S Victorian News

The Australian Society for Microbiology VIC Branch Newsletter

November 2017, Vol 506

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Submission Deadline: 4th of the Month

Find us on Facebook: https://www.facebook.com/groups/250340155042466/

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Northern News - Event Report –

Proudly Sponsored by:



Northern News was presented by the ASM Victorian Branch at the Austin Hospital (Heidelberg) on Tuesday 24th October 2017. The evening was chaired by Dr Marcel Leroi and featured five speakers from various organisations. A range of fascinating case studies and research projects were presented, each followed by thought-provoking discussions. The presentations were dominated by cases of antibacterial resistance which are encountered by medical laboratory scientists and the importance of detecting them. Talks also revealed the difficulties faced in detecting antibacterial resistance mechanisms, the various techniques and efforts utilised and the implications for treatment regimens for patients. Approximately 65 attendees came to enjoy the very interesting talks which were preceded by nibbles and mingling.

Congratulations to medical scientist Nicola Woodfield from Melbourne Pathology who was the winner of the ASM Membership Prize for her presentation on Colistin Resistance. This year ASM also gave out another well-deserved prize which was awarded to Nicole Isles from MDU for her presentation on the transmission of *Salmonella Enteritidis*.

A special thanks to Dr Leroi for chairing the event and to all of our speakers for their informative talks which everyone had the opportunity to learn from. A warm thank you is extended to Biomérieux for their generous sponsorship of the evening, to Austin Health for use of their lecture theatre, and to the organisers of the event.

Abstracts submitted by each of the speakers can be found on the following page in order of presentation.

Report contributed by: Seema Kanade

Serratia Marcescens bla IMP-4, Where have you being hiding?: Trudi Bannan (Austin Health) & Courtney Lane (MDU)

Parvimonas- Pathogen or Commensal – Living up to its Potential: Prudence Waters (Dorevitch Pathology)

My Kitchen Colistin Rules (You can teach an old drugs new tricks): Nicola Woodfield (Melbourne Pathology)

<u>Authors and Affiliations:</u> Claire Gregory, Nicola Woodfield, Andrew McGlinchey, Louise Prendergast, Lynette Waring (Melbourne Pathology)

Colistin is an old drug being brought back in to use due to increasing antimicrobial resistance. It is highly nephrotoxic and effective against most Gram negative organisms, with resistance, in Australia at least, being so far relatively rare. We present a case of a multi-resistant *mcr-1*/methyltransferase positive *E*.coli, isolated from a patient with recent travel to Vietnam. We discuss the case presentation and implications of this resistance gene, Colistin's usage, and emerging resistance to this drug.

Epidemiological & Genomic Analysis of Transmission of *Salmonella Enteritidis* in Victoria: Nicole Isles (MDU)

<u>Authors and Affiliations</u>: NS Isles^{1, 5}, DJ Ingle¹, CR Lane¹, M Valcanis¹, D Williamson^{1,2}, M Easton³ & BP Howden^{1,2,4} ¹ Microbiological Diagnostic Unit Public Health Laboratory, The University of Melbourne at the Peter Doherty Institute for Infection & Immunity

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⁵ Melbourne School of Population and Global Health, The University of Melbourne, Melbourne

Background/Aim/Objectives/Rationale: Salmonella enterica serovar Enteritidis causes animal and human disease, often through ingestion of contaminated chicken eggs. It is responsible for a large proportion of all verified Salmonella outbreaks in the US and Europe. In Australia, S. Enteritidis human infections are predominantly associated with overseas acquisition. However, a recent rise in non-travel-associated S. Enteritidis infections suggests a potential endemic reservoir within Australia. Using combined clinical and genomic epidemiological analysis, this study aimed to determine whether there is local acquisition of S. Enteritidis in Victoria.

Methods: S. Enteritidis cases in Australia during 2000-2016 were identified from the National Enteric Pathogens Surveillance System at MDU PHL. Representative isolates from all states except South Australia and Northern Territory underwent whole-genome sequencing to determine the Australian population structure of S. Enteritidis. This genomic framework was subsequently used to infer travel or non travel-associated acquisition, and prospectively identify potential clusters of Victorian S. Enteritidis isolates.

