



Parasitology (General) **07 October 2008**

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. This document reports the results for the October 2008 proficiency test in Parasitology (General). **Important news about the February 2009 proficiency test is included on the last page.**

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 assayed for quality and confirmation of 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.

08-K (Helminths Only)

Correct diagnosis: *Taenia* sp.

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
<i>Taenia</i> sp.	127/129	98	10/10	Correct
<i>Ascaris lumbricoides</i>	1/129	1	0	Incorrect
No Parasites Seen	1/129	1	0	Incorrect

Quality Control and Referee Information

Participating and referee laboratories agreed that ***Taenia* sp.** was the correct response (98% and 100% respectively). Quality control examination of 4% of this sample showed an average of 7 ova per coverslip. 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.

Diagnostic Characteristics



The diagnostic stage of the intestinal cestode *Taenia sp.* is the characteristic egg found in stool. These eggs are yellow-brown, round to oval and measure 35-40 micrometers. They have a thick radially striated shell and contain an oncosphere with visible hooks. Infection occurs when raw or poorly cooked beef or pork containing encysted larvae is ingested. The larvae are digested out of the meat in the stomach and attach to the wall of the small intestine. The adult worms mature in about 5-12 weeks and begin to produce proglottids containing infective eggs. These eggs are passed in the stool to the environment where the cycle is continued.

08-L (All Parasites)

Correct diagnosis: *Schistosoma haematobium*

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
<i>Schistosoma haematobium</i>	126/129	98	10/10	Correct
<i>Schistosoma mansoni</i>	1/129	1	0	No Penalty
No Parasites Seen	3/129	2	0	Incorrect

Quality Control and Referee Information

Participating and referee laboratories agreed that *Schistosoma haematobium* was the correct response (98% and 100% respectively). Quality control examination of 4% of this sample showed an average of 9 ova per coverslip. *Schistosoma mansoni* was also found in rare numbers (< 1 per coverslip) in the quality control exam, so no credit was deducted for reporting it. 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

Schistosoma haematobium is usually found in urine but it can occasionally be found in stool samples. It is distributed throughout Africa, India, the Middle East, and Portugal. The primary reservoir is humans and the intermediate host is the snail. Humans become infected when exposed to cercariae in fresh water. The cercariae penetrate the skin and develop into adult worms in the venous circulation. The fully embryonated eggs measure 112-170 µm and do not have an operculum. They are characterized by a distinctive terminal spine.



08-M (Helminths Only)

Correct diagnosis: *Clonorchis sinensis*.

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
<i>Clonorchis sinensis</i> / <i>Opisthorchis</i> sp.	122/129	95	9/10	Correct
No parasites seen	7/129	5	1	Incorrect

Quality Control and Referee Information

Participating and referee laboratories agreed that *Clonorchis sinensis*/*Opisthorchis* sp. was the correct response (95% and 90% respectively). Quality control examination of 4% of this sample revealed an average of 6 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



Clonorchis sinensis is a trematode that parasitizes the biliary ducts of humans. Humans become infected when they eat uncooked freshwater fish that contain metacercariae. The metacercariae excyst and travel to the distal bile capillaries where the worms mature. Adult worms deposit eggs in the bile fluid and these are later discharged into the feces. The eggs measure 28-35 μ m. They are thick shelled, ovoid, have an operculum with distinct opercular shoulders, and a knob at the abopercular end.

08-N (Protozoa Only)

Correct diagnosis: *Giardia lamblia*.

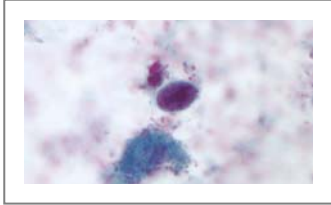
Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
<i>Giardia lamblia</i>	128/128	100	10/10	Correct

Quality Control and Referee Information

Participating and referee laboratories agreed that *Giardia lamblia* was the correct response (100%). Quality control examination of 4% of this sample showed cysts and trophozoites in almost every 100X oil-immersion field.

