



# Department of

# Wine, Food

# and

# Molecular Biosciences

**Contacts for Department of Wine, Food and Molecular Biosciences**

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## Introduction to the Faculty of Agriculture & Life Sciences

The Faculty of Agriculture and Life Sciences at Lincoln University provides knowledge and expertise to lead New Zealand into a dynamic, innovative and sustainable future in a wide range of disciplines related to Agriculture, Food and the Environment. It is a multidisciplinary research and teaching Faculty with 16 Professors and 150 staff. The Faculty of Agriculture and Life Sciences provides expertise throughout the 'farm to fork' value chain.

The Faculty is a centre of excellence for postgraduate education. It provides a continuum of postgraduate programmes from the fundamental areas of science through to the applied in disciplines relating to soils, the environment and its management, plants, animals, viticulture and oenology, food, farm management and ecology. The Faculty also provides undergraduate degrees in: Agricultural Science, Viticulture & Oenology, Science (which includes a number of majors), and Diplomas in Agriculture, Horticulture and Agricultural and Horticultural Management

Most importantly, there are wide ranging employment opportunities for the Faculty's graduates who are sought after by innovative and progressive organisations in New Zealand and worldwide.

The Faculty has excellent collaborations with the agriculture and horticulture industries and research in these areas is directed towards solving industry problems. Collaboration is also very strong with government-funded research organisations that are based in Lincoln or elsewhere in New Zealand. Notably, the Faculty is an integral part of the Marlborough Wine Research Centre, a new initiative to provide leading research to this important industry. This is only one of many examples of our credibility with industry partners: meeting expectations and solving problems in a modern society. The Faculty of Agriculture and Life Sciences also has extensive links to a wide range of international research organisations.

The Faculty has access to excellent facilities, including well-equipped laboratories, controlled environment rooms, animal laboratories, a winery, advanced analytical instruments and computing facilities. The Faculty's field facilities incorporate a wide range of production systems including arable cropping and pastures (three research farms totalling 430 ha), a vineyard, horticultural research area, lysimeters, access to a 'best practice' commercial dairy farm and a new purpose-built research dairy farm. The Faculty also has access to a wide range of livestock including sheep, beef and dairy cattle, and deer.

There are four departments in the Faculty:

- Agricultural Sciences
- Ecology
- Soil and Physical Sciences
- Wine, Food and Molecular Biosciences

The Faculty is research led and has a number of specific research centres, including the:

- Centre for Soil and Environmental Quality
- Centre for Viticulture and Oenology
- Centre for Advanced Computational Solutions

## Introduction to the Department of Wine, Food & Molecular Biosciences

The Department of Wine, Food and Molecular Biosciences covers subject areas including animal and plant science, biochemistry, food science, horticulture, microbiology, sensory science, viticulture and wine science. Staff are actively involved in teaching, at undergraduate and postgraduate levels, and involved in a wide range of research projects.

Areas of research we are currently involved in include:

- The content and availability of bioactive compounds
- Meat quality
- Vineyard practice and effects on grape quality (especially for Pinot noir)
- Pest and disease management
- Innovative technologies in juice and wine processing
- Systems Biology
- Sensory theory
- Animal, plant breeding and genetics (molecular and quantitative) to confer resistance to disease caused by pathogens.
- The use of animal models for the study of human diseases (cataracts, Batten's disease, osteoporosis).
- The use of computer simulation to predict biological and physical phenomena.
- The influence of environmental stressors on animal and plant health (microbial infections, UV damage in plants, temperature stress in dairy cattle and poultry).
- The detection of environmental toxicants using biosensors.

We also recognise that it is important to provide the breadth of expertise required to New Zealand industry through our research and training of postgraduate students.

## Research and Teaching Strengths within the Faculty include:

### Agricultural Sciences

- Animal production;
  - dairy, sheep, beef and deer
- Plant production;
  - crops, pasture and horticulture
- Animal genetics
- Animal health
- Nutrition; animal and plant
- Physiology; animal and crop
- Agronomy
- Animal products
- Animal welfare
- Grazing ecology
- Parasitology and immunology
- Reproductive physiology
- Rumen function

### Ecology

- Agro-ecology and organics
- Bio-control and bio-protection
- Biodiversity
- Conservation, wildlife and invasion biology
- Ecology
- Ecology and Maori
- Ecotoxicology
- Entomology
- Evolutionary biology
- Fungal genetics
- Integrated pest management
- Invertebrate taxonomy
- Molecular, spatial and behavioural ecology
- Molecular systematics
- Plant pathology
- Vertebrate pest management

### Soil and Physical Sciences

- Agricultural greenhouse gas science,
  - measurement, mitigation & modelling
- Antarctic soils
- Environmental biochemistry
- Nitrate leaching and mitigation
- Remediation of contaminated soils
- Rhizosphere process science
- Soil and environmental physics
- Soil biology, biochemistry and molecular biology
- Soil fertility and nutrient management
- Soil geomorphology, quaternary geology and soil-landscape modelling
- Soil micro-morphology
- Soil nutrient cycling and management
- Stable isotope methodologies
- Sustainable land management
- Trace elements in soils

### Wine, Food and Molecular Biosciences

- Animal models for human health
- Biochemistry and cell biology
- Biotechnology
- Computer modelling
- Food biochemistry
- Immunology
- Microbiology
- Molecular biology
- Plant biology
- Systems biology
- Toxicology
- Wine science
- Viticulture

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## Roy Bickerstaffe



**Professor of Food  
Biochemistry,  
Director of Research Strategy**  
B.Sc (Hons), PhD (Liverpool)

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Roy.Bickerstaff@lincoln.ac.nz

New Zealand representative on  
Government Scientific delegations to  
Iowa and Chile.  
Trustee, representing Lincoln  
University, on the Brian Mason  
Scientific and Technical Trust.

### Teaching

Examiner for General Biochemistry and Animal Biochemistry .

### Research

- Meat quality specifications; Calpain action and substrates; Bio-imaging; Meat production and quality gene markers; DNA microbial taxonomy.

In particular:

- The role of the calcium dependent proteases, known as calpains, in muscle growth, post-mortem myofibrillar degradation (meat tenderisation) and cataract development in collaboration with Japanese, American, French and UK researchers.
- The use of image analysis to quantify the quality and value of animal carcasses for their ability to yield quality cuts of meat.
- The application of an eyedrop with a pharmaceutical molecule to halt the progression of cataract development.
- Co-ordinator with K. Gately of identifying meat with superior eating qualities for the National Lamb (Wanaka) and Beef (Palmerston North) competitions.
- Identifying meat quality specifications for supermarkets.

### Selected Publications

- Hiszczynska Sawicka E, Akhtar M, Kay G W, Holec-Gasior L, Bickerstaffe R, Kur J. Stankiewicz M. The immune responses of sheep after DNA immunization with, *Toxoplasma gondii* MAG1 antigen - with and without co-expression of ovine interleukin 6. *Veterinary Immunology and Immunopathology* 136: 324-329. 2010.
- Bekhit, A.E., Ilian, M., Morton, J.D., Vanhanen, L.P., Sedcole, R.R., & Bickerstaffe, R. *Effect of calcium chloride, zinc chloride and water infusion on metmyoglobin reducing activity and fresh lamb color*. *Journal of Animal Science* 83: 2189-2204. 2005.
- Obanor, F.O., Morton, J.D., Geesink, G.H. & Bickerstaffe, R. *Effect of processing on turkey meat quality and proteolysis*. *Poultry Science* 84: 1123-1128. 2005.
- Alayan, M.A., Bekhit, A.E. & Bickerstaffe, R. *The relationship between meat tenderization, myofibril fragmentation and autolysis of calpain 3 during post-mortem aging*. *Meat Science* 66: (2): 387-397. 2004.
- Alayan, M.A., Bekhit, A.E. & Bickerstaffe, R. *Does the newly discovered calpain 10 play a role in meat tenderization during post-mortem storage?* *Meat Science* 66: (2): 317-327. 2004.
- Bekhit, A.E., Geesink, G.H., Ilian, M., Morton, J.D., Sedcole, R.R. & Bickerstaffe, R. *Pro-oxidant activities of carnosine, rutin and quercetin in beef model system and their effects on metmyoglobin-reducing activity*. *European Food Research and Technology* 218: 507-514. 2004.