Results/Findings: A total of 4,223 Australian cases were identified. 49/1988 (2.46%) of Victorian cases had no documented international travel. Genomic analysis of 245 isolates identified three clades of related isolates, two of which were predominantly associated with local acquisition in Australia. Prospectively, region of travel was correctly predicted in 24/25 (96%) isolates.

Conclusions/Significance: Our combined epidemiological and genomic analyses suggest local acquisition of S. Enteritidis in Australia. The genomic framework provides a useful foundation for future detection of clusters of local transmission and source attribution work assessing the reservoirs of this important pathogen.







Come and celebrate the year that has been with great Bavarian food and music, and fantastic company.

Venue: Hofbräuhaus Melbourne 18-28 Market Ln Melbourne VIC 3000

When: Thursday 7th December, 6:30pm to 9:30pm

Cost: \$20 ASM Members / \$30 Non-Members (includes a sit-down meal and 2 beverages) *Vegetarian and GF options available

For catering purposes, please RSVP for this event by 3pm Thursday 30th November 2017 via: <u>https://www.trybooking.com/SYIK</u>

For further details, contact Jacqueline Heath (jhea@unimelb.edu.au) or Catherine Satzke (catherine.satzke@mcri.edu.au)





ASM Victorian Branch

Microbial Art Prize

Calling all artistic individuals! Submit your microbiology themed images for a chance to win the inaugural ASM VIC Branch Microbial Art Prize and have your work displayed at ASM events!

Image Details:

All types of scientific images are welcome

Images

es - must have a microbiological theme

- must be high resolution and suitable for printing on a 1x2m banner

- must be accompanied with a description of what the image illustrates and how it was generated (<100 words)

Prize:

The winning image will be printed on an ASM floor banner to be displayed at ASM events The winner's name and image description will be included on the banner The winner will receive a \$100 prize

The winning image will be selected by the ASM Vic Branch committee

Competition Entry Conditions:

Maximum 2 entries per person Submitter must be the owner of the image Submitter must be a member of ASM A complete entry consists of: (1) image (.jpeg, .tiff or .svg), (2) a description of the image (<100 words), and (3) the submitter's details (name, position, institution)

Competition closes 24th November 2017

Please send all entries (and questions) to: Sarah Baines bainess@unimelb.edu.au

Please note that by submitting an entry you agree that if your image is selected the ASM Victorian Branch Committee reserves the right to use the image as promotional material at ASM-organised and ASM-sponsored events. The image may be edited at the discretion of the ASM Victorian Branch Committee. The submitter's name will always be included with the image when used.





ASM VIC Branch

is very pleased to announce

Applications for the Summer Student Research Awards are now OPEN

The Summer Student Research Awards are designed to enable undergraduate students taking subjects in Microbiology (and Masters by Coursework students taking subjects in Microbiology) to complete a research experience in the laboratory of an ASM member, on a specific research project.

These awards will operate in the Summer of 2018, and will comprise a 4-week research experience. Successful (student) applicants will receive \$1500 (upon completion of the project and submission of an adequate post-experience report), plus a free 1 yr student membership to the ASM. A maximum of 4 awards may be awarded each application round, subject to the quality of the applications.

For additional information about the Awards, including the Eligibility Criteria, Application Information, Assessment of Applications and Conditions of the Award, please email Karena Waller (<u>klwaller@unimelb.edu.au</u>)

Applications close at 5pm on Friday 17 November 2017.



How to join the Australian Society for Microbiology at a reduced rate!

Did you know that non-members can join the Australian Society for Microbiology at a reduced rate? Well, you can!

As a non-member, by paying the fee to attend an event hosted by ASM VIC Branch, you can use this amount to put towards an annual membership of the Australian Society for Microbiology. To do so, please follow these instructions:

- 1. Register to attend the event hosted by ASM VIC Branch via the advertised trybooking link, and pay the attendance fee.
- 2. Attend the event, and then within 2 weeks after the event, go to the ASM membership area at http://www.theasm.org.au/membership/
- 3. Choose the appropriate membership for you and then click on: <u>Click here to join or update your details</u>
- 4. Click 'Begin here' and create a Currinda membership profile for yourself. Then, pay the membership full fee.
- Following payment, download the paid receipt (showing your payment) and email it along with your postal address to: Priscilla Johanesen, Treasurer VIC Branch <u>priscilla.johanesen@monash.edu</u>
- 6. A cheque refunding the event fee will be posted to you.

