



<b>Project Title: The application of pathogen genomics in local and regional outbreaks</b>		<b>Code: WCS5</b>
<b>Host School / Institute:</b> <a href="#">Westmead Clinical School</a>		<b>Address:</b> Centre for Infectious Disease and Microbiology - Public Health, Level 3, ICPMR Westmead Hospital C24, Westmead
<b>Certificates &amp; Clearances required:</b> Yes *Vaccination Certificate *Working with children clearance *Police clearance <i>Information on how to obtain certificates, where necessary, will be given to successful applicants.</i>		
<b>Primary Supervisor:</b> <a href="#">Dr Verlaine Timms</a>		
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<b>Co-Supervisor/team:</b> <a href="#">Professor Vitali Sintchenko</a>		
<b>Project Type:</b> Data Analysis		
<b>Project Category:</b> Bioinformatics		
<b>Skills / Attributes of a successful student:</b> The successful student will have a keen interest in genomics, microbiology and infectious diseases. A commitment to teamwork and responsibility in planning and organising along with attention to detail is required.		
<b>Project Keywords:</b> Infectious Diseases; Public Health; Bioinformatics		
<p><b>Project Description:</b>            Background: Microbial pathogens are constantly evolving, with new diseases emerging and old diseases re-emerging. Globally, infectious diseases present a significant and re-occurring problem with the emergence of Ebola and new, virulent strains of E.coli. In Australia, we see well controlled, vaccine preventable diseases, such as pertussis and diphtheria re-emerging as significant diseases with epidemic potential. Further, changes to our built environment have seen opportunistic infections such as Legionnaire's disease emerge and cause significant outbreaks and death.</p> <p>Research Environment: The Centre for Infectious Diseases and Microbiology is embedded in the laboratories of NSW Health Pathology and national reference laboratories at Westmead. We meet the challenge of infectious disease control with pathogen genomics. Pathogen genomics has revolutionised infectious disease control primarily with the use of Next Generation Sequencing (NGS). NGS is a relatively new, highly robust and continually evolving technology. It has been used by our team to inform diagnostics, detect antibiotic resistance resolve transmission chains and produce outbreak mapping for pathogens with epidemic potential all to reduce and control the spread of infectious disease with powerful precision.</p> <p>Project: The project will use comparative genomics to investigate and compare genomic data collected by our laboratory. Skills in bioinformatics and data management will be developed while mining NGS data for potential diagnostic and surveillance targets for our most infectious pathogens. As this project will see the student guided by researchers at the coalface of outbreak control, the student will also experience firsthand the translational power of pathogen genomics research.</p>		