

IMBcom Pty Ltd is The University of Queensland's company for commercialisation of the IP arising from the research of the IMB. It is responsible for protection and development of the IMB's intellectual property portfolio. Established in 2000, IMBcom has a skilled, independent Board of Directors and operates as a separate commercial entity, but with a charter of service to the University's commercialisation objectives. The company has nineteen employees who provide the necessary skills and support to IMB researchers in commercialising the results of their discoveries.

IMBcom uses a model of cooperative integration with the discovery activities of the research labs. IMBcom staff are involved from the early stages with the planning and delivery of ways to add value to the emergent innovations. The company manages the IMB's Intellectual Property as custodians, developers, and drivers, resulting in licences, contracts and the formation of start-up companies to take discovery to products and services into markets.

IMBcom has had a historical strategic focus on developing new companies. During the first five years, IMBcom has seen the establishment of 11 new biotechnology companies, two in conjunction with UniQuest. These companies have raised more than \$40 million through private sector investment, \$16 million in federal and state government commercial grants and currently employ or contract over 60 individuals in R&D and commercialisation. These spinouts have gone on to develop strategic relationships in their own right with many other Australian and international biotechnology and pharmaceutical companies, and have encouraged the growth and establishment of service providers, adding to the fabric and critical mass of the industry in Queensland. The companies continue to mature under their own management once substantial first round investment is raised. One of the companies developed in partnership with Uniquest, Xenome, has now moved to become completely independent of the University, and the funds generated for the IMB and IMBcom are being used to provide the "proof-of-concept" funds for future IP and product development.

The IMB has a commitment to the training of high-quality graduate students in the molecular biosciences and aspires to provide a more holistic training with the inclusion of commercial and ethical dimensions. IMBcom has supported this objective through the provision of workshops throughout the training period. These "bootcamps", or BioBusiness Retreats, incorporate elements of career preparation, understanding and working in a commercial environment, and working in teams to produce outcomes. The training engages experienced professionals from the pharmaceutical, biotechnology, investment and research industries. The training has provided one of the building blocks of the commercial culture emerging in the IMB. These programs have provided commercial, project and team management skills to over 240 individuals to date, some of whom have adopted careers in the industry, being placed in Queensland biotechnology companies and IMBcom itself. The IMBcom model is now widely imitated by other organisations that recognise that the preservation of value in intellectual property is the key to building assets upon which industry develops.

IMBcom provides assistance to Queensland and Commonwealth government departments and agencies with respect to biotechnology industry development, and is well regarded as an effective advocate for Queensland's consistent promotion of the Smart Queensland agenda. IMBcom showcases not only the IMB and the University to industry and investment, but Queensland as an industry destination.



It has been yet another exciting year for the IMB Postgraduate Program, with 37 new students joining the program throughout the year. Nearly one third of these were from overseas (from countries as diverse as Germany, USA, UK, Brazil, Singapore, Indonesia, Thailand and Malaysia) and, interestingly, slightly over one third commenced their degree in the middle of the year, rather than at the more traditional January – March start date. We also had another solid year for completions, with more than 20 IMB students receiving their PhD degrees (for a full list see Table 1 page 56) and a further seven submitting their theses for examination in 2007. We currently have approximately 130 research higher degree (RHD) students enrolled through the IMB and are hoping this number will grow slightly throughout 2008.

Not only are our students growing in numbers, they are continuing to produce high-quality research outcomes. Half of our 2006 graduates, or 12 of 24, were nominated for consideration for the Dean's List for 2006, with Ben Clark (Capon lab), Alistair Forrest (Grimmond lab), Markus Kerr (Teasdale lab) and Matthew Kirkham (Parton lab) being successful. A snapshot of some of our students' other achievements can be seen in Table 2 (page 56).

This year saw the continuation of two specialist awards, initiated in 2006 for our IMB RHD students, through generous sponsorship by leading companies in the field of life science.

