NEW YORK STATE

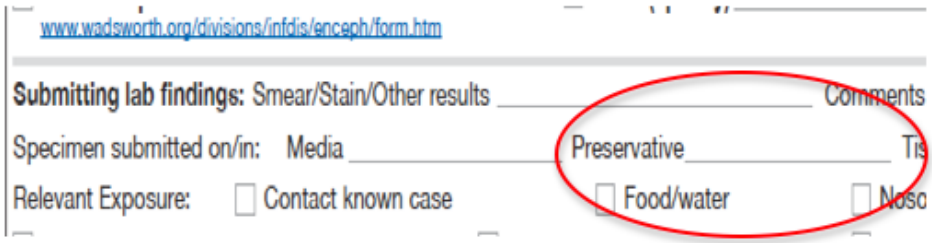
Parasitology Proficiency Testing Program

News and Notes

Samples supplied for laboratories performing antigen detection are 15I-A, 15I-B, and 15I-C. These are distinct from samples 15-A, 15-B, and 15-C and **cannot** be used interchangeably.

As molecular methods become increasingly common in the clinical parasitology lab, so does the necessity of knowing what preservative was used with the specimen. Preservatives commonly used for parasitology are not ideal for DNA extraction, and newly developed tests may only be approved for use with specific preservatives. For example, the assay may be approved for use with specimens preserved in 10% formalin but not SAF. Please remember to include the preservative information by filling out that section of the Infectious Disease Requisition, whenever submitting specimens to Wadsworth.

PLEASE NOTE: Specimens preserved in ethanol based fixatives (e.g. Total-Fix or Eco-Fix) or an unpreserved specimen should also be submitted, whenever possible, to maximize the likelihood of extracting good quality DNA.



Parasitology Comprehensive
3 February 2015

The purpose of the New York State Proficiency Testing Program in the category of Parasitology - Comprehensive is to monitor the performance of applicant laboratories that detect and identify parasites in fecal emulsions, fecal smears, and blood films. Below please find the results for the February 2015 proficiency test in Parasitology - Comprehensive and Antigen Detection.

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 Wadsworth Center Parasitology Laboratory (NYSDOH), and were assayed for quality and confirmation of organisms. The supplying vendor also conducted extensive quality control tests and a detailed quality control report was submitted for inspection and verification. Samples were authenticated by at least 80% of participating laboratories and/or referee laboratories.

15-A (Helminths Only)

Correct Identification: *Diphyllobothrium latum*

Results of Participating Laboratories

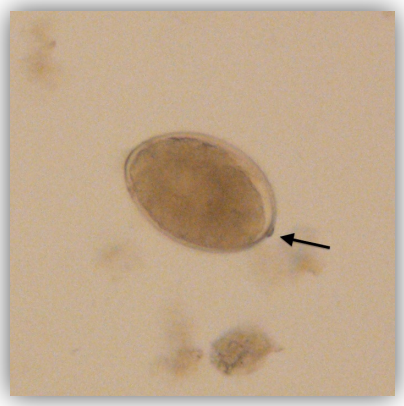
Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
Diphyllobothrium latum	89/90	99	10/10	**Correct**
Hymenolepis nana	1	1	0	**Incorrect**
Isospora belli	1	1	0	**Incorrect**

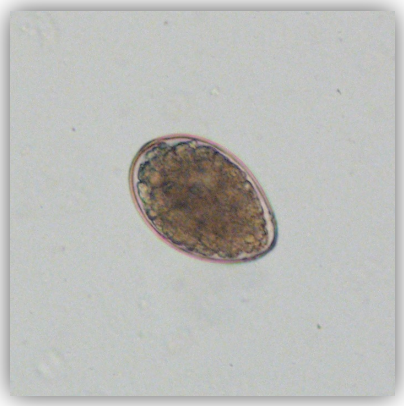
Quality Control and Referee Information

Participating and referee laboratories agreed that ***Diphyllobothrium latum*** was the correct response (99 and 100% respectively). Quality control examination of 4% of the vials for this sample showed an average of 9 eggs per coverslip.