Diagnostic Characteristics



Giardia lamblia is the most commonly diagnosed flagellate in humans. It has a worldwide distribution and is more prevalent in children than in adults. Trophozoites are pear shaped and measure 10-20 μm . They have 2 nuclei, 4 pair of flagella, 2 axonemes, and 2 median bodies. The infective cysts are oval and measure 11-15 μm . They contain 4 nuclei usually located at one end, filaments, and median bodies.

08-O (All Parasites)

Correct diagnosis: No parasites seen.

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
No Parasites Seen	121/121	100	10/10	Correct

Quality Control and Referee Information

Participating and referee laboratories agreed that No Parasites Seen was the correct response (100%). Quality control examination of 4% of this sample showed erythrocytes of normal size and staining characteristics. Normal blood elements are present and exhibit typical staining characteristics. No inclusions are present.

Scoring Information

Immunoassay Results (incorrect answers are marked)

<i>Cryptosporidium</i>	08-K		08-L		08-M	
METHOD	-	+	-	+	-	+
Meridian ImmunoCard STAT Crypto/Giardia	19	0	19	0	19	0
Meridian Merifluor Crypto/Giardia	18	0	18	0	18	0
Meridian Premier Cryptosporidium	1	0	1	0	1	0
Remel ProspecT Cryptosporidium EIA	21	1	22	0	22	0
Remel Xpect Cryptosporidium	1	0	1	0	1	0
Remel Xpect Giardia/Cryptosporidium	4	0	4	0	4	0
TechLab/Wampole Test EIA	6	1	7	0	7	0

<i>Giardia</i>	08-K		08-L		08-M	
METHOD	-	+	-	+	-	+
Meridian ImmunoCard STAT Crypto/Giardia	20	0	20	0	20	0
Meridian Merifluor Crypto/Giardia	13	0	13	0	13	0
Meridian Premier Giardia	1	0	1	0	1	0
Remel ProspecT Giardia EIA	29	0	29	0	29	0
Remel ProSpect Giardia EZ	2	0	2	0	2	0
Remel Xpect Giardia	4	0	4	0	4	0
Remel Xpect Giardia/Cryptosporidium	4	0	4	0	4	0
TechLab/Wampole Test EIA	10	0	9	1	10	0

Distribution of Scores

Score	# of labs	% of labs
100	125	91
90-99	1	1
80-89	10	7
70-79	0	0
60-69	1	1
50-59	1	1

Answer Key

Sample	Correct Answer	Points
08-K	<i>Taenia</i> sp.	20
08-L	<i>Schistosoma haematobium</i>	20
08-M	<i>Clonorchis sinensis</i> / <i>Opisthorchis</i> sp.	20
08-N	<i>Giardia lamblia</i>	20
08-O	No parasites seen	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. These regulations state that 80% or more of participating laboratories **or** referee laboratories must identify the parasite for it to be correct. Similarly, reporting of a parasite identified by less than 20% of the participating laboratories **or** referees finding parasites or ova is an incorrect response. Organisms reported by more than 20% but less than 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 mailout dates for Parasitology have been changed from the first Monday of February, June, and October to the first Tuesday.

The next Parasitology Proficiency Test is scheduled for **February 3, 2009**. You are responsible for notifying us **before February 10, 2009** if you do not receive your test. Proficiency test results must be electronically submitted through EPTRS by **February 17, 2009** 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

Beginning with the February 2009 proficiency exam, the **grading policy will change**. In order to make the score on the NYS Parasitology PT exam more accurately reflect laboratory performance, and be more consistent across categories, a new scoring system will be in effect. Under the new scoring system, grades will be based only on the specimen types processed by your laboratory. For example, if your laboratory does not process blood smears, your score will be based on the four fecal specimens, each of which will be worth 25% of the total. Laboratories that process all of the types of samples included in the exam will not observe any changes in scoring method.