



DEPARTMENT OF MICROBIOLOGY

Alison Nicholson, MB BS, DM (Med. Microbiology) – Head of Department

WORK OF THE DEPARTMENT

The Department has continued, in pursuance of The UWI's triple A strategy, to foster growth and development, through continuing education to undergraduate and graduate students as well as providing diagnostic services to our internal and external stakeholders in the areas of immunology, bacteriology, virology, mycology and parasitology.

Over the reporting period, academic staff members have been actively involved in research activities including collaboration with external partners. Through Dr. Joshua Anzinger the Department of Microbiology welcomed the Co-Founder of the Global Virus Network (GVN), Professor Robert Gallo, world-renowned scientist who co-discovered HIV-1 in addition to discovering HTLV-1 and interleukin-2, to launch the new GVN Jamaica Affiliate. As part of the GVN, the department continued to facilitate students participating in the annual virology short course at the University of Maryland with DM candidate Dr. Ynolde Leys, Resident, attending the 2019 course.

Postgraduate students in the department, Mrs. Suzette Cameron-McDermott, Dr. Ynolde Leys, and Dr. Camille Blake were accepted as NIH Fogarty Scholars, under the supervision of Dr. Joshua Anzinger. Each of these students drafted a research proposal for their application and these were reviewed by a team of international experts. These projects will be developed in Jamaica with additional training at various collaborating laboratories of the State University of New York (SUNY).

Ms. Tiffany Butterfield and Mr. Chadwic Mears, both NIH Fogarty Scholars had the opportunity to receive advanced training at several research institutions. Ms. Butterfield, while at the University of Buffalo, gained the ability to perform bioinformatic pathway analysis for her research project. Mr. Mears also gained training in diagnostic arbovirus techniques for his research project while at the Wadsworth Laboratory in Albany, New York. Additionally, he was selected for advanced sequencing training at

the Research Center for Zoonosis Control, Hokkaido University, sponsored by the Japanese Government.

During the period 2018–2019 the Virology Laboratory responded to two major viral epidemics: influenza and dengue. Additional testing methodologies were introduced to facilitate rapid testing and early reporting of results.

The Collaboration between The University at Buffalo Center for Integrated Global Biomedical Sciences, The University of the West Indies, State University of New York (SUNY), Upstate Medical University and Jamaica Ministry of Health through co-investigator Professor John Lindo continues to grow. Professor Lindo has been representing The UWI at various meetings in an effort to establish a Clinical Research Center Network among other initiatives.

Dr. Sandra Jackson-Betty has continued consultative work with the World Health Organisation and has been focussing on Respiratory Syncytial Virus Global Surveillance – Phase 1 and Phase 2 through the WHO Global Influenza Programme – Global Influenza Surveillance and Response System. She has documented her findings.

The Department continued to bring awareness on how to manage infection to the medical fraternity and the general public through symposiums. World Sepsis Day was celebrated with the start of a church service, free online streaming to the Second World Sepsis Congress, presentation at Spanish Town High School and ended with a Symposium on Friday, September 13, 2018, on the theme: *Sepsis: Prevent it. Stop it. Treat it. Beat it.* The events were well attended and received sponsorship from various entities in corporate Jamaica.

Accreditation

The Department, led by Professor Monica Smikle, had its second interim surveillance assessment on June 11–12, 2019. Findings which did not fulfil the requirements of the International Standard ISO 15189 and/or the Department's Quality Management System (QMS) were subsequently addressed and closed within the required timeline. The Department of Microbiology has been granted continued accreditation to the ISO 15189:2012 standard.

The National Influenza Centre (NIC)

The National Influenza Centre (NIC) under the leadership of Professor Monica Smikle continued to perform the important functions of influenza surveillance and diagnosis in Jamaica in keeping with World Health Organization (WHO) terms of reference for National Influenza Centres. The NIC activities were supported by the collaborative efforts of the Ministry of Health (MOH), Jamaica, Centres for Disease

Control Prevention (CDC), Atlanta, Pan American Health Organization (PAHO) and The University of the West Indies.

