

中国疾病预防控制中心 寄生虫病预防控制所

年 报

ANNUAL REPORT

2006

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



▲ 亚洲疟疾培训网络疟疾监测和流行病学管理培训班
Workshop on malaria surveillance and epidemic management
Shanghai, P.R.China, September 20-26, 2006



▲ 非洲国家传染病防治研修班
Training course on infectious diseases control and prevention for African countries

**中国疾病预防控制中心
寄生虫病预防控制所**
NATIONAL INSTITUTE FOR PARASITIC DISEASES
CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION

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- “索宝杀螺剂”进行现场扩大试验
- 我所顺利完成全国血防工作会议的材料准备工作
- 汤林华所长在湖南岳阳县考查寄生虫综合防治示范区试点准备

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- 全国血吸虫病防治研究青年学术交流会会议在滇召开 (2006-12-27)

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由卫生部疾病控制司召开的“全国血吸虫病防治策略理论与实施研讨会”于2006年12月9-10日在云南省昆明市举行。 (2007-1-16)

重要新闻

全国血吸虫病防治策略理论与实施研讨会于2006年12月9-10日在云南省昆明市举行。 (2007-1-16)

由卫生部疾病控制司召开的“全国血吸虫病防治策略理论与实施研讨会”于2006年12月9-10日在云南省昆明市举行。 (2007-1-16)

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- 2005.12.30 猪巨吻棘头虫 (Macracanthorhynchus hirudinaceus Pallas, 1781) 简介...
- 2006.02.01 线虫类属线形动物门的线虫纲 (Class Nematoda), 是无脊椎动物中一个很大的类群...
- 2006.02.13 医学节肢动物 (medical arthropod) 是指与医学有关即危害人畜健康的节肢动物...
- 2006.03.10 卫氏并殖吸虫 [Paragonimus westermani (Kerbert) Braun, 1899] 简介...

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- One hundred years with schistosomiasis japonica in the Philippines 11 - 15 September, 2006 Manila & Bohol Island, Philippines

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- RNAS+ Holds Sixth Regular Workshop (2006-10-3)
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§ 1. 2006 年工作总结及 2007 年工作要点

2006 年工作总结

2006 年是“十一五”规划的开局之年，也是我所团结奋进、和谐创新的一年，在党的十六大精神和“三个代表”重要思想指引下，全所职工同心同德，开拓进取，勇于抓住机遇，敢于迎接挑战，不断攀登、提升和超越，较好地完成了年初制定的各项工作目标，形成了我所事业发展的良好局面。

现将我所 2006 年的行政业务工作总结如下：

1 认真谋划，精心部署，切实加强寄生虫病防治工作

1.1 血吸虫病防治

1.1.1 血吸虫病综合治理联系点技术指导与评估

针对国务院血防领导小组办公室设立的综合治理联系点的各项血吸虫病的防控工作，我所每月组织 1-2 次现场调查，分别对江西、湖南、湖北、安徽和云南等省血防联系点进行现场技术指导和工作督导，共派出专业人员达 40 余人次。

配合卫生部组织召开了血防联系试点评估会议，并分别在上海、云南、江苏、安徽和云南等地组织召开了《以传染源控制为主的中国血吸虫病防治策略的研究》试点项目总结、成果申报等一系列工作会议，完成了试点项目数据、资料的收集整理、分析、总结和上报。

1.1.2 全国血吸虫病监测点技术指导与工作督导

组织专业人员赴湖南、湖北、江西、安徽、云南等地开展查螺、血吸虫病检测的督导和指导；分别在江西和云南召开了“监测技术改进与提高培训班”和“全国血吸虫病监测地区螺情调查工作会”，组织各省进行查螺数据汇总上报并总结了全国监测点螺情分布。

在全国血吸虫病潜在流行区山东、河南等省开展血吸虫病监测，并在全国血吸虫病流行区设立了流动监测点。

1.1.3 血吸虫病疫情和突发疫情管理

继续开展血吸虫病疫情监测，完成每周急性血吸虫病疫情分析，并于 9 月下旬召开了急性血吸虫病疫情应急处理工作会，对急性血吸虫病疫情报告、疫情核实与处理、统计分析等进行了培训和研讨。

为掌握血吸虫病疫情的第一手资料，配合血防专家的现场调研，我所分别组织专业人员在安徽、湖南、湖北、江西、云南、四川等血吸虫病流行县开展了现场调查和明察暗访工作，对部分流行县血吸虫病流行区进行了抽查，核实了现场资料，掌握了较为可靠的疫情信息。

1.1.4 健康教育及其它工作

为提高疫区群众的自我保护意识，启动了 2006 年血吸虫病健康教育试点工作，统一工作方案，组织专家设计制作了多种健康宣传材料在各试点广为宣传；为配合“全国血吸虫病防治工作会议”的召开，我所分别在福州、上海等地召开了 5 次专家审稿会，完成了

《中国血吸虫病防治历程与展望》、《中国血吸虫病防治画册》等书籍的印刷、出版；协助卫生部疾控局完成了《全国血防条例释义》的修订工作，制作了近 10 种适用现场防治工作的健康教育宣传材料。

为提高各省血防工作者的技术水平，配合卫生部举办了三期全国血吸虫病综合治理项目县血防站站长、血防办主任培训班；在四川举办了血吸虫病化疗技术培训班，在血吸虫病监测地区开展了新发现地区钉螺调查和技术培训，培训了 200 余名基层血防人员。

受卫生部委托，组织开展了新型灭螺药物“荣芽、荣宝杀螺剂”现场扩大试验，通过江西、湖北、四川、云南、上海等省（市）的现场试验，于 9 月召开“荣芽、荣宝杀螺剂现场扩大试验中期总结会”，对该项工作进行了总结，对下阶段试验计划进行了探讨。

启动了《我国控制和消灭血吸虫病标准》修订工作，制定了修订、调研计划，组织专家组分别到江西、湖北、湖南等省开展现场调研，先后组织 5 次专家研讨会，完成《我国控制和消灭血吸虫病标准》（送审稿），并通过了卫生部地方病与寄生虫病标准委员会的审评。

与卫生部血吸虫病专家咨询委员会和中华预防医学会共同主办了“全国血吸虫病防治研究青年学术交流会”，为广大血吸虫病防治研究青年工作者提供了学习、交流与合作的平台，来自全国血防战线的 130 余名青年工作者参加了交流。此外，我所接受卫生部任务，组织专业技术人员驻国务院血防办综合治理联系点，对试点的秋季查病工作给予了支持与帮助。

1.2 疟疾防治

1.2.1 春季休止期根治与联防联控

组织专家编制了相关技术方案，撰写了《春季疟疾休止期根治健教处方》，举办重点省区春季疟疾休止期根治方案培训班，分赴安徽、河南、湖北等省开展了技术指导、督导及明察暗访工作，并在安徽等省疟疾流行区现场开展了入户调查。

配合中原五省联防联控工作会议的召开，协调完成每两年的值班省交接工作，组织 4 个专家组参加了本年度的五省联防联控检查。

1.2.2 援藏疟疾防治与策略研讨

我所先后两次组织召开了援藏疟疾防治工作专家研讨会，制订了相关培训计划和现场调查工作方案，组织援藏专家组两次赴藏深入疟疾高发地区培训疟原虫镜检技术、休根技术，开展流行现状调查、媒介分布调查等，并指导西藏自治区开展疟疾防治工作；配合卫生部疾控局在西藏召开疟疾防治策略研讨会，为西藏地区进一步开展疟疾防控工作奠定了基础。

1.2.3 疟疾疫情监测与突发疫情应急处理

继续开展全国疟疾监测点的监测工作，完成 2006 年重点省疟疾监测现场督导和技术培训，制作了疟疾抗原片 4000 余片和抗药性测试药纸，分发到各重点省的有关监测点，在重点省开展了媒介按蚊抗药性监测。

根据全国疟疾疫情网络直报系统的报告，每周进行疫情分析，对疟疾疫情的趋势进行预测，针对安徽和贵州等省出现的疟疾突发疫情，组织专家组赴疟区开展防治工作指导。

1.2.4 策略研讨与技术培训

先后两次组织召开了《疟疾预防控制机构工作业务规范》专家审稿会，《疟疾防治手册》修订会，多次对《疟疾控制与消除标准》进行论证，完成了《疟疾预防控制机构工作业务规范》和《疟疾防治手册》审定工作。

1.2.5 全球基金疟疾项目

完成全球基金第五轮疟疾项目的各项准备和启动工作，通过召开项目编制会、审定会、研讨会和现场调研，编制完成了项目两年工作计划、督导与评估计划、采购供应管理计划，建立了项目协调与合作机制。对项目省、合作伙伴单位项目有关人员，就项目管理、财务、采购、审计等方面内容进行了培训。

1.3 其它寄生虫病防治

1.3.1 我国消除丝虫病认证的各项准备

多次召开专家会议，完成了“我国消除丝虫病国家报告”中英文版的起草、修订和定稿等工作，为卫生部在今年的世界丝虫病联盟大会上正式递交我国消除丝虫病的论证申请提供了技术保障。并对安徽省泗县丝虫病监测工作进行了抽样复核。

1.3.2 黑热病试点与媒介监测

启动了甘肃省动物源型黑热病监测试点，组织专家赴流行区开展了现场调查和试验工作，同时开展了白蛉监测试点工作，我所专家历时近两个月，在甘肃和四川省交界地带开展白蛉分布调查，检测出阳性白蛉，为下一步白蛉监测工作奠定了基础。

1.3.3 包虫病防治试点

结合卫生部在四川省的中央转移支付包虫病防治试点项目，我所启动了四川省包虫病防治试点工作，组织 3 次包虫病防治策略、措施的调研，开展相关健康宣传，设计制作了近 3 万份宣传材料。

在新疆包虫病流行地区选择了 2 个县作为试点，启动了包虫病疫情现状调查。

1.3.4 全国土源性线虫病监测启动

完成《土源性寄生虫病监测方案》的起草、论证，同时展开了相关准备工作，包括器材的统一采购、操作手册的编定、数据库的建立、调查方法、数据采集录入培训，方案下发后，组织开展了监测方案培训班，该项工作已于 9 月启动。

1.3.5 大力推动寄生虫病综合防治示范区的启动

完成重点寄生虫病综合防治示范区方案研讨和可行性论证，制定了综合防治示范区试点县的工作方案，协助卫生部和中国疾病预防控制中心确定广东、广西、黑龙江等 10 省（市、自治区）的 10 个示范区，开展了寄生虫病综合防治示范区培训，编写了示范区基线调查的技术方案，推动了示范区工作。

1.3.6 全国人体重要寄生虫病现状调查后续工作

完成寄调数据库后续清理，对寄调 16 个数据库进行了全面梳理和清查，组织专家对全国 25 篇专题文章及 56 篇省内专题报告进行审修，同时起草了《全国重要寄生虫病调查》工作报告、技术报告，现《全国重要寄生虫病调查资料汇编》已完成定稿。

1.3.7 做好突发疫情的应急处理

今年 9 月，北京出现广州管圆线虫病突发疫情，引起社会的广泛关注，我所派出专家直接参与诊断，及时为卫生部提供技术支撑，并组织召开广州管圆线虫病疫情研讨会和防

治技术培训班,在全国 19 个省市选定调查点,推动了广州管圆线虫病疫源地现场调查工作。

2 认真抓好科技项目管理,继续扩大国际合作与学术交流

2.1 课题执行和申请情况

2006 年在研课题 31 项(部级以上重点课题 18 项),其中国家“863”计划 1 项;国家“十五”科技攻关计划 5 项;国家自然科学基金 4 项;科技部中央研究院所专项基金 4 项;上海市科委重大和重点科技攻关项目 3 项,国际合作课题 6 项,所中青年基金项目 6 项,其他来源 2 项。2006 年投入科研经费共 1000 万元左右。除个别课题因特殊原因由上级部门同意延期外,其他课题均按年度计划执行。

2006 年由我所牵头申报各渠道课题 11 项,参与共同申请课题 10 项,其中中标课题 5 项。继续获得资助课题 1 项,共获准经费 1100 万元。

根据有关政策,申请上海市地方匹配资金项目 4 项,获得匹配课题 3 项,获匹配资金 50 万元。

为落实《国家中长期科学和技术发展规划纲要》,支持社会公益性行业科技发展,充分结合本单位的研究领域和方向,组织有关人员积极撰写了“十一五”期间本行业科技发展规划和本领域迫切需要解决的社会公益性行业科技问题,并经所学术委员会讨论通过,力争在科技部立项。

参与国家“艾滋病肝炎等传染病防治重大专项”的立项工作,研讨和撰写“血吸虫病等寄生虫病防治重大专项”建议书及论证等工作。

2.2 成果与发表论文

我所承担的国家科技基础条件平台工作“重要寄生虫虫种资源标准化整理、整合及共享试点”和 3 个“十五”国家科技攻关课题“生态环境变化对血吸虫病流行的影响及干预措施的研究”、“嗜人按蚊地区疟疾流行潜势及控制暴发流行的研究”、“建立长江流域、我国湖区 GIS 血吸虫病预警系统研究”都顺利通过了验收,取得了较好成绩。

我所 2006 年牵头申请专利 8 项,合作申请专利 3 项,已获准专利 2 项,即瑞香素与青蒿素衍生物配伍的抗疟组合物及一种蚊虫诱捕器。全年在国内外科技期刊以第一作者发表各类论文约 55 篇,其中国外发表 4 篇。

2.3 加强国际合作和交流

我所与亚洲疟疾培训网络(简称亚网)基金会合作,成功举办了“亚洲疟疾培训网络疟疾监测和流行病学管理培训班”,来自孟加拉国、柬埔寨、中国、印度尼西亚、老挝、马来西亚、缅甸、菲律宾、泰国和越南等 10 个亚网成员国、亚网基金会、世界卫生组织(WHO)以及各成员国的疟疾控制项目官员和教员共 30 余人参加培训班。

为贯彻胡锦涛总书记在 2005 年联合国发展筹资高级别会议上的讲话精神,落实我国对非洲国家的承诺,帮助发展中国家培养人才,受商务部委托,我所分别主办和承办了“非洲国家传染病防治研修班”和“2006 年非洲国家疟疾防治技术培训班”,来自非洲 18 个国家的 33 名学员参加了培训。

本年度共接待外宾 27 批 133 人次,出访 28 批 37 人次。

2.4 编辑出版工作

《中国寄生虫学与寄生虫病杂志》共收稿件 230 篇, 刊登论著、实验报道等 77 余篇, 综述及短文 75 篇。据 2006 年度中国科学技术信息研究所中国科技期刊引证报告, 本刊影响因子为 0.478、总被引频次 573、他引率 82%, 均在同类期刊中名列前茅。

为推动我国寄生虫种质资源的共享与应用, 特增刊一期“寄生虫种质资源理论与实践”专辑, 以促进我国寄生虫种质资源共享与利用联盟的建立。

3 完成急性虫媒传染病实验室改造工程

在各级领导的关心、支持和帮助下, 经过不懈地努力, 克服了多重困难, 作为国家突发性公共卫生事件应急体系的重要组成部分的急性虫媒传染病实验室改造工程已于 6 月顺利竣工, 并获上海市卢湾区建筑业联合会 2006 年度卢湾区优质工程“建设杯”称号, 为所的事业发展提供新的舞台, 并为推动图书资料楼装修工程、所内环境优化工程、建设“职工之家”、清产核资等相关工作创造了有利条件, 其中图书资料楼装修工程也在年内竣工。

4 做好人才培养和培训工作

树立人才资源是第一资源的观念, 加大人才引进和培养力度, 优化专业技术队伍结构, 今年引进德国和澳大利亚学成回国人员各 1 名。2005 年共招收研究生 8 名, 其中博士研究生 3 名。在读研究生共 29 名, 其中博士研究生 10 名。今年毕业并获得学位证书的研究生 11 名, 其中博士生 2 名。

2006 年完成申报国家继续教育项目、国家传染病基地项目及中华预防医学会继续教育项目共 22 项, 批准 16 项。完成举办继续教育项目共 11 项, 均取得较满意的结果。

积极开展多途径、多形式的教育培训, 新职工在正式上岗前都必须经过岗前培训和为期半年的轮岗锻炼。鼓励在职职工参加继续教育, 不断更新和拓宽知识, 以适应时代发展的需要。全年在职职工参加学历学习及业务培训共 73 人次, 本年度共接受兄弟单位来所进修生 7 名。

5 完成其他各项工作

5.1 立足当前, 着眼长远, 面对新形势, 在认真调研的基础上重新制定本所的《中长期发展规划》和《人才发展规划》, 为事业的发展注入了新的动力和活力。

5.2 加强期刊与网络建设, 《国际医学寄生虫病杂志》顺利更名并启用了新的封面, 版面由 48 页增至 56 页, 栏目设置更加多样化; 对我所局域网接口进行了改建。

5.3 为提高人们对寄生虫病防治工作的认识, 起到普及和教育的作用, 制作了形式多样的寄生虫病防治宣传材料, 包括 DVD, 年画及生活日用品等, 并走进学校和社区, 为中小学生开展预防寄生虫病讲座。人体寄生虫和媒介标本馆共接待国内外参观者 35 批 320 人次。

5.4 举办两期中层干部培训班, 力求通过培训取得实效, 并能理论联系实际, 提高干部的管理水平和能力。

5.5 加强规划和财务管理, 严格按照疾控项目的目标、进度完成各项工作任务。

5.6 抓好一类新药三苯双脒的开发工作, 我所和山东新华制药股份有限公司、青海省畜牧兽医科学院合作进行三苯双脒对高原牧区牛、羊寄生蠕虫的驱虫效果试验及安全性观察、评价, 签订了三苯双脒兽用可行性研究合作协议书, 并与山东新华制药股份有限公司签订了共同开发兽用三苯双脒的合作意向书。

5.7 做好《国家公共卫生应急反应体系建设第二期仪器设备配置》仪器设备的进口免税、验收和安装调试等工作。大型仪器设备已实行集中管理、开放使用,充分发挥了各类设备的作用。

5.8 认真倾听职工代表的意见,尽力解决职工关心的热点问题,积极落实整改措施,职工的待遇进一步提高。

5.9 开展了以“加强安全管理,促进文明建设”为主题的安全教育周活动,对全所职工就消防知识、实验室生物安全法律法规、实验室操作规范和实验室生物安全案例作了专题辅导,还以处室为单位开展学习讨论,并举行突发事件应急处理的演习,取得预期的效果。

5.10 经全所职工共同努力,我所获得上海市安全合格单位称号。

5.11 SPF 实验动物室通过上海市动管会组织的验收,获得使用合格证书;生物安全二级实验室也在上海市有关部门备案。

通过不断地努力,我所的面貌已经焕然一新,这不仅体现在 4 幢大楼基本翻新、办公条件改善等硬件的建设上,还体现在疾控和科研能力的提高,体现在寄生虫病防治队伍的日益成熟。我们要继续保持昂扬向上的拼搏精神,同心同德,开拓进取,用不断发展来提升自身实力,促进和谐,开创寄生虫病防治事业的新局面。

2007 年工作要点

2007 年是构建和谐之年,也是我所在新的起点上努力开拓、奋力进取的一年,我们要深刻领会党的十六届六中全会精神和“三个代表”重要思想,以科学的发展观为指导,坚持以人为本,科学发展,以发展促和谐,不断提高疾病控制能力和科研水平,进一步从宏观上发挥国家级寄生虫病预防控制所的作用,为人民的健康服务,为构建和谐社会服务。

2007 年的主要工作如下:

1 站在全局的高度,继续推动全国的寄生虫病防治工作

2007 年,我所将在卫生部疾控局和中国疾控中心的领导下,继续推动全国寄生虫病防治的全面开展。要从全局出发,围绕以控制传染源为主的血吸虫病综合治理策略、加强重点地区疟情回升势态的防控、寄生虫病综合防治示范区试点工作,通过以点带面,集中优势和主要力量,主要开展以下工作:

1.1 血吸虫病

继续做好全国血吸虫病监测工作,积极参与《血吸虫病防治条例》的宣传和以控制传染源为主的综合防治策略的推广与应用,协助疫区省完成全国血吸虫病预防控制项目的中长期目标达标规划的制定和全国血防工作达标考核办法及标准的制订。

在做好血吸虫病综合治理项目试点县的技术指导和技术支持的基础上,开展卫生学和经济学评价工作。加强血吸虫病疫情分析和报告,加强流动人口血吸虫病疫情管理和监测。继续实施全国血吸虫病健康教育方案和健康教育试点工作。积极开展基层血防工作者的能力培训工作和应用性科研项目。

1.2 疟疾

继续做好全国疟疾监测点工作,全面掌握全国疟疾疫情动态变化。继续做好全球基金

第一轮和第五轮疟疾项目的组织、管理，积极推动全国疟疾防治工作，包括对云南、海南高疟区的疟疾防治的督导与检查，协调中部五省疟疾联防联控工作和加强对安徽、河南与西藏控制疟疾回升与暴发流行的技术指导。加强对援非疟疾防治中心人员的培训和指导，承担商务部和卫生部交办的非洲国家和东南亚国家疟疾防治培训班，积极开展疟疾防治的健康教育与宣传工作。

1.3 其他寄生虫病

积极做好我国消除丝虫病后续的各项工 作；继续对中央转移支付包虫病防治项目和包虫病防治示范项目进行技术指导和督导；开展黑热病的抽样调查、监测以及防治试点工作，加强疫情的报告与管理，同时开展相关技术交流与培训等工作。

做好全国重点土源性、食源性寄生虫病的监测，及时对全国土源性线虫监测点的数据进行收集、汇总、分析，并给予技术支持。推动全国寄生虫病综合防治示范区工作的全面展开，做好技术培训、技术指导、工作质量督导与评价，制订重点寄生虫病的控制标准。

1.4 提高突发公共卫生事件应急反应及处理能力

进一步完善突发公共卫生事件应急反应机制的建设，提高处理突发疫情的能力，做好呈上升趋势或有潜在威胁的寄生虫病的病原学鉴定、流行病学、防治技术、防治手段等方面的技术储备。进一步加强专业人员的流行病学、应急处理技术的培训与学习，做到科学管理，规范操作。努力完成卫生部和中国疾病预防控制中心交办的其他各项任务，有效应对各类突发的寄生虫病疫情事件。

2 加强科学研究与重点实验室建设

2.1 积极争取科研项目

在国家“十五”科技攻关、“863”计划、自然科学基金、国际合作等研究已取得进展与成果的基础上，积极参与“十一五”重要寄生虫病防治研究课题的立项，组织科技人员积极申请国家“十一五”重大专项及科技支撑等项目。积极组织申报中华医学科技进步奖和中华预防医学科技进步奖。

2.2 加强寄生虫病原与媒介生物学重点实验室的管理

卫生部寄生虫病原与媒介生物学重点实验室应坚持“开放、流动、联合、竞争”的运行机制，加强实验室的建设和管理，创造良好的科学研究条件和学术环境，在我国重要人体寄生虫及其媒介相关的前沿领域开展高水平的基础和应用基础研究，提供指导全国寄生虫病防治工作科学实验与研究的重要平台。争取在 2007 年通过卫生部组织的验收及评估，进行国家级重点实验室申报的前期调研工作。

设立卫生部寄生虫病原与媒介生物学重点实验室开放课题基金，促进相关领域科技进步和人才培养。加强实验室管理和实验室生物安全培训，参与中心突发公共卫生事件实验室网络的建设。

2.3 推动平台建设与学术交流

启动寄生虫病信息平台 and 寄生虫病药物研究平台的建设，加强重要寄生虫与媒介资源平台、寄生虫病诊断技术平台等平台的建设。

做好相关寄生虫病标准的修订和制定工作，积极开展学术交流和教育培训工作。

继续加强同 WHO 的联系与合作，发挥我所作为 WHO 疟疾、血吸虫病与丝虫病合作

中心的作用,积极向 WHO 等机构申请课题,办好本所与日本国立传染病研究所及 WHO 共同举行的国际间日疟防治会议。

3 完善用人制度,健全内部激励制度,加大人才培养力度

根据《中国疾病预防控制中心干部人事制度改革系列配套文件》和上级有关文件精神,在“公开、平等、竞争、择优”原则下,以事业单位岗位设置、收入分配制度改革为契机,合理配置人力资源,建立能上能下、能进能出的用人机制,实现由身份管理向岗位管理的转变。对原内部分配中不适应人事制度改革的部分内容进行调整。

成立人才工作领导小组,制定人力资源发展细则,在年内启动并组织实施。包括筹措所人才发展的专项经费,用于资助高层次人才、紧缺人才以及优秀青年人才的引进、培养与使用,加大职工岗位培训和在岗继续教育的投入,以提高岗位专业水平。

4 加强培训工作和内涵建设

加强岗位培训,举办各类培训班以提高专业水平,包括“血吸虫病社会医学与技术培训班”、“钉螺控制技术 & 灭螺新技术推广培训班”、“全国寄生虫学高级业务专业培训班(英文)”、“寄生虫病诊断技术培训班”和“全国媒介调查培训班”等。

组织相关人员参加研修班、讲座、网络学习、现场实践等。有计划、有重点的择优选派人员到国外学习、交流和培训。

5 推进创建文明单位工作,力争文明单位建设上一新台阶

以精神文明建设为抓手,进一步深化社会公德、职业道德教育,加强文化建设,发扬艰苦奋斗、奉献进取的疾控精神,美化环境,营造和谐、团结和积极向上的文化氛围;在完善内部管理制度规章制度的基础上,加大执行和检查考核的力度;进一步加强职工队伍思想建设和作风建设,提高职工的素质,确保疾控、科研工作的顺利开展。

要花大力气,下真功夫,推进创建上海市文明单位工作,使我所文明单位建设上一新台阶。

6 围绕所的中心工作,完成其他各项任务

6.1 完成三苯双脒四期临床工作,以利在国内推广和应用;加速三苯双脒国际注册申请,扩大三苯双脒对线虫和吸虫感染的现场疗效观察。完成兽用三苯双脒的国内、国际专利申请和三苯双脒治疗牛、羊肠道寄生虫感染试验;探索国内外合作开发三苯双脒为兽用药的新途径。

6.2 加快“环境优化”、“职工之家”等工程的实施,年初完成所内道路整修,在此基础上改造周边绿化,明显改善所内环境,为职工创造良好的工作环境。

6.3 改进图书馆管理,增购新书,启动图书馆数字化建设,逐步将中外文图书检索、年报、论文集检索列入图书馆检索系统。对现有的数据库继续扩充、调整,进一步发挥作为寄生虫病专业图书馆的功能。

6.4 加强“一馆两库”建设,扩展寄生虫病原与媒介标本展示馆空间,增添生动直观的图片资料。加大投入,采集稀有和罕见的寄生虫标本,扩大标本储藏量和虫种数量,将寄生虫标本分装储存,并录入计算机建立标本数据库。

6.5 加强后勤管理,实行内部分工负责制、明确岗位职责,建立相关规章制度,谁分管,谁负责,谁落实,提高后勤服务水平;年内进行一次全所范围清产核资工作,对各部

门的国有资产进行清查核对；认真做好《国家公共卫生应急反应体系建设第二期仪器设备配置》仪器设备验收、安装调试工作；认真实施 2007 年度本所仪器设备大购置项目，努力争取在年内将该项目设备投入使用。

我所的发展呈现蒸蒸日上的良好势头，全所职工要继续努力，营造团结奋进的工作氛围，建设一支爱岗敬业的疾控和科研队伍，继续保持饱满的工作热情和求真务实的工作作风，同心同德、开拓进取，和谐创新，为保障人民的健康，构建和谐社会做出贡献。

§1. REPORT ON THE WORK IN THE YEAR 2006& KEY POINTS OF THE WORKING PLAN FOR THE YEAR 2007

SUMMARY OF THE WORK IN 2006

2006 is the beginning year of the 11th 5-year Program and the period for members of our institute drawing together, being harmonious and innovating. We are brave in catching opportunity, facing challenge, and progressing. All the tasks assigned at the beginning of the year have been fulfilled, which launches the well development situation for our institute. Summary of the administration work in our institute in 2006 are as follows:

1 Strengthening the work of parasitic diseases control and prevention by careful planning and assigning

1.1 Control and prevention of schistosomiasis

1.1.1 Technique guidance and evaluation for contact units of schistosomiasis comprehensive control and prevention

Towards all the schistosomiasis control and prevention work of the contact units of comprehensive control and prevention set up by State Council office of Schistosomiasis Control and Prevention Leading Group, we organized 1-2 times field inspection per month. A total of 40 person-times of professionals were dispatched to the provincial contact units in Jiangxi, Hunan, Hubei, Anhui, Yunnan, ect. to provide field technique guidance and supervision.

We assisted Ministry of Health (MOH) in holding evaluation conference of schistosomiasis control and prevention contact pilot spots. We organized and held a series of meetings for summary and outcome report for pilot spots program of “Research on schistosomiasis control strategy, giving priority to the control of infection source”. Data and materials collecting, sorting, analyzing, summarizing and reporting of pilot spot program were accomplished.

1.1.2 Technique guidance and supervision for nationwide schistosomiasis surveillance spots

Professionals were organized and dispatched to Hunan, Hubei, Jiangxi, Anhui, Yunnan, ect. for the supervision and guidance of the snail survey and schistosomiasis diagnosis. Training of surveillance technique improvement and conference of nationwide schistosomiasis surveillance areas for the snail survey were held respectively in Jiangxi and Yunnan Province gathering and reporting the snail survey data in every province and summarizing snail distribution of nationwide surveillance spots.

We launched the schistosomiasis surveillance in Shangdong and Henan Province, where is the potential epidemic region, and set up mobile surveillance stations in nationwide schistosomiasis epidemic regions.

1.1.3 The management of schistosomiasis epidemic situation and emergent epidemic situation

We continued schistosomiasis epidemic situation surveillance. Weekly analysis of acute

schistosomiasis epidemic situation was accomplished. In the last ten days of September, conference of emergent treatment for acute schistosomiasis epidemic situation was held for training and discussing the report, verification and statistic analysis of acute schistosomiasis epidemic situation.

In order to obtain the first hand information of schistosomiasis epidemic situation and to cooperate the field investigation and research by schistosomiasis control experts, we organized professionals to go to endemic counties in Anhui, Hunan, Hubei, Jiangxi, Yunnan, Sichuan, ect. respectively to carry out field investigation. We selected some endemic regions in schistosomiasis endemic counties for examination. Field data were verified and credible epidemic situation information was obtained.

1.1.4 Health education and others

To improve the self protection consciousness of people in endemic region, we launched the work of schistosomiasis health education pilot spots, uniformed work scheme and organized experts to design and produce various health education materials for propaganda in pilot spots. To collaborate the National Schistosomiasis Control Conference, we held expert peer reviewing meeting in Fuzhou, Shanghai, ect. For 5 times and published books, such as “The history and prospect of China schistosomiasis control”, “Picture brochure of China schistosomiasis control and prevention”, ect. In addition we assisted Bureau of Disease Control, MOH with the revision of “Paraphrase of schistosomiasis control ordinance” and produced 10 health education materials for disease control in field.

To promote the skill of staff in charge of schistosomiasis control in every province, we assisted MOH with three training courses for directors of schistosomiasis control stations/offices from counties of national schistosomiasis comprehensive control project. We also held training of schistosomiasis chemical treatment techniques in Sichuan Province and started training program of investigation and technique for new emergent snail region in schistosomiasis surveillance area. And 200 schistosomiasis control personnel were trained.

As requested by Ministry of Health, we carried out the extended field experiment of new anti-mollucicide—Rong Ya, Rong Bao. By the field experiment in Jiangxi, Hubei, Sichuan, Yunnan, Shanghai, ect., middle term summary meeting of extended field experiment of Rong Ya, Rong Bao anti-mollucicide was held in September. On the meeting, every task was summarized and the plan for further experiment was discussed.

We launched the revision work of “national standard of control and elimination of schistosomiasis”, established revision and investigation plan, organized experts to investigate in Jiangxi, Hubei, Hunan, ect. and held 5 times expert symposium, accomplished the “national standard of control and elimination of schistosomiasis” (for peer review) which passed the review of endemic and parasitic diseases committee Ministry of Health.

We co-sponsored with Schistosomiasis expert consultation committee, Ministry of Health and Chinese preventative medicine association for “young researcher symposium of China

schistosomiasis control”, which provided to a platform of study, communication and cooperation young personnel for schistosomiasis control. More than 130 young personnel worked on schistosomiasis control participated in this symposium. Furthermore, we dispatched professionals to schistosomiasis comprehensive control contact spot of State Council to support investigations on fall season diseases in pilot spots.

1.2 Malaria control

1.2.1 Spring radical treatment of malaria during transmission interregnum period and associated control and prevention

We organized experts to draw up related technical scheme and “Health education scheme for radical treatment of malaria during transmission interregnum period”. Training of spring radical treatment scheme for interregnum transmission season malaria in key provinces/autonomous regions was held. Experts were dispatched to Anhui, Henan, Hubei for technique guidance, supervisions and investigations. They carried out home investigation in malaria endemic regions, such as Anhui etc.

Assisting with holding 5-province associated control meeting, we finished the every two years’ work handing over between provinces on duty and organized 4 expert groups to examine the work of 5-province associated control.

1.2.2 Supporting Tibet malaria control and strategy discussing

We held expert symposium of supporting Tibet malaria control twice and made relevant training plan and field investigation plan. We dispatched experts to areas with high incidence of malaria twice for malaria microscope diagnosis training, radical treatment of malaria technique training, current epidemic situation investigation, vector distribution investigation, ect. They also guided malaria control work in Tibet; assisted with Bureau of disease control, Ministry of Health to hold conference of malaria control strategy in Tibet, which has laid a basis for further malaria control work in Tibet.

1.2.3 Surveillance of malaria epidemic and response to emergent epidemic situation

We continued to carry out surveillance work in nationwide surveillance spots, accomplished field supervision and technique training in key provinces of 2006 and produced 4000 pieces of malaria antigens and drug-resistance detection sticks, which were distributed to the surveillance spots in key provinces. We also launched the surveillance on vector drug-resistance in key provinces.

According to the report of national malaria reporting network system, we carried out weekly analysis of epidemic situation, and then predicted the tendency of malaria epidemic situation. Towards the emergent malaria epidemic situation in Anhui and Guizhou Provinces, we dispatched experts to malaria endemic regions to guide the control work.

1.2.4 Discussion of strategy and technique training

We organized and held peel review meeting twice for “operation regulation for malaria control and prevention organization” and revision meeting for “malaria control manual”. We

also held discussion for “malaria control and elimination standard” several times. The “operation regulation for malaria control and prevention organization” and “malaria control manual” were examined for authorization.

1.2.5 Global Fund Project on malaria control

We have completed various preparations and launching work for the 5th round project granted by Global Fund to Fight HIV/AIDS, TB and Malaria. By holding project scheduling meeting, examining meeting, discussion and field investigation, the two-year's working plan, supervision and evaluation plan and purchasing and supplying management plan for the project well completed. Project coordinating and cooperating mechanism was set up. Cooperators and staff involved in this project were trained in project management, financing, purchasing, auditing and so on.

1.3 Control and prevention of other parasitic diseases

1.3.1 Preparing for the authentication of filariasis elimination

After several expert meeting, the National Report on Elimination of Filariasis in China (in Chinese and English) was drafted out, which provided the guarantee for MOH formally submitting the application of filariasis elimination argumentation on the world filariasis league conference. We also sampled and reexamined the filariasis surveillance work in Si County, Anhui Province.

1.3.2 Kala-azar pilot spots and vector surveillance

We initiated animal-borne visceral leishmaniasis surveillance spots. Experts went to endemic region for field investigation and trial, as well as the sand-fly surveillance work. In two months, the experts of IPD investigated the distribution of sand-fly and detected infected sand flies in the boundary of Sichuan and Gansu, which could be the foundation of sand-fly surveillance work.

1.3.3 Echinococcosis control pilot spots

Facilitating the MOH project for echinococcosis control pilot spots in Sichuan Province, we initiated the echinococcosis control pilot spots in Sichuan. We carried out investigation on control strategy and methods for echinococcosis 3 times. Health propaganda was performed. Nearly 30,000 propaganda materials were designed and produced.

We chose 2 counties in Xinjiang echinococcosis endemic regions as pilot spots and initiated the investigation of current echinococcosis epidemic situation.

1.3.4 Initiating national soil-borne nematode surveillance

The drafting and discussing of “national surveillance scheme of soil-borne parasitic diseases” was finished. The preparation was initiated including uniform equipment purchasing, manual compiling, database establishing, investigation method and training of data collecting and inputting. After sending out this plan, surveillance plan training program was organized and began in September.

1.3.5 Boosting the establishment of parasitic diseases comprehensive control demonstration area

Plan discussion and feasibility argumentation for parasitic diseases comprehensive control demonstration area was performed. Working plan for comprehensive control demonstration area was formed. Also, we assisted MOH and China CDC with selecting 10 demonstration areas in 10 provinces/municipalities/autonomous regions, such as Guangdong, Guangxi and Heilongjiang, carrying out training in demonstration areas and compiling technique protocol for investigation on basic situation of demonstration areas investigation plan to boost the work in demonstration areas.

1.3.6 The consequent work for national survey on current status of the important human parasitic diseases

The database of this survey was organized. 16 databases were completely organized and examined. 25 national special topic papers and 56 provincial special topic papers were reviewed by experts. They also drafted up the work and technique report of national survey on important parasitic diseases. Now the final version of national survey on important parasitic diseases information compilation has been completed.

1.3.7 Emergent response to emergent epidemic situation

In September, 2006, the outbreak of angiostrongyliasis in Beijing raised public concern. Experts dispatched from institute directly intervened in diagnosis and provided technical support to MOH. Conference of angiostrongyliasis epidemic situation and technique training were held. We chose pilot spots in 19 provinces/cities and boost field investigations in angiostrongyliasis endemic regions.

2 Emphasizing on management of science and technique project; expanding international cooperation and academic communication

2.1 The performance of the projects and the situation of application

A total 31 research projects were undertaken in 2006, among which 18 were key projects above Ministry level, 1 was supported by “863” National High-tech program, 5 by National “Eleventh Five-year” Key Technologies R&D Program, 4 by National Natural Science Foundation of China, 4 by Special Fund of Ministry of Science and Technology, 3 by Science and Technology committee of Shanghai Municipal Government, 6 were in collaboration with international communities, 6 were supported by IPD and 2 were supported by other funds. A sum of ten million Yuan were used in research. Except some projects postponed with the permission of superior department, projects were undertaking according to original schedule.

The professionals of IPD applied 11 new projects as the P.I. and 10 projects as cooperating applicant in 2006, 5 among which were approved. A continuing fund for project was approved. A total of eleven million Yuan was gained.

4 Shanghai municipal funds were applied, 3 of which were approved. A total of 500 thousand Yuan was gained.

In order to implement “Compendium of National Middle-long Term Science and Technology Development Plan” and support commonweal vocational SciTech development, by

combining the research program we organized personnel to write vocational SciTech development plan during “Eleventh Five-year” and desiderating commonweal vocational SciTech problems, which were aimed to become a project of Department of Science and Technology after the discussion in IPD academic committee.

We participated in the project-establishing work of national “key project for infectious diseases control such as AIDS and hepatitis”, discussed and wrote the suggestion report of “key project for infectious diseases control for schistosomiasis and other parasitic diseases”.

2.2 Achievement and publications

The projects undertaken by IPD--“important parasites genetic resource standardization, organization, integration and sharing” for national SciTech fundamental platform and three “Tenth Five-year” Key Technologies R&D Program (ecological changes caused effect on schistosomiasis epidemic and intervention study, the study of malaria epidemic tendency and outbreak control in Anopheles anthropophagus dominating region and the study of establishing GIS schistosomiasis warning system in Changjiang river and lake region) were successfully passed the examination and achieved good results.

We applied 8 patents as main applicant, 3 as cooperating applicant, 2 of which were approved. Those are Daphnetin combining Artemisinin derivatives as anti-malarial combination and a mosquito trap device. In this year, there were 55 papers published on domestic and international journals, 4 of which are published on international journals.

2.3 Enhancing international cooperation and communication

IPD collaborated with The Asian Collaborative Training Network for Malaria (ACTMalaria) successfully holding ACTMalaria training program of malaria surveillance and epidemiological management. A total of 30 officers in charge of malaria control or teachers from 10 member countries (Bengal, Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam ect.), ACTMalaria and WHO attended this training.

To carry out the talking of Secretary-general Hu Jintao in 2005 Unite Nation development fundraising advanced conference, implement our promise to African countries, and help train people in developing countries, as the request of Ministry of Business, we held “Infectious diseases training program for African countries” and “2006 malaria control technique training for African countries”. 33 persons from 18 countries attended the conferences.

In 2006, IPD received 27 groups of foreign guests including 133 person-times. And there were 28 groups of our employees including 30 person-times visiting abroad.

2.4 Editing and publishing work

The office of Chinese Journal of Parasitology and Parasitic Diseases received 230 papers and published 77 research papers and 75 reviews. According to 2006 citation report of Chinese Institute of Science and Technology Information, the influence factor of this journal is 0.478 and it was cited 573 times. The citation rate by other is 82%, which ranks highly among other Chinese journals.

To progress the share and practice of parasite genetic resources, a supplement—"The theory and application of parasite genetic resources" was published for accelerating the establishment of parasite genetic resource share and utilization league.

3 Accomplishing the of laboratory building on acute insect-borne infectious diseases

With the concern, support and help from authorities, after our hard work and overcoming handships, the renovation project of acute insect-borne infectious diseases building, as an important component of national public health emergent response system, was accomplished in June, which was awarded Shanghai Luwan District architecture league 2006 Luwan high quality "construction cup". This project provided new platform for development and convenience for library decoration, "employee family" construction and asset checking. The project of library decoration was accomplished within this year.

4 Training for personnel improvment

We should hold the brief that human resource is the first resource. Personnel training and introduction was increased and the structure of professional team was optimized. This year, one person from Germany and one person from Australia were introduced. A total of 8 graduate students were enrolled in 2005, among which 3 were PhD candidates. There are 29 graduate students currently enrolled in our institute, among which 10 are PhD candidates. 11 students graduated and acquired degree, among which 2 were PhD degree.

A total of 22 applications, such as national continuing education project, national infectious diseases base project, Chinese preventative medicine association continuing education project and so on, were completed, among which 16 projects were approved. A total of 11 continuing education projects were held, which all achieved satisfactory results.

We actively carried out multiple methods for training. Fresh staff must be trained and experienced half-year's position rotation, and then they were able to be formally positioned. Current staff was also encouraged to participate in continuing education for updating and extending knowledge to meet the requirement of new era. Within this year, there were 73 person-times participating in continuing education. And we received 7 persons for advanced study from cooperative institution.

5 Accomplishing other tasks

5.1 Based on current situation, facing new changes with foresight. Based on the careful investigation, we redesigned the "middle and long term development plan" and "human resource development plan" of IPD, which infused power and energy to career development.

5.2 Improving journal index and network. International Journal of Medical Parasitic Diseases has successfully been renamed and has changed new cover. Pages were increased from 48 to 56. The contents are more diverse. Furthermore, the interface of local area network was improved.