The Roche Award for Postgraduate Career Development (RAPCD) yet again attracted a very high standard of entries for the selection panel to consider. The three finalists, Andrew Noske (Marsh lab), Michael Tallack (Perkins lab) and Rehani Villani (Wainwright lab), gave a 15-minute oral presentation to a second selection panel, which included Dr Andreas Goertz and Ms Susan Matthews from Roche. The presentations were wonderful, reflecting both the talent of our students and the diversity of the IMB's research approaches, and the judging panel spent much time deliberating. The ultimate winner, announced by Dr Goertz at the Institute-wide Friday Seminar Series, was

Rehan Villani with her presentation, "Hedgehog Signalling: Balancing Skin Turnover and Skin Cancer". Rehan has not yet had the opportunity to use her \$1500 prize but is intending to put it to good use in the first half of 2008.

The Olympus Life Science Research Postgraduate Travel Award, as per last year, attracted a number of visually as well as scientifically stunning entries, which took the form of still images or videos. Unlike last year however, where an IMB-based team narrowed the entries to the three finalists, this year the Olympus selection team saw all entries and selected a winner and two runners-up from the total pool. The winner was Samantha Murphy (Parton lab), with her video titled "Characterisation of lipid droplet metabolism in adipocyte cells (Phat and Fusogenic)", while the runners-up were Natalie Butterfield (Wicking lab) and Andrew Noske (Marsh lab), who both received gifts from Olympus. Interestingly, Natalie was runner-up last year too, suggesting not only that Natalie continues to produce great work but also that the selection procedures are robust. Sam intends to use her \$1000 travel money to attend a conference in 2008. All recipients were presented with their awards by Mr Kieren McHugh and Mr Paul Pearce from Olympus at the IMB Molecular Genetics and Development Divisional Forum.

Once again, we greatly appreciate the generous support of the IMB graduate program by both Olympus and Roche and hope these awards continue. For more information regarding the instigation of these awards, please see the 2006 annual report.

Our honours cohort was smaller than usual for 2007 and, as with our RHD students, was distributed such that nearly half the students commenced their honours study mid-year. We had 19 students commencing in February, seven students who carried over from July 2006 and seven others who commenced in July 2007. The Amgen Award for the most outstanding honours student at the IMB in 2006 was presented in August by Ms Bronwyn Shanahan and Ms Jo McNaughton from AMGEN

Australia Pty Ltd to Emma Redhead from Dr Tim Bailey's group. Emma, whose honours project focused on developing a discriminative algorithm for detecting motifs in DNA and protein sequences, continued in the Bailey lab as a research assistant for much of 2007 before travelling overseas. Amgen Australia has been presenting our honours students with this award for over a decade and we are thrilled by their continued support of our young researchers.

IMB also continued the Undergraduate Research Scholarship Scheme (URSS) in 2007, giving 21 third-year students the opportunity to work in a laboratory within one of our divisions for eight hours per week during semester. Additionally, more than a dozen third-year students completed mini-research projects as part of the "Introduction to Research" module of their respective degrees, 14 summer students undertook projects in 2007/2008 and several Advanced Studies students completed research projects as part of their program. We also continued our involvement with the Advanced Studies Program lunchtime seminar series coordinated by Ms Robyn Evans from the BACS Faculty at UQ. Once again, we hosted many international students, primarily from Germany, Sweden and France but also from India, Singapore, Denmark, USA and the Netherlands, who joined IMB for several months as occupational trainees, undertaking overseas research placements as part of their degree requirements within their home institutions. We also welcomed a number of year 10, 11 and 12 students from schools throughout Queensland to undertake a brief period of work experience within research laboratories.

Our IMB student association (SIMBA) had yet another very productive year, ushering in a new Executive in May comprising Adam Costin (President), Josefina Sprenger (Vice President), Andrew Noske (Secretary) Elaine Haase (Treasurer), Alex Combes (SIMBALize editor-in-chief) and Tom Whittington (Webmaster). This Executive continued with the vibrancy of the last, better promoting the SIMBA website among the general IMB community, continuing the fine tradition of the bimonthly electronic student journal, SIMBALize,

and organising a host of social events and bonding exercises. This included the inaugural IMB/AIBN combined trivia night, which proved very successful in bringing students and staff from the two research institutes together. Throughout

the year, the IMB Early Career Researcher (ECR) Committee also provided useful information sessions and a mentoring breakfast, as well as continuing to coordinate the Institute-wide Monday Midday Meetings, which provided an ideal venue

for some of our postdocs and more senior PhD students to present their research to the Institute. During 2007 the members of the ECR committee included postdocs Dr Terje Svingen, Dr Dagmar Wilhelm, Dr Karen McCue, Dr Michael Hanzal-

