

CURRICULUM VITAE

Mick Roberts PhD, FIMA, FRSNZ

May 30, 2011

Present Position

- **Professor in Mathematical Biology, Institute of Information and Mathematical Sciences, Massey University, Auckland.**
- **Professor, New Zealand Institute for Advanced Study, Massey University, Auckland.**
- **Director, Centre for Mathematical Biology, Massey University.**

Professional Qualification

1992 C.Math., F.I.M.A. Chartered Mathematician, Fellow of the Institute of Mathematics and its Applications, UK.

2008 FRSNZ, Fellow of the Royal Society of New Zealand.

Academic Qualifications

1979 Ph.D.: Victoria University of Wellington, Mathematics.

1974 M.Sc.: Cranfield Institute of Technology, Applicable Mathematics.

1971 B.Sc.: University of Bristol, Aeronautical Engineering.

Significant Professional Appointments

- 2009 : Visiting Research Professor, Utrecht University.
- 2006 - present: Member of the Pandemic Influenza Modelling Group, in association with the Wellington School of Medicine and Health Sciences, Otago University.
- 2005 : Christensen Fellow, St Catherine's College Oxford.
- 2003 - present: Member of the World Health Organisation SARS Modelling Working Group.
- 1999 - 2000: Member of the European Commission independent expert committee on the assessment of geographical BSE-risk.
- 1993 : Invited participant in the Research Programme on Epidemic Models, Isaac Newton Institute for Mathematical Sciences, University of Cambridge.
- 1992 : High Level Scientific Scholarship, Ministry of Foreign Affairs, Paris.

Awards

- New Zealand Mathematical Society Research Award, 2006.
- Christensen Fellowship, St Catherines College Oxford, Michaelmas Term 2005.
- Lincoln University Foundation Award, 1995.
- NZ/USA STC Award, 1995.
- Trimble Agricultural Research Fellowship, 1993.
- High Level Scientific Scholarship, Ministry of Foreign Affairs, Paris 1992.
- Prince and Princess of Wales Science Award, 1989.

Research Objective

To understand the epidemiology of infectious diseases and optimise strategies for their control, using modern methods of mathematical analysis and developing new methods as necessary.

Current Research

The Evolution of Infectious Diseases

- The development of models that explain why pathogens have evolved their present characteristics.
- The development of models for the evolution and transmission of a virus. Joint work with Prof. Hans Heesterbeek, Utrecht University.
- The development of a model for the dynamics of the HIV virus, in order to explore the interaction between within-host virus evolution and between host virus transmission. Joint work with Prof. Angela McLean, University of Oxford.

The Invasion of Infectious Diseases

- The analysis of integral equation models for invading infections.
- Models for control strategies to contain exotic infections, such as influenza, SARS and smallpox. Joint work with Prof. Hans Heesterbeek, Utrecht University, and Assoc. Prof. Michael Baker, University of Otago at Wellington.

Control Strategies for Infectious Diseases

- Threshold quantities and control strategies for endemic infections. Joint work with Prof. Hans Heesterbeek, Utrecht University.
- Vaccination strategies to prevent infectious diseases.