5.3 To enhance the understanding of parasitic diseases control, various propaganda materials were produced, including DVD, Spring Festival pictures, daily things and so on, for

popularization and education. We went to schools and communities to hold parasitic diseases lecture for primary and middle school students. The museum of medical parasitology, entomology and molluscology received 35 groups of foreign or domestic visitors including 320 persons.

5.4 Two training courses for middle-level leaders were held. We tried to achieve practical effect and combine theory with reality to enhance the management ability of trainees.

5.5 Improving plan and financial management. Various tasks were accomplished according to the aim and schedule of disease control.

5.6 Deepening the development of the first level drug, Tribendimidine. IPD collaborating Shangdong Xinhua Pharmaceutical Company Limited and Qinghai Academy of Science and Veterinary Medicine carried out antihelminthic effectiveness and safety experiment and evaluation on cattle and sheep in tableland. We signed cooperation agreement of Tribendimidine for animal feasibility study. We and Shangdong Xinhua Pharmaceutical Company Limited signed protocol of cooperative development of Tribendimidine.

5.7 The work of imported apparatus tax free, checking and installment for “National Public Health Emergent Response System 2nd Term Apparatus Configuration” was accomplished. The large-scale apparatus was uniformly managed and openly used, which fully functioned the apparatus.

5.8 Careful listening to the opinion of staff deputies. We tried to deal with the issues concerned by staff and actively made changes. Moreover, the salary of staff was increased.

5.9 We carried out safety education week with the scheme of “strengthening safety management and promoting civil construction”. The lectures for the regulations and cases of fire fighting, laboratory biosafety and laboratory operation protocol were organized for all staff. The departmental discussion and emergency rehearsal achieved satisfactory results.

5.10 Through the hard working of all staff, IPD was awarded “Shanghai safety eligible institution”.

5.11 SPF experimental animal department passed the examination of Shanghai animal management association and acquired certificate. The biosafety II laboratory was put on records in Shanghai relevant department.

Through our continuing hard work, the visage of IPD looks brand-new. This is not only because of the renewing four building and improving work hardware, but also because of the promotion of disease control and research ability and the mature of parasitic diseases control team. We should keep the fighting spirit, cooperate and explore. By continuing development, we are enhancing our ability, promoting harmony and opening the new page of parasitic diseases control career.

WORK PLAN IN 2007

2007 is the year of building harmony and the year that IPD explores further in new start point. We should promote harmony by development, continue to enhance the ability of disease control and research, further play the role of national parasitic diseases control team and serve the health of people and the harmony of society.

The work in our institute in 2007 is as follows:

1 Continuing to promote the nationwide parasitic diseases control work

In 2007, guided by the Bureau of Disease Control, Ministry of Health and China CDC, IPD continue to promote the nationwide parasitic diseases control work. We should consider the whole situation, adopt schistosomiasis control strategy of mainly controlling of infection source and strengthen prevention and control of the disease resurgence in the important endemic regions and the work of parasitic diseases comprehensive control pilot spots. To bring along larger areas by spots, We concentrate advantages and forces on following works.

1.1 Schistosomiasis

Continue to fulfill schistosomiasis surveillance and participate in the propaganda of “schistosomiasis Control Regulation” and the popularization and application of the schistosomiasis control strategy giving priority to the controll of infection source. Assist the institutions in endemic region with accomplishing the establishment of mid-long term aim standard reaching plan for national schistosomiasis control program and the establishment of assessment method and standard for nationwide schistosomiasis control work.

Based on the fulfillment of technique guidance and technique support for schistosomiasis comprehensive control pilot counties, we carry out hygiene and economics assessment work. The epidemic situation analysis and report are enforced. The management and surveillance on schistosomiasis in mobile population are enforced. We continue to carry out national schistosomiasis health education plan, health education pilot work and training and applied research project for basic level schistosomiasis control personnel.

1.2 Malaria

Continue to fulfill the national malaria surveillance and fully handle the dynamic change of national malaria epidemic situation. Continue to fulfill the organization and management of the 1st and 5th round Global Fund malaria program, actively impel national malaria control work, including the supervision and examination of Yunnan and Hainan hyperendemic area, assist middle five provinces with malaria collaborating control work and strengthen the technique guidance of control malaria resurgence and outbreak in Anhui, Henan and Tibet. Strengthen the personnel training of “Aid to Africa” malaria control center and undertake the training of malaria control for African and Southeast Asian countries at the request of Ministry of Business and Ministry of Foreign Affair. We also actively carry out the health education and propaganda for malaria control.

1.3 Other parasitic diseases

We should well prepare the follow-up work of filariasis elimination, continue central transferring payment project for echinococcosis control and control pilot spots work, carry out kala-azar sampling investigation, surveillance and pilot spots work and strengthen the report and management of epidemic situation. Simultaneously, we begin relevant technical communication and training.

Fulfill the national surveillance of important soil-borne and food-borne parasitic diseases. Timely collect, analyze data from national soil-borne nematode surveillance spots and provide technique support. Impel the general development of national parasitic diseases comprehensive control. Fulfill technique training and guidance; fulfill the supervision and evaluation of work quality; establish control standard of important parasitic diseases.

1.4 Promoting the ability of responding and dealing with emergent public health affairs

The mechanism of emergent response to emergent public health affair should be further constructed. The ability of responding to emergent epidemic situation is promoted. We need to improve the pathogen diagnosis, epidemiology, control technique and control method for parasites that is increasing and potentially threaten people. The professionals need to be further trained on epidemiology, emergent response technique for scientific management and standardized operation. We manage to accomplish the tasks from MOH and China CDC and effectively respond to various emergent parasitic epidemic situations.

2 Strengthening scientific research and construction of key laboratory

2.1 Actively applying for scientific research project

Based on the progress and achievement of National “Tenth Five-year” Key Technologies R&D Program, “863” Program, National Natural Science Foundation and international cooperation, we actively participate in the project establishing of important parasitic diseases control study of “Eleventh Five-year” Key Technologies R&D Program. We organize personnel to participate in application and scientific support of “Eleventh Five-year” Key Technologies R&D Special Program. We also actively apply Chinese Medical Progress Award and Chinese Preventative Medicine Scientific Progress Award.

2.2 Strengthening the management of Key Laboratory of Parasitic Pathogen and Vector Biology

Key Laboratory of Parasitic Pathogen and Vector Biology, MOH insistes on the mechanism of “open, flow, collaboration and competition”, We should strengthen the construction and management of laboratory, create good scientific and academic environment, perform high level fundamental and applied research in leading area for China important human parasites and relevant vectors and provide an important experimental and research platform for guiding national parasitic diseases control. We try to pass the examination and assessment of MOH in 2007 and began prior period investigation of National Key Laboratory application.

Establish open fund of MOH Key Laboratory of Parasitic Pathogen and Vector Biology to promote researches and personnel training of relevant areas. Strengthen laboratory management and laboratorial biosafety training and participate in China CDC laboratory

network of emergent public health affair.

2.3 Impelling platform construction and academic communication

Launch the construction of parasitic diseases information platform and drug research platform. Strengthen the construction of important parasite and vector resources platform, and parasitic diseases diagnosis platform and so on.

Establish and edit standards of relevant parasitic diseases. Carry out academic communication and education training.

Strengthen the communication and cooperation with WHO playing the role of WHO Collaborating Centre for Malaria, Schistosomiasis and Filariasis. We actively apply projects from WHO and other institutions. Make it ready to hold the international vivax malaria conference co-sponsored by IPD, Japan National Institute of Infectious Diseases and WHO.

3 Improving human resource system and personnel training

Following the “Series Documents of China CDC Human Resource Regulation Reform” and the rule of “open, equity, competition and optimization”, the chance that positions set as those of public institutions and income regulation reform, we properly arrange people to establish the dynamic mechanism for human resource and accomplish to transfer the status management to position management. The improper sections of human resource regulation is going to be adjusted.

Human resource leading group and human resource development plan, will be implemented within this year, including financing for IPD personnel development special fund to support the importing and training of high level professionals, urgently needed professionals and excellent young man. The training and continuing education for will were also be funded to promote their professional abilities.

4 Strengthening training and connotation construction

By holding various training programs professional ability is enhanced, including “training for schistosomiasis social medicine and technique”, “training for popularization of snail control technique and snail killing technique”, “national professional training for advanced parasitology” (in English), “training for parasitic diseases diagnosis”, “training for national vector investigation” and so on.

We will organize relevant people to participate in training, lectures, on-line education and field practice. And we dispatch excellent personnel to foreign countries for study, communication and training.

5 Striving for "model unit" and upgrading the construction of "model unit"

By the construction of civilization, the education for social morality and professional morality is deepened. We strengthen cultural construction, bring the disease control spirit of hard struggle, and devotion into play, beautify environment and establish harmony, corporate and enterprising cultural environment. Based on the improvement of interior management regulation, the examination and check are strengthened. Staff ideological construction and

behavioral are strengthened to promote the quality of staff and to guarantee the progress of disease control and research work.

We should spend great effort to impel and upgrade the "model unit" construction.

6 Accomplishing other tasks of IPD

6.1 Complete the 4th period clinical trial of Tribendimidine to facilitate the domestic and foreign popularization. Accelerate the application of international patent for Tribendimidine. Expand the field effectiveness observation on Tribendimidine against nematode and trematode. Accomplish the domestic and international patent application of Tribendimidine for drug livestock and the trial of Tribendimidine against intestinal parasites in sheep and cattle. Explore the new way to domestic or international collaborating development of Tribendimidine for livestock drug.

6.2 Accelerate the implementation of "environment optimization" and "staff family" projects. Complete the road repave in the beginning of this year and plant along the road to provide good working environment for staff.

6.3 Improve library management, purchase new books, launch the construction of digital library and gradually add Chinese or foreign language books, annul and paper index to IPD library index system. Extend and adjust current database to further exert the function of parasitic diseases professional library.

6.4 Strengthen the construction of "one museum and two stores". Expand the space of the museum of medical parasitology, entomology and molluscology and add vivid pictorial materials. We will increase funds, collect scarce parasite specimens, expand specimen store numbers and parasite species numbers, store parasite specimens separately and input information to establish specimen database.

6.5 Strengthen logistics management, implement interior individual work responsibility regulation, specify the responsibilities for certain positions and establish relevant regulation to improve the logistics service with the concept that "those responsible should implement their work". Perform asset checking within this year. Earnestly check and install the apparatus of "National Public Health Emergent Response System 2nd Term Apparatus Configuration". Earnestly implement 2007 IPD apparatus purchasing project and strive to put the apparatus into utilization within this year.

There is a good tendency of IPD development. All staff should keep on hard work, establish collaborating work environment and build a position-loving disease control and research team. We should keep our passion of work and style of earnest work, be of one heart and one mind, exploit and make progress, be harmony and innovative and contribute to people's health and the establishment of harmony society.

§ 2. 疾病控制

2006年,在卫生部和中国疾控中心的领导下,寄生虫病所较好地完成了年初制定的各项防治工作目标任务,主要总结如下:

1 血吸虫病

1.1 中央支持地方血吸虫病防治项目与国务院血防办综合试点的指导和评估

每月组织1-2次现场技术指导和督导,共派出专业人员达40余人次。组织专业技术人员驻点技术支持。配合卫生部组织召开了血防联系试点评估会议;组织召开了《以传染源控制为主的中国血吸虫病防治策略的研究》试点项目总结、成果申报;完成了试点项目数据、资料的收集整理、分析、总结和上报。

1.2 继续完成全国血吸虫病监测工作

分别在江西和云南召开了“监测技术改进与提高培训班”和“全国血吸虫病监测地区螺情调查工作会”;对各省人群及家畜病情监测工作进行了现场抽查工作督导。

1.3 全国血吸虫病疫情报告和疫情处理

完成每周急性血吸虫病疫情周报;召开了急性血吸虫病疫情应急处理工作会;开展现场调查和明察暗访工作,抽查,核实现场资料,掌握了较为可靠的疫情信息。

1.4 继续实施全国血吸虫病健康教育方案

启动了2006年血吸虫病健康教育试点工作,完成了《中国血吸虫病防治历程与展望》、《中国血吸虫病防治画册》等书籍的印刷;协助卫生部疾控局完成了《全国血防条例释义》的修订工作。

1.5 其他

开展了新型灭螺药物“荣芽、荣宝杀螺剂”现场扩大试验;开展流动监测和潜在流行区监测工作;完成《我国控制和消灭血吸虫病标准》(送审稿);主办了“全国血吸虫病防治研究青年学术交流会”。

2 疟疾

2.1 2006年春季休止期治疗

编撰了《春季疟疾休止期根治健教处方》,举办重点省区春季疟疾休止期根治方案培训班,分赴安徽、河南、湖北等省开展了技术指导、督导及明察暗访工作,并在安徽等省疟疾流行区现场开展了入户调查。

2.2 继续做好全国疟疾监测工作

完成2006年重点省疟疾监测现场督导和技术培训,制作了疟疾抗原片4000余片和抗药性测试药纸,分发到各重点省的有关监测点,并在重点省开展了媒介按蚊抗药性监测。

2.3 疟疾疫情报告和突发疫情处理

完成疟疾疫情周报,并对疟疾疫情的趋势进行预测,针对安徽和贵州等省出现的疟疾突发疫情,组织专家组赴疟区开展防治工作指导。

2.4 策略研讨与技术培训

先后两次组织召开了《疟疾预防控制机构工作业务规范》专家审稿会,《疟疾防治手册》修订会,多次对《疟疾控制与消除标准》进行论证,完成了《疟疾预防控制机构工作业务规范》和《疟疾防治手册》审定工作。

2.5 援藏疟疾防治与策略研讨

先后两次组织召开了援藏疟疾防治工作专家研讨会,制订了相关培训计划和现场调查工作方案,组织援藏专家组两次赴藏深入疟疾高发地区培训并指导西藏自治区开展疟疾防治工作;配合卫生部疾控局在西藏召开疟疾防治策略研讨会。

2.6 继续做好全球基金疟疾项目工作

完成全球基金第五轮疟疾项目的各项准备和启动工作,编制完成了项目两年工作计划、督导与评估计划、采购供应管理计划,建立了项目协调与合作机制。对项目省、合作伙伴单位项目有关人员,就项目管理、财务、采购、审计等方面内容进行了培训。

3 其它寄生虫病防治

3.1 我国消除丝虫病认证的各项准备

完成了“我国消除丝虫病国家报告”中英文版的起草、修订和定稿等工作,为我国向WHO提交消除丝虫病的论证申请提供了技术保障。并对安徽省泗县丝虫病监测工作进行了抽样复核。

3.2 黑热病试点与媒介监测

启动了甘肃省动物源型黑热病监测试点,组织专家赴流行区开展了现场调查和试验工作,同时开展了白蛉监测试点工作。

3.3 包虫病防治试点

启动了四川省包虫病防治试点工作,组织3次包虫病防治策略、措施的调研,开展相关健康宣传,设计制作了近3万份宣传材料。同时在新疆包虫病流行地区选择了2个县作为试点,启动了包虫病疫情现状调查。

3.4 全国土源性线虫病监测启动

完成《土源性寄生虫病监测方案》及方案的操作手册的编写和下发，举办了监测方案培训班，在全国设立了22个监测点开展土源性线虫病监测工作。

3.5 大力推动寄生虫病综合防治示范区的启动

制定了综合防治示范区试点县的工作方案，协助卫生部和中国疾病预防控制中心确定了10个示范区，并开展了寄生虫病综合防治示范区培训，编写了示范区基线调查的技术方案，推动了示范区工作的开展。

3.6 全国人体重要寄生虫病现状调查后续工作

完成寄调数据库后续清理，组织专家对全国25篇专题文章及56篇省内专题报告进行审修，同时起草了《全国重要寄生虫病调查》工作报告、技术报告，完成《全国重要寄生虫病调查资料汇编》定稿。

3.7 做好突发疫情的应急处理

针对今年9月北京出现的广州管圆线虫病突发疫情，我所派出专家直接参与诊断，及时为卫生部提供技术支撑，并组织召开广州管圆线虫病疫情研讨会和防治技术培训班，在全国19个省市选定调查点，开展了广州管圆线虫病疫源地现场调查工作。

§2. DISEASE CONTROL

In 2006, under the leadship of the Ministry of Health and the Chinese Center for Disease Prevention and Control, the National Institute of Parasitic Diseases has well accomplished all aims and tasks of the diseases prevention and control established in the beginning of the year. The summary is as follows:

1 Schistosomiasis

1.1 Evaluation on the local schistosomiasis control projects supported by the Central Authority and the comprehensive trials assigned by the Department of Schistosomiasis Control of State Council

More than 40 person-times of the professional were assigned to supply technical advice and supervise the field work once or twice every month. The technical personnel were organized to propagandize the prevention techniques by encamping. The Department of Schistosomiasis assisted the Ministry of Health to hold the assessment meeting on the schistosomiasis prevention trials, and held the summary convention on the study of “*schistosomiasis control strategy giving priority to the control of infection source*” and declared the achievement. The sorting and analysis of trials project data were finished and the results were reported to authority.

1.2 Continuing national surveillance of schistosomiasis

A training course on improvement and promotion of surveillance techniques and a working conference on the survey of snail status in the surveillance regions were held in Jiangxi and Yunnan province, respectively. Some work on epidemic situation surveillance in population and livestock was singled out and inspected.

1.3 Report of national epidemic situation of schistosomiasis and handling of epidemics

Weekly epidemic situation of acute schistosomiasis was published on time. The meeting on the emergency response to epidemic situation of acute schistosomiasis was held. The field surveys were conducted and local work was investigated openly and secretly, and the field data were checked, and the reliable information on epidemic situation was obtained.

1.4 Further implementation of the national health education program of schistosomiasis

The trial work of health education of schistosomiasis was initiated, and the print of publicity data (*the History and Prospect of Schistosomiasis Prevention and Control in China* and *Propaganda Posters of Schistosomiasis Prevention and Control in China*) were accomplished. The professional assisted the Bureau of Disease Control, Ministry of health, to accomplish the

revision of “*paraphrase of schistosomiasis control ordinance*”.

1.5 The others

The expanded experiment of the new-type molluscicide “Rongya and Rongbao” in field was conducted. The surveillance in mobile population and potentially endemic area were initiated. “*Criterion of control and elimination of schistosomiasis in China*” (draft for examination) was achieved. A scholar communication convention of young researchers in schistosomiasis prevention and control was sponsored.

2 Malaria

2.1 The treatment of malaria during transmission interregnum in spring

The “*Health Education Scheme of Radical Treatment of Malaria During Spring Transmission Interregnum*” was compiled, meanwhile a training course on the scheme for heavily endemic provinces. The professional were assigned to Anhui, Henan and Hubei Province to provide techniques and investigate local work openly and secretly. Household investigations were developed in malaria epidemic provinces (Anhui Province).

2.2 Continuing the national surveillance of malaria

Investigation of surveillance and technical training for key provinces in 2006 had executed. More than 4 000 slides marked with malaria antigen and a plenty of test papers for antimicrobial resistance were made and distributed to surveillance plots. The surveillance of insecticide resistance of vector *Anopheles* was started in the provinces.

2.3 Report of national epidemic situation of malaria and handling of epidemics

Weekly epidemic situation of malaria was published on time, and the epidemic tendency of malaria was predicted. Experts were organized and assigned to the locus to guide the treatment of malaria outbreaks in Anhui province and Guizhou province.

2.4 Discussion of strategy and technical training

The draft of “*Practice regulations of malaria prevention and control agency*” was discussed and revised twice and the revision meeting on “*Guidance of malaria prevention and control*” was held. Authorization of the “*regulations*” and “*criterion*” had been finished. The professional were organized many times to demonstrate “*criterion of malaria control and elimination*”.

2.5 Support for Tibet in malaria control and the discussion of malaria control strategy

Two working meetings on support for Tibet in malaria control were held, the corresponding training plans and fieldwork scheme were made on the meetings. Experts were organized and assigned to train the personnel and guide the malaria control in heavily epidemic area in Tibet

twice. Our institute assisted the Bureau of Disease Control, Ministry of Health to hold conference on malaria control strategy.

2.6 Global Fund Project

The 5th round GF program was well prepared and initiated. Two-year work plan, investigation and evaluation plan, and procurement and management plan had made. The mechanisms of coordination and cooperation were established. The training on project management, financial management, procurement, audit, and so forth, had been held for the obligate provinces and cooperative agencies.

3 Prevention and control of the other parasitic diseases

3.1 Preparation for the demonstration of filariasis elimination in China

The corresponding professional drafted, revised and finished the national report on the elimination of filariasis in China, which provided technical supports for the demonstration application about filariasis elimination in China submitted to WHO. The filariasis surveillance in Sixian County, Anhui Province was singled out and checked.

3.2 Surveillance trials in leishmaniasis and its vector

The surveillance trials of animal-borne leishmaniasis in Gansu Province were initiated, the professional were organized to conduct field surveys and pilot trials in endemic area, and simultaneity triggered surveillance trials of sand flies.

3.3 Trials in echinococcosis prevention and control

The pilot trials in echinococcosis prevention and control were started in Sichuan province. Three investigations and discussions on the strategies and measures of echinococcosis prevention and control were carried out. The corresponding health education was developed, about 30 000 propaganda data were designed and printed. Two echinococcosis endemic counties in Xijiang were selected as trial spots and the study on current epidemic status of echinococcosis was started.

3.4 National surveillance on soil -borne parasitic diseases

The “*National Surveillance Scheme of Soil-borne Parasitic Diseases*” was accomplished and meanwhile the scheme manual was compiled and distributed. A training course on surveillance scheme was held. Twenty-two surveillance spots were set up and the corresponding surveillance work were initiated.

3.5 Comprehensive demonstration plots of parasitic diseases prevention and control

Our institute assisted the Ministry of Health and the Chinese Center for Disease Prevention and Control to determine 10 comprehensive demonstration counties, and established the working

scheme. Special training was held for the demonstration plots, the technical plan on baseline investigation was made, the demonstration work was promoted.

3.6 National survey on the current status of important human parasitic diseases

The sorting of the data in parasitic disease survey was finished, experts were organized to revise 25 special articles and 56 provincial special reports, and drafted working and technical report on the national survey on important human parasitic diseases, and achieved the final version of “*Data Assembly of the National Survey on Important Human Parasitic Diseases*”.

3.7 Emergency treatment

Our institute immediately and accurately responded to the angiostrongyliasis outbreak in Beijing in August, 2006. The professionals were assigned to participate in the diagnosis and identification of the outbreak, and supplied technical support to Ministry of Health in time. The conference on angiostrongyliasis epidemic status and the training course on prevention and cure technique were held. The field survey on the endemic focus of angiostrongyliasis was performed in 19 southern provinces.

§ 3. 科研工作与外事工作

2006 年,在所领导的大力支持下,在全所广大科技人员的积极配合和共同努力下,我所的科研、教育培训、国际合作与交流、中华预防医学会医学寄生虫分会、卫生部寄生虫病标准专业委员会等工作均取得了一定的成绩。

1 科学研究

1.1 研究课题概况

2006 年全所共有 32 项在研课题,其中血吸虫病、疟疾、黑热病、土/食源性寄生虫病、其他寄生虫病依次占 43%、16%、3%、13%、25%。按学科分类,流行病学与预防控制、病原与媒介生物学、免疫学与诊断、疫苗、药物、其他在研课题分别占 31%、6%、35%、9%、13%及 6%。

32 项在研课题来源于“863”计划 2 项、国家“十五”科技攻关课题 5 项、国家自然科学基金 3 项、科技部中央院所专项 4 项、上海市科委重点科技攻关课题 3 项、国际合作 6 项、所中青年基金 5 项、所启动基金 1 项、其他 1 项。

2006 年投入科研经费共 1000 万元左右。除个别课题因上级部门同意延期外,其他课题均按年度计划执行。

1.2 科研成果

1.2.1 2006 年全所通过验收的科研项目有 4 项,包括“重要寄生虫虫种资源标准化整理、整合及共享试点”(国家科技基础条件平台工作)、“生态环境变化对血吸虫病流行的影响及干预措施的研究”(“十五”国家科技攻关项目)、“嗜人按蚊地区疟疾流行潜势及控制暴发流行的研究”(“十五”国家科技攻关项目)和“建立长江流域、我国湖区 GIS 血吸虫病预警系统研究”(“十五”国家科技攻关项目)。

1.2.2 十年百项计划推广项目

“手持全球定位设备 GPS 在血吸虫病钉螺调查中的应用”被批准为卫生部面向农村和基层推广适宜技术十年百项计划推广项目。

1.2.3 专利

我所牵头申请专利 8 项,参与申请专利 3 项。“瑞香素与青蒿素衍生物配伍的抗疟组合物”获得发明专利;“一种蚊虫诱捕器”获得实用新型专利。

1.2.4 在国内、外发表论文 66 篇,其中被 SCI 专业期刊收录 7 篇,学术会议交流 25 篇;主编一部《寄生虫病流行病学与统计学》,参加其他专著的部分章节的撰写(4 篇)。

1.3 申请课题

申报课题 22 项, 批准 5 项, 共获研究经费 1100 万元。

1.4 中青年科研基金在研课题 6 项, 本年度结题 3 项, 组织申报 5 项。

2 卫生部寄生虫病原与媒介生物学重点实验室

2.1 卫生部寄生虫病原与媒介生物学重点实验室第三届学术委员会第二次会议于 2006 年 12 月 24 日在本所举行。重点实验室副主任曹建平研究员向学委会汇报“2005~2006 年度重点实验室工作报告”和“2007 年重点实验室工作计划”。委员们对实验室建设与发展展开了讨论并提出了建议。

2.2 经考核, 我所改建的动物实验室获上海市科学技术委员会颁发的“实验动物使用许可证”。

3 教育培训

3.1 研究生培养

在读研究生共 29 名, 其中博士研究生 10 名。

新招收研究生 8 名, 其中博士研究生 3 名, 硕士生 5 名。毕业并获得学位的研究生 11 名, 其中博士 2 名。

3.2 专业进修

接受兄弟单位进修生 7 名。

3.3 全国专业人员继续教育培训共 11 项, 学员 982 名。

名称	来源	时间	地点	学员数
全国血吸虫病防治研究青年学术交流会	中华预防医学会	12.9-10	云南	130
全国寄生虫学与热带病学术研讨会	中华预防医学会	9.20-23	深圳	118
全国土源性线虫病检测方案培训班	中华预防医学会	8.27-31	青海	108
全国寄生虫病应急处理培训班	中华预防医学会	7.12-16	上海	30
全国急性血吸虫病疫情处理培训班	中华预防医学会	9.15-17	浙江	36
监测资料分析利用培训班	中华预防医学会	7.8-12	云南	30
全国分子寄生虫学培训班	中华预防医学会	12.7-14	上海	13
利什曼病媒介监测与控制培训班	国家医学教育基地项目	4.25-27	上海	30
全国钉螺控制及其相关技术培训班	国家医学教育基地项目	4.3-5	福建	108
重要寄生虫虫种资源共享与利用学术交流会	国家医学教育基地项目	8.4-5	兰州	71
全国血防健康教育试点培训(1-3 期)	国家医学教育基地项目	8.19-9.6	无锡	308

3.4 编制疾病控制 DVD 培训教材《钉螺控制》《查灭钉螺》和《肺吸虫病防治》。

3.5 本所职工继续教育培训共 73 人次。

4 国际合作与交流

4.1 国际交往

4.1.1 来访：本年度共接待外宾 27 批 133 人次，分别来自韩国、日本、美国、津巴布韦、瑞典、柬埔寨、印度尼西亚、马来西亚、老挝、孟加拉国、缅甸、泰国、菲律宾、越南等 37 个国家。

4.1.2. 出访：全年出访 28 批，37 人次。分赴日本、美国、马来西亚、瑞士、泰国、德国、瑞典、丹麦、越南等 15 个国家、地区。

4.2 举办国际专业培训班

4.2.1 我所与亚洲疟疾培训网络（简称亚网）基金会联合举办“亚洲疟疾培训网络疟疾监测和流行病学管理培训班”。来自 10 个亚网成员国的学员、亚网基金会、世界卫生组织（WHO）疟疾控制项目官员和教员共 30 余人参加。

4.2.2 主办、承办“非洲国家传染病防治研修班”和“2006 年非洲国家疟疾防治技术培训班”，来自非洲 18 个国家的 33 名学员参加了培训。

4.3 国际合作项目

4.3.1 与 6 个国家 9 个单位共同承担国际合作课题 6 项。

4.3.2 申请 WHO/TDR、中日合作研究等国际合作项目 3 项。

4.4 全球基金中国控制疟疾项目

4.4.1 第一轮全球基金中国控制疟疾项目获资助 550 万美元，覆盖 10 个项目省，43 个项目县。自 2003 年 4 月正式启动以来，累计血检发热病人 160 余万，治疗疟疾病例 30 余万，杀虫剂浸泡蚊帐 35.4 万顶。

4.4.2 第五轮全球基金中国控制疟疾项目获资助 3900 余万美元，覆盖全国 6 省 121 县。项目于 2006 年 10 月 1 日全面启动。第一批资金 770 万美元已按计划如期拨付。

5 中华预防医学会医学寄生虫分会工作

5.1 《全国寄生虫学与热带病学学术研讨会》于 2006 年 9 月 20 日-23 日在深圳市举行。大会交流论文 22 篇，书面交流论文 73 篇。与会的专家、学者共 118 人。

5.2 《全国血吸虫病防治研究青年学术交流会》于 2006 年 12 月 9-10 日在云南省鹤庆县举行。各科研院所、大专院校、各血吸虫病流行省血防行政和业务机构的血吸虫病防治与科研专家和中青年技术骨干共 130 余人参加。

5.3 “中国寄生虫学与寄生虫病杂志 2004-2005 年论文分析”及“寄生虫病防治研究进展”已在《预防医学学科发展蓝皮书—2006 卷》刊登。

6 编辑出版工作

6.1 《中国寄生虫学与寄生虫病杂志》按期出版，共收稿件 201 篇。本刊影响因子为 0.462、总被引频次 473、他引率 80%、即年指标 0.054，基金论文比 52%，在同类期刊中名列前茅。为推动我国寄生虫种质资源的共享与应用，《中国寄生虫学与寄生虫病杂志》出版发行“寄生虫种质资源理论与实践”增刊。

6.2 《国际医学寄生虫病杂志》如期出版, 共收稿件 112 篇。

6.3 “中国寄生虫学与寄生虫病杂志和国际医学寄生虫病杂志研讨会”于 2006 年 11 月 10 日在上海召开。53 名专家与会, 对提高期刊的影响因子、目前存在的问题及未来发展方向等提出了宝贵的意见和建议。

7 健康教育

7.1 人体寄生虫和媒介标本馆接待参观者 285 人次。

7.2 完成专题科普教育片《谨防肺吸虫病》和《话说疟疾》。

7.3 完成寄生虫病健康教育科普文章 12 篇, 已刊登于《健康财富周刊》。

7.4 科技咨询服务: 血清学检测 2530 人次、病原学检测 682 人次。

8 卫生部寄生虫病标准专业委员会工作

8.1 卫生部寄生虫病标准专业委员会经卫生部批准于 2006 年 11 月 23 日成立。

8.2 卫生部寄生虫病标准专业委员会 2006 年工作会议于 12 月 23 日在上海召开, 评审相关标准 3 项。

8.3 组织完成的血吸虫病、疟疾、丝虫病、黑热病和包虫病等 5 项诊断标准于 2006 年颁布。

9 卫生部专家咨询委员会

2006 年 12 月 21-22 日在上海组织召开了“卫生部寄生虫病专家咨询委员会 2006 年工作会议”, 会上寄生虫病专家组、疟疾专家组、丝虫病专家组汇报了 2006 年工作进展并讨论了 2007 年工作计划。

§3. WORKS ON RESEARCH & EXTERNAL AFFAIRS

1 Science research

1.1 Analysis on 32 projects

A total of 32 research projects were undertaken in 2006, among which 2 were supported by National 863 High-tech Program, 5 by Key Science and Technology Project of National “Ten-Year-Plan” of China, 3 by National Natural Science Foundation of China, 4 by Ministry of Science and Technology Project, 3 by Key Science and Technology Project of Committee of Science and Technology of Shanghai, 6 by International collaboration, 5 by Young Foundation of IPD, 1 by Starting Foundation of IPD and 1 by others.

The projects involve schistosomiasis 43 %, malaria 16 %, leishmaniasis 3 %, soil-borne and food-borne parasitic diseases 13 % and others 25%. The relating science fields of those projects are epidemiology , prevention and control 31 %, pathogen and vector biology 6 %, immunology and diagnosis 35 %, vaccines 9 %, drugs 13 % and others 6 %.

1.2 Outcome

1.2.1 Four projects passed examination

They are “Standard infrastructure establishment on parasite germplasm resources and sharing pilots” (Nature resource platform project from Ministry of Science and Technology)

“Research on influence and intervene measures to environmental changes on schistosomiasis epidemic” (Key Science and Technology Project of National “Ten-Year-Plan” of China)

“Research on malaria epidemic potential situation and outbreak control in the areas with *Anopheles Anthropophagus*” (Key Science and Technology Project of National “Ten-Year-Plan” of China)

“To establish GIS schistosomiasis forecasting system in Changjiang areas and lake area in China” (Key Science and Technology Project of National “Ten-Year-Plan” of China)

1.2.2 Patent

Eight patents were applied by National Institute of Parasitic Diseases, and NIPD was co-applicant for other 3 patents.

“Antimalarial drugs of daphnetin combined with artemisinin derivatives” obtained invention patent and “one mosquitoes entrapping ware” obtained new and practical patent.

1.2.3 Sixty-six articles were published and seven of them were embodied by SCI. Twenty-five articles were communicated in science meetings. “Epidemiology and statistics for parasitic diseases” was edited in chief and 4 for other books chapters were written.

1.3 Projects declaration

Twenty-two projects were applied and five projects awarded with total of 11,000,000 yuan.

1.4 Six projects are supported by Young research foundation. Three projects completed this year and five projects are declared.

2 Parasite pathogen and vector biology laboratory of Ministry of Health

2.1 Third Academic Committee for 2nd meeting of Parasite pathogen and vector biology laboratory of Ministry of Health was held on Dec, 24th, 2006 in IPD. The report of 2005~2006 and the work plan of 2007 were reported by Cao Jian-ping, the vice director of the laboratory. Laboratory construction and development were discussed and good suggestions were provided.

2.2 The reconstructed animal laboratory got the license for utilization of laboratory animals issued by Committee on Science and Technology of Shanghai.

3 Education and training

3.1 Postgraduate education

Twenty-nine postgraduates are trained and ten of them are Ph.D. graduates. Eight postgraduates were recruited and three of them are Ph.D. graduates and others are postgraduates. Eleven postgraduates graduated and got the academic degree and two of them are Ph.D. graduates.

3.2 Professional Development

7 professionals coming from other institutions are trained.

3.3 National professional Continuing education and training for 11 times and a total of 982 students.

Title	Sponsor	When	Where	Number of participants
National academic meeting on Schistosomiasis prevention and control	China Preventive Medicine Association	12.9-10	Yunnan	130
National on parasitology and tropic diseases Seminar	China Preventive Medicine Association	9.20-23	Shenzhen	118
National training course on detection Scheme of Geohelminthes diseases	China Preventive Medicine Association	8.27—31	Qinghai	108
National training course on emergency management of parasitic diseases	China Preventive Medicine Association	7.12-16	Shanghai	30
National training course on emergency management of acute Schistosomiasis	China Preventive Medicine Association	9.15-17	Zhejiang	36
Training course on surveillance data analysis and utilization	China Preventive Medicine Association	7.8-12	Yunnan	30
National training course on molecular parasitology	China Preventive Medicine Association	12.7-14	Shanghai	13
Training course on vector surveillance and control of Leishmaniasis	National Medical Education Base Project	4.25-27	Shanghai	30
Training course on snail control and related technology	National Medical Education Base Project	4.3-5	Fujian	108

Academic meeting on important parasite germplasm resource sharing and utilization	National Medical Education Base Project	8.4-5	Lanzhou	71
Training course on national health education pilot of Schistosomiasis control(1-3 phases)	National Medical Education Base Project	8.19-9.6	Wuxi	308

3.4 DVD training material of “snail control” and “detection and eradication of snail” was edited.

3.5 Continuing education for the staff in our institute was 73 person-times.

4 International collaboration and communication

4.1 International exchange

4.1.1 Visit of foreign guests: 133 foreign visitors coming from 37 countries and areas.

4.1.2 Visit abroad: 37 persons to visit 15 countries and areas.

4.2 International professional training course

4.2.1 Training course on “malaria surveillance and epidemiology management” was sponsored by IPD and ACTMalaria. About 30 participants took part in the course coming from 10 member countries of ACTMalaria.

4.2.2 Seminar on infectious diseases prevention and control for Africa and training course on Africa malaria control technique were held, and 33 participants took part in the training course coming from 18 countries of Africa.

4.3 International collaborate projects

4.3.1 Six international collaborate projects were in progress with 6 countries.

4.3.2 Three projects were supported by WHO/TDR or collaborated with Japan.

4.4 Global Fund for China malaria control programme

4.4.1 The 1st round Global Fund for China malaria control programme was supported for \$5,500,000, which covered 43 counties in 10 provinces. About 1,600,000 fever patients have been examined and 300,000 malaria patients have been treated and 354,000 bed-nets were treated with insecticides since April, 2003.

4.4.2 The 5th round Global Fund for China malaria control programme was supported for \$39,000,000, which covered 121 counties in 6 provinces. The project was kicked off on Oct 1st, 2006. And \$7,700, 000 for the first phase was allocated on schedule.

5 Medical parasitology association of China Preventive Medicine Association

5.1 National Academic seminar on parasitology and tropic diseases was held on Sep 20th -23th, 2006 in Shenzhen. 22 articles were communicated in the meeting and 73 articles were communicated by being published. The number of experts and participants was 118.

5.2 National academic meeting on Schistosomiasis prevention and control was held on Dec 9th -10th, 2006 in Heqing county of Yunnan province. 130 participants took part in the meeting including experts and young technique workers from research institutes, universities and

Schistosomiasis prevention and control units of epidemic provinces.

5.3 Analysis on theses of the 《Chinese journal of parasitology and parasitic diseases》 in 2004-2005 and Research progress on parasitic diseases prevention and control were selected to be published on 《Blue Paper for Preventive Medicine Development-2006》.

6 Editing and Publishing

6.1 《Chinese journal of parasitology and parasitic diseases》 was published on schedule and 201 papers were published. The overall citation and impact factor of this journal were 473 and 0.462, being among the best of the periodicals. In order to further improve the sharing and use of the parasite germplasm resources in our country, the supplement of 《Chinese journal of parasitology and parasitic diseases》 on “Theory and Practice of the Infrastructure Establishment on Parasite Germplasm Resources” was published.

6.2 《International Journal of Medical Parasitic Diseases》 was published on schedule and 112 papers were published.

6.3 《Chinese journal of parasitology and parasitic diseases》 and 《International Journal of Medical Parasitic Diseases》 seminar was held on Nov 10th, 2006 in Shanghai. Fifty-three experts took part in discussion on how to improve the impact factor and development orientation of the two Journals in future.

7 Health education

7.1 285 visitors come to visit parasite and vector specimens museum.

7.2 Two popular science education films 《Prevention of Paragonimiasis》 and 《Talking about malaria》 were completed.

7.3 12 papers about health education on parasitic diseases were completed and published on 《Health and wealth weekly》.

7.4 Consulting services: serological examination-2530 person-times and etiological examination-682 person-times.

8 Professional Standards Committee for parasitic diseases of Ministry of Health

8.1 Professional Standards Committee for parasitic diseases of Ministry of Health was established on Nov 23rd, 2006 approved by Ministry of Health.

8.2 2006 Conference of Professional Standards Committee for parasitic diseases of Ministry of Health was held on Dec 23rd, 2006 in Shanghai to evaluate 4 related standards.

8.3 Diagnosis standards for Schistosomiasis, Malaria, Filariasis, Leishmaniasis and Echinococcosis were standardized and promulgated in 2006.

9 Expert consulting committee of Ministry of Health

9.1 2006 conference was held.

