

DR MICHAEL LUKE WALKER

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Membership of Professional Associations:

Australian Institute of Physics, Statistical Society of Australia.

RELEVANT EMPLOYMENT

2018 - Project Officer, Kirby Institute, University of New South Wales, Australia.

Using agent-based modelling to simulate the effect of HIV-preventing medication on the epidemiology of sexually transmitted diseases among Sydney's gay and bisexual male population. This work is expected to inform government policy.

09/2016 -12/2017 Research Officer, La Trobe Institute of Molecular Sciences, La Trobe University, Australia.

Worked with a molecular [modelling/drug design group](#) adding nonlinear machine-learning techniques, such as neural networks and support vector machines, to the team's molecular modelling *Java* package [BioPPSy](#). During this time I was also responsible for making the code available on [sourceforge](#) and maintaining the repository using git. This work led to the publication of two research papers with a third in preparation. Other projects included a simple molecular model of cancer drug interactions and the parallelization of *fortran* code for simulating molecular solubility using *CUDA*.

2013 -09/2017 MPhil in Bioinformatics, University of Melbourne, Australia.

Studied a high-powered longitudinal cohort of asthma-related factors in early childhood. Issues of interest included potential causal relationships using dynamic Bayesian networks, with a particular interest in whether regular respiratory infections in early childhood lead to the development of allergen-driven asthma. The networks inferred indicated that this was not the case. Another chapter studied the predictive ability of various variables in infancy for later asthma development, leading to a classification method for sub-types of asthma. Finally, a study of the nasopharyngeal microbiome found statistical evidence that certain bacteria in infancy were associated with various asthma types in later childhood. My code was written in the *R* programming language and my [thesis](#) is available from the University of Melbourne library.

OTHER EMPLOYMENT

2009 -12 Expert engineer, [Virtual Plants Team, INRIA](#)

Computer modelling of hormone transport and other growth-related processes in plants.
Contributed *python* code for simulating the expression of hormone transporting proteins and their effect on hormone transport. Published a more parsimonious model of plant vasculature formation than was previously known.

03/2008 Computational Biophysics, Research School of Biological Sciences, Australian National University.

02-04/2008 Visitor, Department of Physics, University of New South Wales, Australia. 2007 Departmental Visitor, College of Quantum Science, Nihon University.

2005 -07 JSPS Postdoctoral fellow, Chiba University, Japan.

Published several papers relevant to particle physics.

2003 -05 Full-time lecturer, Department of Physics and Applied Physics, Kyung Hee University, South Korea.

Taught Korean students various physics and mathematics subjects in English.

2001 -02 BK21 Postdoctoral Fellow, School of Physics, Seoul Nat. University, South Korea.

2000 Postdoctoral Fellow (Part-time) in biophysics, chemistry department, ANU. Tutor in mathematics department, ANU.

1999 Lecturer in third year course "Relativistic Quantum Mechanics"

EDUCATION

2013 -16 UNIVERSITY OF MELBOURNE

Graduated with Master of Philosophy in Bioinformatics.

1995 -99 AUSTRALIAN NATIONAL UNIVERSITY (ANU)

Graduated with Doctor of Philosophy, 20th April 2000 (nominated for university medal).

1995 -96 CAMBRIDGE UNIVERSITY

Master of Advanced studies. PhD suspended during this time.

1991 -94 MONASH UNIVERSITY

1991 Bachelor of Science/Engineering.

1992 -94 Bachelor of Science (Pure Mathematics Honours).

Awarded B.Sc.(Hons 1st class) 29th March 1995.

SCHOLARSHIPS AND AWARDS

2014 -15 Recipient of Beaney Fellowship, MDHS, University of Melbourne.

1995 -99 Recipient of ANU Graduate Student Award.

1995 -96 Cambridge Commonwealth Trust Bursary.

1999 Distinction for Director's award for best student research paper accepted by a recognized, refereed journal.

1998 -00 ANU University House Scholarship.

1998 Australian Institute of Physics travel grant.

1997 Winner of "Director's prize for best presentation of a theoretical topic" in the "John Carver Seminar Competition".

OTHER ACTIVITIES

[HEALTHHACK](#)

Participated 2013-14, when my team won second place and “spirit-of-healthhack”, respectively.
Organiser in 2015, finding sponsors and recruiting problem-owners. Assisted in 2016.

MELBOURNE MATHS and SCIENCE MEETUP

Helped restart during 2017, organising speakers assisting running meetings.

VOLUNTEER EXPLAINER

Questacon, at the (Australian) National Science and Technology Centre, is a science museum where I supervised some of the exhibits and explained them to members of the general public.

PARTICIPANT IN "ADOPT A PHYSICIST" PROGRAM

An initiative by the Australian Institute of Physics to encourage secondary students to study physics.

GRADUATE TEACHING PROGRAM

A twelve-week course of seminars and group discussions on effective teaching.

VICE-PRESIDENT and PRESIDENT OF MONASH PHYSICS SOCIETY

I led a committee which organised special lectures, excursions and social functions to promote physics on campus.

TREASURER OF C.A.D.S. (Campus Amateur Dramatic Society, ANU) and F.O.M.E. (Science Fiction and Fantasy Appreciation Society of Monash university)

Other pursuits included piano (Grade 8), leading a church choir, theatre, judo and taekkyon.