

Undergraduate and Junior Research Support Awards in HIV and Hepatitis 2004

Juliet N. Babirye



Juliet N. Babirye is a Masters by Research student at the school of Public Health and Community Research, University of New South Wales under the supervision of Dr Andrew Grulich and Prof. John Kaldor. Her main area of interest is the prevention of mother-to-child transmission of HIV. Juliet will be completing a comparative cross-sectional study in Bushenyi district,

Uganda, East Africa. 72 HIV-positive women and 104 HIV-negative women, and 41 of their spouses have been interviewed so far using a semi-structured questionnaire. Male partners were interviewed in order to identify factors that would enhance male involvement in infant feeding. Preliminary results reveal that there is no statistically significant difference in the choice of infant feeding mode between the HIV-positive mothers and the HIV-negative mothers ($P=0.15$). There is, however, a difference in actual feeding practice ($P<0.05$). 21% of the HIV+ mothers practised exclusive breastfeeding (EBF) and 25.8% mix feed, compared to 11.5% and 61.5% respectively among the HIV-negative mothers. This is not surprising since 66% of the HIV-positive mothers have heard of and only 55% have received, infant feeding counselling (IFC). Ideally, all HIV-positive mothers should receive IFC.

These results have important infant feeding policy implications for Uganda and other resource-poor settings since exclusive breast-feeding has been associated with almost half the risk of HIV transmission compared with mixed breast-feeding.

Lindsay Breugem

Lindsay is undertaking the Bachelor of Science (Honours) at Flinders University of South Australia. She holds a Bachelor of Health Sciences with a major in Health Education/Health Promotion. Her supervisors for this project are Ms Eileen Willis, School of Medicine and Dr Judith Peppard, School of Education.



Her Honours project is titled: 'A Tale of Two Diseases: A

Comparative Analysis of the Australian Public Health Response to HIV/AIDS and Hepatitis C'.

This research will seek to determine the reasons underpinning Australia's successful public health response to HIV/AIDS, and thus the success Australia has had in containing this epidemic, and why this has not been translated to the corresponding Hepatitis C epidemic.

The research will employ the qualitative techniques of text analysis (literature review, media analysis and policy review) and semi-structured interviews with a selection of experts in the field. The objectives that will guide this project include to determine: why Australia has not managed to contain the Hepatitis C epidemic; what the critical factors for success were in the HIV/AIDS epidemic; if the public health response to hepatitis C was as vigorous as the response to HIV/AIDS; whether the social status of the affected population has facilitated public neglect; social and political factors impeding public health endeavours related to hepatitis C; and a potential way forward for Hepatitis C policy.

Kerrie Dunstan



Kerrie is in her second year of a PhD (through the University of New South Wales) at the Westmead Millennium Institute. Her Honours project involved testing a candidate HIV vaccine in vitro and she has maintained an interest in the vaccine field. Her current project looks at the binding, entry and processing of candidate

viral vaccine vectors, by human dendritic cells (DCs). DCs are professional antigen presenting cells which play a key role in controlling the magnitude, quality and memory of an immune response. The mechanism of entry and processing of vaccinia virus and adenovirus, two potential HIV vaccine vectors, in DCs is unclear. She hypothesises that C-type lectin receptors may play a role in initial virus binding to DCs and she has been using viral binding assays with flow cytometry, confocal microscopy and real-time PCR to assess this. In future, she will look at co-localisation between virus and endolysosomal pathway compartments to determine the mechanism of processing of these vectors. Further understanding of these factors may enhance the uptake, processing and presentation of such vaccines in these key antigen-presenting cells, currently recognised as a major hurdle to improving their efficacy. She is supported by an NHMRC Dora Lush scholarship.

Hien HoThi



Hien Ho Thi is working on her PhD at the School of Public Health and Community Medicine in the University of New South Wales. Her supervisor is Associate Professor Lisa Maher.

The potential for a sudden and significant increase in

HIV among ethnic Vietnamese injecting drug users (VIDUs) in Australia is a growing cause for concern. Her research aims to explore cultural influence on risk behaviours and prevalence of HIV and HCV among VIDUs. In-depth qualitative interviews (n=42) were used to identify underlying explanatory models of health and illness, and cultural beliefs and practices and their influence on risk behaviours. These data were used to develop a questionnaire designed to measure knowledge, risk behaviours and barriers to health and protective behaviours, and a linked serosurvey to assess antibody HIV and HCV prevalence (n=109). Results indicate that factors influencing vulnerability to blood-borne viruses (BBVs) include: cultural characteristics such as trust, obligation and stoicism; reluctance to discuss problems with outsiders; and a belief in fate. Limited knowledge of BBVs, low perceived risk and dislike of condoms may increase vulnerability. Beliefs in natural processes, traditional remedies and self-medication influence presentation, and barriers to service access include the stigma of injecting drug use, perceived lack of confidentiality, language and cost. The data indicate a need for interventions designed to reduce the risk of BBV transmission based on culturally specific meanings and contexts of health, illness and risk.

