The following PhD vacancies and research topics within the School of Biosciences were compiled in November 2013 and were correct at the time of publication.

For further guidance on pursuing a PhD in any of these areas, please consult the School of Biosciences website or contact the relevant members of academic staff as listed below.

Agricultural and Environmental Sciences

Dr Liz Bailey (liz.bailey@nottingham.ac.uk)

Lecturer in Environmental Science

Liz’s research focus lies in understanding trace element speciation and mobility in the environment. She uses X-ray absorption spectroscopy (XAS) as a tool to understand mechanisms at the atomic level applies this technique to a range of environmental problems:

- Measuring and modelling chemical cycling in the environment, focusing on trace elements (e.g. Pb, Cd, As), radio-isotopes (e.g. 129-I) and beneficial micronutrients (e.g. Se, I) in soils and aquatic systems.

- Investigation of transformations in soils, new approaches to measuring heavy metal reactivity and modeling adsorption and fixation in soils.

Professor Neil Crout (neil.crout@nottingham.ac.uk)

Professor of Environmental Modelling

Neil’s research interests relate to the development, use and evaluation of models of environmental and agricultural systems. Particular interests include:

- The transfer of trace elements in the environment (radionuclides, toxic elements, micronutrients)

- Predicting crop growth and development

- Terrestrial biogeochemistry

- Parameterisation, Evaluation, and Simplification of models
Dr Ian C W Hardy (ian.hardy@nottingham.ac.uk)

Associate Professor and Reader in Animal Population Biology

Ian’s research interests centre around the behaviour and ecology of a range of organisms. Particular current topics include:

- Contest behaviour across all animal taxa and especially between parasitoid wasps
- Sex ratios, mating behaviour & social behaviour: in general, in parasitoid wasps and in humans
- Ecology of African vultures, storks and eagles
- Methodology: Statistical analysis using Generalized Linear Modelling, Chemical approaches to studying behavioural ecology

Professor Charlie Hodgman (charlie.hodgman@nottingham.ac.uk)

Professor of Bioinformatics and Systems Biology

Charlie was the founding director of the Multidisciplinary Centre for Integrative Biology and Centre for Plant Integrative Biology, and his research interests concern the use of mathematical and computational approaches to support research in:

- reducing fertiliser input by improving plant nutrient-uptake
- the regulation of fruit growth and ripening
- epigenetic responses in the control of flowering and vernalisation
- improving feed-conversion efficiency in farm animals
- increasing efficiency of biofuel/biorenewable production

Dr Barry Lomax (barry.lomax@nottingham.ac.uk)

Lecturer in Environmental Science

Barry's research is focused on quantifying how the Earth’s climate has changed over geologic time, how these changes have influenced the Earth’s terrestrial biosphere and how in turn the Earth’s terrestrial biosphere has influenced climate. Particular interests include:

- Palaeopolyploidy and plant genome size over geological time
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- Plant responses to CO2
- Sporopollenin chemistry as a palaeoclimate proxy

Dr Chungui Lu (chungui.lu@nottingham.ac.uk)
Lecturer in Post-genomics and Systems Biology

Dr Lu's research focuses on the use of post-genomic technologies (e.g. RNA Seq) to monitor gene expression profiles/patterns and gene regulatory networks in the following related areas:

- Systematic functional analysis of nitrogen/phosphate use efficiency in crops
- Modelling the development of root hairs in rice and wheat
- Application of next-generation sequencing in crop improvement
- Sustainable urban agriculture through innovative vertical farming

Professor Sacha Mooney (sarah.mooney@nottingham.ac.uk)
Chair in Soil Physics

Sacha's research is focused on utilizing information on the structural geometry of porous media, in particular soils, to understand and predict its behaviour and subsequent function. Particular interests include:

- root-soil interactions in particular rhizosphere processes and functions
- soil biophysical behaviour
- soil and water management
- imaging of biomaterials using X-ray Computed Tomography

Dr Stephen Ramsden (Stephen.ramsden@nottingham.ac.uk)
Associate Professor in Management and Director of University Farm

Steve’s research relates to modelling and management of agricultural systems. Current research:
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• Agri-environmental trade-offs in Ghana and Thailand
• Energy balances & GHG emissions from straw
• Efficiency & productivity in rice and wheat
• Risk management in agricultural systems
• Optimality & resilience in agricultural systems

Professor George Shaw (George.shaw@nottingham.ac.uk)
Professor of Environmental Science

George’s interests are on the behaviour and impacts of trace contaminants in the environment and include:
• Radioecology - fate and impact of radionuclides in soil-plant systems
• Trace gases in the soil-plant-atmosphere system
• Trace organics and biological substances in soils
• Laboratory, field and computer techniques to quantify contaminant migration, persistence and sequestration

Dr Sofie Sjorgersten Turner (Sofie.Sjogersten@nottingham.ac.uk)
Associate professor in Environmental Science

Sofie research interests focuses on how environmental change impacts on biogeochemical cycling and ecosystem processes. Particular interests include:
• The impact of climate change and herbivory on carbon cycling and green house gas emissions in Arctic and alpine environments.
• The role of tropical wetlands in the global carbon cycle.
• Assessment of management strategies of agricultural land aiming to minimise impacts on ecosystem function and services (e.g. carbon storage).

Dr Daniel Smith (Daniel.smith@nottingham.ac.uk)
Teaching Fellow in Environmental Science

Daniel is an environmental biologist by training, with particular interest in biosphere-atmosphere interactions. His recent work has been in two major areas: (1) Measuring and modelling soil carbon gas exchange in boreal and tropical systems; and (2) development and implementation of empirical and mechanistic crop-climate models for yield forecasting. Daniel’s teaching interests fall into the following categories:

- Global environmental and ecosystem processes
- Statistical and mechanistic modelling of environmental systems
- Environmental Science in society.

Dr Dov Stekel (dov.stekel@nottingham.ac.uk)

Associate Professor in Integrative Systems Biology

Dov’s research uses mathematical, computing and statistical techniques to build predictive models for biological systems. Current projects include:

- Model-driven interpretation of data from bioluminescent reporters.
- Model-driven interpretation of data from high-throughput phenotype arrays.
- Mathematical modelling of gene regulatory responses of pathogenic microbes to stress.