A comprehensive panel of influenza diagnostic tests, including polymerase chain reaction (PCR) assay and virus tissue culture/isolation, were available throughout the 2018/2019 Influenza season. This is particularly important to note as a two-fold increase was observed in the number of specimens analysed for Influenza in 2018/2019 compared to the corresponding period in 2017/2018. The increase in the number of cases investigated was accompanied by a 50% increase in the positivity rate for Influenza. During the period under review NIC was favourably assessed by two external organizations including PAHO, Washington, February, 2019 and Jamaica National Agency for Accreditation (JANAAC), June 2019. Additionally, a member of staff received CDC sponsored influenza diagnosis training in Mexico.

Antimicrobial Resistance:

The UWI continued its partnership with the MOH in its fight against antimicrobial resistance. The Department of Microbiology, once again, through Dr Alison Nicholson, joined with the National Action Plan working group, to observe 'World Antibiotic Awareness Week' in the month of November. A symposium on the theme: *Antimicrobial stewardship: The last attempt to save our Antibiotics?* was held in both Kingston and St. Ann on November 14 and 16, 2018 respectively. Dr. Nicholson presented at both meetings on Antibiotic Resistance in Jamaica.

The Department, led by Dr. Alison Nicholson and Dr. Jerome Walker, using data collected from the Bacteriology laboratory, published Antibigrams which were distributed to all Consultants in the hospital. The idea behind the antibiograms was to keep all abreast of the organisms most commonly isolated from the hospital, along with their antibiotic susceptibility profile of organisms implicated in various infections in the hospital in order to guide empiric therapy while awaiting definitive culture results.

Infection Prevention and Control

The Microbiology Department continued to lead the Infection Prevention and Control programme. Under the leadership of Dr. Alison Nicholson, there was a thrust to institutionalise Infection Prevention and Control throughout the hospital. Education and training of all sectors of the workforce continued to be emphasized. The 2018/2019 period called for increased surveillance measures in light of the outbreaks experienced. Dr Nicholson led the development of a proposal for a postgraduate diploma programme in Infection Prevention and Control. This was approved by The University of the West Indies, Jamaica and should start in 2020.

Mycology: Environmental Investigation of Mould

The Mycology laboratory continued to be a major income generator both from clinical and environmental samples received from the UHWI, UWI and outside of the University Campus.

The full potential of the laboratory has not yet been realised.

The continued growth and success of the laboratory will depend on capital investment in obtaining the necessary material and equipment for antifungal susceptibility testing. The introduction of susceptibility testing, and its promotion among health care institutions will need a concerted effort to achieve this objective. Also, there is a need for material and reagents for conclusive species identification of the various yeasts. This must also be considered for increased income generation.

Surveillance Reports

The Department of Microbiology continued to submit monthly surveillance reports to the Ministry of Health and Wellness:

- General Virology Report
- Bacteriology Report
- Dengue Report
- Chikungunya Report
- HIV Report

Department of Microbiology Newsletter

It's a Small World, was developed by Dr. Alison Nicholson in keeping with the desire to improve communication between the Department and the community it serves. It will keep the community informed of any developments in the laboratory that would be of interest and where necessary will provide updates on any advances in diagnostic methods available in the department as well as any developments in Infection Prevention and Control in the Healthcare setting. The newsletter will be sent three to four times per year.

PAPERS PRESENTED**Poster Presentations**

- Butterfield TR, Hanna DB, Kaplan RC, Xue X, Kizer JR, Durkin HG, Young MA, Nowicki MJ, Tien PC, Golub ET, Floris-Moore MA, Titanji K, Fischl MA, Heath S, Palmer CS, Landay AL, **Anzinger JJ**. "HIV+ Women with Diabetes

Mellitus Exhibit CD4+ T Lymphocyte Immunometabolic Dysfunction". 10th International AIDS Society Conference on HIV Science. July 23, 2019, Mexico City, Mexico.