TABLE 1: PhD CONFERRALS FOR 2007

Last Name	First Name	Group	Degree	Thesis Title	Where are they now?
Allen	Tamara	Muscat	PhD	Regulation of PPARg Activity by Novel Modulators	Baker Heart Research Institute, Melbourne, Australia
Barry	Daniel	Craik	PhD	Structural and Dynamic Studies of Cyclotides and their Precursors	Queensland Institute of Medical Research, Brisbane, Australia
Constantin	Myrna	Hume	PhD	Transcriptional Regulation of the c-fms Promotor by the ETS Family of transcription Factors	Travelling
Dave	Richa	Sweet	PhD	Functional Characterisation of the Role of Protein Tyrosine Phosphatase CD148 in Macrophages	Institute for Molecular Bioscience (Wainwright group), Brisbane, Australia
Davis	Melissa	Teasdale	PhD	Defining the Membrane Organisation of Eukaryotic Proteins	Institute for Molecular Bioscience (Ragan group), Brisbane, Australia
Garcia Castro	Alexander	Ragan	PhD	Developing Ontologies in the Biological Domain	Institute for Infocomm Research, Singapore
Gardiner	Melissa	Perkins	PhD	Determining the role of klf4 in zebrafish development	Queensland Brain Institute, Brisbane, Australia
Gruber	Christian	Craik	PhD	Plant Cyclotides: Evolution, Biosynthesis and Application of Circular Cystine Knot Mini-Proteins Cystine Knot Mini-Proteins	Vienna Medical University, Austria
Hamwood	Tamarind	Hume	PhD	The Structural Basis of CSF-1:CSF-1R Interactions	CBio Pty Ltd, Brisbane, Australia
Helwani	Falak	Yap	PhD	Cortactin regulates actin cytoskeletal dynamics at E-cadherin Adhesive Contacts	Mater Medical Research Institute, Brisbane, Australia
Imperial	Julita	Alewood	PhD	Novel peptides from Conus planorbis, Terebra subulata, and Hastula hectica	University of Utah, Salt Lake City, Utah, USA
Ireland	David	Craik	PhD	Structure-Activity Relationships in Biotechnology: Scientific and Business Perspectives	UniQuest Pty Ltd., The University of Queensland, Brisbane, Australia
Joseph	Shannon	Stow	PhD	The Exocytic and Endocytic Trafficking of E-cadherin in Epithelial Cells	Patient Safety Officer, Emerald Hospital, Queensland, Australia
Kay	Jason	Stow	PhD	Intracellular Cytokine trafficking and Phagocytosis in Macrophages	Hospital for Sick Children, Toronto, Canada
Loughnan	Marion	Lewis/Alewood	PhD	Discovery and Characterisation of Conopeptide antagonists of nAChRs	Institute for Molecular Bioscience (Lewis group), Brisbane, Australia
Lovelace	Erica	Craik	PhD	The Structure, Activity and Engineering of Two Disulfide-bonded Conotoxins	Fred Hutchinson Cancer Research Center, Seattle, USA
Palmer	James	Wainwright	PhD	Characterisation of the Host Immune response in Cystic Fibrosis Mice	Institute for Molecular Bioscience (Wainwright lab), Brisbane, Australia
Pippal	Jyotsna	Muscat	PhD	The Role of PPAR-alpha In Lipid and Carbohydrate Metabolism of Skeletal Muscle Cells	Prince Henry's Institute of Medical Research, Melbourne, Australia
Ratnayake	Ranjala	Capon	PhD	Chemistry and Bioactivity Studies of Australian Microorganisms	National Cancer Institute, Frederick, USA
Ren	Gang (Albert)	Munn	PhD	Interactions between PCH proteins Hof1p and Vrp1p in regulation of cell division and membrane transport	Institute for Molecular Bioscience (Yap lab), Brisbane, Australia
Saska	Ivana	Craik	PhD	Biosynthesis of Circular Proteins in Plants	Institute for Molecular Bioscience (Craik lab), Brisbane, Australia
Woolford	David	Hankamer	PhD	Advanced Algorithms, Software and Applications in Single Particle Analysis	Baylor College of Medicine, Houston, USA
Wu	Andy Chiu Ku	Cassady	PhD	Invitro and In vivo Characterisation of Cellular Responses to PHBV and Hydroxyapatite/PHBV Composites as Bone Biomaterials.	School of Biomedical Sciences, The University of Queensland, Brisbane, Australia

Bayer, Dr Mathias Francois, Dr Andrew Brooks, Dr Allison Pettit, and PhD students Evan Stephens and Simon Wilkins.