Dr Helen West (Helen.west@nottingham.ac.uk)

Associate Professor in Environmental Biology

Helen’s research interests focus on ecological interactions between plants, microorganisms and invertebrates and specifically on how the interactions are changed by people (e.g. by farming methods, use of agrochemicals and veterinary drugs). Current research areas include:

- Evaluation of wastes derived from sustainable energy systems such as anaerobic digestion and gasification.
- Exploring use of bacteria as plant growth-promoters.
- Monitoring ecotoxicological effects of veterinary pharmaceuticals.
• Determining if algae can ‘clean up’ industrial effluent.

Dr Paul Wilson (paul.wilson@nottingham.ac.uk)

Associate Professor of Management
Chief Executive, Rural Business Research
Director, Rural Business Research Unit

Paul’s research interests are in Agricultural Economics and Farm Business Management:

• Agricultural policy, efficiency, and productivity analysis.

• Farm and farm business decision making.

• Determinants of variations in farm business income performance.

• Agricultural-Environmental interactions.

• Food market analysis of farm to retail food prices.

• Food consumer behaviour. Applied econometrics.

• Bioenergy feedstock supply.

• Sustainable Intensification in Agriculture.

Dr Scott D Young (scott.young@nottingham.ac.uk)

Reader in Environmental Science

Scott’s major interest is in trace element, heavy metal and radionuclide dynamics in soils. Current research interests include:

• Dynamics of heavy metals (Cd, Pb, Hg), metalloids (As) and radionuclides (U, Th) in soils and aquatic systems: novel measurement and modelling approaches.

• Availability of micronutrient elements (iodine, selenium, zinc, iron) and major nutrients (N, P, K) to crop plants and natural ecosystems.

• Biofortification of crops.

• Phytoremediation of soils.
Animal Sciences

Dr Ramiro Alberio (Ramiro.alberio@nottingham.ac.uk)

Lecturer in Developmental Epigenetics

Our laboratory investigates the mechanisms regulating the generation of pluripotent cells. Our long term aim is to develop novel cellular reprogramming strategies for regenerative medicine and for the genetic manipulation of farm animals. Current research areas in the lab include:

- Epigenetic reprogramming of somatic cells using oocyte molecules
- Investigating the program of Germ cell development, and working towards deriving human gametes in vitro
- Biology of pluripotency in embryos and embryonic stem cells
- Developing novel techniques for farm animal transgenesis

Prof Phil Garnsworthy (phil.garnsworthy@nottingham.ac.uk)

Professor of Dairy Science

Phil’s research encompasses all aspect of dairy science with particular emphasis on nutrition. Current research projects include:

- Feed efficiency and sustainability of dairy systems
- Variation in methane emissions by individual dairy cows measured on-farm
- Nutritive value of co-products from the bioethanol industry
- Rumen function in relation to the microbiome, the cow genome, and digestive Efficiency
- Manipulation of milk fatty acid profile by nutrition and genetics
- Nutritional strategies for enhancing dairy cow fertility
Dr Sara Kelly (sara.kelly@nottingham.ac.uk)

Lecturer in Neuroscience

Sara’s research is focused on understanding the mechanisms that contribute to chronic pain. This increased understanding will ultimately aid the development of improved analgesic (pain killers). Sara is part of the Arthritis Research UK Pain Centre (www.nottingham.ac.uk/paincentre) a centre of excellence established to increase the understanding of arthritis pain mechanisms and to improve its treatment. Her main research interests are:

- How the nerve fibres that innervate joints become hyperexcitable when a joint becomes inflamed (rheumatoid arthritis) or degenerates (osteoarthritis)
- How this hyperexcitability can be altered by novel analgesic compounds

Dr John Harris (john.harris@nottingham.ac.uk)

Lecturer in Neurophysiology

John’s research investigates mechanisms behind acute and chronic pain by measuring spinal reflexes using electrophysiological recording and motion analysis techniques. Current research includes:

- How individual muscles in a limb are organized in producing a withdrawal reflex
- How this organization changes in acute and chronic pain states
- The mechanisms underlying excitability changes in the spinal cord (‘central sensitization’) in pain
- Pain in rheumatoid and osteoarthritis and development of more effective Analgesics
- The treatment of osteoarthritis in dogs

Dr Martin Luck (martin.luck@nottingham.ac.uk)

Associate Professor in Animal Sciences

Martin’s research interests cover all aspects of reproductive biology, but especially the endocrinology and function of the ovary. His pedagogical interests include the role of research in undergraduate education and he is a National Teaching Fellow. Scientific research areas:
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- Eggshell structure in birds
- Mammalian ovarian follicular development
- Reproductive physiology and endocrinology
- Pedagogical research areas
- Supervision and development of undergraduate research projects
- Undergraduate learning through research and enquiry

Dr George Mann (George.mann@nottingham.ac.uk)
Associate Professor and Reader in Reproductive Endocrinology

George is interested in the regulation of reproductive function in farm animals. The main research interests are:

- How hormones control early embryo development and the establishment of Pregnancy
- How problems with these processes lead to early embryo mortality and pregnancy Loss
- Developing strategies to overcome these problems and improve reproductive Efficiency

Dr Kate Millar (kate.millar@nottingham.ac.uk)
Director, Centre for Applied Bioethics

Kate’s research interests fall under four main areas: Biotechnology Assessment; Bioethical Analysis and the development of Ethical Tools; Animal, Agriculture and Food Ethics; Publics and Stakeholder Engagement in Science Research and Governance. Expertise: Biotechnology Assessment, Stakeholder and Publics Engagement in Science, Development of Ethical Frameworks, Ethical Analysis, Ethics of Emerging Science and Technology, Animal Ethics. Current Research Areas:

- Technology Assessment approaches and Ethical Frameworks

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- Veterinary and Animal Ethics; Animal - Human Interactions
- Policy dimensions of biotechnology development and use
- Ethics, 3Rs and Animal Experimentation
- Ethical Dimensions of Food and Bioenergy Production
- Making Science Public: Politics and Publics (engagement methods)

**Professor Kevin Sinclair** ([kevin.sinclair@nottingham.ac.uk](mailto:kevin.sinclair@nottingham.ac.uk))

*Professor of Developmental Biology*

Kevin’s research interests primarily concern metabolic programming during early mammalian development, where epigenetic outcomes are determined in embryonic cells and tissues, and long-term developmental consequences assessed in offspring. Current research interests include:

- Genetics of trace element deficiencies in sheep and how these affect embryonic Development
- Applying advanced breeding technologies to amplify and distribute bovine genetics to increase production efficiency and sustainability
- Optimising the delivery of superior genetics through advanced genomic selection of bovine embryos

