PHYSIOLOGY CANADA

The Newsletter of the...

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CANADIAN PHYSIOLOGICAL SOCIETY

SOCIÉTÉ CANADIENNE PHYSIOLOGIE

In This Issue...

Welcome from the CPS President Doug Jones

Welcome to the second "electronic" version of Physiology Canada. We are pleased to have received some positive feedback on the first issue and its varied content.

Included in this issue are a number of items of interest to the membership. Below I have included a brief description to lead off our second electronic issue.

Hold the Date for the 2011 CPS Winter Meeting, at Hotel Mount Gabriel, Sainte-Adèle, Quebec, February 10th to 12th, 2011. This will be a collaborative effort between the CPS teaming with the Canadian Action and Perception Network (CAPNET) to jointly host "Physiological Mechanisms of Perception, Cognition and Action". There are additional details in this issue. See you there!

The CPS has begun a new involvement with the Partnership Group for Science and Engineering (PAGSE), an organization of the Academy of Sciences of the Royal Society of Canada and 25 other National Societies in collaboration with 8 Corporations, Industry Canada, Media and other organizations including the NSERC and CIHR to inform members of Parliament and their support workers regarding emerging issues. As an example of their role, their May meeting included a presentation and discussion with Dr. Eliot Phillipson, President, Canada Foundation for Innovation, and their June meeting included a presentation and discussion with Dr. Suzanne Fortier, President, Natural Sciences and Engineering Research Council of Canada. The group has recessed for the summer, but CPS will be joining them for their September 2010 meeting. There is more information about this organization and their objectives on their website at ***http://www.pagse.org/en/main.htm***. We will provide the first update to the CPS membership on its role in PAGSE in the next newsletter.

Also included in this issue to keep you, the membership, informed are: announcements of deadlines for award nominations, job postings, and funding opportunities.

We trust that you find this information helpful. The Executive is open to suggestions to meet the needs of the membership. If there is information you wish to make available to the membership, please contact the Secretary, ***Dr. Melanie Woodin***.

Feel free to also provide copies of this Newsletter to members of your department, particularly to those who are not yet members to encourage them to join your Society.

I trust you have already had, or have some plans for a refreshing break this summer.

Doug Jones

CPS / CAPNET Joint Winter Meeting

Physiological mechanisms of perception, cognition and action
Hotel Mount Gabriel, Sainte-Adèle, Quebec
February 10 to 12, 2011

CPS is trying a new "joint" sponsorship format that focuses the winter meeting on a particular aspect of the physiological sciences. For this year, CPS plans to leverage the traditionally strong neuroscience participation of past meetings in Quebec by teaming up with CAPNET to jointly host Physiological mechanisms of perception, cognition and action. We hope that the success of this years meeting will spur other joint CPS meetings that highlight a variety of topics in physiology.

This conference will be of interest to researchers seeking to understand the physiological basis of how we perceive, think and move about the world at all levels of investigation (including molecular, cellular, systems, behavioral and computational). The format of this years meeting will be similar to past CPS meetings with a single oral presentation track that allows students and postdocs an opportunity to present their research.

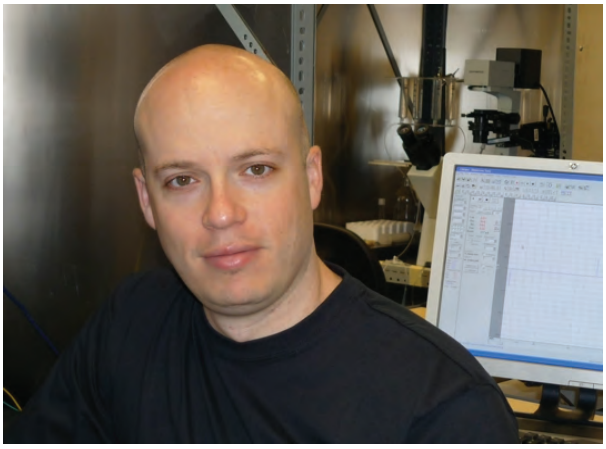
The official call for submissions will open in early fall 2010. We hope to see you there.

About CAPNET: *The Canadian Action and Perception Network* is a neuroscience research consortium that celebrates Canada's international leadership and close-knit community in the neuroscience of action and perception.

The mandate of CAPNET is to promote major collaborative projects, both between the core member universities and with their academic, clinical, and industrial partners.

