larvae nodes in lung capsule of the snail.

HUMAN ANGIOSTRONGYLIASIS OUTBREAK IN DALI, CHINA

Lv Shan Zhang Yi Chen Shao-Rong¹ Wang Li-Bo² Fang Wen¹ Chen Feng¹ Jiang Jin-Yong² Li Yuan-Lin¹ Du Zun-Wei² Z hou Xiao-Nong

BACKGOUND: Several angiostrongyliasis outbreaks have been reported in recent years but the disease continues to be neglected in public health circles. We describe an outbreak in Dali, southwest China in order to highlight some key problems for the control of this helminth infection. METHOD/PRINCIPAL FINDINGS: All available medical records of suspected angiostrongyliasis patients visiting hospitals in Dali in the period 1 October 2007-31 March 2008 were reviewed, and tentative diagnoses of varying strengths were reached according to given sets of criteria. Snails collected from local markets, restaurants and natural habitats were also screened for the presence of Angiostrongylus cantonensis. A total of 33 patients met criteria for infection, and 11 among them were classified as clinically confirmed. An additional eight patients were identified through a surveillance system put in operation in response to the outbreak. The epidemic lasted for 8 months with its peak in February 2008. Of the 33 patients, 97.0% complained of severe headache. 84.8% patients had high eosinophil cell counts either in the peripheral blood or in cerebrospinal fluid (CSF). Three-quarters of the patients were treated with a combination of albendazole and corticosteroids, resulting in significantly improved overall conditions. Twenty-two patients reported the consumption of raw or undercooked snails prior to the onset of the symptoms, and approximately 1.0% of the Pomacea canaliculata snails on sale were found to be infected with A. cantonensis. The snails were also found in certain habitats around Dali but no parasites were detected in these populations. CONCLUSIONS/SIGNIFICANCE: The import and sale of infected *P. canaliculata* is the likely trigger for this angiostrongyliasis outbreak. Awareness of angiostrongyliasis must be raised, and standardized diagnosis and treatment are needed in order to provide clinicians with a guide to address this disease. Health education campaigns could limit the risk, and a

hospital-based surveillance system should be established in order to detect future outbreaks.

*Supported by the Chinese National Natural Science Foundation (grant no. 30590373), the Ministry of Science and Technology (grant numbers 2003BA712A09-01, 2005DKA21100, and 2007BAC03A02), and the Chinese Important Scientific Research Project on Infectious Diseases (grant no. 2008ZX10004-011).

ANGIOSTRONGYLUS CANTONENSIS: MORPHOLOGICAL AND BEHAVIORAL INVESTIGATION WITHIN THE FRESHWATER SNAIL POMACEA CANALICULATA

Lv Shan Zhang Yi Liu He-xiang Zhang Chao-wei Peter Steinmann Zhou Xiao-nong Jürg Utzinger¹

An infection with Angiostrongylus cantonensis, the main causative agent for human eosinophilic encephalitis, can be acquired through the consumption of the freshwater snail Pomacea canaliculata. This snail also provides a suitable model to study the developmental morphology and behavior of A. cantonensis larvae, facilitated by the snail's distinct lung structure. We used microanatomy for studying the natural appearance and behavior of A. cantonensis larvae while developing within P. canaliculata. The distribution of refractile granules in the larval body and characteristic head structures changed during the developmental cycle. Two well-developed, rodlike structures with expanded knob-like tips at the anterior part were observed under the buccal cavity as early as the late second developmental stage. A "T"-shaped structure at the anterior end and its tenacity distinguished the outer sheath from that shed during the second molting. Early first-stage larvae obtained from fresh rat feces are free moving and characterized by a coiled tail, whereas a mellifluous "Q"-movement was the behavioral trait of third-stage A. cantonensis larvae outside the host tissue. In combination, the distribution of refractive granules, distinct head features, variations in sheaths, and behavioral characteristics can be utilized for differentiation of larval stages, and for distinguishing A. cantonensis larvae from those of other free-living nematodes.

INVASIVE SNAILS AND AN EMERGING INFECTIOUS DISEASE: RESULTS FROM THE FIRST NATIONAL SURVEY ON ANGIOSTRONGYLUS CANTONENSIS IN CHINA

Lv Shan Zhang Yi Liu He-xiang Hu Ling Yang Kun Peter Steinmann Chen Zhao¹, Wang Li-ying¹ Jürg Utzinger² Zhou Xiao-nong

BACKGOUND: Eosinophilic meningitis (angiostrongyliasis) caused by Angiostrongylus

¹ Institute of Research and Control of Schistosomiasis in Dali Prefecture, China

² Yunnan Institute of Parasitic Diseases, China

¹ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

^{*} Support by Chinese Ministry of Science and Technology (grant no. 2003BA712A09-01), the Swiss National Science Foundation (project no. PBBSP3-123193, no. PPOOB-102883 and PPOOB-119129).

cantonensis is emerging in mainland China. However, the distribution of A. cantonensis and its intermediate host snails, and the role of two invasive snail species in the emergence of angiostrongyliasis, are not well understood. METHODOLOGY/PRINCIPAL FINDINGS: A national survey pertaining to A. cantonensis was carried out using a grid sampling approach (spatial resolution: 40 640 km). One village per grid cell was randomly selected from a 5% random sample of grid cells located in areas where the presence of the intermediate host snail Pomacea canaliculata had been predicted based on a degree-day model. Potential intermediate hosts of A. cantonensis were collected in the field, restaurants, markets and snail farms, and examined for infection. The infection prevalence among intermediate host snails was estimated, and the prevalence of A. cantonensis within P. canaliculata was displayed on a map, and predicted for non-sampled locations. It was confirmed that P. canaliculata and Achatina fulica were the predominant intermediate hosts of A. cantonensis in China, and these snails were found to be well established in 11 and six provinces, respectively. Infected snails of either species were found in seven provinces, closely matching the endemic area of A. cantonensis. Infected snails were also found in markets and restaurants. Two clusters of A. cantonensis-infected P. canaliculata were predicted in Fuiian and Guangxi provinces. CONCLUSIONS/SIGNIFICANCE: The first national survey in China revealed a wide distribution of A. cantonensis and two invasive snail species, indicating that a considerable number of people are at risk of angiostrongyliasis. Health education, rigorous food inspection and surveillance are all needed to prevent recurrent angiostrongyliasis outbreaks.

EFFECT OF SINGLE-DOSE ORAL ARTEMETHER AND TRIBENDIMIDINE ON THE TEGUMENT OF ADULT *CLONORCHIS SINENSIS* IN RATS

Xiao Shu-hua Keiser J Xue Jian Tanner M Morson G Utzinger J

The tegument of trematodes plays a key role in nutrient absorption, exerts secretory functions, protects the parasite against the immune system of the host, and is a target for anti-trematocidal drugs. We performed a temporal examination of tegumental changes following artemether and tribendimidine administration on adult *Clonorchis sinensis* in rats using scanning electron microscopy. Rats infected with *C. sinensis* for 6 weeks were treated orally with a single dose of artemether (150 mg/kg) or tribendimidine (300 mg/kg). Worms were collected between 8 h and 7 ays (artemether) and between 4 h and 2 days post-treatment (tribendimidine). Worms recovered from untreated rats served as controls. Eight hours after artemether administration, the

¹ Ministry of Health of China

² Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

^{*}Supported by a Ministry of Science and Technology grant (no. 2003BA712A09-01) and the National Natural Science Foundation (no. 30590373). P. Steinmann (project no. PBBSP3-123193) and J. Utzinger (project no. PPOOB-102883 and PPOOB-119129) are grateful to the Swiss National Science Foundation for financial support

tegument of *C. sinensis* was extensively disrupted, including severe swelling, fusion and vacuolization, and the suckers were damaged. Four hours after administration of tribendimidine, *C. sinensis* worms showed extensive tegumental alterations, characterized by massive sloughing, and the suckers were damaged. Interestingly, the severity of tegumental changes did not progress further with time. Our results show that both artemether and tribendimidine rapidly disrupt the tegument and damage the suckers of adult *C. sinensis*. The subtle differences in tegumental changes induced by artemether and tribendimidine might indicate different mechanisms of action of these drugs against *C. sinensis*.

THE IN VITRO AND IN VIVO EFFECT OF TRIBENDIMIDINE AND ITS METABOLITES AGAINST *CLONORCHIS SINENSIS*

Xiao Shu-hua Xue Jian Xu Li-li Zheng Qi Qiang Hui-qin Zhang Yong-nian

The purpose of the study was to understand the in vitro and in vivo effect of tribendimidine (TBD) and its metabolites of p-(1-dimethylamino ethylimino) aniline (aminoamidine, deacylated amidantel, BAY d 9216, dADT), acetylated dADT (AdADT), terephthalaldehyde (TPAL), and terephthalic acid (TPAC) against adult *Clonorchis sinensis*. In in vitro test, the adults of C. sinensis were placed to each of the 24 wells of a Falcon plate and maintained in Hanks' balanced salt solution-20% calf serum. Besides observation on the direct in vitro effect of TBD and its metabolites, the worms exposed to TBD and its metabolites for 1-24 h were transferred to the medium without drug and incubated continually for another 72 h. The reversible effect of TBD and its metabolites was assessed by the recovery of worm motor activity and parasite survival. In in vivo test, 235 rats were divided into five batches for oral infection of each rat with 50 C. sinensis metacercariae. Five to 6 weeks post-infection, groups of rats were treated orally or intramuscularly with a single dose of TBD or its metabolites, while untreated but infected rats served as control. All treated rats were killed 2 weeks post-treatment for assessment of efficacy. When adult C. sinensis were exposed to TBD or dADT 0.5 μ g/mL, they were paralyzed rapidly accompanied by dilatation of the gut. The in vitro effect of AdADT decreased significantly, which was at least lower than 20- to 40-fold compared with TBD and dADT. TPAL and TPAC at a high concentration of 100 µg/mL exhibited no effect against adult C. sinensis. In the worms exposed to TBD or dADT 1 µg/mL for 1 h, well recovery of the worm motor activity from paralysis was seen in the medium without drug. If exposure time extended to 4–24 h before transferred to the medium without drug, few worms were dead and most worms showed very poor recovery of their activity. When the worms exposed to TBD or dADT 10 μ g/mL for 1, 4, and 24 h were transferred to the drug-free medium, recovery of poor motor activity of worms or worm death was seen. In the worms exposed to AdADT 20 and 40 µg/mL for 1-24 h, more worms recovered poor motor activity in the medium without drug. In rats infected with C.

sinensis and treated orally with TBD or dADT, the ED_{50} and ED_{95} were 20.318 and 195.358 mg/kg or 18.969 and 268.882 mg/kg. Under the equal dosages used in the treatment of rats infected with *C sinensis*, the effects between TBD and dADT or TBD and AdADT were similar. Intramuscular TBD or dADT at a single dose of 12.5–75 mg/kg showed effect against adult *C. sinensis* harbored in rats. TPAL and TPAC exhibit no effect against *C sinensis* harbored in rats treated orally with a higher dose of 1 g/kg. The results indicate that TBD and dADT exhibit a strong in vitro effect to paralyze the adult *C. sinensis*, but less in vitro effect was seen in AdADT. TBD, dADT, and AdADT exhibit similar therapeutic effect in oral treatment of rats infected with *C. sinensis*, and intramuscular TBD and dADT also show promising effect against *C. sinensis* in rats. TPAL and TPAC are ineffective metabolites of TBD.

SPATIAL EPIDEMIOLOGY IN ZOONOTIC PARASITIC DISEASES: INSIGHTS GAINED AT THE 1ST INTERNATIONAL SYMPOSIUM ON GEOSPATIAL HEALTH IN LIJIANG, CHINA 2007

ZHOU Xiao-nong LV Shan YANG Guo-jing¹ Thomas K Kristensen² N Robert Bergquist³ Jurg Utzinger⁴ John B Malone⁵

The 1st International Symposium on Geospatial Health was convened in Lijiang, Yunnan province, People's Republic of China from 8 to 9 September, 2007. The objective was to review progress made with the application of spatial techniques on zoonotic parasitic diseases, particularly in Southeast Asia. The symposium featured 71 presentations covering soil-transmitted and water-borne helminth infections, as well as arthropod-borne diseases such as leishmaniasis, malaria and lymphatic filariasis. The work made public at this occasion is briefly summarized here to highlight the advances made and to put forth research priorities in this area. Approaches such as geographical information systems (GIS), global positioning systems (GPS) and remote sensing (RS), including spatial statistics, web-based GIS and map visualization of field investigations, figured prominently in the presentation.

HIV/AIDS, PARASITES AND CO-INFECTIONS: PUBLICATION PATTERNS IN CHINA

Tian Li-guang Steinmann Peter¹ Chen Jia-xu Chen Shao-hong Zhou Xiao-nong

BACKGROUD: Since its discovery, HIV/AIDS has arguably captured more attention among the Chinese biomedical research community than most other infectious diseases.

¹ Jiangsu Institute of Parasitic Diseases, China

² DBL-Institute for Health Research and Development, University of Copenhagen, Denmark

³ Ingerod, Brastad, Sweden

⁴ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

⁵ Department of Pathobiological Sciences, School of Veterinary Medicine, Skip Bertman Drive, Louisiana State University, Baton Rouge, LA, USA

Traditional parasitic diseases, on the other hand, are perceived as being increasingly neglected. However, it has long been recognized that interactions between HIV and other infective agents, including parasites, influence the health status of people living with HIV/AIDS. This study aimed at systematically reviewing the Chinese scientific literature on HIV/AIDS and parasites between 1986 and 2006 in order to substantiate or refute these claims, and to highlight neglected research areas.

RESULTS: Searching the three largest Chinese scientific literature databases, in the China National Knowledge Infrastructure (CNKI) a total of 24,511 citations dealing with HIV/AIDS and 15,398 parasite-specific publications were identified. Wanfang Data and VIP Information (VIP) contained 15,925 and 13,873 entries dealing with HIV/AIDS respectively, while 12,043 and 7,068 hits were scored when searching for parasitological references. The number of publications dealing with HIV/AIDS in China increased exponentially from 6 in 1986 to 3,372 in 2006 whereas the publication activity in the field of parasitology was more erratic and lately started to decline. Epidemiology was the most-reported field of endeavor, accounting for 26.0% and 24.6% of the HIV/AIDS and parasitological literature, respectively, while publications dealing with health education only represented 2.9% and 0.7% of all publications, respectively. The total number of Chinese articles focusing on HIV/AIDS and parasite co-infection was 650, with large year-on-year differences in publication numbers. The single-most frequently studied system was HIV-Pneumocystis carinii co-infection.

CONCLUSIONS: The present study revealed that in China, the fields of parasitic diseases, especially opportunistic parasitic infections linked with HIV/AIDS, is increasingly neglected. This suggests a need to enhance research in the field of opportunistic parasitic infections and parasitology in general.

THE CONTROL OF HOOKWORM INFECTION IN CHINA

ZHENG Qi CHEN Ying ZHANG Hao-bing CHEN Jia-xu ZHOU Xiao-nong

BACKGROUD: Hookworm is still one of the three main soil-transmitted helminthes prevalent in China, and 39 million cases infected with hookworm were estimated in China in 2006.

RESULTS: The main approach to the control of hookworm infections in China consists of large-scale deworming, rebuilding sanitation systems in rural areas and health education. The availability of low-cost, safe and single-dose albendazole make large-scale deworming programs possible in China. Currently, sanitary latrines with three-cells are recommended by government for the control of soil-transmitted helminths, since 35% of helminth infections and 83% of worm eggs could be reduced after using this kind of sanitary latrine. In addition, economic prosperity 122

¹ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

contributes greatly to the reduction of hookworm prevalence, but the inequity of economic and social development among different regions of China provides a scenario that the worst threat of hookworm infection is located in the poorest areas of southern and central China. Therefore, it is necessary to put more investments into prophylaxis and treatment of hookworm in these poor regions.

CONCLUSIONS: Although the prevalence of hookworm infection has fallen significantly in the last 15 years in China, the current strategy for controlling hookworm infections still needs to be strengthened along with the three-pronged approach, e.g. distributing anthelmintic drugs in schools and undertaking large-scale of hookworm deworming, improving water supplies and sanitation, and proper health education.

