

10384  
20120051403120

UDC

厦门大学

**Epidemiological investigation and researches on biology and  
molecular biology of human hookworms in urban and rural  
areas of Southern Fujian**

汪家旭

指导教师姓名：潘沧桑 教授

专业名称：动物学

论文提交日期：2009年7月

论文答辩时间：2009年9月

学位授予日期：20 年 月

厦门大学博硕士论文摘要库

厦门大学博硕士论文摘要库

# 厦门大学学位论文原创性声明

厦门大学博硕士论文摘要库

厦门大学博硕士论文摘要库

# 厦门大学学位论文著作权使用声明

1.

2

" " "

厦门大学博硕士论文摘要库

---

	.....	i
Abstract	.....	iv
	.....	ix
	.....	1
1.	.....	1
2	.....	2
3.	.....	2
4.	.....	4
5.	.....	6
6.	.....	10
7.	.....	11
8.	.....	13
9.	.....	16
10.	.....	19
11.	.....	21
12	.....	26
13.	.....	27
14.	.....	28
	.....	31
1	.....	31
2	.....	32
3	.....	35
3.1	.....	35
3.2	.....	40
3.3	.....	72

---

3. 4	.....	77
4	.....	80
	.....	83
5	.....	92
	.....	95
1	.....	95
2	.....	96
2. 1	.....	96
2. 2	.....	97
2. 3	.....	98
2. 4	.....	101
	.....	102
	.....	114
1	.....	114
2	.....	114
3	.....	115
4	.....	116
	.....	117
1	.....	117
2	.....	122
3	.....	123
3. 1	.....	123
3. 2	.....	124
4	.....	127
	.....	127
1	.....	127
2	.....	128

---

3	.....	130		
3.1	L3	130		
3.2	L3	133		
3.3	L3			
.....	.....	135		
.....	.....	137		
1	.....	137		
2	---	138		
3	---	139		
4	.....	140		
.....	.....	141		
RNA	( <i>A. duodenale</i> )			
1	.....	145		
2	.....	147		
3	.....	148		
3.1	ITS1-5.8S-ITS2	154		
3.2	18S rRNA	156		
3.3	ITS	158		
3.4	18S rRNA	Strongylida	160	
3.5	RAPD	.....	164	
4	.....	166		
4.1	ITS1-5.8S-ITS2	18S rDNA	166	
4.2	ITS1	ITS2	.....	166
4.3	18S rRNA	Strongylida	167	
4.4	.....	RAPD	169	
5	.....	170		

---

.....	171
.....	174
.....	195

厦门大学博硕士论文摘要库

## Contents

Abstract in Chinese .....	i
Abstract in English.....	iv
Note of English abbreviation .....	ix
Chapter 1 Progress in study on hookworms .....	1
1. Discovery of hookworms .....	1
2. Systematics of hookworms .....	2
3. Life cycle of hookworms .....	2
4. Prevalence of hookworms infection worldwide .....	4
5. Relationship between prevalence of hookworm and poverty .....	6
6. Co-infection with other pathogens .....	10
7. Infection and immune responses to hookworms.....	11
8. Diagnosis methods of hookworm disease.....	13
9. Genomics of hookworms .....	16
10. Progress in study on animal models of human hookworms .....	19
11. Study of hookworm vaccines.....	21
12. Strategies for control of hookworm disease.....	26
13. Future directions .....	27
14. Main significance of subject selection and introduction to the scientific research .....	28
Chapter 2 Epidemiological investigation on human hookworms in urban and rural areas of Southern Fujian	
( ----a report of several important human parasitose cases ).....	31
1. Background .....	31
2. Materials and methods .....	32
3. Results and discussions.....	35
3.1 The overall infection rate of geohelminthes, including	