The ECR committee ran several information sessions in conjunction with the Graduate Program this year, including a set of two one-hour scientific writing workshops in March, conducted by Dr Joan Leach, who is part of the science communication program at UQ. These sessions were very well received and will be expanded in the future. Another information session in October, (coordinated largely by Evan Stephens from the ECR committee and funded by the Postgraduate Program), was conducted by Dr Hugh Kearns from Flinders University. The morning session, covering, "The 7 Secrets of Highly Successful PhD Students", was complemented by an afternoon session discussing, "Defeating self-sabotage", both of which were well received and provided food for thought for our student body.

In addition to these information sessions, the Postgraduate Program continued to run its regular set of workshops designed to assist students in overall career development. These included IMBcom's "Biobusiness Day Out" in November, which was compulsory for first-years

(as it replaced the "Introduction to Bio-Business" Workshop) and IMBcom's three-day "BioBusiness Retreat" for the third-years, which was held in June at the Grand Pacific, Caloundra. Once again, feedback from the retreat was extremely positive, with students really enjoying the mentoring sessions, the networking opportunities and career advice. We reinitiated our basic statistics course with Carl Sherwood, the eight-week sessions proving so popular that we ran them in both semesters, as well as conducting a three-day specialist workshop on the program R, conducted by Professor John Maindonald from the Australian National University.

The year has also been a time of change for the UQ Graduate School, with the RHD offices initiating a number of changes in practice that are set to continue in 2008 and 2009. The most important change for this year was the deregulation of the Australian Postgraduate Award and UQ Research Scholarships schemes such that, as of October 2007, domestic students have been able to apply for a scholarship at any time throughout the year, with their scholarship application being linked to the application for enrolment into the RHD program. This has proved beneficial for a number

of our potential students, who, until this year, were tied to an October deadline, requiring many to establish PhD projects while trying to complete their honours thesis. For a full list of scholarship outcomes for 2007/2008, please see Table 3. There has also been a change to the way the University handles international student costs, which may have implications for fee-waiver opportunities in the future.

The IMB has been very fortunate to have Professor Rob Capon continue in his role as the IMB Postgraduate Coordinator and once again serve as the IMB representative on the UQ Postgraduate Committee of the Academic Board throughout the year. Through his ongoing dedication and vigilance to all aspects of the Graduate Program, Rob is continuing to drive the IMB Postgraduate Program forward in a proactive and positive way to help deliver to our students the best overall research training possible.

Table 2: Non-IMB Awards received by PhD Students in 2007

Recipient	Award
Natalie Butterfield (Wicking lab)	Finalist, Oral Abstract presentation, Australian Society of Medical Research Postgraduate Student Conference
Ming Kang Chang (Sweet lab)	Third Prize, Oral Abstract presentation, Australian Society of Medical Research Postgraduate Student Conference
Alex Combes (Koopman lab)	Winner, Invitrogen Molecular Probes Photo Competition Most Outstanding Individual Presenter, GSK Biopitch, IMBcom Biobusiness Retreat
Melissa Gardiner (Perkins lab)	UQ Graduate School Research Travel Award
Dhiraj Hans (Fairlie lab)	Gates Foundation Global Health Series Travel Award
Jason Kay (Stow lab)	\$1000 Travel Grant, Keystone Symposia macrophage conference
Tim Mercer (Mattick lab)	UQ Graduate School Research Travel Award
Philip Nguyencong (Craik lab)	UQ Graduate School Research Travel Award
Amber Stephens (Munn lab)	UQ Graduate School Research Travel Award
Rehan Villani (Wainwright lab)	Poster Prize, Australian Society of Medical Research Postgraduate Student Conference
Simon Wilkins (Perkins lab)	UQ Graduate School Research Travel Award