§5. 研究生毕业论文研究报告摘要

中华按蚊中肠细菌及其特性研究

李美(博士后) 合作导师: 汤林华

中肠细菌在控制传疟按蚊种群数量和抑制疟原虫在按蚊体内发育等方面的作用已经 得到证实,利用中肠细菌有望成为防控按蚊种群,阻断疟疾感染,并最终消除疟疾的重要 手段之一。本研究首次对中华按蚊的中肠细菌菌群及其在按蚊饲养水体中的生存能力、在 按蚊体内的传递性及对按蚊产卵的影响等特征进行了研究,为按蚊中肠细菌的开发和应用 奠定基础。研究结果如下:

嗜人按蚊和中华按蚊对疟原虫的敏感性存在差异,采集自同一地区的这两种按蚊,中 肠内含有的细菌种类也存在巨大差异,这为探讨蚊媒肠内细菌是导致按蚊媒介能量不同的 原因提供了重要依据。

分别以现场和室内饲养的中华按蚊为研究对象,对中华按蚊中肠细菌菌群进行了分析。从室内饲养的中华按蚊吸血成蚊中肠内获得了4种革兰氏阴性细菌,即气单孢菌、丛毛单胞菌、金黄杆菌和A4菌呈革兰氏阴性,其中气单孢菌和A4菌是在按蚊的三个发育期(幼虫、未吸血成蚊和吸血成蚊)中肠内均被检测到的可培养细菌。从现场采集的中华按蚊中肠内分离到了7种细菌,分别为不动杆菌、普罗菲登斯菌、土壤杆菌、成团范菌、嗜麦芽菌(2种)和肠杆菌,与这些细菌亲缘关系较近的细菌种类均为革兰氏阴性细菌。

对气单孢菌、A4 菌、肠杆菌和嗜麦芽菌在按蚊饲养水体中的生存力(竞争能力)和 传递性研究表明,分离自按蚊中肠的这四种细菌,经人工培养后,均不能在饲养按蚊的水 体中建立种群,也未发现能在按蚊不同虫态间传递的证据。因此还不能在现场开展对这几 种细菌的直接应用,需要研究提高人工培养细菌在自然界的生存力对方法或探索其他的应 用方式。

具吸引作用的细菌或其挥发物能提高按蚊与杀虫或抗疟工程细菌接触的机会,但中华 按蚊产卵时对 A4 菌和气单孢菌却具有明显的负趋性,而对肠杆菌仅具有微弱的趋向性, 从营养学的角度讲,这三种细菌可能不是中华按蚊食物的优先选择,但具有在蚊中肠内较 为稳定存活的可能性,因此更适合于作为蚊幼生物杀虫基因的宿主细胞和仿转基因按蚊抗 疟基因的宿主细胞被应用。

经过对中华按蚊中肠细菌菌群分析及其基本特征的研究,发现在自然界存在大量具有 开发为蚊幼生物杀虫剂和构建仿转基因按蚊的细菌种类,但如何提高这些细菌经人工改造 和培养后在自然环境中的生存能力,以及以何种方式应用这些细菌才能获得最大效果是今 后该方面研究的关键和重点。

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日本血吸虫侵袭前后湖北钉螺差异表达分子的研究

刘琴(博士后) 导师:周晓农

[目的] 日本血吸虫病是危害我国人民健康的重要的寄生虫病之一。湖北钉螺是日本 血吸虫唯一的中间宿主,在日本血吸虫病的传播中起着重要作用。本研究着重开展日本血 吸虫侵袭前后湖北钉螺差异表达分子的研究。

[方法] 提取日本血吸虫侵袭前、后湖北钉螺头足部组织的总 RNA,利用选择 PCR cDNA 消减试剂盒(Clotech),以日本血吸虫侵袭前、后湖北钉螺头足部组织分别为检测方(Tester)和驱动方(Driver),进行正向抑制消减杂交。将获得的正向、反向抑制性消减杂交产物克隆入 pGEM-T easy vector,转化大肠杆菌 DH5a,构建正向、反向抑制性消减 cDNA 文库。并以菌液 PCR 扩增鉴定插入片段,鉴定了文库的质量。从正向文库随机 抽取 354 个阳性克隆进行测序,并将所得 ESTs 序列统计其冗余率,进行在线 BLAST 同 源性分析。根据冗余 ESTs 序列的多序列比对结果设计 6 对引物,半定量 RT-PCR 鉴定基因的差异表达。

[结果] 正向文库的反向文库重组效率分别为 96.5%和 92.8%; 文库插入片段大于 500 bp 比率分别为 95%和 75%。从正向文库随机挑取的 354 个阳性克隆中测得 350 个 ESTs 序列, 生物信息学分析发现了 34 个湖北钉螺新基因, 冗余性分析鉴定了 6 条 ESTs 高表达, 半定量 RT-PCR 证实 5 个基因其在日本血吸虫毛蚴侵袭前后湖北钉螺中是差异表达的, 而且这种差异表达是上调的。

[结论] 成功的利用抑制性消减杂交技术建立日本血吸虫毛蚴侵袭前后湖北钉螺正、反向差异表达 cDNA 文库,发现了 34 条新基因序列,鉴定了 5 个差异表达的分子,其分子可能与湖北钉螺天然免疫分子相关,这为进一步探讨中间宿主与病原的相互作用及其筛选传播阻断疫苗候选分子的研究奠定了基础。

西藏疟疾流行区多斑按蚊复合体传疟作用与分子生物学研究

武松(博士研究生) 导师: 汤林华

[目的] (1)了解西藏林芝疟疾流行区墨脱县按蚊组成与多斑按蚊复合体的生态习性; 鉴定多斑按蚊复合体的成员种构成; (2) 检测按蚊唾腺子孢子以判定当地的传疟媒介,并 结合生态习性调查探讨相关传疟按蚊的传疟能力; (3) 采用分子建树方法研究多斑按蚊复 合体的分子进化关系,并探讨西藏、云南和缅甸不同地理区域间伪威氏按蚊的群体遗传结 构差异; 为该地区的疟疾防治提供按蚊媒介的基线资料,并为制定综合媒介管理措施提供 科学依据。

[方法] (1)在西藏疟疾流行区选择墨脱县三个有代表性的自然村为调查点,调查多 斑按蚊复合体的生态习性,伪威氏按蚊群体遗传学研究现场为西藏林芝地区的墨脱县和察 隅县、云南勐腊县和景洪、缅甸拉咱市;(2)按蚊媒介现场调查采用人诱、牛诱和灯诱方 法捕获按蚊成蚊,按蚊经形态学鉴定后放入硅胶干燥冻存备用;采用显微镜观察成蚊卵巢 气管支方法判定经产蚊,并计算经产蚊比率;(3)采用多重 PCR 扩增 ITS2 序列方法对形态学鉴定为多斑按蚊复合体的成蚊进行种型鉴定;并采用混合样本和巢氏 PCR 方法扩增成蚊唾腺间日疟子孢子 SSu rDNA 以判定该地区的传疟媒介;(4)结合生态学指标,通过计算疟疾流行区伪威氏按蚊的媒介能量和昆虫学接种率以判断伪威氏按蚊的传疟作用;(5)以 mtDNA-COI 基因序列对多斑按蚊复合体 5 成员种(多斑按蚊、伪威氏按蚊、威氏按蚊、塞沃按蚊、达罗毗按蚊)进行系统进化分析;(6)以 mtDNA-COI 和 mtDNA-Cytb 基因对伪威氏按蚊进行群体遗传学分析;(7)采用 Cluxtal、Chromas 软件对基因序列进行核实和比对;以 Bioedit、Mega 和 Phylip 软件进行碱基组成分析和构建聚类进化树;以 TCS 软件计算单倍型和构建单倍型家系网络图;采用 Arleiquin 软件进行 AMOVA 分析;并将基因序列在 NCBI 进行 BLAST 比对。

[结果] (1)西藏疟疾流行区墨脱县共捕获按蚊 5 345 只,其中形态学鉴定为多斑按 蚊复合体 97.10% (5 190/5 345),带足按蚊为 2.90% (155/5 345);多重 PCR 方法鉴定 多斑按蚊复合体种型构成,其中伪威氏按蚊为 98.1%,威氏按蚊为 1.9%,提示伪威氏 按蚊为该地区的优势蚊种;调查期间伪威氏按蚊种群密度大,通宵均有吸血活动,通 宵室内叮人率为 15.80 只/人·夜,并有偏吸牛血和室外吸血的习性,按蚊孳生地仅发现 于稻田;(2)在 360 个混合样本中发现 2 份间日疟原虫子孢子 SSurDNA 的阳性扩增, 克隆测序并经 NCBI BLAST 同源性比对证实与间日疟原虫(AF145335)SSu rDNA 基因 片段 100%同源,分子种型鉴定证实 2 份阳性混合样本均由伪威氏按蚊组成;生态学调查 伪威氏按蚊的媒介能量为 2.795,昆虫学接种率为 0.004389,子孢子自然感染率为 0.56‰; (3) UPGMA、NJ、ME、MP 和 ML 聚类得到的亲缘关系总体趋于一致,单倍型数据显 示 mtDNA-COI 和 mtDNA-Cytb 基因多态性丰富,不同群体间伪威氏按蚊 mtDNA-COI 和 mtDNA-Cytb 基因 AMOVA 分析 Fst 和 Nm 值分别为 0.00794, 31.236 和 0.01696, 4.168。

[结论] 西藏疟疾流行区多斑按蚊复合体由伪威氏按蚊和威氏按蚊组成,其中伪威氏 按蚊种群数量大,密度高,叮人率高,通宵均有吸血活动,偏吸牛血,兼吸人血,是该地 区的优势蚊种,也是该地的主要传疟媒介;达罗毗按蚊、多斑按蚊与塞沃按蚊亲缘关系最 近,威氏按蚊,伪威氏按蚊的关系最远;mtDNA-COI和mtDNA-Cytb均为适合于群体遗 传学分析的基因序列,伪威氏按蚊西藏、云南和缅甸各群体间基因交流频繁,尚未发生群 体遗传分化。

应用现代生物信息技术对湖北钉螺遗传多样性的研究

李石柱(博士研究生) 导师:周晓农

本研究通过采集不同景观地区的湖北钉螺样本,建立湖北钉螺空间分布数据库,在此基础上应用基因组 DNA 的酶切片段与生物素标记的(AAT)17,(GA)25,(CCT)17,(AC)25,(CAG)17,(CA)18,(CAC)5,(TC)10,(GT)8和(TG)18等寡核苷酸探针杂交、分离、富集和克隆测序,完成湖北钉螺微卫星 DNA 库的构建,并据此挑选具有多态性的微卫星位点,对长江中下游地区的湖北钉螺群体的遗传结构进行了分析;应用长 PCR 技术和引物步移

测序技术,结合 SubPCR 和克隆测序策略,测定湖北钉螺湖南岳阳株的线粒体基因组 (mtDNA)全序列,并通过测定不同景观群体湖北钉螺个体线粒体基因(16S)和核糖体 间隔区(ITS1-ITS2)片段序列,综合分析了湖北钉螺不同景观群体遗传分化和地理隔离之 间的关系。获得以下结果:

1. 基于景观遗传学的理念,编制了湖北钉螺空间遗传信息管理系统。该系统总体结构 包括了两个部分,一是基础数据库,二是管理系统,其中基础数据库根据研究样本的分类 层次划分为三个数据库,分别是采集点数据库、样本数据库和遗传信息数据库。初步完成 数据库的构建,包括了73个采集点、676条记录及其相关遗传信息。

2. 首次构建了湖北钉螺微卫星 DNA 库,共获得了 209 条微卫星 DNA 序列,筛选了 67 个微卫星位点,并对其中 20 个位点进行了鉴定。其中 6 个位点可以获得良好的信号, 即 P84, T5-13, T5-11, T4-22, T6-27 和 P82。6 个微卫星 DNA 位点中,除 P84 位点的观 测杂合度和 PIC 值较低,其余位点的观测杂合度和 PIC 值范围在 0.36-0.8929 和 0.8437-0.9289 间,具有较好的多态性。应用 6 个微卫星位点检测对长江中下游 5 个湖北钉 螺群体的群体遗传结构,共检测到 188 个等位基因,不同位点在群体间平均为 15.83 个; 等位基因在不同群体中的分布无明显的集中趋势。群体内遗传分析显示,所有位点平均的 观测杂合度、期望杂合度和 PIC 值分别为 0.637、0.811 和 0.777,多态性明显,综合所有 指标的信息,湖北群体遗传变异程度最高,江苏群体最低。群体间遗传结构分析表明,江 苏和江西群体间具有较高的遗传分化程度,安徽与湖南群体间则分化程度较小,群体间分 化系数表明群体间分化较低,遗传变异主要来自群体内的个体间。

3. 首次获得了湖北钉螺线粒体基因组全序列,全长 15 182 bp (Genbank 登记号: FJ997214),为闭合环状分子,A+T 含量为 67.32%。共编码 37 个基因,包括 13 个蛋白基 因、22 个 tRNA 基因、2 个 RNA 基因和一段 A+T 富集区,其中轻链编码 8 个 tRNA 基因, 其余基因由重链编码。基于核糖体 DNA 的 ITS1-ITS2 和 mtDNA-16S 基因序列将我国大 陆湖北钉螺群体可分为 4 个主要类群,即长江中下游地区群体、云南和四川的高山型群体、 广西内陆山丘型群体和福建沿海山丘型群体,2 个 DNA 分子 (ITS1-ITS2、16S)在不同采 集点之间的遗传差异呈明显的地理聚集性,并与地理距离之间形成显著的相关性 (P<0.001),相关指数分别为 RITS1-ITS2=0.784, R16S=0.717,群体遗传分布格局符合距 离隔离模型。

中国西部某村土源性线虫感染现况调查与钩虫病化疗方案的比较研究

郑琪(硕士研究生) 导师:周晓农

[目的] 本研究旨在通过横断面调查及现场干预试验的方法,对中国西部某农村地区的土源性线虫感染现况及其影响因素进行研究,并对不同化疗方案治疗钩虫病的疗效及其适用性进行评估。

[方法] 本研究分为 2 大部分,一是试点村土源性线虫感染现况调查,二是在试点村 应用不同化疗方案治疗钩虫病,对其疗效和适用性进行研究。

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首先,通过基线调查,选择合适研究现场,采用横断面调查方法,以研究现场2岁以 上常住人口作为调查对象。对所有调查对象进行病原学检查(Kato-Katz法)、血红蛋白值 测定和问卷调查。其次,利用第1部分病原学检查信息,选择钩虫感染者作为现场干预试 验的人群。将干预人群用随机分组方式分为三组,分别使用单剂阿苯达唑、单剂三苯双脒、 阿苯达唑与噻嘧啶伍用的化疗方案进行现场干预。

[结果] 研究现场四川省长宁县三元乡大池村共有 473 人,经检查土源参与本次研究。 调查人群的土源性线虫感染率为 64.5%,为土源性线虫高度感染区。其中钩虫、鞭虫和蛔 虫的感染率为 48.4%、8.5%和 31.5%。影响土源性线虫感染的因素为:家庭厕所类型,饭 前便后洗手频率,家庭用水来源,家庭富裕程度。

单剂阿苯达唑、单剂三苯双脒、阿苯达唑与噻嘧啶伍用治疗钩虫的治愈率分别为 65.0%, 64.5%和 84.1%, 不良反应率为 13.3%、25.0%和 11.1%。阿苯达唑与三苯双脒本次 治愈率无显著性差异。

[结论] 本研究调查发现,在中国西部施粪肥地区影响土源性线虫感染的影响因素为 饭前便后洗手频率、家庭厕所类型、家庭用水来源和家庭富裕程度。三苯双脒治疗钩虫的 疗效与阿苯达唑趋同,该结果将有助土源性线虫防治策略的制定及相关部门对钩虫化疗方 案的选择。

日本血吸虫热激蛋白和次黄嘌呤鸟嘌呤磷酸核糖转移酶 DNA 疫苗的研究

张璟(硕士研究生) 导师:曹建平

研究高效的血吸虫病疫苗一直被视为长期有效控制血吸虫病的重点。通过联合应用佐剂、改善疫苗递送途径等方法,有可能提高 DNA 疫苗的效力。HSP70 作为一种天然佐剂, 在抗肿瘤和抗感染性疾病的疫苗研究中备受关注。而在血吸虫疫苗研究领域,目前尚未见 相关应用的报道。次黄嘌呤鸟嘌呤磷酸核糖转化酶(和 ypoxanthine - guanine phosphoribosyltransferase, HGPRT)是血吸虫体内鸟嘌呤和/或次黄嘌呤合成鸟嘌呤核苷必不 可少的一种酶,在血吸虫虫生长、代谢过程中发挥重要作用,是治疗血吸虫病的潜在靶点。

本研究以日本血吸虫大陆株成虫总 RNA 为模板,反转录 PCR 扩增了编码日本血吸虫 HSP70 和 HGPRT 的基因。PCR 产物经纯化酶切后,通过 T4 DNA 连接酶与 pGEM-T 载体 连接,转化 JM109 感受态大肠杆菌。通过限制性内切酶反应,获得目的基因双酶切片段, 纯化后与真核表达载体 pVAX1 质粒连接,构建重组质粒。经过鉴定,证明本研究成功构 建了日本血吸虫大陆株热激蛋白 70 (SjHSP70)和日本血吸虫次黄嘌呤鸟嘌呤磷酸核糖转 移酶 (SjHGPRT) 两种 DNA 疫苗: pVAX1-SjHSP70 和 pVAX1-SjHGPRT。

本研究观察了两种 DNA 疫苗单独使用及联合免疫对实验动物的免疫保护效果。将 75 只 C57BL/6 雌性小鼠随机分为 5 组,每组 15 只,分别于各小鼠双腿股四头肌注射 100 µl 生理盐水、100 µg pVAX1 空载体质粒、100 µg pVAX1-SjHSP70 质粒、100 µg pVAX1-SjHGPRT 质粒、pVAX1-SjHSP70 和 pVAX1-SjHGPRT 质粒各 100 µg 联合免疫。共 免疫 3 次,每次间隔 2 周。末次免疫后 1 周,用日本血吸虫尾蚴攻击感染小鼠,每鼠 30 ±1条,攻击感染后第36天剖杀小鼠。IFAT 检测结果表明,两种 DNA 疫苗注射后,小鼠肌肉组织均有相应蛋白表达;ELISA 检测结果表明,两种 DNA 疫苗免疫后,小鼠血清中特异性 IgG 水平均显著高于注射生理盐水对照组。与注射生理盐水对照组相比,pVAX1-SjHSP70免疫组和 pVAX1-SjHGPRT 免疫组两组 DNA 疫苗免疫组的减虫率分别为34.85%和40.25%,小鼠肝组织减卵率分别为34.31%和26.48%;联合免疫组的减虫率和小鼠肝组织减卵率分别为27.80%和34.54%。实验结果表明,两种 DNA 疫苗都能诱导出小鼠的部分抗日本血吸虫感染免疫保护力。本实验构建的 pVAX1-SjHSP70 对 pVAX1-SjHGPRT 的佐剂效应有待进一步研究。

本研究为今后进一步提高日本血吸虫 DNA 疫苗的效力和 HSP70 佐剂作用研究奠定了基础。

黄淮流域疟疾回升的生态因素研究

张少森(硕士研究生) 导师:周水森

[目的] 通过分析气象、地理景观、水体等生态因素与疟疾发病的关系,探讨影响黄 淮流域疟疾回升的主要生态因素及其对疟疾传播季节与流行强度的影响,为黄淮流域地区 疟疾防治对策提供科学依据。