## Sue Blackmore



### Teaching

Principles of Wine Science,  
Wine Quality Assessment,  
Wine Chemistry and Technology.

### Research

- Development of new technologies.
- Organic wine styles.
- Limiting the use of SO<sub>2</sub> in wine.
- Sustainable practices within wineries.

### Lecturer in Wine Science

BHortSci(Massey), PGradDip Ed  
(UWA), PGradDip V & O (Lincoln)

Ext 8636  
Hilgendorf 313  
Sue.Blackmore@lincoln.ac.nz

Originally a horticultural scientist,  
with practical experience in a  
range of horticultural fields and  
education. Studied Viticulture and  
Oenology at Lincoln before  
working in the wine industry both  
in New Zealand and overseas.

## Glen L Creasy



### Senior Lecturer in Viticulture

BS (Cornell), MSc, PhD (Oregon State)

Ext 8128

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Glen.Creasy@lincoln.ac.nz

Member of:

New Zealand Society for Viticulture and Oenology.

American Society for Enology and Viticulture.

Australian Society of Viticulture and Oenology.

Wines of Canterbury.

Publications Committee (and Associate Editor) American Journal of Enology and Viticulture.

### Teaching

Viticulture I, Viticulture II, Science of Grapes and Wine, Postgraduate Special Topics, Grapevine Physiology, Physiology of Grape Berry Development, Academic Course Co-ordinator for the Bachelor of Viticulture and Oenology Degree, Bachelor of Viticulture and Oenology Honours Degree and a Course Advisor for the Graduate Diploma in Viticulture and Oenology qualification.

### Research

- Ongoing trials into rootstock and cultivar evaluation.
- Influencing grapevine microclimate using reflective mulches.
- Viticultural management as an integral part of influencing final wine quality.

### Selected Publications

- Saxton V.P., I. Mulder, G. Creasy, A.M. Paterson, J.G. Ross and M.C.T. Trought. Comparative behavioural responses of silvereyes (*Zosterops lateralis*) and European blackbirds (*Turdus merula*) to secondary metabolites in grapes. *Austral Ecology* March:XX-XX. 2010. DOI 10.1111/j.1442-9993.2010.02142.x
- Friend, A.P., M.C.T. Trought and G.L. Creasy. 2009. The influence of seed weight on the development and growth of berries and live green ovaries in *Vitis vinifera* L. cvs. Pinot Noir and Cabernet Sauvignon. *Australian Journal of Grape and Wine Research*. 15(2):166-174.
- Creasy, G.L. and L.L. Creasy. Grapes. No. 16 in the CABI Crop Production Science in Horticulture Series. CAB International. ISBN 978-1-84593-401-9
- Saxton, V. P., G. L. Creasy, A. M. Paterson and M. C. T. Trought. 2009. Behavioral Responses of European Blackbirds and Australasian Silvereyes to Varying Acid and Sugar Levels in Artificial Grapes. *Am. J. Enol. Vitic.* 60(1): 82-86.
- Bonerz, D.P.M., M.S. Pour Nikfardjam and G.L. Creasy. 2008. Technical Brief. A new RP-HPLC Method for the Analysis of Polyphenols, Anthocyanins, and Indole-3-Acetic Acid (IAA) in Wine. *Am. J. Enol. Vitic.* 59(1):106-109.

## Kirsten Creasy



### Senior Tutor Oenology

BSc (Roseworthy, Sth Aust.)

Ext 8845 or 8156

Horticulture Teaching Lab 006

Kirsten.Creasy@lincoln.ac.nz

Sixteen years of international commercial winemaking experience encompassing both New World and Old World Wineries.

### Winery Manager

Responsible for planning and maintenance of the boutique on-site winery. Commercial scale winemaking allowing students to experience industry equipment and conditions. Maintains liaison with industry partners to update winemaking practices and trends.

### Teaching

Tutor postgraduates and undergraduates in practical winemaking during their microvinification projects. Assists with preparation and delivery of wine tastings.

Assists in preparation and delivery of wine laboratory programmes.

### Research

- Assists in the planning and production of all research wines made at Lincoln University Winery.

## Chris Dawson



### Senior Technical Officer

BSc, MAppSc (Cant)

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Chris.Dawson@lincoln.ac.nz

Contract consultation and analytical work.

### Teaching

Food Microbiology.

Biochemistry and Animal Health.

### Research

- Nutritional biochemistry area, in particular food lipid investigations.
- Technical assistance and advice in postgraduates studies of alkanes used as markers, malonic acid for B<sub>12</sub> studies and ethylene for flower maturation.

### Selected Publications

- Bekhit, A.E.D., Qiao, W., Creasy, G., Hider, R., Dawson, C.O., (2009). Manipulating the functionality of grape seeds products through reflective mulching and wine fermentation. Proceedings of the Nutrition Society of New Zealand.
- Bekhit, A.E.D., Morton, J. D., Dawson, C.O., Zhao, J.H., Lee, H. Y.Y., (2009). Impact of maturity on the physicochemical and biochemical properties of chinook salmon roe. Food Chemistry (in press).
- Bekhit, E. D., Shi, J., Mason, S., Gooneratne, R., Zhao, J., Dawson, C.O. (2008). Nutritional value of *Cookia sulcata*. Proceedings of the Nutrition Society of New Zealand.
- Bekhit, A.E.D., Morton, J. D., Dawson, C. and Sedcole, R. (2008). Optical properties of raw and processed fish roe from six commercial New Zealand species. Journal of Food Engineering. 91: 363–371.
- Bekhit, A.E.D., Morton, J. D., and Dawson, C. (2008). The effect of processing conditions on trace elements in fish roe from six commercial New Zealand fish species. Journal of Agriculture and Food Chemistry, 56: 4846–4853.
- Bekhit, A. E. D., Lingming, K., Dawson, C.O., Sedcole, J. R and Mason, S. L. (2006). Antioxidant content of fermented products made from brassica waste. Proceedings of the Nutrition Society of New Zealand, 29: 18-25.
- Cutler, S., Dawson, C.O. The Fatty acid content of Hemp Seed Oil from various cultivars grown in New Zealand. Proceedings, Pacific Oils 2003 Conference (Abstract).
- Sherlock, R., Sommer, S.G., Khan, R., Wood, C.W., Guertal, E.A., Freney, J.R., Dawson, C.O. and Cameron, K. Emission of ammonia, methane and nitrous oxide from pig slurry applied to a pasture in New Zealand. Journal of Environmental Quality 31: 1491- 1501. 2002.
- Sherlock, R.R., Sommer, S.G., Khan, R.Z., Wood, W.C., Guertal, E.A., Freney, J.R., Dawson, C.O., Cameron, K.C. Greenhouse gas and ammonia emission from land applied pig slurry in New Zealand. Journal of Environmental Quality, 2002.