**Dr Carl Stevenson** ([karl.stevenson@nottingham.ac.uk](mailto:karl.stevenson@nottingham.ac.uk))

*Lecturer in Neuroscience*

Carl’s research investigates the neurochemical and neural circuit basis of fear learning and memory processing, combining behavioural testing methods with various in vivo pharmacology and neurophysiology techniques, including:

- systemic drug administration
- intra-cerebral drug infusion
- neural activity recordings.
Dr Reinhard Stöger (reinhard.stoger@nottingham.ac.uk)

Associate Professor in Epigenetics

Reinhard’s research interests are: heritability of nucleic acid modifications, chromatin, non-coding RNAs, gene-environment interactions and energy metabolism. Current research projects include:

- Analysing the impact of environmental stressors on honeybee health, combining transcriptomics, metabolomics, and systems biology.
- Epigenetic regulation of Leptin, encoding a key metabolic hormone.
- Mitochondrial DNA metabolism.

Dr Dylan Sweetman (dylan.sweetman@nottingham.ac.uk)

Lecturer in Molecular Embryology

Research focuses on the use of chicken embryos as a model for developmental biology. Current areas include:

- Inductive signals in limb muscle formation
- Formation and development of adipose tissue
- Regulation of muscle development by transcription factors

Dr Alan Waterfall (alan.waterfall@nottingham.ac.uk)

Teaching Fellow in Animal Physiology

Alan’s interests are in general anatomy and physiology teaching particularly practical sessions and specialised modules in neuroscience. Current interests are within the field of neuroscience, especially:

- Neurobiology of fundamental animal behaviour and the issue of complexity within nervous systems.
- Developing simulations of specific animal behaviours including autonomy and bipedalism.
Professor Julian Wiseman  (Julian.wiseman@nottingham.ac.uk)

Professor of Animal Production

Julian’s research interests fall into two main areas: non-ruminant animal nutrition and product quality. Current research areas include:

- Nutritional value of co-products from bioethanol production
- Home-grown legumes in diets for non-ruminants; digestibility, performance and carcass quality
- Evaluating exogenous enzymes in pig nutrition
- Muscle growth in broilers

Food Sciences

Professor Chris Boulton  (chris.boulton@nottingham.ac.uk)

Lecturer in Brewing Science

Chris is interested in the relationships between brewing yeast and fermentation performance. The main research interests are:

- How the yeast genome responds to the conditions it is exposed to in brewing using very large batch sizes.
- How an understanding of these underlying drivers can be utilised to improve the consistency and efficiency of brewery fermentation
- How the study of the complex model represented by yeast growing on a natural substrate, brewers’ wort, in large

Professor Ian Connerton  (ian.connerton@nottingham.ac.uk)

2 Sisters Food Group Professor of Food Safety

Ian leads the Food Microbiology and Safety Section at the University of Nottingham. He has been involved in molecular biology research for more than 30 years. His current research interests include:
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• Food-borne zoonotic pathogens

• The influence and therapeutic use of bacteriophage against zoonotic pathogens in the human food chain

• The synthesis and delivery pathogen products to host cells and their molecular responses

• Studies of host protein interactions

• Enzyme technology in partnership with agri-food industries: Making use of the traditional benefits of biological catalysts (chemical specificity, mild reaction conditions and low environmental loads) for food applications

Dr David Cook (david.cook@nottingham.ac.uk)

Lecturer in Brewing Science

David’s research interests focus on the malting and brewing fields, specialising in:

• micromalting and the development of novel malting processes

• flavour formation in the brewing process

• appraising the flavour stability of lager beers (using electron spin resonance spectroscopy) and sensory perception of beer flavour

• biorefining and the use of lignocellulosic waste for bioethanol fermentations

• links between crop husbandry, barley microbiology and the functionality of malts.

Professor Christine Dodd (Christine.dodd@nottingham.ac.uk)

Professor in Food Microbiology

Christine’s research interests centre on the characterisation of microbial populations at the species and sub-species levels using cultural and molecular approaches and in understanding the factors influencing their composition. Current research areas include:

• Understanding the contribution of non-starter microflora to product characteristics in natural and controlled fermentations.

• The factors which influence microbial survival in foods and other environments.
Dr Chenyu Du (chenyu.du@nottingham.ac.uk)

Lecturer in Biochemical Engineering

The objective of Chenyu’s research is to develop key technologies to solve one or two essential problems in the biofuel production processes. Current research interests include:

- Sustainable bioenergy production from sustainable raw materials
- Biorefinery for the biochemical production
- Bioprocess simulation and process design.

Dr Ian Fisk (ian.fisk@nottingham.ac.uk)

Lecturer in Food Chemistry

Ian’s research interests lie in the area of food Chemistry, with a specific interest in aroma chemistry and flavour chemistry. Ian’s research relates to the real time delivery of aroma and taste (e.g. sugar and salt) compounds. In addition, I run after the analytical chemistry laboratories in the division of Food Sciences which contain GC-MS, LC-MS and MS-MS-Nose technologies. Current research interests include:

- Probiotics
- Salt reduction
- Flavour delivery and stability

Dr Tim Foster (tim.foster@nottingham.ac.uk)

Associate Professor and Reader in Food Structure

Tim’s expertise is in microstructure design through understanding the interplay between ingredients and process, so that the final microstructure is stable / functional in storage, in-use, in-digestion. Tim’s research interests include:

- Areas of natural structuring agents
- Rehydration phenomena,
- Microstructure changes in physiological environments
- Targeted / controlled release.