TABLE 3: Scholarships Obtained in 2007 for Funding in 2008

7	Australian Postgraduate Awards/UQRS (2 additional scholarships obtained early 2008)
1	Endeavour International Postgraduate Research Scholarships/UQRS
3	UQ International Research Awards/UQRS
1	Endeavour Postgraduate Research Scholarship
1	Endeavour Turkey Postgraduate Award
2	ANZ Trustees PhD Scholarships in Medical Research
1	The Cancer Council Queensland ('John Earnshaw Scholar')
3	AusAID Scholarships (2 from transferred students)
2	Home Government scholarships

VISITING SPEAKERS

DR KIRILL ALEXANDROV

Department of Physical Biochemistry, Max-Planck-Institute for Molecular Physiology, Germany

"Development of new tools and approaches for the analysis of GTPase controlled molecular machines"

PROFESSOR ALAN W. BELL

Chairman, Department of Animal Science, Cornell University, New York, USA

"The fetal origins hypothesis: evidence and implications for performance and health of livestock species"

PROFESSOR MAXWELL R. BENNETT AO

Director, Brain & Mind Research Institute, University of Sydney

"Astrocyte and microglia signalling in the brain"

PROFESSOR MARGARET BRIMBLE

Department of Chemistry and Maurice Wilkins Centre for Molecular Biodiscovery, University of Auckland, New Zealand

"Medicinal Chemistry: An Academic Discipline or a Commercial Reality?"

PROFESSOR KEVIN BURRAGE

Director, Advanced Computational Modelling Centre, The University of Queensland

"Is mathematical modelling and simulation of any practical use in the life sciences?"

DR ANTONY COOPER

Garvan Institute

"Misfolded proteins and disease: Insights into Parkinson's Disease and ALS from model systems"

ASSOCIATE PROFESSOR PETER CURRIE

Developmental Biology Laboratory Head, Victor Chang Cardiac Research Institute

"Zebrafish models of skeletal muscle development and regeneration"

ASSOCIATE PROFESSOR SAM EL-OSTA

Baker Heart Research Institute

"Transient hyperglycemia induces vascular epigenetic changes that cause persistent increased gene expression during subsequent normoglycemia"

DR MATTHIAS ERNST

Ludwig Institute for Cancer Research, Royal Melbourne Hospital

"Using reverse genetics to dissect mechanisms maintaining epithelial homeostasis in the gut"

DR ALEX FRANZUSOFF

GlobelImmune, Colorado, USA

"Sheep in wolf's clothing – engineering yeast for use in cancer and viral immunotherapy"

PROFESSOR RUDI GLOCKSHUBER

Institute of Molecular Biology and Biophysics, Zurich, Switzerland

"Assembly of type 1 pili in *Escherichia coli*"

DR ERICA A. GOLEMIS

Fox Chase Cancer Center, Philadelphia, Pennsylvania, USA

"HEF1/NEDD9, a scaffold for metastasis"

PROFESSOR THOMAS GOODWIN

Department of Chemistry, Hendrix College, Arkansas, USA

"Utilisation of green extraction techniques for pheromones in elephants, maned wolves and ring-tailed lemurs"

PROFESSOR JENNY GRAVES

Research School of Biological Sciences, Australian National University

"Weird animal genomes and the evolution of sex"

PROFESSOR JEAN GRUENBERG

Department of Biochemistry, University of Geneva, Switzerland

"Membrane dynamics in the endosomal pathway"

PROFESSOR GARY HALLIDAY

Melanoma and Skin Cancer Research Institute, University of Sydney

"Ultraviolet radiation-induced skin cancer: the outcome of immunosuppression and gene mutations"

ASSOCIATE PROFESSOR STUART HOOPER

Monash University

"Imaging Lung Aeration at Birth"

PROFESSOR JONATHON HOWARD

Max Planck Institute of Molecular Cell Biology, Dresden, Germany

"From single motor proteins to cellular motility"

DR MICHAEL HUCKA

Co-director, Biological Network Modelling Center, The Beckmann Institute, California Institute of Technology, USA

"SBML, BioModels Database, MIRIAM and SBO: infrastructure for computational systems biology"