Program Committee: Erik Cook *(McGill University)*, Doug Crawford *(York University)*, Randy Flanagan *(Queen's University)*, Paul Cisek *(University de Montreal)*, Jody Culham *(University of Western Ontario)*.

Who Am I? Where Am I? An update of physiologists and their research across Canada.



Dr. Robert Rose is an Assistant Professor in the Department of Physiology and Biophysics at Dalhousie University. He obtained his undergraduate and PhD training at the University of Calgary and then completed a postdoctoral fellowship at the University of Toronto. His primary research interests are in cardiac electrophysiology and the links between ion channel dysfunction and heart disease.

Current research in Dr. Rose's laboratory focuses on the role of a group of peptide hormones, called natriuretic peptides, in regulating ion channel function in the heart. Natriuretic peptides are naturally produced in the human body where they play a pivotal protective role in cardiac diseases such as hypertrophy and heart failure. Work in Dr. Rose's laboratory investigates the effects of these peptides on heart rate (a key determinant of cardiovascular function in health and disease) and electrical conduction in vivo in order to understand the effects of natriuretic peptides on arrhythmogenesis. Furthermore, this research group studies natriuretic peptide effects on ion channel function in isolated cardiomyocytes from different regions of the heart using the patch-clamp technique and molecular biology methods. Dr. Rose's prior work has identified unique effects of natriuretic peptides on ion channels in the sinoatrial node (the pacemaker of the heart) compared to the working myocardium. Ongoing work is aimed at determining the role(s) of different classes of natriuretic peptide receptors and their downstream signaling molecules in mediating these effects in normal and diseased hearts. The goal of this work is to develop new methods for treating cardiovascular disease using natriuretic peptides.

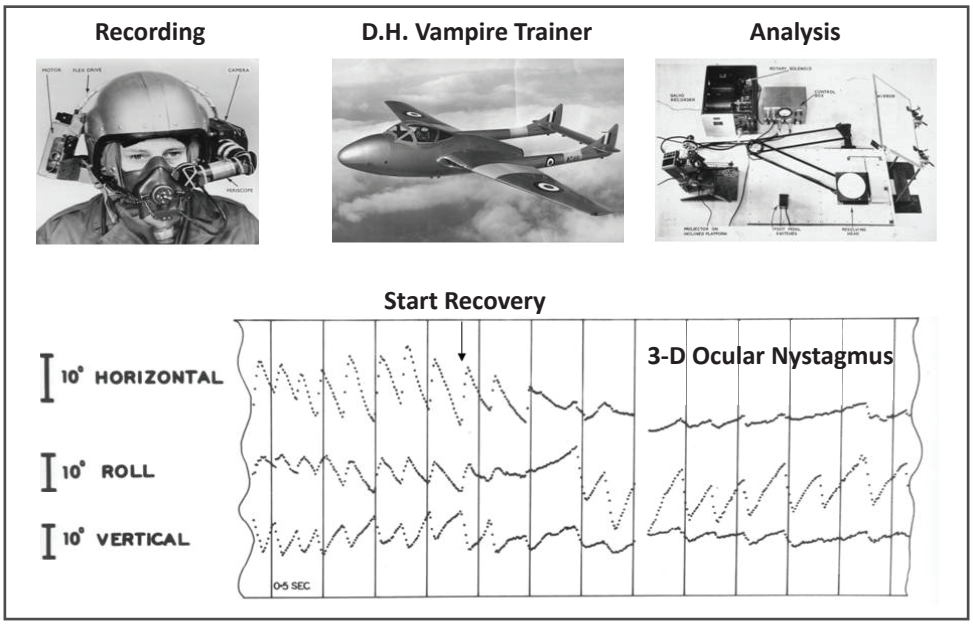
Dr. Rose's research program is supported by The Canadian Institutes of Health Research, The Heart and Stroke Foundation of Nova Scotia, The Dalhousie Medical Research Foundation, The Canada Foundation for Innovation and The Department of Physiology of Biophysics. Dr. Rose also holds a CIHR New Investigator Award.