**Dr David A Gray** ([david.gray@nottingham.ac.uk](mailto:david.gray@nottingham.ac.uk))

*Associate Professor, Food Chemistry*

David is interested in novel, bio-innovative approaches of incorporating lipids into the diet to improve health, and to reduce the impact on the environment. Current research interests include:

- Sustainable Nutrition
- Characterising the functional and nutritional properties of selected plant cell organelles ex-vivo e.g. oil bodies (oleosomes)
- Alternative sources of omega-3 fatty acids
- Microalgae as food/feed
- Health benefits of leaf tissue
- Processing of oilseeds without organic solvents

**Professor Steve Harding** ([steve.harding@nottingham.ac.uk](mailto:steve.harding@nottingham.ac.uk))

*Professor of Applied Biochemistry and Director of the NCMH*

Steve’s focuses on developing hydrodynamic methods for the study of the sizes, shapes and interactions of macromolecules. Current research interests:

- Sugars that behave like proteins
- Designing macromolecular blocks against gluten intolerance
- The nature and stability of carbohydrate vaccines
- Y-chromosome DNA & the Scandinavian settlements of Britain

**Professor Sandra Hill** ([sandra.hill@nottingham.ac.uk](mailto:sandra.hill@nottingham.ac.uk))
Professor of Biomaterials Processing

Dr Phil Hill (phil.hill@nottingham.ac.uk)

Associate Professor in Microbiology

Phil’s research interests fall into three main areas: Bacterial gene control, imaging and synthetic biology. Current research areas include:

- Construction of reporter gene systems
- Optical and nuclear imaging
- Engineering of bacteria for production of high value compounds
- Anti-Staphylococcal agents

Dr Jon Hobman (jon.hobman@nottingham.ac.uk)

Associate Professor of Microbiology

Jon’s research interests centre on bacterial metal ion homeostasis and resistance, and pathogenic enterobacteria. Current research areas include:

- Bacterial resistance to antimicrobial metals.
- Gene regulation of antimicrobial metal resistance genes.
- Antimicrobial resistance plasmids in Gram-negative bacteria.
- Laboratory and pathogenic Escherichia coli.
- Molecular methods for studying bacterial gene regulation and expression.
- Molecular methods for engineering Gram-negative bacteria.

Dr Joanne Hort (joanne.hort@nottingham.ac.uk)

Associate Professor in Sensory Science
Joanne’s research focuses on using sensory science and instrumental techniques to understand how we perceive flavour. Current areas of interest include:

- Crossmodal perception - how taste, aroma and texture integrate to form flavour perception
- Investigating individual variation in perception e.g. supertasters and thermal tasters
- Using functional Magnetic Resonance Imaging (fMRI) to understand flavour perception
- Measuring Emotional response to sensory properties

**Dr Preeti Jethwa** ([preeti.jethwa@nottingham.ac.uk](mailto:preeti.jethwa@nottingham.ac.uk))

*Lecturer in Human Nutrition*

**Dr Kenneth Mellits** ([Kenneth.mellits@nottingham.ac.uk](mailto:Kenneth.mellits@nottingham.ac.uk))

*Lecturer in Virology, Director University of Nottingham, Monogastric Centre of Excellence*

Ken’s research is on the enteric disease of monogastric species, focusing on the pig. Current interests include:

- To better understand the mechanism by which the porcine rotavirus counters the host interferon response.
- To monitor circulating strains of porcine rotavirus as part of a strategy to produce a viral vaccine to halt transmission of the virus.
- To determine the effect of *Saccharomyces cerevisiae* var. *boulardii* on pathogen load, microflora and stress related bowel dysfunction in the pig.

**Dr Chris Powel** ([chris.powel@nottingham.ac.uk](mailto:chris.powel@nottingham.ac.uk))

Chris Powell has a background in microbiology and industrial yeast biotechnology. With experience in yeast physiology, metabolism and genetics. Chris has research interests in:

- Alcoholic beverage fermentations, as well as related fields such as microbial
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- Brewing science and sustainable bioenergy.

Dr Cath Rees (cath.rees@nottingham.ac.uk)

Associate Professor in Microbiology

Cath’s focus of research is the application of molecular biology to fundamental research on microorganisms of importance to the food chain.

General area of expertise:

- Bacterial genetics and molecular biology
- Analysis of gene expression and use of reporter genes
- Bacteriophage
- Genetics and physiology of Gram-positive food borne pathogens: adaptation, survival and transmission of bacteria in the food environment with a specific focus on Listeria and Mycobacteria.
- Biotechnology applications for Bacteriophage: use for rapid detection of bacterial pathogens with a specific focus on Mycobacterium paratuberculosis (Johnne’s disease of cattle) and Listeria Monocytogenes
- Genetic engineering of bacteriophage for detection of pathogens
- Development of phage-based vaccines

Frank Ruedisueli (frank.ruedisueli@nottingham.ac.uk)

Associate Lecturer in Microbiology

Frank’s teaching and research interests generally fall within Animal Disease. His main passion lies in Parasitology, human and animal, with a particular focus on vector-borne diseases and parasite identification from bloок and faecal samples using light microscopy.

Current research interests:

- Parasitology: with particular interest in ticks and tick-bourne diseases
• Gastro-intestinal parasites in animals, particularly equines

• Dematoloty and skin microbiology: Dermatophytes and D.congolensis

• Herbal tick control and control of other haematophagic arthropods through herbal supplementation.

Dr David Scott (david.scott@nottingham.ac.uk)

Associate Professor and Reader in Physical Biochemistry

David’ research is primarily in Biophysics and Structural Biology employing hydrodynamic techniques such as analytical ultracentrifugation and small angle scattering allied to structural techniques such as protein crystallography and NMR. These relate in particular to:

• bacterial resistance

• plant proteins

• cancer targets and microbial diseasestheoretical work to do with method development.

Dr Angie Swali (angelina.swali@nottingham.ac.uk)

Teaching Fellow in Food Sciences

Angie’s research interests to date include impacts during pregnancy (e.g. maternal nutrition/growth) on the metabolic health of the offspring and effect of excess glucocorticoids on the Metabolic Syndrome.

Current research interests include:

• Anti-nutritional factors in food

• The effect of food processing on nutritional quality

Emma Weston (emma.weston@nottingham.ac.uk)

Teacher and Industrial Advisor

Emma has a predominantly teaching role within the Division and specialises in
translating Food Science principles into realistic modern manufacturing and retail applications for students. She is also responsible for the problem based learning teaching aspects within course structures.

Areas of expertise are:

- Food Manufacturing processes
- Routine QA and QC Testing
- New Product Development
- Food Safety and Quality Systems and Auditing
- Technical Management Approaches
- Current and emerging manufacturing technical trends and needs

Dr Bettina Wolf ([Bettina.wolf@nottingham.ac.uk](mailto:Bettina.wolf@nottingham.ac.uk))

Associate Professor in Biomaterials Science

Bettina’s research interests are in the general area of rheology - microstructure - processing - performance relationships of liquid or semi-liquid materials including foods, cosmetics and biopolymers for pharmaceutical applications.