Rachel Koldej



Based at the Women's and Children's Hospital, Rachel is currently studying for her PhD through the University of Adelaide. Her supervisors are Associate Professor Donald S. Anson and Associate Professor Keryn Williams.

Gene therapy has great potential for the treatment of a range of

inherited and acquired diseases. However, its development has been hindered by a lack of efficient and effective gene-delivery systems. As the target cells are often non-dividing, the system must have the ability to infect non-cycling cells, preferably resulting in long-term stable genetic modification. HIV-1 naturally possesses these characteristics and therefore we have

used it to develop a gene-transfer system. The system comprises a number of plasmids that separate the *cis* and *trans* functions of the virus. The *cis* functions are incorporated into a vector construct, while the *trans* (protein-coding) functions are distributed over a number of 'helper' or packaging plasmids preventing their transfer to target cells. Modifications have included the codon-optimisation of protein-coding sequences, and the use of alternate polyadenylation signals and the removal of splice donor sites within the vector construct. Future investigations will include a detailed analysis of the viral genome packaging signal, and the requirement for the Rev Response Element and various *cis* acting signals in the 3' and 5' Long Terminal Repeats.

Edwin Leeansyah



Edwin is a PhD student in the Department of Medicine, Monash University, conducting his research at the Macfarlane Burnet Institute for Medical Research and Public Health under the supervision of Dr Anthony Jaworowski and Prof. Suzanne

Crowe. Born in Jakarta, Indonesia, he recently obtained his Bachelor of Biomedical Science with first class Honours from Monash University and is a recipient of an Australian post-graduate award.

Edwin is studying the effect of HIV-1 infection on phagocytosis of IgG-opsonised pathogens, specifically how HIV-1 impairs Fcγ receptor-mediated phagocytosis and how this contributes to AIDS-related opportunistic infections. In previous work, he has shown that HIV-1 infection of human monocyte-derived macrophages inhibits signal transduction of the Fcγ receptor (CD64) which signals via a protein called FcRγ or "g-subunit" but does not inhibit signal transduction via CD32A, an Fcγ receptor which does not require the g-subunit for signalling. This supports the hypothesis that HIV-1-related inhibition of Fc-phagocytosis is caused by a decreased expression of the g-subunit.

In his study, Edwin aims to determine the mechanism by which HIV infection decreases expression of the g-subunit and whether impaired signalling via this protein extends to other cells of the immune system which normally express this protein, such as NK cells and effector T-cells.

Josephine McGuinness



Josephine is studying for her Masters in Clinical Pharmacy at the Victorian College of Pharmacy, Monash University in Melbourne. She is employed as a clinical pharmacist in the Specialist Medicine team at the Alfred Hospital, Melbourne.

Her primary area of research interest is the integration of acute and community service

providers for HIV-positive patients, to improve patient follow-up and continuity of care within this patient population. She is currently conducting a research project based at the Alfred Hospital called the Patient Information Exchange (PIE) study.

This aims to improve and formalise the process of information exchange between all the health care providers involved in the care of an HIV-positive patient and to evaluate the benefits of implementing a new service utilising a case-management model of pharmaceutical care. The study measures the impact of assigning patients a 'primary' pharmacist (one pharmacist dedicated to an individual patient's care), allowing the provision of individualised care and improving follow-up of patients by acting as the key contact regarding all medication-related issues.

Dimitra Zotos



Dimitra completed a Bachelor of Biomedical Science at Deakin University, Melbourne in 2003. She is currently in her Honours year. For her Honours project she is examining the immune isotype responses of long-term non-progressors (LTNP)

and survivors (LTS) of HIV-1 infection. These individuals represent approximately 5% of the HIV-1 infected population, who don't progress to AIDS within eight to ten years. The cohorts with whom she will work are the Sydney Blood Bank Cohort (SBBC), the Sexually Acquired (SA) Cohort and the National Centre in HIV Epidemiology and Clinical Research Cohort (NCHECR). She is doing her research at the National Serology Reference Laboratory, St Vincent's Institute, under the supervision of Associate Professor Dale McPhee.



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