

DEPARTMENT OF MICROBIOLOGY



Professor John F. Lindo, BSc, PhD *UWI*
Head of Department

WORK OF THE DEPARTMENT

The Department of Microbiology continues to provide laboratory diagnostic services in the areas on bacteriology, virology, mycology, immunology parasitology, molecular biology and Fluorescence microscopy. The main client of the department is the University Hospital of the West Indies and we also serve the Ministry of Health especially in the area of virology. The department also serves a small number of private laboratories and other clients. During the period under review a total of 61,398 samples were tested with the heaviest service being bacteriology followed by virology (Table 1).

Table 1. Clinical work done in sections

Service	Number of specimens	Units
Bacteriology	30,777	1,442,422
Virology	13,986	1,980,012
Enteric/Parasitology	1,305	64,689
Immunology	7,102	244,099
Fluorescence Antibody test	4,342	182,190
Emergency samples	3,268	
Mycology	511	15,330
Molecular Biology	107	4,815
Total	61,398	3,933,557

There was no significant change in the number of specimens tested between 2011/2012 and 2012/2013. The only significant increase was seen in the area of virology which saw a 56.06 increase (Table 2).

Table 2. Comparison of total specimens by sections

Section	2011/2012	2012/2013	Change
Bacteriology	31,059	30,777	0.91↓
Virology	8,962	13,986	56.06↑
Enteric/Parasitology	1,330	1,305	1.88↓
Serology	7,233	7,102	1.81↓
Fluorescence Antibody test	4,324	4,342	0.42↑
Molecular Biology	132	107	12.94↓
Mycology	495	511	3.23↑
Emergency	2,858	3,268	14.35↑

Department of Microbiology

The department has failed to implement an income generation strategy for sustainability by offering its services to private clients.

BIOSAFETY LEVEL III LABORATORY

Work is almost completed on the construction of Jamaica's first Biosafety Level III laboratory. The last steps are to train the staff in use of the laboratory and to have it certified by a consultant.

CARIBBEAN MEDICAL MYCOLOGY REFERENCE LABORATORY (CMMRL)

The CMMRL continues to provide improved services to the clinical disciplines with improved turnaround time and the addition of new diagnostic assays. In addition, the laboratory has started to make strides with the undertaking of environmental fungal studies. This includes environmental mold sampling for buildings on the University campus (Mona School of Business and Management) and the University Hospital of the West Indies for surveillance purposes and determination of the need for decontamination of relevant areas.

NATIONAL INFLUENZA CENTRE

Established in 1952, in the Department of Microbiology, the National Influenza Centre (NIC) Jamaica continues to work in collaboration with National Authorities through the Ministry of Health (MoH) Influenza and International Health Regulation Focal Point. The NIC engages in collaborations with the CDC, the WHO Global Influenza Surveillance and Response System and through the MoH with the PAHO and CARPHA. The NIC continues to contribute to the following national, regional and international weekly publications:

1. Weekly PAHO Influenza Regional Reports (EW 1-52, 2013 to present): http://www.paho.org/hq/index.php?option=com_content&view=article&id=3352&Itemid=2469&to=2246&lang=en

2. Weekly CARPHA reports – (EW 1 to 52, 2013 to present)
3. Weekly Surveillance Bulletin – Jamaica, Surveillance Unit, Ministry of Health (EW 1 to 52, 2013 to present)
4. Weekly WHO FluNet Charts:
http://www.who.int/influenza/gisrs_laboratory/flunet/charts/en/

In April 2014 Jamaica was represented by Dr. S Jackson at the WHO Informal Consultation on Improving Influenza Vaccine Virus Selection in Geneva. Such contributions are important to the appropriate selection of antigenic virus compositions for influenza vaccines for the Northern Hemispheres, in which Jamaica grouped.

In May 2014, the NIC Jamaica successfully participated along with 182 laboratories from 142 countries in six WHO regions in the World Health Organization (WHO) External Quality Assessment Programme (EQAP) for the Detection of Influenza Viruses with a turnaround time of 24 hours.

In April 2014, Dr. Jackson was awarded the Certification in Infection Control and Epidemiology (CIC) by the Certification Board of Infection Control in the USA.

