INFORMATION FOR CANDIDATES
for appointment as
AgResearch Chair in Reproduction and Genomics

DEPARTMENT OF ANATOMY AND STRUCTURAL BIOLOGY
OTAGO SCHOOL OF MEDICAL SCIENCES

General Information

A statement of general information for applicants for academic posts within the University is attached.

The Centre for Reproduction and Genomics

A Centre for Reproduction and Genomics has recently been established between the University of Otago and AgResearch Ltd and is the culmination of many years of extensive research collaboration between these two institutions. In conjunction with this, a Leading Thinker’s Chair in Reproduction and Genomics will be established within the Department of Anatomy and Structural Biology.

The establishment of the chair and Centre bring together two of the three largest research organisations in New Zealand. The University of Otago and AgResearch Ltd have a vision that the Centre will be an undisputed leader in reproduction and genomics research within New Zealand and internationally. The Centre’s international reputation will be built on scientific excellence and a long term commitment by the parties to create an enduring identity. The mission of the Centre is to conduct scientific research in reproduction and genomics with a particular focus on the following fundamental areas: livestock and human reproduction; livestock and human health and disease; and mammalian reproductive control.

Both partners bring strong research and development capability and a history of successful commercial outcomes. Both AgResearch Ltd and the University of Otago have reproductive and genomic research capabilities and facilities and the University also has clinical expertise. More specifically, the University has capabilities and infrastructure in reproduction, genomics, epigenetics, infectious diseases, animal diseases and food. Additionally, it has expertise in animal research, bioinformatics, pharmacology and a wide range of research areas in biomedical, biological, environmental, and social sciences where there is potential application of knowledge to the pastoral and biotechnology sectors.

AgResearch Ltd is a Crown Research Institute with specialist expertise, capabilities and infrastructure in pastoral agricultural research. It has specialist knowledge of animal reproduction, mammalian genomics, infectious diseases and genetics. AgResearch Ltd has established expertise in commercialisation, IP management, animal resources and trials, evaluation of large data sets, food technology, nutrigenomics, bioinformatics and environmental and social research. It also has experience with technology transfer and has effective links with industry funding bodies.

The Department of Anatomy and Structural Biology has strength in basic research in the fields of reproduction and genomics as well as postgraduate and postdoctoral training. This includes expertise in the areas of animal and human reproduction, the neuroendocrine control of reproduction and bioinformatics. Active collaborations in these areas are ongoing with members of the Departments of Physiology and Obstetrics and Gynaecology, with the Centre for Neuroendocrinology and with Fertility Associates, in addition to long-standing collaborations with AgResearch Ltd.

The chair will be established within the Department of Anatomy and Structural Biology and report to the Head of that Department.

Background to AgResearch Ltd
AgResearch Ltd is a government owned Company which conducts Research and Development for the Pastoral Industries on a full commercial basis. AgResearch Ltd has 950 staff, including 264 with PhDs, and operates from 5 research centres and research farms throughout New Zealand. There are 3 main research areas:

- Agriculture and Environment.
- Applied Biotechnologies.
- Food and Health.

AgResearch Ltd earns in excess of NZ$120M each year and largely reinvests its profits to grow scientific capability to better support pastoral and biotechnology sectors. AgResearch Ltd sees its role as providing the scientific link between current agricultural practice and future farming by developing and successfully implementing technologies that sustainably benefit health and quality of life.

The successful applicant for the AgResearch Chair in Reproduction and Genomics at the University of Otago is also expected to be the Director of the Centre for Reproduction and Genomics, run jointly between AgResearch Ltd and the University of Otago. The primary liaison will be with the Applied Biotechnologies Group, primarily based at the AgResearch Ltd Invermay Campus near Mosgiel, a 15 minute drive from the University. Invermay is the hub of animal genomic research in New Zealand and is actively building its reproduction capability by relocating staff from another AgResearch Ltd campus. A new purpose designed building at Invermay is scheduled for completion in 2008.