Historical Canadian Physiological Perspectives

Six Decades of Messing about with Problems of Spatial (dis-) Orientation By Dr. Geoffrey Melvill-Jones

When I graduated with a Cambridge Medical degree in 1948 the aim was to become a surgeon. But that was not to be. After a few years of working as a hospital House Surgeon the post war military draft whisked me into the British Royal Air Force (RAF) with a posting to their physiology labs at the Institute of Aviation Medicine (IAM), Farnborough, UK. My first day there was memorable. A senior Experimental Flying Medical Officer invited me to fly with him in the lab's DeHavilland Mosquito, a high performance, twin engine fighter/bomber of WWII fame: And life was never the same again! I soon winkled my way into a full RAF flying training, eventually to become an experimental Flying Personnel Medical Officer (FPMO) myself. Thereafter an eventful research career unfolded in three phases, first at IAM Farnborough (1951-61)), then at McGill University (1961-1991) and finally at the University of Calgary (1991-present).

My first job at IAM was to investigate a current spate of flying disasters attributed to pilot spatial disorientation in the new generation of jet combat aircraft. As a starter I flew out to a number of active squadrons to find out at first hand where the problems lay. Among a surprising number of previously unidentified problems there was one which clearly stemmed from a physiological origin; adverse vestibular stimulation in the aerodynamic spin. Not only were there wildly disorienting vestibular sensations occurring throughout the spin, but also reports of blurred vision at the crucial moment of spin recovery suggested the intrusion of involuntary post-rotational vestibular nystagmus. To study the matter we set about the "obviously impossible" task of designing and implementing a novel 3-D optical eye movement recording system (Fig. 1), to be worn by the pilot and synchronized with a 3-D gyro system recording aircraft rotation. With the subject blindfolded and a co-pilot flying the aircraft this enabled us to estimate vestibular response in terms of the dark-tested 3-D vestibulo-ocular reflex (VOR). With the pilot's eyes open and head fixed to the aircraft we could estimate visual illusions of rotation of the earth's horizon by summing eye rotation re head with aircraft rotation re space. Unexpectedly, ocular nystagmus in the then little understood torsional, or roll, plane turned out to be one of the chief "bogies". Linked ground-lab experiments revealed that this was due to selective lack of visual suppression of the adverse VOR in this plane. Shortly after the critical moment of spin recovery (Fig 1, vertical arrow) we estimated up to 100 deg/sec of rotational retinal image slip in this plane, thus adding disorienting visual illusions to the more obvious vestibular ones[1].



▲ **Figure 1: The system for recording and analysis of 3-D ocular nystagmus during the spin**

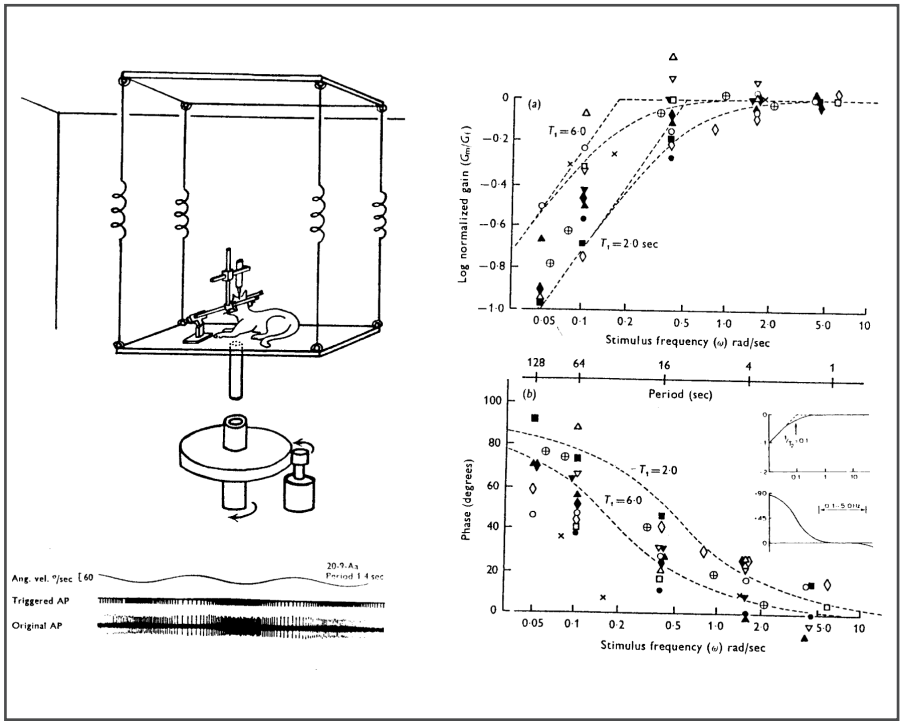
The practical issue of spin recovery was solved by devising a novel, fail safe, sequence of aircraft control maneuvers which could be implemented by rote. But for my part, curiosity led on to a more fundamental study of the physiological response of the offending sensory end organ, the bilateral system of Semicircular Canals. Collaborating with the lab's "tame" physicist (Dr. Kenneth Spells) we set about unraveling its hydrodynamic response to rotational stimulation. Contrary to intuition, it turns out that, largely due to the canal's very small size, the basic mechanical response is that of an integrating angular accelerometer, yielding a sensory signal keyed to "instantaneous" head angular velocity relative to space. Later on (at McGill) we showed that, due to cupular elasticity this conclusion only holds within a specific frequency range of rotational movement. But at least in the human, this range proved to match that of natural head movement. Ergo: although driven by head angular acceleration, during natural movement the human inertial canal measuring system does indeed transduce a virtually instantaneous (~3 msec response time) sensory message of 3-D head angular velocity relative to inertial space.