## Lemuel M. Diamante



### Senior Lecturer

BS Hons. (VSU), MTech Hons., PhD (Massey)

Ext 8015

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Lemuel.Diamante@lincoln.ac.nz

Visiting Research Fellow, Oct. 1995 to Apr. 1996

Center for Food Safety and Quality Enhancement

University of Georgia, Griffin, Georgia, USA

Visiting Research Fellow, May to Nov. 2001

Department of Bioresource Science, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Hokkaido, Japan

Member:

New Zealand Institute of Food Science and Technology

### Teaching:

ENGN 230 (Food Engineering)

BICH 329 (Advanced Food Processing)

### Research:

- Vacuum frying of foods
- Sorption isotherms of foods
- Drying of foods
- Packaging and shelf life of foods

### Selected Publications:

- Diamante L, Durand M, Savage G P, Vanhanen L P. 2010. Effect of temperature on the drying characteristics, colour and ascorbic acid content of green and gold kiwifruits. *International Food Research Journal* 17: 441-451.
- Diamante, L.M. 2009. Vacuum fried jackfruit: Effect of maturity, pre-treatment and processing on the physicochemical and sensory qualities. In *Proceedings of the Nutrition Society of New Zealand*. Massey University Press, Palmerston North, New Zealand. Volume 33. pp. 138-142.
- Diamante, L.M., Ihns, R. Savage, G.P. and Vanhanen, L. A new mathematical model for thin layer drying of fruits. *International Journal of Food Science and Technology*. doi: 10.1111/j. 1365-2621.2010.02345.x.
- Diamante, L.M., Ishibashi, K. and Hironaka, K. 2004. Moisture adsorption isotherms of dried mangoes at a temperature range of 25 to 45°C. *Annals of Tropical Research*. 26 ( 1 & 2): 39-53.
- Diamante, L.M., Chinnan, M.S.. and Mallikurjunan, P. 2004. Deep bed peanut drying using Hukill's analysis. *Annals of Tropical Research*. 26 (1 & 2): 54-76.
- Diamante, L.M., Ishibashi, K. and Hironaka, K. 2002. Effect of temperature and water activity on quality deterioration and shelf life of dried mangoes. *Annals of Tropical Research*. 24: 49-70.
- Diamante, L.M. 2001. Desorption isotherms of sweetened maturing coconut at different temperatures. *Annals of Tropical Research*. 23: 50-65.
- Diamante, L.M., Rosillo, J.P and Patindol, R. 2000. Effect of temperature on drying rates on sensory qualities of sweetened maturing coconut. *Annals of Tropical Research*. 22(1&2): 105-118.

## Ravi Gooneratne



### Associate Professor in Toxicology

BVSc (Cey), DipTox (Sask), PhD (Murdoch) FRCPath

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Ravi.Gooneratne@lincoln.ac.nz

### Manager of CENTOX

#### Awards:

Lincoln University Teaching Excellence Award; George Fleming Memorial Prize for best paper published in "The Veterinary Journal"; Lincoln University Special Achievement Award for Excellence in Research and Creative Activity; NZ Science Communicator Merit Award.

#### Professional memberships:

Fellow of the Royal College of Pathologists, UK; Fellow of the American Academy of Veterinary & Comparative Toxicology; Registered Toxicologist in UK; British Toxicology Society; Australasian Society for Ecotoxicology.

### Teaching

Examiner for Toxicology and Mammalian Physiology, principles of risk assessment in environmental toxicology, food toxicology and radiation toxicology in environmental chemistry and toxicology, renal physiology, and acid-base balance in Environmental Physiology. Special topics in advanced level toxicology and and/or physiology (at 600 level) for Honours and postgraduates.

### Research

- Developing and application of non-invasive electrophysiology techniques in terrestrial and aquatic earthworms and use of biosensors to monitor environmental pollution, metabolism of xenobiotics by cytochrome P450 hepatic mixed function oxidase system, heavy metal toxicology, characterisation and assessment of environmental impact of agrochemical and heavy metal pollution, and endocrine disrupting chemicals.

### Selected Publications

- Gooneratne, S.R., Eason, C.T., Milne, L., Arthur, D.G., Cooke, C. and Wickstrom, M. (2008). *Acute and long-term effects of exposure to sodium monofluoroacetate (1080) in sheep*. Onderstepoort Journal of Veterinary Research (in press).
- Gooneratne, S.R., Buser, A., Lindsay, P. and Wellby, M. (2007). *Ecotoxicological assessment of acid mine drainage: Electrophysiological changes in earthworm (Apporectodea caliginosa) and aquatic oligochaete (Lumbriculus variegatus)*. Invited plenary lecture & in the Proceedings of the Conference on Environmental Health Aspects of Mining, Fefing and Related Industries, Bakgatla, Pilanesberg, South Africa, July 2007.
- Leusch, F.D.L., Chapman, H.F., Vanden Heuvel, M.R., Gooneratne, S.R. & Tremblay, L.A. *Bioassay-derived androgenic and estrogenic activity on municipal sewage in Australia and New Zealand*. Journal of Ecotoxicology and Environmental Safety 65: 403-411, 2006.
- Leusch, F.D.L., Vanden Heuvel, M.R., Laurie, A.D., Chapman, H.F., Kay, G.W., Gooneratne, S.R. & Tremblay, L.A. *Quantification of vitellogenin mRNA induction in mosquitofish (Gambusia affinis) by reverse transcription real-time polymerase chain reaction (RT-PCR)*. Biomarkers 10: 429-438. 2005.
- Tizzard, L A.J., Weber, J., Gooneratne, S.R., John, R., Hay J. & Pasco, N.F. *MICREDOX application for rapid toxicity*. Analytica Chimica Acta 522: 197-205. 2004.
- Gooneratne, S.R. & Drewes, C. *Sublethal toxic effects of permethrin and fenvalerate in the freshwater oligochaete, Lumbriculus variegates*. Toxicology, 191: 26. 2003.

## Roland Harrison



### Senior Lecturer in Oenology

BSc (Hons) Chemistry, PhD  
(B'ham)

Ext 8647

Hilgendorf 338

Roland.Harrison@lincoln.ac.nz

Director of Centre for Viticulture  
and Oenology.

### Teaching

Principles of Wine Science, Food Products' Quality, Wine Chemistry and Technology, Wine Quality Assessment, Advanced Oenology.

### Research

Current research interests include:

- Wine quality parameters linked to environment and viticulture practices.
- Grape and wine phenolics, protein stability and wine hazes.
- Chemistry of wine aging.

As a chemist, initially established a research career in clay-organic interactions, soil phosphorus chemistry and mitigating effects of agriculture on the environment.

### Selected Publications

Over 60 papers, including 30 refereed articles and one book chapter, in a diverse range of subjects related to chemistry in agriculture and the environment.

- Ford, R.J., Harrison, R., Creasy, G., Sherlock, R.R. and Trought, M.C. *The effect of shading and crop load on the flavour and aroma compounds in Sauvignon blanc grapes and wine*. Proceedings of the 12th Romeo Bragato Conference, 24-26 August, Queenstown Events Centre. p134, 2006.
- Hung, W.F., Harrison, R., Morton, J., Trought, M.C.T., Frost, A. (2009). *Effects of hot/cold test and juice/wine pH adjustment on Marlborough Sauvignon blanc wine protein stabilization*. Romeo Bragato 2008, Proceedings of 15th Annual Conference.
- Kemp, B.S., Harrison, R. Creasy, G.L. (2009) *Timing of leaf removal affects Pinot noir wines*. Romeo Bragato 2009, Proceedings of 15th Annual Conference.
- Harrison, R., Kemp, B.S., Hider, R.N., Creasy, G.L. (2008). Tannin assays. *Getting to grips with Pinot noir. A workshop on Pinot noir phenolics*. The Great Hall, Christchurch Arts Centre, Christchurch, New Zealand, The New Zealand Society for Viticulture and Oenology. Supplement to Proceedings: 4-11.
- Hung, W.F., Harrison, R., Morton, J., Trought, M.C.T., Frost, A. (2008) *Protein stabilization of Marlborough Sauvignon blanc: the impact of site and training*. Romeo Bragato 2008, Proceedings of 14th Annual Conference, Christchurch Convention Centre, Christchurch, New Zealand.
- Kemp, B.S., Creasy, G.L., Harrison, R., (2008). *Timing of leaf removal affects Pinot noir fruiting zone leaf layer number and bunch exposure*. Romeo Bragato 2008, Proceedings of 14th Annual Conference, Christchurch Convention Centre, Christchurch, New Zealand.