The Department of Anatomy and Structural Biology’s Context

The Department of Anatomy was founded in 1876 as part of the University of Otago Medical School. In 1995, restructuring saw the splitting of the Otago Medical School into two Schools within the Faculty of Medicine, namely the School of Medical Sciences, encompassing the departments previously known as the preclinical departments of the Otago Medical School, including Anatomy and Structural Biology, and the Dunedin School of Medicine encompassing the former clinical departments of the Medical School.

In 1992 the Department changed its name to include Structural Biology to reflect the changing nature of research within the Department and the close relationship between anatomy and structural biology.

The University is divided into large administrative units under the headings of Sciences, Health Sciences, Humanities and Commerce. The Health Sciences Division incorporates the Dunedin School of Medicine, Otago School of Medical Sciences, School of Physiotherapy, School of Dentistry, and School of Pharmacy in Dunedin, and the Christchurch and Wellington Schools of Medicine and Health Sciences. Although this Department is a member of the Division of Health Sciences, it is also closely allied with the Division of Sciences.

The Head of the Department of Anatomy and Structural Biology reports directly to the Dean of the School of Medical Sciences, who in turn is responsible to the Pro-Vice-Chancellor, Division of Health Sciences.

The Department of Anatomy and Structural Biology - Management and Staffing

The Department is led by a Head and Deputy Head of Department and is characterised by the presence of standing and ad hoc committees. The Department operates as an Academic Resource Responsibility Centre within the Otago School of Medical Sciences, giving the Department the flexibility to establish its own priorities and act accordingly. In 2006, the Department’s budget is based on the number of effective full-time equivalent students it attracts plus income earned from the Performance Based
Research Funding exercise. For the current year, the budget is of the order of $5.8 million (excluding research funding).

The current staff profile of the Department of Anatomy and Structural Biology is:

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<tr>
<th>Academic Staff</th>
<th>General Staff</th>
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<tbody>
<tr>
<td>4 Professors</td>
<td>3 Technical Managers</td>
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<tr>
<td>2 Associate Professors</td>
<td>6 Administrative Staff</td>
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<tr>
<td>12 Senior Lecturers</td>
<td>1 Departmental Secretary</td>
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<tr>
<td>4 Lecturers</td>
<td>4 IT Staff</td>
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<tr>
<td>12 Research/Postdoctoral Fellows</td>
<td>20 Departmental Technical Staff</td>
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<tr>
<td>1 Assistant Lecturer</td>
<td>9 Research Technicians/Assistants</td>
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<td>17 Assistant Research Fellows</td>
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<td>2 Professional Practice Fellows</td>
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<td>7 Honorary Staff</td>
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The Department of Anatomy and Structural Biology - Teaching

The Department has teaching responsibilities in the Divisions of Health Sciences, and Sciences. In the Division of Health Sciences, it contributes to the teaching of medical, dental, physiotherapy, medical laboratory science, and pharmacy students, covering topics of gross anatomy, histology, embryology, and neuroanatomy. It also contributes modules in 100-level papers in cell biology and human biology. In the Division of Sciences, the Department offers a BSc degree in Anatomy and Structural Biology, papers in Biological Anthropology (in conjunction with the Department of Anthropology) and teaches physical education students. Science papers taught by the Department include human biology (cells and systems), neurobiology, reproductive and developmental biology, and an introduction to biological anthropology, at 200-level; and functional anatomy, cell biology, neurobiology, reproductive biology, developmental biology, the biological anthropology of the human skeleton and anatomical research principles at 300-level. Papers are also taught at BSc Honours level, with supervision for medical students undertaking Bachelor of Medical Science (Honours) degrees. Postgraduate courses (Postgraduate Diploma in Science, Master of Science and Doctor of Philosophy) are available. The Department is involved in the teaching of an interdepartmental BSc (Honours) in Neuroscience and a Bachelor in Biomedical Sciences. Currently there are 81 students working on either 400-level papers or theses, including 30 PhD students in the Department.