Diagnostic Characteristics

Eggs observed consistently measured 60-70 µm x 40 µm in size. While most eggs were in tact, some were broken or had the operculum (lid) opened. A knob (arrow) is found at the aboperculum end, or the end opposite the operculum. The eggs are similar to those of *Paragonimus* but smaller in size with a less prominent operculum. Accurate measuring will clearly distinguish the two eggs.
D. latum is the fish tapeworm or broad fish tapeworm and is the largest of the cestodes that infect humans, with adult worms reaching lengths of up to 10 meters. As the name implies infection is caused by eating raw or undercooked fish. Severity of infection is dependent on the number of worms present and can range from asymptomatic to abdominal pain, weight loss and vitamin B12 deficiency.





15-B (All Parasites)

Correct Identification: No Parasites Seen

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
No Parasites Seen	90/90	100	10/10	**Correct**

Quality Control and Referee Information

All participating and referee laboratories agreed that **No Parasites Seen** was the correct response. Quality control examination of 4% of the vials for this sample showed normal fecal elements and no organisms present. Other tests performed included a direct immunofluorescent assay for *Giardia lamblia* and *Cryptosporidium* sp., which was negative for both organisms and a modified acid-fast stained slide, which was also negative.

15-C (Helminths Only)

Correct Identification: *Taenia* sp.

Results of Participating Laboratories

Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
Taenia sp.	89/90	99	10/10	**Correct**
Ascaris lumbricoides	1	1	0	**Incorrect**
Giardia lamblia *	1	1	1	**Incorrect ***

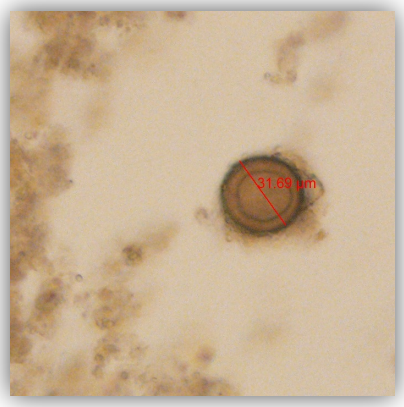
* The protozoa *Giardia lamblia* was present in this sample in low numbers. Instructions stated to "Report Helminths Only".

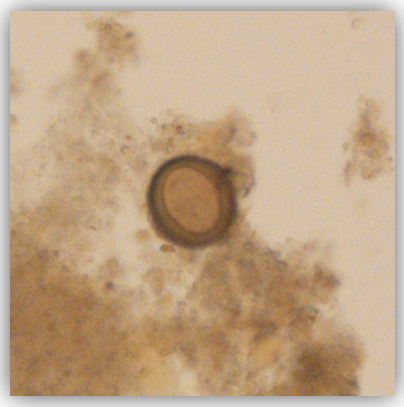
Quality Control and Referee Information

Participating and referee laboratories agreed that ***Taenia* sp.** was the correct response (99 and 100% respectively). Quality control examination of 4% of the vials for this sample showed an average of 9 eggs per coverslip.

Diagnostic Characteristics

The eggs observed in this sample had a thick outer shell and were round with a diameter of 30 µm. These are readily identified as belonging to the tapeworm *Taenia*. Eggs of *T. saginata*, the beef tapeworm, and *T. solium*, the pork tapeworm, cannot be distinguished microscopically. For both species the infection is caused by ingestion of raw or undercooked meat. The larval form of *T. solium* (cystercerci) can encyst throughout the body, typically in muscle or brain tissue, causing cystercercosis.





15-D (All Parasites)

Correct Identification: ***Entamoeba coli***

Results of Participating Laboratories

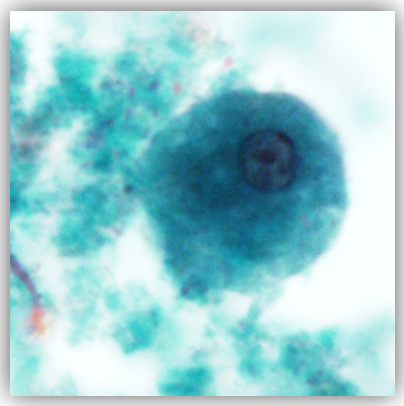
Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
Entamoeba coli	55/89	62	9/10	**Correct**
Entamoeba histolytica/dispar	36	40	2	**Incorrect**
Dientamoeba fragilis	1	1	0	**Incorrect**
Endolimax nana	1	1	0	**Incorrect**
No Parasites Seen	2	2	0	**Incorrect**