9.2 Expert of parasitic diseases meeting was held.

9.3 Expert of malaria meeting was held.

9.4 Expert of filariasis meeting was held.

§ 4. 研究论文摘要

血吸虫病

日本血吸虫副肌球蛋白全基因核酸疫苗对小鼠的抗病免疫效应*

陈家旭 刘述先 曹建平 宋光承 徐徐信

[目的] 探讨日本血吸虫副肌球蛋白全基因核酸疫苗 (Sjc97 DNA) 免疫小鼠诱导的抗病免疫效应。**[方法]** 将 40 只 C57BL/6 小鼠随即分成 4 组: 疫苗组, 以 Sjc97 DNA 疫苗 100 μ g 经后腿胫前肌注射免疫小鼠, 共 2 次, 间隔 3 周; 空质粒组, 以同法、同剂量的空质粒载体免疫小鼠; 上述 2 组分别于末次免疫后 3 周攻击感染 30 ± 2 条日本血吸虫尾蚴; 感染对照组, 不作免疫, 感染相同数量的日本血吸虫尾蚴; 空白对照组, 未作任何处理。攻击感染后 7 周剖杀小鼠, 测量肝脏单个虫卵肉芽肿大小, 测定鼠血清透明质酸及层黏连蛋白含量, PCR-ELISA 检测肝组织转化生长因子(TGF- β 1)mRNA 的表达水平。**[结果]** Sjc97 DNA 疫苗组小鼠肝脏虫卵肉芽肿得直径为 $(183.75 \pm 42.36) \mu\text{m}$, 显著小于空质粒对照组的 $(303.12 \pm 37.36) \mu\text{m}$ 和感染对照组的 $(304.38 \pm 53.23) \mu\text{m}$ ($P < 0.01$)。血清透明质酸和层黏连蛋白水平, 疫苗组显著低于感染对照组 ($P < 0.01$)。肝组织 TGF- β 1 mRNA 表达水平, 疫苗组亦明显低于两对照组 ($P < 0.05$)。**[结论]** Sjc97 DNA 核酸疫苗具有一定的抗虫卵肉芽肿及抗肝纤维化作用。

* 国家 863 高技术计划 (No. 10207040197)

胶体金免疫渗滤法检测日本血吸虫病血清抗体的研究

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应用建立的胶体金免疫渗滤法检测日本血吸虫病血清抗体, 并以快速酶联免疫吸附试验 (F-ELISA) 方法检测作平行对照。现场和实验室试验表明, 胶体金渗滤法与 F-ELISA 方法在敏感度和特异度的差异无统计学意义 ($P > 0.05$), 两法具有较高的一致性。但胶体金免疫渗滤法操作简便快速, 无特殊要求, 在临床和现场防治工作中具有比较广泛的应用前景。

¹ 福建省三明博峰生物科技有限公司

我国不同阶段实施综合治理措施控制血吸虫病策略演变

余晴 赵根明¹ 郭家钢

值此我国发现血吸虫已逾 100 年,同时我国血吸虫病防治工作开展逾 50 年之际,回顾我国不同阶段综合治理措施实施控制血吸虫病策略演变过程,综述各阶段的防治经验,探讨综合治理控制措施效果,提示与明确我国综合治理措施实施控制血吸虫病策略的进一步方向。

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山丘型流行区血吸虫感染者人数低估原因探讨

祝红庆 曹淳力 王强 鲍子平 郑浩 郭家钢

[目的] 探讨山丘型流行区血吸虫感染者人数低估的原因。**[方法]** 在山丘型流行区随机选择 A、B、C、D4 个调查点,湖沼型流行区选择一个参照点。用 ELISA 方法筛查 4 个点的居民,对阳性感染者及参照点人群同时采用尼龙绢集卵孵化法和改良加藤法进行病原学检查。以两种方法的合并阳性数为标准,估算病原学方法的相对漏检和病人低估数;就参照点敏感性较高的粪孵法漏检,分析山丘型流行区血吸虫病人人数严重低估的原因。**[结果]** 调查点 ELISA 检查 5 563 人,阳性 1 536 例,阳性率 27.61%;A、B 点病原学检查阳性数分别为 38、28 例,其感染率分别为 3.12% 和 2.96%,结果均远低于相应流行分类的感染率。4 个调查点粪孵的检出率均高于加藤法,粪孵相对漏检 8 例,加藤法相对漏检 72 例;参照点粪孵检出率低于加藤法,粪孵相对漏检 59 例,加藤法相对漏检 19 例。**[结论]** 病原学方法的敏感性造成病人人数一定程度的低估,反复使用吡喹酮使人群虫荷和感染度降低以及化疗药物的抑制导致病人人数漏检,是山丘型流行区血吸虫感染者人数严重低估的原因。

国外吡喹酮防治血吸虫病的进展

陈名刚

吡喹酮是一种对人体 5 种主要学习虫病(曼氏、埃及、湄公、间插与日本血吸虫病)都非常有效的药物。全球以对 1 亿多例血吸虫感染者及有疫水接触史的可能感染者用吡喹酮进行了治疗,累积了极为丰富的经验。该文概述自吡喹酮问世以来国外用吡喹酮治疗几种血吸虫病的效果、副反应及吡喹酮在几个主要流行国家(埃及、巴西、老挝、印度尼西亚、菲律宾)防治规划中的应用。

SAS 统计软件的 SURVEYSELECT 过程在血吸虫病抽样调查中的应用

党辉 郭家钢 徐志敏 王强 吴晓华 周晓农

[目的] 为了减少第三次全国血吸虫病流行冰雪抽样调查中认为选择样本带来的偏差。**[方法]** 采用 SAS 统计软件的 SURVEYSELECT 过程在计算机上进行抽样。**[结果]** 分别用计算机在江苏、江西、安徽、湖南、湖北、云南和四川随机抽取 13、23、18、47、58、12 和 68 个样本点;共抽取 239 个样本村,占未达到传播阻断标准乡镇的所有流行村的 1.36%。**[结论]** SAS 统计软件的 SURVEYSELECT 过程是计算机和现代统计学结合发展的结果,它极大地丰富了现场流行病学,它为流行病学的现场调查提供了简单而快速的样本选择方法,有着广泛的应用空间。

蒿甲醚对感染小鼠体内埃及血吸虫超微结构的损害

肖树华 Utzinger J¹ 沈炳贵 Tanner M¹ Chollet J¹

[目的] 观察蒿甲醚对小鼠体内埃及血吸虫成虫超微结构的损害。**[方法]** 8 只小鼠于感染埃及血吸虫尾蚴后 81d 用单剂蒿甲醚 400mg/kg 口服治疗。治后 24h、3d、7d 和 14d 各剖杀 2 只小鼠,用灌注法收集血吸虫,并按常规方法固定和处置虫体,作投射电镜观察。从另 2 只未治疗的感染小鼠体内取虫作对照。**[结果]** 蒿甲醚对血吸虫皮层超微结构的损害主要是皮层基质的肿胀、溶解和空泡变化,基底膜消失和部份受损皮层破裂;在感觉器和皮层结节中,常见其内部结构广泛溶解。在肌层、实质组织、合体细胞和肠管上皮细胞中,查见局灶性或广泛的溶解、粗面内质网减少、卵黄球融合以及受损卵黄细胞破溃等。上述雌、雄虫变化于感染小鼠用蒿甲醚治疗后 24h 即可见到,并逐渐加重,3-7d 后最重。治后 14d,部分雌、雄虫仍示有超微结构的损害,但同时亦观察到受损虫组织的恢复。**[结论]** 蒿甲醚对埃及血吸虫成虫的皮层和皮层下组织具有广泛和严重的超微结构损害。

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IgM-ELISA 法用于日本血吸虫病早期诊断初探

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[目的] 验证血清特异性 IgM 抗体检测对急性日本血吸虫病的早期诊断价值。**[方法]** 采用 IgM-ELISA 方法检测感染血吸虫的小鼠和急性血吸虫病人血清中的特异性 IgM 抗体水平,与 IgG - ELISA 相比较,并与急性血吸虫病人的流行病学调查资料相比对。**[结果]** 感染 4 周时小鼠血清中特异性 IgM 抗体水平显著升高,5 周时阳性检出率达 100%,比 IgG-ELISA 提早 2-3 周。检测急性血吸虫病人血清阳性率达 100%,IgG-ELISA 为 91.4%。急血病人接触疫水后 5 周,特异性 IgM 抗体水平明显高于 IgG。7 周时两者水平相近,8

周时 IgG 抗体水平超时 IgM。[结论] IgM-ELISA 具有早期诊断急性血吸虫病的价值。

1 深圳康泰诊断试剂公司

血吸虫雌雄合抱及其意义

臧炜 曹建平

雌雄合抱作为血吸虫发育过程中的一种特殊生物学现象,对血吸虫个体的发育成熟,特别是生殖功能的完善有着非常重要的意义。对雌雄合抱的研究,有助于更深入地了解血吸虫尤其是雌虫发育的过程既影响因素、阐明影响雌虫成熟和产卵的分子机制、发掘新的疫苗候选抗原和药物靶点。

日本血吸虫 DNA 疫苗的研究杂志

刁薇 曹建平

血吸虫病是严重危害人类健康的人畜共患寄生虫病,疫苗可能是预防控制血吸虫病的重要手段。该文概述了日本血吸虫 DNA 疫苗的优点、候选抗原、联合免疫、免疫机制及 DNA 疫苗存在的问题和展望。

2005 年全国血吸虫病疫情监测报告

党辉 朱蓉 郭家钢

[目的] 了解全国血吸虫病流行状况,为制定血吸虫病防治对策提供科学依据。[方法] 依照《全国血吸虫病监测方案》,开展全国血吸虫病疫情监测点工作,统计与分析 2005 年监测结果。[结果] 80 个全国监测点人群血检阳性率 17.22%;人群粪检阳性率 2.04%,人群感染度几何均数 0.52;牛、羊和猪的感染率分别为 10.59%、3.05%和 0.55%;活螺平均密度 0.77 只/0.11m²,感染螺平均密度 0.002 0 只/0.11m²,钉螺感染率 0.62%。[结论] 一、二类流行村疫情严重,需要加强传染源控制。渔船民和农民的感染率较高,应根据防治目标,选择重点人群,实施人群健康教育与查治病措施。低度流行区疫情不稳定,应加强监测巩固和综合治理工作。

日本血吸虫钙磷蛋白基因的克隆、表达及进化分析*

鞠川 彭建新 徐斌 王玮 冯正 胡薇

[目的] 克隆和表达日本血吸虫钙磷蛋白基因,纯化表达产物。[方法] 从日本血吸虫 cDNA 文库中挑出钙磷蛋白基因进行体外扩增,将目的基因亚克隆至原核表达载体 pET-28a 中进行表达,组氨酸标签亲和柱层析法纯化表达产物,并用蛋白质印迹(western blotting)分析其免疫原性。然后用生物信息学方法对其结构域和功能作用位点进行分析和预测,并

绘制该蛋白的进化树。**[结果]** 构建了重组原核表达载体,并在大肠埃希菌中获得了表达。纯化的重组蛋白可以被日本血吸虫感染的兔血清识别。经生物信息学分析发现该基因的编码蛋白含有 4 个 EF 手型(exchange factor hand, EF-hand) 功能结构域,另外具有 3 种潜在的功能作用位点,即 2 个蛋白激酶 C 磷酸化位点、8 个酪蛋白激酶 II 磷酸化位点和 1 个 N-肉豆蔻酰化位点,属于 II 型(type-II) 钙磷蛋白。**[结论]** 日本血吸虫钙磷蛋白基因编码蛋白为钙结合蛋白,有可能成为潜在的血吸虫病疫苗候选抗原和药物及诊断靶点。

* TMRC (2P50 A139461-06A1); 国家 973 重大专项 (2003 CB7-16804); 国家 863 重大专项 (2001AA223091)

2005 年全国急性血吸虫病疫情

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[目的] 描述和分析 2005 年全国急性血吸虫病(急血)和突发疫情的特点和流行趋势。**[方法]** 根据急血周报告、零报告制度,对网络直报数据和突发疫情报表数据资料进行分析。**[结果]** 2005 年全国共报告急血病例 564 例,其中确诊病例 460 例,临床诊断病例 104 例。湖区 5 省报告 515 例,山区 2 省 49 例。血吸虫病疫发疫情 6 起,病例 55 例。全国报告输入性病例 35 例,占报告病例总数的 6.2%。全国急血病例以散发为主,但突发疫情较为集中。急血病例多为农民和中小学生,主要感染方式为生产生活和嬉戏接触疫水。**[结论]** 长江流域的江洲湖滩地区的急血、特别是突发疫情的重点地区,应该做好重点人群的防护。

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2005 年湖区五省急性血吸虫病疫情分析

郑浩 李石柱 朱蓉

[目的] 描述和分析 2005 年湖区五省急性血吸虫病和突发疫情的分布、特点和流行趋势。**[方法]** 根据急性血吸虫病周报告、零报告,用描述流行病学方法对急感周报、网络直报数据和突发疫情报表数据资料进行分析。**[结果]** 2005 年湖区五省共报告急性血吸虫病人 515 例,其中确诊病例 411 例,临床诊断病例 104 例;湖区五省共报告急性血吸虫病突发疫情 5 起,病例 4 例。2005 年湖区 5 省急感病例以散发为主,突发疫情分布较为集中,急感病人多为农民和中小学生,主要感染方式为生产生活和嬉戏接触疫水。**[结论]** 长江流域的江洲湖滩地区是感染急性血吸虫病、特别是突发疫情的重点地区;应重点加强血吸虫病的监测工作。

问卷对慢性日本血吸虫病疾病筛检效度的研究*

贾铁武 周晓农 王显红 吴晓华 易平¹ 徐永安² 何未龙³ 何伶俐⁴

[目的] 探讨慢性日本血吸虫病疾病的询检指标并评价其效度。**[方法]** 选择湖南省汉寿县随机抽取 51 个村,以 5 岁以上常住人口为调查对象。用血吸虫抗体血清学(ELISA)进行筛

查,对 ELISA 阳性者做腹部 B 超和询检,同时在不同流行强度村选取等比例的 ELISA 阴性者做对照。用非条件 logistic 回归方法分析询检指标与血清学、B 超检查结果的关系;用贝叶斯(Bayes)判别分析检验询检与血清学、血吸虫病肝纤维化的符合程度。**[结果]** 血清学检查 26426 人,阳性率为 5.2%(1380/26426)。对 ELISA 阳性者 1264 例和阴性者 1446 例分别进行询检和 B 超检查。Bayes 判别分析结果显示:过去 2 周内腹泻、黏血便、乏力、疫水接触史、治疗总次数等询检指标的判别结果与 ELISA、B 超结果的交叉验证符合率分别为 75.9%和 75.4%。**[结论]** 问卷询检的效度良好,对筛检慢性日本血吸虫病患者有重要价值。

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1 湖南省卫生厅血吸虫病防治办公室

2 湖南省汉寿县血防办公室

3 湖南省汉寿县疾病预防控制中心

4 湖南省汉寿县沧港血防站;

日本血吸虫重组硫氧还蛋白小鼠保护性免疫研究*

韩海勃 曹建平 刘述先 徐裕信 沈玉娟 李小红 卢潍媛 刘海鹏 汤林华

[目的] 观察日本血吸虫(大陆株)硫氧还蛋白重组抗原在小鼠诱导抗血吸虫感染的免疫保护作用。**[方法]** 30 只雌性 C57BL/6 小鼠随机分为 3 组, reSjcTrx 免疫组: reSjcTrx(15mg/鼠)和 ISA720 佐剂乳化后采用小鼠相背部多点皮下注射, 共免疫 3 次, 间隔 2 周; ISA720 佐剂对照组: 小鼠仅注射 ISA720 佐剂和生理盐水; 感染对照组不作任何处理。于末次免疫后 3 周, 各组小鼠经腹部皮肤感染(30±1)条日本血吸虫尾蚴, 感染后 6 周剖杀, 门静脉灌注法收集成虫, 计成虫数和每克肝组织虫卵数。在免疫前、攻击感染前和小鼠剖杀前分别采血并分离血清, 用 ELISA 检测重组抗原特异性 IgG 抗体。并对 reSjcTrx 进行十二烷基磺酸钠-聚丙烯酰胺凝胶电泳(SDS-PAGE)和蛋白质印迹(Western blotting)分析。**[结果]** ELISA 检测表明, reSjcTrx 免疫组小鼠产生特异性 IgG 抗体应答, 并诱导小鼠产生对攻击感染的减虫率和肝组织减卵率分别为 22.8%和 29.5%, 与 ISA720 佐剂对照组和感染对照组相比, 差异均有统计学意义($P < 0.05$)。SDS-PAGE 和 Western blotting 的结果表明, 该重组抗原相对分子质量(Mr)约 14 000 (含载体的 6 个氨基酸), 可被日本血吸虫感染兔血清和 reSjcTrx 免疫小鼠血清所识别。**[结论]** reSjcTrx 免疫小鼠可产生一定的抗血吸虫感染的保护作用。

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疟疾

抗疟药敏感性检测方法的研究进展

黄芳 汤林华

疟疾仍是一种严重危害人类健康的寄生虫病，多重抗药性恶性疟原虫株的扩散和间日疟原虫出现对氯喹及伯氨喹的耐药性，使全球消除疟疾面临严峻挑战。疟原虫对抗疟药物的敏感性检测为抗疟药物的合理使用和抗疟措施的制定提供了可靠的依据。该文对近年来抗疟药物敏感性检测方法进行了综述。

瑞香素对恶性疟原虫细胞色素 C 氧化酶及核糖核酸还原酶活性的影响

黄芳 汤林华 陈博¹ 倪奕昌 王琴美

[目的] 体外测定瑞香素对恶性疟原虫细胞色素 C 氧化酶(COX)及核糖核酸还原酶(RNR) 活性的影响。**[方法]** Trager & Jensen 法体外培养恶性疟原虫 FCC1/HN 分离株，超声波破碎恶性疟原虫提取总蛋白，用紫外分光光度计检测瑞香素与瑞香素-Fe 复合物在不同作用时间和不同作用浓度对恶性疟原虫 COX 活性的影响，以电子自旋共振法检测经瑞香素与瑞香素-Fe 复合物作用 1、2、3 和 4h 后，恶性疟原虫酪氨酸(Tyr)自由基的量以反映恶性疟原虫 RNR 的活性。**[结果]** 体外同步培养的恶性疟原虫经瑞香素(100 μ mol/L) 作用 2、4、8 和 12h 后，COX 活性分别被抑制了 0、6%、73% 和 80%；在瑞香素浓度为 0.1、1、100 和 1000 μ mol/L，作用 6h 后，RNR 活性分别被抑制 3%、31%、58% 和 93%；而瑞香素-Fe 复合物作用 6h 后 RNR 活性分别被抑制 8%、6%、11% 和 9%。**[结论]** 在体外瑞香素可显著降低恶性疟原虫的细胞色素 C 氧化酶 (COX) 及核糖核酸还原酶 (RNR) 活性。

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微量荧光法体外测定恶性疟原虫对 4 种常用抗疟药的敏感性

黄芳 汤林华 王琴美 倪奕昌

[目的] 验证微量荧光法 (MFA) 用于恶性疟原虫体外药物敏感性和抗疟药物筛选的适用性。**[方法]** 运用 MFA 测定氯喹、青蒿素、蒿甲醚和咯萘啶等 4 种常用抗疟药物对体外培养 FCC1/HN 株恶性疟原虫的敏感性，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)与光学显微镜镜检法所得的结果进行比较。**[结果]** MFA 所测定的氯喹、青蒿素、蒿甲醚和咯萘啶的 IC₅₀ 分别为 18.79、6.32、3.67 和 2.00nmol/L，光学显微镜镜检法的结果分别为 19.65、5.82、4.38 和 2.83nmol/L，两者差异均无统计学意义 (P<0.05)。**[结论]** 用 MFA 体外测定恶性疟原虫对抗疟药的敏感性敏感、快速，可用于体外抗疟药物的敏感性测定及抗疟药物筛选。

恶性疟原虫对咯萘啶敏感性的体外微量测定方法*

刘德全 冯晓平 刘瑞君 张春勇

[目的] 研究并建立恶性疟原虫对咯萘啶敏感性的体外微量测试方法。**[方法]** 研制咯萘啶涂药板和便于现场使用的培养基, 现在实验室用体外连续培养的恶性疟原虫(FCC1/HN)测试, 证明咯萘啶涂药板和培养基的效果稳定可靠后, 在疟疾流行高峰季节赴海南省及云南省现场, 取恶性疟现症病人血样, 测试恶性疟原虫对咯萘啶的敏感性, 并设体内四周法为对照。**[结果]** 研制的咯萘啶涂药板及现场用的培养基效果稳定, 咯萘啶涂药板 4℃ 贮存有效期为 6 个月, 4℃ 贮存的安封装液体培养基及瓶装冰冻干燥培养基有效期分别为 2 个月和 2 年。经过多年现场测试, 不但掌握了我国恶性疟原虫对咯萘啶敏感性的基线数据, 同时还显示, 在目前咯萘啶临床治疗效果仍较满意的情况下, 恶性疟原虫对咯萘啶的敏感性已在逐渐降低, 而去体外完全抑制裂殖体形成的平均药浓度提高了 2-4 倍。**[结论]** 恶性疟原虫对咯萘啶的敏感性可用体外微量法测试, 较体内四周法更为方便和敏感。

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HPLC 同时测定抗疟复方制剂中磷酸咯萘啶、磺胺多辛与乙胺嘧啶含量

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[目的] 建立同时测定复方抗疟制剂中磷酸咯萘啶、磺胺多辛与乙胺嘧啶的高效液相色谱法。**[方法]** 醋酸-醋酸钠 (pH6) -乙醇(30:70)为提取溶剂, ZORBAX RX -C₁₈ 柱(4.6mm × 150mm, 5 μm), [0.022mol·L⁻¹ 盐酸-0.22% 三乙胺水溶液(pH2.3)]-乙腈(75:25)为流动相, 流速 1mL·min⁻¹, 非那西丁为内标, 266nm 为检测波长。**[结果]** 非那西丁、磷酸咯萘啶、乙胺嘧啶与磺胺多辛的保留时间分别为: 10.19, 1.27, 5.70 和 7.63min。磷酸咯萘啶、乙胺嘧啶与磺胺多辛的线性范围、相关系数分别为 20-400 (mg·L⁻¹), r=0.999 3; 2.05-40.20 mg·L⁻¹, r=0.999 9; 20.01-800.40 mg·L⁻¹, r=0.999 9。磷酸咯萘啶、乙胺嘧啶与磺胺多辛的提取回收率和 RSD(n=3) 分别为 (97.62 ± 1.09)%, 3.68%; (98.34 ± 1.94)%, 1.97% 及 (99.77 ± 2.16)%, 2.17%。**[结论]** 本方法灵敏度、准确度均能满足含量测定的需要, 提取和测定快速简单, 可用于该复方制剂的质量控制。

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疟疾植物口服疫苗的研制

陈勤 汤林华

转基因植物已用于表达多种病原体的抗原蛋白。动物实验证实转基因植物表达的抗原蛋白经纯化后仍保留其免疫学活性, 注入动物体内能诱生特异性抗体; 用转基因植物组织饲喂动物, 抗原蛋白在植物细胞壁的保护下能通过胃的酸性环境到大肠相关淋巴组织, 被

其表面特异受体所识别,诱导产生黏膜免疫和系统免疫应答。该文在综述疟疾口服疫苗研究进展的基础上,探讨了用转基因植物生产疟疾口服疫苗的可行性。

利什曼病

甘肃文县婴儿利什曼原虫无症状感染的检测*

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[目的] 评价 PCR 法,ELISA 法和试条法检测我国利什曼原虫无症状感染的潜能。**[方法]** 用两组 PCR 引物 RV1-RV2 和 K13A-K13B 检测动物源性黑热病疫区健康犬静脉血和骨髓中利什曼原虫特异 DNA,以利什曼原虫可溶性抗原为包被抗原的 ELISA 法和 rk39-dipstick 试条法分别检测利什曼原虫特异抗体,并比较各种检测方法的敏感性差异。**[结果]** PCR 法检测抗凝静脉血和骨髓的阳性率分别为 50.63% (10/79) 和 69.62% (55/79),两种样本总检出率为 77.21% (61/79); ELISA 法检测的阳性率为 22.22% (16/72),而 rk39-dipstick 试条检测阳性率为 33.33% (19/57)。**[结论]** 我国动物源性黑热病疫区利什曼原虫无症状感染的比例相当高,以骨髓为样本的 PCR 检测法为较精确的犬无症状感染检测方法。

* WHO/TSA 基金资助课题 (No. 1079946)

¹ 甘肃省疾病预防控制中心寄生虫病防治科

PCR 检测婴儿利什曼原虫无症状感染的研究*

高春花 汪俊云 杨玥涛 包意芳

[目的] 建立适合检测我国婴儿利什曼原虫无症状感染的 PCR 方法。**[方法]** 选择 6 种常用于诊断内脏利什曼病的 PCR 引物 (RV1-RV2、K13A-K13B、174-798、Pia3-Pia4 和 DBY-Ajs31),以培养的甘肃人株利什曼原虫前鞭毛体种植人抗凝全血抽提的 DNA 为模板,确定了这 6 种 PCR 引物检测我国婴儿利什曼原虫的最适条件,并比较其检测的敏感性和特异性。选用两种敏感性和特异性最佳的引物对采自利什曼病疫区 100 份无利什曼病症状居民的静脉血进行检测。**[结果]** 6 种 PCR 引物检测的特异性均达到 100%,而检测的敏感性各异,检测到的原虫数目从 0.1-1000 条原虫/ml,其中引物 RV1-RV2 (0.1 个原虫/ml 血) 和 K13A-K13B (1 个原虫/ml 血) 敏感性较高。这两对引物对 100 份无症状居民血的阳性检出率分别为 33% (33/100) 和 30% (30/100)。**[结论]** 引物 RV1-RV2 和 K12A-K13B 适于检测我国婴儿利什曼原虫无症状感染。在我国甘肃动物源性利什曼病疫区,人群利什曼原虫无症状感染率颇高。

* 世界卫生组织 TSA 基金资助项目 (No. 1079946)

利什曼病及其媒介白蛉控制的现状和展望

顾灯安 金长发 张仪

利什曼病是我国重要的寄生虫病之一,白蛉是其传播媒介,目前我国已发现有 4 种白蛉可传播利什曼病。近几年,世界范围内利什曼病的发病率呈上升趋势,这不仅由于环境改变增加了人与白蛉接触的机会,而且由于个体危险因素的增加,缩短了从感染到发病的时间。该文借鉴国外利什曼病的防治经验,结合我国的国情,对加强利什曼病的防治以及媒介白蛉的控制工作提供了建议。

分子方法在利什曼原虫虫株鉴定和系统发生研究中的应用

王勇 汪俊云

利什曼原虫虫种复杂,致多种形式的利什曼病,且其媒介也具有多样性,正确鉴定利什曼原虫对及时治疗和制定有效的控制策略至关重要。该文介绍了同工酶谱分析、单克隆抗体、核型分析、核算分析、基因测序、限制性片段长度多态性(RFLP)、随机扩增多态性 DNA(RAPD)、微卫星 DNA 等分子技术和方法在利什曼原虫虫株鉴定和系统发生研究中的应用及进展情况。

螺类

福寿螺休眠期体内广州管圆线虫生长发育及其感染性的观察研究*

刘和香 张仪 周晓农 吕山 朱丹 林金祥¹ 李莉莎¹ 李友松¹

[目的] 了解福寿螺处于休眠期对其体内感染的广州管圆线虫幼虫生长发育及其感染性的影响。**[方法]** 来自实验室的广州管圆线虫 L1 幼虫感染福寿螺,感染后第 1 天螺置于 25.0-25.5℃ 恒温箱中休眠,观察体内幼虫生长发育情况,第 13 天起解剖观察幼虫生长发育情况。感染后第 20 天福寿螺置冬季室内自然变温条件下休眠 2 个月,每隔 10 d 观察螺体内幼虫活力。检获的 L3 幼虫经口或腹腔注射感染 SD 大鼠,观察其感染性。同时观察螺的生存与体重变化情况,并以水族缸饲养螺作平行对照。**[结果]** 25.0-25.5℃ 恒温条件下螺休眠不影响体内幼虫发育,且其幼虫发育历期为 (16.3 ± 0.6) d,显著快于水族缸饲养螺 (17.6 ± 0.96) d ($t=5.72, P<0.01$)。冬季室内自然变温条件下的休眠螺,生存率高于水族缸饲养螺 ($P<0.05$),体重下降率为 $(33.5 \pm 4.3)\%$,也高于水族缸饲养螺 $[(9.0 \pm 2.3)\%, t=10.68, P<0.01]$ 。但随着休眠期的延长其死亡率增高 ($X^2=18.31, P<0.01$)。从存活螺体内获检的不同活力的 L3 幼虫均可感染 SD 大鼠。**[结论]** 25.0-25.5℃ 恒温条件下螺休眠不影响体内幼虫发育,冬季室内自然变温条件下螺休眠或水族缸饲养,其体内幼虫均具有感染性。感染的福寿螺越冬方式,休眠明显优于水族缸饲养。

* 国家“十五”科技攻关项目 (No. 2003BA712A09-01)

¹ 福建省疾病预防控制中心

密达利杀灭湖北钉螺效果的研究

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[目的] 实验室和现场试验评价密达利(META-Li,40%四聚乙醛水乳剂)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、不同浓度密达利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,密达利剂量为 1、2、和 4g/m²,设氯硝柳胺药物对照剂量为 1、2 和 4g/m²,设氯硝柳胺药物对照剂量为 1 g/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:24、48 和 72h 的半数致死剂量(LD₅₀)分别为 0.78、0.44 和 0.46 g/m²;室内浸杀试验:24、48、72h 的半数致死浓度(EC₅₀)分别为 44.4、27.4 和 24.8mg/L;24h 抑制钉螺上爬半数有效浓度(EC₅₀)为 5.86mg/L。现场喷洒试验:密达利 2g/m²喷洒后 7d 钉螺死亡率大于 90%,灭螺效果和氯硝柳胺 1g/m²相当(P>0.05)。**[结论]** 密达利室内及现场喷洒灭螺效果明显,有抑制钉螺上爬作用。

¹ 安徽省寄生虫病防治研究所

其他

鱼骨图法对寄生虫病血清学调查质量效果评价*

陈颖丹 张雪强 徐隆祺

[目的] 控制全国人体重要寄生虫病现状调查血清检测的质量,为进一步提高质控水平和检测效率积累经验。**[方法]** 采用鱼骨图法对 5 种寄生虫病血清流行病学调查质量控制进行评价。**[结果]** 分析调查可能产生的质量问题,找出干预措施,通过抽样复测部分血清样品,用符合率与 Kappa 值分析 2 次检测的一致程度。通过对 5 种寄生虫病血清样品复测,确定 5 种寄生虫病血样 2 次检测观察一致率,囊虫病、包虫病、并殖吸虫病、旋毛虫病和弓形虫病分别为 98.85%, 97.47%, 97.21%, 92.84%和 98.14%。囊虫病 Kappa 值为 0.73,重现性好,后 4 种寄生虫病 Kappa 值依次为 0.94, 0.86, 0.77 和 0.87,重现性好。对 5 种寄生虫病血清样品 2 次检测的 Kappa 值进行显著性检验, u 值均>2.58, P<0.01,表明这 5 种病 Kappa 值因机遇所致可能性很小。**[结论]** 采用鱼骨图法对 5 种寄生虫病血清流行病学调查质量控制效果较理想。

* 卫生部十五重大项目(卫疾控发[2001]178 号);世界卫生组织、联合国儿童基金会资助

三种淡水螺与广州管圆线虫相容性的实验研究*

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[目的] 比较福寿螺、中国圆田螺、铜锈环棱螺等 3 种食用淡水螺与广州管圆线虫的相容性。**[方法]** 在相同条件下, 用广州管圆线虫福建株感染 3 种螺, 1、3、6、12 及 24h 后, 随即抽样各 20 只, 分别饲养于置有滤水器、水温 (24 ± 1) °C 的玻璃缸内。记录感染 2 周内各组螺死亡数。第 15 天开始解剖, 记录螺软体重量和感染虫数。同时设不感染螺对照组。**[结果]** 3 种螺感染后第 1 周死亡数达高峰。感染率和死亡率与螺的种类及感染时间均无相关性。虫负荷与虫密度, 福寿螺感染 6、12 及 24h 均显著高于感染 1h 的 (P 值均 >0.05)。福寿螺感染 6、12 及 24h 的虫负荷均显著高于铜锈环棱螺和中国圆田螺 (P 值均 <0.05)。感染 6、12 及 24h, 福寿螺及铜锈环棱螺虫密度均高于中国圆田螺 (P 值均 <0.05)。**[结论]** 3 种螺对广州管圆线虫均易感并有较高的相容性, 其中福寿螺的相容性较强。

¹ 南京市疾病预防控制中心

* 国家“十五”科技攻关计划项目 (No. 2003BA712A09-01)

ELISA 检测粪抗原诊断寄生虫感染的研究进展

陈家旭 常正山

双抗体夹心法 ELISA 检测寄生虫粪抗原, 用于诊断寄生虫病或寄生虫感染, 特别是肠道寄生虫感染, 具有敏感、特异、快速, 可区分现症感染与既往感染, 且具有早期诊断和疗效考核价值等特点, 是临床或现场个体检查及群体流行病学调查与监测的重要工具和手段。

卫氏与斯氏并殖吸虫在实验动物体内分布的比较观察

张永年 常正山 陈韶红 陈名刚

[目的] 比较两种主要对人体致病的肺吸虫在实验动物肺内与肺外(胸、腹腔)的分布, 为临床诊断及药物治疗提供参考。**[方法]** 粪检肺吸虫卵阴性的猫犬分别经口感染卫氏并殖吸虫(P.W)与斯氏并殖吸虫(P.S)囊蚴, 饲养 3 个月后粪检肺吸虫卵阳性时对犬、猫进行解剖, 观察与统计内肺外虫数。**[结果]** 猫犬解剖所获得 P.W 与 P.S 成虫均以左、右肺下叶寄生成虫数最多, 猫、犬感染 P.W 后检获肺外期与左、右肺的童虫数均无显著性差异 ($P>0.05$)。猫感染 P.S 后所检获肺外期童虫数与左、右肺的童虫数有显著性差异 ($P<0.05$), 而犬感染 P.S 所检获 41.84%, 39.85%; 犬感染 P.W 与 P.S 囊蚴后虫体平均回收率分别为 47.44%, 24.57%。经统计学处理猫感染两种虫体回收率显著高于犬 ($P<0.05$)。**[结论]** 两种肺吸虫实验动物犬、猫肺部的分布均以左、右肺下叶寄生成虫数最多, 猫犬感染 P.S 所检获的肺外期童虫数与检获左、右肺内的童虫数分别为显著性差异 ($P<0.05$) 与高度显著性差异 ($P<0.01$), 猫感染虫体的回收率明显高于犬。

寄生虫图片资料检索系统

陈海宁 郝志明¹ 朱显因

收集、整理、加工有关血吸虫、疟原虫、丝虫、钩虫、利什曼原虫等 5 种寄生虫历史图片及标本。用计算机多媒体技术进行整理、分类、编码,建立图片数字化检索系统。共制作 3 000 余张 1950-1990 年各类寄生虫珍贵历史图片,涉及寄生虫形态、生活史、病理、诊断等学科,按照数字化管理模式要求初步建立了“寄生虫图片资料检索系统”,并以网络版形式置于局域网上使用,同时制成 CD-ROM 光盘实现资源共享。

¹ 上海浩智电脑科技有限公司

进化速率不同的分子标记对微小按蚊新亲缘种的研究

周水森 汤林华

[目的] 选择进化速率不同的核糖体 rDNA-ITS2、rDNA-28S-D3 基因和线粒体 DNA (mtDNA) COII 基因作为分子标记,研究我国微小按蚊变异及新的亲缘种。**[方法]** 用蛋白酶 K 消化单蚊蚊腿,提取基因组 DNA,PCR 特异扩增 rDNA-ITS2、rDNA-28S-D3 和 mtDNA-COII 基因片段,对 PCR 产物进行纯化、测序和序列分析,并基于 mtDNA-COII 基因采用最大似然法构建种系发生树,分析微小按蚊变异地位和进化关系。**[结果]** 1) 云南元江微小按蚊 rDNA-ITS2 扩增片段约 700bp,其他微小按蚊为 480bp 左右;2) ITS2 和 D3 序列分析显示 3 种单倍型,其中元江微小按蚊基因长度与碱基组成显著不同;3) mtDNA-COII 种系发生树显示元江微小按蚊与其他微小按蚊的亲缘关系较远。**[结论]** 我国存在微小按蚊 A 和 C 之外的新的微小按蚊亲缘种。

云南微小按蚊 A、C 种群密度高峰及嗜血习性的观察

郑彬 汤林华 王学忠¹ 马雅军² 周水森 施文琦

[目的] 研究云南省勐腊县微小按蚊 A、C 种群密度及其当地疟疾发病的相关性,并比较微小按蚊 A、C 的嗜血习性。**[方法]** 在云南勐腊县选取人房,逐月收集微小按蚊,以复合 PCR 方法分子鉴别其为微小按蚊 A 或 C,观察密度高峰;收集当地疟疾发病情况,分析其与微小按蚊 A 或 C 密度高峰的相关性。对勐腊和元江县人房和牛栏采集的吸血蚊经复合 PCR 方法分子鉴别后,以 ELISA 方法检测胃血来源。**[结果]** 微小按蚊 A 的密度高峰出现在 9 月,微小按蚊 C 则在 7 月,两者密度高峰的出现均会引起当地疟疾发病人数的增加。微小按蚊 A 的吸人血率(19.1%)略高于微小按蚊 C 的(12.8%),但无统计学意义。**[结论]** 微小按蚊 A、C 的密度高峰略有不同,两者均嗜吸牛血,尚不能认为微小按蚊 A、C 的嗜血习性存在差异。

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混合血清检测在寄生虫病血清流行病学调查中的应用*

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[目的] 通过旋毛虫病、弓形虫病血清学检测,探讨了混合血清检测(混检)在寄生虫病血清流行病学调查中的应用及对成本-效果的影响。**[方法]** 根据二项分布原理,探讨混合血清检测的可行性。旋毛虫病或弓形虫病血清学检测,采用 3、5、10 份等三种混检方法。同时对血清样品逐一检测和混合检测进行了成本-效果评价。**[结果]** 只要混有 1 份弱阳性血清,旋毛虫病或弓形虫病的三种混检都呈阳性结果。如果混合的血清全部是阴性,旋毛虫病 3、5、10 份阴性血清样品混合各检测 24 组,全部呈阴性;弓形虫病 3、5 份阴性血清样品混合,检测 112 组,都呈阴性,20 份阴性血清样品混合,检测 18 组中 16 组呈阴性,2 组呈阳性。旋毛虫病或弓形虫病混检显示,混检效率与待检寄生虫血清学阳性率有关,血清学阳性率在 10% 时,4 份混检效率较高,血清学阳性率在 1% 时,以 10 份混检效率较高,而当血清阳性率在 0.1% 时,增加混检样品数可明显减少检测次数,但前提条件是要保证混检样品中只要有 1 份阳性样品,混检时都能测出阳性,而去若全部是阴性样品混检,也不出现阳性。**[结论]** 运用卫生经济学成本-效果分析,表明寄生虫病血清流行病学调查,混检成本低,尤其是对预期血清学阳性率较低($\leq 1\%$)的调查,混检可节省大量成本。

* 卫生部“十五”科技重大资助项目(卫疾控发[2001]178 号)

PCR 方法检测大瓶螺体内广州管圆线虫幼虫方法的建立

张仪 周晓农 刘和香 吕山 李丽莎¹ 林金祥¹ 李友松¹

[目的] 建立一种基于 PCR 方法检测大瓶螺体内广州管圆线虫幼虫的方法。**[方法]** 从美国生物信息中心 GenBank 中获得广州管圆线虫感染性 III 期幼虫(L3) cDNA 特异性片断,应用美国 DNASTAR 公司 Lasergene 软件,设计特异性引物。TRIzol 一步法抽提广州管圆线虫感染性 L3 和大瓶螺总 RNA,按 RT-PCR 试剂盒提供方法进行 PCR 扩增。**[结果]** 用 RT-PCR 方法能检测出阴性与感染性螺发,其最低检出的总 RNA 量相当于 1 条广州管圆线虫 L3;将阴性大瓶螺总 RNA 与感染期幼虫总 RNA 不同浓度混合,PCR 法可检测出肉眼能分辨的电泳条带相当于总 RNA 浓度为 128pg。此方法可以检测出广州管圆线虫 III 期幼虫 RNA 的最低值为 105pg。**[结论]** 建立了 PCR 检测大瓶螺体内广州管圆线虫幼虫的方法。

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《中国寄生虫学与寄生虫病杂志》2004-2005 年载文和引文分析

盛慧锋 富秀兰 伯韦 胡亚青 戴菁

应用文献计量学方法,对《中国寄生虫学与寄生虫病杂志》2004 和 2005 年发表的论文和引用的文献进行统计分析。该刊两年共载文 312 篇,主要载文类型为论著(42.3%)和实验报道(7.7%)。作者群的分布主要来自高等院校(61.5%)和疾病防治机构(28.5%)。平均基金论文比为 51.9%。刊载论文的引文率为 82.3%,被引文献的类型主要为主期刊,其中 58.7%引自外文期刊,31.5%引自中文期刊,平均普赖斯指数为 44.9%。该刊有一支较高水平的作者群,刊载的论文内容丰富,引文范围广,是寄生虫病学领域研究中较为重要的文献来源之一。

《中国寄生虫学与寄生虫病杂志》2000-2004 年载文、基金论文比和影响因子分析

盛慧锋 富秀兰 伯韦 胡亚青 戴菁

对《中国寄生虫学与寄生虫病杂志》2000-2004 年刊载的论文和主要评价指标进行分析。5 年共发表论文 833 篇,主要为论著(39.4%)、综述(9.1%)和实验报道(4.4%)。核心著者群主要来自高等院校(53.4%)和疾病预防机构(29.4%)。发表论文 8 篇以上的核心著者机构有 20 个,占总论文数的 38.1%。基金论文比(平均 0.50)和国际基金论文比(平均 0.09)均稳中有升,2004 年近年来最高,分别为 0.52 和 0.07。国家基因项目、省部级基因项目和国际项目分别为 29.9%、43.9%和 20.4%。总被引频次和影响因子分别从 2000 年的 325 和 0.377 上升至 2004 年的 437 和 0.462,均在同类期刊中名列前茅。本刊在该领域学术水平最高,在国内外具有较高的影响。

克里格法在流行病中的应用及展望

付青 伍卫平

克里格法是地统计学的重要内容之一,它可对空间分布的数据求线性最优、无偏内插估计。克里格法在一些流行病的研究中已经得到了成功应用,通过建立疾病的预测表面,绘制疾病及其传播媒介的空间分布图,从而描绘疾病及其传播媒介的空间分布以及变化趋势。随着克里格法的不断拓展和完善,在遥感技术等手段的辅助下,将克里格法于流行病相结合所开展的研究必定会为流行病的预测、监测和防治提供更有力的依据和技术支撑。

气候变暖对中国几种重要媒介传播疾病的影响

杨坤 王显红 吕山 张玲 贾铁武 李兰花 邓瑶 周晓农

全球气候变暖对人类健康的影响越来越受到人们的重视。该文从气候变暖对国内血吸虫病、疟疾、登革热、流行性乙型脑炎、广州管圆线虫病、钩端螺旋体病以及其他虫媒疾病的影响、预测方法研究及今后的研究重点等几个方面,综述了气候变暖对中国几种重要媒介传播疾病影响的研究进展。

医学软体动物标本制作技术的探讨

张仪 周晓农 刘和香

[目的] 建立医学软体动物的标本制作技术,用于科学研究、教学与卫生宣传教育。**[方法]** 采集医学软体动物,分别用软体浸制法、螺壳干制法制作标本。**[结果]** 用规范的方法制作成的标本,符合生物学研究要求。干壳标本螺壳完整,色泽保持原样,无异味,可以永久保存。软体浸制法制作的标本个体分开,软体完整,各软体结构部分易于解剖分离,长久保存质量保证。**[结论]** 建立了能用于分类、分子生物学及形态学等研究,而且可长久保存的软体浸制法、螺壳干制法标本制作规范。

§ 4. ABSTRACTS OF RESEARCH ARTICLES

SCHISTOSOMIASIS

ANTI-SCHISTOSOMIASIS EFFECT INDUCED BY FULL LENGTH DNA VACCINE CODING PARAMYOSIN OF *SCHISTOSOMA JAPONICUM* IN C57BL/6 MICE*

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

[Objective] To observe the anti-schistosomiasis effect in mice immunized with Sjc97 DNA vaccine challenged with 30 ± 2 cercariae of *Schistosoma japonicum* three weeks after immunization. Mice in blank plasmid vector control and infection control groups were also infected with same number of cercariae. The mice were sacrificed 7 weeks after challenge infection. The size of single egg granulomas in livers was measured with micrometer. The level of hyaluronic acid (HA) and laminin (LN) in sera of the mice was determined by ELISA. PCR-ELISA was used to examine the expression of TGF- β 1 mRNA in liver. **[Results]** The mean hepatic egg granuloma diameters of the three groups, the Sjc97 DNA, blank plasmid vector and infection control, were 183.75 ± 42.36 microns, 303.12 ± 37.36 microns and 304.38 ± 53.23 microns, respectively. The hepatic granuloma was significantly smaller in the Sjc97 DNA group than that in control. The level of HA and LN in sera of Sjc97 DNA vaccinated mice was markedly lower than those in the two control groups ($P < 0.01$). The amount of TGF- β 1 mRNA isolated from the livers of mice in Sjc97 DNA group decreased significantly. **[Conclusion]** The results showed that SJC97 DNA vaccine may act as an effective inhibitor against formation of egg granuloma and reduce immunopathological damage caused by *Schistosoma japonicum* in the host.

* Supported by the National 863 Bio-Tech Program of China (No. 10207040197)

ANTIBODY DETECTION IN SERA OF PATIENTS WITH SCHISTOSOMIASIS JAPONICA BY DOT IMMUNOGOLD FILTRATION ASSAY

XU Jing YAN Zi-Zhu ZHANH Rui-Jian¹ FENG Ting WANG Qiang QIAN Cui-zhen
WU Xiao-hua ZHU Dan GUO Jia-gang ZHOU Xiao-nong

Serum antibody of schistosomiasis patients was detected by dot immunogold filtration method (DIGFA) in laboratory and field, and F-ELISA was used as control. The results showed that there was no significant difference between these two assays in sensitivity and specificity

($P>0.05$), with a high coincidence. DIGFA is easy to operate and may deserve a wide application in the diagnosis of schistosomiasis.

