

# NEW YORK STATE PARASITOLOGY PROFICIENCY TESTING PROGRAM

## GENERAL

06 FEBRUARY 2007

The purpose of the New York State Proficiency Testing Program in the category of Parasitology General is to monitor the performance of applicant laboratories in detecting and identifying parasites in fecal emulsions, fecal smears, and blood films.

### **SAMPLE PREPARATION AND QUALITY CONTROL**

All emulsions and slides used in this test were prepared by a commercial source. The emulsions were dispensed into the vials from pools which were continuously mixed during the loading process. Numerous samples of each test specimen were selected at random by the Parasitology Unit of the David Axelrod Institute for Public Health, and were checked to confirm their contents. Extensive quality control tests were also conducted by the supplying vendor and a detailed quality control report was submitted to the New York State Parasitology Laboratory for inspection and verification. Samples were authenticated by 80% of participating laboratories and/or referee laboratories.

**SAMPLE 07-K**  
**Report: HELMINTHS ONLY**

**RESULTS OF PARTICIPATING LABS:**

<b>ORGANISM REPORTED</b>	<b>NUMBER REPORTED</b>	<b>PERCENT REPORTED</b>	<b>REFEREE RESULTS</b>	<b>STATUS</b>
<i>Hymenolepis diminuta</i>	142/143	99	10/10	CORRECT
<i>Hymenolepis nana</i>	2	1	0	INCORRECT
<i>Entamoeba coli</i>	1	.7	0	INCORRECT
<i>Necator americanus</i> / <i>Ancylostoma duodenale</i>	1	.7	0	INCORRECT

**QUALITY CONTROL:**

Participating and referee laboratories agreed that *Hymenolepis diminuta* was the correct response (99 and 100%). Quality control examination of 4% of this sample revealed an average of 8 ova per coverslip. Other tests performed include Direct Immunofluorescent Assay and ELISA for *Giardia lamblia* and *Cryptosporidium* sp. which were negative for both organisms. A modified acid-fast stained smear was also negative.

**DIAGNOSTIC CHARACTERISTICS:**



*Hymenolepis diminuta* is an uncommon infection in man but it has a worldwide distribution and most cases are reported in children. Infection occurs when arthropods containing cysticercoids are ingested resulting in the development of adult worms in the intestine. The arthropod intermediate host is not optional and transmission cannot occur from person to person through the direct ingestion of eggs. The eggs passed in stool are the diagnostic stage although adult worms are sometimes passed. The eggs are thin shelled, measure from 60-79 microns and contain a six-hooked oncosphere. They are similar to the eggs of *H. nana* but are larger and do not contain polar filaments.

**SAMPLE 07-L**  
**Report: PROTOZOA ONLY**

**RESULTS OF PARTICIPATING LABS:**

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
NO PARASITES SEEN	142/143	99	10/10	CORRECT
<i>Giardia lamblia</i>	1	.7	0	INCORRECT

**QUALITY CONTROL:**

Participating and referee laboratories agreed that **NO PARASITES SEEN** was the correct response (99 and 100%). Quality control examination of 4% of this sample showed normal fecal debris. Other tests performed include a Direct Immunofluorescent Assay and ELISA for *Giardia lamblia* and *Cryptosporidium* sp. which were negative for both organisms. A modified acid-fast stained smear was also negative.

**SAMPLE 07-M**  
**Report: HELMINTHS ONLY**

**RESULTS OF PARTICIPATING LABS:**

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Diphyllobothrium latum</i>	143/143	100	10/10	CORRECT

**QUALITY CONTROL:**

Participating and referee laboratories agreed that ***Diphyllobothrium latum*** was the correct response (100%). Quality control examination of 4% of this sample revealed an average of 25 ova per coverslip. Other tests performed include Direct Immunofluorescent Assay and ELISA for *Giardia lamblia* and *Cryptosporidium* sp. which were negative for both organisms. A modified acid-fast stained smear was also negative.

## DIAGNOSTIC CHARACTERISTICS:



*Diphyllobothrium latum* is an intestinal tapeworm acquired by ingesting raw or poorly cooked freshwater fish. The diagnostic stage is the egg recovered in stool. These eggs are ovoid and measure 60 to 70µm by 20-35µm. They have an operculum at one end and a small knob at the other. The knob may or may not be visible depending upon the position of the egg. These eggs may be confused with *Paragonimus* sp. so measurement with a calibrated ocular micrometer is important.

### SAMPLE 07-N

Report: ALL PARASITES

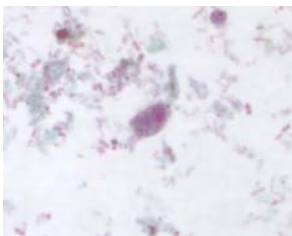
## RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Entamoeba hartmanni</i>	138/142	97	10/10	CORRECT
<i>Entamoeba histolytica</i>	4	3	0	INCORRECT
<i>Chilomastix mesnili</i>	2	1	0	INCORRECT

## QUALITY CONTROL:

Participating and referee laboratories agreed that *Entamoeba hartmanni* was the correct response (97 and 100%). Quality control examination of 4% of this sample showed trophozoites in every 2-3 100X oil emersion fields. They measure 4-8 microns and contain a single nucleus with peripheral nuclear chromatin.

## DIAGNOSTIC CHARACTERISTICS:



Nonpathogenic *Entamoeba hartmanni* has a worldwide distribution and is morphologically similar to *E. histolytica*. Transmission occurs through the fecal oral route and the diagnosis is made by detecting cysts and trophozoites in stool. The cysts are small, measuring 5-8 microns and contain 4 nuclei with small, compact, centrally located karyosomes. Rounded chromatoid bodies may or may not be present. The trophozoites measure from 5-12 microns and contain 1 nucleus. The karyosome is compact and usually centrally located. The cytoplasm is finely granular and may contain ingested bacteria but not red blood cells.