Current areas of food physics research include:

- Emulsions, suspensions, foam
- Surfactants, antifoaming agents, Pickering particles
- Biopolymer mixtures
- Rheology
- Microstructure generation
- Digestive behaviour of complex foods – analysis and design
- Oral processing of foods
- Interplay between food microstructure, rheology and sensory – in collaboration with Dr Joanne Hort
- Plant lipid surfactants for design of food microstructure, physical properties and
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digestive behaviour – in collaboration with Dr David Gray

- Processing of starch based foods – in collaboration with Prof Sandra Hill

Nutritional Sciences

Dr Marcos Alcocer (marcos.alcocer@nottingham.ac.uk)

Associate Professor in Nutritional Biology

Marcos’ research interests fall into two main areas: Protein expression/folding and Food allergy. Our aim is to understand why specific proteins are recognized by the immune system as "foreign" whilst other proteins with similar structures are tolerated? Our model systems: nuts proteins (plant 2S albumins).

Current research includes:

- Allergy diagnostics: we are developing new tools for the clinical diagnose of allergies and safety of vaccines. The validation of a comprehensive basophil x protein microarray system is ongoing.

- Characterising the intrinsic allergenicity determinant of Ber e 1, the major allergen protein from Brazilnut.

- Developing a comprehensive protein microarray and bioinformatic system for diagnosis of allergy.

- Understanding the role of key lipid mediators on the intrinsic allergenicity of pollen proteins.

Mrs Amanda Avery (Amanda.avery@nottingham.ac.uk)

Lecturer in Nutrition and Dietetics and Registered Dietitian
(Also Consultant Dietitian in weight management at Slimming World)

Amanda’s main specialist interest areas include:

- Weight management - most recently weight management during pregnancy.

- Infant nutrition
• Diabetes
• Irritable bowel syndrome
• Public health nutrition.

**Dr John Brameld** ([john.brameld@nottingham.ac.uk](mailto:john.brameld@nottingham.ac.uk))

*Associate Professor in Nutritional Biochemistry*

John’s research interests fall into three main areas: molecular nutrition, development of body composition and regulation of energy balance. Current research projects include:

• Effects of vitamin D on cell growth, metabolism and gene expression, as a mechanism for improving human health.

• Regulation of tissue (muscle, fat and liver) growth and metabolism, combining metabolomics, transcriptomics and systems biology.

• Novel regulators of energy expenditure and appetite.

**Dr Lisa Coneyworth** ([lisa.coneyworth@nottingham.ac.uk](mailto:lisa.coneyworth@nottingham.ac.uk))

*Teaching Fellow in Nutritional Science*

Lisa’s research expertise lies in the area of epigenetics including the role of epigenetics in zinc regulated gene expression, genetic and non genetic influences during pregnancy on DNA methylation and the effect of specific nutrient exposure on epigenetic modifications in human embryonic stem cells. Lisa’s teaching interests include:

• Basic nutrition including protein, carbohydrates, fats, vitamins and minerals

• Micronutrient deficiencies in the developing world

• Nutrigenomics and Nutrigenetics

**Dr Matthew Elmes** ([matthew.elmes@nottingham.ac.uk](mailto:matthew.elmes@nottingham.ac.uk))

*Lecturer in Nutritional Biochemistry*
Matthew’s research interests fall into two main areas: developmental origins of disease and the effects of nutrition on pregnancy outcome. Current research areas include:

- Unravelling the mechanism through which maternal obesity and maternal age increases the risk of dysfunctional labour and emergency caesarean section
- The effects of dietary polyunsaturated fatty acids on prostaglandin production and the timing of labour.
- The effects of maternal protein restriction on the adult onset of cardiovascular disease in the offspring.

**Ms Nicky Gilbert** ([nicky.gilbert@nottingham.ac.uk](mailto:nicky.gilbert@nottingham.ac.uk))

*Part-time Lecturer in Dietetics*

Nicky is a Dietitian and Registered Sport and Exercise Nutritionist and still retains a freelance practice. Her teaching focuses on developing knowledge and skills in the following areas:

- Sport and exercise nutrition
- Physical activity, diet and the prevention and management of chronic disease
- Obesity management
- Communication skills for dietitians
- Management skills for dietitians

**Professor Simon Langley-Evans** ([simon.langley-evans@nottingham.ac.uk](mailto:simon.langley-evans@nottingham.ac.uk))

*Deputy Head of School of Biosciences*

Simon’s research expertise lies in the area of the Developmental Origins of Adult Disease, where he has conducted pioneering work in the development of experimental models of nutritional programming. Current areas of research include:

- Human nutrition and health
- Pregnancy and breastfeeding
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- Early life origins of adult disease
- Animal models of developmental programming
- Nutrition and ageing
- Systematic reviews
- Obesity
- Antioxidants and health.

Dr Fiona McCullough ([Fiona.mccullough@nottingham.ac.uk](mailto:Fiona.mccullough@nottingham.ac.uk))

Lecturer in Human Nutrition

Fiona’s teaching interests are in the areas of dietetic practice, clinical leadership, professional policy and inter-professional learning. She has supervised a number of MSc Advanced dietetic practice projects in areas of specialist dietetic practice including haemodialysis and motor neurone disease.

Current research interests include:

- meat reduction
- anti-oxidant profile of food and vegetables and containing products
- diet and diabetes.

Dr Sarah McMullen ([sarah.mccullen@nottingham.ac.uk](mailto:sarah.mccullen@nottingham.ac.uk))

Lecturer in Human Nutrition

Sarah’s research focuses on the impact of nutrition during pregnancy and early life on the health of both mother and baby.

Current interests include:

- Mechanisms underlying the developmental origins of health and disease
- Maternal weight management during pregnancy
- The impact of childhood obesity on long term health
Dr Duane Mellor (duane.mellor@nottingham.ac.uk)

Lecturer in Dietetics

Duane’s current interests fall into the areas of diabetes including patient education and nutritional interventions along with a clinical research interest in diabetes and obesity in pregnancy.