Invited Addresses

- Invited speaker at the *Australian Mathematical Society Conference*, to be held at the University of Wollongong, September 2011.
- Invited speaker at and participant in the meeting *Discrete Mathematics and Probability in Networks and Population Biology*, held at the Institute for Mathematical Sciences, National University of Singapore, April/May 2011.
- Invited speaker at the *Conference on Computational and Mathematical Population Dynamics (CMPD 3)*, held at the University of Bordeaux, France, June 2010.
- Invited speaker at and participant in the *International Conference on Mathematics, Evolution, and Development*, held at The Chinese Academy of Sciences, Shanghai, March 2010.
- Invited speaker at and participant in the *Workshop on Epidemiology of Infectious Diseases*, held at the Institute for Mathematical Sciences, National University of Singapore, January 2010.
- Invited speaker at and participant in the meeting *Design and Analysis of Infectious Disease Studies*, held at Mathematisches Forschungsinstitut Oberwolfach, Germany, October 2009.
- Invited speaker at the meeting *Modelling and Data Analysis for Infectious Disease Control*, to be held at Murrumang, NSW, Australia, March 2009.
- Invited speaker at the meeting *Spatio-temporal and Network Modeling of Diseases III*, to be held at the University of Tübingen, Germany, October 2008.
- Invited speaker at *ANZIAM 2008*, Katoomba, February 2008.
- Invited speaker at the *International Conference on Bio-Mathematics 2007*, to be held at the Institut Teknologi Bandung, August 2007.
- Invited speaker at the meeting *Spatio-temporal and Network Modeling of Diseases II*, to be held at the International Centre for Mathematical Sciences, Edinburgh, May 2007.
- Invited speaker at the meeting *Immuno-epidemiology: closing the immunity-transmission cycle*, held at the Center for Discrete Mathematics and

Theoretical Computer Science (DIMACS), Rutgers University New Jersey, USA, December 2006.

- Invited speaker at the *New Zealand Mathematics Colloquium*, held at Waikato University, Hamilton, December 2006.
- Invited speaker at the *Industrial Mathematics Initiative*, held at the Korea Advanced Institute of Science and Technology (KAIST), Daejeon, July 2006.
- Invited speaker at and participant in the meeting *Modelling of Emerging Infectious Diseases*, held at The National Centre for Immunisation Research (NCIRS), the Children's Hospital at Westmead, Sydney, March 2006; and presenter of two invited papers.
- Invited speaker at and participant in the meeting *Design and Analysis of Infectious Disease Studies*, held at Mathematisches Forschungsinstitut Oberwolfach, Germany, October 2004.
- Invited participant and problem moderator in the *Mathematics in Industry Study Group*, Auckland, January 2004.
- Invited speaker at the *Australasian Region Conference of the International Biometric Society*, held at the Australian National University, December 2003.
- Invited speaker at the *Annual ACT ANZIAM* meeting, held at the Australian National University, November 2003.
- Invited speaker in the symposium *Vaccine Preventable Diseases in NZ & Surrounds*, Auckland, October 2003; held as part of the meeting *MicroNZ 2003*, the combined annual scientific meeting of the Australian and New Zealand Societies for Microbiology.
- Invited participant in the *WHO Global Conference on Severe Acute respiratory Syndrome (SARS): where do we go from here*, Kuala Lumpur, June 2003, and presenter in the Modelling breakout session.
- Invited speaker in the minisymposium *Recent Advances in Epidemic Modelling*, Milan, July 2002; held as part of the meeting *Mathematical Modelling and Computing in Biology and Medicine, 2002*.
- Invited participant and speaker in the *Workshop on Mathematical Epidemiology of Infectious Disease, Modeling and Simulation of Dengue Transmission*, Institut Teknologi Bandung, Indonesia, May 2002.

- Invited speaker at *ANZIAM 2002*, Canberra, February 2002.
- Invited speaker at, and organiser of, the *Infectious Disease Modelling Workshop*, Australian National University, Canberra, 2001; held in conjunction with the *Communicable Diseases Control Conference 2001*.
- Invited speaker at the *Symposium on Epidemic Modelling*, Australian National University, Canberra, 1998.
- Invited speaker at the *Wildlife Diseases Conference: Integrating Biology and Mathematics*, Trento, Italy, 1998.
- Invited speaker at the *New Zealand Mathematics Colloquium*, Victoria University of Wellington, 1998.
- Invited participant and speaker in the *RSS Workshop on Stochastic Modelling and Statistical Data Analysis for Epidemics*, Sabhal Mor Ostaig, Isle of Skye, 1997.
- Invited paper presented to the *Conference of the New Zealand Society for Parasitology*, Taupo, 1996.
- Invited speaker at *Models in Veterinary Epidemiology*, organised by Pri-
oriteitenprogramma Populatiedynamica, Amsterdam, 1995.
- Invited plenary paper presented at the *Fourteenth International Conference of the World Association for the Advancement of Veterinary Parasitology*, Cambridge, 1993.
- Invited paper presented at the workshop on the *Ecology of Infectious Diseases in Natural Populations*, Isaac Newton Institute for Mathematical Science, Cambridge, 1993.
- Invited speaker at, and organiser of, the *Symposium on the Modelling of Parasite Populations* at the *Joint Conference of the New Zealand and Australian Societies for Parasitology*, Auckland 1992.
- Lecture given as part of a course *Modern Approaches to the Control and Epidemiology of Infectious Diseases*, Imperial College, London 1990.
- Invited paper presented to *Second International Symposium on Echinococcosis*, Zurich, 1990.
- Invited paper presented to the *Joint Conference of the New Zealand and Australian Societies for Parasitology*, Christchurch, 1984.
- Invited paper presented to the *Conference of the New Zealand Society for Parasitology*, Dunedin, 1982.