## Rainer Hofmann



### Senior Lecturer in Plant Biology

DipSci (Massey), PhD (Massey)

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Member of:

Environmental Sustainability  
Advisory Group at Lincoln  
University;

NZ Society of Plant Physiologists;  
NZ Society for Biochemistry and  
Molecular Biology;  
NZ Grassland Association.

### Teaching

Plant Science II, Plant Physiology, Plant Cell Physiology.

### Research

- Plant biology and environmental plant physiology.
- Plant responses to environmental stress, e.g. drought, UV-B radiation; stress interaction.
- Plant metabolomics and role of flavonoids in stress protection.
- Photosynthesis and plant water relations.
- Application of plant physiology and biochemistry in agriculture, viticulture, Rongoa Māori medicinal plants, ecology.

### Selected Publications

- Hofmann, R.W., Campbell, B.D., Bloor, S.J., Swinny, E.E., Markham, K.R., Ryan, K.G., Fountain, D.W. *Responses to UV-B radiation in Trifolium repens L. – physiological links to plant productivity and water availability*. Plant, Cell and Environment 26 (4): 603-612. 2003.
- Hofmann, R.W., Campbell, B.D., Fountain, D.W. *Sensitivity of white clover to UV-B radiation depends on water availability, plant productivity and duration of stress*. Global Change Biology 9 (3): 473–477. 2003.
- Hofmann, R.W., Campbell, B.D., Fountain, D.W., Jordan, B.R., Greer, D.H., Hunt, D.Y., Hunt, C.L. *Multivariate analysis of intraspecific responses to ultraviolet-B radiation in white clover (Trifolium repens L.)*. Plant, Cell and Environment 24 (9): 917-927. 2001.
- Hofmann, R.W., Swinny, E.E., Bloor, S.J., Markham, K.R., Ryan, K.G., Campbell, B.D., Jordan, B.R., Fountain, D.W. *Responses of nine Trifolium repens L. populations to ultraviolet-B radiation: differential flavonol glycoside accumulation and biomass production*. Annals of Botany 86 (3): 527-537 (cover story). 2000.
- Lindroth RL, Hofmann RW, Campbell BD, McNabb WC, Hunt, D.Y. *Population differences in Trifolium repens L. response to ultraviolet-B radiation: foliar chemistry and consequences for two lepidopteran herbivores*. Oecologia 122: 20-28. 2000.
- Campbell, B.D., Hofmann, R.W., Hunt, C.L. *UV-B effects on New Zealand pasture ecosystems*. In: Rozema J, ed. Stratospheric ozone depletion. The effects of enhanced UV-B radiation on terrestrial ecosystems. Leiden: Backhuys Publishers, 227-249. 1999.

## Brian Jordan



### Professor of Plant Biotechnology

BSc(Hons), PhD, MRSNZ

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Brian.Jordan@lincoln.ac.nz

Member of:

NZ Society of Plant Biologist  
(Council member and Vice  
President);

New Zealand Institute of  
Agricultural & Horticultural  
Science;

New Zealand Society of  
Biochemistry and Molecular  
Biology;

Royal Society of New Zealand.

### Recent Contributions to National and International Science

- 2011 Visiting Professor at the University of Bordeaux, France
- 2008 Principal Scientist in EU COST-ACTION 858: Viticulture.
- 2007 C. Alma Baker Travel Fellowship to UK.
- 2006 – 2008 Management team member of EU SSA programme, Food Frenz.
- 2006 Science Advisory Committee for Pastoral Genomics.
- 2006 Editorial Board of Functional Plant Biology.
- 2006 FRST Review of New Zealand Plant Biotechnology.
- 2006 United Nations Environmental Programme Reviewer (UV-B).
- 2005 Member of the New Zealand Delegation to the European Commission re: research collaboration on Agriculture, Food and Biotechnology, Farm to Fork.
- 2004 Management team FRST Savignon blanc programme: “Quality New Zealand Wines”.
- 2003 Appointed Board Director for the Marlborough Wine Research Centre.
- 2002 Expert reviewer of food quality and safety through sustainable production for the European Commission and attended panel discussions in Brussels.

### Research

- UV-B radiation effects on plants. The effect of light on the biochemical composition of grapes.
- Biochemistry and molecular biology of grape berry developments.
- Environmental impact on plant gene expression.
- Molecular aspects of floral development.

### PhD Research

- Isolation and characterisation of genes involved in aromatic volatile formation in Sauvignon blanc.
- Biochemical composition of grapes, including amino acids, flavonoids, acids and proteins.
- The effect of light and ultraviolet-B radiation on grape composition.

### Selected Publications

Over 70 refereed publications and book chapters. Editor of two books.

- Catanach, A., Bicknell, R., Erasmuson, S., Podivinski, E. and Jordan, B. Deletion mapping of genetic regions associated with apomixis in Hieracium. Proceedings of the National Academy of Science 103 (49): 18650-18655. 2006.
- Podolyan, A., White, J., Jordan, B. and Winefield, C. (2010) Identification of the lipoxygenase gene family from Vitis vinifera and biochemical characterisation of two 13-lipoxygenases expressed in grape berries of Sauvignon blanc. Functional Plant Biology. 37, 1-18
- Jordan, B.R. (ed) (2006) *The Molecular Biology and Biotechnology of Flowering*. Published by C.A.B. International, Wallingford, Oxon, UK, 2006
- Jordan, B.R. (2002) *Molecular response of plant cells to UV-B stress*. Functional Plant Biology, 29, 909-916.

## Graham Kay



### Senior Research Officer

BSc (Hons), MSc, PhD (Witw)

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Consultant on animal reproduction and reproduction technology.

### Teaching

Animal reproduction and lactation physiology.

### Research

- Part of a team trying to develop a treatment for Battens disease, a fatal neurodegenerative inheritable disease which affects humans.

### Selected Publications

- Hiszczynska Sawicka E, Akhtar M, Kay G W, Holec-Gasior L, Bickerstaffe R, Kur J, Stankiewicz M. The immune responses of sheep after DNA immunization with, *Toxoplasma gondii* MAG1 antigen - with and without co-expression of ovine interleukin 6. *Veterinary Immunology and Immunopathology* 136: 324-329. 2010.
- Leusch F.D.L., Chapman H.F., Kay G.W., Gooneratne S.R. and Tremblay L.A. *Gonadal Histopathology and Anal Fin Morphology in Gambusia holbrooki Exposed to Treated Municipal Sewage Effluent*. *Archives of Environmental Contamination and Toxicology* 50 (4): 562-574, 2006.
- Oswald, M J, Palmer, D N, Kay, G W, Shemilt, S J, Rezaie, P & Cooper, J D. *Glial activation spreads from specific cerebral foci and precedes neurodegeneration in presymptomatic ovine neuronal ceroid lipofuscinosis (CLN6)*. *Neurobiology of Disease* 20: 49-63. 2005.
- Hughes, S.M., Kay, G.W., Jordan, T.W., Rickards, K., Palmer, D.P. *Disease-specific pathology in neurons cultured from sheep affected with ceroid lipofuscinosis*. *Molecular Genetics and Metabolism* 66: 381-386, 1999.
- Kay, G.W., Hughes, S.M. and Palmer, D.N. *In Vitro culture of neurons from sheep with Batten disease*. *Molecular Genetics and Metabolism* 67: 83-88, 1999.
- Kay, G.W., Jay, N.P. and Sedcole, J.R. *Monozygotic twin lamb production by embryo bisection: Factors affecting the twinning rate*. *Animal Technology (Oxford)* 52: 103-112, 2001.