Well then, what about all the other animal species of different size, and hence presumably different frequency bands of natural head movement? Would the same be true, and if so what "design" constraints of the canal system would have to be adjusted to achieve dynamical similarity of response between animals of different size? We began with a theoretical allometric approach, using the method of dimensional analysis and the assumption that stress (i.e. force/cross sectional area) in the neck due to head weight is independent of

animal size. Then, for similarity of the canal's dynamic response across animals of different size, it transpired that the radius of canal curvature (R) and the square of the internal radius of the internal lumen (r^2) should vary as the same power function (n) of body mass (M). We arrived at a theoretical value for this power function of n = 0.083, implying vastly less than proportionate changes of canal dimensions as a function of animal size..

The next step was to compare this value with that derived from actual measurement of relevant canal dimensions in animals of different size. For this we turned to a unique collection of decalcified membranous vestibular labyrinths, housed at the Royal College of Surgeons in London and prepared in the 19th century by a remote Scottish general practitioner, Dr. A.A. Gray. Alas, most of his specimens were destroyed by wartime bombing. But fortunately this remarkable man had prepared properly scaled stereoscopic pairs of photographs from several hundred different animal species and published the results as two beautiful volumes in 1908 & 1909. To test the above hypothesis we plotted measured values of R and r^2 against animal mass for a wide range of species, using log-log scales to estimate the slopes of their respective curves and hence the respective values of the power function "n". Amazingly these values emerged as n = 0.08 for R and n = 0.09 for r^2. This close analogy between the above theoretically predicted value and these measured observations proved one of the highlights in my career. Apparently evolution has favored angular velocity transduction in the canal by appropriate, but very small, variations of specific canal dimensions as a function of animal size[2].

1n 1960 I received a surprise invitation from the then Defense Research Board of Canada to set up and direct a new Aerospace Medical Research Unit in the Department of Physiology at McGill University. After a good deal of vacillation we took the plunge and emigrated with a small family, to take up an Associate Professorship in the department. The burning question was, Where to start? After several preliminary studies stemming directly from work at IAM, I decided to learn the skills of unit neural recording in the decerebrate cat's brainstem, with the aim of testing the following hypothesis: If evolution had successfully produced an integrating accelerometer in the canal sensory end organ, surely it would have retained that characteristic through the afferent neural pathway into the brain. For this work I collaborated with John Milsum, the then new Abitibi Professor of Systems Engineering at McGill.



▲ **Figure 2: Frequency response analysis of canal-dependent neural units in vestibular nuclei**