1 Bofang Biological and Technical Limited Company, Sanming City, Fujian Province, Sanming

EVOLVEMENT OF COMPREHENSIVE STRATEGY ON SCHISTOSOMIASIS CONTROL IN VARIOUS CONTROL PHASES IN CHINA

YU Qing ZHAO Gen-ming¹ GUO Jia-gang

At the time of japonic schistosome was discovered in China beyond 100 years and the tasks for schistosomiasis control has been carried out for 50 years more. The course of the evolvement strategy and experiences on schistosomiasis control with comprehensive measures was reviewed in various control phases. Base on exploring and evaluation the effectiveness on schistosomiasis control with comprehensive measures. It will be ultimately to provide reference of schistosomiasis control with comprehensive measures in future.

1 School of Public Health, Fudan University

STUDY ON REASONS OF UNDERESTIMATION OF THE NUMBER OF *SCHISTOSOMA JAPONICUM* INFECTED PERSONS IN MOUNTAINOUS ENDEMIC REGIONS

ZHU Hong-qing CAO Chun-li WANG Qiang BAO Zi-ping ZHENG Hao GUO Jia-gang

[Objective] To study the reasons of underestimation of the number of *Schistosoma japonicum* infected persons in mountainous endemic regions. **[Methods]** Four study pilots (A, B, C, D) were selected at random in mountainous regions and one site (E) was selected in a lake region for reference. The target population of four study pilots were screened by ELISA, and those positive in ELISA in mountainous regions and the reference population in the lake region were checked by hatching test after egg concentration with a nylon-tissue bag and modified Kato technique for etiological examination. With the standard of total positive population of parasitological examination of the above two techniques, the number of comparatively missing examination and underestimation of persons infected with *S.japonicum* was calculated. In accordance with the sensitivity of missing examination of hatching test in the control site, the reasons of underestimation of the number of *S.japonicum* infected persons in the mountainous regions were analyzed. **[Results]** Among a total of 5 563 people in study areas examined by ELISA, 1 536 were positive. The positive rate was 27.61%. The positive numbers of etiological examination of A and B sites were 38 and 28, and the infection rates were 3.12% and 2.96%,

respectively. The infection rates of A and B sites were lower than that of the endemicity classification. The detection rates of the hatching test were higher than those of the modified Kato method in the 4 study sites. The missing numbers were 8 by the hatching test, and 72 by the modified Kato method. The detection rate with the hatching test is lower than that of the modified Kato method in the reference area, with 59 cases of missing examination by the hatching test, and 19 cases of missing examination by the modified Kato method. **[Conclusions]** The sensitivity of etiological examination was the reason of underestimation of infected persons, while the low egg burden after repeated chemotherapy and the restrained effect of medicine may be the reasons for missing examination in mountainous endemic regions.

PROGRESS OF PRAZIQUANTEL IN THE TREATMENT OF SCHISTOSOMIASIS IN FOREIGN COUNTRIES: A REVIEW

CHEN Ming-gang

Since late 1970s, praziquantel has been well developed in the treatment of schistosome infections both at home and abroad. In this paper, the author presents a comprehensive review on praziquantel for the treatment of schistosomiasis in foreign countries. Praziquantel has been used for treatment of five major schistosome infections: i. e. , *Schistosoma haematobium*, *S. mansoni*, *S. intercalatum*, *S. mekongi* and *S. japonicum* with good effect. The dose-schedules used in different schistosome infections were similar, mainly, 40mg/kg body weight, single dose, or 60 mg/kg divided into two doses given in one day. The side effects owing to treatment of the chemical were also similar and were presented. Up till now, the drug has been used in more than 100 million people for treatment of schistosome infection and mass chemotherapy in highly endemic population without preliminary screening. No single death has been identified during and shortly after the treatment among very large population. As a whole, it is the drug of choice in the treatment of major schistosome infections with mild side effects, excellent therapeutic efficacy and easiness for administration. It is also effective to late stage schistosomiasis with hepatic fibrosis induced by *S. mansoni* infection or obstructive uropathy induced by *S. haematobium*. The drug is a useful weapon for morbidity control and has sped up the control work. Praziquantel is not only used for individual treatment, but also used for mass treatment to reduce the prevalence and morbidity in whole population in heavily endemic areas. The strategy of chemotherapy is slight different used in the control programme in different endemic countries, i. e., Egypt, Brazil, Indonesia, Laos, etc., and it also reviewed herein. WHO morbidity control strategy using praziquantel for schistosomiasis in the endemic community is also introduced.

ULTRASTRUCTURAL ALTERATIONS OF ADULT *SCHISTOSOMA HAEMATOBII* HARBORED IN MICE FOLLOWING ARTEMETHER ADMINISTRATION

XIAO Shu-hua Ytzing J¹ SHEN Bing-gui Tanner M¹ Chollet J¹

[Objective] To perform a temporal examination of ultrastructural alterations in adult *Schistosoma haematobium* due to artemether. **[Methods]** Eight mice infected with 100-120 *S. haematobium* cercariae for 81 days were treated intragastrically with 400 mg/kg artemether. At 24 hours, 3, 7 and 14 days post-treatment, groups of 2 mice were sacrificed and schistosomes collected by the perfusion technique. Worm samples were fixed and examined by transmission electron microscopy. Schistosomes were also obtained from 2 untreated mice that served as control. **[Results]** Typical ultrastructural alterations included swelling, lysis and vacuolization of the tegumental matrix, and disappearance of basal membrane. In sensory organelles and tubercles, there was extensive lysis, decrease in granular endoplasmic reticulum, vacuolization and degeneration of mitochondria were observed. These alterations became apparent both in male and female worms 24 hours post-treatment. In female worms, severe damage to the vitelline cells was also observed, resulting in the emergence of vacuoles, a decrease in granular endoplasmic reticulum, fusion of vitelline balls or even collapse of damaged vitelline cells. The most extensive tegumental alterations were observed 3-7 days post-treatment. Whilst 14 days post-treatment ultrastructural damage was still apparent, the tegument of some worms showed similar features to those recovered from untreated control mice. **[Conclusion]** Administration of artemether to mice infected with adult *S. haematobium* results in extensive damage to the ultrastructure in the tegument and subtegument tissues of the worms, confirming previous results with other schistosome species.

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THE APPLICATION OF THE SURVEYSELECT PROCEDURE OF STATISTICAL ANALYSIS SYSTEM AT SCHISTOSOMIASIS EPIDEMIC SAMPLING SURVEY

DANG Hui GUO Jia-gang XU Zhi-ming WANG Qiang
WU Xiao-hua ZHOU Xiao-nong

[Objective] Sampling by the computer decrease the sampling bias by people at the third nation wide schistosomiasis epidemic sampling survey. **[Methods]** Sample been sampled by SAS's SURVEYSELECT procedure on the computer. **[Results]** Jiangsu, Jiangxi, Anhui, Hunan, Hubei, Yunnan and Sichuan have been separately sampled by the computer 13, 23, 18, 47, 58, 12 and 68 sample sites. **[Conclusion]** The SAS's SURVEYSELECT procedure combine the computer with the modern statistics, it enrich largely field epidemiology, it provide the simple

and quick sampling method for the field survey of epidemiology.

EVALUATION OF EARLY DIAGNOSIS VALUE OF IGM-ELISA FOR SCHISTOSOMIASIS JAPONICA

*GUO Jian QIAN Chui-zhen WU Ying YU Qing BAO Zi-ping XU Zhi-ming XU Jing
JIAO Pei-ying MEI Jing-yan YAN Zi-zhu HU Shao-liang¹*

To evaluate the early diagnosis value for schistosomiasis japonica with IgM-ELISA, the antibodies specific to SEA from schistosome infected mice or acute schistosomiasis patient sera before and post-infection were detected using IgM-ELISA or IgG-ELISA. The IgM antibody increasing remarkably at day 28 post-infection. All mice were positive of IgM antibody at day 35 post-infection with IgM-ELISA. But with IgG-ELISA all mice were positive at day 49 post-infection. All acute schistosomiasis patients' sera were positive with IgM-ELISA, but 3 acute schistosomiasis patients' sera were negative with IgG-ELISA. The IgM antibody was largely more than IgG antibody before five weeks post-infection, and as more as IgG antibody within following two weeks, but less than IgG antibody after eight weeks post-infection. The results indicated that the IgM-ELISA method has a high value for early diagnosis of schistosomiasis japonica.

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MALE-FEMALE WORM PAIRING OF SCHISTOSOME AND ITS SIGNIFICANCE

ZANG Wei CAO Jian-ping

Male-female worm pairing of schistosome, one special biological phenomenon of the life cycle, is of vital significance to its reproductive function. Studies on the male-female worm pairing will be helpful to understand the development of female schistosome worms and the relating factors, to elucidate the reproductive mechanisms of female worms at molecular level, thus to provide the clues for the new vaccine candidates and the targets of new drugs.

RESEARCH PROGRESS ON DNA VACCINE OF SCHISTOSOMA JAPONICUM

DIAO Wei CAO Jian-ping

Schistosomiasis is a serious health-threatening parasitic zoonoses for human beings. Vaccine may plays an important role in preventing and controlling the disease. This article summarizes the advantages, candidate antigens, combined immunization, immune mechanisms

of DNA vaccine, and illustrates the problems and prospects of future researches on DNA vaccine.

CLONING, EXPRESSION AND PHYLOGENETIC ANALYSIS OF *SCHISTOSOMIASIS JAPONICUM* CALCYPHOSINE GENE*

JU CHUAN PENG Jian-xin XU Bin WANG Wei FENG Zheng Hu Wei

[Objective] To clone and express *Schistosoma japonicum* (Sj) calcyphosine gene, and purify the expressed protein. **[Methods]** The encoding sequence selected from Sj cDNA library was amplified by PCR. After subcloned into prokaryotic expression vector pET-28a, the expressed protein was purified with His-Tag affinity chromatography. Western blotting was used to detect the immunogenicity. The structure and functions of the protein were analyzed by bioinformatics method, and the phylogenetic tree of the protein was drawn. **[Result]** The recombinant protein was specifically recognized by the Sj infected rabbit serum. The bioinformatics analysis showed 4 EF-hand domains. Beside, it as predicted that Sj calcyphosine contains two phosphorylation sites for protein kinase C, eight phosphorylation sites for casein kinase II and one N-myristoylation site. The Sj calcyphosine belonged to type-II calcyphosine. **[Conclusion]** The calcyphosine gene is a calcium-binding protein and might be potential candidate for diagnosis, vaccine or drug target.

* Supported by TMRC (2P50 AI39461-06A1); 973 National Key Project (2003 CB716804); 863 National Key Project (2001 AA223091)

REPORT OF THE RESULT OF NATIONAL SURVEILLANCE FOR *SCHISTOSOMIASIS* IN CHINA, 2005

DANG Hui ZHU Rong GUO Jia-gang

[Objective] To understand the whole national endemic situation of schistosomiasis, so as to provide scientific evidence for making out prevention and control measures for it. **[Methods]** To carry out the whole national surveillance work of schistosomiasis according to national surveillance protocol, and to analyze the surveillance results. **[Results]** Among 80 national surveillance sites, the average positive rate, with sera-test, of the resident was 17.22%, the average positive rate, with stool examination, of the resident was 2.04%, the geometrical mean of EPG of the resident was 0.52. The infection rate of the cattles, goats and pigs was 10.59%, 3.05% and 0.55%, respectively. The average density of the living snail was 0.77/1.11m², the average density of the positive snail was 0.0020/0.11m², the snail infection rate was 0.26%. **[Conclusion]** Schistosomiasis was seriously endemic in the endemic villages with first and second level, the control of infection sources should be enhanced. The infection rate of fisher and farmer was relatively very high. So health education and examination and treatment should

be carried out for them as the focal people. The situation in low endemic areas was instable, surveillance and comprehensive management should be strengthened in these areas.

ACUTE SCHISTOSOMIASIS SITUATION IN CHINA, 2005

ZHENG Hao LI Shi-zhu WANG Ru-bo XU Zhi-min NIU Hong-feng WU Xiao-hua
XIA Gang¹ WANG Li-ying¹ ZHOU Xiao-nong GUO Jia-gang

[Objective] To describe and analyze the current status of acute schistosomiasis and distribution, characteristics, and trends of outbreaks in China, 2005. **[Methods]** Epidemiological data of acute schistosomiasis were collected, checked and analyzed through the reports for acute schistosomiasis every week in China. **[Results]** In 2005, there 564 acute cases which included 460 confirmedly diagnosed cases and 104 clinical diagnosed cases, and 6 outbreaks of acute schistosomiasis including 55 cases. There were 515 cases reported in five provinces of lake areas and 49 cases in another two provinces of mountain areas, and 35 imported cases among the all of cases. **[Conclusions]** The regions of marshlands and beach along the Yangtze River are key places for acute schistosomiasis, especially for outbreaks. Most of the high risk residents are peasants and students, also including floating population, and they all need to be warded carefully.

¹ Department of Endemic Disease Control, Ministry of Health, RP China

ACUTE SCHISTOSOMIASIS SITUATION OF FIVE PROVINCES IN 2005

ZHENG Hao LI Shi-zhu ZHU Rong

[Objective] To analyze the distribution, character and trends of acute schistosomiasis in 5 provinces along middle and lower reaches of Yangtze river in 2005. **[Methods]** Epidemiological data of acute schistosomiasis were collected, checked and analyzed through reporting weekly and zero reporting system issued by MOH. Results In 2005, there were 515 acute cases included 411 cases definitely diagnosed and 104 cases clinically diagnosed in these 5 provinces, and 5 outbreaks of acute schistosomiasis were reported in Hubei province centralizely and 1 outbreaked in the areas under interruption. And most of acute schistosomiasis were farmers and students infected by farming and swimming dispersedly. **[Conclusion]** The regions of marshlands and beach along the Yangtze river are key places for acute schistosomiasis infection, especially for outbreaks. The surveillance should be strengthened in schistosomiasis control.

VALIDITY OF INQUIRY IN SCREENING CHRONIC *SCHISTOSOMIASIS JAPONICA**

JIA Tie-wu ZHOU Xiao-nong WANG Xian-hong WU Xiao-hua YI Ping¹ XU Yong-an²
HE Wei-long³ HE Ling-yong⁴

[Objective] To study the indicators and validity of inquiry in the screening of chronic schistosomiasis japonica. **[Methods]** 51 villages of Hanshou county were selected at random in Hunan Province and the whole resident (>6 months/year) population aged 5 years and above was eligible for inclusion in the study? Inquiry through questionnairing, serological test (ELISA) and B type ultrasonography were applied respectively to screen chronic cases and evaluate morbidity due to schistosome infection. Logistic analysis was performed to explore the relationship between indicators of questionnaire and the results of ELISA and abdominal ultrasonography. Bayes discriminant analysis was used to assess consistency of inquiry and ELISA, inquiry and the degree of hepatic fibrosis. **[Results]** 26 426 inhabitants in the endemic villages were screened by ELISA with 1 380 (5.2%) positive. 1 264 sero-positive and 1 446 seronegative cases were asked questions relating to schistosomiasis and examined by abdominal ultrasonography. Inquiry indices such as self-reported diarrhea, stool with mucus and fatigue during the last two weeks, history of infested water contact and times of treatment were specific to chronic schistosomiasis. The coincident rate for validation was 75.9% between inquiry and ELISA, and 75.4% between inquiry and hepatic fibrosis degree. **[Conclusion]** Validity of inquiry was satisfactory in screening chronic schistosomiasis in endemic areas.

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1 Hunan Schistosomiasis Control Office

2 Hanshou Schistosomiasis Control Office

3 Hanshou Center for Disease Control

4 Hanshou Station of Schistosomiasis Control; China)

PROTECTIVE IMMUNITY INDUCED BY RECOMBINANT *SCHISTOSOMA JAPONICUM* THIOREDOXIN IN MICE*

HAN Hai-bo CAO Jian-ping LIU Shu-xian XU Yu-xin SHEN Yu-juan LI Xiao-hong
LU Wei-yuan LIU Hai-peng TANG Lin-hua

[Objective] To investigate the protective immunity of the recombinant thioredoxin of *Schistosoma japonicum*(reSjcTrx)in mice. **[Methods]** Thirty 6-week old female C57BL/6 mice were randomly divided into 3 groups with 10 each: reSjcTrx with Montanide ISA720 adjuvant, adjuvant control, and infection control. Mice were vaccinated subcutaneously at week 0, 2, 4 with reSjcTrx emulsified in Montanide ISA720 adjuvant. The mice in adjuvant group was injected three times with Montanide ISA720 and saline only. Mice in infection control group

were given no injection. Three weeks after final injection, each mouse was challenged with 30 ± 1 cercariae of *S. japonicum* (Chinese strain). At the week six after challenge, all mice were sacrificed and perfused. The number of recovered worms and eggs from liver tissue of mice were counted. Sera were collected from mice before immunization, before challenge and before killing. The anti-SjcTrx antibodies in sera were detected with ELISA. **[Results]** ELISA showed a high level of specific IgG antibodies in mice immunized with the re SjcTrx. The worm reduction rate and egg reduction rate of reSjcTrx immunization group were 22.8% and 29.5% respectively, significantly higher than those of the control groups ($P < 0.05$). SDS-PAGE and Western blotting revealed that the molecular weight of expressed protein was around Mr 14 000 and could be recognized by sera from rabbit infected with *S. japonicum* and from mice immunized with re SjcTrx. **[Conclusion]** The reSjcTrx induces certain protective immunity against *Schistosomiasis japonica* in mice.

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NEW PERSPECTIVES ON HOST-PARASITE INTERPLAY BY COMPARATIVE TRANSCRIPTOMIC AND PROTEOMIC ANALYSES OF *SCHISTOSOMA JAPONICUM*

LIU Feng¹ LU Jiong¹ HU Wei WANG Shen-yue¹ CUI Shu-jian¹ CHI Ming¹
WANG Xin-ping¹ SONG Huai-dong¹ XU Xue-nian WANG Ju-jun ZHANG Xiang-lin¹
ZHANG Xin¹ WANG Zhi-qin¹ XIE Chun-liang² Paul J. Brindley Donald P. McManus
YANG Peng-yuan FENG Zheng CHEN Zhu¹ HAN Ze-guang¹

Schistosomiasis remains a serious public health problem with an estimated 200 million people infected in 76 countries. Here we isolated $\sim 8,400$ protein-encoding cDNA contigs from *Schistosomiasis japonicum* after sequencing circa 84,000 expressed sequence tags. In tandem, we undertook a high-throughput proteomics approach to characterize the protein expression profiles of a number of developmental stages (cercariae, hepatic schistosomula, female and male adults, eggs, and miracidia) and tissues at the host-parasite interface (eggshell and tegument) by interrogating the protein database deduced from the contigs. Comparative analysis of these transcriptomic and proteomic data, the latter including 3,260 proteins with putative identities, revealed differential expression of genes among the various developmental stages and sexes of *S. japonicum* and localization of putative secretory and membrane antigens, enzymes, and other gene products on the adult tegument and eggshell, many of which displayed genetic polymorphisms. Numerous *S. japonicum* genes exhibited high levels of identity with those of their mammalian hosts, whereas many others appeared to be conserved only across the genus *Schistosoma* or Phylum Platyhelminthes. These findings are expected to provide new insights into the pathophysiology of schistosomiasis and for the development of improved

interventions for disease control and will facilitate a more fundamental understanding of schistosome biology, evolution, and the host-parasite interplay.

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EFFECT OF ARTEMETHER ADMINISTERED ALONE OR IN COMBINATION WITH PRAZIQUANTEL TO MICE INFECTED WITH *PLASMODIUM BERGHEI* OR *SCHISTOSOMA MANSONI* OR BOTH

XIAO Shu-hua Utzinger J¹ Chollet J¹ Tanner M¹

The artemisinins have become key drugs for the treatment and control of malaria, particularly within artemisinin-based combination therapies. Since the artemisinins also exhibit antischistosomal properties, their use in areas where malaria and schistosomiasis are co-endemic may have an effect on both diseases and co-infection might alter drug efficacy. We assessed the antimalarial and antischistosomal efficacies of artemether in mice infected with *Plasmodium berghei* or *Schistosoma mansoni* or both parasites concurrently. There oral doses of 400 mg/kg artemether at 14 day intervals reduced total female *S. mansoni* worm burdens by 98.7-100%, regardless of a concurrent *P. berghei* infection. When four daily doses of 55 mg/kg artemether were administered, which is a standard treatment schedule to cure *P. berghei*-infected mice, significantly lower total and female *S. mansoni* worm burden reductions were observed (73.1-89.2%). Artemether, administered at both of the above-mentioned treatment schemes, showed excellent antimalarial efficacy with no indications of delayed clearance of *P. berghei* or recrudescence, also in mice co-infected with *S. mansoni*. Co-infection with *P. berghei* had no effect on *S. mansoni* worm burden reductions following artemether-praziquantel combinations. Our findings point to the need for epidemiological studies in areas where malaria and schistosomiasis co-exist and where artemisinin-based combination therapies are introduced, since artemisinin-based combination therapies as part of a malaria control package may have ancillary benefits against schistosomiasis.

RECONSTRUCTION AND IN SILICO ANALYSIS OF THE MAPK SIGNALING PATHWAYS IN THE HUMAN BLOOD FLUKE, *SCHISTOSOMA JAPONICUM*

WANG Li-li¹ YANG Zhong LI Yuan-yuan¹ YU Fu-dong¹ Paul J. Brindley² Donald P. McManus² WEI Dong-zhi¹ HAN Ze-guang³ FENG Zheng LI Yi-xue¹ HU Wei

At present, little is known about signal transduction mechanisms in schistosomes, which cause the disease of schistosomiasis. The mitogen-activated protein kinase (MAPK) signaling pathways, which are evolutionarily conserved from yeast to *Homo sapiens*, play key roles in

multiple cellular processes. Here, we reconstructed the hypothetical MAPK signaling pathways in *Schistosoma japonicum* and compared the schistosome pathways with those of model eukaryote species. We identified 60 homologous components in the *S. japonicum* MAPK signaling pathways. Among these, 27 were predicted to be full-length sequences. Phylogenetic analysis of these proteins confirmed the evolutionary conservation of the MAPK signaling pathways. Remarkably, we identified *S. japonicum* homologues of GTP-binding protein β and α -I subunits in the yeast mating pathway, which might be involved in the regulation of different life stages and female sexual maturation processes as well in schistosomes. In addition, several pathway member genes, including ERK, JNK, Sja-DSP, MRAS and RAS, were determined through quantitative PCR analysis to be expressed in a stage-specific manner, with ERK, JNK and their inhibitor Sja-DSP markedly upregulated in adult female schistosomes.

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BAYESIAN ESTIMATION OF COMMUNITY PREVALENCES OF *SCHISTOSOMA JAPONICUM* INFECTION IN CHINA

WANG Xian-hong WU Xiao-hua ZHOU Xiao-nong

A Bayesian approach to overcome the imperfections of an immunological test (an antibody-based ELISA) and a parasitological test (Kato-Katz) in the detection of *Schistosoma japonicum* infection, was used to estimate community prevalences of *S. japonicum* infection in China. At the same time, the similarity between the prevalence estimates based on data from ELISA alone and those using data from both ELISA and Kato-Katz tests was explored. The database from the third nationwide sampling survey of schistosomiasis in China, 2004, was used for analysis, in which a total of 239 endemic villages were sampled from seven endemic provinces through a stratified cluster sampling technique and 250,987 residents aged from 6 to 65 years, were examined by ELISA followed by a Kato-Katz test applied to the seropositives. Bayesian hierarchical models incorporating random effects to reflect the nested data structure and uncertainty about test properties were employed to analyse the data. Our analysis suggested that using data from ELISA alone or both ELISA and Kato-Katz tests resulted in similar prevalence estimates, probably owing only ELISA, instead of combined ELISA and Kato-Katz tests, to estimate prevalence of *S. japonicum* infection in large-scale epidemiological settings. This study confirmed heterogeneity in the prevalence of *S. japonicum* infection in the sampled villages ranged from 0.02% to about 56% (posterior median). It is indicated that the disease remains a threat in some areas along the Yangtze River, although great achievements have been made in the control programme of schistosomiasis in China.

MALARIA

THE RESEARCH PROGRESS IN TESTING ANTIMALARIAL DRUGS SENSITIVITY

HUANG Fang TANG Lin-hua

Malaria remains one of the most life-threatening and widespread parasitic diseases in the world. Spreading multi-resistance of *Plasmodium falciparum* to available antimalarials and emerging chloroquine and primaquine resistance of *Plasmodium vivax* makes the task to roll back malaria all over the world even difficult. In vivo or in vitro assays for testing antimalarial drug sensitivity have become indispensable tools for surveillance on drug resistance and strategy making for prevention and control of malaria. This paper reviews the recent progress in approaches to the test of antimalarial drugs sensitivity.

IN VITRO EFFECT OF DAPHNETIN ON CYTOCHROME C OXIDASE AND RIBONUCLEOTIDE REDUCTASE OF *PLASMODIUM FALCIAPRUM*

HUANG Fang TANG Lin-hua CHEN Bo¹ Ni Yi-chang WANG Qin-mei

[Objective] To test the in vitro effect of daphnetin on cytochrome C oxidase (COX) and ribonucleotide reductase (RNR) activity of *Plasmodium falciparum*. **[Methods]** *P. falciparum* (FCC1/HN) was cultured *in vitro* using the method of Trager and Jensen. The effect of daphnetin and daphnetin-Fe complex on COX and RNR activity of *P. falciparum* was tested by ultraviolet spectrophotometer and electron spin resonance (ESR) respectively. **[Result]** The parasites synchronized with sorbitol *in vitro* was treated for 2,4,8 and 12 h were 0.6%,73% and 80% respectively and the inhibition level by daphnetin at different concentrations (0.1,1,100 and 1 mmol/L) for 6h was 3%,31%,53% and 84%, respectively. No considerable effect was observed on the COX activity of *P. falciparum* treated with daphnetin-Fe complex. The tyrosyl free radical was tested to reflect the RNR activity of *P. falciparum* at various times by ESR. The inhibition level by daphnetin for 1,2,3 and 4 h were 7%, 51%, 69% and 75% respectively, while the values treated by daphnetin-Fe complex were 8%, 6%, 11% and 9% respectively. The inhibition level by daphnetin at different concentrations (0.1, 1, 100 and 1 mmol/L) for 6 h was 3%, 31%, 58% and 93% respectively and while the values treated by daphnetin-Fe complex were 8%, 6%, 11% and 9%. **[Conclusion]** Daphnetin significantly reduces the COX and RNR activities of *Plasmodium falciparum* *in vitro*.

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THE MICROFLUORIMETRIC ASSAY (MFA) IN *IN VITRO* TESTING THE SENSITIVITY OF *PLASMODIUM FALCIPARUM* TO ANTIMALARIAL DRUGS*

HUANG Fang TANG Lin-hua WANG Qin-mei NI Yi-chang

[Objective] To establish an in vitro microtest for determining the sensitivity of *Plasmodium falciparum* to pyronaridine. **[Methods]** Pyronaridine-coated plate and culture medium which is easy to use in the field were prepared. *P.falciparum* parasites from In vitro continuous passage culture (FCC1/HN) were used for experimental tests in the laboratory. When they were proved stable and reliable through repeated determinations, field trials were made in Hainan and Yunnan Provinces during the malaria transmission season with blood samples from clinical falciparum malaria cases. A 4-week in vivo test was carried out as a control. **[Results]** The pyronaridine-coated plate and culture medium were proved to be stable. The effective period of pyronaridine-coated plate, the ampule sealed liquid culture medium and the bottled lyophilized culture medium, all stored at 4°C was 6 months, 2 months and 2 years respectively. Through several years field determinations, the baseline data of pyronaridine-sensitivity of *P.falciparum* in the country were collected and the sensitivity of *P.falciparum* to pyronaridine was also revealed to have decreased gradually. The mean drug concentration for in vitro complete inhibition of schizont formation raised by 2-4 times although the clinical therapeutic efficacy of pyronaridine was still satisfactory at the present time. **[Conclusion]** The developed in vitro microtest can be used for determination of the sensitivity of *P.falciparum* to pyronaridine, and it is more convenient and sensitive than the 4-week in vivo method.

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IMULTANEOUS DETERMINATION OF MALARIDINE, SULFADOXINE AND PYRIMETHAMINE IN AN ANTIMALARIAL COMPOUND PREPARATION BY HPLC

TAO Yi ZHANG Hao-bing JIN Qi-yun¹ GUO You-mei¹ ZHANG Li-wen²

[Objective] To develop a high performance liquid chromatographic (HPLC) method to determine malaridine sulfadoxine and pyrimethamine simultaneously in an antimalarial compound preparation simultaneously. **[Methods]** Buffer (HAc-NaAc, pH6)-EtOH(70:30) was used as extraction solvent. The chromatographic analysis was carried out using ZORBAX RX-C18 column (4.6mm×150mm,5 μ m) and mobile phase consisting of buffer [0.022mol·L⁻¹ HCl-0.22% triethylamine,pH2.3]-CAN (75:25) at a flow rate of 1 mL·min⁻¹. Phenacitine was used as internal standard and all components were quantified with detection wavelength at 266 nm. **[Results]** The recoveries of malaridine, sulfadoxine and pyrimethamine were (97.62±

1.09)% with RSD=3.68%, $(99.77 \pm 2.16)\%$ with RSD=2.17% and $(98.34 \pm 1.94)\%$ with RSD=1.97% (n=3), respectively. The linear range and regression equation of malaridine, sulfadoxine and pyrimethamine were over the range of 20-400 ($\text{mg}\cdot\text{L}^{-1}$) with $r=0.999\ 3$, 2.05-40.20 $\text{mg}\cdot\text{L}^{-1}$ with $r=0.999\ 9$ and 20.01-800.40 $\text{mg}\cdot\text{L}^{-1}$ with $r=0.999\ 9$. The retention time for the internal standard phenacitine, malaridine, pyrimethamine and sulfadoxine were 10.19, 1.27, 5.70 and 7.63 min, respectively. **[Conclusion]** The method, which is simple, sensitive and precise in the determination and extraction of those three components, can meet the requirements for the quality control of the antimalarial compound preparation.

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IN VITRO POTENTIATION OF ANTIMALARIAL ACTIVITIES BY DAPHNETIN DERIVATIVES AGAINST *PLASMODIUM FALCIPARUM*

HUANG Fang YU Lin-qian TANG Lin-hua WANG Qin-mei
NI Yi-chang NAN Fang-jun¹

[Objective] To screen the antimalarial compounds of daphnetin derivatives against *Plasmodium falciparum* in vitro. **[Method]** *Plasmodium falciparum* (FCC1) was cultured in vitro by a modified method of Trager and Jensen. Antimalarial compounds were screened by microscopy-based assay and microfluorimetric method. **[Results]** DA79 and DA 78 showed potent antimalarial activity against *Plasmodium falciparum* cultured in vitro. **[Conclusion]** Though the relationship between the structures of daphnetin derivatives and their antimalarial activities has not been clarified yet, this study may provide a new direction for discovery of more potential antimalarial compounds.

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STUDY ON PLANT-DERIVED MALARIA ORAL VACCINE

CHEN Qin TANG Lin-hua

Transgenic plants have been used to express and produce subunit vaccines against various infectious diseases. Many of these vaccines can elicit immune response with specific antibodies when purified and injected into animal models. When administered orally, by feeding in a non-purified form with transgenic plant tissues, antigen proteins protected by the wall of plant cells can arrive at the gut associated lymphatic tissues and induce mucosal immune response and systematic immune response when recognized by the receptors. This review summarizes the progress of the oral malaria vaccine and discusses the feasibility of plant derived malaria vaccine.

LEISHMANIASIS

STUDY ON PCR METHOD FOR DETECTING THE ASYMPTOMATIC INFECTION OF *LEISHMANIA INFANTUM**

GAO Chun-hua WANG Jun-yun YANG Yue-tao BAO Yi-fang

[Objective] To establish PCR method for the detection of the asymptomatic infection of *Leishmania infantum*. **[Methods]** Six primer pairs were selected for detecting Chinese strain of *L. infantum* by optimizing conditions which affect amplification. Their sensitivity and specificity were compared by using DNAs extracted from human blood seeded with cultured *L. infantum* promastigotes (MHOM/CN/86/GS) as template. Blood samples of the inhabitants without symptoms of visceral leishmaniasis in the endemic area were analyzed with two selected primer pairs with good sensitivity and specificity. **[Results]** The specificity of all six primer pairs reached 100%, and the sensitivity varied among the primer pairs. The primer pairs RV1-RV2 (0.1 parasite/ml blood) and K13A-K13B (1 parasite/ml blood) were most sensitive. *Leishmania* DNA was detected in 33% (33/100) and 30% (30/100) human blood samples by RV1-RV2 and K13A-K13B primer pairs respectively. **[Conclusion]** This study suggests that RV1-RV2 and K13A-K13B primer pairs are suitable in detecting the asymptomatic infection of *L. infantum*, and the prevalence of the asymptomatic infection is high in human population in the endemic area.

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SURVEY ON THE *LEISHMANIA INFANTUM* ASYMPTOMATIC INFECTION IN DOGS IN WENXIAN COUNTY OF GANSU PROVINCE

WANG Jun-yun CHEN Sheng-bang¹ GAO Chun-hua JIN Chang-fa FENG Yu¹
ZHANG Chou-ji¹ HE Hui-xian¹ YANG Chen-ming¹ YANG Yue-tao BAO Yi-fang

To evaluate the potential of PCR, ELISA and rk39-dipstick for the detection of *Leishmania infantum* asymptomatic infection in dogs in western China, samples from healthy dogs in Wenxian county of Gansu province. The endemic area of zoonotic visceral Leishmaniasis, were collected and subjected to be tested for the leishmania specific DNA in venous blood and bone marrow of the healthy dogs in this area by means of PCR assay with two pairs of primers RV1-RV2 and K13A-K13B. Meanwhile, the *Leishmania* specific antibodies were detected by ELISA contend with soluble antigen and the rk39 dipstick. It was found that the positive detection rates of PCR in venous blood and bone marrow samples were 50.63(40/47) and 69.62%(55/79), with a total detection rate of 77.21%(61/79); those of ELISA and rk39-dipstick were 22.22%(16/72) and 33.33%(19/57). It is evident that the prevalence of the asymptomatic

infection with *L.infantum* in dogs is rather high, and the PCR assay for bone marrow specimens is proved to be a reliable method to detect the asymptomatic infection in dogs.

PRESENT SITUATION AND PERSPECTIVE OF LEISHMANIASIS AND ITS VECTOR SANDFLY CONTROL

GU Deng-an JIN Chang-fa ZHANG Yi

Leishmmaniasis is one of the important parasitic diseases in China. Its transmission vector is sandfly. Only four species of sandfly have been identified as leishmaniasis transmission vector in China. The morbidity of leishmaniasis worldwide has been increasing rapidly in the recent years, not only due to environmental changes which increase exposure to sandfly vectors also to the increase of individual risk factors which facilitate the development from infection to disease. We expect to strengthen prevention and treatment of leishmaniasis, taking worldwide experience of prevention and treatment of leishmaniasis as reference in combination with China reality. Therefore, we summarize and make a prospect of prevention and treatment of leishmaniasis with emphasis on control of its vector sandfly.

APPLICATION OF MOLECULAR METHODS IN IDENTIFICATION AND PHYLOGENY OF *LEISHMANIA*

WANG Yong WANG Jun-yun

There is a wide diversity of parasites within Genus *Leishmania*, which causes a variety of clinical syndromes. There is also a diversity of sand fly vectors. Correct identification of *Leishmania* is crucial for making decision for early treatments and control measures. Various molecular techniques for identification and phylogeny of *Leishmania* are reviewed herein, such as isoenzyme analysis, monoclonal antibody typing, karyotyping, nucleic acid hybridization, gene sequencing, restriction fragment length polymorphism (RFLP), random amplified polymorphic DNA(RAPD), microsatellite DNA and so on.

SNAILS

STUDIES ON THE GROWTH-DEVELOPMENT AND INFECTIVITY OF *ANGIOSTRONGYLUS CANTONENSIS* IN DORMANT *POMACEA CANALICULATA**

LIU He-xiang ZHANG Yi ZHOU Xiao-nong LV Shan SHU Dan
LIN Jia-xiang¹ LI Li-sha¹ LI You-song¹

[Objective] to study the impact of dormancy of *Pomacea canaliculata* on the growth-development and infectivity of *Angiostrongylus cantonensis*. **[Methods]** The intermediate host snails (*P. canaliculata*) were infected with the first stage larvae of *A. cantonensis* from the laboratory. One day after infection the snails were kept dormant under 25.0-25.5°C, and a sample of the snails was selected and dissected to examine the larval growth-development at various interval. Twenty days after infection, they were placed in room with natural winter conditions. Every 10 days a sample of the snails was dissected for larval activity. The third-stage larval infectivity from each group was identified by infecting SD rats. Meanwhile the survival and weight change of snails in the two groups were recorded, and were compared with those snails cultured in water under the corresponding temperature conditions mentioned above. **[Results]** The time for first-stage larvae of *A. cantonensis* in dormant snails to develop to third stage was shorter than that in the snails in aquarium. All the third stage larvae at various degree of activity recovered from snails in winter room conditions, including formant snails and active snails in water, infected rats successfully. The dormant snails in winter room conditions stopped growing with decreased weight, but the survival rate was significantly lower than that of the snails in snails in aquarium with the same condition along with an extending time of dormancy. **[Conclusion]** The development of *A. cantonensis* larvae has not been affected when snails are kept dormant under 25.0-25.5°C. The third stage larvae from snails at natural winter room temperature or in aquarium were all infective. As of the overwintering ways. It is better to keep the infected snails dormant than in the aquarium.

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¹ Fujian Provincial Center for Disease Control and Prevention

STUDY ON THE MOLLUSCICIDAL EFFECT OF META-LI AGAINST *ONCOMELANIA HUPENSIS*

ZHU Dan ZHOU Xiao-nong ZHANG Si-qing¹ ZHANG Gong-hua¹ LIU He-xiang
LV Da-bin¹ CAI Guo-ying NI Quan-zheng CAO Zhi-guo¹ WU Wei-duo¹

[Objective] To evaluate the molluscicidal effect of the META-Li (40% META liquid formulation) against *Oncomelania* snails in laboratory and field. **[Methods]** The experiment of

META-Li against the snails by spraying, immersion and climbing-inhibition test was carried out in laboratory. Spray method was performed in the field to compare with the wettable powder of 50% niclosamide ethanolamine salt. **[Results]** In laboratory, the LC₅₀ of META-Li by spraying for 1, 2, 3 days was 0.78, 0.44 and 0.46g/m² respectively; by immersion method for 1, 2, 3 days, it was 44.4, 27.4 and 24.8 mg/L respectively. When sprayed with active ingredient 2 g/m² of META-Li in the field, the snail death rate was above 90% after 7 days, similar to that of niclosamide. **[Conclusion]** META-Li shows high molluscicidal and climbing-inhibition effect on *Oncomelania* snails.

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THE OTHERS

EVALUATION OF QUALITY CONTROL OF SEROEPIDEMIOLOGICAL SURVEY ON FIVE PARASITIC DISEASES BY FISH-BONE CHART METHOD

CHEN Ying-dan ZHANG Xue-qiang XU long-qi

[Objective] To control the quality of seroepidemiological survey in the national survey of current situation of major human parasitic diseases in China and accumulate experiences for further improving the quality control level and efficiency in serological tests for future investigations. **[Methods]** Fish-bone chart method was used to study on control the quality for this survey. **[Results]** To analyse the possible quality problems by fish-bone chart method then adopt intervention measures to solve these problems. Some serum samples were reexamined through sampling, and the agreement of the two tests was analyzed by using coincidence rate and Kappa Value to Evaluate the effect of the quality control of this survey. Through reexamination of the serum samples of 5 parasitic diseases, it was found that the overall coincidence rate of the two tests on the serum samples of 5 parasitic diseases were 98.85%, 97.47%, 97.21%, 92.84% and 98.14% respectively for cysticercosis, hydatidosis, paragonimiasis, trichinellosis and toxoplasmosis. The Kappa value of cysticercosis was 0.73 with good reproducibility, and the kappa value for the other 4 parasitic diseases was respectively 0.94, 0.86, 0.77 and 0.87, indicating that all the serum samples of the 4 parasitic diseases had very good reproducibility. Significance test on the kappa values of the two tests on the serum samples of 5 parasitic diseases was calculated, u values were all ≥ 2.58 , $P < 0.01$, indicating that the Kappa value of these 5 parasitic diseases was not accidental. **[Conclusion]** It could be considered that the quality control for this seroepidemiological survey of 5 parasitic diseases was relatively ideal by fish-bone chart method.

EXPERIMENTAL STUDY ON COMPATIBILITY OF THREE SPECIES OF FRESHWATER SNAILS WITH *ANGIOSTRONGYLUS CANTONENSIS**

LV Shan ZHANG Yi WANG Xian-hong LIU He-xiang ZHU Dan
YIN Wei-gang¹ ZHOU Xiao-nong

[Objective] To compare the compatibility of three species of freshwater snails, *Pomacea canaliculata*, *Cipangopaludina chinensis*, *Bellamya aeruginosa*, with *Angiostrongylus cantonensis*. **[Methods]** The snails were infected by the first-stage larvae of *A. cantonensis* under the same conditions. Twenty snails of each species were randomly sampled after exposed to the larvae for 1, 3, 6, 12, 24 hours, respectively. Each group was placed into an aquarium. Each species with same number was established as control. All the aquaria were equipped with a filter, the water temperature was kept at $(24 \pm 1) ^\circ\text{C}$. In the first two weeks, the number of death was recorded. Later, the snails were successively examined to record the weight and worm burden of each snail. **[Results]** Some snails were dead which mainly happened in the first week postinfection. The death rate and infection rate were not associated with exposure time and snail species. Worm burden of *P. canaliculata* was significantly higher than the other two species, however, the worm density of *P. canaliculata* and *B. aeruginosa* was significantly higher than the other two species, however, the worm density of *P. canaliculata* and *B. aeruginosa* was not significantly different but higher than that of *C. chinensis*. The worm burden and worm density of *P. canaliculata* and *B. aeruginosa*, respectively, were significantly different among five exposure-time groups, but that of *C. chinensis* was not. **[Conclusion]** All the three snail species show a high compatibility with *A. cantonensis*. In general, the compatibility of *P. canaliculata* is superior to the other two species.

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¹ Nanjing Center of Disease Control and Prevention

THE PROGRESS OF STUDY ON DIAGNOSIS FOR INTESTINAL PARASITIC INFECTIONS BY COPROANTIGEN DETECTION

CHEN Jia-Xu CHANG Zheng-shan

A number of reports have been published on the use of double antibodies sandwich ELISA to detect coproantigens in feces of individuals infected with parasites, especially intestinal parasites. The detection of coproantigens with double antibodies sandwich ELISA is not only more sensitive than microscopy and highly specific, but also capable of distinguishing the individuals of present infection from past infection. So the sandwich ELISA for coproantigen detection can be used as an important tool for investigation and monitoring of epidemiology of parasitic diseases in the clinic and the field.