## Don Kulasiri



### Professor of Computational Modelling and Simulation

BSc (Hons) (Eng) MS PhD (Virginia Tech)

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Founding member & Head of Centre for Advanced Computational Solutions (C-fACS);

Visiting Professor to Institute of Scientific Computing, Technical University of Braunschweig, Germany;

Visiting Fellow, Princeton University, New Jersey.

Adjunct professor, Systems Biology Lab, Bio- and Brain Engineering Department, Korea Advanced Institute of Science and Technology, S. Korea.

Member of:

Affiliate member of the Centre for Mathematical Biology, Oxford University, UK;

Modelling and Simulation Society of Australia and New Zealand;

Executive Committee Member of Modelling and Simulation Society of Australia and New Zealand.

### Teaching

Computer Modelling and Simulation; Computer Modelling of Environmental Systems; Molecular Systems Biology; Stochastic Processes.

### Research

- Molecular Systems Biology.
- Stochastic modelling of biological and environmental systems.
- Bio-Engineering (biotechnology).

### Selected Publications

#### Books

- Kulasiri, D., and Verwoerd, W. 2002. *Stochastic Dynamics: Modeling solute transport in porous media*. Volume 44 of the North Holland Applied Mathematics and Mechanics Series. Elsevier Science, Amsterdam. 250 pages.
- Les Oxley and Don Kulasiri (editors). 2007. Proceedings of the International Congress of Modelling and Simulation, Modelling and Simulation Society of Australia and New Zealand (MSSANZ), December, Christchurch, 3104 pages.

#### Research Articles

- Xie Z, Kulasiri G D, Samarasinghe S. Qian J. An unbiased sensitivity analysis reveals important parameters controlling periodicity of circadian clock. *Biotechnology and Bioengineering* 105: (2): February: 250-259. 2010.
- Xie Z. Kulasiri G D. On exploring effects of molecular noise in a simple viral infection model. *International Journal of Biomathematics* 3: (1): March: 1-19. 2010.
- Ling H, Kulasiri G D. Samarasinghe S. Robustness of G1/S checkpoint pathways in cell cycle regulation based on probability of DNA-damaged cells passing as healthy cells. *Biosystems* 101: 213-221. 2010
- Nguyen, Lan K., Kulasiri, Don. 2009. On the functional diversity of dynamical behaviour in genetic and metabolic feedback systems. *BMC Systems Biology* 3:51doi:10.1186/1752-0509-3-51
- Kulasiri, D. and Xie, Z. 2009. Modelling circadian rhythms in *Drosophila* and investigation of VRI and PDP1 feedback loops using a new mathematical model. *Math. Model. Nat. Phenom.* Vol. 3, No. 2, pp. 1-26. (invited article)
- Nguyen, L. K. and Kulasiri, D. 2008. On multiple regulatory mechanisms in the Tryptophan operon system. *In Silico Biology*. 8: 485-510.
- Kulasiri, D., Nguyen, L., Samarasinghe, S. and Xie, Z. 2008. A review of systems biology perspective on genetic regulatory networks with examples. *Current Bioinformatics*. 3. pp. 197-225. (Invited review)

## Susan Mason



### Lecturer in Food Biochemistry

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Member of:

NZ Nutrition Society;

Teaching Committee for the  
Science Faculty.

Health and Safety Co-ordinator,  
Faculty of Agriculture and Life  
Sciences.

### Teaching

Biochemistry I and II, Processing Food for Consumers, Nutrition I and II, Food Biochemistry. Supervisor for postgraduate research projects.

### Research

Human nutrition and food composition including:

- Sensory evaluation of foodstuffs.
- Oxalate content of NZ foods.
- Dietary patterns in young adults.

### Selected Publications

- Bekhit, A.E.D., Lingming, K., Dawson, C.O.D., Sedcole, J.R. and Mason, S.L. *Antioxidant content of fermented products made from Brassica waste*. Proceedings of the Nutrition Society of NZ 29. 2005.
- Kimber, N.E., Ross, J.J., Mason, S.L. & Speedy, D.B. *Energy balance during an ironman triathlon in male and female triathletes*. Journal of Sport Nutrition and Exercise Metabolism 12: 47-62. 2002.
- MacKenzie, J.R., Mason, S.L., Hickford, J.G., Kohonen-Corish, M.J. & Bickerstaffe, R. *A polymorphic marker for the human cathepsin B gene*. Molecular and Cellular Probes 15: 235-237. 2001.
- Sangketkit, C., Savage, G.P., Martin, R.J. & Mason, S.L. *Oxalate content of raw and cooked oca (Oxalis tuberosa)*. Journal of Food Composition and Analysis 14: 389-397. 2001.
- Sangketkit, C., Savage, G.P., Martin, R., Searle, B.P. & Mason, S.L. *Sensory evaluation of new lines of oca (Oxalis tuberosa) grown in New Zealand*. Food Quality and Preference 11: (3): 189-199. 2000.
- Savage, G.P., Vanhanen, L.P., Mason, S.L. & Ross, A.H. *Effect of cooking on the soluble and insoluble oxalate content of some New Zealand foods*. Journal of Food Composition and Analysis 13: 201-206. 2000.

## Robin G McFarlane



### Principal Research Officer

BVSc (Massey), PhD (Missouri),  
MRCVS (London)

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### Awards:

Joseph Garbarino (Animal Health  
Institute Foundation) for  
Research.

### Member of:

The Royal College of Veterinary  
Surgeons;  
New Zealand Veterinary  
Association;  
New Zealand Society for  
Parasitology;  
World Association for the  
Advancement of Veterinary  
Parasitology;  
Australasian Society for  
Immunology;  
World Poultry Science  
Association;  
Sigma Xi Research Society  
(Honorary).

### Teaching

Examiner and Lecturer for the following subjects: Animal Health and Product Quality (disease diagnosis and treatment), Animal Health (epidemiology, immunity, chemotherapy), Advanced Animal Health (papers specialised for postgraduate students).

### Research

- Development and testing of vaccines to use in the control of salmonella infections in livestock.
- The influence of environmental factors (nutrition, climate) on immunity to microbes in sheep and poultry.
- Infectious bronchitis in poultry.

### Selected Publications

- McFarlane, Robin & Verma, Ramneek. Sequence analysis of the gene coding for the S1 glycoprotein of infectious bronchitis virus (IBV) strains from New Zealand. *Virus Genes* 37: 351-357. 2008.
- Barrell, G.K., McFarlane, R.G., Slow, S., Vasudevamurthy, M.K. & McGregor, D.O. *CAPD in sheep following bilateral nephrectomy*. *International Society for Peritoneal Dialysis* 26: 598-608. 2006.
- Lopez, J.C., McFarlane, R.G. & Ulloa, J. *Detection and characterization of infectious bronchitis virus in Chile by RT-PCR and sequence analysis*. *Arch Med Vet* 38: (2): 175-178. 2006.
- Li, H., McFarlane, R.G., & Wagner, J. *Vaccination of pregnant ewes against infection with Salmonella Brandenburg*. *New Zealand Veterinary Journal* 53 (6): 416 - 422. 2005.
- McFarlane, R.G. & Roberts, M. *Genetically modified organisms in New Zealand and cultural issues*. In: Harinder, P.S.Makkar., Gerrit J. Viljoen (ed.) *Application of Gene-Based Technologies for Improving Animal Production and Health in Developing Countries*. Springer, The Netherlands. 551-561. 2005.
- Khalil, A.M., McFarlane, R.G. & Duckworth, J.A. *Humoral immunity to cholera toxin and ovalbumin in the brushtail possum (Trichosurus vulpecula)*. *New Zealand Veterinary Journal* 49: 54-59. 2001.
- McFarlane, R.G. *Immunity to nematodes in ruminants*. In: G K Barrell (ed.) *Sustainable Control of Internal Parasites in Ruminants*. Animal Industries Workshop, Lincoln University, New Zealand. 149-159. 1997.