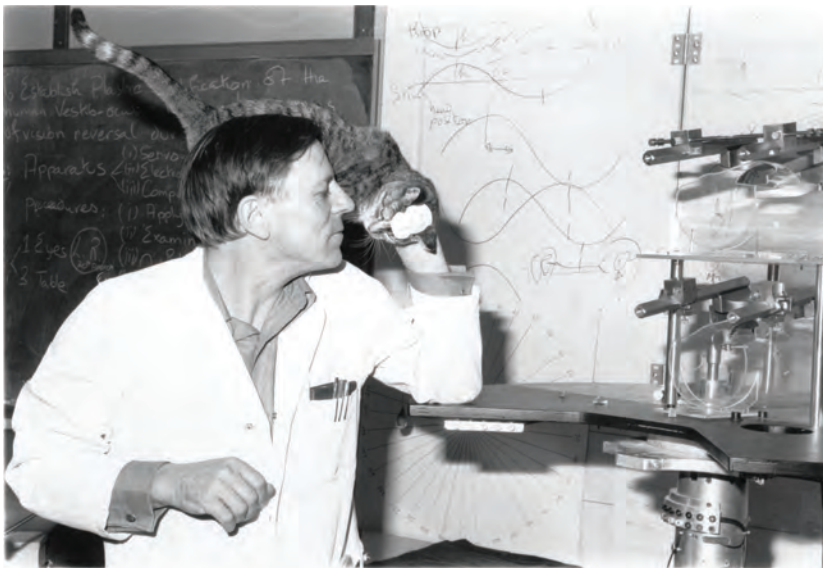
I knew little about Laplace transforms, Bode plots, transfer functions and frequency response analysis: Milsum was completely new to neuroscience. But we had a great time learning enough of each others' trades to test the above hypothesis by estimating the informational content of canal-dependent neural units in the decerebrate cat's vestibular nuclei. Dynamic movement stimulation of the whole animal was provided by an evolving succession of home-made moving platforms (e.g. left side of Fig. 2). Wise councilors gravely shook their heads at the challenge of holding a single cell at the tip of a microelectrode during the extended range of planned movement profiles. But surprisingly this did not prove a serious problem. The outcome was gratifying. By and large the responses fitted well our Bode plots of the canal end organ's transfer function (right side of Fig. 2)[3]. Bearing in mind the multiple mechano-neural and neuro-neural transforms along the vestibular afferent pathway we felt that this finding strongly supported the view that the peripheral canal's velocity transducing characteristic did not evolve by accident (reviewed in[4]).

Numerous additional data emerged from further experiments along this line. But in the interest of space we next pass on to another vestibular related study of *behaviorally induced adaptive plasticity in the VOR*. Back in the early 1950s, while still at IAM we found that this reflex successfully stabilized vision at frequencies of head rotational oscillation far too high for "on-line" visual feedback control. How then could the open ended VOR maintain the stabilizing response of unity gain at these high frequencies over the long term? I remember well the "Ah Ha" moment of realizing that these observations implied some form of behaviorally controlled central adaptive mechanism for appropriate plastic adjustment of internal neural parameters (e.g. synaptic efficacy) within the reflex arc. To address this inference we

(with grad. students Aaron Gonshor and Peter Davies) took the proverbial bull by the horns and "asked" the reflex to reverse itself by wearing image reversing prism spectacles during natural head movement in the light! It transpired that after a mere 16 minutes of prism reversed vision there was up to 25% attenuation of gain in the dark tested VOR. Successively longer exposures produced progressively greater gain attenuation.

To cut a long story short, we eventually exposed one subject to 4 weeks of *continuous* vision reversal during waking hours, followed by another 4 weeks of VOR recovery with normal vision. The results were dramatic. First there was a marked daily reduction of dark tested VOR gain, notably accompanied by a progressive advancement of response phase relative to that of the sinusoidal testing stimulus. By end of the first week, response gain had fallen from 1.0 to ~ 0.2, with a phase advancement of ~ 100º. Over the following 2 weeks there was partial recovery of gain, but with phase plateauing out at around 120º (i.e. near reflex reversal). On return to normal vision it took a whole month for the VOR to return to normal. In later studies with magnifying and minifying paradigms instead of reversing optics we (with grad. student Jacob Bloomberg) showed that adaptive changes in the reflex were accompanied by corresponding changes in vestibular perception.. Evidently we had stumbled on an early example of behavioral access to central neural plastic processes, with the particular feature that the changes induced were adaptive in the sense that they always tended towards restoration of retinal image stabilization during head movement[5].

In succeeding years numerous "fall-out" experiments in our labs confirmed and extended these results, including a two year study in alert behaving cats (Fig. 3). Perhaps more significant was the stimulation of a wide range of international neurophysiological studies searching for responsible plastic neural mechanisms in the CNS, a search which still continues today, some 35 years later!