The Department of Anatomy and Structural Biology - Research

The main research interests of the Department's staff lie in biological anthropology, clinical and functional anatomy, reproductive and developmental biology and neuroscience. A considerable amount of interchange and collaboration occurs between research staff. The Department has a Research Committee that has, as one of its major aims, the enhancement of the research culture in the Department. The Committee has input into many issues which impact on research, including the provision of appropriate research infrastructure and space for research laboratories, the provision of support and mentoring for research workers, and the support of academic staff applying for internal and external research funding.

For the past two years, research funding has been secured of the order of $4 million per annum. All members of the academic staff hold current research grants. Departmental staff publish in a wide range of academic journals, with up to 50 papers published in peer-reviewed journals per annum over recent years.

Staff of the Department are involved in a considerable amount of collaborative research. There exist strong links with staff of different departments in the Otago School of Medical Sciences and the
University and with special centres such as AgResearch Ltd, Canesis Network Ltd and the Neuroscience Research Centre. A significant number of international collaborative links also exist.

All academic staff are encouraged to make use of the University’s provisions for conference and study leave. The majority of academic staff receive support for conference travel from a fund administered by the Dean of the School of Medical Sciences. In the five year period 2002-2005, the Department received an average of approximately $50,000 per annum from the School’s Travel Fund.

**Research Interests of Academic Staff**

**Dr GM Anderson (Lecturer)**
The neuroendocrine regulation of fertility by nutritional factors (leptin) and novel neuropeptides (gonadotrophin inhibitory hormone, GnIH). Dr Anderson also collaborates with the Grattan research group, particularly on experiments investigating prolactin regulation and the central actions of leptin and prolactin. The Anderson Neuroendocrinology Research Group forms one of the laboratories that make up University of Otago’s Centre for Neuroendocrinology.

**Dr HR Buckley (Lecturer)**
Prehistoric human skeletal population studies focused primarily on the investigation of the role of infectious disease in the health of human populations in the Pacific Islands.

**Dr SJ Bunn (Senior Lecturer)**
Biochemical, pharmacological and anatomical investigations of receptor-signalling and intracellular signal transduction in neuronal and neuroendocrine cells.

**Dr A Clarkson (Postdoctoral Fellow)**
Working with A/P McLennan to ascertain whether Müllerian Inhibitory Substance (MIS) can provide significant protection to motoneurons in motoneuron diseases.

**Dr Koreen Clements (Postdoctoral Fellow)**
Working with Dr Reynolds investigating how sensory information might be involved in synaptic strengthening and the learning of new skills.

**Mr KJ Dennison (Research Fellow)**
Biological anthropology and functional anatomy of the early people of the Pacific; Egyptian mummy studies; early Polynesian dentition and jaw structure studies.

**Dr SNGPJ Dias (Senior Lecturer)**
Development and evaluation of properties of a new biocompatible, biodegradable bone graft substitute/bone screw from a biological material; miniplatting system for internal fixation of bone fractures; investigation of the detailed anatomy of structures in the head and neck region; osteological studies, particularly skeletal responses to pathological and environmental factors in contemporary and archaeological skeletal material.

**Dr MJ Duxson (Senior Lecturer)**
Developmental biology of skeletal muscles; plasticity and development of the neuromuscular junction. Cellular origins of peripheral neuropathy.

**Associate Professor DR Grattan**
The neuroendocrine control of pituitary and gonadal hormones, focussing on the mechanisms by which hormones feedback to regulate hypothalamic neuronal activity. The neuroendocrine adaptations of the maternal brain, including appetite and body weight regulation and maternal behaviour.
Professor DPL Green
Gene expression profiling of human follicle cells; molecular biology of mouse early embryonic (pre-implantation) development; computational approaches to mammalian embryonic and stem cell gene expression; development of DNA-based diagnostics for human infertility.

Dr PR Hurst (Senior Lecturer)
Human ovary and uterine remodelling. Possum reproduction. Microscopy and stereology.

Professor DG Jones
(i) Bioethical issues relating to the human body and human tissues; human embryo; stem cell technology; reproductive and therapeutic cloning. (ii) Educational issues in anatomy. (iii) Neurobiology - synaptic and neural plasticity; social and ethical debate.