## Victoria Metcalf



**Lecturer in Animal Genetics**  
BSc(Hons), PhD (Otago)

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Member of:  
Royal Society of New Zealand  
Committee on Antarctic Sciences;  
Scientific Committee of Antarctic  
Research;  
Association of Polar Early Career  
Researchers;  
New Zealand Society for  
Biochemistry and Molecular  
Biology;  
Australian and New Zealand  
Society for Comparative  
Physiology and Biochemistry;  
Association of Women in Science.

### Teaching

BICH104 Biochemistry 1  
ANSC 340 Animal Breeding and Genetics  
BICH 207 Biochemistry II

### Research

- Molecular biology and functional genomics.
- Animal metabolism.
- Marine biology.
- Environmental adaptation and assessment of climate change effects.
- Lipid metabolism and transport, especially in Antarctic marine organisms (fish and invertebrates).
- Mechanisms of thermal adaptation in poikilotherms.
- Physiological and genetic responses to food resource shifts.
- Functional genomic studies of the effects of ocean acidification on marine organisms.
- Detection of feeding and trophic relationship determination using novel methods in Weddell seals.
- Pollutant detection and determination of their effects on marine organisms.
- Reproductive biology in fish.
- Population genetics and evolutionary biology.

### Selected Publications

- Rosengrave, P.C., Montgomerie, R., Metcalf, Victoria J., McBride, Katherine P., Gemmell, Neil J., 2009. *Sperm traits in chinook salmon depend upon activation medium: implications for studies of sperm competition in fishes*. Canadian Journal of Zoology (in press).
- Rosegrave, P.C., Taylor, H.H., Montgomerie, R., Metcalf, V.J., McBride, K.P. Gemmell, N.J., 2009. *Chemical composition of seminal and ovarian fluids of chinook salmon (Oncorhynchus tshawytscha) and their effects on sperm motility traits*. Comparative Biochemistry and Physiology A-Molecular and Integrative Physiology 152(1):123-129.
- Rosengrave, P.C., Gemmell, N.J., Metcalf, V.J., McBride, K.P., Montgomerie, R., 2008. *A mechanism for cryptic female choice in chinook salmon*. Behavioural Ecology 19(6):1179-1185 doi:10.1093/beheco/arn089
- Metcalf, V.J., 2007. *Fishy tales from Antarctica*. In: ISS 2007 Ecoscience textbook. Editor, Chris Stewart. The Science Foundation for Physics within the University of Sydney, Sydney, Australia: pp 122-145. ISBN-978-1-86487-891-2.
- Metcalf, V.J., 2007. *Extreme living in Antarctica* In: ISS 2007 Ecoscience textbook. Editor, Chris Stewart. The Science Foundation for Physics within the University of Sydney, Sydney, Australia: pp 146-161. ISBN-978-1-86487-891-2.

## Michael Morley-Bunker



**Senior Lecturer in Horticulture**  
BSc(Hons), MSc (Lond)

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### Teaching

Fruit Crop Products,  
Viticulture I and II,  
Horticulture Production System,  
Fruit and Vegetable Science and Technology.

### Research

- Temperate and subtropical fruit crops.
- Feasibility of the pepino (*Solanum muricatum*) as a crop for growing either as a field crop or under protective covers.
- Environmental limitations and the crop performance for crops such as persimmon, passionfruit and kiwifruit.
- Determining the influences on event timing in crops (phenology).
- Factors that determine fruit set and fruit growth.

### Selected Publications

- Jackson, D. & Morley-Bunker, M.J. *Pruning and Training - Kiwifruit*. In: D.I. Jackson, and N.E. Looneyed. *Temperate and Subtropical Fruit Production 2nd Edition*. Wallingford: Oxon OX1 0 8DE, UK: CAB International; p.7. 1999.
- Morley-Bunker, M.J. *Citrus*. In: D.I. Jackson and N.E. Looneyed. *Temperate and Subtropical Fruit Production 2nd Edition*. Wallingford: Oxon OX1 0 8DE, UK: CAB International; p.229-239. 1999.
- Morley-Bunker, M.J. & Lyford, P. *Kiwifruit*. In: D.I. Jackson and N.E. Looneyed. *Temperate and Subtropical Fruit Production 2nd Edition*. Wallingford: Oxon OX1 0 8DE, UK: CAB International; p.7. 1999.
- Morley-Bunker, M.J. *Subtropical Fruit - Tamarillos*. In: D.I. Jackson and N.E. Looneyed. *Temperate and Subtropical Fruit Production 2nd Edition*. Wallingford: Oxon OX1 0 8DE, UK: CAB International; p.3. 1999.
- Morley-Bunker, M.J. *Subtropical Fruit - Passionfruit*. In: D.I. Jackson and N.E. Looneyed. *Temperate and Subtropical Fruit Production 2nd Edition*. Wallingford: Oxon OX1 0 8DE, UK: CAB International; p.4. 1999.

## Jim Morton



**Head of Department**  
**Assoc Prof in Biochemistry**  
 BSc(Hons), MSc (Otago),  
 PhD(Cant)

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 Jim.Morton@lincoln.ac.nz

Member of:  
 New Zealand Society of  
 Biochemistry and Molecular  
 Biology (Secretary);  
 International Society for Eye  
 Research;  
 Association for Research into  
 Vision and Ophthalmology;  
 International Proteolysis Society.

### Teaching

Examiner of first year Biochemistry, a second year subject, Methods of Bioanalysis, and third year and masters Protein Biochemistry.

### Research

- The role of calcium-dependent proteases or calpains in cataract formation using a line of sheep with a genetic predisposition to develop cataracts as an animal model.
- The role of endogenous calpains in meat tenderisation and why changes in processing conditions alter meat quality.
- The biochemistry of wool proteins.

### Selected Publications

- Grosvenor A J, Morton J D, Dyer J. Profiling of residue-level photo-oxidative damage in peptides. *Amino Acids* 285-296. 2010.
- Koehn H, Clerens S, Deb-Choudhury S, Morton J D, Dyer J, Plowman J E. The Proteome of the Wool Cuticle. *Journal of Proteome Research* 9: 2920-2928. 2010.
- Robertson, L.J.G., David, L.L. Riviere, M.A., Wilmarth, P.A., Morton, J.D.; (2008) *Susceptibility of ovine lens  $\alpha$ - and  $\beta$ -crystallins to proteolytic cleavage during formation of hereditary cataract*. *Investigative Ophthalmology and Visual Science* 49: 1016-1022.
- Toh, T.Y., Morton, J.D., Coxon, J.M., Elder, M.J. (2007) *Medical Treatment of Cataract*. *Clinical and Experimental Ophthalmology* 35: 664-671.
- Abel, A.D., Jones, M.J., Neffe, A.T., Aitken, S.G., Cain, T.P., Payne, R.J., McNabb, S.B., Coxon, J.M., Stuart, B.G., Pearson, D., Lee, H.Y.Y., Morton, J.D. (2007). *Investigation into the P<sub>3</sub> Binding Domain of m-Calpain Using Photoswitchable Diazo –and Triazene-dipeptide Aldehydes: New Anticataract Agents*. *Journal of Medicinal Chemistry* 50: 2916-2920.
- Robertson L.J.G., Morton, J.D., Yamaguchi, M., Bickerstaffe, R., Shearer, T.R., Azuma, M. *Calpain may contribute to hereditary cataract formation in sheep*. *Investigative Ophthalmology and Visual Science* 46(12): 4634-4640. 2005.
- Obanor, F., Morton, J.D., Geesink, G.H., Bickerstaffe, R. *Effect of processing on turkey meat quality and proteolysis*. *Poultry Science*, 84:1123-1128. 2005.
- Morton, J.D., Bickerstaffe, R., Kent, M.P., Dransfield, E., Keeley, G.R. *Calpain-calpastatin and toughness in M.longissimus from electrically stimulated lamb and beef carcasses*. *Meat Science* 52: 71-79. 1999.