---

hookworm ,roundworm ,whipworm and oxyurid.....	35
3.2 Studies of epidemiology on human hookworms in urban and rural areas of Southern Fujian.....	40
3.3 The investigation on infection situation of <i>enterobius vermicularis</i> in the kindergartens of Xiamen .....	72
3.4 The analysis on infection status of roundworm and whipworm in urban and rural areas of Southern Fujian.....	77
4. Brief summary of the epidemiological investigation.....	80
Appendix---a report of several important parasitic cases.....	83
5. Brief summary of the chapter .....	92
Chapter 3 Study on biology of human hookworms in urban and rural areas of Southern Fujian .....	95
. The morphological feature of <i>Necator americanus</i> and <i>Ancylostoma duodenales</i> and <i>Ancylostoma caninum</i> .....	95
1. Matreials and methods .....	95
2. Results and discussions.....	96
2.1 Eggs.....	96
2.2 Rhabditid larva.....	97
2.3 Filariform larva.....	98
2.4 Adults .....	101
Appendix---the morphological observation of the eggs of <i>A. lumbricoides</i> and <i>T. trichiura</i> and <i>C. sinensis</i> and <i>E. vermicularis</i> .....	102
. A simple convenient mothds for collecting a large amount of hookworm larva was developed .....	114
1. The tested materials and experimental apparatuses .....	114
2. An introduction to the methods.....	114
3. Results .....	115
4. Discussions .....	116
. A preliminary studying on a new technique of hookworm larva separated from the soil .....	117

1. Background .....	117
2. Matrials and methods.....	122
3. Results .....	123
3.1 Comparison between two methods of the overall separation efficiency of hookworm larva .....	123
3.2 Comparison between two methods of the separation efficiency of hookworm live larva .....	124
4. Discussions .....	127
. An experiment observation on the third larva of <i>Necator americanus</i> attraction migration at sand plate model .....	127
1. Background .....	127
2. Matrials and methods.....	128
3. Results and discussions.....	130
3.1 Effect on the moisture proportion at the sand plates with the third larva of <i>Necator americanus</i> attraction migration .....	130
3.2 Effect on the temperature at the sand plates with the third larva of <i>Necator americanus</i> attraction migration .....	133
3.3 Contrast attraction with <i>E. coli</i> , human and pig dander sweat the small intestine contents of the <i>N. americanus</i> L3 larva .....	135
. An experiment observation on the third hookworm larva attraction migration in 2% water agar plate model .....	137
1. Matrials .....	137
2. Experiment methods.--- water agar plate transitional design .....	138
3. Results --Three hookworm larva transitional in <i>E. coli</i> .....	139
4. Discussions .....	140
. Brief summary of the chapter .....	141
Chapter 4 Researches on molecular biology of <i>Ancylostoma duodenale</i> based on nuclear ribosomal RNA genes .....	145
1. Matrials .....	147
2. Methods.....	148

3. Results.....	154
3.1 Hookworm ITS1-5.8S-ITS2 gene cloning .....	154
3.2 Hookworm 18S rRNA gene cloning .....	156
3.3 Based on the ITS types, molecular identification of hookworm .....	158
3.4 Based on 18S rRNA , phylogenetic analysis of Strongylida .....	160
3.5 RAPD analysis of genetic diversity within <i>Ancylostoma duodenale</i> ....	164
4. Discussions .....	166
4.1 ITS1-5.8S-ITS2 and 18S rDNA gene cloning of the tested hookworm .	166
4.2 Based on ITS1 and ITS2 sequence , molecular identification of hookworms and phylogenetic analysis on <i>Ancylostoma</i> .....	166
4.3 Based on 18S rRNA , Phylogenetic analysis on Strongylida.....	167
4.4 Genetic diversity within <i>Ancylostoma duodenale</i> using the RAPD analysis.....	169
5. Brief summary of the chapter.....	170
Conclusion .....	171
References.....	174
Acknowledgments.....	195

2005 3 2009 1

2.

1  
2  
89  
r      Q 9800, P      0.05      50  
88.16%, 84.10%  
50

3 261

2

4

1

Degree papers are in the "[Xiamen University Electronic Theses and Dissertations Database](#)". Full texts are available in the following ways:

1. If your library is a CALIS member libraries, please log on <http://etd.calis.edu.cn/> and submit requests online, or consult the interlibrary loan department in your library.
2. For users of non-CALIS member libraries, please mail to [etd@xmu.edu.cn](mailto:etd@xmu.edu.cn) for delivery details.

厦门大学博硕士论文摘要库