[方法] 1.气象因素对疟疾传播的影响分析:①曲线描绘疟疾发病率与各气象因素的 变化趋势,以直观分析二者关系; ②运用 Spearman 相关分析气象因子与疟疾月发病率的 相关关系:③以疟疾月发病率为因变量,各种气象因子作为自变量,通过多元回归拟合, 筛选影响疟疾发病的主要气象因素。④通过计算主要气象因素的变化倾向率并结合疟疾月 发病率的季节变化趋势分析,阐明主要的气象因素对疟疾传播季节和流行强度的影响。2. 土地利用状况(LUCC)变化与疟疾发病的关系分析:①ArcGIS 软件支持下获得 20 世纪 80年代、1995年和2000年研究点的土地利用类型分类及其面积并计算各土地类型面积所 占总土地面积的构成比; ②通过计算各土地类型面积的构成比在两个时间阶段(20 世纪 80年代—1995年; 1995年—2000年)的变化率,并结合疟疾发病数据分析,以探讨当地 近 15 年来的土地利用状况变化与疟疾发病关系。3.水体分布与疟疾发病风险范围分析:① 运用全球卫星定位系统(GPS)现场调查采集疟疾患者居住环境的地理信息(包括经纬度、 附近水体面积等),获得疟疾患者与水体的空间分布信息; ②通过 Mapsource 等软件进行 格式转换,建立数据库,在ArcGIS9.2软件下,计算疟疾患者居住地与水体的最短距离: ③通过分析疟疾患者居住地与水体的最短距离的统计学分布,得到疟疾患者分布与水体分 布的关系; ④基于上述结果,对村庄内所有住户进行分组,并计算每组内有疟疾患者住户 的构成比,通过 x²检验计算各组的疟疾发病风险。

[结果] 1.气温和降雨量与疟疾发病率变化曲线趋同;月平均气温、月平均降雨量是 气象因素中与发病变化相关性最强的两个因素;当月平均气温(T_{mean}),近两个月的平均 气温(T_{mean01}),当月平均降雨量(R_{mean})对疟疾发病变化的影响贡献为75.3%;黄淮地区 年平均气温逐年升高,尤其以4月和11月的月平均气温升高最为显著;5月、11月的月 发病人数及其占全年的比例在 2000 年以后亦上升明显,表明疟疾传播季节前后(4月、11 月)气温升高使传播季节由过去的 6-10 月延长至 5-11 月。7 月、8 月的月均降雨量增加,而7月、8 月的月疟疾发病人数及其占全年的比例在 2000 年以后也上升明显,表明疟疾传播高峰季节7月、8 月的降雨量增加使得疟疾发病强度增强。2.土地利用状况变化分析显示,桐柏县 1995 年间土地利用有较大变化。1996 年前后桐柏县疟疾疫情回升较为明显,年发病率(385.41/10万)和年发病总人数(1620)都明显较往年升高。但以旱耕地为主要土地类型的怀远县和永城市,未见明显的土地利用状况变化。因此本研究结果尚不能证实土地利用状况改变等大生态环境变化为黄淮流域疟疾回升的重要原因。

3.通过对 113 个自然村,357 名疟疾患者的地理信息采集与分析,结果显示大部分疟疾患者(74%)居住地分布在距水体 < 60 m 范围内。通过对居住在水体周围 60 m 范围内的村民和 60 米以外的村民进行调查和空间分析,发现居住在 60 m 范围内的村民疟疾发病风险较高。(OR=1.6,95%CI (1.042,2.463), P<0.05)

[结论] 1.气温和降雨量是影响黄淮流域疟疾回升的两个主要气象因素。受气候变暖影响黄淮流域地区疟疾传播季节延长,疟疾流行季节由过去的6-10月延长到5-11月; 高峰季节7月和8月的降雨量增加使疟疾发病强度增强。2.以土地利用状况为综合指标的 宏观生态环境变化对疟疾回升影响不明显,表明黄淮流域地区区域性疟疾回升尚不能以共 同的生态环境改变予以解释。本次疟疾回升是否因区域性宏观生态环境变化所致尚需进一 步深入分析。3.疟疾发病与回升虽与宏观生境变化关系不明显,但与微观环境(村庄内水 体分布)关系密切。村庄内适宜中华按蚊孳生水体周围以60m半径内的范围内为疟疾发 病高风险地带,是采取疟疾传染源控制措施的重点区域。

冬季气候因素对鄱阳湖区洲滩螺情的影响研究

褚秀娟(硕士研究生) 导师: 郭家钢

在我国南方,日本血吸虫病是一种主要寄生虫病。钉螺是血吸虫的唯一中间宿主,温度是钉螺孳生的重要环境因素,冬季温度对钉螺能否生存起决定作用。目前我国钉螺面积的94%以上分布于长江流域的湖沼地区。随着全球气候变暖,我国南方出现了暖冬,气候变暖也造成了极端天气事件的发生,比如2008年1月江西遭遇的雨雪冰冻天气,因此了解冬季气候因素对湖沼区螺情变化的影响具有重要意义。

与钉螺孳生相密切相关的是地表温度,随着遥感技术的发展,其在提取地表温度方面 的应用也越来越多,因而在了解气温对螺情变化的影响以及遥感提取地表温度与气温之间 的关系的基础上,可运用遥感技术来预测洲滩钉螺的孳生分布情况。

三个试点区分别鄱阳县三门村的窑背汊洲滩,进贤县三里乡滨山村杨家坪洲滩星子县 渚溪村的两块相连的洲滩:马家湾和渚溪滩。发现三个试点区在 2007 年,2008 年未发现 阳性螺。活螺密度在 2005 年,2008 年有明显的下降。

本研究收集三个试点区 1998-2008 年冬季 12 月~2 月的气象资料(气温和降雨)统计 出相关的气象指标,并将螺情指标与气象指标进行相关分析。在星子试点区经相关分析发

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现活螺密度与冬季最低温度低于 5.87℃的天数和冬季最低温度低于 0℃的天数之间都成负 相关。活螺密度与1月平均温度之间为正相关。有螺框出现率与与冬季最低温度低于 5.87 ℃的天数、冬季最低温度低于 0℃的天数、1月平均温度低于 0℃的天数之间均成负相关, 与 12月平均温度,1月平均温度成正相关;阳性螺密度和钉螺阳性率在鄱阳湖区纬度比较 高的地方-星子与冬季降雨量成正相关。在鄱阳试点区,活螺密度与 12月最高温度,1月 平均温度之间都成正相关,有螺框出现率与 12月最高温度和 1月平均温度都成正相关。 钉螺阳性率,阳性螺密度与 2月最高温度和 2月平均温度都成正相关关系。在进贤试点区, 活螺密度与 2月平均气温存在正相关。说明湖沼地区冬季低温越低,来年春季螺的密度和 有螺框出现率越低,2月平均气温越高,钉螺孳生繁殖活动加剧,随着 2月温度升高,人 畜草洲活动开始频繁,导致阳性螺密度和钉螺阳性率升高。

下载 NASA 网站上兔费的 MODIS 8 天地表温度产品 MOD11A2,经过重投影, ENVI 中计算,算出一月份平均地表温度,由于星子试点区的螺情与1月平均气温成正相关关系。 所以用星子试点区作为感兴趣区域,对 modis 地表温度产品进行裁剪,提取星子试点区的 一月平均地表温度。经分析获得的1月平均地表温度与星子试点区活螺密度之间也为正相 关关系,且相关系数更高,为0.929,大于1月平均气温与星子试点区活螺密度之间的相关 系数0.764。说明在地表温度难以获得区域可以利用 MOD11A2 地表温度产品来监测预测 钉螺孳生。

日本血吸虫体被蛋白作为诊断和疫苗候选抗原的研究

钱门宝(硕士研究生) 导师: 胡薇

血吸虫病仍然是影响人类健康的重要寄生虫病。现有的免疫学诊断方法主要是用血吸 虫成虫粗抗原或虫卵粗抗原检测抗体,材料来源受限,且不能区分现症感染和既往感染, 特异性也有待进一步提高。血吸虫疫苗一直是研究热点,但目前仍无突破性进展。血吸虫 体被是血吸虫和宿主相互作用的两个主要界面之一,在营养吸收和免疫逃避等多个方面发 挥重要作用,被认为是诊断、疫苗和药物的潜在靶点。前期日本血吸虫的体被蛋白质组学 研究鉴定了一批体被蛋白质。本研究就是针对其中的4个蛋白质开展的相关研究。它们分 别是 Sjannexin(AY813612,AAW25344)、Sj22(AY815492,AAW27224)、Sjinnexin (AY815599,AAW27331)、SjMRLC(AY815219,AAW26951)。针对这四个蛋白的研究 主要包括:(1)利用已知的序列进行生物信息学分析,如信号肽预测、跨膜区域预测、功 能位点和结构域预测、同源序列搜索、多序列比对和进化树构建等;(2)基因的原核克隆 和表达、重组蛋白质的纯化;(3)重组蛋白免疫原性检测,重组蛋白兔多克隆抗体的制备 及评价,基因的虫期转录特异性,蛋白质的虫期表达特异性,蛋白质的免疫定位;(4)蛋 白质的诊断价值评价和蛋白质的动物保护性实验。

本研究成功获得了4个候选抗原的重组蛋白,为后续研究提供基础。Sjannexin 是相对 保守的蛋白,具有虫期表达特异性和较好的免疫原性,推测该蛋白位于体被的外质膜内外 两层单位膜之间,发挥连接作用,初步研究发现其具有一定的诊断价值。Sj22为日本血吸 虫特异蛋白,在雄虫高表达,经组织定位研究发现定位于肠腔,提示高通量体被蛋白质组 学研究可能含有非体被蛋白的"污染",需要进行组织定位研究加以确认。Sjinnexin 是相 对特异的蛋白,在各虫期均有转录且水平比较稳定,具有较好的免疫原性,初步免疫保护 性实验显示该蛋白是潜在的抗生殖疫苗候选靶标。SjMRLC 是相对保守的蛋白,在各虫期 均有转录且水平比较稳定,提示该基因可能是个管家基因,在多个虫期发挥作用,其诊断 和疫苗潜在应用价值有待评价。

青南高原多房棘球绦虫中间宿主分布与环境因素关系的研究

王立英(硕士研究生) 导师:伍卫平

泡型包虫病(Alveolar echinococcosis, AE)是一种由多房棘球绦虫的幼虫寄生于动物 或人体内而致的重要人兽共患寄生虫病。广泛流行于我国的西部地区,严重影响着我国西 部地区的人群健康和经济发展。多房棘球绦虫的地理分布取决于其自然终宿主和中间宿主 的存在,啮齿目和兔形目动物是多房棘球绦虫的重要中间宿主。本研究通过对青南高原的 称多县进行现场调查,发现高原鼠兔和青海田鼠为主要的中间宿主,在青南高原的草场上 广泛存在,两种动物的总洞穴密度为88.2个/100m²,其中高原鼠兔洞穴密度为40.4个/100 m²,青海田鼠洞穴密度为47.8个/100 m²。病理学检查发现,两种动物泡球蚴和石渠棘球蚴 的总感染率为2.46%,其中高原鼠兔感染率为4.36%,青海田鼠感染率为1%,高原鼠兔的 感染率高于青海田鼠(*X*²=9.41, *P*<0.05)。同时当地居民进行了B超检查,泡型包虫病的患 病率为8.70%(4/46)。结果表明,青南高原是泡型包虫病的流行区,两种中间宿主动物高 原鼠兔和青海田鼠是主要的中间宿主,分布广泛,其密度有增加的趋势,有导致当地泡型 包虫病的传播压力和流行上升的风险。

通过单因素分析发现,高原鼠兔和青海田鼠的分布与土壤类型和植被类型有关。高原 鼠兔主要分布在高山草甸土和高山草原土两种土壤类型中,密度显著高于高山灌丛草甸土 和草甸沼泽土中的密度(P<0.05)。青海田鼠主要分布在草甸沼泽土中,密度显著高于高 山草原土土壤类型中的密度(P<0.05);高原鼠兔主要分布在高山草甸中,密度显著高于 高寒灌丛(P<0.05),沼泽化草甸中的密度居中,高寒灌丛中的密度最低;而青海田鼠主 要在沼泽化草甸中,密度显著高于高山草甸和高寒灌丛中的密度(P<0.05)。两种中间宿 主动物的分布具有聚集性和空间自相关性,并验证了其分布类型为负二项分布。

运用现场调查数据和RS/GIS提取数据,探讨了多房棘球绦虫中间宿主分布与环境因素 之间的关系,建立了多房棘球绦虫中间宿主的负二项分布回归模型,分别找出了高原鼠兔 和青海田鼠分布的主要环境影响因子。鼠兔的分布主要与土壤类型、是否为围栏牧场、草 高度即植被长势有关系。青海田鼠的分布主要与地形特征、土壤类型、植被类型、冬夏牧 场类型以及植被覆盖度有关系。两种中间宿主分布的共同环境影响因子为地形分类、土壤 类型、植被类型、冬夏牧场类型、植被覆盖度以及调查时间段的NDVI。并且对不同环境 影响因素的相关方向以及贡献大小作了量化分析。

运用逐步判别的方法建立了判别模型并且进行了判别效果评价。建立的综合判别模型

回代判别符合率为89.3%;外推判别符合率为90%,总体上判别效果较好。本研究建立的 多房棘球绦虫中间宿主的负二项分布模型和判别模型,有利于根据地理环境大致判断多房 棘球绦虫中间宿主的分布状况,利于鼠防部门有针对性地开展中间宿主防治工作,为制定 适宜的泡型包虫病防治策略提供参考依据,为控制泡型包虫病提供了新的思路和依据。

§ 5. ABSTRACTS OF GRADUATE STUDENT DISSERTATIONS

RESEARCH REPROT

STUDY ON MIDGUT BACTERIA OF ANOPHELES SINENSIS AND THEIR CHARATERISTICS

LI Mei(Postdoctoral) TUTOR: TANG Lin-hua

It had been affirmed that bacteria could control the populations of malaria vector anopheline mosquitoes and block the development of *Plasmodium* in their midguts. So, using midgut bacteria was one of the promising strategy aiming to depress anopheline mosquitoe population, interdict the infection of malaria, and finally eliminating the malaria. In this research, bacterial flora in midguts of *Anopheles sinensis* was analysized and their viability, transtadial transmission and the affection on oviposition response were studied, in order to collect knowledge and information on how to exploit and utilize these bacteria. The results were as following:

Different kinds of bacteria located in *An. anthropophagus* and *An. sinensis* which were collected from same location and whose susceptivity to *Plasmodium* were different. This result supplied useful knowledge to our further research in the influence of bacteria in midgut of *An. sinensis* and *An. anthropophagus* on natural transmission of malaria.

Bacterial flora in midguts of *An. sinensis* was analysized. 4 species of culturable gram-negative bacteria were isolated from lab-reared midguts of blood-feeding adult *An.sinensis*. They were *Aeromonas* sp., A4, *Comamonas* sp.and *Elizabethkingia* sp. in which the first two were detected in three different development stages, larva, pre-feeding adult and blood-feeding adult. Severn species of culturable gram-negative bacteria were isolated from field-collected blood-feeding adults of *An.sinensis*. They were *Acinetobacte* sp., *Providencia* sp., *Agrobacterium* sp., *Pantoea* sp., *Stenotrophomonas* sp. (including 2 different species) and *Enterobacter* sp..

The viability and transtadial transmission of 4 species of bacteria, *Aeromonas* sp., A4, *Stenotrophomonas* sp. and *Enterobacter* sp. were demonstrated. However, undergoing LB-incubatation in laboratory, all these 4 bacteria could not established populations in mosquito-rear-cups. And no evidence that bacteria transfer from larva to adult. In this way, these bacteria could not be uselized directly in water where mosquito larva lived. Methods how to enhance the viability of LB-incubated bacteria or new means of using the bacteria were required.

The attractive bacteria or volatiles of bacteria could increase the exposure of the mosquitoes to the oviposition sites treated with the genetically modified bacteria. Bacteria A4 and *Aeromonas* sp. showed repellent effects to gravid females of *An. sinensis* and insignificantly

attracted by *Enterobacter* sp.. It was presumed that these three kinds of bacteria were not favorable food of An. *sinensis* but might be able to withstand the colonization of the mosquito guts and adapt to act as host cells of larvicide genes or antimalarial genes.

The study on the bacteria in midguts of *An.sinensis* and their characteristics, revealed that a great deal of bacteria species were deserved to be exploited as mosquito larvicides or be objects in constructing anti-*Plasmodium* mosquitoes using para-transgenic approaches. However, key points were how to increase their viability in natural environment when they were engineered or LB incubated in laboratory, and how to use them in field.

STUDY ON DIFFERENTIALLY EXPRESSED MOLECULAR FOR ONCEOMELANIA HUPENSIS PRE- AND POST-EXPOSED TO MIRACIDIUM OF SCHISTOSOMA JAPONICUM

LIU Qin(Postdoctoral) TUTOR: ZHOU Xiao-nong

[Objective] Schistosomiasis is one of the most important diseases in China, in terms of its impact on public health, which caused by *Schistosoma japonicum*. *Oncomelania hupensis* is the sole intermediate snail host of *S.japonicum*. It plays an important role in transmission of *S.japonicum*. Therefore, the purpose of this study is to focus on differentially expressed molecular for *O.hupensis* pre- and post-exposed to miracidium of *S. japonicum*.