LABORATORY INFORMATION SYSTEM

During the period under review the Central Accessioning Area was completed and commissioned. This allows the recoding of all sample submitted to the laboratories of the UWI to be catalogued, aliquoted where necessary and dispatched to individual laboratories. Work is to commence on moving phlebotomy and cashiering to the CAA which will increase the friendliness of the services to patients. The build of the system is completed and the LIS is being piloted in the laboratories. Preliminary rollout to nursing staff has commenced while training of departmental staff (medical technologists, consultants and residents) has progressed satisfactorily. In the implementation of the system there has been a significant amount of facility upgrade including network cabling and UPS provisioning. The LIS is slated to Go Live before the end of calendar year 2014.

RESEARCH

We continued our collaboration with University College London's Centre for Clinical Microbiology with the visit of Ms Jennifer Ratner who participated on a project on the molecular diagnosis of zoonotic infections of dogs. This project has significant public health and health tourism implications and the collaboration will continue to build on preliminary results obtained.

The department established new research collaboration with the Department of Ecology and Evolutionary Biology Princeton University to study. The co-PIs were Professors John Lindo and Corina Tarnita and Ms Danielle Martin travelled to Jamaica to undertake studies on the biology of *Angiostrongylus cantonensis* in *Thelidomus aspera* which is a major snail host in Jamaica. This formed the basis of her undergraduate thesis

Collaboration between Nicole Christian and Camille-Ann Thoms-Rodriguez from the Faculty of Medical Sciences at the University of the West Indies and six researchers (Dr. Doris Gomez, Dr. Claudio Gomez, Dr. Margarita Ochoa Diaz, Dr. Ronald Maestre, Dr. Jose Pomares, Dr. Javier Bahema, Dr. Angelo Alario Dr. Enrique Mazenett) from the Faculty of Medicine at the University of Cartagena, led to the development of a biomedical research group that is working together to develop research can potentially address health problems faced in Jamaica and Colombia. This research group was born out of the first meeting of the International Network of SUE Caribe – University of the West Indies Caribbean Researchers held in 2014 in Jamaica that resulted in the establishment of research groups that were formed to develop research projects aimed at addressing problems faced in the Caribbean region. They are currently working on projects that will look at the molecular resistance seen in *P. aeruginosa* isolates obtained from sputum samples in patients diagnosed with cystic fibrosis in Colombia. They will also evaluating the molecular diagnosis of tuberculosis in Caribbean patients using the Gene Xpert machine.

Dr Alison Nicholson continued her collaboration on pneumococcal vaccine coverage in paediatric and adult populations in Jamaica.

POSTGRADUATE TRAINING

The department has the following postgraduate students on register:

MSc – 12

MPhil – 3

PhD – 2

DM – 5

Ms Tiffany Butterfield was awarded a postgraduate scholarship.

PAPERS PRESENTED

- **Anzinger J**, Zhou J, Lam L, McCune J, Crowe S, Palmer C. Glut1 expressing intermediate monocytes are elevated in cART-treated and untreated HIV-1+ subjects. 20th International AIDS Conference. July 2014, Melbourne, Australia.
- **Anzinger J**, Glut1 expression on intermediate monocytes is a potential marker of inflammation in HIV-positive subjects. UWI, Mona Faculty of Medical Sciences 22nd Annual Research Conference and Workshop. Kingston, Jamaica; 2013.
- **Thoms-Rodriguez C**, R Hardie, G Reynolds-Campbell, Y Rodriguez, A Nicholson: Epidemiology of diabetic foot infections at the University Hospital of the West Indies, 2012 . *West Indian Medical Journal*. 2013; 62 (Suppl. 6) page 45–46. (POSTER PRESENTATION at the 22nd Annual Faculty of Medical Sciences (FMS) Research Conference and Workshop on Affairs of the Heart, Kingston, Jamaica, November 2013)
- R Hardie, AM Nicholson, JP Walker, GJA Stevens, G Reynolds-Campbell, **Thoms-Rodriguez C**: Production of Betalactamase in common urinary pathogens at the University Hospital of the West Indies. *W Indian Med J* 2013; 62 (Suppl. 6) page 56. (POSTER PRESENTATION at the 22nd Annual Faculty of Medical Sciences (FMS) Research Conference and Workshop on Affairs of the Heart, Kingston, Jamaica, November 2013)