- Chin, A., Ali, I., Edwards, J., **Reynolds-Campbell, G.** "Kocuria species; A possible emerging foe in Jamaica". The University of the West Indies, Faculty of Medical Sciences 27th Annual Research Conference and Workshop 2018 Violence, Trauma and Development. *West Indian Medical Journal* 67, 4 (2018):39.
- Kerr JS, Aitken W, Gossell-Williams M, **Nicholson AM, Thoms-Rodriguez C.** "Characterisation of the Aetiological Agents and their Susceptibility Patterns in Patients with Complicated Urinary Tract Infections in the University Hospital of the West Indies, Jamaica". The University of the West Indies, Faculty of Medical Sciences 27th Annual Research Conference and Workshop 2018 Violence, Trauma and Development. *West Indian Medical Journal* 67, 4 (2018):39.
- Leys-Thomas YE, Thomas C, Burton N, **Anzinger JJ.** "Zika Virus Laboratory Diagnosis During the 2016 Jamaican Epidemic". The University of the West Indies, Faculty of Medical Sciences 27th Annual Research Conference and Workshop 2018 Violence, Trauma and Development. *West Indian Medical Journal* 67, 4 (2018):39.
- Pearson, K., Nelson, K., **Reynolds-Campbell, G.** "Non-viral etiology of conjunctivitis at a tertiary level hospital in Jamaica." The University of the West Indies, Faculty of Medical Sciences 27th Annual Research Conference and Workshop 2018 Violence, Trauma and Development. *West Indian Medical Journal* 67, 4 (2018):39.
- **Thoms-Rodriguez, C,** Facey, K, Edwards, J, **Reynolds-Campbell, G,** Wright, R, **Nicholson, A, Heslop, O.** "Cryptococcaemia in a Jamaican Cohort". American Society for Microbiology Microbe. June 20–24, 2019, Moscone Centre, San Francisco, California.

Oral Presentations

- **Anzinger JJ.** "HIV in the Caribbean". 10th International Global Virus Network Meeting. November 28, 2018, Annecy, France.
- Christie DC, **Anzinger JJ.** "Jamaica VT study – Enrolments, Follow-up Preliminary Results & Lab Data". ZIKAction Consortium Meeting. November 3, 2018, Rio de Janeiro, Brazil.
- Clarke K, Porter R, Facey P and **Thoms-Rodriguez CA.** "Essential oil composition and antimicrobial activity of *Cannabis sativa* grown in Jamaica at five stages of maturity". 21st CAS General Meeting and Conference on Science Technology and Innovation – Vehicles for a Knowledge Based Economy. November 27–30, 2018, Mona Visitors' Lodge and Conference Centre.

- **Jackson ST.** FLU: “Where are we 100 years after the Great Pandemic? Assessing the Risk to Jamaica. Environmental Impact on Health: A Clear and present danger”. Medical Association of Jamaica, Symposium. June 6–9, 2019. The Jamaica Pegasus Hotel, Kingston, Jamaica.
- **Nicholson AM.** “Antibiotic Resistance: The Jamaican Journey”. World Antibiotic Awareness Week. November 14, 2018. Main Medical Lecture Theatre, UHWI.
- **Nicholson AM.** “Antibiotic Resistance: The Jamaican Journey”. World Antibiotic Awareness Week November 16, 2018. Hibiscus Lodge, St Ann.
- **Reynolds-Campbell, G.** “Current status of diagnosis, treatment and surveillance of Histoplasmosis: analysis by regions: The Caribbean”. 2nd meeting of the International Histoplasmosis Advocacy Group (IHAG). March 22–24, 2019. Manaus, Brazil.
- **Reynolds-Campbell, G.** “Role of the environment in infection”. 8th Annual Scientific Conference of the Ophthalmological Society of Jamaica, Infection Control Symposium March 9, 2018. Legacy Suite, Jamaica Pegasus.
- **Thoms Rodriguez C.** “Tuberculosis: Updates on Diagnosis, Infection Prevention and Control”. Medical Association of Jamaica, Symposium. June 6–9, 2019. The Jamaica Pegasus Hotel, Kingston, Jamaica.