## • David Palmer



### Professorial Fellow

MSc (Toronto), PhD (Massey)

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President of the New Zealand Society of Biochemistry and Molecular Biology.

Trustee of the Lysosomal Diseases New Zealand Trust.

Member of:

New Zealand Organisation for Rare Diseases;

Australian Batten Disease Support and Research Association;

Neurological Foundation of New Zealand.

### Teaching

Supervision of Honours and Postgraduate students in aspects of Batten disease, Enzymology and Bioenergetics, General Biochemistry.

### Research

- Animal models for human disease, particularly Batten disease: related genetics, neuroscience, biochemistry, cell biology, neuropathology and cell culture.
- Understanding the genetic, biochemical and cell biology lesions in the group of inherited fatal neurodegenerative diseases of children known as Batten disease (neuronal ceroid-lipofuscinoses (NCLs)). Current efforts are concentrated on defining the pathogenesis and using affected sheep as a model for possible treatments including in situ gene therapy. This work involves a number of collaborations with workers in New Zealand, Australia, Europe, and the USA.

### Selected Publications

Over 70 refereed publications. Over 1900 citations.

- Kay, G.W., Oswald, M.J. and Palmer, D.N. *The development and characterisation of complex ovine neuron cultures from fresh and frozen foetal neurons*. Journal of Neuroscience Methods 155: 98-108. 2006.
- Kay, G.W., Palmer, D.N., Rezaie, P. and Cooper, J.D. 2006. *Activation of non-neuronal cells within the prenatal developing brain of sheep with neuronal ceroid lipofuscinosis (CLN6)*. Brain Pathology 16: 110-116.
- Tammen, I., Houweling, P.J., Frugier, T., Mitchell, N.L., Kay, G.W., Cavanagh, J.A.L., Cook, R.W., Raadsma, H.W. and Palmer, D.N. 2006. *A missense mutation (c.184C>T) in ovine CLN6 causes neuronal ceroid lipofuscinosis in Merino sheep whereas affected South Hampshire sheep have reduced levels of CLN6 mRNA*. Biochimica et Biophysica Acta. 1762, 898-905.
- Pears, M.R., Salek, R.M., Palmer, D.N., Kay, G.W., Mortishire-Smith, R.J. and Griffin, J.L. 2007. *A metabolomic investigation of CLN6 neuronal ceroid lipofuscinosis in affected South Hampshire sheep*. Journal of Neuroscience Research 85: 3494-3504.
- Oswald, M.J., Palmer, D.N., Kay, G.W., Barwell, K.J. and Cooper, J.D. 2008. *Location and connectivity determines GABAergic interneuron survival in the brains of South Hampshire sheep with CLN6 neuronal ceroid lipofuscinosis*. Neurobiology of Disease 32: 50-65.

## Wendy Parr



### Senior Research Officer

BA (VUW), BA (Hons) (VUW), PhD in Psychology (Otago), PhD in Wine Science (Lincoln)

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Member of:

Association of Australasian Chemosensory Science;  
Nelson Grapegrowers and Winemakers Association.

### Research

- Sensory evaluation of wine.
- Psychological aspects of flavour perception.
- Flavour and aroma of Sauvignon blanc wines.
- Perception, memory, categorisation, and judgment behaviour.

### Selected Publications

- Parr, W.V., Valentin, D., Green, J.A., & Dacremont, C. (2010). *Evaluation of French and New Zealand Sauvignon wines by experienced French wine assessors*. Food Quality and Preference, 21, 56-64.
- Parr, W.V. (2009). *Sensory Evaluation Protocol*. New Zealand Winegrowers: Auckland, N.Z.
- Parr, W.V. (2009). *WineSense: Geographical indication and the concept of wine typicality*. ChemoSense, 11 (2), 16-17.
- Parr, W.V., Green, J., Valentin, D., & Dacremont, C. (2008). *Sensory evaluation of Sauvignon blanc wines*. Congress Proceedings: World Sauvignon Congress, Graz, Austria.
- Parr, W.V. (2008). *Application of cognitive psychology to advance understanding of wine sensory evaluation and wine expertise*. In Applied Psychology Research Trends, Karl H. Kiefer (Ed.), Nova Science Publishers, pp. 55-76.
- Parr, W., Green, J., Agnew, R., Valentin, D., Stronge, K., Trought, M., Dacremont, C., & Bennett, J. (2008). *The distinctive nature of New Zealand Sauvignon blanc: Sensory and chemical analyses*. In David Chassagne (Ed.) Wine Active Compounds: Proceedings of the WAC2008 International Conference, pp. 89-91, University of Burgundy, March 2008.
- Parr, W.V., & Green, J.A. (2007). *Delineating the concept "New Zealand Sauvignon blanc"*. In Conference proceedings: Bacchus at Brock, Science of Wine, Editors C. Cullen, I. Lesschaeve, & R. Parker.
- Parr, W.V., Green, J.A., White, K.G., & Sherlock, R.R. (2007). *The distinctive flavour of New Zealand Sauvignon blanc: Sensory characterisation by wine professionals*. Food Quality and Preference, 18, 849-861.
- Parr, W.V., Green, J.A., & White, K.G. (2006). *Wine judging, context, and New Zealand Sauvignon blanc*. European Review of Applied Psychology, 56, 231-238.
- Parr, W.V., White, K.G., & Heatherbell, D. (2004). *The nose knows: Influence of colour on perception of wine aroma*. Journal of Wine Research, 14 (2-3), 79-101.
- Parr, W.V., White, K.G., & Heatherbell, D. (2004). *Exploring the nature of wine expertise: What underlies wine experts' olfactory recognition advantage?* Food Quality and Preference, 15 (5), 411-420.
- Parr, W.V., Frost, A., White, K.G., & Marfell, J. (2004). *Sensory evaluation of wine: Deconstructing the concept of 'Marlborough Sauvignon blanc'*. The Australian & New Zealand Grapegrower & Winemaker: 32nd Annual Technical Issue, pp. 63-69.
- Parr, W.V. (2003). *The ambiguous nature of our sense of smell*. The Australian & New Zealand Grapegrower & Winemaker: 31st Annual Technical Issue, 473a, 114-116.
- Parr, W.V., Heatherbell, D.A., & White, K.G. (2002). *Demystifying wine expertise: Olfactory threshold, perceptual skill, and semantic memory in expert and novice wine judges*. Chemical Senses, 27, 747-755.

## Geoffrey Savage



### Associate Professor in Food Biochemistry

BSc (Hons), PhD (N'cle UK), FNZIFST, MRSNZ, NZ Registered Nutritionist

Visiting Professor, Department of Food Science, Swedish University of Agricultural Sciences, Uppsala, Sweden.

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Member NSNZ Council and NZFIST.

Editor of the Proceedings of the New Zealand Nutrition Society of New Zealand.

Former President of the Nutrition Society of New Zealand and Council Member of the Royal Society of New Zealand.

### Teaching

Food and Health, Food Quality and Consumer Acceptance, Food Biochemistry, Biochemistry I and II, Nutritional Biochemistry. Course Advisor for BCom (Food Industry).

### Research

- Measurement of secondary metabolites in plants such as oxalates and antioxidants and the effect of cooking and processing on the composition of foods consumed by humans.
- Measurement of positive nutritional factors such as fatty acids and plant sterols that can be found in nuts and seeds and the stability of extracted oils from these products.
- Recent research has led to the development of new food products that are now being marketed by local Canterbury companies.

