

Newsletter

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MARSDEN FUNDING



Congratulations to **James Degnan** (left), **Charles Semple** (centre) and **Mike Steel** (right) who have been awarded Marsden funding over the next 3 years.

As a result of their intriguingly titled application, *The Curse of the Unfaithful Grandparents: new mathematical tools for unravelling complex ancestry*, Mike Steel and Charles Semple will receive a grant of \$576,000 over three years. They will be addressing unanswered mathematical questions concerning the reconstruction of ancestral relationships of organisms that have inherited their DNA from several ancestors. These questions range from quantifying horizontal gene transfer events in early evolution to the detailed reconstruction of recent human history.

James Degnan has been awarded a \$282,000 Fast Start grant over three years to use primarily statistical techniques to analyse the conflicting evidence that genes give us about relationships between species.

COLLEGE OF ENGINEERING RESEARCH AWARD 2009

Congratulations to Douglas Bridges, who has been awarded one of only two College of Engineering Research Awards for 2009. In a Royal Society of New Zealand (RSNZ) citation in 2000, Douglas was described as the dominant figure in constructive mathematics and an inspiration to mathematicians in the United States, Japan and Europe. Since 2003, Douglas has published 54 refereed publications and has given 13 principal addresses at international conferences in Italy, USA, UK, Sweden, Germany, France and Japan. He was elected a Fellow of the RSNZ in 2000 and a Corresponding Fellow of the Royal Society of Edinburgh in 2004.

JAMES COOK RESEARCH FELLOWSHIP 2010

Congratulations yet again to Mike Steel, who is one of five New Zealand researchers to be awarded a prestigious, two-year James Cook Research Fellowship commencing in 2010. The fellowship, in the physical sciences category, is for his research entitled *Mathematical foundations for inferring large evolutionary trees*.

These fellowships are administered by the Royal Society of New Zealand on behalf of the Government and are awarded to “forward thinking” researchers who will make a significant contribution to New Zealand’s knowledge base. They allow researchers to concentrate on their chosen research for two years without the additional burden of administrative and teaching duties.

THE WALKING WOUNDED!

Mike Steel has been recuperating at home under the watchful eye of daughter Emma, following surgery. By the time this newsletter is out, he will be hobbling around the office, though great mountaineering feats will have to be put on hold for a while!



STAR COURSE (MATH199)

A nice email from a happy father of a high school student taking MATH199 from outside Christchurch ...

“Just a line to say thank you for all your work with this paper. My son has really enjoyed it – a bit of a challenge along with everything else going on, but the organization etc has been outstanding. Canterbury Uni certainly does a good job recruiting high school students”.

Well done, Liz!

- Jennifer Brown

PAPERS SUBMITTED

Jennifer Brown & Timothy Robinson: *Assessing uncertainty in environmental sampling* (Proceedings of the Third Annual Applied Statistics Education and Research Collaboration (ASEARC) Research Conference, Newcastle, Australia, December 2009).

Jennifer Brown & Irene David: *Teaching critical thinking to first-year university students* (Proceedings of the 8th International Conference of Teaching Statistics, Slovenia, August 2010).

Hordijk W, Hein J & Steel M: *Autocatalytic sets and the origin of life* (Origins of Life and Evolution of Biospheres)

N A Rosenberg & J H Degnan: *Coalescent histories for discordant gene trees and species trees* (Theoretical Population Biology)

Jeroen Schillewaert & Gunter Steinke: *Flat Laguerre planes of Kleinewillingerhofer type III.B* (Advances in Geometry)

PAPERS ACCEPTED

M DeGiorgio & J H Degnan: *Fast and consistent estimation of species trees from supermatrix rooted triples* (Molecular Biology and Evolution)

Steel M & Sanderson M J: *Characterizing phylogenetically decisive taxon coverage* (Applied Mathematics Letters)

BOOK PUBLISHED

Raazesh Sainudiin: *Machine Interval Experiments: Accounting for the Physical Limits on Empirical and Numerical Resolutions*. (ISBN 978-3-8383-1599-7, LAP Academic Publishers, 2009)

Steel M A & Szekely L: *Inverting random functions (III): Discrete MLE revisited* (Annals of Combinatorics 13: 373--390)

WELCOME TO OUR DEPARTMENTAL VISITORS

<u>Visitor</u>	<u>Organization</u>	<u>Host</u>	<u>From</u>	<u>To</u>	<u>Room</u>	<u>Extn</u>
Prof. John Rhodes (Erskine)	University of Alaska Fairbanks	M Steel	15/7/09	1/11/09	607	8875
Prof Eric Lehman	University of Caen	P Renaud	15/9/09	31/10/09	607	8875
Karen Magnuson-Ford	Simon Fraser University	M Steel	23/9/09	8/12/09	616	8876
Travis Ingram	University of British Columbia	M Steel	29/9/09	17/12/09	620	7431

CONFERENCES & VISITS

Qui Bui: to make a research visit funded through a department research initiative to Xuan Dong at Macquarie University, Australia, 8-21 November 2009.

James Degnan: to give a talk entitled *Identifiability of rooted species trees from unrooted gene tree distributions*, (with Elizabeth Allman and John Rhodes), University of Tasmania, 29-30 October 2009.

James Degnan: to make a research visit to the University of Michigan for collaboration with Noah Rosenberg, 7 – 19 December 2009.

Miguel Moyers-Gonzalez: to attend the NZ Mathematics Colloquium, Massey University Albany, 7 – 10 December 2009.

Rua Murray: to attend the NZ Mathematics Colloquium, Massey University Albany, 7 – 10 December 2009

Charles Semple: to give a talk on Combinatorics at the NZ Mathematics Colloquium, Massey University Albany, 7 – 10 December 2009.

HAMISH SILVERWOOD - UPDATE



Hamish Silverwood at CERN



Hamish at Downing College, Cambridge

Former Mathematical Physics student Hamish Silverwood, who graduated BSc with First Class Honours this year, is now at Cambridge University, via CERN. He has started lectures for Part 3 of the Math Tripos and says, in a recent email to the Physics Department, that it's a new experience being in a Quantum Field Theory or General Relativity lecture with 150 people!

(Photos courtesy of the Department of Physics)