COMPARATIVE OBSERVATION OF DISTRIBUTION OF PARAGONIMUS WESTERMANI AND PAGUMOGONIMUS SKRJABINI IN EXPERIMENTAL ANIMALS

ZHANG Yong-nian CHANG Zheng-shan CHEN Shao-hong CHEN Ming-gang

[Objective] To compare distribution of two major pathogenic lung flukes in lungs and the other places out of lungs (Chest, abdominal cavity) of experimental animals, in order to offer suggestion for clinical diagnosis and therapy. **[Methods]** The dogs and cats were infected with metacercarias of *Paragonimu westermani* (P.W), *Pagumogonimus skrjabini* (P.S) respectively through mouth. The animals when the eggs were found in their feces were killed, 3 months after infection, and the number of adults were counted and analyzed. **[Results]** The number of adults found from left and right lower lobe lungs of cats and dogs infected with P. W and P.S were most. The number of pre-adults collected from the cats and dogs infected with P.W had no statistically difference by comparing left and right lungs with the other place out of lungs ($P>0.05$), but that from cats infected with P.S had statistically difference ($P<0.05$), and that from dogs infected with P.S had remarkably statistically difference ($P<0.01$). The average recovery rates of adult worms of P.W and P.S were 41.48%, 39.85% from infected cats, and that from dogs were 47.44%, 24.57% on average, respectively. The recovery rates of two lung flukes from cats were markedly higher than that from dogs ($P<0.05$). **[Conclusion]** The recovery rates of two lung flukes from cats were markedly higher than that from dogs.

A SEARCHING SYSTEM OF PARASITE PICTURES AND RELEVANT INFORMATION

CHEN Hai-ning HAO Zhi-ming¹ ZHU Xian-yin

Over 3 000 pictures on five major parasites (schistosome, filarial, hookworm, leishmania and plasmodium) collected between 1950 and 1990 were edited and a searching system was established. The data can be used with a network-based version through a LAN system in the Institute. The adoption of Digital Computerized Management makes its possible for sharing resources in human parasitology.

¹ Shanghai Haozhi Computer technology, Ltd.

STUDY ON NEW CRYPTIC SPECIES OF *ANOPHELES MINIMUS* COMPLEX BASED ON MOLECULAR MARKERS WITH DIFFERENT EVOLUTION VELOCITY

ZHOU Shui-sen TANG Lin-hua

[Objective] To investigate molecular variations of *Anopheles minimus* complex and analyze the probability of a new cryptic species in China, based on the ribosomal DNA and the mitochondrial DNA with different evolution velocity. **[Methods]** Single mosquito's legs were digested to extract DNA and by the GNT-K method; the ribosomal DNA second internal transcribed spacer (rDNA-ITS2), rDNA-28S-D3 and the mitochondrial locus (cytochrome oxidase II, COII) genes were amplified, sequenced and analyzed. The phylogenetic tree of members of Minimus group was reconstructed by maximum likelihood method (DNAML) to reveal the genetic variations and evolution relationships of members of Minimus group. **[Results]** 1) The rDNA-ITS2 of Minimus species from Yuanjiang district of Yunnan Province was about 700 bp while all other species showed 480 bp in the size; 2) Three haploids were found in the sequence analysis of ITS2 and D3 genes, and the size and nucleotide constitution of the sequences in Yuanjiang's species were significantly different from other originals; 3) The phylogeny tree based on the sequences of mtDNA-COII showed that the genetic distance between the Yuanjiang' species and others was relative far away in evolution relationship. **[Conclusion]** The data confirm the presence of a new cryptic species besides the cryptic species, A and C, within *An. minimus* complex in China.

STUDY ON THE SEASONAL ABUNDANCE AND BITING HABIT OF *AN. MINIMUS* A AND *AN. MINIMUS* C IN YUNNAN PROVINCE

ZHENG Bin TANG Lin-hua WANG Xue-zhong¹ MA Ya-jun² ZHOU Shui-sen SHI Wen-qi

[Objective] To study the relationship between the seasonal abundance of *An. Minimus* A, C and the local malaria endemic situation and compare the difference of bloodmeal source between *An. Minimus* A and *An. Minimus* C. **[Methods]** *An. Minimus* samples in Mengla County, Yunnan Province were collected monthly by hanging ultraviolet lamps inside the tenement, then *An. Minimus* A or *An. Minimus* C was identified by multiplex-PCR, the highest seasonal abundance of *An. Minimus* A and *An. Minimus* C was gained. Local malaria cases were collected and the relationship between the seasonal abundance and malaria endemic situation was estimated. The difference of blood meal source of *An. Minimus* A and *An. Minimus* C was detected by ELISA to the samples collected in Mengla and Yuanjiang counties. **[Results]** The highest seasonal period of abundance of *An. minimus* A occurred in September, while for *An. Minimus* C, the period was in July. Both occurrence of the high abundance was followed by an increase of malaria cases.

The proportion of human blood meal in *An. Minimus* A was a little higher (19.1%) than that of *An. Minimus* C (12.8%) , but no statistic significance. **[Conclusion]** The period of high seasonal abundance of *An. Minimus* A and *An. Minimus* C was a little bit different, both *An. Minimus* preferred to bite bovine, however, there are no enough proof to indicate any statistic difference of blood preference between *An. Minimus* A and *An. Minimus* C.

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STUDY ON THE MIXED TESTING OF SERUM SAMPLES IN SEROEPIDEMIOLOGICAL SURVEY OF PARASITIC DISEASES

CHEN Ying-dan WANG Ju-jun ZHOU Chang-hai XU Long-qi

[Objective] In order to accumulate experiences for improving the efficiency in serological tests, the present study on mixed testing of serum samples was performed by taking the serological test of trichinellosis and toxoplasmosis as the examples, and had proved the effects on cost-effectiveness of seroepidemiological survey of parasitic disease with method of mixed-samples test. **[Methods]** According to the binomial distribution principle, to develop an approach to the feasibility of mixed testing of serum samples, and to work on a cost-effectiveness analysis of one-by-one testing and mixed testing using hygienic economic analysis method was performed. For serological test of trichinellosis and toxoplasmosis, 3 kinds of mixed testing methods, namely 3 serum sample mixture, 5 serum sample mixture and 10 serum sample mixture, were performed. **[Results]** The results showed that all the 3 kinds of mixed tests of trichinellosis and toxoplasmosis showing positive result if only 1 weak positive serum sample were mixed with. When the serum samples being mixed were all negative ones, then among the 24 groups tested with each kind of negative serum sample mixture of trichinellosis (3 serum samples, 5 serum samples and 10 serum samples), they all showed negative. However, among the 12 groups tested with 2 kinds of negative serum mixture of toxoplasmosis (3 serum samples and 5 serum samples), all showed negative while among the 18 groups tested with the 10 serum sample mixture, 16 groups showed negative and 2 were positive. The mixed testing of trichinellosis and toxoplasmosis showed that the efficiency of mixed testing was related to the serological positive rate of the parasitic diseases to be examined. When serological positive rate was 10%, the efficiency of mixed testing was higher in 4 serum sample group. When serological positive rate was 1%, the efficiency of mixed testing was higher in 10 serum sample group and when serological positive rate was 0.1%, the increase of the size of mixed serum samples could decrease the number of testing, but the prerequisite was that there must be one positive samples, so the positivity for all the mixed tests could be detected. If mixed testing were performed on all negative samples, no positivity could be detected. **[Conclusion]** The result of cost-effectiveness analysis demonstrated that for

seroepidemiological survey of parasitic diseases, the cost for mixed testing was low, especially when the serological positive rate was expected low ($\leq 1\%$), thus the mixed testing could save a large amount of the cost.

DEVELOPMENT OF PCR ASSAY FOR DETECTION OF *ANGIOSTRONGYLUS CANTONENSIS* IN *POMACEA CANALICULATA*

ZHANG Yi ZHOU Xiao-nong LIU He-xiang LV Shan LI li-sha¹
LIN Jin-xiang¹ LI You-song¹

[Objective] To establish a PCR assay for detecting the third-stage larvae of *Angiostrongylus cantonensis* in *Pomacea canaliculata*. **[Methods]** Polymerase chain reaction primers were designed by the software lasgene, based on the specific cDNA of the third-stage larvae of *A. cantonensis* is Genbank. The total RNA was prepared from the third-stage larvae of *A. cantonensis* and of the snails by TRIzol one-step protocol. Amplification by RT-PCR was carried out following the kit protocol. **[Results]** RT-PCR assay revealed a clear differentiation between infected and negative snails. When a mixture of the total RNA from the negative snails and the third-stage larvae of *A. cantonensis* was tested by the PCR assay, the detectable level was 128 pg RNA, a concentration close to one third-stage larva of *A. cantonensis*, minimum concentration that could be found by naked eyes. The minimum detected total RNA concentration of the third-stage larvae of *A. cantonensis* was 105 pg by PCR assay. **[Conclusion]** A PCR assay has been developed for detecting *A. cantonensis* larva in *Pomacea canaliculata*.

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ANALYSIS ON THESESES AND CITATION OF THE 《CHINESE JOURNAL OF PARASITOLOGY AND PARASITIC DISEASES》 IN 2004-2005

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The published articles and citation of the Chinese Journal of Parasitology and Parasitic Diseases in 2004-2005 were statistically analyzed. Among 312 papers published in the two years, original articles and experiment reports occupied 42.3% and 7.7% respectively. Authors were mainly from colleges/universities (61.5%) and institutions for disease control (28.5%). 51.9% of the articles received support by research funds/foundations. 82.3% were with reference citation mostly from periodicals, with 58.7% and 31.5% respectively from international and national (Chinese) journals. The average Price index was 44.9%. This Journal possesses a group of stable and qualified authors, covers substantial content with relatively broad citation, and is an important source of information in parasitological research.

APPLICATIONS AND PROSPECTS OF KRIGING IN STUDIES ON EPIDEMICS

FU Qing WU Wei-ping

Kriging is an important part of geostatistics, which deals with spatially distributed data, the estimation of Kriging is linear optimal and unbiased interpolative. Kriging has been successfully applied to the studies of some epidemics, which can describe the spatial distribution and transformation trend of disease and their vectors by building forecasting surface and drawing the map of spatial distribution of diseases. Accompanying with the developments of Kriging and assistances of remote sensing technologies, studies of epidemics combined with Kriging can give powerful evidences and technical supports for prevention, surveillance and control of epidemics.

IMPACT OF GLOBAL WARMING ON TRANSMISSION OF VECTOR-BORNE DISEASES IN CHINA

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DENG Yao ZHOU Xiao-nong*

The influence of global warming on human health received increasing attentions. The article reviewed the advanced study on the impact of global warming on transmission of vector-borne diseases in China, such as schistosomiasis, malaria, dengue fever, epidemic encephalitis B, angiostrongyliasis cantonensis, leptospirosis, and on the methodology of prediction as well as future study direction in this field.

EXPLORATION ON SPECIMEN PREPARATION FOR MEDICAL MOLLUSKS

ZHANG Yi ZHOU Xiao-nong LIU He-xiang

[Objective] To establish techniques to prepare the specimens of the medical mollusks for the purpose of scientific research, teaching and public education. **[Methods]** After collection of the mollusks samples, the shell specimens and soft body specimens were prepared in accordance with the standard of making dried specimens and immersed specimens, separately. **[Results]** All of specimens prepared based on the method described in the paper meet the basic requirements of the specimens to be used in biological research. The shells and softbody can be preserved for longer time base on the standard of making dried specimens and immersed specimens. Shells are integrated, its colour are hold and no peculiar smell. The softbody can be separated. The structures of softbody can be used for anatomized. **[Conclusion]** The specimen prepared by the standard criteria not only can be used for research purpose on molecular biology and

morphology, but also can be preserved permanently.

PROTECTIVE IMMUNITY ELICITED BY ULTRACIOLET-IRRADIATED THIRD-STAGE INFECTIVE HOOKWORM HOOKWORM (*NECATOR AMERICANUS* AND *ANCYLOSTOMA CANINUM*) LARVAE IN MICE AND HAMSTERS

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ZHAN Bin¹ Xiao Shu-hua

The protective immunity elicited by ultraviolet-irradiated third-stage infective larvae of *Necator americanus* (UV-NaL3) and *Ancylostoma caninum* (UV-AcL3) was evaluated in laboratory mice (a nonn-permissive model) and hamsters (a permissive model). After optimizing the time of exposure to UV-irradiation, both oral and subcutaneous vaccination routes with UV-AcL3 in mice were explored. Oral vaccination was more effective at reducing the number of challenge AcL3 entering the lungs, whereas subcutaneous vaccination was more effective at blocking muscle entry. When UV-irradiated NaL3 and non-irradiated AcL3 were used as vaccines in hamsters, both of them were effective at reducing adult hookworm burdens. However, the length of protection afforded by UV-irradiated L3 was substantially greater than that resulting from immunization with non-irradiated L3. A single dose was less effective than multiple doses. The protective immunity elicited by UV-irradiated NaL3 given once every other week for a total of three immunizations was similar to that elicited by non-irradiated AcL3 given during the same schedule. Protection was not significantly affected by administering the L3 on a weekly basis for a total of three immunizations, even though the antibody titers were reduced using this schedule. These studies will facilitate elucidation of the mechanisms underlying larval protection.

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THE EFFECT OF TEMPERATURE ON THE DEVELOPMENT OF *ANGIOSTRONGYLUS CANTONENSIS* (CHEN 1935) IN *POMACEA CANALICULATA* (LAMARCK 1822)

LV Shan ZHOU Xiao-nong ZHANG Yi LIU He-xiang ZHU Dan YIN Wei-gang
Peter Steinmann WANG Xian-hong JIA Tian-wu

Angiostrongylus cantonensis, clinically presented as eosinophilic meningitis, is a snail-borne parasitic diseases. We studied the effects of different temperatures on the larval development of *Angiostrongylus cantonensis* in the freshwater snail *Pomacea canaliculata*. Six groups of snails were infected and each group was cultured under different temperature conditions. At predefined intervals, four snails from each group were dissected to examine the

larval development. The development-time curve of each group was drawn according to the fraction of third-stage larvae present. The developmental time was defined as the time needed until 50% of the first-stage larvae developed into third-stage larvae. A linear regression model was established based on the time (D; in days) and the corresponding temperature (T; in degrees Celsius): $DT=15.04X D + 262.53$. The threshold temperature for larval development was 15.04 °C and the thermal constant was 262.53 degree-days. These parameters could be helpful in estimating the number of parasite generations in a year and the impact of climate change on the distribution of *A. cantonensis*.

§5. 研究生毕业论文研究报告摘要

瑞香素类抗疟化合物的筛选及其靶分子研究

黄芳（博士研究生） 导师：汤林华

[目的] 通过体外试验和鼠疟动物模型筛选瑞香素结构衍生物的抗疟作用；寻找瑞香素类抗疟化合物对恶性疟原虫抗疟作用的靶分子。

[方法] ① 在瑞香素基本结构的基础上设计并合成瑞香素的结构衍生物；② 通过光学显微镜镜检法和微量荧光法筛选瑞香素衍生物对恶性疟原虫的体外抗疟作用；并建立了高效液相色谱法对体外筛选抗疟活性高的化合物进行分离鉴定的分析方法；③ 对体外筛选抗疟活性高的化合物，采用 WHO 推荐的四天抑制试验测定其对鼠伯氏疟原虫（ANKA 株）的抗疟作用；④ 采用紫外分光光度法和电子自旋共振法测定瑞香素类抗疟化合物对恶性疟原虫细胞色素 C 氧化酶与核糖核酸还原酶活性的影响；⑤ 运用实时聚合酶链式反应测定瑞香素类抗疟化合物对恶性疟原虫的超氧化物歧化酶、核糖核酸还原酶及乳酸脱氢酶基因表达的影响。

[结果] ① 共合成 24 种瑞香素结构衍生物；② 24 种瑞香素结构衍生物中，7 种体外无抗疟活性，15 种显示较弱的抗疟活性，2 种瑞香素衍生物 DA78 与 DA79 体外显示较强的抗疟活性，两者经高效液相色谱法分析显示其出峰时间依次为 6.472min、6.424min，灵敏度为 10-20ng；③ 体内试验按感染后第 5 天（D4）减虫率评价，1，10，50，75mg/kg·d×4d DA78、DA79 给药组与对照组 1%西黄蓍胶相比较有显著性差异（ $P<0.01$ ），两者的半数有效剂量分别为 155.03mg/kg 与 96.06mg/kg；但两者在各剂量组的抗疟效果都低于同剂量的瑞香素的抗疟效果（ $P<0.05$ ）；④ 恶性疟原虫细胞色素 C 氧化酶的活性随着瑞香素类抗疟化合物浓度的增高与作用时间的增长而降低，而当瑞香素的铁螯合能力被饱和后对 COX 的影响几乎消失；⑤ 恶性疟原虫核糖核酸还原酶的活性随着瑞香素类抗疟化合物浓度的增高与作用时间的增长而降低，而当瑞香素的铁螯合能力被饱和后对 COX 的影响几乎消失；⑥ 瑞香素抗疟化合物对恶性疟原虫 LDH 基因的表达无显著性抑制作用（ $P>0.05$ ），而且各组间无显著性差异（ $P>0.05$ ）；对恶性疟原虫 RNR 基因的表达均有抑制作用；只有瑞香素对恶性疟原虫 SOD 基因表达产生抑制作用，其他各组无显著性抑制作用；但瑞香素的铁螯合能力被饱和后，对上述三种基因的表达均未产生显著性抑制作用（ $P>0.05$ ）。

[结论] 两种瑞香素衍生物 DA78 与 DA79 在体外和体内试验中均显示出一定的抗疟活性；恶性疟原虫的 RNR 可作为瑞香素类抗疟化合物抗疟作用的分子靶标。

本研究首次发现两种瑞香素结构衍生物 DA78 与 DA79 具有较强的抗疟活性，为寻求更有效的抗疟化合物提供了方向；首次研究瑞香素类抗疟化合物与众不同的抗疟机制在于影响了以铁-酪氨酸自由基为活化中心的在疟原虫 DNA 合成中起重要作用的 RNR 的活性，提示该蛋白可作为瑞香素类抗疟化合物分子设计的分子靶标，为今后瑞香素类抗疟药物的进一步研究开发提供了理论依据。

中国长江中下游地区慢性血吸虫病疾病负担及其社会影响因素的研究

贾铁武(博士研究生) 导师: 周晓农

[目的] 本研究旨在通过对长江中下游地区两县慢性血吸虫病的人群调查和病家入户调查, 以达到以下目标: 1) 评价慢性日本血吸虫病患者的健康状况(health status)和伤残权重(disability weight); 2) 测量慢性血吸虫病的疾病负担(disability adjusted life years, DALYs), 并评价其健康公平性(health equities); 3) 在家庭和社区水平上探讨卫生经济因素对慢性血吸虫病疾病负担的影响。

[方法] 采用区域抽样法(grid sampling), 随机抽取当涂、汉寿两县的 91 个行政村作为样本村, 以样本村的所有 5 岁及以上的常住人口(每年在本村居住时间 ≥ 6 个月)为调查对象。先对所有调查对象进行血清学(ELISA)筛查, 血清学筛查阳性者进行病原学检查(Kato-Katz 法)、问卷调查和腹部 B 超检查。问卷内容包括既往病史、疫水接触史和过去 2 周内的主诉症状(腹痛、腹泻、黏血便和乏力)等。腹部 B 超的主要测量指标包括: 肝、脾的大小、肝纤维化程度, 以及肝胆的其它病变和有无腹水等; B 超指标中, 肝纤维化程度被分为 4 级: 0 度、I 度、II 度和 III 度; 肝肿大的诊断标准为: 肝脏右锁骨中线肋缘下 >0 厘米或肝脏剑突下 >3 厘米; 脾肿大的诊断标准为: 左锁骨中线肋缘下 >0 厘米。

在完成上述调查的基础上, 进行以下 6 个方面的分析: 1) 根据我国血吸虫病诊断标准确定慢性血吸虫病病例, 用生命质量量表(EQ-5D+C 量表)对慢性血吸虫病患者的健康状况和生命质量进行自我评价。2) 基于患者生命质量的自评结果(visual analogue scale, VAS), 计算年龄别伤残权重(disability weight, DW)。3) 用多水平回归模型分析伤残权重与健康状况、伤残权重与病情指标的相关关系。4) 在计算分年龄、性别和地区的失能寿命年(years lived with disability, YLD)的基础上, 以基尼指数(Gini index)和集中指数(concentration index)分析比较不同地区的健康公平性。5) 利用入户调查数据中的家庭居住条件和家有电器等财产指标计算财产指数(asset index), 并将家庭和社区的经济状况进行五等分。6) 用多水平模型分析家庭卫生经济因素与血吸虫病患病危险之间的关系, 用多元回归分析社区卫生经济因素与人均 YLD 的关系。

[结果] 共获得以下 9 方面的结果: 1) 在当涂、汉寿两县 91 个行政村, 共有 59 765 人接受了血清学筛查, 查出血清学检查阳性者共计为 3 405 例, 两县总的血检阳性率为 5.70%。共对 2 843 名血检阳性者进行了问卷、病原学检查和 B 超检查, 1 466 人被诊断为慢性血吸虫病病例(其中, 临床病例为 1 225 例, 确诊病例为 241 例)。2) 慢性血吸虫病患者的调查中, B 超结果发现 73.9%的病例有肝肿大、73.3%有肝纤维化、18.1%有脾肿大; 主诉症状结果发现, 46.7%患者主诉有腹泻、34.0%有腹痛、30.8%有乏力、11.4%有黏血便; 病例健康状况的自报问题率分别为, 疼痛或不适(48.8%)、焦虑或抑郁(36.2%)、认知能力(20.6%)、日常活动(15.1%), 移动困难(2.8%)和自我照料(3.6%)。3) 慢性血吸虫病病人群体总的伤残权重(DW)为 0.192, 年龄别 DW 分别为 0.095 (5-14 岁), 0.160 (15-44 岁), 0.210 (45-59 岁)和 0.246 (60 岁及以上)。DW 随着年龄的增长而增大, 年龄别 DW 两两比较都存在显著性差异(bonferroni t 检验, $P < 0.05$)。4) 多水平分析显示 DW 与腹痛、

黏血便、乏力、肝肿大以及肝纤维（I-III 度）存在显著性联系(P 均 <0.05)。5) 当涂县总的 YLD 为 1056.26 人年, 汉寿县总的 YLD 为 3 967.43 人年。汉寿县总的 YLD 比当涂县高出 2 911.17 人年, 是当涂县的 3.76 倍。两县一类村的 YLD 占慢性血吸虫病疾病负担的 37.95%。样本村年龄、性别比较, 高年龄组和男性的 YLD 率较高。6) 两县健康公平性分析结果显示, 当涂县基尼指数为 0.67, 汉寿县基尼指数为 0.45。7) 多水平分析的结果显示, 只有 4 个家庭卫生经济因素与血吸虫病有显著性关联, 即住所与疫水距离、生活用水类型、家庭人均水田面积和较差的经济状况。8) 多元回归结果显示, 在社区水平上只有 2 个因素与疾病负担存在显著性的联系, 住所离疫水较近的村和人均水田面积较大的村的血吸虫病疾病负担较重($P<0.05$)。9) 两县慢性血吸虫病 YLD 经济水平间的集中指数, 当涂县为-0.12, 汉寿县为 0.03。

[结论] 本研究首次通过现场调查证实, 日本血吸虫病的伤残权重(DW)在 GBD 中被严重地低估, 日本血吸虫病总的 DW 应为 0.192, 年龄别 DW 应在 0.095—0.246 之间。慢性血吸虫病 YLD 的人群、地区评价结果, 将有助于确定重点干预地区及对象, 提出消除人群健康不公平性的卫生决策。

空间统计方法在喀什地区人源型黑热病分布中的应用

李森 (硕士研究生) 导师: 伍卫平

新疆维吾尔自治区的喀什绿洲是我国人源型黑热病的重点流行区, 也是我国黑热病的主要流行区之一。近十年来, 喀什地区新发黑热病病例呈现逐年上升的态势。本研究利用空间统计和地统计方法探讨黑热病流行的分布, 为今后黑热病预防控制工作提供新的研究方法和手段。横断面调查结果表明, 该地区人源型黑热病的发病情况与年龄有关, 随着年龄的增加, 人群黑热病 15 年累计发病率逐渐下降; Ka24 单抗抑制 ELISA 对既往黑热病病人检测有较高的阳性率, 尤其是病后距现在时间越近, 检测的阳性率越高; 人群利什曼素皮试阳性率随着年龄的增加有逐渐增高的趋势。通过对黑热病病人在家庭的分布进行分析发现, 该地区黑热病病例的分布存在家庭聚集性。游程检验的结果表明, 在黑热病病家数超过五家的组中, 病家沿水渠的分布是不随机的, 病家的分布存在局部聚集的现象。通过 Scan 统计的 Possion 模型来模拟当地黑热病的空间分布, 结果显示当地黑热病的分布存在一定的空间聚集性。本文分别使用局部插值法中的 Kriging 插值法和整体插值法中的趋势面插值法来研究黑热病的累计发病情况。我们利用 Kriging 法对已建立的黑热病 GIS 数据库做空间插值, 并绘制黑热病概率分布图。同时我们使用趋势面插值法来进一步研究黑热病地理分布中的全局性趋势。在确定趋势面阶次时, 我们综合使用趋势面拟合适度的 R^2 检验、显著性 F 检验、趋势面适度的逐次检验以及结合疾病的实际地理流行病学特征直观判断等方法, 最终确定用 3 阶趋势面模型进行拟合比较合理。3 阶趋势面模型判定系数 $R^2 = 0.6937$ 。

隐孢子虫牛源分离株的鉴定 及其 70kDa 热休克蛋白编码基因克隆表达

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隐孢子虫 (*Cryptosporidium spp.*, CPS) 为小肠上皮细胞内寄生原虫, 具有感染性的卵囊可通过污染的水和食品间接传播或通过粪-口途径、医院感染等直接传播, 引起隐孢子虫病 (cryptosporidiosis)。隐孢子虫病是一种人兽共患病, 广泛存在于人和 170 多种动物, 迄今全球六大洲 74 个国家已有该病流行。感染人的隐孢子虫至少有 8 种, 导致人体隐孢子虫病。该病被 WHO 列为世界 6 种最常见的腹泻病之一。隐孢子虫病为新发传染病, 隐孢子虫被美国政府列为生物恐怖制剂名单中唯一的寄生虫病原。隐孢子虫感染可导致霍乱样腹泻, 艾滋病患者等免疫功能受损或缺陷者以及婴幼儿合并隐孢子虫感染可造成死亡。世界卫生组织 (WHO) 于 1986 年将隐孢子虫病列为艾滋病的怀疑指标和常规检测项目。隐孢子虫在儿童和艾滋病患者中的感染率分别高达 17.5% 和 48%, 全世界每年约有 5 000 万 5 岁以下儿童发生感染。发达国家与发展中国家腹泻病人中, 隐孢子虫感染率分别为 0.6%~7.3% 与 3%~13%。我国腹泻病人隐孢子虫感染率 1.4%~13.3%。因此, 隐孢子虫和隐孢子虫病的研究是必要的、紧迫的。此外, 隐孢子虫种类较多, 宿主特异性、毒力、致病性等方面存在种间或株间差异, 故其准确的分类研究和鉴定技术在其基础研究与防治实践中有着非常重要的意义。

江苏省徐州地区隐孢子虫病资料表明该地区隐孢子虫感染较为普遍, 为日后开展该地区牛源隐孢子虫的种株鉴别及其与人源隐孢子虫相关性研究作准备, 本研究首先对徐州牛源隐孢子虫进行了分离, 获得一株隐孢子虫, 采用小亚基核糖体 RNA (SSU rRNA) 基因与卵囊壁蛋白 (COWP) 基因序列分析、SSU rRNA 基因的巢式 PCR-限制性长度多态性 (Restriction Fragments Length Polymorphism, RFLP) 分析和种系发生分析 (phylogenetic analysis) 对该虫株进行鉴定, 表明为安氏隐孢子虫。迄今对安氏隐孢子虫的致病性、宿主特异性等生物学特征的研究不多, 因此本研究进行了安氏隐孢子虫的动物实验感染研究。

随着分子生物学和免疫学技术的深入运用, 隐孢子虫某些具有诊断或免疫保护性等价值的抗原的研究正在开展。热休克蛋白 (Heat Shock Proteins, HSPs) 与宿主免疫的关系密切, 可促进抗原呈递, 激发机体先天性免疫应答和适应性免疫应答。当人或动物受到细菌和寄生虫感染时, 病原生物源性的 HSPs 可以诱导宿主机体产生特异的体液和细胞免疫应答, 是一种非常重要的保护性免疫原。为探讨隐孢子虫 70 kDa 热休克蛋白 (HSP70) 的免疫学作用, 本研究对其编码富含抗原决定簇的 HSP70 部分基因序列进行了克隆和表达, 获得了重组抗原。

1. 徐州牛源隐孢子虫的分离与鉴定

采集徐州某奶牛场经改良抗酸染色方法确定为隐孢子虫感染的奶牛粪便, 用不连续 Sheather 蔗糖密度梯度离心法纯化卵囊, 经脱囊液处理体外脱囊后, 用 Percoll 密度梯度离心法纯化孢子。运用 Chelex-100 法提取基因组 DNA。设计引物扩增该隐孢子虫 SSU rRNA 和 COWP 基因, 分别克隆到 pGEM-T 与 pGEM-T Easy 载体, 并对核苷酸序列进行测定,

运用 BLAST 和 MEGA 软件进行核苷酸序列同源性和种系发生分析。同时采用 RFLP 法进行基因分型, 巢式 PCR 扩增

SSU rRNA 基因部分序列, 克隆到 pGEM-T Easy 载体并测序, 分析其限制性内切酶酶切位点, 利用相应的内切酶进行分析。结果表明, 分离获得的隐孢子虫卵囊个体大小为 $(7.4 \pm 0.32) \mu\text{m} \times (5.4 \pm 0.21) \mu\text{m}$, 长宽比为 $1.37 \pm 0.07 (n=20)$ 。徐州牛源隐孢子虫与 GenBank 公布的安氏隐孢子虫比较, SSU rRNA 和 COWP 基因同源性分别为 100% 和 99%。种系发生分析显示该株隐孢子虫与安氏隐孢子虫处于同一分支。且该隐孢子虫 SSU rRNA RFLP 分析结果与文献中安氏隐孢子虫分析结果一致。获得的徐州牛源安氏隐孢子虫, 简称为 XZ_BOV。

2. 安氏隐孢子虫大鼠和小鼠实验感染的研究

纯化安氏隐孢子虫卵囊, 经灌胃法感染免疫抑制大鼠和小鼠, 观察其存活、体重变化以及粪便中卵囊的排出情况。免疫正常的大鼠和小鼠作为对照。结果显示, 安氏隐孢子虫可感染免疫抑制的大鼠和小鼠。在大鼠和小鼠粪便中均检出卵囊, 在感染后 7~9 天卵囊的排出数量处于高峰。终止免疫抑制后, 大鼠粪便中的卵囊排出数量明显降低, 1 w 后无卵囊排出; 小鼠粪便中卵囊数量降低缓慢, 排出卵囊时间达 3 w。免疫抑制早期大鼠、小鼠体重明显下降, 随后体重变化不大, 中止免疫抑制后大鼠、小鼠体重明显回升。观察期间感染的大鼠、小鼠的累积死亡率分别为 70% 和 50%。免疫正常的大鼠和小鼠人工感染未成功。结果表明, 经免疫抑制处理的大鼠和小鼠均可作为安氏隐孢子虫感染动物, 且小鼠以其排虫持续时间较长、饲养成本较低而优于大鼠。

3. 安氏隐孢子虫 70 kDa 热休克蛋白部分编码基因的克隆、分析和表达

依据公布的安氏隐孢子虫 70 kDa 热休克蛋白 (CaHSP70) 基因序列设计一对引物, 上游引物引入 *Bam*HI 酶切位点, 下游引物引入 *Sal*I 酶切位点。以 XZ_BOV 总 RNA 为模板, 反转录 PCR (RT-PCR) 扩增目的编码基因。PCR 产物与 pGEM-T 载体连接后转化感受态大肠杆菌 JM109, 双酶切和测序鉴定重组质粒。纯化重组质粒中目的基因酶切片断, 亚克隆入 pET28a 原核表达载体, 构建重组质粒 pET28a-CaHSP70, 转化感受态大肠杆菌 DH5 α 。重组质粒 DNA 经限制性内切酶酶切和测序鉴定后, 抽提阳性克隆质粒转化感受态大肠杆菌 BL21 (DE3), IPTG 诱导表达并获得纯化的重组蛋白 (简称为 reCaHSP70), 采用 SDS-PAGE、Western blotting 和 ELISA 对该重组蛋白进行分析和鉴定。采用 ANTHEPROT 和 GENERUNNER 软件分析和预测 reCaHSP70 蛋白的功能位点、二级结构及表位特征。采用 MEGA 软件进行隐孢子虫及相关物种的 HSP70 的种系发生分析。结果, 根据核苷酸序列测定结果推导的氨基酸序列与 GenBank 公布的 CaHSP70 一致。SDS-PAGE 和 Western blotting 分析显示, 重组蛋白相对分子质量约 43 000 (含 6 个组氨酸), 以包涵体的形式存在, 可被抗 His-G HRP 标记抗体、reCaHSP70 免疫小鼠血清、安氏隐孢子虫感染小鼠血清和微小隐孢子虫感染儿童血清识别。reCaHSP70 存在多个功能位点和潜在的抗原决定簇。种系发生分析表明 XZ_BOV 与安氏隐孢子虫进化关系最近。ELISA 检测结果表明,

reCaHSP70 免疫的 C57BL/6 小鼠与 BALB/c 小鼠血清特异性抗体滴度均显著高于免疫前。XZ_BOV HSP70 部分编码基因的克隆获得成功, 种系发生分析进一步证实为安氏隐孢子虫。研究获得的重组蛋白具有一定的免疫原性和免疫反应性, 为其免疫预防或免疫诊断价值研究奠定了基础。

应用免疫学方法及 PCR 技术检测华支睾吸虫的研究

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[目的]1. 建立敏感、特异的双抗夹心 ELISA 法, 检测华支睾吸虫病人粪样中的排泄分泌抗原 (excreted-secretory antigen, ES antigen), 用于测定人群中中华支睾吸虫的感染; 2. 建立高特异、高灵敏的 PCR 方法, 检测鱼肉中的华支睾吸虫囊蚴 DNA, 应用于鱼类食品的卫生检疫及华支睾吸虫中间宿主的感染调查。

[方法]1. 对 17 株华支睾吸虫单克隆抗体应用间接 ELISA 法确定其亚类, 并用位点阻断 ELISA 法, 进行位点类别分类; 2. 采用单抗和单抗或单抗和多抗之间的二二配对实验, 以夹心 ELISA 法筛选最佳抗体组合; 3. 比较常规双抗夹心 ELISA 法和生物素-链亲和素 (Biotin-Streptavidin, BS) 双抗夹心 ELISA 法检测 ES 抗原的敏感性, 确定粪 ES 抗原的 ELISA 检测系统; 4. 通过对两种粪 ES 抗原抽提方法 BSA 法和 PBS 法的对比实验研究, 确定最佳粪 ES 抗原的抽提方法; 5. 通过检测纯化的 ES 抗原、模拟粪 ES 抗原、华支睾吸虫病人粪样和其他消化道寄生虫病人粪样对建立的双抗夹心 ELISA 方法进行敏感性和特异性的初步评估; 6. 对以引物 CS1F/CS1R 建立的 PCR 体系中的 Mg^{2+} 浓度、引物浓度和退火温度进行优化, 确定最佳的 PCR 反应条件; 7. 通过检测华支睾吸虫囊蚴 DNA 和其他吸虫成虫的 DNA 对引物为 CS1F/CS1R 和 OP2/Cs 的二组 PCR 反应体系进行敏感性和特异性分析; 8. 对比研究蛋白酶 K 简单消化法、煮沸法和消化-煮沸法等三种 DNA 抽提方法, 建立从感染华支睾吸虫囊蚴的鱼肉中抽提 DNA 的最佳方法; 9. 通过检测 31 条华支睾吸虫阳性麦穗鱼和 31 条阴性鱼对建立的 PCR 检测方法进行初步评估。

[结果]1. 17 株华支睾吸虫单抗分成两类单抗亚类, 其中 Cs30 和 Cs32 两株单抗属于 IgM, 其余 15 株为 IgG₁; 单抗识别抗原位点也分成两类, 其中 Cs30、Cs13、Cs17、Cs51 和 Cs32 五株单抗识别同一抗原表位, 其余 12 株单抗 (包括 Cs63) 则识别另一相同的抗原表位; 2. 对 17 株单抗中效价最高的 Cs32 和 Cs63 进行特异性评估, 两株单抗均不与血吸虫成虫粗抗原、血吸虫虫卵抗原以及卫氏并殖吸虫成虫粗抗原发生交叉反应, 表现出对华支睾吸虫高度的特异性; 3. 通过二二抗体配对试验筛选出最佳抗体夹心组合为单抗+多抗; 4. 在同样的单抗包被 (Cs32 或 Cs63) 条件下, BS-ELISA 检测系统比 HRP-ELISA 检测系统更敏感, 可用于粪 ES 抗原检测; 5. 确定 BS-ELISA 检测方法检测华支睾吸虫粪 ES 抗原, 抽提粪 ES 方法为 PBS 法, 包被抗体为 Cs63; 该系统可检测到 23.4ng 的粪 ES 抗原; 6. 应用建立的生物素-链亲和素双抗夹心 ELISA 检测方法检测华支睾吸虫病人的敏感度为 80.9%, 其中对每克粪虫卵数 (EPG) 大于 500 的中高感染度的华支睾吸虫病人能够 100% 检出; 检测蛔虫、血吸虫、鞭虫、钩虫等其他寄生虫病人的粪样以及正常人粪样, 仅与蛔虫 (13%)、鞭虫 (10.5%) 病人粪样有部分交叉反应, 检测正常人粪样有 9.4% 的假阳性;

7.经优化,以 CS1F/CS1R 为引物的 PCR 体系最佳反应条件是:引物浓度为 0.67 μ M、Mg²⁺ 浓度为 1.5-2.0 mM,退火温度为 53.5℃; 8.特异性引物 CS1F/CS1R 可从华支睾吸虫囊蚴和成虫 DNA 中扩增出 283bp 的特异性片段,另一特异性引物 OP2/Cs 则扩增出 301bp 的特异性片段;两对引物对宫川棘口吸虫、抱茎棘隙吸虫、东方次睾吸虫、日本血吸虫、卫氏并殖吸虫等基因组 DNA 均未扩增出任何条带;结果表明,两对引物具有对华支睾吸虫高度的特异性; 9.引物为 CS1F/CS1R 的 PCR 检测体系最低能检测到 0.67 个 C.s 囊蚴,引物为 OP2/Cs 时则能检测出 4×10^{-5} 个 C.s 囊蚴,敏感性优于 CS1F/CS1R 的 PCR 检测体系,可用于鱼肉中的华支睾吸虫囊蚴 DNA 的检测; 10.确定以消化-煮沸法从感染华支睾吸虫囊蚴的鱼肉中抽提囊蚴 DNA, DNA 提取液最佳用量为 10-15 μ l; 11.应用经优化的 PCR 检测方法检测 31 个华支睾吸虫阳性鱼样品均扩增出 301bp 的特异性条带,阳性检出率为 100%; 31 个阴性样品,均未扩增出特异性条带,假阳性率为 0。

[结论]1.本研究建立的生物素-链亲和素双抗夹心 ELISA 检测方法检测粪 ES 抗原具有较高的敏感性和特异性,对测定人群中华支睾吸虫的感染具有一定的应用前景; 2.引物 CS1F/CS1R 和 OP2/Cs 对华支睾吸虫 DNA 都具有高度的特异性,并且引物 OP2/Cs 具有更高的敏感性,能检测到 4×10^{-5} 个 C.s 囊蚴; 3.建立了从感染华支睾吸虫囊蚴的鱼肉中抽提囊蚴 DNA 的方法(消化-煮沸法),并用于引物为 OP2/Cs 的 PCR 检测方法,检出率 100%,假阳性率 0,有望应用于鱼类食品的卫生检疫及华支睾吸虫中间宿主的感染调查。

广州管圆线虫与螺宿主的相容性研究

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本研究通过对中间宿主与广州管圆线虫的相容性研究,了解几种重要淡水螺在广州管圆线虫传播中的潜能,为预测和预防广州管圆线虫病的发生和流行提供科学依据;并且对相容性机制问题做出初步探索,为以后进行细胞和分子水平相容性机制研究提供参考。为此,我们进行 3 个实验,首先从相容性特征上比较福寿螺、中国圆田螺和铜锈环棱螺的相容性;然后以相容性最高的福寿螺作为中间宿主研究广州管圆线虫的形态和行为,并探讨广州管圆线虫的组织相容性;最后,研究温度对广州管圆线虫在福寿螺体内的生长发育的影响。

第一个实验结果表明,三种螺的感染致死率和感染率与螺的种类及感染时间没有相关性,福寿螺的虫负荷显著高于中国圆田螺和铜锈环棱螺,但是铜锈环棱螺的虫密度与福寿螺没有显著差异,二者显著高于中国圆田螺。从这些指标综合考虑,福寿螺与广州管圆线虫的相容性最高,其次是铜锈环棱螺,中国圆田螺较低,但是后两者的实际意义仍不能忽略。

第二个实验结果显示,肾脏中幼虫的生长发育发育显著低于同期其他组织器官中的幼虫,表明肾脏可能不是广州管圆线虫的适宜寄生器官。在形态观察中,我们重点描述了幼虫在不同时期体长和体宽对比情况、折光颗粒分布、头部特征、鞘膜变化。这些特征的描述体现了广州管圆线虫生长发育的动态变化,深化了对广州管圆线虫在福寿螺体内的生长发育的认识,也为广州管圆线虫与不同宿主体之间的相容性比较提供形态学上的参考依

据。在行为观察方面,我们主要观测不同发育阶段幼虫在宿主体外的运动情况。在行为观察方面,我们主要观测不同发育阶段幼虫在宿主体外的运动情况。柔和的“Q”运动是三期幼虫活动的典型特征,这一特征除了区别于其他发育阶段幼虫外,对区别广州管圆线虫与某些水体中营自生生活的线虫也有很大帮助。 $DT=15.04D+262.53$

在温度对生长发育的影响研究中,我们根据发育历期(D)和相应的温度(T)建立有效累积温度模型: $DT=15.04D+262.53$ 。其中 15.04(°C)是发育零点温度,262.53(DD)是有效累积温度。有效累积温度模型不仅为相容性机制的研究提供理论依据,而且对广州管圆线虫分布变化的预测及疾病预防控制也有现实意义。