Publication Record

	Submitted	Accepted	Published	Total
Refereed Scientific Papers	-	-	90	90
Book Chapters	-	-	25	25
Published Reports	-	-	1	1
Published Conference Abstracts	-	-	7	7
Total	-	-	113	113
Unpublished Reports				23

Professional Societies

2007 - 2009: Member of ANZIAM Executive

2006 : Outgoing Vice-President of the New Zealand Mathematical Society

2003 - 2005: President of the New Zealand Mathematical Society

2002 - 2003: Incoming Vice-President of the New Zealand Mathematical Society

1994 - 2000: Member of the Council of the New Zealand Mathematical Society, and from 1996-2000 Treasurer.

1983 - 1986: Member of the Executive Committee of the New Zealand Statistical Association

Member of: New Zealand Mathematical Society; The Institute of Mathematics and its Applications; ANZIAM (Australia and New Zealand Industrial and Applied Mathematics); European Society for Mathematical and Theoretical Biology.

Funding

- **Health Research Council:** Early estimation of epidemic parameters. (\$97K 2010)
- **Marsden Fund:** Modelling a virus (\$150K 2009; \$152K 2010; \$160K 2011)

- **Foundation for Research, Science and Technology** Public Good Science Fund programmes: Epidemiology of Tb Control (\$132K p.a., 1994-6; \$106K p.a., 96/7; \$131K p.a., 1999-2003); Epidemiology of Possum Pathogens (\$148K, 1995/6); Improved Parasite Management (with Chuck Shoemaker) (\$1,203K p.a., 1996/7).

Other Research Contracts:

- Ministry of Health, 1996 - 2006, total \$ 169K. Measles Epidemic Modelling, Population Health Modelling, Control of Pertussis, Smallpox Modelling, SARS Modelling, Influenza modelling.
- AgResearch Ltd, Possum Population Dynamics (\$90K p.a., 2003-6, 3 years).
- Contracts with Animal Health Board, Otago Regional Council, Biosecurity Ltd., Ministry of Agriculture and Forestry.

Employment History

2006 - present: Professor in Mathematical Biology and Director of the Centre for Mathematical Biology, Institute of Information and Mathematical Sciences, Massey University, Auckland, New Zealand; and from 2008 Professor, New Zealand Institute for Advanced Study.

2003 - 2005: Associate Professor of Mathematics, IIMS, Massey University, Auckland, New Zealand.

1980 - 2002: Scientist, Wallaceville Animal Research Centre, Upper Hutt, New Zealand. Leader of epidemiology and modelling programmes.

1980 : Systems analyst, Ministry of Works and Development, Wellington.

1975 - 1979: Junior Lecturer, Department of Mathematics, Victoria University of Wellington.

1972 - 1974: Attended the Cranfield Institute of Technology.

1971 - 1972: Graduate Apprentice, British Aircraft Corporation, Bristol, England.

1968 - 1971: Attended the University of Bristol.

1967 - 1968: Undergraduate Apprentice, British Aircraft Corporation, Preston, England.