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Honours Projects 2010

Molecular mechanisms of antimicrobial resistance

Resistance to antibacterial agents is increasing worldwide. New mechanisms of resistance are emerging all the time. The Antimicrobial Research Laboratory of SA Pathology, located at the Women's and Children's Hospital, is involved in national (Australian Group on Antimicrobial Resistance) and international (SENTRY) surveillance programs identifying the nature and extent of new resistance mechanisms by rapid molecular detection methods. Resistance of increasing importance include extended-spectrum β -lactamases, plasmid-borne AmpC β -lactamases, carbapenemases, plasmid-borne quinolone resistance and aminoglycoside ribosomal methylases. The laboratory has been responsible for identifying two novel resistance mechanisms. Projects in any of these areas are possible.

Antimicrobial susceptibility testing – modernising routine testing

Testing susceptibility to antibacterials in the routine diagnostic laboratory relies on phenotypic techniques that are over 100 years old. These tests have never been subject to the scrutiny required of modern assay techniques. The Antimicrobial Research Laboratory of SA Pathology at the Women's and Children's Hospital is conducting research into (i) refining the precision and accuracy of the reference broth microdilution test (ii) other liquid media with higher precision than the current reference medium, (iii) improving statistical techniques for analysis of data and measurement of uncertainty. Projects in any of these areas are possible.

BIOGRAPHY

Professor Turnidge graduated in Medicine from Sydney University and subsequently trained in Infectious Diseases and Microbiology at Flinders Medical Centre. After a stint as head of Microbiology and Infectious Diseases at Monash Medical Centre in Melbourne, he returned to the Women's and Children's Hospital in Adelaide to a similar position. Subsequently he became Director of the Division of Laboratory Medicine at the same institution. He has a long-standing interest in antimicrobial prescribing and antimicrobial resistance, and has contributed nationally in these areas to government and international organisations, and learned societies, including the NHMRC, the WHO, the US-based Clinical and Laboratory Standards Institute, and the Therapeutic Guidelines-Antibiotic writing group. He co-founded the Australian Society for Antimicrobials which now has over 500 members. He retains expertise in diagnostic microbiology and Infectious Diseases clinical work, and his advice is sought on all aspects of antimicrobials from laboratory testing to development and appropriate use