[Methods] Total RNA samples were separately isolated from pools of *O.hupensis* pre- and post-exposed to miracidium of *S.japonicum*, and suppression subtractive hybridization (SSH) was performed by using the PCR-select cDNA subtraction kit (Clontech) using pre-exposed and post-exposed *O.hupensis* as tester and driver, respectively. The subtracted cDNA was ligated into pGEM-T easy vector. Recombinant plasmids were transformed into competent *Escherichia coli* cells DH5 α and then the forward and reverse subtracted cDNA library was constructed. And the quantity of the library was evaluated by identified the insert fragments using bacterium solution PCR. The 354 positive clones from the forward *library* were selected in random to sequence, and the redundancy rate was counted. 6 primers were designed according to the multi-blast on the redundancy ESTs and the differentially expressed molecules of the gene were identified by semi-quantity RT-PCR.

[Results] The recomdance effiency of the forward and reverse library were 96.5% and 92.8% respectively. The rate of exceed 500 bp insert fragment were 95% and 75%. The 354 random-selected positive clones from forward library were sequenced, and the 350 valid EST sequences were obtained and 34 new genes were discovered by bioinformatics analysis. 6 ESTs were highly expressed by redundancy analysis. 5 differentially expressed genes were identified by semiquantitative RT-PCR and these genes are up-regulated expressed.

[Conclusion] The forwars and reverse differentially expressed cDNA library for *O.hupensis* pre- and post-exposed to miracidium of *S.japonicum* was successfully constructed by

SSH, and 34 new genes were identified. 5 specific highly expressed genes were identified and presumed these molecules will be related to the innate immunity of *O.hupensis*, which may provide foundation to study the biology of intermediate host-pathogen interactions and to identify potential vaccine candidate molecules for blocking transmission of pathogens.

STUDY ON THE CAPACITY OF MALARIA TRANSMISSION AND MOLECULARBIOLOGY OF *ANOPHELES MACULATUS* S.L. IN MALARIA ENDEMIC AREA OF XIZANG AUTONOMOUS REGION

WU Song(PhD Student) TUTOR: TANG Lin-hua

[Objective] (1) To explore the Anopheles composition and ecological behaviour of *An. maculatus* s.l. in malaria endemic area of Xizang. (2) To identify the species of *An. maculatus* s.l. and find the malaria transmission vector by amplifing the sporozoites DNA in Anopheles salivary glands and study the transmission capacity of malaria vector. (3) To construct the phyletic evolution tree of 5 members of *An. maculatus* s.l. with mtDNA-COI and analyze the variance of population genetics constitution in the different geography area with mtDNA-COI and mtDNA-Cytb, Thus to provide the vector baseline data for malaria control and the scientific evidence for integrated malaria vector control programme.

[Methods] (1) Three representative villages were selected for vector investigation and Xizang, Yunnan and Lazan city of Myanmar were picked up to collect An. pseudowillmori for population genetics analysis. (2) Human baited net traps (HBNT), cow baited traps (CBT) and CDC light traps were used for catching of mosquito adults, and oviposited moquitoes were decided by ootheca tracheal branches with microscopy. (3) Amplifing the ITS2 gene according to the variance of 5 members of An. maculatus s.l. by multiple PCR was adopted to identify the species. Nested PCR with mixed sample was applied to decide the malaria vector by amplifying sporozoites SSu rDNA of *Plasmodium vivax*. (4) Integrating the ecological behaviour, malaria vector capacity and entomology inoculation rate (EIR) were calculated to evalue the transmission ability of An. pseudowillmori. (5) Phyletic evolution analysis of 5 members (An. pseudowilomori, An. willmori, An. maculatus s.s., An. sawadwongporni, An. dravidicus) of An. maculatus s.l. was performed with mtDNA-COI. (6) Population genetics analysis was executed with mtDNA-COI and mtDNA-Cytb gene. (7) Sequence comparision and blast were carry out by Cluxtal and Chromas software, Bioedit, Mega and Phylip software were used for the calculation of the basepair feature and contruct the phylogenetic tree. Haplotype family lattice map and AMOVA analysis were implemented by TCS and Arlequin software, respectively. Internet sequence comparision was blasted through NCBI web.

[Results] (1) 5 345 anopheline moquito adults were collected and of which 97.10% (5 190/5 345) were *An. maculatus* s.l. identified by morphology, and *An. peditaeniatus*

accounted for the remainder. An. pseudowillmori (98.1%) and An. willmori (1.9%) were identified by the method of molecularbiology among An. macualtus group. An. pseudowillmori was dominant with high density and whole night biting rate. The human biting rate was 15.80 per man per night and only ricefied found the anopheline larvae. (2) Two mixed samples were amplified out the positive SSu rDNA fragment. After clone sequencing and web blast, it was found 100% homologization compared with *P. vivax* (AF145335), and further investigation confirmed the two mixed samples each included 10 mosquitoes were composed of An. pseudowillmori. The vector capacity, entomology inoculation rate (EIR) and sporozoites natural infection rate were 2.795, 0.004389 and 0.56‰, respectively. (3) Coincident results were obtained by UPGMA, NJ, MP, ME and ML clustering methods. Gene polymorphism was found in mtDNA-COI and mtDNA

[Conclusion] An. maculatus s.l. was composed of An. pseudowillmori and An. willmori, and An. pseudowillmori was the dominant anopheline mosquito with high density and biting rate and was the primary malaria vector. An. sawadwongporni, An. dravidicus and An. maculatus s.s. with close relationship, and An. pseudowillmori with the remote distance to the others. The two molecular marks of mtDNA-COI and mtDNA-Cytb beseem to population genetics analysis. An. pseudowillmori gene flow was frequently and no obvious genetics variance was found among population between China (Xizang, Yunnan) and Myanmar (Lazan).

GENETIC DIVERSITY STUDY ON ONCOMELANIA HUPENSIS BASED ON MODERN BIOLOGY INFORMATION TECHNIQUES

LI Shizhu(PhD Student) TUTOR: ZHOU Xiao-nong

In this study, *O. hupensis* was sampled based on different landscape distribution, and its genetic diversity was studied based on microsatellite DNA and complete sequence of mtDNA after geospatial database were established firstly.

1. In the line with the theory of landscape genetics, a management system on geospatial genetic information of *O. hupensis* was established in computer language. The system composed of 2 parts, one was the basic database which made up of 3 sub-datasets, i.e., collection sites, samples and genetic information datasets. The database was primarily founded including 73 collection sites, 676 sample records and relevant genetic information of *O. hupensis*.

2. A total of 209 effective sequences were attained from our study. 67 locus were selected and 20 pairs of primers of them were designed. among which. 6 locus were randomly selected, i.e., P84, T5-13, T5-11, T4-22, T6-27 and P82 to polymorphism analysis, which showed good polymorphism. And they were applied to detect the genetic diversity in 5 populations. A total of 137

188 alleles genes were detected, of which the average number of sites among different populations was 15.83 without obvious central tendency. Analysis of population genetics revealed that the observed and expected heterozygosis, PIC value of all sites equaled to 0.637, 0.811 and 0.777, respectively. It was found that genetic variation of *O. hupensis* was the highest in Jiangsu population while was the lowest in Hubei population. Results from analysis of population genetics showed that genetic differentiation was high between Jiangsu and Jiangxi populations, while low between Anhui and Hunan populations. As a result, gene exchanges were not frequent among population and species caused high heterozygosis. However, low differentiation coefficient showed that genetic variation mostly resulted from that of individuals.

3. The 15 182 bp-long complete sequence of *O. hupensis* mtDNA (Genbank registration No.: FJ997214) was sequenced, and it is a closed circular molecular with 67.32% AT content which encoded 37 genes, including 13 protein genes, 2 RNA genes and AT Rich Region, of which 8 tRNA genes were light chain coded and the others were heavy chain coded. The genetic diversity of landscape populations were analyzed based on ITS1-ITS2 and 16S sequences, *O. hupensis* in Mainland China could be divided into 4 populations, i.e., population in the middle-lower reaches of Yangtze Valley, mountainous population in Yunnan and Sichuan, inland hilly population in Guangxi and coastal hilly population in Fujian, all of which were in accordance with landscape ecological types. Obvious geographical aggregation of genetic diversity was observed between of 2 DNA molecular colleted in different point.(RITS1-ITS2= 0.784, R16S=0.717, P<0.01) which showed that population genetics distribution were in accordance with the Isolation-by-distance Model.

CROSS-SECTIONAL INVESTIGATIONC ON SOIL-TRANSMITTED HELMINTH INFECTIONS IN ONE VILLAGE OF WEST CHINA AND EFFICACY EVALUATION OF CHEMOTHERAPY SCHEMES ON HOOKWORM

ZHENG Qi (MSc student) TUTOR: Zhou Xiao-nong

[Objective] The purpose of the research was to study on current situation of soil-transmitted helminth infection and its factors on transmission by cross-sectional survey. Then, efficacy evaluation of different kind of chemotherapy schemes on hookworm infection was investigated by field trial.

[Methods] This study has two parts. One is to Study on current situation of soil-transmitted helminth infection of the field, the other is to make efficacy evaluation of different chemotherapy schemes on hookworm and their applicability.

Firstly, pilot study was performed by using cross-cetional survey. The residents over 2 years old were selected as eligible study targets for the survey. All eligible residents' stool were 138

collected and examined by Kato-Katz technique. Simultaneously, hemoglobinometry were tested for all eligible residents. All eligible residents were invited to answer a questionnaire including personal information and their hygienic habits, family health status and economy income. After finished the survey.

Secondly, based on the etiological examination information in Part 1, patients infected with hookworm were selected as eligible residents. All of eligible residents were classified into 3 groups in random and treated by single dose of albendazole, single dose of tribendimidine and combined therapy with albendazol and Pyrantel. The adverse event informations after patients took the drug were collected and analyzed. Evaluate drug efficacy by "2 samples 6 smears" stool test.

[Results] Through the study on current situation of soil-transmitted helminth infection of the field, we have results as follows: A total of 473 people eligible residents of Dachi Village, Changning County, Sichuan Province attended this study. The soil-transmitted helminth infection rate of total eligible residents was 64.5%. The infection rates of hookworm, trichuris and ascaris were 48.4%, 8.5% and 31.5%. Soil-transmitted helminth infection was significantly associated with 4 factors; they are frequency of washing hands, the type of water source, the type of latrine and the family income.

The recovery rate single dose of albendazole, single dose of tribendimidine and combined therapy with albendazole and pyrantel on hookworm are 65.0%, 64.5% and 84.1%. Based on the result of chi square test, albendazole and tribendimidine have no significant difference in the efficacy on hookworm. The adverse event rate of single dose of albendazole, single dose of tribendimidine and combined therapy with albendazole and pyrantel on hookworm are 13.3%, 25.0% and 11.1%.

[Conclusion] This study indicates that the influence factors of soil-transmitted helminth infections in the nightsoild-fertilizer area in west China are highly related to daily activities, such as frequency of washing hands, the type of water source, and the type of latrine and the family income. The effect of tribendimidine and albendazole are similar. These results provide useful information to formulate the prevention strategy of soil-transmitted helminth in west China and help government to make the decision on selecting chemotherapy schemes.

STUDIES ON THE PROTECTIVE EFFICACIES OF SCHISTOSOMA JAPONICUM HEAT SHOCK PROTEIN AND HYPOXANTHINE-GUANINE PHOSPHORIBOSYLTRANSFERASE DNA VACCINES

ZHANG Jing (MSc student) TUTOR: CAO Jian-ping

The development of an effective vaccine remains the most feasible long-term solution to the problem of schistosomiasis. Efficient adjuvants and delivery systems are suggested in order 139

to improve their protective efficacies. The unique properties of HSP70 as natural adjuvant has attracted more attention in the immunotherapy of cancer or infectious diseases. However, there has been no report related to the modulatory effect using the HSP70 gene as a molecular adjuvant to enhance the DNA vaccine against schistosomasis. Hypoxanthine–guanine phosphoribosyltransferase(HGPRT) is essential for the synthesis of guanosine monophosphate (GMP) from guanine and/or hypoxanthine. It plays an important role during the growth of schistosome, which has long pointed to HGPRT as a potential drug target for treating schistosomiasis.

In the present study, full-length genes encoding *Schistosoma japonicum* heat shock protein 70 (SjHSP70) and *Schistosoma japonicum* hypoxanthine-guanine phosphoribosyl transferase (SjHGPRT) were amplified by reverse transcription polymerase chain reaction (RT-PCR). The PCR products were ligated with pGEM-T vector and then cloned into JM109. The target DNA fragments and the pVAX1 plasmids were digested by restriction endonucleases. The target DNA fragments were purified and cloned properly into the eukaryotic expression vector of pVAX1. The recombinant plasmids were then transformed into competent *E. coli* DH5 α and identified by endonucleases digestion, PCR, agarose gel electrophoresis and sequencing. Thus, two DNA vaccines were constructed for the evaluation of their protective efficacies and the adjuvant effects of SjHSP70 by SjHGPRT DNA vaccine were also investigated.

A total of 75 C57BL/6 female mice were divided randomly into five groups with fifteen mice per group. Each mouse was vaccinated 3 times by intramuscular injection into the M. quadriceps at both sides with 100 µg pVAX1, pVAX1-SjHSP70 or pVAX1-SjHGPRT DNA or 200 µg mixed pVAX1-SjHSP70 and pVAX1-SjHGPRT plasmids respectively. Mice in the control group were inoculated with injection of 100 µl normal saline. The injections were repeated at 2 week interval. One week after the final boost, mice were challenged percutaneously with 30±1 cercariae. On day 36 after the challenge, adult worms were perfused from hepatic portal system and mesenteric veins after mice sacrificed. Indirect fluorescent antibody test (IFAT) was used to investigate the location of specific antigen expressed in muscle. Results showed that both pVAX1-SjHSP70 and pVAX1-SjHGPRT were expressed in the muscle tissue injection area. ELISA results showed that the level of specific IgG in pVAX1-SjHSP70 and pVAX1-SjHGPRT DNA vaccinated groups were significant higher than that of challenge control group. The worm reduction rates of pVAX1-SjHSP70 DNA vaccinated group and pVAX1-SjHGPRT DNA vaccinated group were 34.85% and 40.25%. The egg reduction rates of the two groups were 34.31% and 26.48%, respectively. The worm reduction rate and the egg reduction rate of the complex injection group were 27.80% and 34.54%, respectively. The results demonstrated that partial protective immunity could be induced in mice immunized with the two DNA vaccines against challenge infection of Schistosoma japonicum. SjHSP70 in this experiment did not show its adjuvant effect potentially as expected and further experiments should be made on the adjuvant effect for DNA vaccines.

These results provide a necessary basis for enhancing the protective efficacies of *Schistosoma japonicum* DNA vaccines and the adjuvant effects of SjHSP70.

STUDY ON THE ECOLOGIC FACTORS FOR MALARIA RE-EMERGENCE IN THE AREAS ALONG THE YELLOW RIVER AND HUAI RIVER

ZHANG Shao-sen (MSc student) TUTOR: ZHOU Shui-sen

[Objectives] To study the major ecologic factors influenced the re-emergence of malaria in the areas along the Yellow River and Huai River by the analysis on the relationship between the re-emergence of malaria incidence and the changes in ecologic factors.

[Methods] 1. Delineated the curves of malaria annual incidence, average annual meteorological factors, to explain the annual trends of these factors changes and its relationship with the re-emergence of malaria. Considering the cycle of growth and development of plasmodium vivax and anophelines, we conducted the data processing and derived the new parameter as follow: Tmean01, Tmean012, Rmean01, Rmean012, Mmean012. Use Spearman rank correlation to analyze the relationship between these meteorological factors and malaria incidence. Use multiple regressions, to seek the more effective meteorological factors.2.The data of land use and land cover change (LUCC) in study sites extract by ArcGIS9.2.Analysis of the environment changes in these periods(1980s—1995,1995—2000), were conducted by counting the areas and the proportion of each type of LUCC in 1980s, 1995 and 2000. The correlation coefficients of malaria incidences and these environmental changes were calculated with SPSS 11.5.3.Collected the geographic information of the malaria cases with global position system locator. Uses the soft ware of Mapsource conduct the data processing and establish the database in excel. Then we conducted spatial analysis with ArcGIS 9.2 to calculate the distance between the houses of malaria cases and the water-body. To analyze the characters of the distribution of malaria cases based on the results of statistics analysis of the distance calculated above. Grouping all the residents in the village according to the characters of the distribution of malaria cases, use χ^2 test to analyze the risk of malaria transmission.

[Results] 1. The curves analysis showed that the two factors may have close relationship with malaria annual incidence. The average monthly temperature and rainfall are top two factors which had positive correlation to monthly malaria incidence. The multiple regressions showed that 75.3% changes of monthly malaria incidence contributed to T_{mean} , T_{mean01} , and R_{mean} . In the recent 15 years, the temperature was increased significantly in April and November. Both the number of malaria cases and malaria incidence in May and November had been increased significantly since 2000. These findings indicated that the temperature growing higher in April and November prolonged the malaria transmission season. The monthly mean rainfall increased significantly in July and August. The number of malaria cases in July and August had been

increased since 2000 and also in the proportion of malaria cases in the two months contribute to the annual case. These indicated that the increasing of rainfall in July and August enhanced the malaria transmission in the two months. 2. The LUCC is significant in Tongbai County in the period from 1980s to 1995 and from 1995 to 2000. In the same time, the annual malaria incidence increased rapidly in 1996. However, the analysis of LUCC in Huaiyuan county and Yongcheng county showed that no significant changes could be found. 3. The analysis on the geographic information of 357 malaria cases location and around water body in 113 villages showed that the most of malaria cases (74%) in the study are inhabited in the extent of 60 m near the water body, the risk rate of people live there attacked by malaria was higher than others(OR=1.6, 95%CI (1.042, 2.463), P<0.05).

[Conclusion] 1. The temperature and rainfall are two major factors which influenced the malaria re-emerging in Yellow River and Huaihe River basins. The average monthly temperature increased in April and November result in the extension of malaria transmission season, while the enhancing of malaria transmission in July and August account for the raising of rainfall. The malaria transmission season had been prolonged from June-October to May-November.2. LUCC did play an important role in malaria transmission, but we could do limited analysis only in the county level because of the resolution of images and the capacity of sample. So we could not make conclusion that LUCC played an important effect on malaria re-emergence in these area confidently. 3. There were no significant results of large scales analysis in environment changes, but in the smaller scale analysis we got one. The spatial characters of water-body influenced the distribution of malaria cases. The extent of 60 m around water-body is the risk area of malaria and the key area of malaria sources of infection.