<u>Please note:</u> you must complete the above process within 2 weeks following an event to take advantage of this offer. After this time, the event fee cannot be used to pay membership fees.



ASM Member Awards Apply Now

The ASM offers a variety of awards to its members. Take full advantage of your membership by applying now for one of the awards listed below with deadlines approaching. For more details and additional awards please refer to the National webpage http://www.theasm.org.au/awards/

The deadlines for all award applications are now March 31st of each year.



ASM History SIG – Column

ASM Memorabilia:

If any ASM members have significant ASM memorabilia that they would like to the donate to the ASM archives or would like to suggest topics suitable for possible symposia at future ASM Annual Scientific Meetings, please send details of the memorabilia or suggested symposia topics to:

History SIG convener c/o Australian Society for Microbiology Office 9/397 Smith Street Fitzroy VIC 3068



Visiting Speakers Program

Do you know of an outstanding speaker coming to Australia?

If so, consider them for the Visiting Speakers Program (VSP).

Further information about the VSP and the speaker recommendation form can be found at:

http://www.theasm.org.au/events/visiting-speakersprogram/

Alternatively, contact Catherine Satzke (catherine.satzke@mcri.edu.au), who is the VSP Coordinator for the ASM VIC Branch.

MICRO NEWS and VIEWS

- Scientists Just Discovered That Bacteria Have a Sense of Touch
 https://www.sciencealert.com/bacteria-sense-of-touch
- We're One Step Closer to Understanding The Inner Workings of Bacteria's Complicated Proteins

https://www.sciencealert.com/researchers-are-one-step-closer-to-understanding-the-innerworkings-of-bacteria-s-complicated-proteins

 One of The Biggest Evolution Experiments Ever Has Followed 68,000 Generations of Bacteria

https://www.sciencealert.com/one-of-longest-evolution-experiments-overthrowing-previousassumptions

 Strange Quantum Particles Could Be Our Next Weapon Against Superbugs

https://www.sciencealert.com/light-activated-particles-new-age-in-medicine

 A Century-Old Discovery of a Virus Could Become Our Solution to Antibiotic Resistance

https://www.sciencealert.com/century-old-viruses-save-millions-human-lives-antibioticresistance-health-medicine?perpetual=yes&limitstart=1

- KC Huang probes basic questions of bacterial life https://www.sciencenews.org/article/kerwyn-casey-huang-sn-10-scientists-to-watch
- Gut fungi might be linked to obesity and inflammatory bowel disorders

https://www.sciencenews.org/article/gut-fungi-might-be-linked-obesity-and-inflammatory-boweldisorders

- Bacteria self-organize to build working sensors https://www.sciencedaily.com/releases/2017/10/171009123210.htm
- Gut bacteria linked to age-related conditions
 https://www.sciencedaily.com/releases/2017/11/171102091105.htm
- Breast cancer linked to bacterial imbalances Study compares bacterial composition in healthy vs. cancerous breast tissue

https://www.sciencedaily.com/releases/2017/10/171006124004.htm

MICRO NEWS and VIEWS

World Antibiotic Awareness Week, 13-19 November 2017

Reproduced from: <u>http://www.who.int/features/factfiles/antimicrobial_resistance/en/</u>

10 Facts on Antimicrobial Resistance

Many of the medical breakthroughs of the last century could be lost through the spread of antimicrobial resistance. Previously curable infectious diseases may become untreatable and spread throughout the world. This has already started to happen. The report "Antimicrobial resistance: global report on surveillance 2014" showed that antimicrobial resistance is everywhere and has the potential to affect anyone, of any age, in any country. In April 2015, WHO published a "Worldwide country situation analysis: Response to antimicrobial resistance". It revealed that while much activity is underway and many governments are committed to addressing the problem, there are major gaps in actions needed across all 6 WHO regions. This fact file describes the threat of drug resistance, some of its main causes, and how WHO is helping to lead the global response.