PUBLICATIONS

Refereed Journal Articles

- Ali I, Mundle M, **Anzinger JJ**, Sandiford SL, Butterfield TR, Crowe SM. “Tiger in the sun: A report of *Aedes albopictus* in Jamaica”. *Acta Tropica* 199 (2019):105–112.
- Arvind Babu RS, **Christian N**, **Lindo J**, Jones T, **Thoms-Rodriguez C**, Pinkney J, Thompson T, Barton E. “Molecular Epidemiology of Human Papillomavirus Genotypes in Oral Rinses from HIV Positive and HIV Negative Jamaican Patients”. *Journal of Investigative and Clinical Dentistry* 10:e12365 (2019). DOI:10.1111/jicd.12365
- Broor, S, Campbell, H, Hirve, S, Hague, S, **Jackson, S**, Moen, A, Nair, H, Palekar, R, Rajatonirina, S, Smith, PG, et al. “Leveraging the Global Influenza Surveillance and Response System for global respiratory syncytial virus surveillance-opportunities and challenges”. *Influenza Other Respiratory Viruses* (2019-00):1–8. DOI: 10.1111/irv.12672
- East J, T, Newnham M, Titus I, **Vickers I**, Brown H. “Guidelines on Management of the Patient with Diabetic Foot Infection”. In WIMJ Guidelines for Selected Surgical Diseases. *West Indian Medical Journal* 68, 2 (2019):18–26. DOI: 10.7727/wimj.2018.194

- Lee ML, **Lindo JF**, Auer, H, Walochnik, J. Successful extraction and PCR amplification of Giardia DNA from formalin-fixed stool samples. *Experimental Parasitology* 198 (2019):26-30. DOI:10.1016/j.exppara.2019.01.010
- Morse, GD, Lombardo, J.C, Forrester, T, Fletcher, H, McDonald, A, Talal, AH, Govindaraju, V, DeHovitz, J, **Lindo, JF**. Development of a dual university system health research partnership as a foundation for the Sustainable Development Goals. *The Lancet Global Health* 6, Suppl. 11 (2018): DOI:10.1016/S2214-109X(18)30140-2
- Rajendra Santosh, AB, **Christian, NA**, Jones, T, **Thoms-Rodriguez, CA**, Condappa, A, Thompson, T, Pinkney, J, Barton, EN, **Lindo, JF**. Molecular epidemiology of human papillomavirus genotypes in oral rinses from HIV-positive and HIV-negative Jamaican patients. *Journal of Investigative and Clinical Dentistry* 10, 1(2019):e12365. DOI:10.1111/jicd.12365
- **Reynolds-Campbell G, Nicholson A, Christian N, Willey B, Mazzulli T**. “16s rRNA methyltransferases in Gram negative bacilli from a tertiary care hospital in the Caribbean”. *West Indian Medical Journal e-Published: 08 Mar, 2019* Doi: 10.7727/wimj.2018.131
- Willis R, **Heslop O**, Bodonaik N, Thame M, Smikle M. “Morbidity, mortality and antimicrobial resistance of pneumococcal infections in the Jamaican paediatric and adult populations”. *Human Antibodies* 27,2 (2019):155-160. DOI:10.3233/HAB-180361
- Willis R, **Smikle M, Heslop O** et al. “Pneumococcal disease burden, clinical presentations and vaccine coverage in the Jamaican population”. *Human Antibodies*. 26,4 (2018):193-199. DOI:10.3233/HAB-180338IOS.