IMPACT OF CLIMATE FACTORS IN WINTER ON THE SITUATION OF ONCOMELANIA HUPENSIS IN REGIONS OF POYANG LAKE

CHU Xiu-juan (MSc student) TUTOR: GUO Jia-gang

Schistosomiasis is one of major parasitic diseases in the south of China. *Oncomelania hupensis* is the only intermediate snail host of *Schistosoma japonicum* and temperature while winter temperature determines the survival of snails. At present, more than 94% of the total areas of snail habitats in China locate in lake region of the Yangtze River. With the global warming,warmer winters occur in the south of China. At the same time,climate warming has caused extreme accidents of weather situation. For example,the heavy snow appeared in Jiangxi in January, 2008.Therefore,it is of significance to know about the impact of winter's climate factors on the marshlands of the Poyang Lake region.

Land surface temperature (LST) has a closer relationship with the breeding of *O.hupensis*. With the development of remote sensing technique, it has been more and more applied in 142

distilling LST. Thus on the basis of understanding the impact of temperature changes on the breeding of snails and the relationship between LST from remote rensing, we can apply remote sensing technology to forecast the distribution of snails on the land.

There are three experimental areas ,the first one is Yaobeicha marshland in Sanmen village, Poyang County, the sencond one is Yangjiaping marshland in Binshan village,Jinxian County,and the third one is two neighbor marshlands, i.e., Majiawan and Menqian marshland in Zhuxi village ,Xingzi County. No infected snails were found in the three pilot areas in 2007 and 2008.The density of living snail all declined significantly in 2005 and 2008.

We collected the climate data including temperature and rain fall of winter months containing December, January and February from 1998 to 2008 and tidied out relative climate variables. Then we carried on the correlative analysis among the climate variables and the variables of snails. In the pilot area of Xingzi, the density of snails showed a negative relationship with the days with the average temperature lower than 5.87°C, the days with average temperature below 0° C and the days with the lowest temperature below 0° C. In winter the density of snails has a positive relationship with the average temperature in January. Percentage of frames with living snail has a positive relationship with the average temperature in December and January. The density of infected snail and the percentage of infected snail both have a positive relationship with the total rain fall in winter. In the experimental area of Poyang County, the density of snails has a positive relationship with the highest temperature in December and average temperature in January. It was the same with the percentage of frames with living snails. The density of infected snails and the percentage of infected snails both had positive relationship with the highest temperature and average temperature in February. In the experimental area of Jinxian, the density of snail had a positive relationship with the average temperature in February. It indicates that the lower temperature in winter in the lake region, the lower density of snails and the percentage of frame with snails. With the higher average temperature in February, it is more suitable for snail to breed; also with that, more frequently, people and cattle begin to go to marshland, and as a result, a higher density of infected snails and a higher percentage of infected snails are shown.

The free 8-day LST product-MOD11A2 downloaded from the NASA website ,was firstly reprojected and then processed in ENVI.After that ,four 8-day LST product-MOD11A2 in January came out the average LST in January.Due to the result in the second part:the density of snails having a positive relationship with the average temperature in January, we cut out the MOD11A2 with the region of investigating snails in Xingzi to get the average LST in January of Xingzi.The result of correlation analysis shows that LST also had a positive relationship with the density of snails with a bigger coefficient 0.929,higher than that between the average temperature and the density of snails in Xingzi,0.764.it suggests that LST retrieved from MOD11A2 can be applied on the mornitoring and predicting the habitat of *O.hupensis* in the regions that the true LST is difficult to obtain.

THE STUDY OF *SCHISTOSOMA JAPONICUM* TEGUMENT PROTEINS AS CANDIDATES FOR DIAGNOSIS AND VACCINE

QIAN Men-bao (MSc student) TUTOR: HU Wei

Schistosomiasis remains a serious parasitic disease. Crude adult worm antigens or crude egg antigens used for antibody detection are limited in material, and they can't differentiate infection time and need increase in specificity. Vaccine for schistosomiasis has been studied for a long time, but has not breakthrough. Schistosome is covered by a living syncytium, called tegument, which plays important roles in nutrient uptake and immune evasion and of which there may be some putative diagnosis, drug and vaccine targets. The tegumental proteome of *Schistosoma japonicum* identified lots of proteins, from which we choosed four for further studies. They are Sjannexin (AY813612, AAW25344) 、Sj22 (AY815492, AAW27224) 、Sjinnexin(AY815599, AAW27331) and SjMRLC(AY815219, AAW26951). Studies included bioinformatics analysis, the cloning of aimed genes, the expression and purification of proteins, the immunogenicity analysis of recombinant proteins, the stage-specific transcription of gene, the stage-specific expression of protein, the immunolocalization of proteins, the evaluation of diagnosis value and animal protective experiment of recombinant proteins.

The four recombinant proteins were gained successfully. Sjannexin was one relatively conserved protein. It was expressed differently in different stages and had high immunogenicity. Through our studies, we inferred that Sjannexin was located in the tegument of worms and played a role in connection of the two lipid bilayers of the outer plasma membrane. Sjannexin was potential candidate for diagnosis through preliminary study. Sj22 was *Schistosoma japonicum* specific protein and high expressed in male worms. Sj22 was located in the gut of male worms, which indicated that the tegumental proteome might be contaminated with non-tegumental proteins and tegument proteins should be verified by immunolocalization. Sjinnexin was one relatively specific protein and transcripted in all stages including sporocysts, miracidia, eggs, cercariae, schistosomulae, female worms, male worms and paired adults. Sjinnexin had high immunogenicity and demonstrated the potential for anti-fecundity vaccine through preliminary study. SjMRLC was one conserved protein and had equal transcript in all stages including sporocysts, miracidia, eggs, cercariae, schistosomulae, female worms, male worms, male worms, male worms, male worms and paired adults.

STUDY ON THE RELATION OF DISTRIBUTION OF INTERMEDIATE HOST OF *ECHINOCOCCUS MULTILOCULARIS* TO THE ENVIRONMENT FACTORS IN SOUTHERN QINGHAI PLATEAU

WANG Li-ying (MSc student) TUTOR: WU Wei-ping

Alveolar echinococcosis (AE) is a severe parasitic zoonosis caused by the metacestode *Echinococcus multilocularis* with a high mortality, which is distributed in different geographic regions in western China, and has a great impact on the public health and social economy. The geographic distribution of *Echinococcus multilocularis* is determined by the existence of its natural definitive host and intermediate host. Rodential and lagomorpha animals are the main intermediate hosts. The study conducted in the southern Qinghai Plateau proved that the two species of small mammals-*Ochotona curzoniae* and *Microtus fuscus* are the main rodential and Lagomorpha animals and are abundant in this area. The burrow density of both *Ochotona curzoniae* (40.4/100 square meter) and *Microtus fuscus* (47.8/100 square meter) is 88.2/100 square meter. *Ochotona curzoniae* and Microtus fuscus are proved to be the main intermediate hosts through field mousing and parasitological investigation. The total infection rate was 2.46%, while the infection rate of *Ochotona curzoniae* (4.36%) was higher than that of *Microtus fuscus* (1%) (X^2 =9.41, P<0.05). The research results showed that *Echinococcus multilocularis* was prevalent in the Southern Qinghai Plateau, the abundance of *Ochotona curzoniae* and *Microtus fuscus may* increase the spread pressure and epidemic risk.

Statistic analysis of the survey data by univariate analysis demonstrated that the distribution of *Ochotona curzoniae* and *Microtus fuscus* may be related to the edaphic type and vegetation. *Ochotona curzoniae* was mainly distributed in the alpine meadow soil and alpine steppe soil, where the burrow density was significantly higher than that in alpine cold bush soil and meadow swamp soil (P<0.05). However, *Microtus fuscus* was mainly distributed in the meadow swamp soil, the burrow density was significantly higher than that in other soil types. As to the distribution in different vegetation types, *Ochotona curzoniae* was mainly found in the alpine meadow, where the burrow density was significantly higher than that in alpine cold bush (P<0.05); the burrow density in the swamp meadow land was mediate while the burrow density in the alpine cold bush was at the lowest. In the case of *Microtus fuscus*, which was mainly distributed in swamp meadow vegetation, the burrow density was significantly higher than that in alpine than that in alpine than that in alpine cold bush (P<0.05). Furthermore, the result revealed that the aggregation and spatial autocorrelation in the distribution of *Ochotona curzoniae* and *Microtus fuscus*, and verified that their distribution conformed to the negative binomial distribution.

We investigated the environmental factors influencing the distribution of *Ochotona curzoniae* and *Microtus fuscus* by field survey and collection of RS/GIS information, and established a regression model of negative binomial distribution. Multivariate analysis was used to determine environmental factors that combine best to provide favorable conditions for 145

Ochotona curzoniae and *Microtus fuscus*. The type of soil and the pasture (penned or open), and the height of grass were found to be related to the distribution of *Ochotona curzoniae*. The topographic feature, edaphic type, vegetation type, pasture type (winter pasture or summer pasture) and vegetation coverage were found to be related to *Microtus fuscus* distribution. The common environment factors for the two species of intermediate hosts were the topographic feature, edaphic type, pasture type, vegetation coverage and the time period of NDVI.

We developed a discriminatory model by using stepwise discrimination method and evaluated its efficacy. The evaluation test indicated that the discriminatory model we developed displayed the discrimination coincidence rate by back substitution and extrapolation being 89.3% and 90% respectively. The negative binominal regression model and the discrimination model developed through this study provided a useful tool for the estimation of distribution of the intermediate hosts for *alveolar echinococcosis* according to the geographic environment, and for the rodent and Lagomorpha control by the sectors involved. The result of this research may provide a new clue and scientific basis for making suitable control strategy for *alveolar echinococcosis*.

§6.获奖项目介绍

建立长江流域、我国湖区 GIS 血吸虫病预警系统研究

郭家钢¹ 余晴¹ 鲍子平¹ 朱蓉¹ 梁松² 钟波³
 张世清⁴ 李岳生⁵ 元艺⁶ 陈红根⁷ 龚健雅⁸ 鲍曙明⁹

完成单位:1 中国疾病预防控制中心寄生虫病预防控制所

2 中国科学院遥感应用研究所

3 四川省疾病预防控制中心寄生虫病研究所

- 4 安徽省寄生虫病防治研究所
- 5 湖南省血吸虫病防治研究所
- 6 湖北省血吸虫病防治研究所
- 7 江西省寄生虫病防治研究所
- 8 武汉大学测绘遥感信息工程国家重点实验室
- 9 江西省师范大学教育部鄱阳湖综合治理与资源开发重点实验室

长期以来,血吸虫病一直威胁着我国人民的健康。而长江中下游的5省湖沼型血吸虫 病流行区是我国血吸虫病防治的重点和难点。迫切需要建立湖沼地区血吸虫病预警系统。 运用地理信息系统,全球定位系统和全球无线移动通讯技术三者相结合,能有效的提高对 血吸虫病疫源地的准确性和互动性。本项目针对湖沼地区钉螺分布环境与血吸虫病流行密 切相关的特点,成功地应用 3G 系统,创建了我国湖区血吸虫病监控预警模式,有效的实 现了对疫源地实时监控的目的。

主要成果: 1. 应用 GIS 软件,通过 GIS 平台对地面数据和空间数据进行可视化表达, 开发适用于血吸虫病信息管理、处理分析的地理医学信息系统。2. 针对钉螺生态环境特点, 运用遥感技术 (RS) 尺度放大,从遥感卫片中获取钉螺孳生地的环境信息,实现钉螺孳生 地的快速确定。3. 建立基于风险组和基于个体的血吸虫病时空传播模型,4. 在全球定位 系统和全球无线移动通讯技术的支持下,通过短信方式实现了疫源地位置信息与血吸虫病 疫情信息的快速传递,达到实时监测和预测血吸虫病疫情的目的。

创新点:1.利用全球定位系统进行钉螺调查,准确获取疫源地位置信息,提高其可复 核性,通过地理信息系统平台对血吸虫病监测和防治等数据进行分析和表达;2.运用全球 无线通讯系统,实现血吸虫病疫情与疫源地空间位置信息同步交换,实现对血吸虫病疫情 的实时、实地监控,也为自然疫源性传染病疫情报告系统提供了一个及时、准确、可靠的 技术平台; 3. 结合卫星遥感技术建立了基于风险组和个体的血吸虫病时空传播模型。

推广应用情况: 1. 根据本研究结果,卫生部在全国 110 个流行县配置 GPS 手持设备 1110 台,极大地加速了疫区钉螺调查的电子化管理进程,并通过 GIS 平台进行表达。根据 技术要求,研究组已制定手持全球定位设备在血吸虫病防治中的应用培训教材,在江西、 湖南、湖北、安徽、四川、云南等省培训建立一支专业化队伍,显著提高了血吸虫病疫情 管理的效率。根据安徽省血吸虫病监测点测算,可节约防治经费达 350 万元。2. 本研究 GIS 数据管理系统成果已完全用于全国血吸虫病 80 个监测点的数据采集、分析和表达。3. 在国务院血防办及中国疾病预防控制中心所进行的一系列血吸虫病防治工作的暗访工作 中,运用该系统进行环境了解和现场实地导航。4.建立的血吸虫病时空传播动态模型成功 应用于四川德阳市旌阳区,江西省鄱阳湖流域现场预警,取得了良好效果。

本研究已发表论文 20 篇,其中 SCI 期刊源收录论文 4 篇,国内核心期刊收录论文 12 篇,引用引证 44 次;有 10 篇待发表。

项目研究起止年月: 2004 年 10 月至 2006 年 12 月 项目来源: 十五国家科技攻关项目(编号: 2004BA718B06)

中国血吸虫病防治策略的研究

王陇德¹ 周晓农¹ 汪天平² 陈红根³ 郭家钢¹ 吴晓华¹ 林丹丹³ 熊继杰 袁文宗 洪献林⁴ 张志海⁵ 易冬华 朱绍平⁶ 陈更新⁷ 徐兴建⁸

完成单位:1中国疾病预防控制中心寄生虫病预防控制所

2 安徽省寄生虫病防治研究所

3 江西省寄生虫病防治研究所

4 进贤县血吸虫病防治站

5 中共汉川市委汉川市人民政府血吸虫病地方病防治领导小组办公室

6 安乡县血吸虫病防治领导小组办公室

7贵池区血吸虫病防治站

8湖北省血吸虫病防治研究所

所属学科为预防医学。

我国湖沼型流行区因缺乏有效的血吸虫病防治策略而使血吸虫病控制工作长期难以 获得突破性进展。本课题围绕血吸虫感染与再感染这一科学问题,开展了血吸虫病防治策 略相关的基础研究(包括人畜宿主感染与再感染规律和人群、家畜宿主的种类与传播作用的研究)、防治策略与措施的研制(包括策略的理论体系研究和关键技术措施与方案的制定)和防治策略的验证与推广等3方面研究。

取得的研究成果为: (1) 证实了湖沼型流行区人畜感染与再感染率高,牛在 10 个月 内再感染率可高达 64%; (2) 阐明了牛是湖沼型流行区血吸虫病传播的主要传染源和污染 源,牛对草洲的潜在污染指数可高达 90%; (3) 提出了控制血吸虫虫卵污染环境是减少感 染性钉螺的关键措施; (4) 现场证实了原来的以人畜同步化疗为主的防治策略不能持续、 稳定地降低病情,更不能控制再感染; (5) 验证了人畜粪便管理是持续控制血吸虫感染与 再感染的有效途径,新策略实施后经 3 个传播季节即可降低人畜感染率至 0-1%,并稳定 在低水平; (6) 形成了"以切断虫卵污染环境为关键措施"、"以控制传染源为主的血吸 虫病综合防治新策略"; (7) 现场验证发现这一策略可有效控制湖沼型血吸虫病的传播, 年均经济效益较原策略显著提高。

主要创新点为:提出了"人畜感染与再感染"是湖沼型地区难以控制血吸虫病的主要原因;定量验证了牛源性血吸虫虫卵是湖沼型流行区传播血吸虫病的主要污染源这一事实;构建了以切断虫卵下水为基础的"以传染源控制为主的血吸虫病综合防治策略"理论与相应的4项关键措施;为"生物一环境一社会"综合性防病新模式提供了范例,解决了因人畜高再感染率而难以控制湖沼型血吸虫病传播之瓶颈问题。

血防新策略的提出符合我国血吸虫病流行规律与中国社会经济发展国情,引导了世界 卫生组织制定新的全球控制血吸虫病传播策略。新策略中的"封洲禁牧"等关键技术已纳入 了国务院制定的《血吸虫病防治条例》,人畜感染性等关键指标为制定《血吸虫病控制和 消灭标准(GB 15976-2006)》提供了重要技术参数。项目成果对推动我国控制并最终消灭血 吸虫病的进程、保障我国血吸虫病防治中长期规划目标的如期实现,具有重大的理论与实 践意义。

迄今,新策略已在湖南、湖北、江西、安徽、江苏等 5 个省的 90 个重点防治项目县 推广应用,并产生了具大的经济效益。项目已出版专著 5 部、发表论文 40 篇。其中:国 外发表论文 14 篇(包括在 Lancet, New Engl J Med 发表)、SCI 总影响因子达 111.5、引用引 证 148 次;国内发表论文 26 篇,引用引证 104 次。

项目研究起止年月: 2002 年 6 月至 2008 年 12 月

项目研究经费来源:科技部,联合国儿童基金会/联合国发展规划署/世界银行/世界卫生组织热带病研究与培训规划署,江西省卫生厅

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§ 6. AWARDED PROJECTS

STUDY ON THE ESTABLISHMENT OF GIS SYSTEM FOR FORECASTING AND WARNING SCHISTOSOMIASIS IN THE CHANGJIANG RIVER VALLEY AND MARSHLAND AND LAKE REGIONS OF CHINA

GUO Jia-gang¹ YU Qing¹ BAO Zi-ping¹ ZHU Rong¹ LIANG Song² ZHONG Bo³ ZHANG Shi-qing⁴ LI Yue –sheng⁵ YUAN Yi⁶ CHEN Hong-geng⁷ GONG Jian-ya⁸ BAO Shu-ming⁹

Accomplishment units

1 National Institute of Parasitic Diseases, China CDC

2 Institute of Remote Sensing Application, Chinese Academy of Sciences

3 Institute of Parasitic Disease, SiChuan CDC

4 AnHui Provincial Institute of Parasitic Disease Control and Prevention

5 HuNan Provincial Institute of Parasitic Disease Control and Prevention

6 HuBei Provincial Institute of Parasitic Disease Control and Prevention

7 JiangXi Provincial Institute of Parasitic Disease Control and Prevention

8 State Key Laboratory of engineering in mapping and Remote Sensing information, Wuhan University

9 Key Laboratory of resources exploitation and comprehensive treatment for Poyang lake of Ministry of Education, Jiangxi Normal University

Schistosomiasis has threatened health of people for a long time in our country and the problem continues. Among the five schistosomiasis endemic provinces in the middle and lower reaches of the Changjiang River, marshland and lake regions remain a stronghold for schistosomiasis prevention and control. There is a pressing need to develop a warning system for schistosomiasis in marshland and lake regions to inform early actions. It has been recognized that spatial technologies have a great potential in assisting in understanding and prediction the disease patterns. This project aims at, through a creative utilization of GIS (geographical information system), GPS (global positioning system), and GSM (global system for mobile communication), developing a real-time monitoring system on schistosomiasis and a disease transmission dynamics system in the marshland and lake regions.