应用 GIS/RS 监测三峡库区内可疑钉螺孳生环境的研究

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[目的] 改进和完善快速确定有螺环境的遥感流程与技术参数,建立确定三峡库区的可疑钉螺孳生地的卫片分析流程;探索三峡库区可疑钉螺孳生地。**[方法]** 分别选择有螺地江西余干县和重庆万州区作为研究对象。在卫片上分析得到植被(NDVI),地表温度的信息,比较余干和万州两地的卫片信息,结合地面数据,探索用遥感卫片来预测万州钉螺孳生的可能环境的方法是否可行。**[结果]** 由比较分析得出 NDVI、地表温度等数据表明在鄱阳湖地区预测钉螺孳生地的流程模型也能有效的应用于三峡库区;三峡库区的环境存在着适合钉螺孳生的潜在因素。**[结论]** 利用地理信息系统与遥感技术来预测三峡库区可疑钉螺孳生环境的模型是切实可行的,随着科学技术的进步,将发挥更大的作用。

皖北中华按蚊传播疟疾密度阈值和暴发流行监测指标的研究

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[目的] 研究皖北中华按蚊传播疟疾密度阈值和暴发流行监测指标,以完善当地疟疾监测、预测与预警系统。

[方法] (1)选取中华按蚊传播区疟疾发病率较高的安徽北部蒙城县立仓镇路楼村作为研究点,于 2005 年 8~9 月现场调查媒介和疟疾流行状况。调查中华按蚊孳生地,用全球定位系统(GPS)测量试点村池塘、灌溉渠、道路等标志点,画出该村地理状况图,注明按蚊孳生地的位置,并估算孳生地面积。(2)每日晨搜捕人房蚊帐内全部按蚊,进行鉴定、分类、计数,根据当晚蚊帐内休息人数计算就寝后各种按蚊的平均叮人率;每 5 日一次半通宵室外人饵帐诱按蚊,并进行鉴定、分类、计数,根据诱饵总人次计算就寝前各种按蚊的平均叮人率;以二者之和作为代表实际的校正叮人率。每日晨从各类栖息场所搜捕按蚊,并于当天上午鉴定蚊种后解剖卵巢、观察经产蚊情况,计算各种按蚊的平均经产蚊比例。在按蚊密度高峰季节选择一个按蚊密度高的自然村,早晨搜捕所有人房和畜舍内按蚊,鉴定、分类、计数,并压制蚊胃血滤纸标本,用环状沉淀实验鉴定血源后计算各种按蚊的人血指数。通过被动病例侦察镜检发热病人血片,调查发热病人发病至接受诊断治疗的平均间隔期。收集当地观察期间的平均气温数据,根据基本繁殖率概念计算按蚊的媒介能量和

临界叮人率。(3)根据疟疾暴发流行定义和疟疾突发疫情的判定标准对该县疟疾流行状况进行判断,并用 WHO 推荐的累积总数法(c-sum method)确定该县疟疾暴发流行的 c-sum 值并推测 2005 年疟疾流行趋势。

[结果] (1)调查点有灌溉沟、洼地、水塘等 26 处,总面积超过 1 100m²。(2)调查点中华按蚊的实际叮人率为 11.1877;平均经产蚊比例为 0.51;原虫阳性者从发病至接受诊断治疗的平均天数为 5.05 天。当中华按蚊对间日疟原虫敏感性参数为 1 时,其媒介能量为 0.6266、基本繁殖率为 6.2663、临界叮人率为 1.7863;当敏感性参数取 0.2343 时,其媒介能量为 0.1468、基本繁殖率为 1.4681、临界叮人率为 7.6340。(3)判定 2005 年为疟疾暴发流行年。推测 2005 年蒙城县疟疾流行呈上升趋势。

[结论] (1)调查点灌溉沟、洼地、水塘绝大部分积水从 2003 年夏季水灾受涝始,时间已达 2 年之久,为中华按蚊提供了大量孳生场所。(2)安徽北部中华按蚊传播疟疾的临界叮人率为 7.6340。而现场观察期间的校正叮人率为 11.1877,是临界叮人率的 1.47 倍,表明当地中华按蚊引起的疟疾有继续流行的趋势,需采取媒介防控措施将现有的叮人率至少降低 47%,才能阻断当地中华按蚊引起的疟疾传播。(3)用累积总数法(c-sum method)确定疟疾暴发流行的 c-sum 值并推测疟区流行趋势简易、方便,适合作为疟疾暴发流行监测的指标。

三峡库区人群社会行为因素对血吸虫病传播的影响

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[目的] 调查研究三峡建坝后库区自然生态和社会环境的改变情况,库区人群社会行为状况、知识水平、肠道寄生虫病感染情况及其影响因素,分析这些因素对血吸虫病传播的潜在影响,为库区血吸虫病预防工作提供科学依据。**[方法]** 搜集三峡建坝后十年间自然和社会经济发展情况,采用流行病学调查方法,选取重庆市万州区有代表性的地区对库区居民、后靠移民及流动人口进行横断面问卷调查、实验室检测等,了解社会人口学特征、生产生活方式、血吸虫病知识及感染情况,肠道寄生虫病感染状况及其感染因素,并引入地理信息系统和遥感技术提取监测区环境变量;采用描述性分析方法,分析目标人群血吸虫病危险行为状况及相互关系。**[结果]** 三峡建坝蓄水后水流变缓,水面加宽,正常蓄水运行后,库岸 145—175m 水位间可形成消落带。十年间气温有升高趋势,降雨量增加,湿度降低;社会经济发展显示,库区人口逐年增加,耕地面积逐年减少;产业结构变化呈现第二、三产业增长明显,农民经济收入增加,库区规划新产业有柑桔业、养殖业、畜牧业、旅游业。研究地区经济结构以农业为主,主要种植水稻、旱粮,耕作方式是牛耕,生产施肥为人畜粪结合使用,农民习惯于赤脚下田,手工施肥。居民文化程度以小学文化为主,职业以农民为主;因耕种农田,洗衣洗菜的需要,45.6%的居民经常接触江河水,接触方式男性主要为农业生产,女性主要为洗衣洗菜,其次为农业生产;30—50 岁为接触江河水的高峰年龄组。居民饮用水和生活用水来源主要为河水,自来水比例很低;家庭厕所室内简易厕所为主,其次为沼气池厕所。后靠移民文化程度以小学文化为主,职业以外出打工、待业为主,搬迁后饮用水和生活用水情况明显改善,大多来源于自来水,但生活用水仍依

赖河水；家庭厕所无害化厕所为主；很少接触江河水，接触方式为洗衣洗菜。居民和移民的血吸虫病防治知识知晓率低，接受宣传少。居民肠道寄生虫平均感染率为 45.4%，感染度以轻度感染为主，人群年龄、饮用水来源与肠道寄生虫感染率密切相关，其他各因素间感染率无统计学差异。流动人口抗血吸虫血清学检查发现阳性反应者。[结论] 三峡建坝后库区自然生态环境包括气温和植被等都是适宜钉螺孳生和繁殖的，原有的生产和生活方式是肠道寄生虫病高感染的主要原因，卫生条件较差，人群防病知识和意识缺乏，也是肠道寄生虫病和血吸虫病传播的危险因素。库区居民生产生活方式与血吸虫病疫区相似，移民中外出打工人员、流动人口是血吸虫病传播的潜在传染源，应为今后监测的重点人群。建坝后的产业结构优化对肠道寄生虫病和血吸虫病控制起到了积极作用，但新兴产业的发展对血吸虫病传染源输入具有潜在危险性。因此如何选择适合当地经济发展而对防治寄生虫病和血吸虫病有利的项目至关重要。地理信息系统和遥感技术的初步应用和探索也为快速、准确、全面的监测三峡生态环境变迁奠定了基础，对库区有效的预防控制寄生虫病传播流行具有重要意义。

密达利杀灭湖北钉螺效果的研究

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[目的] 通过对密达利(META-Li)实验室杀螺试验、抑制上爬试验、淡水生物毒性试验、酶组织化学实验及现场杀螺试验等研究，测定密达利的杀螺效果、淡水生物毒性、杀螺作用机理和现场杀螺效果，以评估密达利的现场应用前景。

[方法] 室内试验：采用常规实验室杀螺方法测定杀螺效果、采用环境安全评价方法观察淡水生物的急性毒性、采用冰冻切片染色法观察钉螺经药物作用后组织内细胞色素 C 氧化酶 (CCO)，乳酸脱氢酶 (LDH)，琥珀酸脱氢酶 (SDH)，乙酰胆碱酯酶 (AChE) 和一氧化氮合酶 (NOS) 等代谢酶类活性变化。现场试验：选择钉螺孳生地进行现场喷洒和浸杀试验，密达利喷洒剂量为 1、2 和 $4\text{g}/\text{m}^2$ ，浸杀剂量为 10、20 和 $40\text{g}/\text{m}^3$ ，同时设药物和空白对照组，观察施药后不同时间钉螺存活情况。

[结果] 密达利室内喷洒试验对钉螺的 24、48 和 72h 半数致死剂量 (LD_{50}) 分别为 0.78、0.44 和 $0.46\text{g}/\text{m}^2$ ，浸杀试验对钉螺的 24、48 和 72h 半数致死浓度 (LC_{50}) 分别为 44.4、27.4 和 $24.8\text{mg}/\text{L}$ ；密达利浸泡 24h 抑制钉螺 50% 上爬有效浓度 (EC_{50}) 为 $5.86\text{mg}/\text{L}$ ；福寿螺浸杀 24、48 和 72h 的 LC_{50} 分别为 33.1、27.6 和 $11.6\text{mg}/\text{L}$ ；淡水生物 96h 急性毒性试验结果：密达利对斑马鱼的 LC_{50} 为 $119\text{mg}/\text{L}$ ；对鲤鱼苗、日本沼虾、中华绒螯蟹、三角帆蚌、河蚬的 LC_{50} 均大于 $500\text{mg}/\text{L}$ ，安全浓度均小于 $50\text{mg}/\text{L}$ 。酶组织化学实验观察结果显示，经药物作用后组织中 CCO 活性显著上升、LDH 活性明显下降 ($P<0.01$)，神经节 AChE 的活性明显上升，咽管 NOS 活性明显下降 ($P<0.01$)，SDH 活性无显著性变化 ($P>0.05$)。现场喷洒试验：密达利 $2\text{g}/\text{m}^2$ 喷洒后 7d 钉螺死亡率大于 90%，杀螺效果和氯硝柳胺 $1\text{g}/\text{m}^2$ 喷洒 3d 效果相当 ($P>0.05$)，现场浸杀中最高浓度组为 $40\text{g}/\text{m}^3$ 浸杀 4d 钉螺死亡率仅为 36.7%，和氯硝柳胺组均有显著性差异

($P<0.01$)。

[结论] 密达利室内喷洒杀钉螺效果为高度毒性,并能有效抑制钉螺上爬逃逸,对常见淡水生物毒性低,杀钉螺机理为密达利抑制钉螺糖代谢和阻断神经节传导机能引起钉螺死亡;现场应用喷洒杀钉螺方法,可通过延长作用时间后,能达到氯硝柳胺相同的杀螺效果。密达利基本达到 WHO 提出的对杀螺药的基本要求,特别是在氯硝柳胺禁用的水产养殖经济区,具有很好的应用前景。

特异性 IgM 抗体检测早期诊断急性血吸虫病价值的评价

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[目的] 通过对实验动物感染日本血吸虫早期血清中特异性 IgM 和 IgG 抗体消长规律的观察分析,结合循环抗原检测和免疫印渍反应等实验室手段,推测两种抗体水平差异度不同的急性血吸虫病人的感染时间,并与现场获取的患者流行病学调查资料进行比对,验证 IgM 抗体检测早期诊断急性日本血吸虫病的价值。

[方法] 1. 用 ELISA 法测定小鼠感染前后血清中的 IgM 与 IgG 抗体水平,分析感染早期抗体消长规律,比较两者的阳性检出率和阳性平均检出时间。2. 用 ELISA 法测定急性血吸虫病人、正常人和其他非血吸虫病人血清中的 IgM 和 IgG 抗体水平,计算敏感性、特异性和 Youden 指数等指标。3. 制备日本血吸虫单抗, Dot-ELISA 法半定量测定急性血吸虫病人血清中的循环抗原水平;用 Western blot 法分析小鼠和急性血吸虫病人血清与可溶性虫卵抗原(SEA)反应的抗原组分;推测急性血吸虫病人的感染时间。4. 收集急性血吸虫病人的流行病学资料,并与实验室结果进行比对分析。结果: 1. 感染后 3 周,小鼠血清中的特异性 IgM 抗体开始升高,第 7 周达到高峰。特异性 IgG 抗体于感染 6 周后迅速升高,8 周时超过 IgM 抗体水平。IgM 的 100%抗体阳性出现时间和阳性平均检出时间分别为感染后 5 周和 23.0 ± 6.2 天,比 IgG-ELISA 均早 2 周左右。2. IgM-ELISA 的敏感性、特异性和 Youden 指数分别为 100%、93.6%和 0.94; IgG-ELISA 的三种指标分别为 91.4%、97.3%、0.89。3. ①IgM 抗体与 IgG 抗体的差异度大于 0.61 的病病人的循环抗原检测试验均未出现强阳性反应,小于 0.61 的病人中,有 41.9%的病人呈强阳性反应,51.6%的病人为一般阳性反应,两组各有 2 人分别呈弱阳性和阴性反应。②小鼠血清 IgM 与 SEA 的免疫印渍反应条带最早出现在感染后 2 周,分子量为 150kDa、140kDa、72kDa,至感染后 5 周时,反应带增至 11 条;小鼠血清 IgG 与 SEA 的免疫反应最早出现于感染后 4 周,分子量为 150 kDa、140 kDa、38kDa、26 kDa 和 22 kDa。急性血吸虫病人血清 IgM 与 SEA 的免疫反应条带均较多且颜色较深。抗体差异度大于 0.61 的病人血清 IgG 与 SEA 的免疫反应条带明显少于另一组,仅出现 150 kDa、140 kDa、72 kDa、69 kDa、55 kDa、50 kDa 6 条带且其反应强度亦较另一组弱。③抗体差异度大于 0.61 的急性血吸虫病人的感染时间约为感染后 5 周,小于 0.61 的病病人的感染时间更接近于感染后 7 周。4. 约 70.8%的病人曾有过误诊史。抗体差异度大于 0.61 的病人在就诊前两周内无人出现发热、腹痛和腹泻等临床症状,其接触疫水距就诊时的平均天数为 29.5 天;小于 0.61 的病人中有一半以上在就诊前两周内已出现上述临床症状,其接触疫水距就诊时的平均天数为 51.1 天。与实验室结果基

本相符。

[结论] 1. IgM-ELISA 是一种敏感性高、特异性较好的诊断方法，在病人排卵前就能作出诊断，具有早期诊断急性血吸虫病的价值，适用于现场筛查病人。2. 血清中特异性 IgM 和 IgG 抗体水平的差异度对急性血吸虫病的感染时间具有较强的指示作用，该定量方法是否适用于区分病期和疗效考核等方面值得进一步研究。3. 早期诊断急性血吸虫病除了要进一步做好健康教育工作，提高人们的血防意识外，还应在非血防医疗机构推广血吸虫病早期诊断试剂盒，借助血清学免疫诊断方法尽早地诊断病人，更好地保护人民的身体健康，防制血吸虫病的传播和蔓延。

§ 5. ABSTRACTS OF GRADUATE STUDENT DISSERTATIONS

RESEARCH REPROT

SCREENING ANTIMALARIAL ACTIVITIES OF DAPHNETIN DERIVATIVES AGAINST *PLASMODIUM FALCIPARUM* AND *PLASMODIUM BERGHEI* AND RESEARCH ON THEIR MOLECULAR TARGETS

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[Objective] To screen antimalarial activities of daphnetin derivatives against *Plasmodium falciparum* *in vitro* and *Plasmodium berghei* *in vivo*. To identify the molecular targets of antimalarial activity of daphnetin derivatives.

[Methods] ① The daphnetin derivatives were designed and synthesized based on the original structure of daphnetin. ② The antimalarial activities of daphnetin derivatives against *Plasmodium falciparum* *in vitro* were screened by microscopy-based assay and microfluorimetric method. A High Performance Liquid Chromatography analyzing method for sepesation and identification of daphnetin derivatives with potent antimalarial activity was developed. ③ The schizontocidal effects of daphnetin derivatives with potent antimalarial activity *in vitro* assay were further tested in mice infected with *Plasmodium berghei* ANKA according to the “4-day suppress assay” recommended by WHO. ④ The effects of daphnetin and its derivatives on cytochrome C oxidase and ribonucleotide reductase activities of *Plasmodium falciparum* *in vitro* were tested by Ultraviolet Spectrophotometer and lectron Spin Resonance. ⑤ The gene express levels of daphnetin and its derivatives on ribonucleotide reductase, superoxidase dismutase and lactate dehydrogenase(LDH) of *Plasmodium falciparum* were tested by Real-time PCR.

[Results] ① Twenty four daphnetin derivatives were designed and synthesized. ② Among 24 daphnetin derivatives, 7 compouds showed no antimalarial activities and 15 derivatives showed weak antimalarial effects. Only DA78 and DA79 showed potent antimalarial activities against *Plasmodium falciparum* *in vitro*. With the HPLC analyzing method developed, daphnetin derivatives DA78 and DA79 could be completely seperated and identified individually at vase line, the retention time were 6.472min, 6.424min and the sensitivity of the method reached 10-20ng. ③ The antimalarial efficacy *in vivo* was assessed by reduction rate of parasitemia on day 4. The values treated with 1, 10, 50, 75mg/kg·d×4d DA78 and DA79 intragastrically compared with 1% Gurm tragacanth had significant difference ($P<0.01$), and the effective dose 50% (ED_{50}) value of DA78 and DA79 were 155.03mg/kg and 96.06mg/kg, respectively. ④ The activities of cytochrome C oxidase and ribonucleotide reductase decreased with the increasing

concentration and treatment time of daphnetin, DA78 and DA79. No effect on cytochrome C oxidase and ribonucleotide reductase activity of *Plasmodium falciparum* treated with daphnetin-Fe complex was observed. ⑤ The difference of expression levels of three genes after treatment of daphnetin, DA78 and DA79 were compared by the number of original copies based on the standard curves. There were no significant inhibition effects ($P>0.05$) and no significant difference of the expression levels of LDH among three groups ($P>0.05$). The inhibition effects on expression of *Plasmodium falciparum* RNR transcripts were showed by daphnetin, DA78 and DA79 and only daphnetin showed inhibition effects on expression of *Plasmodium falciparum* SOD and no significant inhibition effects were showed by other groups. No significant inhibition effects on expression of these three genes could be observed when the chelator activity of daphnetin had been saturated with iron.

[Conclusions] As new antimalarial compounds, daphnetin derivatives DA78 and DA79 showed antimalarial activity *in vitro* and *in vivo* at the same level compared with that of daphnetin. The molecular target of antimalarial activity of daphnetin derivatives may be RNR of *Plasmodium falciparum*.

This was the first report of daphnetin derivatives showing antimalarial activity *in vitro* and *in vivo*, that might provide a new direction for discovery of more effective antimalarial compounds. Research on antimalarial mechanism of daphnetin derivatives by molecular biological approaches identified RNR which contained an iron-tyrosyl radical activation center as the molecular target of antimalarial activity of daphnetin derivatives, thus to lay a basis for further research and development of daphnetin derivatives antimalarial drugs.

DISEASE BURDEN AND SOCIAL FACTORS OF CHRONIC SCHISTOSOMIASIS JAPONICA IN THE YANGTZE RIVER BASIN

JIA Tie-wu(PhD student) TUTOR: ZHOU Xiao-nong

[Objective] To understand the disease burden and its social factors of schistosomiasis japonica in the Yangtze River basin, with the following specific aims: 1) to assess the health outcomes and disability weight of chronic schistosomiasis japonica; 2) to measure its disability adjusted life years (DALYs) and health inequities; and 3) to explore the relationships between socio-economic factors and disease burden at both household and community levels in endemic areas.

[Methods] A total of 91 villages in Dangtu and Hanshou counties were selected as study sites at random by grid sampling method. All residents who lived in study village for more than six months per year and over 5 years old were considered as eligible study targets for the project. All eligible residents were screened by ELISA test to detect the schistosome-specific antibodies. All seropositive individuals were asked to declare all symptoms suffered during the last two weeks, including abdominal pain, diarrhea and mucous bloody stool, and their stool samples

were collected and examined the by Kato-Katz technique. Simultaneously, an abdominal ultrasonographic examination was performed to assess the hepatic and splenic morbidity. All pathological changes were graded according to criteria. E.g. hepatic fibrosis is graded from 0 (normal) to III (severe damage), hepatomegaly was defined as a protrusion of the liver >3 cm under the xiphoid process, or >0 cm under the right costal margin at the midclavicular line, and splenomegaly was defined as a protrusion of the spleen >0 cm under the right subcostal margin at the midclavicular line. Chronic cases of schistosomiasis japonica were identified based on these results and all chronic cases were then invited to complete the EQ-5D+C questionnaire to evaluate their health status in details and the socio-economic data of families and villages were collected by household questionnaires. Age-specific disability weights (DWs) were calculated based on the self-rated health score on a visual analogue scale (VAS), and multilevel regression models were developed to explore the relationship between health status and DW, and morbidity and DW. Years lived with disability (YLDs) were calculated and classified by sex, age and village, and health inequities were evaluated by both Gini index and concentration index. Families and villages were stratified using an asset index based on living conditions and household assets to compare the socio-economic inequity in distribution of chronic cases and YLD rate. A multilevel regression model was established to examine the association of socio-economic indicators and morbidity of schistosomiasis at family level. A multiple regression model was used to explore the relationship between socio-economic factors and YLD rate at community level.

[Results] A total of 59 765 eligible residents from 91 villages of two counties were screened by ELISA. Among them, 3 405 (5.70%) were positive and 2 843 were examined by both Kato-Katz technique and abdominal ultrasonography. 1 466 out of 2 843 serologically positive participants were considered as chronic cases (241 were etiologically confirmed cases and 1225 were clinical cases). Among them, 73.9% suffered from hepatomegaly, 73.3% hepatic fibrosis, and 18.1% splenomegaly. The self-reported conditions comprised diarrhea (46.7%), abdominal pain (34.0%), impaired working capacity (30.8%) and mucous bloody stool (11.4%). In the EQ-5D+C questionnaire, Pain/discomfort and anxiety/depression were reported most often (48.8% and 36.2%, respectively). Impaired mobility was reported by 2.8%, self-care by 3.6%, usual activities by 15.1% and cognition by 20.6%. The overall disability weight was 0.192, age-specific DWs were 0.095 (5-14 years old), 0.160 (15-44 years old), 0.210 (45-59 years old), 0.246 (60 years old and above), and DWs increased with age (bonferroni *t*-test, all *P* < 0.05). The multilevel models showed that the disability weight was significantly associated with hepatic fibrosis, hepatomegaly, abdominal pain, mucous bloody stool, impaired working capacity and cognition.

The total YLDs was 1 056.26 years in Dangtu county and 3 967.43 years in Hanshou county, of which Hanshou was 3.76 times higher than Dangtu (with a difference of 2 911.17 years). The contributing rate of most severe endemicity to the whole YLDs of county was

37.95% (40.08% in Dangtu and 37.39% in Hanshou). Comparisons between sex and age groups of YLD rate (of sampled population), the older ones and male tent to a larger one. Gini index of Dangtu was 0.67 and 0.45. The multilevel models showed that the morbidity was significantly associated with 4 socio-economic indicators of families, namely the distance of housing from infested water, the type of water for washing, poor economic status and the average area of paddy field per person. The multiple regression model showed that at community level, the YLD rate of village was significantly associated with 2 factors, namely, the distance between village and infested water, and the average area of paddy field per person. There was no significant association between economic statues of community and disease burden. Concentration index of socio-economic inequity was -0.12 of Dangtu and 0.03 of Hanshou.

[Conclusion] This community-based study indicates that the disability weight used in the Global Burden of Diseases seriously underestimated the true effects caused by schistosomiasis japonica and offers estimates of more realistic weights. The results of YLDs provide information to help prioritizing possible choices for the disease prevention and control.

APPLICATION OF SPATIAL STATISTICS ON DISTRIBUTION OF ANTHROPONOTIC VISCERAL LEISHMANIASIS IN KASHGAR OASIS OF XINJIANG

LI Sen (MSc student) TUTOR: WU Wei-ping

Kashgar Oasis of Xinjiang Uygur Autonomous Region is not only one of major endemic regions of anthroponotic visceral leishmaniasis(VL), but also one of important endemic regions of VL in China. In the last 10 years, the number of new incidences of VL increased gradually. In this paper, spatial statistics and geostatistics were applied to the study related to distribution of VL and provided new methods to guide the prevention and control of VL. Cross-sectional study demonstrated that the incidence rate of VL had differences among different age groups. And the older the age is , the lower incidence rate of VL is. The result of ELISA of Ka24 showed that the people of infected VL had higher positive rate than non-infected people. And the later treatment time is, the higher positive rate is. The result of LDT demonstrated that positive rate in population increased gradually with ascending age. Through analysis of family aggregation, the study demonstrated that the distribution of VL in studying region accorded with family aggregation. Runs test showed that the distribution of patient households was not random and had local aggregation when the number of patient-families exceeded 5 in a team. Spacial distribution of VL was simulated through Possion model of Scan statistics. It demonstrated that VL did not distribute randomly and there were some regions that had more VL than others. Two different spatial interpolation methods were applied to the study of geographic distribution of VL. GIS data we have constructed were interpolated by Kriging method and risk probability map of

VL was drawn. In the meantime, we further studied the distribution of VL through multi-order trend surface analysis. We put forward the following three different methods to select the order of trend surface model: R^2 test of goodness of fit, F-test, test of goodness of fit order by order and subjective judgement method based on geographical epidemiology of disease. Finally we selected 3-order trend surface equation as optimal model and made the contour map of accumulated incidence rate of VL according to the model. The determinant coefficient (R^2) for the 3-order trend surface model is 0.6937.

IDENTIFICATION OF A COW *CRYPTOSPORIDIUM ANDERSONI* ISOLATE AND ITS GENE CLONING AND EXPRESSION OF 70 KDA HEAT SHOCK PROTEIN

LIU hai-peng(MSc student) TUTOR: CAO jian-ping

Cryptosporidium spp. is an obligate intestinal epithelial parasitic protozoa. Infective oocysts in feces discharged from animal hosts can cause both indirect transmission by digestion of contaminated water and food and direct transmission by fecal-oral route or inner-hospital infection, which result in cryptosporidiosis. Cryptosporidiosis is a global zoonose with a wide range of animal reservoirs as much as over 170 species, being endemic in 74 countries over six continents so far. At least eight species of *Cryptosporidium* could infect human and cause human cryptosporidiosis, which has been ranked as one of the six most common cause of diarrhea in the world. Cryptosporidiosis has been listed as emerging infectious disease by World Health Organization(WHO) and the US Centers for Disease Control and Prevention(CDC). *Cryptosporidium* has also been ranked as the only parasite pathogen in the list of US government bio-terrorism agents. *Cryptosporidium* infection can result in choleraic diarrhea. The immunodeficiency individuals and infants may die from *Cryptosporidium* infection. Human cryptosporidiosis was ranked as one suspect index of AIDS by WHO in 1986. The infection rates of *Cryptosporidium* among children and AIDS patients reached 17.5% and 48% respectively. About 50 billions children under 5 years age were infected annually all over the world. The infection rates of cryptosporidiosis among diarrhea patients range from 0.6% to 7.3% in developed countries and from 3% to 13% in developing countries. The infection rate ranges from 1.4% to 13.3% in our country. Besides, *Cryptosporidium spp.* contains many species, and the toxicity, pathogenicity and so on varies among different species and intraspecies. Thus, the research on taxonomy and genotypic variation of *Cryptosporidium* is of vital importance.

Epidemicological data revealed that infection of *Cryptosporidium* had been common in Xuzhou, Jiangsu province. To make preparation for further research on the identification and genotyping of bovine *Cryptosporidium* and its correlation with human *Cryptosporidium*, sequence analysis of small subunit ribosomal RNA(SSU rRNA) and *Cryptosporidium* oocyst wall protein(COWP) gene, nested polymerase chain reaction-restriction fragments length

polymorphism(nestedPCR-RFLP) analysis of SSU rRNA as well as phylogenetic analysis were applied for the identification of an isolate obtained from cow in Xuzhou. The results showed that the isolate was *Cryptosporidium andersoni*. The biological characteristics of pathogenicity and host specificity of *C. andersoni* has not yet been elucidated. Therefore, study on animal experimental infection by *C. andersoni* was also made in this paper.

With the application of molecular and immunological techniques in the field of *Cryptosporidium* research, some functional antigens have been evaluated as diagnosis or vaccine candidate antigens. Heat shock proteins(HSPs) play important functions in facilitating antigens presenting and inducing host production of innate immune responses and adaptive immune response. HSPs derived from pathogens can stimulate specific humoral and cellular immune responses while human or animal hosts are infected with bacteria or parasites, indicating that the HSPs antigens are one of the most important protective antigens. To understand the possible role that HSPs played in immunodiagnosis or immune protection, partial sequences encoding 70 kD heat shock protein (HSP70) of *C. andersoni* with several antigen determinants were cloned and expressed in *E. coli*.

1. Isolation and identification of a cow *Cryptosporidium* isolate from XuZhou

Fecal samples from infected cow identified by modified acid-fast staining method were collected. Oocysts were isolated and purified with discontinuous Sheather sucrose density gradient centrifugation technique. Purified oocysts were excysted *in vitro* and sporozoites were purified with Percoll density gradient technique. Genomic DNA was isolated with Chelex-100. Both primers were designed to amplify *Cryptosporidium* small subunit ribosome RNA gene (SSU rRNA) and *Cryptosporidium* oocyst wall protein gene(COWP) respectively. The PCR products were cloned into pGEM-T and pGEM-T Easy vectors and sequenced respectively. Homology and phylogeny were analyzed with BLAST and MEGA software. Meanwhile, small subunit ribosome RNA gene was amplified with nested PCR, cloned into the pGEM-T Easy vector and sequenced. Endonuclease restriction enzyme sites were analyzed and the nested PCR product was analyzed by restriction fragment length polymorphism with corresponding endonuclease restriction enzymes. The results suggested that the size of oocysts is (7.4 ± 0.32) μm by (5.4 ± 0.21) μm , the ratio of length and width is 1.37 ± 0.07 ($n=20$). BLASTn results revealed that the identity of SSU rRNA and COWP gene of *Cryptosporidium* isolated from cow to the counterparts of *C. andersoni* is 100% and 99% respectively. Phylogenetic reconstruction places SSU rRNA and COWP of the isolated *Cryptosporidium* within the *C. andersoni* clade of SSU rRNA and COWP homologues. The RFLP analysis demonstrated that the isolated *Cryptosporidium* is *C. andersoni* as well. In conclusion, the cow *Cryptosporidium* isolate was *C. andersoni* (named XZ_BOV).

2. Study on experimental infection of *C. andersoni* in Rats and Mice

Immunosuppressed rat and mice were inoculated intragastrically with purified *Cryptosporidium andersoni* oocysts, and the normal rats and mice were used as control. The

observation on the oocysts discharged from feces and the changes of their body weights as well as the survival rates in rats and mice were made. The results revealed that *C. andersoni* is infective to immunosuppressed rats and mice. Oocysts discharged by rats and mice reached the peak between 7 to 9 days after inoculation. Oocysts shed in feces of rats decreased obviously after termination of immunosuppression treatment and there were no oocysts in feces after 1 week. However the number of oocysts shed in feces of mice decreased slowly, and there were no oocysts in feces after 3 weeks. The body weights of rats and mice had a dramatic decline during early immunosuppression treatment and then maintained in same levels. When immunosuppression stopped, the body weights in rat and mice had a sharp increase. Rats were easier to die than mice. However normal rats and mice could not be infected by *C. andersoni*. Thus both immunosuppressed rats and mice can be used as animal models for *C. andersoni*. Moreover, the mice model showed some advantages for infection of *C. andersoni* over the rat model.

3. Cloning , analysis and expression of the 70 kDa heat shock protein of *C. andersoni*

A couple of primers were designed, with the *Bam*HI restriction endonuclease site introduced in forward primer and *Sal*I in reverse primer. Total RNA was isolated from oocysts of *C. andersoni* and the CaHSP70 gene was amplified by reverse transcriptase-polymerase chain reaction (RT-PCR). The PCR product was ligated with pGEM-T vector and cloned into *E. coli* JM109. The target DNA fragments were cut off by *Bam*HI and *Sal*I, purified, ligated with pET28a vector, and then transformed competent *E. coli* DH5 α . After identification by endonucleases digestion and sequencing, plasmids isolated from recombinant clone were transformed into *E. coli* BL21(DE3) and the bacteria were induced by IPTG and the expressed protein was purified and analyzed by SDS-PAGE and Western blotting. The secondary structure, domains and epitopes of the recombinant protein named reCaHSP70 were predicted with softwares of ANTHEPROT and GENE RUNNER respectively. Phylogenetic analysis of HSP70 was applied with Software MEGA. The specific IgG antibodies in mice sera stimulated by reCaHSP70 were detected by Western blotting and ELISA respectively. The deduced amino acid sequence showed to be the same as that of *C. andersoni* 70 kDa heat shock protein reported in the GenBank. The reCaHSP70 expressed in the form of inclusion body, with the molecular weight of around 43 kDa, and could be recognized by anti-His G HRP antibodies and sera from mice infected with *C. andersoni* and children infected with *C. parvum* as well as sera from mice immunized with reCaHSP70. The reCaHSP70 had multiple domains and a lot of potential antigen determinants. ELISA results showed that the level of specific antibodies against reCaHSP70 of immune BALB/c and C57BL6 mice sera was significantly higher than that of preimmune mice. Thus the recombinant plasmid pET28a-CaHSP70 was successfully constructed. Phylogenetic analysis of HSP70 had also showed that the isolate was *C. andersoni*. The purified reCaHSP70 exhibits high antigenicity. Thus, the reCaHSP70 seems to be a potential candidate antigen for immunodiagnosis of *Cryptosporidium*.

Key Words: *Cryptosporidium andersoni*; Phylogenetic analysis; Experimental infection; 70 kDa heat shock protein; Recombinant antigen

STUDY ON THE DETECTION OF *CLONORCHIS SINENSIS* BY IMMUNOLOGICAL METHOD AND PCR TECHNIQUE

LU Jie-yuan (MSc student) TUTOR: XU xue-nian

[Objective] 1. To develop a specific and sensitive sandwich ELISA method for detecting ES antigen in feces of patients with clonorchiasis which can be used for screening human populations. 2. To develop a highly specific and sensitive PCR method for detecting DNA of *C. sinensis* metacercariae in fish flesh for use in food hygiene investigations and surveys of *C. sinensis* infection in intermediate hosts.

[Methods] 1. The isotypes of 17 MAbs cell lines against *C. sinensis* were determined using an indirect ELISA method and epitopes were identified with an epitope block test; 2. The optimal sandwich match was screened through one-to-one match with the sandwich ELISA method; 3. HRP sandwich ELISA and Biotin-Streptavidin sandwich ELISA methods were compared for their sensitivity in detecting ES antigen from feces. 4. BSA and PBS methods for extracting ES coproantigens were compared. 5. Preliminary evaluation was done of the sensitivity and specificity of the established sandwich ELISA method for detecting purified ES antigen, ES antigen mixed with feces and fecal samples from patients with Clonorchiasis and other alimentary tract parasites. 6. PCR conditions were optimized for the concentration of Mg^{2+} and primers, as well as annealing temperature. 7. Two different pairs of primers were used in PCR to evaluate their sensitivity and specificity in detecting DNA of *C. sinensis* metacercariae. 8. Three DNA extraction methods (PK simple digestion method, boiling method and digestion-boiling method) were compared to establish which was best for extracting DNA from *C. s.*-infected fish. 9. The PCR method chosen for detecting DNA from *C. s.* metacercariae was evaluated using 31 infected *Pseudorasbora parve* and 31 fish free from *C. s.* metacercariae.

[Results] 1. The isotypes of the 17 MAbs were divided in to two types. Among them, Cs30 and Cs32 belonged to IgM and the other 15 MAbs belonged to IgG₁. The 17 MAbs can recognize two different epitopes. Cs30, Cs13, Cs17, Cs51 and Cs32 all recognized one epitope: the remaining 12 MAbs recognized the other epitope. 2. The specificity evaluation assay showed that MAb Cs32 and Cs63 did not cross-react with antigens of *S. japonicum* adult worm, *S. japonicum* egg and *Paragonimus westermani* adult worm. 3. The best antibody match was selected as MAb plus polyclonal antibody through one-to-one match tests between antibodies. 4. The BS-ELISA system displayed higher sensitivity than the HRP-ELISA system and could be used for detection of ES coproantigen using the same coating MAb (Cs32 or Cs63). 5. The

BS-ELISA method, using Cs63 as the coating antibody, was chosen to detect *C.sinensis* ES antigen in feces extracted by the PBS method. The lowest amount of ES antigen that could be detected was 23.4ng. **6.** The sensitivity for detecting patients infected with *C.sinensis* by the BS-ELISA method was 80.9%. Of those patients with greater than 500 EPG in feces, 100% were found to be positive using this method. When testing fecal samples from healthy patients and those infected with *Ascaris*, *S. japonicum*, *Trichuris*, hookworm, partial cross-reaction was observed with *Ascaris* (13%) and 9.4% of samples from healthy individuals yielded a false-positive result. The BS-ELISA method showed a false-positive rate of 9.4% to *C.sinensis*. **7.** The optimal PCR conditions for primers CS1F/CS1R included a primer concentration of 0.67 μ M, 1.5-2.0 mM of Mg²⁺ and an annealing temperature of 53.5°C. **8.** A specific fragment of 283 bp could be amplified by primers CS1F/CS1R from DNA of *C.s* metacercariae and adult worms. A fragment of 301bp was amplified by primers OP2/Cs. Neither primer pair amplified a band from genomic DNA of *Echinostoma miyagawai*, *Echinochasmus perfoliatus*, *Metorchis orientalis*, *S. japonicum* or *Paragonimus westermani*. The result showed that the two sets of primers, CS1F/CS1R and OP2/Cs, had high specificity to *C.sinensis*. **9.** The sensitivity of PCR using primers CS1F/CS1R and OP2/Cs for detecting *C.s* metacercaria was 0.67×10^{-5} and 4×10^{-5} respectively. Thus PCR using OP2/Cs has the higher sensitivity. **10.** The digestion-boiling method was best for the extraction of DNA from fish flesh infected with *C.s* metacercaria, and the optimal amount of the extracted solution of DNA used in PCR was 10-15 μ l. **11.** Thirty-one fish known to be infected with *C.s* metacercaria were tested using the optimized PCR method and all of them amplified the 301bp band; no bands were amplified from negative control fish.

[Conclusion] **1.** The Biotin-Streptavidin sandwich ELISA method had comparative higher sensitivity and specificity in detecting ES coproantigen. **2.** Both primer pairs CS1F/CS1R and OP2/Cs are highly specific to *C.sinensis* DNA. PCR using primer pair OP2/Cs could detect the equivalent of 4×10^{-5} *C.s* metacercariae. **3.** The digestion-boiling method for extracting DNA from the flesh of infected fish was used in conjunction with primer pair OP2/Cs in a PCR assay, which had an excellent result (100% of positive rate, 0 of false positive rate). This assay can be used for fish food hygiene investigations and studies of *C.sinensis* infection in intermediate hosts.

THE STUDY ON COMPATIBILITY OF INTERMEDIATE HOST WITH *ANGIOSTRONGYLUS CANTONENSIS*

LV Shan(MSc student) TUTOR: ZHOU Xiao-nong

To understand the transmission potential of important freshwater snails in the transmission of *Angiostrongylus cantonensis*, we observed the compatibility of three species of snails, i.e.

Pomacea canaliculata, *Cipangopaludina chinensis*, *Bellamya aeruginosa*, to *A. cantonensis* infection, which may provide the reference for predicting and preventing angiostrongyliasis, and prepare for the further cytological and molecular study of compatibility. Therefore, we launched three experiments: the first one is on evaluation of the compatibility of three species of freshwater snails. Then we study on the morphology and behavior of *A. cantonensis* during growth and development in the intermediate host snail which is the snail with the highest compatibility among three species of freshwater snail. At last, we study the effect of temperature on development of *A. cantonensis* in snail.

In the first experiment, the results showed that the parasite-induced host mortality and the infection rate were not correlated with species of snails and exposure time. The worm burden of *P. canaliculata* is significantly higher than those of the others. However, the worm density of *B. aeruginosa* was as high as that of *P. canaliculata* and higher than that of *C. chinensis*. Relatively, the compatibility of *P. canaliculata* to *A. cantonensis* is highest, and then *B. aeruginosa*, *C. chinensis* is the lowest. Although lower compatibility of *B. aeruginosa*, *C. chinensis* to *A. cantonensis* was showed in the experiment, the potential role of *B. aeruginosa* and *C. chinensis* in the disease transmission should been paid more attention to.

In the second experiment, results of the experiment showed the rate of growth and development in kidney was significantly lower than in other organs, and implied kidney is lower compatible with *A. cantonensis*. We concentrated on larval indicators, such as size index ("length/width"), the distribution of refractile granules, head features and sheaths in the observation of morphology. We found the characteristic behaviour of developed third-stage larvae is the mellifluous "Q" movement which is useful not merely in distinguishing the larvae from other stage-specific larvae but also in differentiating from other nematode often contaminating water where snails live.

In the third experiment, we constructed the below linear regression based on developmental time (D) and corresponding temperature (T) is the degree-day model ($DT = 15.04D + 262.53$). Threshold temperature is 15.04°C and thermal constant is 262.53 degree-days. This model provides a method for study on the impact of temperature on parasite-host compatibility, and also embodies practical value in preventing and controlling snail-borne diseases.

A STUDY OF SURVEILLANCE OF POTENTIAL SNAIL HABITATS IN THE THREE GORGES RESERVOIR AREAS USING GIS AND RS

NIU Hong-feng(MSc student) TUTOR: GUO Jiagang

[Objective] To develop a procedure model of remote sensing images information extraction of rapidly determination of snail habitats and explore the potential snail habitats in the Three Gorges Reservoir areas. **[Methods]** Choose the Oncomelania snail habitats in Yugan of Poyang lake areas and Wanzhou District of the Three Gorges Reservoir areas as the studied areas, extract the NDVI, LST and other information from the TM images, compare the information of Yugan and Wanzhou areas and combine the information from the field survey, so as to explore the possibility of predicting the potential snail habitats in the TGR areas based on remote sensing. **[Results]** From the NDVI, LST and other information extracted from the remote sensing images, the procedure model used in the lake area can also be used in the TGR areas successfully. Based on the analysis there exist potential snail habitats in the TGR areas. **[Conclusions]** It is effect to use the remote sensing and geographic information system to predict the potential snail habitats in the TGR areas and with the development of the technology it will play a significant role in the future.

STUDY ON TRANSMISSION DENSITY-THRESHOLD OF *AN. SINENSIS* FOR MALARIA AND EPIDEMIC SURVEILLANCE INDEX IN THE NORTHERN ANHUI PROVINCE

WANG Min (MSc student) TUTOR: TANG Lin-hua

[Objective] To study the transmission density-threshold of *An. sinensis* for malaria and the epidemic surveillance index in the northern Anhui Province, so as to improve the surveillance, prediction and early warning system for malaria control and prevention.