Current research projects include:

- Understanding of evidence based nutrition and its application to dietetic practice
- Diabetes education
- Beneficial effects of flavonoids in diabetes and cardiovascular health, including novel methods to enhance bioavailability

Dr Andrew Murton (Andrew.murton@nottingham.ac.uk)

Lecturer in Nutrition

Dr Murton’s research is primarily focussed on the mechanisms that lead to the loss of skeletal muscle mass during disease, disuse and ageing. Current research interests include:

- Skeletal muscle metabolism
- The control of muscle protein turnover
- Ubiquitin-proteasome system
- Autophagy
- Cancer cachexia
- Sarcopenia
- Sepsis-induced muscle atrophy

Dr Tim Parr (tim.parr@nottingham.ac.uk)

Associate Professor and Reader in Nutritional Biochemistry
Tim’s research interests are associated with studying the factors influencing muscle growth and metabolism both in livestock and humans. Current projects include:

- Determining factors influencing muscle growth and metabolism to improve human health and livestock’s feed utilisation efficiency.
- The role of proteolysis in protein turnover (particularly the calpain proteolytic system) and the effect of this metabolic process on meat quality.
- The influence of Vitamin D on metabolism.

**Joanne Pearson** ([joanne.pearson@nottingham.ac.uk](mailto:joanne.pearson@nottingham.ac.uk))

*Teaching Associate*

Joanne works at understanding how hydrocolloid gels can be used in the food industry to improve texture, performance and sustainability of food. At present the main focus is studying the in vitro and in vivo effects of dog food to develop improvements to the performance of the food.

**Professor Andy Salter** ([Andrew.salter@nottingham.ac.uk](mailto:Andrew.salter@nottingham.ac.uk))

*Professor of Nutritional Biochemistry*

Andy’s interests are on the impact of diet on human health and well-being. Current research interests include:

- Impact of diet on metabolic disease
- Molecular mechanisms whereby nutrients regulate gene expression
- Manipulation of foods (particularly those of animal origin) to improve their impact on human health
- Improving the sustainability of food production (particularly those of animal origin)

**Dr Judy Anne Swift** ([judy.swift@nottingham.ac.uk](mailto:judy.swift@nottingham.ac.uk))

*Lecturer in Human Nutrition*
Judy’s research predominately involves a social psychology approach to the study of food and eating behaviour.
Areas of particular interest include:

- maternal and childhood obesity
- communicating obesity, diet and health
- psychological (particularly cognitive) determinants of obesity

Methodologically, Judy has particular experience in working with:

- multivariate statistics on large, existing datasets
- psychometric scale development
- qualitative research techniques
- mixed method study designs.

**Professor Greg Tucker** ([greg.tucker@nottingham.ac.uk](mailto:greg.tucker@nottingham.ac.uk))

*Professor of Plant Biochemistry*

Greg’s research is focused on the molecular biology of the plant cell wall and phytonutrients. Current research interests include particular:

- Breakdown of biomass to provide a feed stock for the production of biofuels and Biorenewables
- Extension of postharvest shelf life of fruit and vegetables by genetic, chemical or physical means
- Effect of post-harvest handling and processing on the nutritional value of fruit and vegetables

**Dr Simon Welham** ([simon.welham@nottingham.ac.uk](mailto:simon.welham@nottingham.ac.uk))

*Lecturer in Nutritional Biochemistry*

Simon’s research interests fall into two main areas: mammalian kidney development and acute kidney injury. Current research areas include:
• The role of cell migration in kidney development

• Identifying pathways involved in renal development which participate in recovery from acute kidney injury

• Determination of the nutritional requirements of the recovering kidney

• Establishment of in vitro models of acute kidney injury

**Plant and Crop Sciences**

**Professor Malcolm Bennett** ([Malcolm.bennett@nottingham.ac.uk](mailto:Malcolm.bennett@nottingham.ac.uk))

*Professor of Plant Sciences*

Malcolm’s research interests fall into two main areas: plant systems biology and root development in model plants and crops. Current research areas include:

• Dissecting hormone regulated root growth and development using a systems biology approach

• Assembling the gene regulatory networks that control root development in model plants

• Translating the genetic information gained studying model plants to re-engineer crop root growth and development

• Uncovering the 'hidden half' of plant biology using X-ray approaches to noninvasively image roots growing in soil

**Professor Martin Broadley** ([martin.broadley@nottingham.ac.uk](mailto:martin.broadley@nottingham.ac.uk))

*Professor in Plant Nutrition*

Martin’s research is underpinned by is the need to ensure food and nutritional security. Current research interests include:

• Mineral nutrient dynamics in soil-plant systems, spanning molecular to agronomic scales.

• Developing crops containing appropriate levels of mineral nutrients (e.g.
biofortification) whilst optimising fertiliser-use efficiency.

**Professor Matt Dickinson** ([matthew.dickinson@nottingham.ac.uk](mailto:matthew.dickinson@nottingham.ac.uk))

*Professor of Plant Pathology*

Matt’s research focuses on molecular diagnostics of plant pathogens, including work on the cereal rust fungi, root-infecting pathogens of tomatoes, and phytoplasma diseases of a range of plants. Current research interests include:

- Plant microbe interactions
- Plant pathogen diagnostics
- Molecular fingerprinting of bacteria and fungi
- Plant virology
- Cereal rust fungi
- Phytoplasmas
- Diseases of coconuts, oilpalm, sugarcane, napier grass, wheat, potato and tomato
- Changes in gene expression during plant-pathogen interactions

**Dr John Foulkes** ([john.foulkes@nottingham.ac.uk](mailto:john.foulkes@nottingham.ac.uk))

*Associate Professor in Crop Science*

John’s interests fall into two main areas: cereals physiology and sustainable agriculture.

- Identifying traits, mechanisms and genetic markers to improve water-use efficiency and nitrogen-use efficiency
- Exploring wheat diversity for biomass and nitrogen-use efficiency in pre-breeding germplasm (ancestral introgressions, synthetic derivatives and landraces)
- Understanding the developmental, genetic and physiological bases of ear fertility in wheat
- Developing high-throughput phenotyping approaches for root system architecture
Dr Rupert Fray (Rupert.fray@nottingham.ac.uk)
Associate Professor in Plant Molecular Biology

Rupert’s research interests fall in to two main areas: post-transcriptional gene regulation and synthetic biology.
Current research areas include:

- Determining the mechanisms by which mRNA methylation post-transcriptionally regulates gene expression.
- Identification and mapping of modified nucleotides in mRNA (plant, yeast and mouse).
- Engineering plants and bacteria for the production of novel taxannes and other anti-cancer metabolites.