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- AM Nicholson, JP Walker, R Hardie, G Reynolds-Campbell GJA Stevens, K Roye-Green, **Thoms-Rodriguez C.** Antibiotic susceptibility patterns of bloodstream isolates over a six month period at the University Hospital of the West Indies, Jamaica. *W Indian Med J* 2013; 62 (Suppl. 6) page 58. (POSTER PRESENTATION at the 22nd Annual Faculty of Medical Sciences (FMS) Research Conference and Workshop on Affairs of the Heart, Kingston, Jamaica, November 2013).
- **Foster AN, Nicholson AN,** Detchvijitr D, Good CE, Antoine M., Richards-Dawson M, M JacobsR Streptococcus pneumoniae Serotype Distribution and Antimicrobial Susceptibility in Jamaican Children,
- Nation N, **ST Jackson,** D Eldemire-Shearer, A Klimov, N Cox, M Bullock-DuCasse, S Jackson, Q Simmons. Influenza vaccine composition and circulating influenza viruses in Jamaica, 2010 to 2012. Annual Research Conference and Workshop on Affairs of the Heart. *West Indian Medical Journal.* Vol 62 (Suppl. 6) November 2013.
- S Jackson, D Eldemire-Shearer, K James, M Bullock-DuCasse .Influenza viremia and its significance among Jamaican patients, 2009 to 2012. Annual Research Conference and Workshop on Affairs of the Heart. *West Indian Medical Journal.* Vol 62 (Suppl. 6). November 2013.
- S Jackson, E Williams, S Holder, C Vanderpool K Collins, H Robertson, P Morgan, R Kanneganti, A Howell, H Williams, J Barnett. The economic burden of Dengue at the University Hospital of the West Indies, 2006 to 2012 . Annual Research Conference and Workshop on Affairs of the Heart. *West Indian Medical Journal.* Vol 62 (Suppl. 6). November 2013.
- S Jackson, D. Eldemire-Shearer, D M Bullock-DuCasse, K James, K Collin, H Williams. Evaluating the disease burden of influenza among Jamaican children during 2012. Ministry of Health Annual Research Conference, November 2013. Jamaica
- S Jackson, K James, D. Eldemire-Shearer, T McCartney, D M Bullock-DuCasse. Evaluation of Influenza Pandemic Preparedness

among Jamaican Doctors. Ministry of Health Annual Research Conference, November 2013. Jamaica

- T Rhoden, ST Jackson, W McLaughlin, D Soares, JF Lindo. Molecular detection of *Toxoplasma gondii* in patients presenting with neurological manifestations in Jamaica. Annual Research Conference and Workshop on Affairs of the Heart. *West Indian Medical Journal*. Vol 62 (Suppl. 6) . November 2013.
- T Rhoden, ST Jackson, W McLaughlin, D Soares, JF Lindo Genetic Diversity of *Toxoplasma gondii* in patients with Neurotoxoplasmosis in Jamaica. Annual Research Conference and Workshop on Affairs of the Heart. *West Indian Medical Journal*. Vol 62 (Suppl. 6). November 2013.

PUBLICATIONS

Refereed Journal Articles

- Freeman SR, Jin X, **Anzinger JJ**, Xu Q, Purushothaman S, Fessler MB, Addadi L, Kruth HS. ABCG1-mediated generation of extracellular cholesterol microdomains. *J Lipid Res*. 2014 Jan;55(1):115-27. doi: 10.1194/jlr.M044552. Epub 2013 November 8.
- **Anzinger JJ**, Butterfield TR, Angelovich TA, Crowe SM, Palmer CS. Monocytes as regulators of inflammation and HIV-related comorbidities during cART. *J Immunol Res*. 2014;2014:569819. doi: 10.1155/2014/569819. Epub 2014 June 12.
- Fonjungo PN, Kalish ML, Schaefer A, Rayfield M, Mika J, Rose LE, **Heslop O**, Soudré R, Pieniazek D. Recombinant viruses initiated the early HIV-1 epidemic in Burkina Faso. *PLoS One*. 2014 Mar 19;9(3):e92423. doi:10.1371/journal.pone.0092423. eCollection 2014.
- **Heslop OD**, **Roye-Green K**, Coard K, Mulvey MR. A unique strain of community-acquired *Clostridium difficile* in severe complicated infection and death of a young adult. *BMC Infect Dis*. 2013. 1;13:299. doi:10.1186/1471-2334-13-299.