The main achievements include: 1.we developed a geographic medical information system

to manage and analyze schistosomiasis data from routine surveys; both visual and analytical manipulations of health and spatial/environmental information are integrated in the platform.; 2, Through the use of RS (remote sensing) and rigorous validations, we developed a model to magnify the scales and obtained the environmental information which are used to inform snail habitat. 3. we developed a spatial-temporal transmission model of schistosomiasis based on risk groups and individuals, which were successful in helping understanding local transmission dynamics; 4. Through the uses of GPS and GSM, we developed real-time information transfer system that collects location-specific schistosomiasis epidemic information and sends back the central database for further processing.

The innovations include: 1. we used GPS to guide snail surveys and integrated the geo-reference information into a GIS platform for further analysis; 2. we applied GSM to realize the synchronous exchange of schistosomiasis epidemic and position information of infectious focus, so we could make timely and real-time monitoring on schistosomiasis, and also GSM could provide a timely, accurate and reliable technical platform for report system of zoonosis epidemic. 3. we established a spatial-temporal transmission model of schistosomiasis based on risk groups and individuals, supplemented with information collected through GPS $\$ GSM and RS.

The extended applications include, not limited to: 1.Based on results of this study, MOH provided 1110 portable GPS receivers for 110 epidemic counties throughout the whole country, which accelerated the electronical management course of snail investigation in endemic areas, and the results could be expressed in GIS platform. According to requirements, our group had written a series of operation materials about the use of the portable GPS receiver on prevention/cure of schistosomiasis, and in Jiangxi, Hunan, Hubei, Anhui, Sichuan and Yunnan, a specialized group were trained and organized, which evidently improved the efficiency of schistosomiasis epidemic management. According to the estimation of schistosomiasis surveillance sites in Anhui province, it can save 3,500 ¥ thousand of prevention/cure expenditure by applying GPS receivers; 2. The achievements about GIS data management system from this study had been entirely applied in the collection, analysis and expression of data from 80 schistosomiasis surveillance sites among China. 3. During independent appraisals by schistosomiasis office of State Department and China CDC, we used this system to comprehend the environment of snail-infested areas and navigate on the spot. 4. The dynamic spatial-temporal model of schistosomiasis transmission had been applied to pre-alarm in Jingyang areas of Deyang city in Sichuan and Poyang lake in Jiangxi, all of these had acquired good effect.

Twenty papers coming out of this study were published, and four of these were adopted by SCI journals, twelve of these were adopted by domestic core journals, and these papers were cited for 44 times. Ten papers were accepted to be published.

Research duration for Project: Oct, 2004 – Dec, 2006

Funding of the project: Supported by National '10th-five-year' key project for sciences and technology

(Project No. 2004BA718B06)

STUDY ON A NEW STRATEGY FOR THE CONTROL OF SCHISTOSOMIASIS IN CHINA

WANG Long-de¹ ZHOU Xiao-nong¹ WANG Tian-ping² CHEN Hong-gen³ GUO Jia-gang¹ WU Xiao-hua¹ LIN Dan-dan³ XIOANG Ji-jie YUAN Wen-zong HONG Xian-lin⁴

ZHANG Zhi-hai⁵ YI Dong-hua ZHU Shao-ping⁶ CHEN Geng-xin⁷ XU Xing-jian⁸

Accomplishment units

1 National Institute of Parasitic Diseases, China CDC

2 AnHui Provincial Institute of Parasitic Disease Control and Prevention

3 JiangXi Provincial Institute of Parasitic Disease Control and Prevention

4 Jinxian County Station of Schistosomiasis Control

5 Office of Leading Group for Schistosomiasis and Endemic Disease control of Hanchuan Municipality

6 Office of Schistosomiasis Control of Anxiang County

7 Department of Schistosomiasis Control and Prevention of Guichi District, Chizhou

8 HuBei Provincial Institute of Schistosomiasis Control and Prevention

This study belongs to the field of Preventive Medicine.

It proved difficult to make a breakthrough for the national schistosomiasis control program in China due to the lack of an effective control strategy for lake and marshland areas. Therefore, with an emphasis on tackling scientific questions regarding the infection and re-infection of *Schistosoma japonicum*, we initiated a systematic study, focusing on the following three aspects: (1) Control strategy-related basic researches, including infection and re-infection patterns both in humans and livestock, the main definitive hosts of the parasite, and their contribution to *S. japonicum* transmission; (2) Formulation of the new control strategy and technical measures, including the theoretical framework of the control strategy and the relevant key technical approaches; (3) Field validation and promotion of the new control strategy.

The following achievements and findings have been gained through the study: (1) It was found that the re-infection rate of *S. japonicum* in bovines was as high as 64% during 10 months through the assessment of the infection and re-infection patterns in human and livestock in the

lake and marshland region; (2) The bovines are the main infectious sources, or contamination sources, in the transmission of S. japonicum, supported by the evidences that the potential contamination index of bovines reached to 90% in the marshland; (3) Putting forward the key technical measures to reduce the prevalence of infection of Oncomelania snail with S. japonicum through the elimination of the contamination of the environment with eggs; (4) It was found that the old control strategy focusing on synchronous chemotherapy both in humans and livestock could not sustainably reduce the morbidity and control the re-infection with S. japonicum; (5) The new strategy together with a feasible approach could sustainably control infection and re-infection with S. japonicum through the management of feces from humans and livestock to eliminate the contamination of the environment with eggs, since the infection rate of human and livestock could be reduced to 0-1% after intervention had been undertaken for 3 transmission seasons, and maintained at a low level; (6) A four-pronged technical approach was proposed to interrupt the egg contamination based on the principle of eliminating infection sources; (7) The control strategy was validated in the field to effectively control the transmission of S. japonicum in the lake and marshland region, with a significantly higher financial benefit annually than that provided by the old control strategy.

The innovations of the study are summarized as follows: (1) It was found that infection and re-infection of humans and livestock are the main cause for the stalling of the schistosomiasis control program in the lake and marshland region; it was quantitatively validated that eggs from bovines were the main sources of contamination; (2) We put forward a control strategy focusing on controlling infection sources, integrated into other control approaches, and formulated a four-pronged technical approach to interrupting eggs from reaching water bodies; (3) the new control strategy provided a good example of a "bio-eco-social" integrated model for disease control, and solved the key question of difficulties to control the transmission of *S. japonicum* in the lake and marshland due to higher re-infection rate in human and bovines.

The results of field assessment showed that the new control strategy is suitable to be implemented in the country due to the strategy which is closely adapted to the local transmission patterns of schistosomiasis, in keeping with the socio-economic development of the country, capable of sustainably controlling the transmission. At the same time, the innovative strategy further develops the schistosomiasis control strategy formulated by the World Health Organization scientific committee on schistosomiasis. The contents of the technical measures on fencing pasture in snail-infested areas in the control strategy has been written in the Regulation of Schistosomiasis Control issued by the State Council, and the index of human and livestock infectivity provide important components of the National Elimination and Control Criteria on Schistosomiasis (GB 5976-2006). Therefore, the proposed strategy will, theoretically and practically, have great impact on the control and elimination of schistosomiasis, and further achieving the goals of the mid- and long-term program on schistosomiasis control in China.

Up to now, the control strategy and those technical approaches have been applied in 90

endemic counties with elevated prevalence of schistosomiasis, located in 5 provinces (Hunan, Hubei, Jiangxi, Anhui, Jiangsu), with achieving the objective of transmission control and gained great financial benefits. A total of 5 books and 40 scientific papers have been published, among them, 14 were published in international journals including Lancet, New England Journal of Medicine with 111.5 scores of SCI impact factors and 148 citation records in total, and 26 in national kennel journals with 104 citation records.

The period of the project: June 2002 – December 2008

Source of the financial support: Ministry of Science and Technology, UNICEF/UNDP/World Bank/World Health Organization TDR, Health Department of Jiangxi Province

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复旦大学公共卫生学院
 湖北省疾病预防控制中心血吸虫病防治研究所
 湖南省血吸虫病防治研究所
 江西省寄生虫病防治研究所
 安徽省血吸虫病防治研究所
 江苏省血吸虫病防治研究所
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 云南省地方病防治所

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 4 湖北省疾病预防控制中心血吸虫病防治研究所
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 3 湖北省血吸虫病防治领导小组办公室
 4 江西省血吸虫病防治领导小组办公室
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 6 云南省血吸虫病防治领导小组办公室
 7 湖北省疾病预防控制中心血吸虫病防治所
 7 湖北省疾病预防治研究所
 9 江西省寄生虫病防治研究所
 10 安徽省寄生虫病防治研究所
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¹ 上海交通大学-中国科学院上海生命科学研究院-美国宾州州立大学生命科学联合研究中心

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¹ School of Public Health, Fudan University, China

² Institute of Schistosomiasis Control, Hubei Provincial Center for Disease Control and Prevention, China

³ Hunan Provincial Institute of Schistosomiasis Control, China

⁴ Jiangxi Provincial Institute of Parasitic Diseases, China 5 Anhui Provincial Institute of Schistosomiasis Control, China

⁶ Jiangsu Institute of Schistosomiasis Control, China

⁷ Institute of Parasitic Diseases, Sichuan Provincial Center for Disease Control and Prevention, China 8 Yunnan Provincial Institute of Endemic Disease Control

¹ Jiangsu Institute of Parasitic Diseases, China, 2 Jiangxi Provincial Institute of Parasitic Diseases, China,

³ Dali Institute of Schistosomiasis Control, Yunnan Province, China,

⁴ Institute of Schistosomiasis Control, Hubei Provincial Center for Disease Control and Prevention, China,

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- 6 Yunnan Provincal Office of Leading Group for Schistosomiasis Control, China
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³ Hanshou County Center for Disease Control and Prevention, Hunan Province, China

² Hunan Provincal Office of Leading Group for Schistosomiasis Control, China

¹² Yunnan Provincial Institute of Endemic Disease Control and Prevention China

² National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China

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¹ Department of Disease Control, Ministry of Health

² Jiangxi Institute of Parasitic Disease, China

³ Hubei Provincial Center for Disease Control and Prevention, China

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³ Chongqing Center for Disease Control and Prevention, China

⁴ Hubei Institute of Schistosomiasis Control, China 5 Shangdong Institute of Parasitic Diseases, China

⁶ Department of Disease Control, Ministry of Health, People's Republic of China

² Shanghai Jiaotong University School of Medicine

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- 7 Jiangsu Institute of Parasitic Diseases

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³ Ingerod 407, Brastad, Sweden.

⁴ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel , Switzerland

¹ School of Public Health, Peking University, Beijing, China

⁸ Department of Parasitology, Xiangya School of Medicine, Central South University

⁹ Department of Microbiology and Parasitology, Sun Yat-sen University of Medical Sciences, Guangzhou, China

¹⁰ Ministry of Health, Beijing, China

¹¹ Ingerod 407, Brastad, Sweden

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1 Shanghai-MOST Key Laboratory of Health and Disease Genomics, Chinese National Human Genome Center at Shanghai, China

2 School of Life Science/Institutes of Biomedical Sciences, Fudan University, China

- 3 Shanghai Center for Bioinformation Technology, China
- 4 Cheriton School of Computer Science, University of Waterloo, 200 University Avenue West, Waterloo, Ontario N2L 3G1, Canada
- 5 Comparative Genomics Centre/School of Tropical Biology, James Cook University, Townsville, Queensland 4811, Australia
- 6 State Key Laboratory of Medical Genomics and Shanghai Institute of Hematology, RuiJin Hospital, School of Medicine, Shanghai Jiao Tong University, China
- 7 National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China.
- 8 Shanghai Center for Biochip Engineering, China
- 9 Department of Microbiology, Immunology & Tropical Medicine, George Washington University Medical Center, NW, USA
- 10 Molecular Parasitology Laboratory, Queensland Institute of Medical Research, 300 Herston Road, Brisbane, Queensland 4006, Australia
- 11 Beijing Institute of Genomics, Chinese Academy of Sciences/Beijing Genomics Institute, B-6 Beijing Airport Industrial Zone, China
- 12 Pathogen Sequencing Unit, Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton CB10 1SA, UK
- 13 Genome Institute of Singapore
- 14 Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, China.

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¹ National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, China. 2 National Key Laboratory of Agricultural Microbiology, Huazhong Agricultural University

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² Department of Public Health and Epidemiology, Swiss Tropical Institute, Switzerland

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¹ Department of Public Health and Epidemiology, Swiss Tropical Institute, Basel, Switzerland

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§8. 2009 年大事记

- ▶ 1月8-13日,所党、政、工、青、妇领导看望离休老干部、身体欠佳的退休职工和老 专家等共 36人。
- ▶ 1月15-16日上午,召开所2008年度科技和疾控工作会议,各课题和项目负责人分别 就各自的工作作了汇报。
- 1月16日下午,召开本所2009年工作会议,汤林华所长作了《2008年业务行政工作 总结》和《2009年工作要点》的报告;中国疾控中心杨维中副主任出席会议并讲话; 所领导班子成员作了述职报告。
- 1月16日,丝黑包室等9个部门获2008年度文明处室(班组)。"31名同志全力以赴, 无私奉献,为抗震救灾做贡献"等被评为本"十佳"好事。
- ▶ 1月19日,在好望角大饭店举行2009年迎春会。
- 1月19日,召开四届十二次职代会,审议所长报告,民主评议领导干部,财务处长李 伟民通报2008年度本所的经费、福利费、教育经费、招待费的使用和开发创收情况; 蔡继红书记通报党政班子民主生活会情况;审议通过《寄生虫病所职工假期管理规 定》。
- 1月20日,我所被上海市医务工会评为"先进职工之家";汤林华所长被评为"支持工 会工作的好领导";工会主席王灵被评为"上海市医务工会先进工会工作者"。
- ▶ 1月21日,所领导向离休老干部通报本所2008年工作,并一起迎新年聚餐。
- 2月5日,分别启用"中国疾病预防控制中心寄生虫病预防控制所人力资源处"、"中国疾病预防控制中心寄生虫病预防控制所保卫处"部门新章,原"中国疾病预防控制中心寄生虫病预防控制所人保处"公章同时停用。
- 2月8-16日,汤林华研究员赴澳大利亚参加"亚太疟疾消除网络启动会",并访问昆士 兰医学研究所。
- ▶ 2月14-16日,我所和新华药业股份有限公司有关领导和专家赴广西疾控中心,与该中心领导和专家探讨三苯双脒在现场推广应用的事宜。

- 2月18-23日,举办了一期"青年技术骨干现场流行病学培训班"。5名青年技术人员 被评为优秀学员。
- 2月26-27日,汤林华所长和蔡继红书记等4人赴京参加"中国疾控中心2009年工作 会议",汤林华所长就本所人才培养工作作了交流发言。
- 3月3日,周晓农研究员被授予2007-2008年度"卫生部有突出贡献的中青年专家" 称号。
- 3月3-9日,我所组织专家组赴云南省兰坪县调查处理当地不明原因群体性发病事件, 判定此次疫情为旋毛虫病暴发疫情,并拟定了《云南省怒江州兰坪县旋毛虫病流行情况及潜在流行因素调查方案》。
- ▶ 3月5日, 胡薇研究员被评为上海市"三八红旗手"。
- ▶ 3月9日,召开2009年平台建设工作交流会,对目前平台建设工作中存在的困难、问题与解决办法进行了讨论和协调。
- 3月13日,举行开展深入学习实践科学发展观活动动员大会和2009年党建工作会议。 中国疾病预防控制中心党委副书记宫新生、上海市教卫党委、卫生局干部人事处领导、 全体党员和部分群众代表出席了会议。
- 3月15日,我所承担的国家传染病重大专项"重要寄生虫病检测和监测技术研究"项目启动会在上海召开。
- 3月15-18日,配合卫生部疾控局,在新疆乌鲁木齐市组织召开2008年中央补助地方包虫病防治项目工作会议和2008年中央补助地方包虫病防治项目新增项目县培训工作会。
- ▶ 3月15-18日,周晓农研究员赴德国参加WHO会议。
- ▶ 3月26日,市委巡视组一行4人来所视察,听取了领导班子的工作汇报,参观了标本 馆、图书馆和重点实验室。
- 4月9日,举行学习实践科学发展观活动报告会,中国疾控中心杨维中副主任作了题为《学习贯彻科学发展观——加强公共卫生建设,增加社会公平性》的报告,全所职工和部分离退休党员参加了学习培训。