Dr Andrew French (Andrew.french@nottingham.ac.uk)
Lecturer in Bioimage Analysis

My research sits on the boundary between Computer Science and Biosciences, focusing on plant science in particular. Research interests include:

- Image analysis of plants, from cellular- to field-scale.
- Automating phenotyping approaches
- Developing novel software tools to aid biologists and mathematical modellers

Dr Zinnia H. Gonzalez Carranza (zinnia.gonzalez-carranza@nottingham.ac.uk)
Lecturer in Plant and Crop Sciences

Zinnia's research falls into two areas: abscission & cell separation and plant development. Her current research areas include:

- Ubiquitination, microRNAs and Plant Development: We are studying the effect of an F-box protein from Arabidopsis involved in protein degradation, microRNA biogenesis and plant development. The findings from Arabidopsis are being
translated to rice.

- Discovering novel genes involved in abscission and other cell separation processes.

**Professor Michael Holdsworth** ([Michael.holdsworth@nottingham.ac.uk](mailto:Michael.holdsworth@nottingham.ac.uk))

*Professor of Crop Science*

Molecular mechanisms of plant-environment interactions; how do plants survive in a hostile world? Plants cannot run away when confronted with a problem, they have to sit it out and try to survive. This means that they have evolved to respond in specific ways to different environmental changes, which provides an adaptive advantage to those that do it best. Current areas of interest include:

- Understanding molecular and genetic components regulating plant-environment interactions, and defining the biochemistry of sensing environmental change.
- Understanding the role of ‘gas-transmitters’ (nitric oxide, oxygen) in sensing environmental change through the N-end rule pathway of targeted proteolysis
- Understanding how this biochemical pathway controls plant growth and sensing of different environmental stresses by controlled proteolysis of regulator proteins
- To provide molecular resources and a conceptual framework that plant breeders and growers can use.

**Professor Ian King** ([ian.king@nottingham.ac.uk](mailto:ian.king@nottingham.ac.uk))

*Professor of cereal genomics*

Ian’s interests centre on transfer of genetic variation into wheat from related species:

- Global food security
- Interspecific hybridisation, chromosome manipulation and plant breeding.
- Comparative genomics, genetic markers, map based cloning and cytogenetics
- Determination of the genetic control of target traits

**Dr Julie King** ([Julie.king@nottingham.ac.uk](mailto:Julie.king@nottingham.ac.uk))
Lecturer in crop genetics

Julie’s interests centre on transfer of genetic variation into wheat from related species:

- Global food security
- Interspecific hybridisation, chromosome manipulation and plant breeding.
- Comparative genomics, genetic markers, map based cloning and cytogenetics
- Determination of the genetic control of target traits

Dr Grantley Lycett (grantley.lycett@nottingham.ac.uk)

Lecturer in Plant Molecular Biology

Grantley’s research focuses on several areas of the molecular mechanisms underlying the genetic and cellular control of fruit ripening and seed development and germination. Grantley’s research interests are:

- Role of Rab GTPases in intracellular trafficking of proteins and polysaccharides.
- Trafficking of cell wall polysaccharides and wall modifying enzymes to alter softening and post-harvest storage of tomato fruit.
- Trafficking of storage proteins to the protein storage vacuoles to alter the bread making characteristics of wheat.

Dr Sean Mayes (sean.mayes@nottingham.ac.uk)

Associate Professor in Crop Genetics

Sean’s interests involve evaluating genetic diversity in crops and using molecular markers to assist crop breeding. Current research includes:

- Marker assisted breeding in oil palm, wheat, date palm and underutilised crop Species
- Development of approaches to translate research data from major to minor crop Species
- Mining and combining datasets to develop a new perspective on ‘omics data
• Theme Director (Biotechnology) for the Crops for the Future Research Centre in Kuala Lumpur

**Dr Erik Murchie** ([erik.murchie@nottingham.ac.uk](mailto:erik.murchie@nottingham.ac.uk))  
*Lecturer in Crop Science*

Erik’s research interests focus on the optimisation of photosynthesis in crop plants and the regulation of photoprotective mechanisms. Current research interests include:

- Manipulation of photoprotective processes in crop plants
- Exploiting novel variation in photosynthesis and photoprotection using mutant collections and alien introgression in wheat and rice
- Imaging of cereal crops at high resolution and developing models of photosynthesis to identify canopy-level limitations to photosynthesis and photoprotection:
- Optimisation of photosynthesis under LED-based growth systems

**Dr Kevin Pyke** ([kevin.pyke@nottingham.ac.uk](mailto:kevin.pyke@nottingham.ac.uk))  
*Associate Professor in Plant Cell Biology*

Kevin is interested in a variety of developmental topics in plant biology centred around the development of plastids and the development of leaves, petals and fruit. Current research interests include:

- Plastid division and development
- Plastid dynamics and stromules
- Leaf development and the control of chloroplast compartment size
- Photosynthesis and chloroplast development

**Dr Rumiana Ray** ([rumiana.ray@nottingham.ac.uk](mailto:rumiana.ray@nottingham.ac.uk))  
*Lecturer in Crop Science*
Rumiana’s research interests fall into the area of integrated strategies for crop protection. Current interests include:

- Targeted crop protection of root, stem-base and ear diseases of cereals and brassica crops
- Pre-harvest control of Fusarium head blight and Fusarium mycotoxins
- Forecasting disease and yield losses
- Disease and pathogen diagnostics
- Multi-trophic interactions in disease epidemiology
- Resistance and tolerance to biotic and abiotic stress

Dr Tim Robbins (tim.robbins@nottingham.ac.uk)

Associate Professor in Plant Genetics

Tim’s research covers both fundamental and applied aspects of plant reproduction. Specifically his research is focussed on:

- gametophytic self-incompatibility in the model plant Petunia hybrida.
- applied research in sweet cherry, plums, coffee and potato.