▲ **Figure 3: The M-J LadyCat Connection: Vestibular adaptation in cats**

In 1991 I retired from McGill and moved out west to join our 4 offspring and their young families after my wife, Jenny, had sadly passed away. Learning of this, Professor "Bob" Lee invited me to join his Department of Clinical Neurosciences at the University of Calgary as an adjunct research professor. Here we moved from mainly sensory matters to the motor control of spatial orientation. We asked, how does the human bipedal locomotor system steer us where we want to go? The literature is replete with kinematic studies of linear locomotor control, but it proved surprisingly sparse concerning the necessary introduction of complementary rotational limb movement when entering a curve. We showed that during swing, to follow a curve of given radius the ratio of stride length (L) to stride angle (θ) should ideally equal the curve's radius (R), such that $L/\theta = R$ (θ expressed in radians). Furthermore, during the stance or driving phase of locomotion, the radius of curvature of the continuously moving trunk's trajectory relative to space is defined numerically by the ratio of trunk linear velocity (Vt) to its angular velocity (Ωt), such that $Vt/\Omega t = Rt$. Hence the rotational control of limb movement proves to be an essential component in both phases of the locomotor cycle. Experimental studies conducted at the University of Calgary in collaboration with Professor Fay Horak's laboratory at the Oregon Health Sciences University, recently demonstrated a remarkably tight confirmation of these hypotheses. As an outcome we concluded that each of the parameters identified above (L, θ, Vt, Ωt, L/θ, Vt/Ωt) must be capable of expression within the central neural network of locomotor control.

And here we must end this brief vignette of one theme in the six decades of a life in research. But before closing I have a secret message to disclose: there's just nothing to match the thrills, spills and sheer Joy of simply "messing about in labs".

References: (**1**) *Aerospace Med. 36, 976, 1965.* (**2**) *Proc. Roy. Soc. B. 157, 403, 1963.* (**3**) *J. Physiol (Lond). 219,191, 1971.* (**4**) *Ch. 3. Mammalian Vestibular Physiology, Plenum Press, 1979.* (**5**) *J.Physiol (Lond). 265,381,1976.*

On Bones For Beginners

An update from Dr. Stephen Sims recipient of the 2009 Macintosh Senior Visiting Professorship of the Canadian Physiological Society. Dr. Sims is a Professor in the Department of Physiology and Pharmacology at the University of Western Ontario.

The structure of bone has long held attention of anatomists, with a seminal work "On Bones for Beginners" *(De ossibus ad tirones)* composed in A.D. 180 by Galen. The Italian anatomist Niccolò Massa revealed his fascination with bones when he wrote in 1559:

"Thus if any one is ignorant of the structure of the bones it follows necessarily that he will be ignorant of very many other things along with them."

Understanding the physiology of bone followed, though lagging by perhaps half a century. Complex pathways – involving hormones and cytokines, the immune system and the central nervous system – are now known to maintain the balance of bone mass, regulating osteoblasts (the cells responsible for bone formation) and osteoclasts (cells with the unique ability to resorb mineralized tissues). My fascination has been studies into the regulation of ion channels and calcium in osteoclasts. That was the topic of my visit to the University of British Columbia in May 2010 as the MacIntosh Visiting Professorship, sponsored by UBC's Department of Cellular and Physiological Sciences.

The MacIntosh Senior Visiting Professorship is named in honour of Dr. F. C. (Hank) MacIntosh. It is awarded each year to a Canadian physiologist to promote collaboration and exchange between physiology departments and investigators at Canadian universities. During my visit to Vancouver, I met with students, trainees and faculty in Cellular and Physiological Sciences and with management of the Life Sciences Centre. I presented a seminar entitled "The role of ATP-gated ion channels in osteoclasts: regulation of bone resorption".

The background is that nucleotides, released from cells in response to mechanical stimulation or injury, serve as paracrine regulators of bone cell function. Extracellular nucleotides bind to multiple subtypes of P2 receptors on osteoblasts and osteoclasts. Both bone cell types express the P2X7 receptor, a subtype that encodes a ligand-gated ion channel that allows calcium entry into osteoclasts. The importance of this ion channel is apparent in mice with targeted disruption of the gene encoding this receptor. These mice exhibit reduced bone formation and excessive bone resorption. The resulting osteoporotic skeletal phenotype points to interesting roles for this receptor in the regulation of bone formation and resorption. Evidence is emerging that P2X7 ion channels also mediate the response of the skeleton to mechanical stimulation. I described recent studies from our laboratory detailing the expression of P2X7 receptors in bone, their associated signal transduction mechanisms and roles in regulating bone formation and resorption.