- ▶ 4月9日,上海市卫生局副局级巡视员王磐石,疾控处处长李善国应邀来所,与本所 党政领导商讨共建事宜。
- 4月13日,召开了"解放思想大讨论暨学习成果交流会",所领导班子成员、中层干部、 支部委员、特邀代表和离退休老同志共40余人参加了会议。所领导班子成员及部分 中层干部等10位同志作了交流发言。
- 4月21日,市卫生系统文明委召开大会,我所被评为"第九届上海市卫生系统文明单位"、"第十四届上海市文明单位",受到表彰。
- ▶ 4月20-24日,开展实验室生物安全周活动。
- ▶ 4月22日,召开四届十三次职代会,审议通过了《寄生虫病所在职职工住房(购房) 补贴实施办法》。
- 4月28日,召开学习实践科学发展观活动分析检查阶段动员会,蔡继红书记总结了本 所学习实践科学发展观活动第一阶段(学习调研阶段)的工作并布置了第二阶段(分 析检查阶段)的工作。
- ▶ 4月28日,所领导与各部门负责人分别签定《寄生虫病所廉洁勤政责任书》和《保密 工作责任书》。
- ▶ 4月30日,成立以汤林华所长为组长的甲型H1N1流感信息工作领导小组,并启动应急值班,保持与上海市卫生局和中国疾控中心的信息沟通,完成上级交办的任务。
- ▶ 5月5日,我所举办了"甲型 H1N1 流感"疫情和应急处理培训班,全所职工参加了培训。
- ▶ 5月6-7日,周晓农副所长参加国务院血防春查组对四川省的血吸虫病防治工作检查。
- 5月18日,经所人才工作领导小组审议,周水森等9位同志被列为2009年人才培养 对象。
- 5月21-25日,我所党政主要负责人和学习实践办公室的有关同志随中国疾控中心党委副书记宫新生一行赴四川省阿坝藏族羌族自治州看望我所挂职干部副所长曹建平,并开展"学习实践科学发展观,为边远少数民族地区人民健康服务"的主题活动。
- ▶ 5月22日,完成本所1号楼大修及环境改造设计招标工作。

- ▶ 5月28-29日,周晓农研究员参加在加纳阿克拉召开的"建立蠕虫病专家咨询组和伊维 菌素抗药性组织磋商会议"。
- ▶ 6月5日,召开领导班子专题民主生活会,市教卫党委学习实践活动第一指导检查组组长彭裕文、市卫生局局长徐建光、中国疾控中心党委书记沈洁等参加了会议,班子成员查找了在贯彻落实科学发展观方面存在的突出问题,并提出整改的方向。
- ▶ 6月8日,根据《中国疾控中心关于核定寄生虫病所事业编制的通知》,多年困扰本所的事业编制问题得到解决。
- ▶ 6月13日,我所疟防专家完成为期3个月的援建喀麦隆、刚果(金)抗疟中心任务, 顺利回国。
- ▶ 6月13-18日,周晓农研究员赴瑞士参加第32届TDR联合协调理事会。
- 6月15日,召开领导班子民主生活会情况通报和领导班子分析检查报告评议会。上海市教卫党委学习实践科学发展观检查指导组张莉同志、上海市卫生局干部人事处陈蓓丽同志及所领导班子成员、本所参会同志对领导班子分析检查报告进行测评,认可率为97.6%。
- ▶ 6月19日,召开学习实践科学发展观活动整改落实阶段工作会议,布置了整改落实阶段工作。
- ▶ 6月25日,根据上海市公安局卢湾分局《告知书》,我所再次被列为治安保卫重点单位。
- ▶ 6月25日,按照上海市医疗卫生系统对口支援都江堰灾后重建工作总体部署,本所杨 诗杰被选派为第四批医疗队前方工作组成员赴都江堰执行对口支援工作。
- 6月26-27日,召开2009年寄生虫病防治工作研讨会,就2009年上半年寄生虫病防治工作、防治与科研之间关系和2010年防治研究的需求进行了研讨。
- 7 月中旬,开展送清凉活动。所党政领导带领职能部门和退管会,走访看望了离休干部、归国华侨、部分退休的民主党派、体弱多病的老教授和 90 岁以上的高龄职工共28 人。
- ▶ 7月20-24日, 汤林华研究员应 WHO 邀请赴菲律宾参加西太区疟疾控制与消除行动 计划研讨会。

- ▶ 8月21日,对学习实践活动进行了群众满意度测评,职工的满意度为100%(满意90%, 比较满意10%)。
- ▶ 8月23-25日,日本国立传染病研究所 Hiroshi Omae 主任访问我所,与汤林华所长治 谈亚洲间日疟合作项目。
- ▶ 8月24日,市教卫指导组来所对本所开展学习实践科学发展观活动工作进行检查,得 到较好的评价。
- 8月31日,召开深入开展学习实践科学发展观活动总结大会,中国疾病预防控制中心 梁东明书记、杨维中副主任、人资处沈平处长、党办孟宪平副主任及上海市卫生局干 部人事处陈晓红处长等领导出席。
- ▶ 9月1-6日,周晓农研究员赴瑞士日内瓦参加"TDR疾病相关专题咨询组主席与联合 主席会议"和"因贫所致传染病研究管理第三次策略咨询委员会会议"。
- ▶ 9月,所党、政、工、退管会看望离休老干部,获国家级科技奖、市级先进及 80 周岁 以上的退休老同志共 23 名。
- 10月11-21日,周晓农研究员赴老挝万象参加"食源性吸虫和囊虫病非正式咨询会议" 和"第九届亚洲血吸虫病网络年会"。
- 10月14日,完成1号大修和环境改造工程施工招标工作,确定由上海美达建筑有限 公司中标。
- 10月14日-11月2日,发展中国家寄生虫病防治培训班在上海召开,来自15个国家 23名学员参加了培训。
- 10月24-25日,"中国热带病药物与诊断创新网络第一次会议"在上海召开,我所与国家新药筛选中心和第二军医大学等12家单位联合成立了"中国热带病药物与诊断创新网络",中国疾控中心副主任杨维中参加会议。
- ▶ 10月25-30日,汤林华所长赴斯里兰卡参加"疟疾综合控制策略地区研讨会"。
- 10月26日,由我所牵头的2项成果,"中国血吸虫病防治策略的研究"和"建立长江 流域、我国湖区 GIS 血吸虫病预警系统研究"分别荣获中华预防医学会科技进步一等 奖和三等奖。

- ▶ 10月26-28日,受WHO/TDR委托,在上海召开"环境、农业和传染病专家咨询组第 二届年会"。
- 10月,8个党支部完成换届改选,王漪、张超威、郭俭、王立明和苏忠伟分别担任第 一至五党支部书记,余森海任离休党支部书记,陈彩云、章幼妹分别担任退休第一、 二党支部书记。
- 11月3日,完成本所《1号楼大修及环境改造工程》施工监理项目公开招标工作,上 海欣顺建设工程监理有限公司中标。
- ▶ 11 月 10-14 日,汤林华所长赴瑞士参加"综合媒介管理措施第一次利益相关方会议"。
- ▶ 11 月 13 日,完成本所《1 号楼大修及环境改造工程》消防施工项目公开招标工作, 上海科原工程技术有限公司中标。
- 11月15-21日,举办大湄公河次区域疟疾控制和消除培训班,来自老挝、越南、柬埔寨、泰国、缅甸及中国的18名学员参加培训。
- ▶ 11 月 17 日,上海市卫生局院务公开工作检查组来所检查所务公开工作情况,得到较好评价。
- ▶ 11 月 18-22 日,周晓农研究员赴美国华盛顿参加美国热带医学和卫生协会第 58 届年会。
- ▶ 11月20日,第三届上海市世界卫生组织合作中心主任会议在我所召开。
- ▶ 11月23日,本所1号楼大修及环境改造工程开工。
- 11月26日,召开职代会主席团联席会、审议通过《中国疾病预防控制中心寄生虫病预防控制所在职职工住房(购房)补贴实施办法补充条例》。
- 11月,继续组织开展全球基金疟疾防治项目,签订六轮全球基金项目二期启动协议、 对云南、江苏省五轮全球基金项目开展现场督导、举办3期全球基金项目管理培训会等。
- ▶ 12月1日,成立建所 60周年筹备工作领导小组,开展相关筹备工作。
- ▶ 12月1日,夏志贵、张超威、李石柱三位同志试用期满考核合格,正式任职。

- ▶ 12月4日,张国庆同志当选寄生虫病所第六届团总支书记。
- ▶ 12月6日,根据工作需要,经研究决定,聘任陈颖丹同志为土源性、食源性寄生虫病 室主任,试用期一年。
- ▶ 12月8-11日,在海南三亚市与全球消除疟疾专家组合作举办了第4次MEG会议。 卫生部国合司任明辉司长、中国疾控中心王宇主任参加了会议。
- ▶ 12月15日,汤林华所长和蔡继红书记赴京向中心领导汇报共建工作。
- 12月16日,"疫情就是命令,防控就是责任"被评为2009年度上海市医务职工精神 文明"十佳好事"集体。
- 12月29日,杨诗杰同志完成第四批上海市医疗卫生系统对口支援都江堰灾后重建前 方工作组任务,载誉归来。

§8. CHRONICLE OF EVENTS IN 2009

- January 8–13, Party and administrative officials and People in charge of Labor Union, Communist Youth League and Women's Federation visited 36 retired cadres, retired workers in poor health and old experts.
- January 15–16, Annual Meeting of disease control and scientific technology in 2008 was held to communicate and summarize the main disease control activities and the progress of scientific research projects.
- January 16, "IPD Annual Meeting, 2009" was held. Tang Lin-hua, the director of IPD gave the report of "Administrative Work Summary in 2008" and "Key Work Plan of 2009". Yang Wei-zhong, vice director of China CDC attended the meeting and gave a speech. Members of IPD leadership team reported about their performance of duties to all staff followed by an evaluation.
- January 16, 9 departments were elected as 2008 Civilization Departments. 10 deeds such as "31 cadres devoting themselves to the earthquake relief" were elected as the 10 good things of IPD in 2008.
- ▶ January 19, Spring Festival Celebrating Activity 2009 was held.
- January 19, the 12th session of the 4th employee representative conference was held to deliberate the annual report of the director and complete the democratic evaluation of cadres. "IPD employee holiday management rule" was discussed and passed.
- January 20, IPD was elected as "advanced employees family" by Shanghai Medical Labor Union. Tang Linhua was elected as "Good Leader Supporting Labor Union". Chairman of IPD Labor Union, Wang Ling, was elected as "Advanced Worker of Shanghai Medical Labor Union".
- > January 21, leaders reported the work in 2008 to retired cadres and had a dinner together.
- February 5, new signets of "department of human resource" and "department of security" were started to use.

- February 8–16, Tang Linhua went to Australia to attend "Initiative meeting of malaria elimination net in Asia and the Pacific", and visited Medical Research Institute of Queensland.
- February 14–16, leaders and experts of IPD and Xinhua Pharmaceutical Company went to Guangxi CDC to discuss the onsite promotion of tribendimidine.
- February 18–23, "Field epidemiology training for young technians cadreman" was held and five students were elected as excellent ones.
- February 26–27, Director Tang Linhua, Secretary Cai Ji-hong and the other 2 persons went to Beijing to attend "China CDC Annual Meeting 2009". Tang Linhua reported HR training work at the meeting.
- ➢ March 3rd, Zhou Xiao-nong was awarded the title of "MOH outstanding young expert, 2007−2008".
- March 3–9, IPD expert team went to Lanping, Yunnan Province to investigate and deal with the event that local unexplained disease broken out by group. They judged this epidemic disease as trichinosis and made the investigation plan of trichinosis prevalence and potential factors in Lanping.
- March 5, Hu Wei was elected as Shanghai Woman Model.
- March 9, "Communicative Meeting on Platform Construction 2009" was held to discuss and solve the problems and difficulties.
- March 13, mobilization meeting on in-depth study and practice of the scientific concept of development and Party Work Conference 2009 were held. Gong Xin-sheng, Vice Party Secretary of China CDC, leaders of Cadre Department of Shanghai Health Bureau, all Party members and stuff representatives attended the meeting.
- March 15, national major projects of infectious disease "Major Parasitic Disease Detection and Surveillance Technology Research" starting meeting was held in Shanghai.
- March 15–18, with cooperation of the Diseases Control Bureau, MOH work meeting on central government subsidies to local hydatid disease control project and training the staff in new counties in the project 2008 was held in Urumqi, Xinjiang.

- March 15–18, Zhou Xiao-nong attended WHO conference in German.
- March 26, Municipal inspection team came to IPD, listened to the report by the leader team and visited specimen showroom, library and key laboratory.
- April 9, in-depth study and practice of the scientific concept of development report meeting was held. Yang Wei-zhong, Vice director of China CDC gave a speech titled "study and practice the scientific concept of development—enhancing public health construction and increasing social equality". All the staff and part of retired Party members participated the meeting.
- April 9, Wang Pan-shi, inspector of Shanghai Health Bureau and Li Shan-guo, director of disease control department were invited to IPD to talk over the co-construction business with the IPD leaders.
- April 13, discussion and communication meeting on ideological emancipation was held and the leaders of IPD, mid-class cadres, the branches of the Party members, invited representatives and retired cadres attended the meeting. Leaders of IPD and part of mid-class cadres gave speech.
- April 21, IPD was honored as "the 9th round civilization unit of Shanghai health system" and "the 14th round Shanghai civilization unit" on the meeting held by Shanghai Health System Civilization Committee.
- April 20–24, the activity of "IPD Laboratory Security Week" was undertaken.
- April 22, the 13rd session of the 4th employee representative conference was held and "IPD Measures of accommodation subsidies paid to staff for housing" was discussed and passed.
- April 28, the mobilization meeting on Study and Practice of the Scientific Concept of Development during analysis and inspection period was held. Secretary Cai Ji-hong summarized the first period work and assigned the second period work.
- April 28, department chiefs signed responsibility document on promise of honesty and diligence with branch leaders and responsibility document on non-disclosure.
- April 30, leader team of A/H1N1 information work was set up and Tang Linhua was the team leader. Emergency duty started to keep communication with Shanghai Health Bureau

and China CDC and fulfilled the tasks assigned by the superior.

- May 5, A/H1N1 emergency response training class was held and all staff participated.
- May 6 to 7, Vice Director Zhou Xiao-nong participated in the inspection of schistosomiasis control in spring in Sichuan Province organized by the State Department.
- May 18, after discussed by IPD HR work leader team, 9 cadres were elected as 2009 training objects.
- May 21–25, leaders of IPD went to Sichuan Province with Gong Xin-sheng, vice secretary of China CDC to visit the sending cadre Cao Jian-ping and carried out the activity with the theme of "Study and practice of the scientific concept of development to serve the health of people at remote ethnic minority areas".
- May 22, the bid invitation of NO.1 building rebuilding and design was completed.
- May 28 to 29, Zhou Xiao-nong attended the Discussing meeting on helminthiasis expert reference group construction and drug resistance of ivermectin held in Accra, Ghana.
- ➢ June 5, the leaders including Peng Yu-wen, Xu Jian-guang, and Shen Jie attended the democratic meeting with the theme of the Scientific Concept of Development to find out the problems and the solutions.
- June 8, according to "Notice of staff problem ratification in IPD from China CDC", staff problem which worried IPD for several years was solved.
- June 13, malaria experts finished 3-month-long assignment to the establishment of malaria control center in Cameroon and Congo (Kinshasa).
- ➢ June 13 to 18, Zhou Xiao-nong went to Switzerland to attend the 32th TDR Federal Coordinating Council.
- June 15, evaluation meeting on the analysis report of leadership democratic life was held. The leaders of Shanghai Municipal Education and Health Party Committee, Health Bureau and IPD staff attended the meeting and the recognition rate was 97.6 %.
- > June 19, the work meeting of study and practice of the scientific concept of development

activities during the implementation phase was held, on which the detail work was arranged.

- June 25, according to "Disclosure Statement" of the Shanghai Luwan Branch of the Public Security Bureau, IPD was once again listed as key units of public security.
- ➢ June 25, according to the overall plan of Shanghai health system support to the reconstruction in Dujiangyan, Yang Shi-jie was selected as a member of the fourth medical team to work in Dujiangyan.
- ➤ June 26–27, the 2009 workshop on parasitic disease control was held, on which the control work in the first half of 2009, the relationship between scientific research and disease control, and research needs in 2010 were discussed.
- In the hot mid-July, the leaders of IPD visited the retired cadres, returned overseas Chinese, part of the retired members of democratic parties, the frail old professor and retired staff over 90-year-old.
- July 20–24, Tang Linhua was invited to visit the Philippines to participate in WHO seminar on Western Pacific Regional Action Plan for malaria control and elimination.
- August 21, a survey on the population satisfaction of study and practice of Scientific Concept of Development activity was carried out, and employee satisfaction was 100%.
- August 23–25, the Director of Japan National Institute of Infectious Diseases Hiroshi Omae, visited IPD, and discussed with Director Tang Linhua about Asian vivax malaria cooperation projects.
- August 24, the Steering Group of Shanghai Municipal Education and Health Party Committee inspected study and practice of Scientific Concept of Development activity in IPD, and the evaluation was good.
- August 31, the summary meeting on study and practice of the Scientific Outlook on Development was held. The leaders of China CDC and Shanghai Municipal Health Bureau attended the meeting.
- September 1–6, Zhou Xiao-nong went to Geneva, Switzerland, to participate in "Chairman and Co-Chairs of TDR Diseases Related Topics Advisory Group Meeting" and "the Third

Meeting of Strategy Advisory Committee on Research and Management of Infectious Diseases Caused by Poverty".

