

NEW YORK STATE PARASITOLOGY PROFICIENCY TESTING PROGRAM

GENERAL

02 OCTOBER 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 08-F
Report: ALL PARASITES

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
NO PARASITES SEEN	137/138	99	10/10	CORRECT
<i>Cyclospora cayetanensis</i>	1	1	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 08-G
Report: HELMINTHS ONLY

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Trichuris trichiura</i>	138/138	100	10/100	CORRECT
<i>Necator americanus</i> / <i>Ancylostoma duodenale</i>	1	1	0	INCORRECT

QUALITY CONTROL:

Participating and referee laboratories agreed that ***Trichuris trichiura*** was the correct response (100%). Quality control examination of 4% of this sample revealed an average of 12 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:



Trichuris trichiura has a worldwide distribution but is more prevalent in warm moist climates. The diagnosis is made by seeing the characteristic eggs in stool. The average egg measures 55 x 25µm and is barrel-shaped. They have a smooth, thick, brownish shell with polar plugs at each end. Infection occurs when eggs in the soil are ingested. The larvae emerge in the intestine where they mature. Adult worms may live for up to 10 years or longer and continue to pass eggs into the

environment.

SAMPLE 08-H
Report: ALL PARASITES

RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
NO PARASITES SEEN	137138	99	10/10	CORRECT
<i>Balantidium coli</i>	1	1	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 no organisms. 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-I
Report: PROTOZOA ONLY

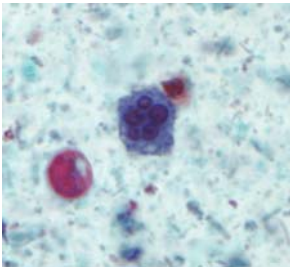
RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
NO PARASITES SEEN	122/137	89	10/10	CORRECT
<i>Dientamoeba fragilis</i>	6	4	0	INCORRECT
<i>Endolimax nana</i>	3	2	0	INCORRECT
<i>Entamoeba hartmanni</i>	3	2	0	INCORRECT
<i>Entamoeba histolytica/dispar</i>	2	1	0	INCORRECT
<i>Iodamoeba butschlii</i>	1	1	0	INCORRECT

QUALITY CONTROL:

Participating and referee laboratories agreed that **NO PARASITES SEEN** was the correct response (89 and 100%). Quality control examination of 4% of this sample showed no organisms but did show many nucleated white blood cells.

DIAGNOSTIC CHARACTERISTICS:



White blood cells can sometimes be confused with amoebae. They can be distinguished primarily by examining their nuclei. The ratio of nuclear material to cytoplasm is about 1:1 in polymorphonuclear leukocytes (PMNs) and is about 1:10 in trophozoites of *Entamoeba histolytica* and 1:3 in cysts. The nuclei of PMNs are also segmented, connected by narrow bands of chromatin. The segments may sometimes appear as separate nuclei but by focusing up and down the connecting strands can usually be seen.

SAMPLE 08-J Report: ALL PARASITES

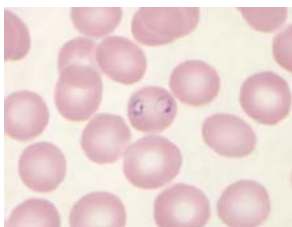
RESULTS OF PARTICIPATING LABS:

ORGANISM REPORTED	NUMBER REPORTED	PERCENT REPORTED	REFEREE RESULTS	STATUS
<i>Plasmodium falciparum</i>	123129	95	10	CORRECT
<i>Babesia</i> sp.	1	1	0	INCORRECT
<i>Plasmodium malariae</i>	2	2	0	INCORRECT
<i>Plasmodium vivax</i>	2	2	0	INCORRECT
Other	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 almost every 100X oil emersion field. The only stage seen was the early (ring) trophozoite. Appliqué forms and double chromatin were noted. Cells are not enlarged.

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	21	0	21	0	21	0
Meridian Merifluor Crypto/Giardia	19	0	19	0	19	0
Remel Prospect Crypto EIA	21	0	21	0	21	0
Remel Xpect Crypto	1	0	1	0	1	0
Remel Xpect Giardia/Crypto	5	0	5	0	5	0
TechLab/Wampole Test EIA	5	0	5	0	5	0
TecLab Crypto Cel IF	0	1	1	0	1	0
Remel Prospect Giardia/Crypto	1	0	1	0	1	0
MCC Para-Tect Crypto/Giardia	1	0	1	0	1	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	15	0	15	0	15	0
Remel Prospect Giardia EIA	27	0	27	0	27	0
Remel ProSpect Giardia EZ	3	0	3	0	3	0
Remel Xpect Giardia	4	0	4	0	4	0
Remel Xpect Giardia/Cryptosporidium	5	0	5	0	5	0
TechLab/Wampole Test EIA	6	0	6	0	6	0
TechLab/Wampole Giardia II ELISA	1	0	1	0	1	0
Remel Prospect Giardia/Crypto	1	0	1	0	1	0
TechLab Giardia Cel IF	0	1	1	0	0	1
MCC Para-Tect Crypto/Giardia	1	0	1	0	1	0

DISTRIBUTION OF SCORES

SCORE	NO. OF LABS	PERCENT
100	113	82
90-99	0	0
80-89	22	16
70-79	1	1
0	2	1

ANSWER KEY

<u>SAMPLE</u>	<u>CORRECT ANSWER</u>	<u>POINTS</u>
08-F	NO PARASITES SEEN	20
08-G	<i>Trichuris trichiura</i>	20
08-H	NO PARASITES SEEN	20
08-I	NO PARASITES SEEN	20
08-J	<i>Plasmodium falciparum</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. 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 **February 5, 2008**. You are responsible for notifying us **before February 12, 2008** if you do not receive your test. Proficiency test results must be entered electronically through EPTRS by **February 19, 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/clep/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.**