PROFESSOR DAVID HUME

Edinburgh Bioscience Research Centre, Scotland

"The Biology of Macrophages"

PROFESSOR PETER HUNTER

Director, Bioengineering Institute, University of Auckland, New Zealand and Professor, Oxford University

"Cardiac modelling: From ion channels and protein pathways to integrative cell, tissue and organ function"

PROFESSOR NANCY JENKINS

Institute of Molecular and Cell Biology, Singapore

"Harnessing transposons for cancer gene discovery"

HUGH KEARNS

Flinders University

"The Seven Secrets of Highly Successful PhD Students" and "Defeating Self-Sabotage"

DR PHILIP KIM

Department of Molecular Biophysics and Biochemistry, Yale University, USA

"Jumping Scales: How 3D structures and Molecular Genetics Meet in Protein Networks"

PROFESSOR MARTIN LAVIN

Queensland Institute of Medical Research

"ATM activation and downstream signalling protection against cancer and neurodegeneration"

DR LARS LEICHERT

Department of Molecular, Cellular and Developmental Biology, University of Michigan, USA

"Global Identification of Redox-Regulated Proteins"

DR GREG MUNDY

Director, Center for Bone Biology, Vanderbilt University Medical Centre, Nashville, Tennessee, USA

"New Concepts of the Vicious Cycle of Breast Cancer Metastasis to Bone"

ASSOCIATE PROFESSOR OSAMU MARUYAMA

Kyushu University, Japan

"ParScope: Predicting Transcription Factor Binding Sites through Parsimonious Composite Patterns"

PROFESSOR ROBERT MURPHY

Carnegie Mellon University, USA

"Automated Interpretation of Subcellular Patterns in Microscopic Images: Bioimage Informatics for Systems Biology"

DR MANDAR NAIK

Institute of Biomedical Sciences, Academia Sinica, Taipei, Taiwan

"Roles of structure and structural dynamics in antibody recognition of allergen proteins"

PROFESSOR BRENT REYNOLDS

Queensland Brain Institute

"Targeting CNS cancer cell lines"

PROFESSOR DAGMAR RINGE

Rosenstiel Basic Medical Sciences Research Center, Brandeis University, Massachusetts, USA

"Mechanism of control of gene expression: the diphtheria toxin repressor"

PROFESSOR JEFF ROSEN

Baylor College of Medicine, Houston, Texas, USA

"Stem/progenitor cells in the etiology and treatment of breast cancer"

PROFESSOR ROB SAINT

Director, ARC Special Research Centre for the Molecular Genetics of Development, Australian National University

"A versatile Rho GTPase signalling pathway in cell division and migration"

PROFESSOR RICK SHINE

School of Biological Sciences, University of Sydney

"Mr Toad comes to Darwin: an evolutionary perspective on the cane toad invasion"

PROFESSOR EVAN SIMPSON

Director, Prince Henry's Institute of Medical Research

"Sex, fat and cancer"

PROFESSOR MANDYAM SRINIVASAN

Queensland Brain Institute

"Smart computers in small brains: vision, navigation, perception and cognition in honey bees"

DR DANIELA STOCK

Victor Chang Cardiac Research Institute

"Structure and function of proton translocating ATPases"

PROFESSOR BRIAN STORRIE

University of Arkansas for Medical Sciences, Little Rock, USA

"Rab6 regulates both ZW10/RINT-1- and conserved oligomeric Golgi complex-dependent Golgi trafficking and homeostasis"

PROFESSOR JILL TREWHELLA

School of Molecular and Microbial Sciences, University of Sydney

"Protein-protein interactions in signalling pathways: what we can learn from solution scattering methods"

PROFESSOR GISOU VAN DER GOOT

Global Health Institute, Ecole Polytechnique Federale de Lausanne, Switzerland

"Anthrax toxin: from entry to cell death"

PROFESSOR GREG VERDINE

Department of Chemistry and Chemical Biology and Department of Molecular and Cellular Biology, Harvard University, USA

"The search for damaged bases in the genome"

DR CHRIS L. WALLER

Director, World Wide Chemistry Informatics, Pfizer Global Research and Development, USA

"Challenges, strategies and solutions for drug discovery data integration at Pfizer"