- > In September, the leaders of IPD visited 23 retired staff.
- October 11–21, Zhou Xiao-nong went to Vientiane, Laos to participate in "Informal Consultation Meeting of Food-Borne Trematode Diseases and Cysticercosis" and "the Ninth Asia Network on Schistosomiasis".
- October 14, Shanghai Meida Construction Co. Ltd. won the bid of No.1 Building overhaul and environment improvement project.
- October 14–November 2, training course on parasitic disease control in developing countries was held in Shanghai and 23 people from 15 countries participated in the training.
- October 24–25, "the First Meeting on China Tropical Disease Drugs and Diagnosis Innovation Network" was held in Shanghai. IPD together with other 11 units including the National Center for Drug Screening and the Second Military Medical University, cooperated to set up "China's Tropical Disease Drugs and Diagnosis Innovation Networks". Yang Wei-zhong, Deputy Director of China CDC attended the meeting.
- October 25–30, director Tang Lin-hua went to Sri Lanka to participate in "Regional Workshop on Integrated Control Strategy of Malaria."
- October 26, "Control Strategies of Schistosomiasis in China" and "the Establishment of GIS Warning System for Schistosomiasis in the Yangtze River Region and Lake Regions" led by IPD were awarded the first prize and the third prize of scientific and technological progress, respectively, by Chinese Preventive Medicine Association.
- October 26 to 28, commissioned by WHO / TDR, IPD held "the second annual meeting of the advisory expert group of environment, agriculture and infectious diseases" in Shanghai, October, the election of cadres of 8 party branches was completed.
- November 3, Shanghai Xinshun Construction Supervision Co., Ltd. won the bid of Construction Supervision of No.1 Building overhaul and environment improvement project.
- November 10–14, Director Tang Linhua went to Switzerland to attend the "the First Meeting of Benefit-Related Partys on Integrated Vector Management".

- November 13, Shanghai Keyuan Engineering and Technology Co., Ltd. won the bid of fire fighting of No.1 Building overhaul and environment improvement project.
- November 15–21, training class of malaria control and elimination in the Great Mekong Subregion was held and 18 people from Laos, Vietnam, Cambodia, Thailand, Myanmar and China participated.
- November 17, the affair publication in IPD was examined by inspection group of Shanghai Health Bureau, and IPD got a good evaluation.
- November 18–22, Zhou Xiao-nong went to Washington to participate in the 58th Annual Meeting of the United States Association of Tropical Medicine and Hygiene.
- November 20, the third Conference of Directors of the World Health Organization Collaborating Centres in Shanghai was held in IPD.
- November 23, No.1 Building overhaul and environment improvement project started.
- November 26, the meeting of employee representatives was held, on which "complementary regulations of implementation measures of working staff housing subsidy in IPD, China CDC" was discussed and passed.
- In November, the Global Fund Malaria Control Project was continued. Initiation Protocol of the second phase of the sixth round of the Global Fund was signed. The field supervision of the implementation of the fifth round of the Global Fund in Yunnan and Jiangsu Province was carried out. The three Global Fund project management training sessions were held.
- December 1, the preparatory work leading group of the 60th anniversary of IPD establishment was set up.
- December 1, Xia Zhi-gui, Zhang Chao-wei, and Li Shi-zhu passed the examination during trial period and were formally employed.
- December 4, Zhang Guo-qing was elected as the sixth secretary of the Youth League of IPD.
- December 6, because of operational need, it was decided to appoint Chen Ying-dan as the Chief of soil-borne and food-borne parasitic diseases department with one-year probation.

- December 8–11, the 4th MEG meeting was held in Sanya with the cooperation of the Global Malaria Expert Group. Ren Ming-hui, Director of International Cooperation Division, MOH, and Wang Yu, Director of Chinese Center for Disease Control and Prevention participated in the meeting.
- December 15, Director Tang Linhua and Secretary Cai Ji-hong went to Beijing to report co-construction work.
- December 16, "the epidemic is the order, and disease control is the responsibility" was elected as one of the ten "great good" group of Shanghai Medical Workers spiritual civilization in 2009.
- December 29, Yang Shi-jie completed the task of Shanghai health system's support to Dujiangyan reconstruction and returned.

§9. 先进事迹介绍

全国血吸虫病防治先进个人

----郭家钢同志先进事迹

郭家钢是中国疾控中心寄生虫病所研究员,血吸虫病室主任,曾赴瑞士巴塞尔大学自 然科学院学习获得流行病学专业博士学位,他从事血吸虫病研究和防治工作近三十年,他 特别注重理论与实践相结合,常年工作在疫区现场,及时发现问题和解决问题,为中国的 血吸虫病研究和防治工作做出贡献。

在血吸虫病研究方面:对中国血吸虫病防治策略进行了深入细致的系列研究,建立了 全民化疗和选择性化疗两种防治策略成本与效果的相关模型,分析了全民化疗和选择性化 疗两种策略居民依从性,提出了血吸虫病巩固和维持阶段中用被动化疗取代主动化疗的策 略,此项目获得了卫生部十年百项推广项目。通过近十年的研究,证实了牛在血吸虫病传 播中的重要作用,为近年国务院血防办在重点疫区综合防治血吸虫病试点项目中实施的传 染源控制策略提供了科学的理论依据,并在现场应用中取得了巨大的成绩,本项目已经获 得中华预防医学科学技术一等奖。运用地理信息系统/遥感技术(GIS/RS)揭示湖沼区钉 螺的孳生地环境特点,并实现了遥感技术在血吸虫病控制和监测方面的应用价值。通过利 用全球定位系统(GPS)和全球无线移动通讯技术(GSM),探索了地理位置信息和疾病 暴发和流行的同步快速的准确传递,实现了监控中心对现场疫情的信息交流;首次将疫情 的信息报告赋予疫源地位置信息,为传染病的报告系统提供的了一个全新的技术平台。本 项目获得一项专利和中华预防医学科学技术三等奖。

在防治工作中,他主动配合卫生部疾病控制局的工作,积极起好参谋作用,为一系列 政策的出台和规划的设计献计献策,为我国制定以传染源控制为主的综合治理策略及推广 做了大量的理论和试点的探索。同时,为促进国家预防控制血吸虫病中长期规划目标的实 现,先后多次参加卫生部组织的技术考核组,对湖南、湖北、江西、安徽、江苏和四川等 省进行了预达标和达标的考核;并在省部联合防治血吸虫病项目制定和执行过程中,积极 开展技术指导,促进项目规划的早日编制完成。为了做好监测和预警工作,利用多种先进 技术开展了急性血吸虫病预警工作,他积极探索和运用地理信息系统/遥感技术 (GIS/RS) 揭示湖沼区钉螺的孳生地环境特点,探索了地理位置信息和血吸虫病流行的动态信息传 递,将疫情信息和疫源地地理信息有机结合,为传染病的报告系统提供的了一个全新的技 术平台。

郭家钢同志主持完成了多项国内外重大科学研究项目,包括国家十五攻关项目《建立

长江流域、我国湖区 GIS 血吸虫病预警系统研究》、美国国立卫生研究院(NIH)《长江中 下游环境变化与血吸虫病传播关系的研究》和英国 WELLCOME TRUST GRANT《中国血 吸虫病防治可持续发展研究》。先后在美国、英国、日本、瑞士、澳大利亚、瑞典、丹麦、 菲律宾、巴西、坦桑尼亚等国进行讲学和学术交流,并多次应世界卫生组织的邀请参加相 关的专家会议,并在国际会上介绍中国新时期血吸虫病防治策略。在国内外核心期刊杂志 上发表论文 50 多篇,其中第一作者 SCI 收录有 6 篇,作为主要的研究者之一在世界上最 慕名的新英格兰杂志发表论著。

一九九八年获卫生部跨世纪防治地方病优秀科技工作者荣誉称号,一九九六年和一九 九七年连续两年获得中国预防医学科学院青年科技人员鼓励奖。在一九九八年被评为卫生 部防洪抢险、防病救灾先进个人。二〇〇八年积极报名参加四川抗震救灾,并对灾后血吸 虫病流行风险进行了调查和评估,为灾后血吸虫病风险防范提供科学的依据。

郭家钢同时还兼任了上海市政协第十、十一届委员,卫生部血吸虫病专家咨询委员会 副主任委员,卫生部 SARS 及其它传染病应对项目国家级专家等职务。

卫生部先进会计工作者

----李伟民同志先进事迹

李伟民同志在近 20 多年财务工作中,团结同志,踏实肯干,爱岗敬业,知识扎实, 具有强烈的主人翁意识,得到领导和同事们的一致认可和信任。他主持制定了《财务处岗 位工作责任制细则》等一系列财务内部规章制度,对本所财务工作进行了认真的业务理顺 和整改,引进了国内先进的财务管理软件(用友财务软件),规范各项业务操作,对我所 会计核算和财务管理水平的提高起到了强有力的推动作用,财务管理工作严格做到了制度 化、规范化和办公自动化。

一、 全身心投入, 配合所领导做好单位各项财务管理工作

李伟民同志尽职尽责,对所的每一项重大决策后的财务预、决算,他总是按要求及时 完成,从无疏漏把"增收节支,提高资金使用效率"放在第一位的前提下突出了财务部的 职能作用。

为提高财政资金的使用效率,他坚持定期分析单位的财务收支状况,深入基层开展调研,掌握第一手资料,为领导决策提供科学的依据。分出主次,合理安排支付资金。

二、严格管理国有资产,做到人变物不变,物变条理清。

在历次资产清查工作过程中,兼任资产清查小组成员并兼任资产清查小组办公室主

任,在资产清查过程中,能认真贯彻执行资产清查有关政策和办法,精通资产管理和资产 清查业务,建立资产管理与预算管理,资产管理与财务管理相结合的运行机制。

三、负责国际合作项目资金管理和财务督导工作,保证项目资金安全、有效,专款专 用。

作为中国全球基金疟疾项目国家项目办财务主管,全面负责项目的资金管理和财务督导工作。建立了各省、县财务通讯网络机制,保证报表的及时性、真实性、完整性。

四、李伟民同志认真履行岗位职责,为单位当好家理好财,做好领导的参谋与助手, 为领导提供可靠的财务数据和各项分析。从建章立制入手,逐步规范各种票、证、帐、表 的使用。在全院培训的前提下,加强会计电算化。在作好本职工作同时,还努力做好所纪 委、工会经审、支部委员等工作。

卫生部治安保卫先进个人

----孙华荣同志的先进事迹

孙华荣同志从事安全保卫工作十多来,在所领导的指导帮助下,以高度的责任感和强 烈的事业心,在保卫工作上兢兢业业、恪尽职守、辛勤工作,使单位的安全保卫工作有了 明显的变化,出色地完成了领导交给的各项任务。为我所安全保卫工作做出了成绩。

一、求真务实、开拓进取,积极开展综合治理工作

1.在所综合治理领导小组帮助下积极开展综合治理工作,建立了由各部门骨干组成的 全所安全保卫网络,根据"谁主管、谁负责"的原则,所长和部门负责人、都签订了"安全 工作责任书",使安全保卫工作,责任到位、责任到人,定期考核、奖优罚劣,增强了职 工对做好安全保卫工作的责任感,职工在工作时发现问题或有不正常现象都能及时向有关 部门反映。

2.在队伍建设方面做了大量的工作,除了对所治保委员会进行调整充实外,还通过耐 心细致的政治思想工作,组织职工,分别成立了"突发事件应急小组"、"基干民兵排"、 "义务消防队"。充分发挥群众组织在安全保卫工作中的作用。由于我所国际交往比较多, 外国专家学者来访和工作不断增多,近两年来单位内部装修工程较多,来往人员复杂,给 安全防范工作带来难度,为了保证安全工作万无一失,经常组织和带领"应急小组"和"义 务消防队员"加强检查和巡逻。查获和制止了多起偷盗和安全违章操作及火警苗子。

3.定期组织职工学习培训,开展安全应急预案模拟演习等活动,调动和发挥了职工对 安全工作的积极性又提高了队伍的素质。多年来,他每年都对新进单位的职工和学生进行

上岗前的安全教育培训,提高他们的安全意识。自己对在平时的安全检查工作中发现的问题,及时向有关部门提出解决的设想,使安全保卫工作更加完善。

4.多年来,由于单位职工的安全防范意识加强,基本形成了安全工作人人参与,人人 关心的好现象。前几年有一伙流窜盗窃犯,以看病为幌子,到我单位进行偷窃活动,当正 在进行偷窃时,被科室的人员及时发现,立即报告并当场抓获。经公安有关部门审查,他 们是一伙流窜惯犯,曾多次潜入多家医院进行偷窃,当进入我单位时因职工的警惕性高, 由于职工的安全防范意识强,制止了盗窃事件的发生,受到了公安有关部门的称赞。

二、勤于学习、自觉锤炼、不断提升从事安全保卫工作的能力

1.针对单位的实际情况,在人防工作到位的情况下,提出了硬件设备要适合管理的步 伐,于是在实验室大修的时候,提出了安装技术防范设备的要求,引起领导的高度重视, 经研究后,同意增加经费,在单位内部主要出入口和重点部门安装了监控录像设备,更换 了消防设施,增添了烟感和喷淋头,加强了安全防范工作的硬件建设,得到了上级和公安 有关部门的好评。

2.工作中实行以安全合格单位为目标的管理责任制。定期组织职工开展安全宣传教育 活动。通过和工会小组长及学习小组长的联谊活动将安全防范工作进一步推广。组织职工 学习《内保条例》和《上海市安全生产条例》,使职工在思想上有了共同的认识和提高, 请专业人员来所课,增强责任感。做到防患于未然,把事故消灭在萌芽状态。利用宣传画 廊和小组学习形式,开展普法教育和宣传法律知识,提高职工的法律意识。走群众路线, 调动和发挥职工的积极性,安全保卫工作取得了职工的支持和配合。

3.他工作认真负责,勤勤恳恳。平时除了认真学习有关政策法规外,自己多次参加义 务知识培训,2006年获得了高级保卫师的职业资格证书。平时还经常走访上级主管部门和 公安有关部门,虚心向内行学习,在实践中,善于思考,周密计划,根据综合治理工作的任 务和要求,能较全面掌握单位职工的基本情况,外来人员的动向。在奥运会期间深入各部 门了解安全防范措施和职工的思想状况,并通过各种形式向职工宣传所内外的治安形势以 及应该注意防范的问题,不断增强职工的安全防范意识和反恐意识。他思想意识和工作方 法都较超前,对安全保卫工作提出的"防范在先,责任到人"的工作方法,得到了有关部 门的认可。

4.修订和建立了一系列规章制度,撰写了各种论文、调查报告等。近期有关工作论文 《寄生虫病预防控制所安全保卫工作的主要方法》、《浅谈科研卫生事业单位的安全保卫 工作》、《科研卫生事业单位学习(内保条例)浅识》、《探索疾病预防控制中心思想政 治工作的方法》等,在专业期刊上发表。

从 1993 年至今,他负责安全保卫工作以来,单位没有发生过重大的治安案件和刑事 198 案件。单位已连续五次十年被评为区《安全合格单位》、2006年、2009年获得上海市《治 安安全合格单位》、2006年、2008年上海市《平安单位》的称号。

个人也曾多次被上海市卫生局评为《综合治理先进个人》、上海市卢湾公安分局评为 《优秀保卫干部》和《治安保卫工作先进个人》、1998年获公安部《中央国家机关文化系 统保卫工作先进个人》、2005-2006年度所优秀共产党员,2006年获中国疾病预防控制中 心《先进保卫工作者》、2007年度卫生部《安全管理个人先进》、2007年卢湾区武装部 《优秀民兵干部》,2007年、2008年上海市公安局《治安保卫先进个人》、2009年上海 市《治安保卫先进个人》。

孙华荣同志始终能以党员标准严格要求自己,不辞辛苦,不计报酬,在平凡的岗位上 做着不平凡的工作,无私奉献,作为新时期的安全保卫工作者,始终坚持在工作中学习, 在学习中探索新的工作方法,任劳任怨,尽职尽责,体现了一位普通保卫干部的事业心和 责任感。

§9. INTRODUCTION OF ADVANCED DEEDS

Professor Guo Jia-gang has devoted himself to research on Schistosomiasis for nearly 30 years. He emphasized combining theory with practice, timely finding out and solving problem in epidemic areas through working in field throughout the year. He was elected as "National Advanced Worker of Schistosomiasis Prevention and Control" for the contribution to the schistosomiasis research and control.

Having worked in finance affair for more than 20 year, with unity to colleagues, hard working and devoting himself to work, Li Wei-ming promoted accounting and finance management of our institute, so he was elected as "Advanced Accountant of Ministry of Health in 2009".

With high responsibility and strong entrepreneur spirit, Sun Hua-rong worked hard in safeguard, and made a contribution to Institute security. He was elected as "Advanced Security Guard of Ministry of Health".



▲ 召开深入开展学习实践科学发展观活动总结大会,中国疾病预防控制中心 梁东明书记、杨维中副主任、人资处沈平处长、党办孟宪平副主任及 上海市卫生局干部人事处陈晓红处长等领导出席

The summary meeting on study and practice of the Scientific Outlook on Development was held. The leaders of China CDC and Shanghai Municipal Health Bureau attended the meeting



▲ 卫生部疾控局郝阳局长于 2009 年 4 月来所参加 在上海召开中国血吸虫病防治策略及现场推广研究成果鉴定会 "Appraisal Meeting of Strategies for Schistosomiasis Control in China" was held in April 2009 in Shanghai

获奖证书 Certificates of Merit



2009年上海市卫生系统精神文明、政风行风建设暨迎世