Fact 1: What is antimicrobial resistance? - Antimicrobial resistance is the ability of a microorganism (like bacteria, viruses, and some parasites) to stop an antimicrobial (such as antibiotics, antivirals and antimalarials) from working against it. As a result, standard treatments become ineffective, infections persist and may spread to others.

Fact 2: Drug resistance is a global problem - Over the past years, the use and misuse of antimicrobials has increased the number and types of resistant organisms. Consequently many infectious diseases may one day become uncontrollable. With the growth of global trade and travel, resistant microorganisms can spread promptly to any part of the world.

Fact 3: What causes drug resistance? - Drug resistance is a natural evolutionary phenomenon. When microorganisms are exposed to an antimicrobial, the more susceptible organisms succumb, leaving behind those resistant to the antimicrobial. They can then pass on their resistance to their offspring.

Fact 4: Inappropriate use of medicines worsens drug resistance - Inappropriate use of antimicrobials drives the development of drug resistance. Both overuse, underuse and misuse of medicines contribute to the problem. Ensuring that patients are informed about the need to take the right dosage of the right antimicrobial requires action from prescribers, pharmacists and dispensers, pharmaceutical industry, the public and patients, as well as the policy makers.

Fact 5: Lack of quality medicines contributes to drug resistance - Most drug quality assurance systems are weak. This can lead to poor quality medicines, exposing patients to sub-optimal concentrations of antimicrobials, thus creating the conditions for drug resistance to develop. In some countries poor access to antimicrobials forces patients to take incomplete courses of treatment or to seek alternatives that could include substandard medicines.

Fact 6: Animal husbandry is a source of resistance to antibiotics - Sub-therapeutic doses of antibiotics are used in animal-rearing for promoting growth or preventing diseases. This can result in resistant microorganisms, which can spread to humans.

Fact 7: Poor infection prevention and control amplifies drug resistance - Poor infection prevention and control can increase the spread of drug-resistant infections. Hospitalized patients are one of the main reservoirs of resistant microorganisms. Patients who are carriers of resistant microorganisms can act as a source of infection for others.

Fact 8: Weak surveillance systems contribute to the spread of drug resistance - While surveillance for the emergence of drug resistant TB and HIV infection is improving, currently there are few well-established networks that regularly collect and report relevant data on drug resistance. Some countries lack laboratory facilities that can accurately identify resistant microorganisms. This impairs the ability to detect emergence of resistance and take prompt actions.

Fact 9: The pipeline for new tools to combat drug resistance is almost dry

Existing antibiotics and anti-parasitic drugs, and, to a lesser extent, antiviral drugs, are losing their effect. At the same time there is insufficient investment in developing new antimicrobials. Similarly, there is insufficient new research into new diagnostics to detect resistant microorganisms; and new vaccines for preventing and controlling infections. If this trend continues, the arsenal of tools to combat resistant microorganism will soon be depleted.

Fact 10: WHO calls on stakeholders to combat drug resistance - The threat from drug resistance is increasing. There is a need for urgent action; everyone must play a part. At the Sixty-eighth World Health Assembly in May 2015, Member States endorsed a global action plan to tackle antimicrobial resistance. The goal of the draft global action plan is to ensure, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them. Countries have been encouraged to develop national action plans to help achieve the global action plan objectives. So far 79 countries have national action plans, and a further 49 countries are in the process of developing a plan.



#microbiome2017

Join Australia's leading biomedical, clinician, and public health researchers to discuss the role of the microbiome in sexual, maternal and child health.

International leading researcher in vaginal microbiome, **Professor Jacques Ravel** from the Institute for Genome Sciences, University of Maryland School of Medicine, USA, is our inaugural keynote speaker.

Professor Ravel's research is focused on deciphering the role of the vaginal microbiome in women's health, using clinical genomics and systems biology approaches to improve strategies in managing gynaecological and obstetrics conditions. He is a key contributor to our growing understanding of the interactions between the vaginal microbiome, the environment and the host, in the context of sexual and maternal health.

This inaugural Symposium #microbiome2017 hosted by Burnet Institute and Co-Convenors Professor Gilda Tachedjian, Dr Philippe Boeuf and Dr Joshua Hayward, will help strengthen and increase collaboration in microbiome-related research.

