

NEW YORK STATE PARASITOLOGY PROFICIENCY TESTING PROGRAM

GENERAL

03 JUNE 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.

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 08-F HELMINTHS ONLY

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Diphyllobothrium latum</i>	131/132	99	10/10	Correct
<i>Cryptosporidium</i> sp.	1	.8	0	Incorrect
<i>Paragonimus westermani</i>	1	.8	0	Incorrect
<i>Giardia lamblia</i>	1	.8	0	Incorrect

QUALITY CONTROL:

Participating and referee laboratories agreed that *Diphyllobothrium latum* was the correct response (99 and 100%). Quality control examination of 4% of this sample showed an average of 9 ova per coverslip. The eggs measured between 65-75µm and had an operculum. Also present were *Blastocystis hominis*, and *Endolimax nana*. 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:



Diphyllobothrium latum egg

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 08-G

Report: ALL PARASITES

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
NO PARASITES SEEN	131/132	99	10/10	Correct
<i>Trichuris trichiura</i>	1	.8	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 revealed normal fecal debris. 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.

SAMPLE 08-H
Report: HELMINTHS ONLY

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Ascaris lumbricoides</i>	128/132	97	10/10	Correct
<i>Trichuris trichiura</i>	12	9	2	No Penalty
<i>Paragonimus westermani</i>	1	.8	0	Incorrect
NO PARASITES SEEN	3	2	0	Incorrect

QUALITY CONTROL:

Participating and referee laboratories agreed that *Ascaris lumbricoides* was the correct response (97 and 100%). Quality control examination of 4% of this sample revealed an average of 9 ova per coverslip. Rare *Trichuris trichiura* were also seen. 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:



Ascaris lumbricoides
infertile egg

Ascaris lumbricoides is one of the most common intestinal nematode infections of man. It is most prevalent in warm moist climates but can also be found in cooler areas. Infection is acquired when embryonated eggs in contaminated soil are ingested. The fertilized eggs are round to oval, mammillated, and golden brown in color. They measure 45-75µm by 35-50µm. Occasionally they may lose their outer mammillated layer. Infertile eggs are larger, less broad, and have thinner shells. They measure 85-90µm by 43-47µm.

SAMPLE 08-I
Report: PROTOZOA ONLY

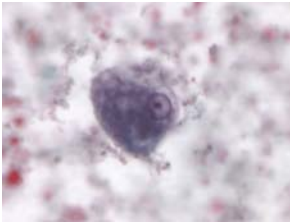
RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Entamoeba coli</i>	85/131	65	6/10	Unauthenticated
<i>Entamoeba histolytica/dispar</i>	54	41	5	
<i>Endolimax nana</i>	1	1	0	
NO PARASITES SEEN	2	2	0	

QUALITY CONTROL:

Participating and referee laboratories failed to agree that *Entamoeba coli* was the correct response (65 and 60%) so credit was given for all responses. Quality control examination of 4% of this sample showed cysts and trophozoites in almost every 100X oil emersion field.

DIAGNOSTIC CHARACTERISTICS:



Entamoeba coli
trophozoite

Entamoeba coli is distributed worldwide and is nonpathogenic. The trophozoites vary in size from 12-50 micrometers with an average range of 15-25 micrometers. They have a single nucleus that generally has a large diffuse karyosome and irregular peripheral chromatin. The cytoplasm is generally granular and vacuolated. The cysts measure between 10-35 micrometers with an average range of 15-25 micrometers. Most of the cysts noted in this sample were in the 10-15 micrometer size range. The mature cyst has 8 nuclei that have uneven peripheral chromatin and large diffuse karyosomes. Chromatin bars are less common than in *Entamoeba histolytica* and have pointed ends. Infection occurs by ingesting contaminated food or water.

SAMPLE 08-J
Report: ALL PARASITES

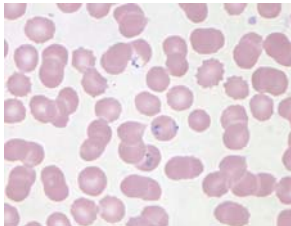
RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Plasmodium falciparum</i>	118/124	95	10/10	Correct
<i>Plasmodium malariae</i>	3	2	0	Incorrect
<i>Babesia</i> sp.	2	2	0	Incorrect
<i>Plasmodium vivax</i>	1	1	0	Incorrect

QUALITY CONTROL:

Participating and referee laboratories agreed that *Plasmodium falciparum* was the correct response (95 and 100%). Quality control examination of 4% of this sample revealed parasites in every 100X oil emersion field.

DIAGNOSTIC CHARACTERISTICS:



Plasmodium falciparum is one of the four species of *Plasmodium* known to infect humans. It causes the most dangerous and severe form of malaria and is always considered to be a medical emergency. Death may occur rapidly if proper treatment is not started immediately. Its distribution is limited to the tropics, primarily Africa and Asia. *P. falciparum* invades all ages of RBC's and so the parasitemia can exceed 50%. The usual stages seen in the peripheral blood are rings and gametocytes. Schizogony occurs in the internal organs so it is rare to see other stages although they may be present in cases of severe malaria. The infected RBC's are not enlarged nor do they contain Schüffner's dots. The rings are generally small, and may have one or two chromatin dots. Appliqué forms are also characteristic. Gametocytes are rounded to banana-shaped and contain a single well defined chromatin and coarse rice-grain like pigment.

CRYPTOSPORIDIUM IMMUNOASSAY RESULTS (Incorrect answers are bolded)

METHOD	08-F		08-G		08-H	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
Meridian ImmunoCard STAT Crypto/Giardia	20	0	20	0	20	0
Meridian Merifluor Crypto/Giardia	18	0	18	0	18	0
Meridian Premier Cryptosporidium	1	0	1	0	1	0
Remel ProspecT Cryptosporidium EIA	22	0	22	0	22	0
Remel Xpect Cryptosporidium	1	0	1	0	1	0
Remel Xpect Giardia/Cryptosporidium	5	0	5	0	5	0
TechLab/Wampole Test EIA	7	0	7	0	7	0

GIARDIA IMMUNOASSAY RESULTS (Incorrect answers are bolded)

METHOD	08-F		08-G		08-H	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
Meridian ImmunoCard STAT Crypto/Giardia	21	0	21	0	21	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	5	0	5	0	5	0
TechLab/Wampole Test EIA	9	1	10	0	10	0

DISTRIBUTION OF SCORES

SCORE	NO. OF LABS	PERCENT
100	130	92
90-99	2	1
80-89	8	6
70-79	0	0
60-69	2	1

ANSWER KEY

<u>SAMPLE</u>	<u>CORRECT ANSWER</u>	<u>POINTS</u>
08-F	<i>Diphyllobothrium latum</i>	20
08-G	NO PARASITES SEEN	20
08-H	<i>Ascaris lumbricoides</i>	20
08-I	<i>Entamoeba coli</i> *	20
08-J	<i>Plasmodium falciparum</i>	20

TOTAL POSSIBLE POINTS 100

* Unauthenticated

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, 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 **October 7, 2008**. You are responsible for notifying us **before October 14, 2008** if you do not receive your test. Proficiency test results must be entered electronically through EPTRS by **October 21, 2008** 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/lep/ProgramGuide/WebGuide.pdf>

NEWS AND NOTES

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.**