Dr GT Jones (Contracted Lecturer)
Early structural and molecular features of cardiovascular diseases. Specifically, defects in the elastic layers of arteries which appear to act as the nidus upon which atherosclerotic plaques develop.

Dr K Koishi (Senior Research Fellow)
Analysis of gene expression in the neuromuscular system with a specific emphasis on the genes encoding for growth factors and their receptors.

Dr IC Kokay (Research Fellow)
Investigating the role the hormone prolactin plays in the interactions between the brain and hormonal systems during pregnancy and lactation.

Dr B Leitch (Senior Lecturer)
Cellular neuroscience; the structural and functional development of neurons and their synapses; and the mechanisms by which chemical messengers modulate the excitable properties of neurons and regulate the strength of synaptic transmission.

Dr JLM Leunissen (Research Fellow)
Immunocytochemistry, cryoultramicrotomy, antibody-immunogold labelling techniques and ultramicrotomy of frozen samples for transmission electron microscopy.

Dr P Liu (Lecturer)
The neurological basis of age-related learning and memory impairments.

Associate Professor IS McLennan
Degenerative conditions of the brain, particularly amyotrophic lateral sclerosis and sarcopenia. The role of cell-to-cell communication in the maintenance of mature neurons.

Dr BJ McLeod (Honorary Fellow)
External co-supervisor for a PhD student working on the structure and function of the reproductive tract in the female brush-tail possum.

Dr SR Mercer (Honorary Associate Professor)
Clinical anatomy of the spine with an emphasis on examining the clinical anatomy underlying common musculoskeletal diagnostic and treatment techniques.

Dr R Miller (Honorary Fellow)
Theory of function of the normal mammalian forebrain; editing book series “Conceptual Advances in Brain Research”; theory of disturbance of brain function in schizophrenia; public education about mental illness; philosophical significance of modern biology.
Dr RMA Napper (Senior Lecturer)
Models of Fetal Alcohol Syndrome are used to study the effects of alcohol exposure during brain development on the structure of the brain and on brain plasticity.

Professor HD Nicholson
The paracrine control of reproductive processes in the male, in particular the regulation of spermatogenesis, sperm transport and prostate growth and the effects of dietary oestrogens. Clinical anatomy, especially issues relevant to surgical practice.

Dr DE Oorschot (Senior Lecturer)
Neuroprotective strategies following immature hypoxic-ischemic brain injury. Circuitry and function of the basal ganglia, in collaboration with Associate Professor JR Wickens and Dr JNJ Reynolds. Application of stereological methods to test hypotheses about the nervous system.

Dr M Oswald (Postdoctoral Fellow)
Mechanisms that lead to change in brain cell activity during learning; in conjunction with Dr John Reynolds.

Dr PV Peplow (Senior Lecturer)
Development and testing of a new biocompatible material for use in tissue repair and regeneration.

Dr JNJ Reynolds (Senior Lecturer)
Memory mechanisms in the mammalian basal ganglia, using intracellular recording techniques. Mechanisms of activation of dopamine cells and the effects of evoked dopamine on behaviour; the role of dopamine in synaptic transmission in the striatum.

Dr M Ryan (Research Fellow)
Molecular aspects of brain function in health and disease, focusing on the effects on learning and memory.

Dr T Shindou (Postdoctoral Research Fellow)
Cellular mechanisms underlying a novel adenosine-based treatment for Parkinson’s disease.

Dr J-A Stanton (Research Fellow)
Trained as a molecular biologist specialising in analysis of gene expression and subtractive hybridisation techniques, and working in conjunction with Associate Professor Green, current research interests focus on gene expression in the oocyte and preimplantation embryo, as well as database structures that describe complex biological systems.

Dr NG Tayles (Senior Lecturer)
Biological anthropology of prehistoric peoples from Southeast Asia and the Pacific, with particular emphasis on health and the interaction of human biology and environment.