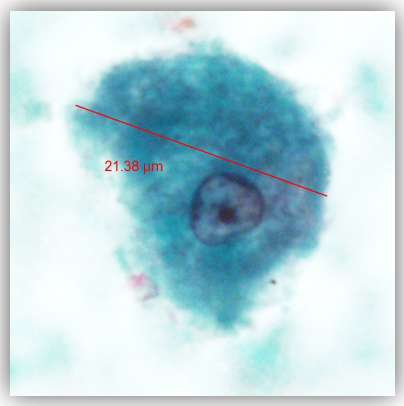
Quality Control and Referee Information

Referee laboratories agreed that ***Entamoeba coli*** was the correct response (90%). Quality control examination of 4% of the slides for this sample showed an average of 1 organism in every 5-10 40X fields.

Diagnostic Characteristics

This sample contained trophozoites of *Entamoeba coli*. This intestinal amoeba is morphologically similar to *E. histolytica*. One difference is a larger size, typically 15-20 µm for *E. coli* vs. 10-15 µm for *E. histolytica/dispar* on a stained slide. The karyosome is typically eccentric in *E. coli* and centrally located in *E. histolytica/dispar*. The peripheral chromatin is more irregularly distributed in *E. coli*. *Entamoeba coli* is considered non pathogenic though does indicate contact with food or water that has been contaminated.





15-E (All Parasites)

Correct Identification: *Trypanosoma brucei*

Results of Participating Laboratories

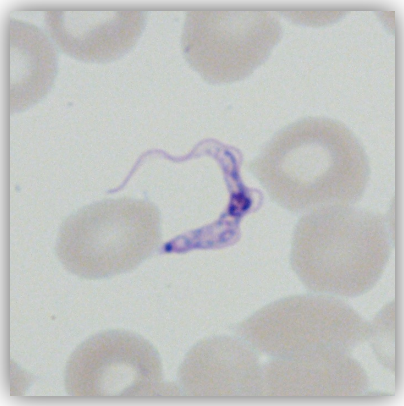
Organism reported	# of labs reporting	% of labs reporting	Referee results	Status
Trypanosoma brucei	64/86	74	8/10	**Correct**
Trypanosoma cruzi	19	22	2	**Incorrect**
Parasites Seen	3	4	0	**Correct**

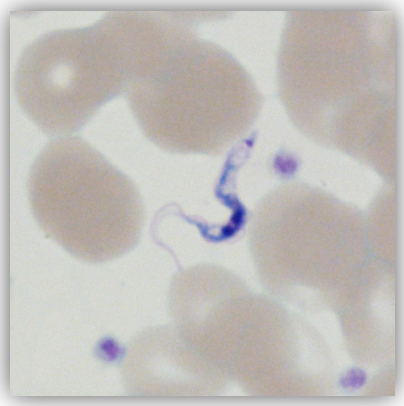
Quality Control and Referee Information

Referee laboratories agreed that ***Trypanosoma brucei*** was the correct response (80%). Quality control examination of 4% of the slides for this sample showed an average of 9 organisms in every 40X field. Staining quality was good.

Diagnostic Characteristics

This blood slide contained trypomastigotes of *Trypanosoma brucei* the causative agent of African sleeping sickness, also know as human African trypanosomiasis (HAT). This flagellated protozoa is most similar to *T. cruzi*, which causes Chagas' disease and is found primarily in South and Central America. The major morphological difference is the large kinetoplast (mitochondrial DNA) observed in *T. cruzi* compared to *T. brucei*.
African trypanosomiasis is limited to the tse-tse fly endemic area of Sub-Saharan Africa, where it has caused serious economic and social problems. If left untreated the infection is fatal.





Parasitology Antigen Detection

A separate set of samples (15I-A, 15I-B, and 15I-C) was sent for antigen detection. These results are reported below and show that the labs testing for *Cryptosporidium* and/or *Giardia* (99%, 100% respectively) obtained the correct answers for all three specimens.