Technical Reports

- Hirve S, **Jackson S**. “WHO RSV surveillance – phase 1 overview, what’s new in phase 2?” WHO Meeting to Launch Phase-2 of the RSV Surveillance Based on the Influenza Platform. April 10–12, 2019, Kathmandu, Nepal.
- **Jackson S**. “RSV typing – logistics, timelines”. WHO Meeting to Launch Phase-2 of the RSV Surveillance Based on the Influenza Platform. April 10–12, 2019, Kathmandu, Nepal.
- **Jackson S**. “RSV surveillance monitoring and evaluation”. WHO Meeting to Launch Phase-2 of the RSV Surveillance Based on the Influenza Platform. April 10-12, 2019, Kathmandu, Nepal.
- **Jackson ST**. “WHO Global RSV Surveillance Sustainability”. WHO Meeting of Final Review of the RSV Surveillance Pilot based on GISRS. October 23–25, 2018, Bangkok, Thailand.

- **Jackson ST.** WHO Meeting of Mid-term Review of the RSV Surveillance Pilot Based on the Global Influenza Surveillance and Response System. December 18–20 2017 PAHO, Washington DC, USA. WHO Reference number: WHO/WHE/IHM/2019.2 <https://apps.who.int/iris/bitstream/handle/10665/311960/WHO-WHE-IHM-2019.2-eng.pdf>

INCOME GENERATION

Source: Ministry of Health

Title: Identification of human viruses circulating in Jamaican mosquito species by next generation sequencing

Grant Period: 2019-2020

Total Amount: JA\$1,500,000.00

Principal Investigator: Joshua Anzinger

Source: UWI/SUNY Collaboration

Title: Evaluation of a Sputum Washing Device as a Means of Improving the Diagnostic Accuracy of the Sputum Gram Stain

Grant Period: 2019

Total Amount: USD\$8000

Co-principal Investigator for Pilot Study: Camille-Ann Thoms-Rodriguez

PUBLIC SERVICE

Anzinger JJ

- Member, Caribbean Sub-regional Certification Committee for the Global Eradication of Poliomyelitis. Pan American Health Organization (PAHO). 2015–present.
- Member, The Arbovirus Diagnostic Network of the Americans (RELDA). 2017–present.
- Director, Global Virus Network, Jamaica Affiliate. Global Virus Network. 2018–present.
- Participant, Expert Consultation Meeting; Technical Guidelines for Laboratory Diagnosis of Arboviral Infections. Pan American Health Organization (PAHO). Washington, DC, USA; August 27–29, 2018.

Lindo, J

- Member, Board of the University Hospital of the West Indies

- Member, Scientific Leadership Committee, Center for Integrated Global Biomedical Sciences, University at Buffalo, SUNY.
- UWI liaison to Ministry of Health on Mosquito Research and Control Unit
- Co-chair (with Gene Morse) UWI/SUNY Global Health Research Taskforce
- Membership Chair, Rotary Club of New Kingston
- Chair, Finance Technical Working Group Caribbean Public Health Laboratories Network.

Reynolds-Campbell, G

- Moderator at the Ministry of Health's 9th Annual Health Research Conference (2018)
- Moderator at the Caribbean Association of Clinical Microbiologists' (CACM) conference (2018)
- Jamaican delegate and member of the International Histoplasmosis Advocacy Group (IHAG) (2019)
- Member of Caribbean Association of Clinical Microbiologists (CACM) (2009–present)
- Secretary of the CACM (2017–present).

STUDENTS

Awards

- **Tiffany Butterfield (PhD student)** – Abstract accepted for presentation at 10th International AIDS Society Conference on HIV Science (peer-reviewed selection).
- **Ynolde Leys (DM student)** – American Society for Microbiology Microbe Best Poster Prize: "ZIKA Virus Laboratory Diagnosis during the 2016 Jamaican Epidemic. The University of the West Indies Faculty of Medical Sciences 27th Annual Research Conference 2018.