Professor Jerry Roberts (jerry.roberts@nottingham.ac.uk)

Professor of Plant Biology

Jerry’s main interest focuses on how the manipulation of plant development can optimise crop performance. Current research areas include:

- Dissecting the molecular and cellular events regulating cell separation processes in plants
- Understanding the linkages between assimilate partitioning and seed development
- Unravelling the responses of plant organs to gravity
• Using novel imaging systems to visualise root growth and development

Dr Steve Rossall (steve.rossall@nottingham.ac.uk)

Associate Professor in Plant Pathology

Steve’s research interests are based on crop protection. Main areas are evaluation of new generation fungicides and biological control and examination of root development. Current research includes:

• Biocontrol of toxigenic Aspergillus in groundnut
• Evaluation of SDHI fungicides against a range of pathogens
• Evaluation of specific SDHIs and phosphites on rooting

Professor Graham Seymour (graham.seymour@nottingham.ac.uk)

Professor of Plant Biotechnology

Graham’s research interests are on the genetic and epigenetic basis of fruit quality traits. Current research interests include:

• Fruit Ripening
• Tomato genomics
• Epigenetics
• Crop Biotechnology
• Novel Bioactive

Dr Debbie Sparkes (Debbie.sparkes@nottingham.ac.uk)

Associate Professor in Agronomy

Research interests fall into two main areas: crop physiology and sustainable agriculture. Current research areas include:

• Exploiting resource use efficiency and resilience of ancient wheat species
• Sugar beet physiology and agronomy
• Impact of minimum tillage on soil structure and crop production
• Bioenergy from wheat straw: investigating differences between varieties and agronomic practices

**Dr Ranjan Swarup** ([ranjan.swarup@nottingham.ac.uk](mailto:ranjan.swarup@nottingham.ac.uk))

*Lecturer in Plant and Crop Sciences*

Ranjan is a Molecular Cell Biologist with main interests in root gravitropism, auxin transport and protein trafficking. Current research areas include:

- Role of ER accessory proteins in root development
- Role of non-protein coding RNA in lateral root development
- Impact of root architecture on resource use efficiency

**Dr Darren Wells** ([Darren.wells@nottingham.ac.uk](mailto:Darren.wells@nottingham.ac.uk))

*Senior Research Fellow in Plant and Crop Biophysics*

Research interests cover fundamental and applied aspects of plant and crop root biology. Current research areas include:

- Development of laboratory, growth room and glasshouse-scale phenotyping platforms
- Root tropisms
- Field phenotyping technology development

**Prof Zoe Wilson** ([zoe.wilson@nottingham.ac.uk](mailto:zoe.wilson@nottingham.ac.uk))

*Professor in Developmental Plant Biology*

Zoe’s research interests fall within the area of plant development, focusing upon plant reproduction and its role in Global Food Security. Current research areas include:
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- Molecular gene networks and systems analysis of anther and pollen development
- Controlling fertility for selective breeding and hybrid production
- Effect of temperature stress on pollen development
- Programmed cell death, particularly during plant reproduction

**Staff at The University of Nottingham Malaysia Campus**

**Dr Asgar Ali** ([asgar.ali@nottingham.edu.my](mailto:asgar.ali@nottingham.edu.my))

*Associate Professor of Postharvest Physiology and Technology and Director Centre of Excellence for Postharvest Biotechnology (CEPB)*

Asgar's research is focused on enhancing food security and development of novel postharvest technologies.

- Food security: Developing natural based edible coatings for reduction of food losses
- Replacing chemical control of pests with alternative disease management strategies
- Enhancing the nutritional value of tropical fruits and vegetables for health and well-being
- Postharvest handling and the extension of postharvest shelf life of fruits and vegetables
- Organic production of fruits and vegetables and the effect of pre-harvest conditions on the postharvest quality.

**Dr Stephanie Evers** ([Stephanie.evers@nottingham.edu.my](mailto:Stephanie.evers@nottingham.edu.my))

*Assistant Professor of Environmental Science*

Stephanie's research is focused on aquatic ecology and the linkages between community assemblages and biogeochemical cycles. In particular:
• Carbon (CO2, CH4, TOC & DOC) fluxes from tropical peatlands and agricultural systems.
• Tropical Peatland ecology
• Impact of land use alteration on aquatic ecosystem functioning.
• Ecological impact and control development for aquatic non-native invasive species.

Dr Chin Chiew Foan (chiew-foan.chin@nottingham.edu.my)
Associate Professor in Plant Biotechnology
Chiew Foan’s research is focused on the isolation of biomarkers for plant improvement and proteomic analysis of plants. In particular:
• Identification, isolation and characterisation of biomarkers for marker-assisted Selection
• Plant cell tissue culture and development
• Effects of protein changes in plant growth and development.

Dr Soma Mitra (soma.mitra@nottingham.edu.my)
Associate Professor in Human Nutrition.
Soma’s research is focused on Public Health Nutrition. In particular:
• Investigation of musculo-skeletal health
• Assessing vitamin D status and deficiency related health effects
• Investigation of adiposity and related health effects.

Dr Yin Sze Lim (yinsze.lim@nottingham.edu.my)
Lecturer in Nutrition and Food Microbiology
Yin Sze’s research interests include the mechanism and health potential of underutilised crops, probiotic and prebiotic products. Current research interests include:
Development of a strategy to improve the growth and health of fish fed with prebiotic plant-based diet

Development of a processing strategy to eliminate the anti-nutritional factors in plant-based feed used in aquaculture

Screening of phytochemicals from underutilised crops.

**Dr Soma Mitra** (soma.mitra@nottingham.edu.my)

*Associate Professor in Human Nutrition*

Soma’s research is focused on Public Health Nutrition. In particular:

- Investigation of musculo-skeletal health
- Assessing vitamin D status and deficiency related health effects
- Investigation of adiposity and related health effects.

**Dr Ajit Singh** (ajit.singh@nottingham.edu.my)

*Associate Professor of Agronomy*

Ajit’s research is focused on the management of crops and soils for increased crop production. In particular:

- Utilization of natural resources like organic manure, rock phosphate, residue management for increased production
- Cropping systems- integration of nitrogen fixing legumes into cereal based cropping systems.
- Seed technology- treatment for establishment and drought endurance.
- Physical manipulation of plant processes for increased productivity.
- Crop management practices for increased photochemical content
- Bio-energy crops management
- Irrigation management of semi-arid crops.
Dr Rachael Symonds (Rachael.symonds@nottingham.edu.my)

Associate professor Plant Biotechnology

- Physiology and molecular biology of Abiotic stress responses in vegetables
- Carotenoid biosynthesis in vegetables.

Dr Winnie Yap (winnie.yap@nottingham.edu.my)

Associate Professor

Winnie’s interest is mainly in the field of plant biotechnology, tissue culture, micropropagation and transgenic research

- Commercial and underutilised plant improvement via genetic engineering
- Plant tissue culture on commercial and underutilised crops

Dr Tan Seok Tyug (tan.seoktung@nottingham.edu.my)

Assistant Professor in Nutrition Sciences

Interactions between phytonutrients and non-communicable diseases:

- Hypoglyceamic properties of bioactive compounds derived from industrial agriwastes.
- The anti-adipogenic effects of phytonutrients derived from underutilised plants.