**SAMPLE 07-O**  
**Report: ALL PARASITES**

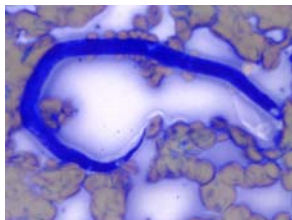
**RESULTS OF PARTICIPATING LABS:**

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Loa loa</i>	109/135	81	9/10	CORRECT
NO PARASITES SEEN	11	8	0	INCORRECT
<i>Mansonella</i> sp.	9	7	0	INCORRECT
<i>Brugia malayi</i>	4	3	0	INCORRECT
<i>Wuchereria bancrofti</i>	2	1	1	INCORRECT

**QUALITY CONTROL:**

Participating and referee laboratories agreed that ***Loa loa*** was the correct response (81 and 90%). Quality control examination of 4% of this sample revealed an average of 9 microfilariae per slide. They are sheathed and the nuclei extended to the tip of the tail.

**DIAGNOSTIC CHARACTERISTICS:**



*Loa loa*, also called the African eye worm, infects humans when they are bitten by infected deer or mango flies. The larvae are deposited into the bite wound and develop into adults within 6-12 months. Adults migrate beneath the conjunctiva or the skin, or through subcutaneous tissues. Years after the initial infection the adults give rise to microfilariae which can be detected in the blood. The microfilariae are sheathed and measure between 250-300 µm. They have nuclei that extend all the way to the tip of the tail. Although the sheath does not stain with giemsa it is still clearly visible as shown in the image on the left.

**CRYPTOSPORIDIUM IMMUNOASSAY RESULTS (Incorrect answers are bolded)**

METHOD	07-K		07-L		07-M	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
Meridian ImmunoCard STAT Crypto/Giardia	12	0	12	0	12	0
Meridian Merifluor Crypto/Giardia	13	0	13	0	13	0

Remel Prospect Crypto EIA	17	0	17	0	17	0
Remel Xpect Crypto	1	0	1	0	1	0
Remel Xpect Giardia/ Crypto	3	0	3	0	3	0
TechLab/Wampole Test EIA	3	0	3	0	3	0
NO CODE GIVEN	12	0	12	0	12	0

**GIARDIA IMMUNOASSAY RESULTS** (Incorrect answers are bolded)

METHOD	07-K		07-L		07-M	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
Meridian ImmunoCard STAT Crypto/Giardia	13	0	13	0	13	0
Meridian Merifluor Crypto/Giardia	9	0	9	0	9	0
Remel Prospect Giardia EIA	22	0	22	0	22	0
Remel ProSpect Giardia EZ	3	0	3	0	3	0
Remel Xpect Giardia	3	0	3	0	3	0
Remel Xpect Giardia/Cryptosporidium	3	0	3	0	3	0
TechLab/Wampole Test EIA	2	<b>1</b>	2	<b>1</b>	3	0
NO CODE GIVEN	13	0	13	0	13	0

**DISTRIBUTION OF SCORES**

SCORE	NO. OF LABS	PERCENT
100	117	78
90-99	3	2
80-89	1	.6
70-79	0	0
60-69	3	2

## ANSWER KEY

<u>SAMPLE</u>	<u>CORRECT ANSWER</u>	<u>POINTS</u>
07-K	<i>Hymenolepis diminuta</i>	20
07-L	NO PARASITES SEEN	20
07-M	<i>Diphyllobothrium latum</i>	20
07-N	<i>Entamoeba hartmanni</i>	20
07-O	<i>Loa loa</i>	20

**TOTAL POSSIBLE POINTS 100**

## GRADING

The answer key was derived from the response of all participating laboratories as per **CLIA Regulations**, Part 493, Subpart I, Section 493.917. These regulations can be viewed at [www.phppo.cdc.gov](http://www.phppo.cdc.gov). These regulations state that 80% or more of participating laboratories **or** referee laboratories must identify the parasite for it to be correct. Similarly, less than 20% of the participating laboratories **or** referees finding parasites or ova is an incorrect response. Organisms reported by 20-80% of the participating laboratories **or** referees are "Unauthenticated", and are not considered for grading.

Each sample has a maximum value of 20 points. Credit is given according to the formula:

$$\frac{\text{Number of correct responses by lab}}{\text{\# Correct Parasites Present} + \text{\# Lab's Incorrect Answers}} \times 100$$

## IMPORTANT REMINDERS

The next Parasitology Proficiency Test is scheduled for **June 5, 2007** You are responsible for notifying us **before June 12, 2007** if you do not receive your test. Proficiency test results must be postmarked by **June 19, 2007** or you will receive a zero. These requirements are clearly stated in your NYS Proficiency Testing Handbook provided by the NYS Clinical Laboratory Evaluation Program or can be accessed via the internet at <http://www.wadsworth.org/labcert/clep/ProgramGuide/WebGuide.pdf>

## NEWS AND NOTES

Policy changes made by the Clinical Laboratory Evaluation Program allow for the CQ holder for a particular category to sign the attestation statement instead of the Laboratory Director. Starting with the February 05, 2001 test event we will now accept Director's and/or CQ holder's signatures on the attestation statement.

The Clinical Parasitology Lab of the NYSDOH offers two mailing kits for the submission of specimens. One kit contains vials of ZnPVA and Formalin and the other does not. These kits can be ordered by calling 518-474-4175 and requesting kit DOH-2117. Please be sure to specify whether you need preservatives or not. **Remember that the NYS Parasitology Lab only accepts specimens preserved in appropriate fixatives for the test requested.**