[Methods] (1) From August to September 2005, field investigations on vectors and malaria surveillance were carried out in the Lulou village of Licang Town, Mengcheng County in the northern Anhui Province, where the incidence of malaria was high. To investigate the habitat place of *An. sinensis* on spot, such as pond, swag, the channel for irrigate and road in the village by global position system (GPS), and to draw a morphological map of the habitat place of anopheline, and to roughly calculate the area of habitat place. (2) All the anopheline mosquitoes collected in 50 bed nets from dwelling houses every morning were morphologically identified and counted, and the mean human-biting rate for the last half of the night was calculated. The mean human-biting rate for the first half of the night was got according to the outdoor human bait catches which were made every 5 days. The sum of the two kinds of rate represented the real one. The species of anopheline mosquitoes captured from all kinds of habitats every morning were identified, and the female were dissected for ovaries that morning, from which the

multiparous ratios of the identified mosquitoes were observed. All the anopheline mosquitoes in dwelling houses and livestock houses were collected at morning from a natural village where the density of anopheline mosquitoes had been high, blood filter paper samples were made after identification and classification, and the human blood index for each was calculated on the origin of mosquitoes blood meals determined by immuno-precipitation. Thick smears of peripheral blood for febrile cases were made and examined under microscope by means of passive detection, meanwhile the intervals from episode for diagnosis were recorded. The data of mean temperature from the area in the duration were collected. Based on the concept of Basic Reproductive Rate, the vectorial capacity and critical human-biting rate were estimated respectively. (3) According to the epidemic definition of malaria explosion and the determinant standards of malaria epidemic situation, we judged the malaria epidemic situation in this county. Then, we estimated the thresholds of explosion and presumed the malaria epidemic tendency in 2005 with the method of Cumulative-Sum Methods recommended by WHO.

[Results] (1) There were more than 26 habitat places for mosquito vector of malaria, and those were composed of a total area larger than 1 100m². (2) In study spot, the adjusted human-biting rate for *An. sinensis* was 11.1877. The mean multiparous ratio was 0.51 and the mean interval of the parasite-positive patients from episode for diagnosis was 5.05 days. When the sensitivity parameter of *An. sinensis* to vivax malaria protozoon was 1, the vectorial capacity was 0.6266; while the Basic Reproductive Rate was 6.2663 and the critical human-biting rate was 1.7863. When the sensitivity parameter was 0.2343, the vectorial capacity was 0.1468; while the Basic Reproductive Rate was 1.4681 and the critical human-biting rate was 7.6340. (3) The year of 2005 was judged as malaria explosive epidemic year. We presumed that the malaria epidemic was in an upward tendency in the Mengcheng County in 2005.

[Conclusion] (1) The village investigated had a large area of pond, swag, the channel for irrigation, and most of those water areas have been formed since 2003 followed the flood of Huai River, which provide habitat place for *An. sinensis*. (2) The transmission density-thresholds of *An. sinensis* in the north of Anhui Province were achieved with the critical human-biting rate 7.6340. The adjusted human-biting rate observed during on field investigation was 11.1877, which was 1.47 times higher than that of the critical human-biting rate. The above result indicated that there was still an epidemic tendency of malaria transmission by *An. sinensis* in the areas studied, and actions should be taken for prevention. Malaria transmission by *An. sinensis* could be reduced if the recent human-biting rate of the mosquito species declines at least by 47%. (3) The study identified the cumulative-sum method is simple and convenient for estimating the thresholds of malaria explosion and presuming malaria epidemic tendency in the pilot area.

Keywords malaria, *An. sinensis*, transmission density-threshold, surveillance index

IMPACT OF PEOPLE'S SOCIAL BEHAVIOR ON SCHISTOSOMIASIS TRANSMISSION IN THE THREE GORGES RESERVOIR AREA

ZHANG Hui-juan (MSc student) TUTOR: GUO Jia-gang

[Objective] To investigate the changes in natural ecology and social environment after the construction of the dam in the Three Gorges Reservoir area, to know the social behavior status and education levels of people living there, to examine the infection status of intestinal parasites and its influencing factors and to analyze the potential impact of these factors to the spread of schistosomiasis, thus to provide scientific basis for the prevention of schistosomiasis in the reservoir area. **[Methods]** To collect the development data of nature and social economy in the recent ten years after the construction of the dam in the Three Gorge area. Wanzhou District in Chongqing Municipality was chosen as the pilot for the epidemiological survey. Cross-sectional study with questionnaires and experiments was carried out among natives, emigrations and floating population. Information about social demographic characteristics, people's production and life style, knowledge about schistosomiasis, the infection of schistosome and intestinal parasites and the related factors have been collected. Geographic information system and remote sensing technology are introduced to collect environmental variables in the areas under surveillance. Descriptive study is adopted to analyze the risk behavior condition and the relations about schistosomiasis on target population. **[Results]** After the construction of the Three Gorges dam, the stream gets slower and the surface of water gets broader. With the normal function of the sluice, a water-level fluctuating zone with the water level between 145m and 175m will be formed. During the ten years there is a tendency that temperature rises, rainfall increases and humidity decreases. The social-economic development situation shows that the population in reservoir areas keeps on increasing while the area of cultivated land keeps on decreasing. Industrial structure change shows that secondary and tertiary industry increase distinctly, farmers' income enhance and the new programmed industries in reservoir areas are orange industry, aquaculture industry, stockbreeding and tourism. Most of the people in the investigated areas are of primary education level with occupation of farmer. Because of the needs of farming, washing clothes and vegetables, 45.6% of people often have a close contact with river water. Men mainly contact the water for farming and women for washing clothes and vegetables, secondly farming. People aged from 30 to 50 years are the main group to contact with river water. The main source of drinking water and the water used in daily life is from river, and the proportion of tap water is very low. Family lavatory is mainly coarse in-room lavatory, secondly firedamp pool lavatory. Most of the emigrations are of primary education level with occupation of working outside hometown or no jobs. After migrating the condition of water for drinking and daily life improves evidently, mostly from tap water. However, water used in daily life still depends on river. Family lavatory is mainly hygienic lavatory. People less contact river

water and only contact river water for washing clothes and vegetables. The residents and immigrants know little about the health hazard and route of transmission for schistosomiasis, and accept little health education propaganda. The average infection rate of the intestinal parasites is 45.4% in residents. The infection intensity is mainly light. The infection rate among population with different ages and using different sources of drinking water is different with statistical significance. The infection rate among population with other different factors is similar, without significant difference. Positive cases with serological test for schistosomiasis are found among floating population. **[Conclusion]** The natural environment of reservoir areas after the construction of the dam in the Three Gorges, including temperature and vegetation, may help the breeding of snails. The original life and behavior style may be the main reason for the high infection rate of the intestinal parasites. The bad sanitation condition and the lack of knowledge and consciousness about the hazard of schistosomiasis are risk factors for the spread of intestinal parasites and schistosomiasis. The life and behavior style of residents in reservoir areas is similar to those living in endemic area of schistosomiasis. People with away-from-home employment among emigrations and floating population are potential infection sources for the spread of schistosomiasis. So they should be the important part of population under surveillance. The optimization of industry structure after the construction of the dam is propitious condition to the keeping away from the introduction of intestinal parasites and schistosomiasis. However the development of new industry increases potential risk to the import of the infection source of schistosomiasis. So how to choose a right way to develop local economy is important to the prevention and control of intestinal parasites and schistosomiasis. The primary application and exploration of geographic information systems and remote sensing technology show that it will play an important role in the surveillance for changes of ecological environment in reservoir areas and parasitic disease prevention and control more rapidly and effectively in the future.

STUDY ON THE MOLLUSCICIDAL EFFECT OF META-Li AGAINST ONCOMELANIA HUPENSIS

ZHU Dan(MPH student) TUTOR: ZHOU Xiao-nong

[Objective] To evaluate the molluscicidal effect of META-Li against *Oncomelania* snails both in laboratory and field study thus to understand the potential of META-Li in the schistosomiasis control programme in the field, and to explore the mechanism of META-Li against *Oncomelania* snails by observing the changes of enzyme activity in snail after exposure to META-Li.

[Methods] The experiment of META-Li 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. Acute toxicity test of META-Li against freshwater fish was conducted to determination the acute lethal toxicity of META-Li

to freshwater fish, crab, and shrimp in laboratory according to ISO 7346-1 or ISO 6341. The stain of enzyme-histochemistry for CCO, LDH, SDH, AChE and NOS was done by the routine method and measured the average gray density under microscopy.

[Results] In the laboratory, the LD_{50} of META-Li against snail by spraying method was 0.78, 0.44 and 0.46 g/m² for 1, 2, 3 days and the LC_{50} by immersion method was 44.4, 27.4 and 24.8 mg/L, respectively. The EC_{50} restraining the snail from climbing out was 5.86 mg/L. The immersion test showed that the LC_{50} of META-Li to *Ampullaria gigas* was 33.1, 27.6, 11.6 mg/L for 1, 2, 3 days, respectively. The acute lethal toxicity (LC_{50}) of META-Li to the *Brachdanio rerio* for 96h was 119 mg/L and 322 mg/L to the *Eriochier sinensis*. The LC_{50} of META-Li to the *Cyprinus carpio*, *Macrobrachium nipponense*, *Hyriopsis cumingii* and *Corbicula fluminea* was more than 500 mg/L and safe concentrations were lower than 50 mg/L. The enzyme activity of CCO and AChE in the test group was significantly lower than that in the control group, that of LDH and NOS in the test group was significantly higher than that in the control group. The enzyme activity of SDH was not significantly different between the two groups. In the field, the death rates of the snails sprayed with Active Ingredient 2 g/m² of META-Li after 7 days were above 90%, similar with the effect of niclosamide.

[Conclusion] The META-Li has high molluscicidal effect against *Oncomelania* snails by spraying method both in laboratory test and field trial, and its acute lethal toxicity to freshwater fish is low, the mechanism of killing snails is to cause the energy consuming and to impede the transmit of nerves.

EVALUATION OF EARLY DIAGNOSIS VALUE WITH DETECTING SPECIFIC IGM ANTIBODY FOR ACUTE SCHISTOSOMIASIS

GUO Jian (MPH student) TUTOR: GUO Jia-gang

[Objective] To investigate the early diagnosis value of IgM-ELISA for acute schistosomiasis japonica, infection times of these patients were inferred by testing specific IgM and IgG antibodies in their sera and contrasted with their epidemiology data, and specific IgM and IgG antibodies in sera from infected mice, circulating antigens in sera of acute schistosomiasis patients and fractionated antigens of SEA were analyzed as indirect evidences.

[Methods] 1. Specific IgM and IgG antibodies in sera of infected mice before infection and at different times post-infection were tested by ELISA to determine the time course of specific anti-*S. japonicum* IgM and IgG responses. Positive rates at different times post-infection and average positive time of mice detected by IgM-ELISA were compared with IgG-ELISA. 2. Specific IgM and IgG antibodies were measured in sera from acute schistosomiasis patients, other infected (non-schistosomiasis) patients, and healthy persons. Sensitivity, specificity and Youden's index of IgM-ELISA were evaluated and compared with IgG-ELISA. 3. Circulating

antigen in sera from acute schistosomiasis patients was detected by direct Dot-ELISA with monoclonal antibody SM21-3 and fractionated antigens of SEA with sera of acute schistosomiasis patients were analyzed using Western blot and contrasted with sera of mice at different times post-infection to deduce the infection time of these patients. **4.** Epidemiology data were collected and contrasted with laboratory results. **[Results]** **1.** Specific IgM antibody increased from three weeks post-infection and reached its peak at seven weeks. Specific IgG antibody increased largely from six weeks post-infection and had reached a higher titer than IgM antibody at eight weeks. All mice were sero-positive at five weeks post-infection and their average time to sero-positivity was 23.0 ± 6.2 days by IgM-ELISA, two weeks earlier than IgG-ELISA. **2.** Sensitivity, specificity and Youden's index of IgM-ELISA were 100%, 93.6% and 0.94, and 91.4%, 97.3% and 0.89 for IgG-ELISA instead. **3.** ① Acute schistosomiasis patients were divided into two groups by difference ratio between IgM-ELISA and IgG-ELISA. No strong positive reaction was observed by direct Dot-ELISA to detect circulating antigen in sera from acute schistosomiasis patients whose difference ratio were greater than 0.61. However, there were 41.9% and 51.6% acute schistosomiasis patients whose difference ratio were less than 0.61 who showed a strong and general positive reaction. Two acute schistosomiasis patients in each group had weak positive and negative reactions, respectively. ② By Western blotting, IgM reaction bands of 150, 140 and 72 kDa in size appeared earliest and were recognized by mice sera of 2-week post-infection. The number of reaction bands increased by 8 to 11 at five weeks post-infection. IgG reactions to 150, 140, 38, 26 and 22 kDa molecular mass bands appeared earliest and were recognized by mice sera of 4-weeks post-infection. In general, more IgM reaction bands recognized by sera from acute schistosomiasis patient, and the bands reacted more strongly as well. Less IgG reaction bands were recognized by sera from those acute schistosomiasis patients whose antibody difference ratio were more than 0.61, and moreover the reaction intensity to these bands was weaker than for other acute schistosomiasis patients'. Their molecular masses were 150, 140, 72, 69, 55 and 50 kDa. ③ It was about five weeks ago when those patients with antibody difference ratio more than 0.61 infected with schistosomiasis. However, two weeks earlier than that time, patients of the other group had already infected with that disease. **4.** About 70.8% acute schistosomiasis patients were made wrong diagnoses once before they are diagnosed as schistosomiasis. No clinical symptoms such as fever and diarrhea were found in those acute schistosomiasis patients whose antibody difference ratio were more than 0.61 two weeks before they went to see the doctor. The average duration from when those patients contacted water contaminated with *Schistosoma japonicum* cercariae until they visited the doctor was 29.5 days. More than half of acute schistosomiasis patients of the other group presented with clinical symptoms during that two weeks. The average duration from when these patients contacted contaminate water until they saw the doctor was 51.1 days. **[Conclusions]** **1.** IgM-ELISA was a sensitive and specific immunodiagnosis method for acute schistosomiasis, a technique that enabled the detection of infection before schistosome eggs were detectable in

stool samples. Accordingly, IgM-ELISA represents a tractable method for early diagnosis of acute *schistosomiasis japonica*, and therefore shows potential as a method for population based screening in epidemic areas. **2.** Difference ratio of IgM and IgG antibodies was predictive of the duration of infection period in patients with acute schistosomiasis. This prediction method is worthy of further study in establish its value as a diagnostic and epidemiological tool. **3.** In order to obtain early diagnosis of schistosomiasis, more efforts needs to be made with health education to heighten awareness of the disease in persons residing in endemic locations. At the same time, non-schistosomiasis hospitals need to be provided with early diagnosis kits in order to establish early diagnosis of *schistosomiasis japonica* as an important component of the overall focus on more effective control of the spread of schistosomiasis.

§ 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

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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

一、研究概述

地理信息系统 (Geographical information system. GIS), 全球定位系统 (Globe position system. GPS) 和遥感系统 (Remote sensing system .RS) 简称 3S 系统。是一项全新的科学技术, 它广泛应用于军事、农业、环境、气象等方面, 并取得了很大成效。在血吸虫病防治方面, 我们已经成功实现了 3S 系统对血吸虫病进行监测和预警。

地理信息系统 (Geographical information system. GIS), 全球定位系统 (Globe position system. GPS) 和全球无线移动通讯系统 (Global system for mobile communication. GSM) 简称 3G 系统。是发展很成熟的全球无线移动通讯技术与全球定位系统有效的结合起来的一项技术, 它能真正实现信息交流在时间和空间上的同步。3G 系统在血吸虫病监测与控制中正处于研发阶段, 它的最终成果将实现中央对各地血吸虫病疫情进行实时监控, 也为今后急性传染病的报告系统提供一个全新的技术平台。

二、研究内容

基于国内的成熟的商业化 GIS 软件, 通过地理信息系统 (GIS) 平台对地面数据和空间数据进行可视化表达, 进一步开发适合血吸虫病等传染性疾病的信息管理、处理分析的地理医学信息系统。目前该软件的 Beta 版本在国内的多数寄生虫病所进行试用。运用遥感技术 (RS), 开展尺度放大研究, 从遥感卫片中获取钉螺孳生地的环境信息, 快速确定钉螺孳生环境以达到对血吸虫病疫情的监测和预测。目前已初步建立了基于风险组的血吸虫病传播模型(Risk group-based transmission model), 分析各类风险终末宿主 (人群及家畜) 的传播特征及对整体传播的影响。初步建立了基于个体的血吸虫病传播模型

(Individual-based transmission model), 分析血吸虫病的传播起始特征、传播域值, 以及制约疾病传播的关键因素。对具有不同传播潜能(transmission potential)的传播场景进行了分析。基于全球定位系统(GPS)和全球无线移动通讯技术(GSM)通过短信方式实现位置信息与血吸虫病疫情信息的传递, 大大提高了疫情报告的快速、准确与精确性。

三、研究成果

1) 通过地理信息系统平台, 对国家血吸虫病监测与控制的数据库进行管理、分析和表达; 2) 建立国家级血吸虫病监控中心, 通过对卫星遥感影像的分析, 快速确定钉螺孳生地, 以及预测洪水过后的钉螺扩散区域; 3) 监控中心可通过全球无线移动通讯技术实现地理位置信息、新发钉螺孳生地信息以及血吸虫病急感病例暴发等信息同步、快速和准确传递, 实现了监控中心对现场疫情的信息交流和实时监控, 为我国疾病预防控制与疾病监测工作中的疫情报告和信息传递提供了一个新型的技术平台。

成果验收或鉴定日期: 2006 年 12 月 19 日

组织验收部门: 卫生部

评审或验收结论:

项目来源: 十五国家科技攻关项目(编号: 2004BA718B06)

重要寄生虫虫种资源标准化整理、整合及共享试点

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11 沈阳农业大学

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本项目从 2005 年开始受科技部的资助, 在实施中吸取了国内外较为成熟的数据库建设经验, 同时结合我国实际特点建立中国寄生虫种质资源数据库和实物库。数据库的建设将分期分层次开展, 逐步形成标准化的数据库系统和完善的数据库管理系统, 并分级共享,

为我国疾病预防控制机构和兽医寄生虫病防治机构提供寄生虫及媒介生物学鉴定等的咨询服务、标准实物标本及研究材料,使其成为我国寄生虫种质资源标准中心和寄生虫领域国际交流合作中心,有助于确立中国寄生虫学科的国际地位,使中国寄生虫种质资源库成为我国乃至世界范围内具有影响的数据资源共享中心之一。

项目同过 6 个方面进行:

1. 建立完整的工作制度

包括完善项目专家组制度、建立项目秘书处及工作机制、建立工作组相应的财务制度、经费使用制度、网上上报制度、保藏单位加盟制度、人员管理制度以及工作质量检查与督导制度。

2. 完成寄生虫种质资源的描述标准

包括寄生虫种质资源共性描述、寄生虫归类编码表、原虫个性描述标准:、吸虫个性描述标准:、线虫个性描述标准:、绦虫个性描述标准:、医学节肢动物个性描述标准:、医学贝类个性描述标准:、甲克动物个性描述标准:(中英文稿)

3. 制定寄生虫标本保存的各类技术规范

到目前为止完成的有《鸡球虫的保种技术规范》、《动物梨形虫种质资源保藏技术规范》、《旋毛虫的保种技术规范》、《重要蜱类活体保藏技术规范》、《马来布鲁线虫的保种技术规范》、《寄生虫生物材料资源保藏技术规范》、《蚊虫采集、保存、标本制作技术规范》。

4. 完成标本整理任务

截止 2006 年 12 月 30 日整理、整合寄生虫种质资源 3.8 万(份),并向 E 平台提供共性描述信息和数字化表达信息 3.8 万份,图像信息 2 万幅。

5. 完善寄生虫资源共享网络

建立了寄生虫资源共享网络体系,完善用户网络登记管理制度和网络共享体系,并在全国范围内试运行。更新了寄生虫虫种资源 PSIC 网页,在网上能查到各单位提交的寄生虫种质资源数据和图像信息。建成了寄生虫种质资源网(<http://www.psic.cn>),数据库达到 8 个,主要为寄生虫原虫数据库、线虫数据库、绦虫数据库、吸虫数据库、重要寄生虫数据库、节肢动物数据库、软体动物数据库、甲克动物数据库。

6. 人才队伍的建设

举办培养寄生虫种质资源工作人才多项活动,成功举办“全国寄生虫种质资源学术交流会”,收录论文 23 篇并由《中国寄生虫学与寄生虫病杂志》作为特刊发行。2 年来,培养的博士研究生 2 名,硕士研究生 7 名。

寄生虫种质资源平台的建立,为地方疾病预防控制机构提供了标本资源 2000 份,为社区和中小学提供标本馆参观人数达到 5000 人次,接待国外人员参观 32 批,达 380 人次,为大专院校提供教学和科学研究资源数量达到 23 次。

"重要寄生虫虫种资源标准化整理、整合及共享试点"项目的技术支撑方面主要表现在 1.活体资源为国家 863 项目"日本血吸虫重要功能基因的发现及其在诊断和预防中的应用研究"提供虫种资源;

2.为国际合作项目"日本血吸虫基因组、后基因组和遗传变异的研究",“鱼源性吸虫诊断技

术研究”，“钩虫疫苗的筛选”等提供活体资源；

3.对国家重大专项寄生虫病诊断平台提供血吸虫、并殖吸虫、广州管圆线虫等病的阳性血清,为诊断寄生虫病提供诊断标准；

4.为研究旋毛虫不同地理株的遗传变异提供活体标准虫株；

5.为国家“十五”科技攻关重大项目“新发寄生虫病媒介生物学检测与预警系统的研究”，“隐孢子虫病快速检测方法及虫株鉴别的研究”等提供病原学及流行病学的基线资料。

成果验收或鉴定日期：2006年7月15日

组织验收部门：卫生部

项目来源：科技部（资助号 2005DKA21104）

嗜人按蚊地区疟疾流行潜势及控制暴发流行的研究

汤林华

完成单位：中国疾病预防控制中心寄生虫病预防控制所

疟疾是严重危害我国人民身体健康的重大寄生虫病。嗜人按蚊是我国疟疾的主要传播媒介之一，20世纪90年代嗜人按蚊分布区疟疾发病数占全国的40%，疫情极不稳定，不断出现局部和较大范围的暴发。针对嗜人按蚊为媒介地区疟疾防治中的关键技术难题，以合作攻关和实验室与现场相结合的形式，用流行病学、分子生物学、遗传学、形态学、社会经济学等方法开展了此项研究。

主要成果：（1）确定了我国嗜人按蚊分布于18省、市、区的245个县，北缘为北纬42°10′，突破了以往分布于北纬33°以南的认识，掌握了分布特征，首次绘制了该蚊的分布地图，对及时调整我国疟疾防治策略有重大的理论和实际指导意义；（2）系统阐明了我国不同嗜人按蚊地区疟疾流行规律、特点，将我国有嗜人按蚊分布的疟区划为三类，制定了针对性疟疾防治策略和技术方案；（3）首次阐明了不同嗜人按蚊分布区疟疾的流行潜势，并应用基本繁殖率的理论，确立了嗜人按蚊传播疟疾的临界叮人率，并经现场验证嗜人按蚊临界叮人率，是疟疾监测中1个重要和灵敏的指标，可用于疟疾流行的监测和预警，具有重要的科学价值和实用性；（4）优选出经济有效的控制嗜人按蚊分布区疟疾暴发流行的对策与措施，在10省1.2亿人口地区推广应用，控制了暴发流行，2006年嗜人按蚊分布区疟疾发病率已稳定在1/万以下，有显著经济、社会效益；（5）建立了赫坎按蚊近缘种基因鉴别技术，解决了嗜人按蚊与其近缘种不易鉴定的难题，已在8省、区应用，且被WHO用于朝鲜疟疾媒介调查；（6）建立了旌德罗索线虫中试生产线，研制了苏云金杆菌缓释剂，拓展了生物灭蚊的应用。

创新点：（1）首次发现辽宁省有嗜人按蚊分布，且对间日疟原虫敏感；（2）建立了嗜人按蚊传播疟疾的临界叮人率，为疟疾流行的监测、预警提供了1个重要和灵敏的指标；

（3）首次根据嗜人按蚊生态特征和疟疾流行潜势，划分我国有该蚊分布的疟区，制定相应防治策略与方案。

撰写论文 112 篇、专著 1 部，已在国内外有影响杂志发表 59 篇。主要成果已被卫生部在《2006-2015 年全国疟疾防治规划》、《疟疾防治技术方案》、《疟疾突发疫情应急处理预案》、《全国疟疾监测方案》和《疟疾防治手册》中采用，课题中、终期验收两次获“优”。本成果体现了我国疟疾防治研究的先进水平，丰富了抗疟理论和实践。

项目研究起止年月: 2001 年 10 月 至 2006 年 12 月

项目研究经费来源: 国家科技部“十五”科技攻关计划

§ 6. AWARDED PROJECTS

NATIONAL ‘10TH-FIVE-YEAR’ KEY PROJECT FOR SCIENCES AND TECHNOLOGY

“STUDY ON THE ESTABLISHMENT OF GIS SYSTEM FOR FORECASTING AND WARNING SCHISTOSOMIASIS IN THE CHANGJIANG RIVER VALLEY AND MARSHLAND AND LAKE REGIONS OF CHINA”

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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
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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

Summarization

The 3S system, namely, geographical information system (GIS), global position system (GPS) and remote sensing system (RS) is a bran-new technique that has widely been used in the fields of military operation, agriculture, environment investigation and meteorology, and great achievements have been reached. With the 3S system, progress has been made in the surveillance, forecast and warning for schistosomiasis.

The 3G system, namely, geographical information system (GIS), global position system (GPS) and global system for mobile communication (GSM), has become a ripe technology. When GPS is combined with GSM technique effectively, information exchange can be realized with space-time synchronization. In despite of its preliminary phase of research for schistosomiasis control and surveillance, the 3G system will ultimately realize schistosomiasis

real-time surveillance at each level by the central leading body, and at the same time, it can also provide a brand-new technical platform for the reporting system of acute infectious diseases in future.

Contents

Based on the domestic, mature and commercialized GIS software and through the visual expression for ground and spatial data on GIS platform, we have been taking a step forward to explore the information system suitable for information management, data processing and analysis for schistosomiasis and other infectious diseases. At present, the Beta version of this software has been on trial in quite a few domestic institutes of parasitic diseases. The RS technique has been used with enlarged measurements for acquiring rapidly the environmental information of snail breeding areas with satellite photos to supervise and forecast the endemicity of schistosomiasis.

Up to now, we have established the risk group-based transmission model for analyzing the influence on the prevalence characteristics of all species of the final hosts (humans and livestock) and individual-based transmission model for analyzing that of schistosomiasis and transmission threshold. Also analysed were the key factors of disease transmission and the scenes of different transmission potential. On the basis of GPS and GIS technique, the system would greatly speed up prevalent situation reporting to be more accurate and precise whereas realize communication of information among the localities with epidemic situation of schistosomiasis by means of sending short messages.

Outcome

1. Platform of the GIS system was useful for database management, processing and analysis for schistosomiasis surveillance and control.

2. The national monitoring center for schistosomiasis was set up for confirming the areas of snail habitats rapidly and forecasting the areas of snail extension after floods via analyzing the image of satellites.

3. The national monitoring center can carry out information communication and real-time supervision in the field endemic for schistosomiasis by the synchronous, rapid and accurate technique for newly discovered snail habitats and the outbreak of acute cases of schistosomiasis on GSM platform. Moreover, the 3G system has become a new technical platform for reporting disease epidemic situation and passing information for national diseases control and surveillance.

Date of appraisal: 19 Dec 2006

Appraisal organizer: Ministry of Health, China

Funding of the project: Supported by National '10th-five-year' key project for sciences and technology (Project No. 2004BA718B06)

NORMALIZED COORDINATION, INTEGRATION AND SHARING OF IMPORTANT PARASITE SPECIES RESOURCES

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From 2005, we are supported by Minister of Science and Technology (MOST) to tidy and integrate the resources of important parasite species of china, establish and manage the normalized information database and parasite libraries. These resources and its information will supply the consultation, research material and specimen for the university, institute or disease control organization.

During the past 2 years, what we have done is showed as following:

1. We established a working system, which include the expert committee system, the secretary working system, the financial system, the data submit and manage system, the quality control and inspect system etc.
2. We edited a serial of description criterion for different kinds of parasites, which include the general description criterion for parasite, the description criterion for cestode, the description criterion for fluke, the description criterion for nematode, the description criterion for protozoan, the description criterion for medical arthropod, the description criterion for medical mollusk, the description criterion for shellfish etc.
3. We wrote eight standard operation protocols (SOP) for parasite preservation, which include the SOP for coccidia preservation, the SOP for piroplasmae preservation, the SOP for trichina preservation, the SOP for trichina preservation, the SOP for ticks preservation, the SOP for filaria preservation, the SOP for mosquito preservation and the SOP for biological material preservation etc.
4. We tidied 38 000 items of parasite resources and submitted 38 000 pieces of parasite resources description information to E-platform of MOST, as well as 38 000 digital pictures.
5. We constructed the network of parasite resources, including the webpage (<http://www.psic.cn>), in order to exhibit the information of parasite resources we have, submit parasite information, release news etc.
6. We established parasite specimen libraries in NIPD Shanghai, as well as other three institutes or universities taking part in our project. Also we established the eight database for different parasites, which are fluke, cestode, nematode, arthropod, mollusk, shellfish, protozoan and other parasites.
7. We held a workshop for parasite material preservation which abstracted more than 100 related researchers in China.

Date of appraisal: 15 July 2006

Appraisal organizer: Ministry of Health, China

Funding of the project: Ministry of Science, China (Project 2005DKA21104)

STUDY ON EPIDEMIC POTENTIAL AND CONTROL STRATEGY FOR MALARIA OUTBREAKS IN *ANOPHELES ANTHROPOPHAGUS* AREAS

Principal Investigator: TANG Lin-hua

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Malaria is a major parasitic disease seriously threatening the health of Chinese people. *Anopheles anthropophagus* (*An. Anthropophagus*) is one of major vectors of malaria in China. The malaria cases in the areas where *An. Anthropophagus* is distributed were accounted for 40% of the total malaria cases nation-wide in 90s of 20 century. The epidemic situation was unstable, the outbreaks of malaria occurred in local or larger areas occasionally. Aiming at the key technique problems of malaria control and prevention in the targeted area, this project has been performed with epidemiological, molecular biological, genetic, morphological and socio-economic methods in combination of laboratory and field researches.

Major outcomes

1. It is identified that *An. anthropophagus* is distributed in the area covering 245 counties of 18 provinces and municipalities in China with the north margin at north latitude of $42^{\circ}10'$ which breaks through the previous conception of north latitude of 33° as north margin. The identification on the characteristics of distribution leads to the completion of drawing a distribution map of *An. anthropophagus* in China that makes great contribution to the adjustment of the strategy of malaria control and prevention in China.
2. The malaria epidemic characteristics in various areas in China have been elucidated. Three categories of malaria epidemic areas have been thus defined and corresponding strategy and technical protocol for malaria control and prevention been determined.
3. The malaria epidemic potential at different *An. anthropophagus* distribution areas has been elucidated for the first time. The critical man-biting rate (CMBR) for *An. anthropophagus* to transmit malaria has been identified based on the theory of basic reproduction rate. In the field trial, CMBR was verified as an important and sensitive parameter that is useful for monitoring and alarming of malaria epidemic with scientific and practical significance.
4. The strategy and measures for economically and efficiently controlling malaria outbreaks in *An. anthropophagus* distribution areas have been determined and widely implemented in 10 provinces with population of 0.12 billion thus to bring the malaria endemic under control. The malaria morbidity in *An. anthropophagus* distribution areas has been stabilized under 1/10,000, gaining significant socio-economical benefits.
5. The establishment of genetic technique for identification of sibling species within *An. Hyrcanus* group has solved the problem of distinguishing *An. anthropophagus* from *An. hyrcanus* group. The technique has been applied in 8 provinces and adopted for malaria vector investigation in DPR Korea by WHO.

6. The intermediate trial production line of *Romanomermis Jingdeensis* has been established while a slow-release formulation of *Bacillus thuringiensis* var. *israelensis* (*Bti*) has been developed so as to widen the application of bio-control of mosquito.

Innovations:

1. It is the first time to identify the distribution of *An. anthropophagus* which is sensitive to *Plasmodium vivax* in Liaoning Province.
2. The critical man-biting rate (CMBR) for *An. anthropophagus* to transmit malaria has been identified thus an important and sensitive parameter for monitoring and alarming of malaria epidemic been supplied.
3. It is the first time to identify the various malaria areas where *An. anthropophagus* is distributed and to determine the strategy and measures for control and prevention of malaria at corresponding areas based on the ecological characteristics of *An. anthropophagus* and the epidemic potential of malaria.

112 papers and 1 book were written among which 59 papers were published on the effective journals home and abroad. The major results of the project have been adopted in “National program of malaria control and prevention in 2006-2015”, “Technical protocol for control and prevention of malaria”, “Pre-protocol of emergency management on outbreaks of malaria”, “National protocol for monitoring malaria” and “Handbook of malaria control and prevention”. The project was graded as “A” in mid- and term- evaluation. The outcomes of the project have revealed the advanced level of researches on malaria control and prevention in China and enriched the anti-malarial theory and practice.

Date of appraisal: 11 Dec 2006

Funding of the project: Supported by the key science and technology project of the National “Tenth Five-Year- Plan” of China.

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§ 8. 2006 年大事记

- 1 月 5-6 日, 中国疾控中心国际合作处强正富处长一行 4 人到我所检查外事工作。
- 1 月 6-7 日, 举办中层干部学习班, 中层干部就如何做好 2006 年的各项工作进行了讨论。
- 1 月 11-12 日, 组织召开了“2005 年度业务工作年会”, 4 个疾控科室作了工作总结, 11 个疾控项目及 26 个课题分别作了年度工作汇报。
- 1 月 13 日, 召开本所 2006 年工作会议, 汤林华所长作了《2005 年行政业务工作总结》和《2006 年工作要点》的报告, 中国疾控中心王宇主任到会并作重要讲话。
- 1 月 22-23 日, 汤林华所长赴北京参加中心 2005 年度国际交流与合作年会和国家突发公共卫生事件专家咨询委员会成立会议。
- 2 月 13-17 日, 受卫生部和 WHO 的委托, 对 4 名朝鲜医生进行疟疾知识的培训。
- 2 月 16 日, 卫生部疾控司郝阳副司长、中国疾控中心沈洁书记、杨维中副主任等领导来所, 就 2006 年全国寄生虫病防治重点工作等进行了探讨。
- 2 月 27 日, 卫生部国合司函复同意全球基金第五轮疟疾项目国家项目办公室设在我所, 由我所负责项目具体实施和管理工作的。
- 3 月 3 日, 完成制订我所“十一五”科技发展规划。
- 3 月 6-10 日, 我所在南昌市召开“全国疟疾监测数据汇总分析暨疟疾监测数据库培训会”, 会议对 2005 年全国疟疾监测数据进行了汇总和分析。
- 3 月 8 日, 商务部援外司赛旦霞副司长一行 3 人来沪考察我所援外培训工作。
- 3 月 8-10 日, 汤林华研究员赴泰国参加“大湄公河区域加强疟疾控制项目第二届顾问委员会会议”。
- 3 月 13 日, 所保密委员会召开会议, 明确了各部门负责人的职责, 增补曹建平、李石柱同志为保密委员会成员。

- 3 月 14-19 日, 对《中国消除丝虫病国家评估报告》(送审稿)的英文版进行了全面修订, 最终形成了国家报告英文稿, 并提交卫生部。
- 3 月 24 日, 召开“2006 年度党委工作会议”, 党委蔡继红书记和纪委周晓农书记分别作了 2005 年工作总结, 部署了 2006 年工作。
- 3 月 27 日, 汤林华研究员和周晓农研究员等 3 人赴斐济参加 WHO 召开的“全球消除淋巴丝虫病联盟大会”, 并递交《中国消除丝虫病国家评估报告》。
- 3 月 31 日, 宫新生副主任及中国疾控中心相关职能部门负责人来所现场办公。
- 4 月 3-6 日, 我所在福建省福清市举办了“钉螺控制与钉螺生物学培训班”, 来自全国血吸虫病流行区的近 90 名技术人员参加了培训。
- 4 月 5 日, 根据工作需要, 经组织考核、公示等程序, 所党政领导班子会议研究决定: 聘任陈家旭同志为健康教育咨询检测中心副主任(主持工作); 聘任伍卫平同志为丝虫病、黑热病、包虫病室主任; 聘任周水森同志为疟疾室主任; 聘任胡薇同志为寄生虫病原与媒介生物学重点实验室副主任; 聘任章幼妹同志为科技业务处副处长(正科级); 聘任孙华荣同志为人事保卫处保卫科科长(正科级)。上述同志试用期均为一年。
- 4 月 7 日, 举办“全国钉螺生物学与控制技术培训班”。
- 4 月 8-12 日, 受卫生部疾控局委托, 我所组织专家参加血吸虫病防治基本数据核查工作, 基本确认了各省流行村类型分布。
- 4 月 10-11 日, 所长汤林华、党委书记蔡继红带队, 再赴安徽省血防所和泾县血防站, 开展“结对共建”活动。
- 4 月 13 日, 由所文明办、工会、团总支联合布置在全所开展为期 4 个月的“加强职业道德建设, 争当疾控标兵”活动。
- 4 月 14 日, 对新聘任中层干部进行岗前廉政自律教育。
- 4 月 17-19 日, 我所在四川眉山市召开了“荣宝粉剂灭螺操作技术培训班”, 对荣宝杀螺剂在实验室和现场杀螺试验的操作方法、技术规范、现场实践等进行了培训。
- 4 月 20-23 日, 汤林华所长、周晓农副所长及有关专家参加了“媒介生物可持续控制国际论坛”, 并分别在会上作了“我国寄生虫和寄生虫病流行、控制、研究、现状及展望”,

“地理信息系统应用于血吸虫病风险评估”的特邀报告。

- 4 月 27 日, 举办“全国利什曼病媒介白蛉监测与控制培训班”。
- 4 月 27-29 日, 组织有关专家分别在江西、湖南、湖北召开了“血吸虫病消灭标准座谈会”, 对血吸虫病消灭与控制标准初稿进行了第三次修订。
- 4 月 29-30 日, 组织召开了“全国血吸虫病第三次流行病学抽样调查报告审稿会”, 对该报告进行了修订。
- 5 月 1-19 日, 我所专家组织编撰的《中国血吸虫病防治画册》出版。
- 5 月 6-8 日, 汤林华所长和周晓农副所长参加在成都召开的“国际包虫病学术研讨会”, 并考察四川省眉山区血吸虫病以机代牛防治试点。
- 5 月 8-13 日, 周晓农研究员赴泰国参加“生态学—生物学—社会学研究亚洲登革热”研究项目(第二轮评审)工作会议。
- 5 月 9 日, 由王陇德副部长主编, 我所专家参与组织编撰的《中国血吸虫病防治历程与展望》一书出版。
- 5 月 12-13 日, 汤林华所长等 3 人赴湖南岳阳县考察寄生虫病综合防治示范区试点县的寄生虫病流行现状, 防治工作进展等情况。
- 5 月 13-14 日, 我所丝虫病防治专家参加卫生部组织的安徽泗县丝虫病抽样复核工作。
- 5 月 14-19 日, 在贵阳组织召开了“全国消除丝虫病省级报告研讨会”, 对部分省的丝虫病消除报告进行了审定, 统一了编写提纲和工作计划。
- 5 月 14-23 日, 周晓农研究员参加全国政协人口资源环境委员会“兴林抑螺及林业血防工程”专题调研, 分别赴江苏、安徽、湖北等地现场考察。
- 5 月 16 日, 国家人类基因组南方研究中心与我所共同召开新闻发布会, 向世界发布了日本血吸虫基因组工作框架图序列, 300 多万条 DNA 序列通过上海市研发公共服务平台与全世界科学家共享, 卫生部副部长王陇德、中科院副院长陈竺、上海市副市长严隽琪出席了会议。
- 6 月 1-5 日, 我所专家参加了由中心组织的“寄生虫病现场处置规范审稿会”, 对血吸

虫病、疟疾、黑热病、包虫病、丝虫病等寄生虫病现场处置规范进行了修订。

- 6 月 6-9 日, 国务院血防领导小组办公室在安徽省贵池召开血防联系点会议, 周晓农副所长等有关专家参加了会议。
- 6 月 9-26 日, 组织召开“援藏疟疾防治工作专家研讨会”, 制订了相关培训计划、现场调查工作方案; 组成援藏专家组赴西藏指导疟疾防治工作。
- 6 月 10 日, 组织召开《中国控制和消灭血吸虫病标准》评审会议, 对该标准进行了深入的审评。
- 6 月 10-16 日, 受卫生部疾控局委托, 我所组织了疟疾春季休止期根治的明察暗访, 分别赴疟疾流行区现场开展入户调查。
- 6 月 18 日, 中国疾控中心党委书记沈洁、纪委副书记韩红琪、党办副主任田占平来所调研。
- 6 月 18-24 日, 受卫生部疾控局委托, 我所组织了血防联系点防治工作暗访, 到江西省进贤县进行实地调查。
- 6 月 24-29 日, 周晓农研究员赴意大利参加“地理信息系统工作组 (GnosisGIS Group) 第三届年会”。
- 6 月 28 日, 市卫生局党委命名本所第二党支部为卫生局系统先进党支部; 授予顾政诚、曹建平同志为卫生局系统优秀共产党员; 王灵同志为卫生局系统优秀党务工作者。
- 6 月 29 日, 召开“纪念中国共产党成立 85 周年暨表彰先进大会”, 命名第四党支部为所先进党支部; 授予邓达等 11 位党员为所优秀共产党员。
- 7 月 1 日, 经党委会研究同意: 王漪、张超威、胡薇、王立明、苏忠伟同志分别担任第一至第五党支部书记, 邓达同志任离休党支部书记, 王延安、李雅卿同志分别担任退休第一和第二党支部书记。
- 7 月 2-3 日, 组织召开《疟疾防治手册》定稿会, 同时对疟疾控制与消除标准进行了论证。
- 7 月 5-10 日, 开展了以“加强安全管理, 促进文明建设”为主题的安全教育周活动, 期间还举行突发事件应急处理演习。