By attending, you will contribute to our vision of creating future funding opportunities in this field, and ultimately to developing interventions and diagnostics to achieve better health for vulnerable communities in Australia and Internationally.

Don't miss this terrific opportunity to promote collaboration and networking opportunities among researchers at Burnet Institute, with access to unique populations, and local, national and international strategic partners to understand the role of the microbiome in sexual, maternal and child health.

When: Wednesday, 29 November, 2017 10:30 AM – 4.00pm

Where: AMREP Lecture Theatre, 75 Commercial Rd, Melbourne VIC 3004

Registrations:

https://www.burnet.edu.au/events/237_inaugural_microbiome_in_sexual_maternal_and_child_h ealth_symposium

More details:

https://www.burnet.edu.au/events/237_inaugural_microbiome_in_sexual_maternal_and_child_h ealth_symposium

Special thanks to our sponsors:







MICROMON DEPARTMENT OF MICROBIOLOGY MONASH UNIVERSITY MELBOURNE

MOLECULAR BIOLOGY TECHNIQUES An introductory course in recombinant DNA technology Sunday 3 – Friday 8, December 2017

Micromon, in the School of Biomedical Sciences, is now seeking enquiries and applications for its next Molecular Biology short course which will provide comprehensive training in the essential skills of *recombinant DNA technology*. Highly regarded throughout the scientific community and by former participants, this outstanding and established course has attracted applicants from diverse backgrounds in private, government, scientific, clinical, educational and commercial organisations. It is an extremely intensive and demanding weeklong course, designed to teach the fundamental skills of Molecular Biology to professionals from all scientific disciplines, who have had minimal previous experience. It is also an ideal workshop for those who would like to consolidate their current, basic-intermediate, skill level. Entry requirements include a tertiary level qualification in science, medicine or a related discipline. We will also accept applicants with extensive, practical laboratory experience.

The course consists of eleven hours of theory provided by a group of experienced lecturers who are all active researchers, experts in their relevant fields and are widely published. Full descriptions of their research work and publications can be found at <u>med.monash.edu.au/microbiology/research</u>

The practical training involves more than 30 hours of experimental laboratory work and tutorials. This is provided by graduate instructors who routinely use the applications and procedures in an active research environment. The key feature of the workshop is our tutor to participant ratio which is one to four, for all workshop sessions and tutorials. A comprehensive manual with all lecture slides, protocols, procedures and references is provided, together with a disk containing all lecture presentations.

The course fee is **\$1,950 (GST-exclusive)** and as part of the package we provide morning and afternoon teas, delicious gourmet lunches, and refreshments at the end of each day. Currently enrolled PhD students receive a 20 per cent discount. Also included in the package is the course dinner on the Thursday evening that includes awards and presentations. There is a range of demonstration equipment for use plus the relevant product information supplied by our commercial, scientific sponsors. A course attendance certificate will be awarded on completion. This package offers an excellent value for money opportunity for interested participants. Information on reasonably priced, university-based or private commercial accommodation can be provided on request.

Technical & Registration information:Mr Mark CauchiTel. 61 3 9905 4830mark.cauchi@monash.edumicromon.monash.org





Advertise in the ASM VIC Branch Newsletter!

Would you like to advertise your event, job vacancy or other news item in our newsletter?

Advertising rates are:

Not-for-profit adverts: free of charge For-profit adverts: \$50 per advert

If so, please contact Karena Waller (klwaller@unimelb.edu.au)

ASM VIC CALENDAR 2017

When planning meetings, please book dates with Karena Waller (Phone: (03) 8344 0045, Email: <u>klwaller@unimelb.edu.au</u>)

- AIMS/ASM Vic Branch Joint Conference Science in the Spotlight 18th to 19th November 2017, Marysville VIC
- Burnet Institute Inaugural Microbiome in Sexual, Maternal and Child Health Symposium – 29th November 2017, Melbourne VIC
- Micromon Molecular Biology Techniques Course 3rd to 8th December 2017, Clayton VIC
- ASM Vic Branch Christmas Party 7th December 2017, Melbourne VIC

Submission Deadline for December ASM Victorian News: December 4th 2017

Email submissions to: jhea@unimelb.edu.au or cbutler@unimelb.edu.au