Dr A Tups (Postdoctoral Fellow)
Neural pathways of GnRH activity in response to leptin; the pathways underlying leptin resistance and the regulation of appetite during pregnancy.

Professor JR Wickens
Cellular mechanisms of reward-related learning. The relation between the anatomical structure of neural circuits and the information processing operations of the brain. Dopamine function in an animal model for attention-deficit hyperactivity disorder.

Dr JM Williams (Lecturer)
Understanding how the brain changes, at the molecular level, when memories are formed.

Mrs S Woodley (Assistant Lecturer)
Validity and diagnosis of lateral hip pain.

Dr M Zhang (Senior Lecturer)
Development of skeletal muscle, including the diversity of fibres under physiological and pathological conditions, and the origin of satellite cells in relation to muscle fibre postnatal growth and regeneration. Clinical anatomy, specifically concerning vascular structures and deep fasciae.

Publications
For details of the Department’s publications, please see our website (www.otago.ac.nz/anatomy).

The Department of Anatomy and Structural Biology - Physical Resources
The Department occupies the top three floors of the Lindo Ferguson Building with additional space on the first floor and in the basement, and in the Scott, Hercus, and Wellcome Buildings. There is a new, recently redeveloped, dissecting room and associated facilities, an extensive museum/work area for students, a large teaching laboratory for histology, a 40-seat advanced science teaching laboratory, and a large lecture theatre (shared with other departments), as well as a seminar room and staff offices/research laboratories. Closed circuit television is used in the teaching laboratories, and the lecture theatre is equipped with state-of-the-art computer/projection facilities.

Facilities available in the Department include research light microscopy facilities with associated image capture computers; a laser capture micro-dissection system; research laboratories equipped for immunohistochemical investigations; a new clinical anatomy research area complete with X-ray, ultrasonohand surgical-operative microscope; a stereology laboratory housing an optical disector microscope; a well-equipped tissue culture laboratory for neurobiological studies, equipped with a Zeiss IM 35 inverted microscope; live cell visualisation; intracellular recording from central nervous system neurons; and facilities for computer simulation of brain function.

The Otago Centre for Electron Microscopy is managed and administered by the Department. This Centre is well equipped for ultrastructural studies. It has a Philips CM 100 transmission electron microscope (TEM) and a Philips 410LS TEM. The Philips CM100 is fitted with a Megaview digital camera system. The Centre also has a JEOL 6700F field emission scanning electron microscope (FESEM) and a Cambridge S360 conventional SEM. The JEOL 6700F is fitted with a Gatan Alto 2500 high resolution cryostage (for imaging hydrated samples) and is capable of energy dispersive analysis.

Preparation equipment in the Centre includes: a Leica KF 80 cryofixation system, a Leica AFS cryosubstitution unit, 1 Leica UCT ultramicrotome fitted with a FCS cryosectioning attachment, 3 UltraCut E ultramicrotomes, a Lynx EM automatic tissue processor, EMS 820 laboratory microwave oven, LKB automatic grid stainer, Wescor osmometer, Balzers critical point dryer, Polaron sputter coater with magnetron head, Edwards E306A evaporative coater, and a Balzers BAF 300 freeze fracture device. The Centre also has facilities for image manipulation.

The Department also administers and supports the Otago Centre for Confocal Microscopy. The Centre has two Zeiss LSM 510 confocal microscopes (one with upright Axioplan 2 configured for structural biology and the other with inverted Axiovert 200 for dynamic investigations) and an older Bio-Rad MRC600, with facilities for image manipulation. The expanded Centre is managed jointly by the Departments of Anatomy and Structural Biology, and Physiology.

The Department, until recently, contributed to a Histology Services Unit which is based on the ground floor of the Hercus Building. The management structure of the Unit is currently undergoing change and may result in a Unit managed and administered by this Department.

The Department's anthropological collection of human skeletal material is the largest in New Zealand and is held in two sections. One comprises mainly North Island Maori and Moriori remains and the
other consists of excavated specimens from archaeological sites in Papua New Guinea, and the Solomon Islands. The collection also includes casts of material excavated in Fiji.