Immunoassay Results

Cryptosporidium	**15I-A**		**15I-B**		**15I-C**	
METHOD	**-**	**+**	**-**	**+**	**-**	**+**
MCC Para-Tect Cryptosporidium/Giardia DFA	0	1	1	0	1	0
Meridian ImmunoCard STAT Cryptosporidium/Giardia	0	21	21	0	21	0
Meridian Merifluor Cryptosporidium/Giardia	1	15	16	0	16	0
Meridian Premier Cryptosporidium	0	1	1	0	1	0
Remel ProSpecT Cryptosporidium EIA	0	11	11	0	11	0
Remel Xpect Giardia/Cryptosporidium	0	5	5	0	5	0
TechLab Cryptosporidium II ELISA	0	1	1	0	1	0
TechLab Giardia/Cryptosporidium Quik Chek (Alere)	0	10	10	0	10	0
TechLab/Wampole Test EIA	0	4	4	0	4	0
# of labs reporting	1/70	69/70	70/70	0/70	70/70	0/70
% of labs reporting	1	99	100	0	100	0
Status	Incorrect	**Correct**	**Correct**	**Correct**	**Correct**	**Correct**

Giardia	**15I-A**		**15I-B**		**15I-C**	
METHOD	**-**	**+**	**-**	**+**	**-**	**+**
MCC Para-Tect Cryptosporidium/Giardia DFA	1	0	1	0	0	1
Meridian ImmunoCard STAT Cryptosporidium/Giardia	21	0	21	0	0	21
Meridian Merifluor Cryptosporidium/Giardia	13	0	13	0	0	13
Meridian Premier Giardia	1	0	1	0	0	1
Remel ProSpecT Giardia EIA	19	0	19	0	0	19
Remel Xpect Giardia	1	0	1	0	0	1
Remel Xpect Giardia/Cryptosporidium	5	0	5	0	0	5
TechLab Giardia II ELISA	1	0	1	0	0	1
TechLab Giardia/Cryptosporidium Quik Chek (Alere)	10	0	10	0	0	10
TechLab/Wampole Test EIA	6	0	6	0	0	6
# of labs reporting	78/78	0/78	78/78	0/78	0/78	78/78
% of labs reporting	100	0	100	0	0	100
Status	**Correct**	**Correct**	**Correct**	**Correct**	**Correct**	**Correct**

Scoring Information

Distribution of Scores Parasitology - Comprehensive

Score	# of labs	% of labs
100	42	46
90-99	4	5
80-89	31	34
70-79	1	1
60-69	11	12
50-59	1	1
0-09	1	1

Distribution of Scores Parasitology - Antigen Detection

Score	# of labs	% of labs
100	77	99
90-99	0	0
80-89	1	1
70-79	0	0
60-69	0	0
0-59	0	0

Answer Key Parasitology - Comprehensive

Sample	Correct Answer
15-A	*Diphyllobothrium latum*
15-B	No Parasites Seen
15-C	*Taenia* sp.
15-D	*Entamoeba coli*
15-E	*Trypanosoma brucei*

Answer Key Parasitology - Antigen Detection

Sample	Correct Answer
15I-A	*Cryptosporidium* sp.
15I-B	Negative
15I-C	*Giardia lamblia*

Grading

The answer key was derived from the response of all participating laboratories as per **CLIA Regulations**, CFR Title 42, Part 493, Subpart I, Section 493.917. These regulations can be viewed at www.cdc.gov/clia/Regulatory/default.aspx. These regulations state that 80% or more of participating laboratories **or** referee laboratories must identify the parasite for it to be authenticated as a correct answer. Similarly, reporting of a parasite identified by less than 10% of the participating laboratories **or** referees is an incorrect response. Organisms that are not authenticated, but which were reported by more than 10% of the participating laboratories **or** referees, are "Unauthenticated" and are not considered for grading.

Credit is given according to the formula:

[# of Correct Responses / (# of Correct Responses + # of Incorrect Responses)] X 100

For example, if a sample contained one principal parasite and the laboratory reported it correctly but reported the presence of an additional parasite, which was not present, the sample grade would be:

$1/(1+1)\times 100 = 50$ percent.

Important Reminders

The next Parasitology Proficiency Test is scheduled for **May 19, 2015.** Participating labs will need to notify us **before May 26, 2015** if the samples are not received. Proficiency test results must be electronically submitted through EPTRS by **June 3, 2015** or the laboratory will receive a score of zero. This and additional information can be found in the NYS Proficiency Testing Program Guide provided by the NYS Clinical Laboratory Evaluation Program, which can be accessed via the Internet at:

http://www.wadsworth.org/labcert/clep/ProgramGuide/pg.htm