### Selected Publications

- Over 70 peer-reviewed articles, 23 book chapters and 70 proceedings papers.
- Morrison, S.C., Savage, G.P., Morton, J.D. & Russell, A. *Identification and stability of trypsin inhibitor isoforms in pea (Pisum sativum L.) cultivars grown in New Zealand*. Food Chemistry 100: 1-7. 2007.
- Oscarsson, K.V. & Savage, G.P. *Composition and availability of soluble and insoluble oxalates in raw and cooked taro (Colocasia esculenta var. Schott) leaves*. Food Chemistry 101: 559-562. 2007.
- Ritter, M.M. & Savage, G.P. *Soluble and insoluble oxalate content of nuts*. Journal of Food Composition and Analysis 20: 169-174. 2007.
- Poeydomenge, G.Y. & Savage, G.P. *Oxalate content of raw and cooked purslane*. Journal of Food, Agriculture and Environment 5: (1): 124-128. 2007.
- Savage, G.P. & Catherwood, D.J. *Determination of oxalates in Japanese taro corms using an in vitro digestion assay*. Food Chemistry 105: 383-388. 2007.
- Dahlgren, E.M. & Savage, G.P. *Reduction in oxalate content during the preparation of a traditional Tongan dessert*. Journal of Food, Agriculture & Environment 5: (3&4): 29-31. 2007.

## Valerie Saxton



### Lecturer

BA (double Hons) (Southampton UK), PG Dip V&O (Lincoln), PhD (Lincoln)

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### Teaching

Viticulture I, Viticulture II, Science of Grapes and Wine.

### Research

- Interaction between ripening grapes and bird behaviour in vineyards, particularly blackbirds and silvereyes.
- Management of problem birds in vineyards.

### Selected Publications

- Saxton V P, Mulder I, Creasy G, Paterson A M, Ross J G, Trought M C T. Comparative behavioural responses of silvereyes (*Zosterops lateralis*) and European blackbirds (*Turdus merula*) to secondary metabolites in grapes. *Austral Ecology* March: 1-7. 2010.
- Saxton, V.P., Creasy, G.L., Paterson, A.M., Trought, M.C.T. 2009. *Behavioural responses of European blackbirds and Australasian silvereyes to varying acid and sugar levels in artificial grapes*. *Amer. J. Enol.Vitic.* 60:1:82-86
- Saxton, Valerie, McEntee, Dale and Hutchinson, Clare. 2008. *Native trees can help deter bird pests*. *NZ Winegrower*, June-July 2008, pp84-85
- Saxton, V.P. 2007. *Ecological strategies for bird management in vineyards*. *Australian and New Zealand Grapegrower and Winemaker*. Issue 524: 57-60.
- Saxton, V.P. 2006. *To develop a robust statistical methodology for assessing bird damage for crops that suffer bird damage, particularly fruit crops*. Report for Sustainable Farming Fund.
- Saxton, V.P., Creasy, G.L., Paterson, A.M., Trought, M.C.T. 2004: *Experimental method to investigate and monitor bird behavior and damage in vineyards*. *American Journal of Enology and Viticulture* 55, 288-291.
- Saxton, V.P., Creasy, G.L., Paterson, A.M., Trought, M.C.T. 2004: *Response of blackbirds (*Turdus merula*) and silvereyes (*Zosterops lateralis*) to Geraniol and 2-Methoxy-3-Isobutylpyrazine*. *American Journal of Enology and Viticulture* 55, 292-294.
- Saxton, V.P., Hickling, G.J., Trought, M.C.T., Creasy, G.L. 2004: *Comparative behavior of free-ranging blackbirds (*Turdus merula*) and silvereyes (*Zosterops lateralis*) with hexose sugars in artificial grapes*. *Applied Animal Behavior Science* 85, 157-166.

## Wynand Verwoerd



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Member of:

New York Academy of Science;  
Royal Society of NZ (Canterbury  
Branch);  
Modelling and Simulation Society  
AU and NZ.

Founding member of the Centre  
for Advanced Computational  
Solutions, (C-fACS).

### Teaching

Examiner for Calculus: Concepts and Applications, Mathematical Models of Dynamic Systems, and Bioinformatics.

### Research

- Molecular modelling in biosystems.
- Mathematical modelling.
- Simulation and Computation.
- Porous media - flow and transport.

Current research is on computational algorithms to split biochemical networks into functional subnets.

### Selected Publications

#### Book

- Verwoerd W S. A practical guide to bioinformatics analysis. Dissecting metabolic networks into functional subnets. 2010
- Kulasiri, D., and Verwoerd, W. *Stochastic Dynamics: Modeling solute transport in porous media*. Volume 44 of the North Holland Applied Mathematics and Mechanics Series. Elsevier Science, Amsterdam. 250 pages. 2002.

#### • Research Articles

- Verwoerd, W.S. *Closed Form Solution of an exponential kernel integral equation*. Journal of Mathematics, Statistics and Allied Fields. 1 (2): 1-5 2007.
- Verwoerd, W.S., Wellby, M.P. and Barrell, G.K. *Absence of a causal relationship between environmental and body temperature in dairy cows (Bos taurus) under moderate climatic conditions*. Journal of Thermal Biology 31: 533-540, 2006.
- Verwoerd, W.S. *Non-linear optical constants of polymers from molecular hyperpolarisabilities of donor-acceptor molecules*. International Journal of Quantum Chemistry 103: 215-225. 2005.
- Verwoerd, W.S. and Kulasiri, D. *Theory of Diffusions Applied to Stochastic Flow in Porous Media*. Mathematical and Computer Modelling 38: 1453-1459. 2003.
- Verwoerd W.S. and Kulasiri G.D. *Solute dispersion by 1D stepped velocity fluctuations*. Proceedings of the MODSIM 2003 International Congress on Modelling and Simulation, Ed. D. Post, Modelling and Simulation Society of Australia and New Zealand, Townsville 272-277. 2003.
- Verwoerd, W.S. *New stochastic model for dispersion in heterogenous porous media: 1. Application to unbounded domains*, App. Math. Mod. 33 (2009) 605-625; doi:10.1016/j.apm.2007.11.023

## Chris Winefield



### Senior Lecturer in Plant Molecular Biology

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### Teaching

Examiner of Plant Biotechnology and 600 level Plant Biochemistry and Plant and Cell Physiology. Teach into Plant Physiology, Plant Science II and Population Biology.

### Research

- Plant secondary metabolism.
- Plant floral and vegetative pigmentation.
- Plant secondary metabolism and its role in plant environmental-stress management.
- Molecular biology and functional genomics.
- Grape biotechnology.

Issues of the regulation, biosynthesis and sequestration of secondary metabolites in plants. In particular how plants control the production and modification of these compounds to achieve the desired function for a given molecule.

Identifying the roles that secondary metabolites have in allowing plants to better cope with the range of environmental stresses encountered throughout development.

### Selected Publications

- Winefield, C., Jordan, B.R. *Biotechnology of floral development*. In: The Molecular Biology and Biotechnology of Flowering, 2nd edition (B.R. Jordan ed.), Wallingford, Oxfordshire, UK. 237-266. 2006.
- Winefield, C.S., Lewis, D.H., Zhang, H., Arathoon, H.S., Davies, K.M., Swinny, E.E., Fischer, T.C., Forkmann, G., Halbwirth, H., Stich, K., Gosch, C., Forkmann, G., Davies, K.M. *Investigation of the biosynthesis of 3-deoxyanthocyanins in Sinningia cardinalis*. *Physiol Planta* 124 (4): 419-430. 2005.
- Winefield, C. *The final steps in anthocyanin formation: A story of modification and sequestration*. *Advances in Botanical Research* 37: 55-74. 2002.
- Markham, K.R., Gould, K.S., Winefield, C.S., Mitchell, K.A., Bloor, S.J., Boase, M.R. *Anthocyanic vacuolar inclusions - their nature and significance in flower colouration*. *Phytochemistry* 55: 327-336. 2000.

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