- 7 月 6-30 日, 我所组织第二次疟疾防治援藏专家组赴西藏疟疾流行区开展疟疾流行现状及媒介分布调查。
- 7 月 8-12 日, 我所在云南组织召开了“全国血吸虫病监测地区螺情调查工作会”。
- 7 月 10-12 日, 周晓农副所长参加卫生部组织的上海市农民工卫生服务状况调查。
- 7 月 11-16 日, 举办了中华预防医学继续教育项目“全国寄生虫病应急处理培训班”, 来自全国各地的 30 学员参加了培训。
- 7 月 14 日, 举行“急性虫媒传染病实验室改造工程竣工启用仪式”, 中国疾控中心王宇主任、上海市卫生局蔡威副局长出席仪式并共同为“急性虫媒传染病实验室”揭幕, 科技部农村司、卫生部科教司、上海市卫生局及中心有关职能部门领导及全所职工出席了该仪式。
- 7 月 20-22 日, 我所在内蒙古自治区组织召开了《全国重要寄生虫病调查资料汇编》第二次统稿会。
- 7 月 24-30 日, 由周晓农副所长带队, 卫生部血咨委专家组对云南省血防工作进行了督导。
- 7 月 25-31 日, 汤林华所长带领专家组赴西藏林芝疟疾流行区调研, 并协助卫生部疾控局组织召开了“西藏地区疟疾防治研讨会”。
- 8 月 1-3 日, 组织召开“中国血吸虫病防治策略研究”项目总结会, 卫生部科教司成果处赵秋来处长、卫生部疾控局血防处夏刚副处长出席了会议并给予指导。
- 8 月 2-5 日, 我所在郑州分别组织召开了《疟疾预防控制机构工作业务规范》专家定稿会和《疟疾控制与消除标准》研讨会。
- 8 月 8-18 日, 汤林华所长赴苏丹、尼日利亚执行援苏丹、尼日利亚疟疾防治示范中心项目可行性考察工作任务。
- 8 月 10-14 日, 针对安徽出现的疟疾突发疫情, 我所专家赴安徽疟疾流行区与安徽省防治专家共同开展了现场调查和疫情核实。
- 8 月 18 日, 受卫生部委托, 我所在无锡举办“全国各地县血防站站长、血防办主任培训班”, 来自 164 个重点流行县的血防站站长、血防办主任参加了培训。

- 8 月 19 日, 针对安徽、贵州、云南省近日出现大范围疟疾疫情高发, 卫生部疾控局组织召开了疟疾疫情分析研讨会, 汤林华所长、周晓农副所长等有关专家出席了会议。
- 8 月 24-25 日, 我所“2006 年上半年寄生虫病防治工作会议”在青浦召开, 本次会议对上半年防治工作进行了总结, 对下半年重点工作进行了部署, 并审定了 2007 年新增防治项目。
- 8 月 25-29 日, 受中国疾控中心委托, 我所在西宁举办了“土源性线虫监测技术培训班”, 标志着我国全面启动了土源性线虫病的监测工作。
- 8 月 26-30 日, 受卫生部委托, 我所在四川举办了“血吸虫病化疗技术培训班”, 对四川省基层血防站防治人员进行培训。
- 8 月 31 日, 召开所务公开情况通报会, 参加会议的 50 名职工代表对本所的所务公开工作进行满意度测评。
- 9 月 5-9 日, 我所在福建省组织召开了“广州管圆线虫病疫情研讨会”, 对各省疾控人员进行防治技术培训。
- 9 月 6 日, 寄生虫病综合防治示范区启动会在湖南省长沙市召开, 来自全国 10 个示范区的省卫生厅分管厅长、示范县县政府负责人, 省疾控中心主任、省寄研所所长及其他代表共 102 人参加了启动会。卫生部疾控局局长、示范区领导小组组长齐小秋, 中国疾控中心主任、示范区领导小组副组长王宇出席会议并作重要讲话。
- 9 月 11-15 日, 我所组团赴菲律宾参加“国际血吸虫病学术大会”和“亚洲血吸虫病网络工作会议”, 在会上交流中国血吸虫病防治策略的演变以及现阶段以控制传染源为主的综合性防治策略, 并联合举办有 28 位亚洲学员参加的“亚洲血吸虫病地理信息系统培训班”。
- 9 月 11-25 日, 受商务部委托, 北京华立科泰医药有限责任公司和我所共同承办了“2006 年非洲国家疟疾防治技术培训班(法语区)”, 来自喀麦隆等 6 个国家的 10 名学员参加了培训。
- 9 月 17-20 日, 召开《全国人体重要寄生虫病现状调查资料汇编》审稿会暨寄咨委寄生虫病组工作会议, 对《汇编》的工作报告、技术报告等进行了统稿和修订。
- 9 月 18-22 日, 周晓农研究员赴意大利参加“全球抗击囊虫病大会”。
- 9 月 19-27 日, 举办“亚洲疟疾培训网络疟疾监测和流行病学管理培训班”, 来自 9 个国家 36 名学员参加了培训班。

- 9 月 20-23 日, 我所在深圳召开了“全国寄生虫学热带病学术研讨会”。
- 10 月 8-21 日, 组织专业人员分别赴湖南、湖北等 7 个省开展广州管圆线虫疫源地调查工作技术培训与现场督导。
- 10 月 9 日, 完成《土源性线虫监测手册》(初稿) 的编写工作。
- 10 月 10 日, 市卫生局医务工会来所检查本所务公开工作, 认为本所务公开工作的特点是: 领导重视, 公开彻底, 透明度高。
- 10 月 13 日, 所纪委和各处室负责人签定“廉洁勤政责任书”。
- 10 月 15 日, 组织召开了“2006 年度寄生虫病防治工作研讨会”, 中国疾控中心杨维中副主任、疾控处冯子健主任出席了会议。
- 10 月 16 日, 召开党政领导班子民主生活会, 中国疾控中心副主任杨维中、党办副主任李志新、上海市卫生局纪委副书记凤伟总、干部人事处曹林处长参加了会议。
- 10 月 16-30 日, 举办“非洲国家传染病研修班”, 来自 18 个国家的 23 名学员参加了研修。
- 11 月 2 日, 中国疾控中心副主任杨功焕来我所就信息资源建设和期刊发展情况进行调研。
- 11 月 11-12 日, 周晓农副所长等专家对广西省血吸虫病监测工作进行了督导、调研。
- 11 月 12-15 日, 我所在广西召开“广州管圆线虫病疫源地调查总结会”, 对广州管圆线虫病调查工作数据进行了汇总和分析。
- 11 月 15 日, 卫生部血吸虫病专家咨询委员会在长沙召开了“晚期血吸虫病救治和吡喹酮用药规范研讨会”。
- 11 月 15-17 日, 汤林华所长等赴皖参加“安徽疟疾疫情控制研讨会”, 研究和商讨如何控制安徽疟疾疫情回升的问题及 2007 年的行动方案。
- 11 月 19 日, 我所召开“2007 年寄生虫病防治重点工作研讨会”, 卫生部疾控局郝阳副局长、中国疾控中心杨维中副主任及有关领导和专家出席了会议。

- 11 月 19-30 日, 工会分两批组织职工赴“港澳”旅游休养。
- 11 月 22-23 日, 汤林华所长和周晓农副所长参加了卫生部医疗等 7 个新建卫生标准专业委员会成立大会, 并分别担任卫生部寄生虫病标准委员会主任委员和副主任委员。
- 11 月 30 日, 2 号楼图书馆装修工程竣工。
- 12 月 3-8 日, 完成《中国消除丝虫病画册》(初稿) 和 《中国消除丝虫病报告》的审定, 并报卫生部疾控局。
- 12 月 7 日, 我所通过上海市创安全合格单位验收。
- 12 月 17 日, 完成《重点寄生虫病调查资料汇编》定稿工作。
- 12 月 7 日, 举办中华预防医学会继续教育项目“全国分子寄生虫学培训班”。
- 12 月 8-11 日, 我所与卫生部血吸虫病专家咨询委员会和中华预防医学会在云南共同举办了“全国血吸虫病防治研究中青年学术交流会”, 为全国血防青年提供了一个学术交流与合作的平台。
- 12 月 9 日, 卫生部血吸虫病专家咨询委员会在云南鹤庆组织召开 2006 年工作会议, 总结了 2006 年的主要工作, 并商讨了 2007 年的工作计划。
- 12 月 11 日-15 日, 我所在贵阳举办“全国土源性线虫病监测技术培训班”, 来自全国 24 个省(市、自治区)的 56 位学员通过培训, 基本掌握了土壤中人蛔虫卵的检查及活力鉴定方法。
- 12 月 12 日, 王灵同志当选卢湾区人大代表。
- 12 月 14-16 日, 举办中层干部培训班, 并参观了江苏省血防所, 听取他们的经验介绍。
- 12 月 15 日, 我所急性虫媒传染病实验室改造工程获上海市卢湾区建筑业联合会 2006 年度卢湾区优质工程“建设杯”称号。
- 12 月 20-22 日, 完成《包虫病防治技术方案》和《慢性丝虫病社区照料方案》的修订。
- 12 月 21 日, 卫生部直属机关党委窦熙照副书记来所检查指导工作。
- 12 月 21-24 日, 组织召开了“卫生部寄生虫病专家咨询委员会 2006 年工作会议”、“卫

生部寄生虫病标准专业委员会 2006 年工作会议”和“卫生部寄生虫病原与媒介生物学重点实验室第三届第二次学术委员会会议”。

- 12 月 22 日，装修一新的图书馆顺利开馆。
- 12 月 27 日，2006 年度参加考核人数 156 人，其中优秀 20 人，称职 136 人。

§ 8. IMPORTANT EVENTS OF 2006

- January 5-6: Four persons from China CDC international cooperation department came to IPD for foreign affair examination.
- January 6-7: Middle level leader training was held. Middle level leaders discussed how to well perform IPD's various tasks.
- January 11-12: "2005 Annual Meeting on professional report" was held, on which deputies from 4 disease control departments reported their work summary. Eleven disease control projects and 26 research projects were also reported.
- January 13: 2006 work conference was held, on which Director Tang Lin-hua reported "Administrative task summary in 2005" and "Key work plan in 2006". Wang Yu, the Chair of China CDC, attended the conference and had an important speech.
- January 22-23: Director Tang Lin-hua went to Beijing to attend 2005 annual international communication and cooperation conference and national emergent public health affair expert committee establishing conference.
- February 13-17: As the request of Ministry of Health (MOH), 4 DPRK physicians were trained on malaria knowledge.
- February 16: HaoYang, vice-minister of branch of disease control of MOH, Shen Jie, secretary of China CDC and Yang Wei-zhong, vice-chair of China CDC came to IPD and discussed the key tasks of parasitic diseases control in China.
- February 27: The reply from branch of international cooperation of MOH agreed that the office of Global Fund 5th round malaria program was set up in IPD in charge of the implementation and management of project.
- March 3: finish "Eleventh Five-year" Key Technologies R&D Program plan of IPD was completed.
- March 6-10: "National malaria surveillance data analysis conference" was held by IPD in Nanchang, on which the national malaria surveillance data of 2005 were gathered and analyzed.

- March 8: Sai Dan-xia, vice-minister of branch of aiding foreign countries of Ministry of Business, with a group of 3 persons came to IPD to examine the work on aiding foreign countries.
- March 8-10: Director Tang Lin-hua went to Thailand for attending the 2nd counselor meeting of strengthening malaria control project in greater Mekong River region.
- March 13: Secret-keeping committee of IPD was held, on which the responsibilities of every departments were determined. Cao Jian-ping and Li Shi-zhu became the members of secret-keeping committee of IPD.
- March 14-19: The English version of National Filariasis Elimination Evaluation Report (in review) was fully revised. This final English version was sent to MOH.
- March 24: Work meeting of party committee in 2006 was held. Cai Ji-hong, secretary of party committee and Zhou Xiao-nong, secretary of discipline committee respectively summarized the work in 2005 and arranged the work in 2006.
- March 27: Professor investigator Tang Lin-hua, Professor investigator Zhou Xiao-nong ect. A total of 3 persons went to Fiji to attend Global Filariasis Elimination League Conference held by WHO and handed in the National Filariasis Elimination Evaluation Report.
- March 31: Gong Xin-sheng, vice-chair of China CDC, with other functionaries came to IPD on business.
- April 3-6: "Snail control and Snail biology training course" was held by IPD in Fuqing City, Fujian Province. A total of 90 nationwide technicians from endemic areas attended this training.
- April 5: As the need of work, after examining and publicizing, IPD leader meeting decided that Cheng Jia-xu was appointed as vice-chair of health education, consultation and diagnosis center, Wu Wei-ping as chair of department of filariasis, leishmaniasis and echinococcosis, Zhou Shui-sen as chair of department of malaria, Hu Wei as vice-chair of parasite pathogen and vector biology key laboratory, Zhang You-mei as the vice-chair of branch of science and technology affairs, Sun Hua-rong as chair of branch of human resource and safeguard. The persons mentioned above should work for one-year's trial period.

- April 7: “National snail biology and control technique training” was held.
- April 8-12: As the request of MOH, experts of IPD participated in the check of schistosomiasis control basic data and affirmed the distribution of schistosomiasis in endemic provinces.
- April 10-11: Director Tang Lin-hua and Secretary Cai Ji-hong leading a group went to Anhui Institute of Schistosomiasis Control and Prevention and Jing County Station of Schistosomiasis Control and Prevention again for pairwise cooperation activity.
- April 13: The activity of “Strengthening staff morality” held by civilization office, labour union and member branch lasted for 4 months.
- April 14: The incorruptness education for new middle leaders was launched before their accession.
- April 17-19: “training of using snail-killing Rong Bao powdering agent” was held by IPD in Meishan, Sichuan, on which the skill, method and practice of using snail-killing Rong Bao powdering agent in laboratory or in field were trained.
- April 20-23: Director Tang Lin-hua, Vice-director Zhou Xiao-nong and relevant experts attended International Conference of Vector Biology Sustainable Control and respectively reported the epidemic, control, research, current situation and prospect of parasitic diseases in China and the specially invited report of schistosomiasis hazard evaluation by GIS.
- April 27: National surveillance and control training of Sandfly, vector of leishmaniasis, was held.
- April 27-29: Relevant experts were dispatched to Jiangxi, Hunan, Hubei to hold schistosomiasis elimination standard meeting, on which schistosomiasis elimination and control standard were revised for the third version.
- April 29-30: “peer review of national schistosomiasis 3rd epidemiological sampling investigation report” was held, on which the report was revised.
- May 1-19: China Schistosomiasis Control Pictorial Brochure compiled by IPD experts was published

- May 6-8: Director Tang Lin-hua and Vice-director Zhou Xiao-nong attended National Echinococcosis Academic Conference in Chengdu and visited the “machine instead of cattle” schistosomiasis control trial spots in Meishan, Sichuan.
- May 8-13: Professor Zhou Xiao-nong attended 2nd Round Evaluation Conference of Ecological-biological-sociological Research on Dengue Fever in Thailand.
- May 9: “The Progress and Prospect of Schistosomiasis Control in China” was published with Vice-minister Wang Long-de as editor in chief and IPD experts as participating editors.
- May 12-13: Director Tang Lin-hua with a group of 3 persons went to Yueyang, Hunan to visit the comprehensive control trial spots and investigated current epidemic situations and progress on the controlling work.
- May 13-14: Filariasis control experts of IPD participated in filariasis sampling work rechecking in Si County, Anhui.
- May 14-19: Conference of “Provincial Report of National Filariasis Elimination” was held in Guizhou, on which some provincial filariasis elimination reports were reviewed and uniform compilation and work plan were decided.
- May 14-23: Professor Zhou Xiao-nong attended the special investigation of “encouraging forestry against snail and forestry schistosomiasis control project” held by population resource and environment committee, national political consultative conference and went to Jiangsu, Anhui, Hubei, ect. for field investigation.
- May 16: Chinese National Human Genome Center at Shanghai and IPD convened news conference to publish the framework sequences of *Schistosoma japonicum* genome worldwide. More than 3 million DNA sequences were shared among researchers from all over the world Shanghai municipal R&D public service platform. Vice-minister Wang Long-de, Chen Zhu, CAS Vice-director, and Yan Juan-qi, Vice-mayor of Shanghai attended this conference.
- June 1-5: IPD experts attended the review meeting “parasitic diseases field treatment standard”, on which field treatment standards for schistosomiasis, malaria, leishmaniasis, echinococcosis, filariasis were revised.

- June 6-9: State Council office of schistosomiasis control and prevention leading group held schistosomiasis control contact spots meeting in Guichi, Anhui. Vice-director Zhou Xiao-nong and relevant experts attended the meeting.
- June 9-26: Expert Conference of Aiding Tibet Malaria Control was held. Relevant training plan and field investigation plans were established. Expert group was organized and went to Tibet to guide malaria control.
- June 10: Review meeting of “Standard of Control and Elimination of Schistosomiasis in China” was held, on which the standard was comprehensively examined.
- June 10-16: As the request of Bureau of Disease Control, MOH, we publicly and privately investigated radical treatment of transmission interregnum period malaria and carried out home investigation in malaria endemic regions.
- June 18: Shen Jie, the Secretary of party committee, China CDC, Huan Hong-qi, the Secretary of discipline committee, China CDC, and Tian Zhan-ping, Vice-chair of party office, came to IPD for investigation.
- June 18-24: As the request of Bureau of Disease Control, MOH, we publicly and privately investigated schistosomiasis control contact spots and did field investigation in Jinxian County, Jiangxi.
- June 24-29: Professor Zhou Xiao-nong attended the 3rd Annual Conference of GnosisGIS Group in Italy.
- June 28: Municipal Bureau of Health appointed IPD’s 2nd round party branch as Bureau of Health system’s excellent party branch. Gu Zheng-cheng and Cao Jian-ping were awarded Bureau of Health system’s excellent party member. Wang Ling were awarded Bureau of Health system’s excellent party affair staff.
- June 29: Excellent Member-honoring Meeting for Memorializing 85th Anniversary of CCP Establishment was convened. The 4th party branch was named excellent party branch. Deng da and other 10 party members were awarded IPD’s excellent party members.
- July 1: After careful examination, party committee agreed that Wang Yi, Zhang Chao-wei, Hu Wei, Wang Li-ming and Su Zhong-wei respectively undertook from the 1st to the 5th party branch secretary. Deng Da was appointed as retiree party branch secretary. Wang

Yan-an and Li Ya-qin were appointed as the 1st and 2nd retiree party branch secretaries respectively.

- July 2-3: Manuscript-finalizing Meeting for “Malaria Control Manual” was held, on which we also discussed malaria control and elimination standard.
- July 5-10: The safety education’s week activity with the theme of “strengthening safety management and promoting civilization construction” was in effect, during which emergent affair treatment was practiced.
- July 6-30: IPD organized 2nd round aiding Tibet expert group to Tibet malaria endemic areas for investigation on current malaria situation and vector distribution.
- July 8-12: “The snail situation investigation meeting for national schistosomiasis surveillance area” was held by IPD in Yunnan.
- July 10-12: Vice-director Zhou Xiao-nong participated in Shanghai peasant workers’ health service investigation held by MOH.
- July 11-16: The Chinese preventative medicine continuing education program--“Training course on emergent treatment of parasitic diseases” was held. A total of 30 nationwide participators attended the training.
- July 14: The ceremony of decoration completion and acute insect-borne infectious diseases laboratory launching was held. Wang Yu, Director of China CDC and Cai Wei, Vice-chair of Shanghai Municipal Bureau of Health attended this ceremony and unveiled “acute insect-borne infectious diseases laboratory”. The leaders from Farm Village Branch of Ministry of Science and Technology, Bureau of Science & Education, MOH, Shanghai Municipal Bureau of Health, China CDC and staff of IPD attended this ceremony.
- July 20-22: The 2nd peer review conference for “Materials Compilation of National Important Parasitic Diseases Investigation” was held by IPD in Inner Mongolia.
- July 24-30: Schistosomiasis consultation committee expert group with Vice-director Zhou Xiao-nong as leader supervised schistosomiasis control work in Yunnan.
- July 25-31: Director Tang Lin-hua with an expert team investigated malaria endemic area in Linzhi, Tibet. In the meantime, we assisted Bureau of Disease Control, MOH with

holding “Tibet malaria control symposium”.

- August 1-3: We organized “summary meeting of “strategy for schistosomiasis control in China”. Zhao Qiu-lai, Director of Branch of Outcome, Bureau of Science & Education, MOH and Xia Gang, Vice-chair of Branch of Schistosomiasis Control, Bureau of Disease Control, MOH, attended the meeting and provided guidance.
- August 2-5: The peel view meeting of “professional operation regulation for disease control institution” and symposium of “malaria control and elimination standard” was held by IPD in Zhengzhou.
- August 8-18: Director Tang Lin-hua went to Sudan and Nigeria for the feasibility of aiding Sudan and Nigeria malaria control model centre project.
- August 10-14: Towards the emergent malaria epidemic situation in Anhui, experts of IPD went to endemic areas in Anhui collaborating with malaria control experts in Anhui to perform field investigation and epidemic situation verification.
- August 18: At the request of MOH, we held “training of stationmasters and chairs of schistosomiasis control from endemic counties in China”. Stationmasters or chairs of schistosomiasis control from 164 important endemic counties participated in the training.
- August 19: Towards the recent large scale epidemic situation of high infection rate of malaria in Anhui, Guizhou and Yunnan, Bureau of Disease Control, MOH held the conference of malaria epidemic situation analysis. Director Tang Lin-hua, Vice-director Zhou Xiao-nong and relevant experts attended the conference.
- August 24-25: IPD’s work meeting for parasitic disease control in the first half year of 2006 was held in Qingpu District, on which the parasitic disease control work in the first half year of 2006 was summarized, the key work of next half year was arranged and the new disease control projects was assessed.
- August 25-29: As the request of China CDC, IPD held soil-born nematode surveillance training in Xining which is the beginning of soil-born nematode surveillance in China.
- August 26-30: As the request of MOH, IPD held schistosomiasis chemical therapy technique training in Sichuan, on which the basic level schistosomiasis control personnel from Sichuan were trained.

- August 31: Public affair report meeting was held. 50 staff deputies attending the meeting scored the satisfactory level about the public affairs of IPD.
- September 5-9: The symposium of “angiostrongyliasis epidemic situation” was held by IPD in Fujian, on which disease control personnel from every province were trained.
- September 6: Meeting on launching the program of parasitic disease comprehensive control model areas was held in Changsha, Hunan. Ten relevant chairs of provincial bureau of health, county government, provincial CDC and provincial institute of parasitic diseases from model areas and other 102 participated in the meeting. Qi Xiao-qiu, Chair of Bureau of Disease Control, MOH, representatives leader of model area leading group and Wang Yu, Chair of China CDC, vice-leader of model area leading group, attended the meeting and addressed important speeches.
- September 11-15: We organized a team to Philippines to attend “International Academic Conference for Schistosomiasis” and “Asia Network Work Meeting for Schistosomiasis”, on which we introduced the evolvement of schistosomiasis control strategy and current control strategy of mainly controlling infection sources. And we collaborated holding “Asia GIS training for schistosomiasis” with 28 Asian participants.
- September 11-25: As the request of Ministry of Business, Beijing Li Hua Ke Tai, CO., LTD collaborated with IPD on holding “Malaria Control Technique Training for African Countries in 2006 (region speaking French)”. 10 persons from Cameroon and other 5 countries attended the training.
- September 17-20: The peel review conference of “Materials Compilation of National Survey of Important Human Parasites”, work meeting of parasitic disease consultation committee was held, on which work report of materials compilation and technical report were revised.
- September 18-22: Professor Zhou Xiao-nong went to Italy for “Global Anti-Cysticercosis Conference”.
- September 19-27: “ACTMalaria Malaria Surveillance and Epidemiological Management Training Course” was held with 36 participators from 9 countries.
- September 20-23: “National Parasitological Tropic Disease Symposium” was held by IPD

in Shenzhen.

- October 8-21: Professionals were dispatched to Hunan, Hubei, ect. totaling 7 provinces to carry out field investigation and technique guidance in angiostrongyliasis endemic areas.
- October 9: The compilation of “Soil-borne Nematode Surveillance Manual” (draft) was accomplished.
- October 10: The deputies of medical affair labour union, Shanghai Municipal Bureau of Health, came to IPD to examine the affair publication of IPD and summarized the character of affair publication of IPD as emphasis of leader, exhaustive publication and high transparency.
- October 13: The persons in charge of discipline committee of IPD or other departments signed the liability letter of probity and affair-settling improvement.
- October 15: The Annual Parasitic Diseases Control Work Meeting in 2006 was held. Yang Wei-zhong, Vice-chair of China CDC and Feng Zi-jiang, Chair of disease control branch, attended the meeting.
- October 16: Democratic life meeting for party and administrative leaders was held. Yang Wei-zhong, Vice-chair of China CDC, Li Zhi-xing, Vice-chair of party office, Feng Wei-zong, Vice-chair of discipline committee, Shanghai Municipal Bureau of Health and Cao Lin, Chair of Human Resource Branch, attended the meeting.
- October 16-30: “Infectious Disease Training for African Countries” was held with 23 participators from 18 countries.
- November 2: Yang Gong-huan, Vice-chair of China CDC, came to IPD to investigate the information resource construction and progress of journals.
- November 11-12: Vice-director Zhou Xiao-nong and other experts supervised and investigated the schistosomiasis surveillance in Guang.
- November 12-15: The Summary Meeting of Investigation in Angiostrongyliasis Endemic Areas was held, on which the investigation data were summarized and analyzed.
- November 15: schistosomiasis consultant committee, MOH, held Symposium of “Cure of

Late Stage Schistosomiasis and Standard of Praziquantel Treatment”.

- November 15-17: Director Tang Lin-hua attended Symposium of “Control Malaria Epidemic Situation in Anhui” and discussed how to prevent the re-increase of malaria epidemic situation in Anhui and negotiated the work plan in 2007.
- November 19: IPD held Conference of Key Work of Parasitic Diseases Control in 2007. Hao Yang, Vice-chair of Bureau of Disease Control, MOH, Yang Wei-zhong, Vice-chair of China CDC, relevant leaders and experts attended the conference.
- November 19-30: Labour union of IPD organized 2 groups of staff to travel to Hong Kong and Macao.
- November 22-23: Director Tang Lin-hua and Vice-director Zhou Xiao-nong attended the conference of establishing 7 new health standard professional committees of MOH and respectively occupied Chair and Vice-chair of parasitic diseases standard professional committee of MOH.
- November 30: The decoration of library in No.2 Building was completed.
- December 3-8: The review of the Pictorial Brochure of “Filariasis Elimination in China” (draft) and “National Report of Filariasis Elimination” were completed and were handed to Bureau of Disease Control, MOH.
- December 7: IPD passed the examination of “shanghai safety qualified unit”.
- December 17: The manuscript of “Compilation of Investigation Materials of Important Parasitic Diseases” was finalized.
- December 7: “National molecular parasitology training”—Chinese Preventative Medicine Association continued education project was held.
- December 8-11: IPD, schistosomiasis consultant committee of MOH and Chinese Preventative Medicine Association collaborated on holding “National Schistosomiasis Control Study Symposium for the Middle Age and the Young” in Yunnan, which provided a communication and cooperation platform for young schistosomiasis control personnel.
- December 9: Schistosomiasis consultant committee of MOH held 2006 work meeting in

Heqing, Yunnan, on which the work in 2006 was summarized and the work plan in 2007 was discussed.

- December 11-15: The “national soil-borne nematode surveillance technique training” was held by IPD in Guiyang. A total of 56 trainees from 24 provinces/municipalities/autonomous regions handled the method of detecting the egg of ascarid from soil and its activity after the training.
- December 12: Wang Ling was elected as deputy of the people's congress in Luwan District.
- December 14-16: Training for middle level leaders was held. They visited the Jiangsu Provincial Institute of Schistosomiasis Control and learned their experiences.
- December 15: The decoration project of acute insect-borne infectious disease laboratory was awarded “Jianshe Cup”-- Luwan District excellent quality project in 2006 of Shanghai Luwan District architecture association.
- December 20-22: The revision of “Echinococcosis Control Technique Plan” and “Chronic Filariasis Community Care Plan” were completed.
- December 21: Dou Qi-zhao, Vice-secretary of party committee of department directly affiliated to MOH came to IPD to examine the work of IPD.
- December 21-24: “Workshop of Schistosomiasis consultant committee of MOH in 2006”, “workshop of parasitic diseases standard professional committee of MOH in 2006” and “the 2nd symposium of 3rd academic committee of parasite pathogen and vector biology key laboratory of MOH” were held.
- December 22: The library was open after decoration.
- December 27: A total of 156 persons were assessed, of which 20 persons were excellent and 136 were qualified.

§ 9. 先进事迹介绍

上海市科教党委系统纪检监察先进工作者

——周晓农同志的事迹

周晓农自担任寄生虫病所纪委书记以来，能够开拓性、创造性开展纪委工作，认真履行自己的工作职责，认真抓计划执行，抓制度落实，抓教育预防，抓队伍建设，在较短时间内，使我所的党风廉政工作有了新的起色，得到上海市卫生局纪委的好评。

周晓农同志是业务副所长、血吸虫病防治专家、纪委书记，他主持的纪委工作也具有业务专家的特色，工作严谨、周密，有条理性，对年度工作进行细化分解，每季度确定阶段工作目标，加以检查落实，调动纪委一班人的积极性，大家齐心协力做好工作。

周晓农同志非常注重廉政教育。紧紧围绕和促进本所的寄生虫病预防控制事业，根据全所各处室(中心)的工作特点，组织开展各项廉政教育活动。在所党委的支持下，周晓农同志专门研究和探讨新形势下纪委工作的工作重点与方法，根据我们工作特点，带领纪委一班人，采取形式多样、丰富多彩的党课教育，道德教育，在做法上，一是结合各种所级领导班子和中心组学习会议，见缝插针地传达有关上级纪委的文件精神；二是在中层干部会议或培训班上，专题进行党风党纪和思想道德教育的讲座；三是结合我所党课教育，请党校老师、上级机关纪检领导至少一年一次给予廉政形势宣讲；四是在所的宣传栏、所网页上设立党风廉政专栏；五是组织收看领导同志关于党风廉政的讲话录像、收看警示教育片、参观警示教育展览等。这样，使党员干部认识到搞好党风廉政建设的必要性，引导全体党员干部牢固树立正确的世界观、人生观、价值观，正确对待权利、地位和自身利益，构筑牢固的思想道德防线。他工作再忙每年都要亲自向中层干部做1-2次廉洁自律的报告。今年本所新聘任7位中层干部，周晓农同志及时向新聘任干部作廉政教育集体谈话，要求干部要以德树威，以形育人，一定要树立正确的人生观、权力观、地位观、利益观、群众观，经得起公与私的考验，不为名利所累，不做金钱的奴隶，不谋取非分的个人私利。要增强自律意识，管住自己，努力做到自重、自省、自警、自励。

他十分重视纪委各项工作的制度建设，将这一制度建设作为加强党风廉政的一项基础性工作。所纪委专题召开会议，就如何健全和落实党风廉政责任制进行了讨论，并在所党委的支持下，不断健全完善和落实党风廉政责任制的各项规章制度。2004年所纪委组织人员修改制定了“关于领导干部党风廉政建设的若干规定”等12个规章制度，并汇编成册，下发给各个支部。从而做到了党风廉政人人有责，责任到人。

完善内部监督机制是预防腐败行为发生的关键。所纪委与管钱、管物、管建设工程(后勤服务处、财务处、基建办公室)等部门签订“廉洁勤政责任书”；参与家具设备的询标会、重大工程招标选标会。定期参加基建办公室、大修购项目办公室的有关会议；协助有关审计部门做好对大修购项目、建设工程的审计；完善建设工程、物质采购和财务管理制

度。定期向职代会汇报单位的财务、物质采购，职工教育培训及职工福利费的使用情况，主动接受群众监督。近四年来，我所完成 4 号疾控楼的改建装修；1 号综合楼改造装修；3 号生活楼危房改扩建等基建工程十余项。运作资金达 1600 余万元，没有发生违纪行为，得到大家的好评，这与纪委的工作分不开的。

处理争议坚持公平公正，为本单位改革发展保驾护航。近年来，根据国家疾病预防控制中心的政策规定，我所进行职工竞聘上岗并实行岗位津贴。由于这项改革涉及职工切身利益，操作过程是否规范公正，不仅群众十分关注且关系到所领导的党风政风。所纪委承担这项工作的全过程监督，确保操作过程的公平公正。周晓农同志亲自受理群众提出的仲裁申请，耐心听取群众意见，并且组织纪委监察人员开展调查，了解操作过程是否客观公正，是否存在违规行为。由于纪委认真负责的态度，耐心细致的政策解释，向行政领导提出合理的解决争议的建议，使 2005 年岗位调整过程中 13 位同志的争议得到了较好的解决。

能认真做好群众的来信来访工作，我所有位退休老党员在信访中再次提出更改参加革命时间，变退休为离休，且情绪激动，周晓农同志和纪委副书记上门看望他，并与有关部门联系复议工作，经复议认定以前的结果正确后，再与上级部门一起做老同志的工作，最终化解了矛盾。

周晓农同志注意加强纪检监察队伍自身建设，努力提高纪委工作的效率，发挥每一位纪委委员的积极性。所纪委定了一条工作原则，即每年工作年初有计划，年底有总结，每个季度所纪委召开一次全体委员会议，总结上一阶段工作，讨论布置下一阶段的任务，协助党委做好本所的党风廉政建设。明确工作职责与目标，积极组织多种廉政建设的活动，使党员干部从思想上和行动上均对廉政建设工作有了新的认识，有益于正确处理工作中各种矛盾，促进了所纪委的各项工作。

周晓农同志忠于党的纪检监察事业，坚持党的原则，廉洁奉公，作风扎实，工作中发挥模范带头作用，作出了成绩。被评为上海市科教党委系统纪检监察先进工作者。

上海市卫生局系统优秀共产党员

——曹建平同志的事迹

曹建平同志，现任中国疾病预防控制中心寄生虫病预防控制所所长助理、寄生虫病原与媒介生物学重点实验室主任、党委委员。

曹建平同志是一名“双肩挑”的优秀共产党员，无论是行政管理还是科研和教学工作，他充分发挥了共产党员的先锋模范作用。

作为所长助理和重点实验室负责人，他为实验室发展作出重要贡献，积极规划实验室软硬件和体制建设；把握研究方向、组织多渠道申请科研项目；负责全所实验室生物安全工作，在所长领导下，组织全所制订并落实实验室各项规章制度、实验室生物安全培训等。

近年来，作为项目负责人，申请并获得资助国家“863”计划（2 项）、国家科技攻关计划重点项目、国家自然科学基金、以及上海市科委科技攻关重大计划和国际合作

等科研项目十余项。并在科研工作第一线和课题组成员一起，经常加班加点、夜以继日地开展科研工作，在血吸虫病疫苗、血吸虫免疫逃避机制、蛋白质组技术应用于血吸虫疫苗研究、新发寄生虫病快速诊断试剂盒研制等方面取得重要进展。其中血吸虫疫苗的研究获得重要突破，具有重大的开发前景。已申请或正在申请多项专利，发表论文 60 多篇，参与编写专著 10 部。

在研究生培养和指导进修生方面，他总是满腔热情，严格要求，悉心指导，注重拓展学生的思路并引导学生独立工作能力和解决问题的方法，近年来，指导硕士研究生 5 名，此外协助指导博士后 1 名、博士研究生 1 名、硕士研究生 3 名，指导进修生多人。同时特别重视科室的人才培养，根据各人的特长分配任务，给年轻同志压担子，帮助他们解决疑难问题，促使他们尽快成长。此外，指导一些省市疾病预防控制中心等单位开展有关疾病防治的科研工作。

根据科研实践和经验，他积极向卫生部、科技部、国家自然科学基金委和上海市科委、农委提交科技立项建议，多数被采纳。作为国家自然科学基金杰出青年基金、预防医学、免疫学和生物化学学科等评议专家、上海市科委基金评审专家，为国家自然科学基金和上海市科委项目评审和立项付出辛勤的努力。

曹建平同志作为“双肩挑”的优秀党员，具有优秀的素质，很强的业务能力，在我所中青年科研骨干中表现突出，曹建平同志被评为上海市卫生局系统优秀共产党员。

上海市卫生局系统优秀党员

——顾政诚同志的事迹

顾政诚同志从事疟疾防治工作 40 余年，几十年如一日，忠于职守、爱岗敬业。把对党的忠诚和对工作的热爱化为立足岗位、忘我工作的实际行动，长期以来他经常深入海南、云南和安徽等偏远疟区，走村串寨，热情地为当地的人民解除疾苦，努力在平凡的工作岗位上创造不平凡的业绩。

他对待工作一贯认真负责，在平凡的工作岗位上一心一意，努力认真地做好每一件平凡的工作。多年来无论组织上交给什么工作都能尽自己最大的努力，全身心地投入去完成。他积极参与起草了疟疾防治规划、诊断标准、疟疾监测方案等指导全国疟疾防治的重要文件。为了使年轻的同志能接好班，更好的工作，他积极的承担各种培训活动，认真备课。他对工作一丝不苟，任劳任怨，尽职尽责，工作成绩得到领导和同志们的一致肯定。曾多次被评为我所的先进个人，充分体现了一名共产党员的先锋模范作用。

2005 年西藏林芝地区出现疟疾疫情突发事件，顾政诚同志不顾年迈体弱，勇于接受了卫生部的派遣，奔赴西藏疫区。进藏后，他克服高原的生理反应，不辞辛劳，深入藏区第一线，访病问苦，开展调查。为能获得当地传疟媒介的有关资料，以自己的身体为诱饵，通宵诱捕蚊。与同事一起首次摸清了西藏的疟疾流行情况，填补了我国疟疾分布缺少西藏资料的空白，并培训了一批当地的疟防骨干，为西藏的疟疾防治打好了基础。

顾政诚同志即将面临退休，但他始终认为：无论在重要的岗位，还是做平凡的工作，

都同实现党在现阶段的奋斗目标和党的整个事业紧密相联。爱岗敬业、尽心尽责，干一行、就要爱一行，即使工作下岗了，但党员的责任不能下岗。

在开展保持共产党员先进性教育活动中，顾政诚同志思想到位，态度端正。他作为老党员、老同志，带头学习，积极发言，认真撰写学习体会，深刻进行党性分析，自觉开展批评和自我批评，受到了所在支部全体党员的一致肯定。被评为上海市卫生系统优秀共产党员。

上海市卫生局系统优秀党务工作者

——王灵同志的事迹

王灵同志 1984 年起就专职从事党务工作。现任我所党委委员、党委办公室主任，兼任所工会主席。二十多年来，王灵同志以高度的责任感和强烈的事业心，在党务工作上兢兢业业，恪尽职守、辛勤工作，认真地完成上级和所党委交给的各项任务，为我所党建工作作出努力。

王灵同志平时能努力学习马列主义、毛泽东思想、邓小平理论和“三个代表”重要思想，不断提高自己的政治素养和业务水平。她深知新时期疾病预防控制中心党建工作面临的新任务、新目标，和做好党建工作的重要性。充分认识到肩负的使命，认真探讨新时期疾病预防控制中心党建工作面临的新形势和新任务，具有坚定的理想信念，忠诚党的事业，在任何环境下，她都任劳任怨，踏实工作，奉守原则。每年的党务工作安排，她都会配合党委书记精心设计工作目标和计划。作为党委办公室主任，她既要抓好党建工作，又要做好党务管理工作，在工作中，既能做耐心细致思想工作，又能坚持原则，实事求是解决问题，表现出很强的党性原则和政策水平，得到了得到党内外群众的认可，当选为所工会主席、卢湾区人大代表。

王灵同志以身作则，爱岗敬业，服务意识强，善于关心和团结同志，热情豪爽、乐于助人。担任工会主席后，认真听取职工的意见和建议，设立了“合理化建议奖”，并将建议向领导反映，为经常下现场到疫区工作的一线疾控人员办理了保险，为在职职工逢“十”生日，举行祝贺，组织职工赴“井冈山”、“港澳”旅游活动等，得到了大家的好评。

工作中发挥参谋助手的作用，在党委的领导下，抓制度、打基础，严格规范和落实党务工作，在制订、完善党建工作规章制度上做了大量工作。王灵同志十分注重抓党员干部的学习教育，运用多种形式丰富教育方法、提高教育效果，她任党委办公室主任以来，在所党委的领导下，每年都具体策划和开展一系列的教育活动：如 2005 年结合党员先进性教育活动，和老区的有关单位“结对共建”，开展了以“上井冈山走一次红军路、扫一次红军墓、重温一次入党誓词、开展一次井冈山活动摄影展、看一部革命影片、邀请党校老师上一次党课”等系列活动。在党员先进性教育活动中，积极配合，出谋划策，起草方案、贯彻落实，组织协调，加班加点认真落实党委的各项任务，发挥了积极的作用。我所的先进性教育活动由于领导重视、措施有力、组织严密、载体丰富、成效明显，特别是开展的

“继承革命传统，情系疫区，服务全国”主题实践活动，收到了良好效果，上海电视台先锋栏目作了专题报道。在上海市卫生系统第二批保持共产党员先进性教育大会上作交流发言。

虽然身兼多职，任务重，王灵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，体现了一位党务工作者的事业心和责任感。被评为上海市卫生局系统优秀党务工作者。



▲ 第五轮中国全球基金疟疾项目管理培训会

Training Course on the management of China's Global Fund 5th round malaria program



◀ 卫生部寄生虫病原与媒介生物学重点实验室第三次学术委员会第二次会议

The 2nd conference of the 3rd academic committee of the Key Laboratory of Parasite and Vector Biology, MOH

▶ 期刊研讨会

Seminar on journal editing and publication



◀ 《重要寄生虫虫种资源标准化整理、整合与共享试点》验收会

Assessment of research project trial on the standardized sorting, integrating and sharing of important parasites resources



查灭钉螺

疾病预防控制培训教材

信息交流资料
Materials of information
exchange and education



疾病预防控制培训教材

钉螺控制

Control of Oncomelania

钉螺学
基础知识

钉螺学
技术

钉螺控制

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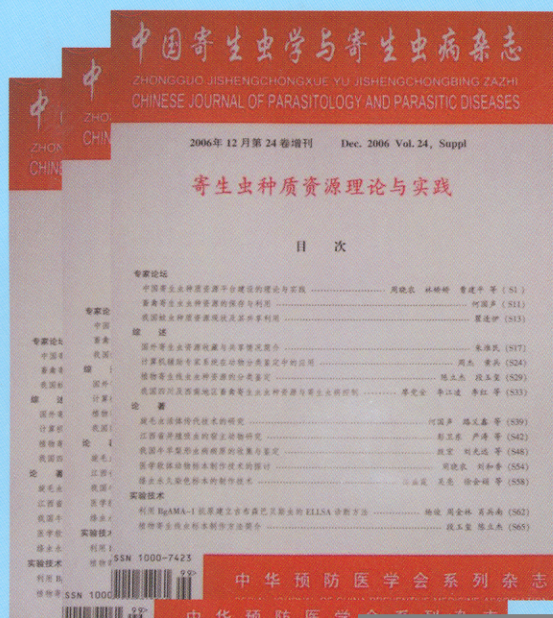
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中国疾病预防控制中心寄生虫病预防控制所

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寄生虫种质资源理论与实践

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实验技术

利用

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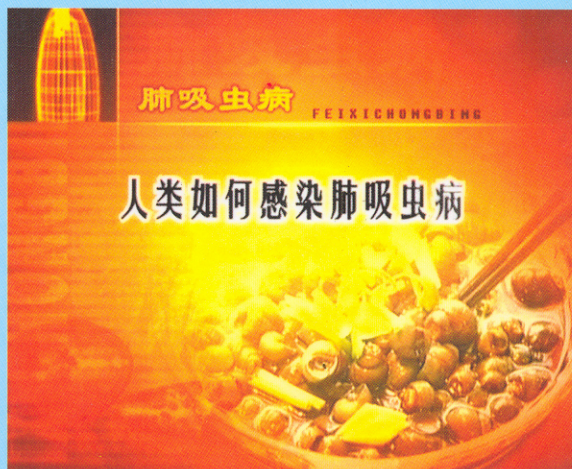
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