- Evans-Gilbert T, **Lindo JF**, Henry S, Brown P, Christie CD. Severe eosinophilic meningitis owing to *Angiostrongylus cantonensis* in young Jamaican children: case report and literature review. *Paediatr Int Child Health*. 2014 May;34(2):148-52. doi: 10.1179/2046905513Y.0000000106.
- **Lindo JF**, Brown PD, **Vickers I**, **Brown M**, **Jackson ST**, Lewis-Fuller E. Leptospirosis and malaria as causes of febrile illness during a dengue epidemic in Jamaica. *Pathog Glob Health*. 2013 September;107(6):329-34. doi: 10.1179/2047773213Y.0000000112.
- Whittle DO, Williams NP, **Nicholson AM**, King-Robinson K, Kirsch R, Riddell R, Mazzulli T, Lee MG. Whipple's Disease in an Afro-Caribbean National. *West Indian Med J*. 2014 January 6;63(1):106–108. doi: 10.7727/wimj.2012.220.
- Reyes-Batlle M, **Todd CD**, Martín-Navarro CM, López-Arencibia A, Cabello-Vilchez AM, González AC, Córdoba-Lanús E, **Lindo JF**, Valladares B, Piñero JE, Lorenzo-Morales J. Isolation and characterization of *Acanthamoeba* strains from soil samples in Gran Canaria, Canary Islands, Spain. *Parasitol Res*. 2014 Apr;113(4):1383-8. doi: 10.1007/s00436-014-3778-z. Epub 2014 January 22.
- Fletcher SM, Lewis-Fuller E, Williams H, Miller Z, Scarlett HP, Cooper C, Gordon-Johnson KA, **Vickers I**, Shaw K, Wellington I, Thame J, Pérez E, Indar L. Magnitude, distribution, and estimated level of underreporting of acute gastroenteritis in Jamaica. *J Health Popul Nutr*. 2013 December 31(4 Suppl 1):69-80.
- White YG. Tuberculosis in HIV: making good with what we have. *West Indian Med J*. 2013;62(2):107–108a.
- Stennett D, **White Y**. Possible economic gains from cancer research. *West Indian Med J*. 2013;62(3):16–70. *PubMed* PMID: 24564033.
- Ezinne CC, Yoshimitsu M, **White Y**, Arima N. HTLV-1 specific CD8+ T cell function augmented by blockade of 2B4/CD48 interaction in HTLV-1 infection. *PLoS One*. 2014 Feb 5;9(2):e87631. doi: 10.1371/journal.pone.0087631. eCollection 2014.

- Yoshimitsu M, White Y, Arima N. Prevention of human T-cell lymphotropic virus type 1 infection and adult T-cell leukemia/lymphoma. *Recent Results Cancer Res.* 2014;193:211-25. doi: 10.1007/978-3-642-38965-8_12. Review.
- White Y, Yoshimitsu M, Kozako T, Matsushita K, Koriyama C, Uozumi K, Suzuki S, Kofune H, Arima N. Effects of exogenous interleukin-7 on CD8(+) T-cell survival and function in human T-cell lymphotropic virus type 1 infection. *Leuk Lymphoma.* 2013 Oct;54(10):2243-50. doi: 10.3109/10428194.2013.772174. Epub 2013 Mar 8.

INCOME GENERATION/GRANTS

Grants Obtained

1. National HIV/STI programme, Ministry of Health, Jamaica, “Laboratory Strengthening Grant”, US\$51,374.00. 2014 (Investigators JF Lindo, JJ Anzinger, N Christian and C. Thoms-Rodriguez).
2. National HIV/STI programme, Ministry of Health, Jamaica, “Vaginal Lactobacillus capture of HIV”, US\$21,507.51. (Principal Investigator. JJ Anzinger, 2014)

PUBLIC SERVICE

Dr Kristian Angeby

- Member, International Union Against Tuberculosis and Lung Disease
- Member, European Society of Mycobacteriology
- WHO TBTEAM expert in the field of laboratory strengthening.

Professor John Lindo

- Membership Chair, Rotary Club of New Kingston
- Member, American Society of Tropical Medicine and Hygiene
- Member, Inter-American Development Bank Civil Society Consulting Group (ConSOC)

Department of Microbiology

Dr Sandra Jackson

- Member, Ministry of Health's IHR Technical Advisory Group of Experts
- Member, Pandemic Preparedness Committee
- Member, American Biological Safety Association

Professor Monica Smikle

- Member, Lions Club of Mona