The Department has a well-equipped plastination laboratory. The Department undertakes a number of plastination techniques including the silicone technique for plastinated prosections, E12 for transparent body slices, and P35 for thin brain slices. The work in plastination is recognised as world class, and is used to provide material for both teaching and research endeavours.

The Department administers a body bequest programme which provides resources for teaching and research. We employ expert prosectors to prepare specimens, many of which are plastinated. Plastinated and wet prosections, sectional anatomy material and whole body dissection are used to teach gross anatomy. Our functional/gross anatomy teaching is supported by an extensive computer image resource.

The Department's Anatomy Museum contains over 2000 catalogued specimens and models, and a collection of approximately 2000 radiographs. Many of the specimens and models have been prepared in the Department. The collection is partly historic, in that it includes at least 130 models and wet preparations that date back at least 100 years. It is also kept up-to-date with the regular addition of new specimens and models.

The Department makes considerable use of digital imaging techniques for capturing, processing and reconstructing anatomical material. The computers in the Department are predominantly Apple Macintosh, with a number of Windows computers primarily connected to laboratory equipment and microscopes. All staff and postgraduate students are provided with access to a computer connected to the internet. The Department provides many IT facilities to its staff and postgraduate students, including digital still and video cameras, scanners and printers. Services also provided include web, e-mail, file, and backup servers, as well as a central digital resource database. The use of IT in teaching is strongly encouraged. All aspects of Department computing are supported by the IT Team - consisting of an IT Manager/Computer-Assisted Learning Developer, an IT Support Technician, a Database and Web Developer, and an IT Assistant.

**Duties and Responsibilities**

Applicants will be committed to excellence in research and have a proven outstanding research ability. They will be world-leaders in reproduction or genomics with a broad understanding of both fields.

Candidates will have an ongoing and active research program that attracts external funding. The successful candidate will also be expected to unify and lead the various research groups within the Centre. As the strengths of the Centre include large animal research and the translation of animal work into the human, expertise in one or both of these areas would be advantageous.

The successful candidate will be required to actively contribute to postgraduate higher degree programs and thus a record of successful supervision of postgraduate research students is crucial.

It is envisaged that the successful applicant will become the Director of the Centre for Reproduction and Genomics.

**Date of Appointment**

It is anticipated that the successful applicant will commence duties by 1 February 2008.

**Salary**
The salary range for a Professor is $116,251 to $141,944 per annum and the salary range for a medically qualified Professor is $143,817 to $160,051 per annum. Appointment will be made at an appropriate step in these ranges depending on qualifications and experience.

**Contact Person**

Specific enquiries may be directed to Professor Helen D. Nicholson, Head, Department of Anatomy and Structural Biology, Tel 03 479 7364, Fax 03 479 7254, Email helen.nicholson@stonebow.otago.ac.nz

The Department's homepage address is [http://www.otago.ac.nz/Anatomy](http://www.otago.ac.nz/Anatomy)

AgResearch Ltd's homepage address is [http://www.agresearch.co.nz](http://www.agresearch.co.nz)

**Offer of the Position**

Should the University wish to offer you the position, a formal, written letter of offer will follow any verbal discussions that might be held with you. It is recommended that you do not resign from your current employment until you have received our written offer. The contents of this formal letter of offer and its attachments will constitute the entire agreement between the employee and the employer, and will supersede all previous representations, negotiations, commitments and communications, either written or oral between the parties. Any agreements will only be binding on the employer where they have been formally offered by the Human Resources Division and accepted by the employee.

**Applications**

The application procedure is set out in the accompanying General Information Statement. Applications quoting reference number A06/190 close with the Recruitment Consultant, Human Resources Division on Friday 23 February 2007.

University of Otago  
PO Box 56  
Dunedin  
NEW ZEALAND

Tel  64 3 479 8269  
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Email  job.applications@otago.ac.nz
While this position is open to applications from outside of New Zealand, unless otherwise stated relocation assistance will not be available should the successful applicant currently reside elsewhere in the world.