I am grateful to my hosts Drs. Christian Naus and Michael Underhill, to CIHR for ongoing operating support, and to the Canadian Physiological Society for this award. It provided an outstanding opportunity to interact with colleagues at a Physiology department elsewhere in Canada. I encourage more physiologists to seek nominations for this and other awards offered by the Canadian Physiological Society.

The attached photograph was taken in Kananaskis, with Mt. Kidd in the background, while attending a celebration for Sims' PhD supervisor, Dr. Edwin E. Daniel.

Background: Sims received his BSc in Zoology from the University of Western Ontario (1975) and a PhD in Medical Sciences from McMaster University (1982). Postdoctoral training was carried out in Physiology at The University of Massachusetts Medical School (Worcester), with a year as fellow in Cardiology at Brigham and Women's Hospital (Boston). He joined The University of Western Ontario in 1987, supported by a Medical Research Council Scholarship and Scientist award. His research focuses on ion channels and calcium in the muscle and bone cells. He is Professor in the Department of Physiology and Pharmacology at the Schulich School of Medicine & Dentistry and serves as Associate Vice-Provost in the School of Graduate and Postdoctoral Studies at The University of Western Ontario.

CPS Awards & Funding Opportunities

The CPS Promotional Fund

Up to $2,500.00 will be available twice a year to organizers of CPS events which stimulate physiology research, integration and/or teaching in Canada. For example, the funds can be used as seed money for the holding of a regional meeting, or promotion of the CPS at a national or international conference. There will be two competitions for funds, with application deadlines January 1st and July 1st. Multiple awards may be allocated at any competition. Any funds available from the January competition will be carried forward to the July 1st competition. Regular CPS members are eligible to apply. Send a 1-2 page proposal to the secretary of the CPS, describing the amount requested, date, location and nature of the planned event. Indicate how the requested funds will support the event and how the event will foster Canadian physiology. Events sponsored by the CPS Networking Fund will display a CPS banner to promote the Society and recognize its financial support. For detailed information please visit the ***CPS website***.

The J. A. F. Stevenson Professorship

Departmental Chairs and Research Directors are encouraged to nominate suitable applicants from other Universities and to facilitate the nomination of their young faculty by Chairs\ Directors from other Universities.

Each year the Canadian Physiological Society offers a Visiting Professorship to an outstanding young Canadian Physiologist. The purpose of the Visiting Professorship is to promote collaboration and exchange of information among investigators at Canadian Universities and to strengthen graduate training programs in physiological research.

The society will provide travel expenses for the visiting professor; living expenses will be the responsibility of the host University. Nominations for the award are normally made by a Departmental Chair or Research Director to enable a distinguished young investigator from another Canadian Institution to visit the host university and to give a lecture and/or graduate seminars. The host department or research group can be at any one of the sixteen in Canadian University Faculties of Medicine.

The candidate chosen to receive the Visiting Professorship will also present a lecture at the Annual meeting of the Society. Partial reimbursement of expenses to attend the Meeting of the Canadian Physiological Society will be the responsibility of the Canadian Physiological Society.

The selection of the Visiting Professor will be the responsibility of the Council of the Canadian Physiological Society and will be based on the scientific achievements of the candidate. Nominees for this award will be, or is expected to become, a member of the Canadian Physiological Society. The Visiting Professorship will not be awarded to candidates after the tenth year from receiving their first faculty position. In the event that more than one host University has requested the chosen recipient, the University which first placed the request will be given preference.

Nominations should be sent to the Secretary of the Society at the address given below. Each nomination should include a letter from the sponsor setting out the proposed itinerary and include the curriculum vitae of the candidate.

Nominations are now being received for the 2010 J.A.F. Stevenson Visiting Professorship. All information must be received by the Secretary before August 1st, 2010. Electronic versions of letters of nomination and supporting documents should be sent to: Melanie A. Woodin, Department of Cell & Systems Biology, University of Toronto, 25 Harbord Street, Toronto, Ontario, M5S 3G5, ***m.woodin@utoronto.ca***

The F. C. (Hank) McIntosh Senior Visiting Professor

Each year the Canadian Physiological Society offers a Senior Visiting Professorship to an outstanding senior Canadian Physiologist. This Senior Visiting Professorship is named in honour of Dr. F.C. (Hank) MacIntosh and is sponsored by the Corporate Patrons of the Canadian Physiological Society. The purpose of the Visiting Professorship is to promote collaboration and exchange between physiology departments and investigators at Canadian Universities. The visiting professor would be encouraged to visit two or more departments within the same geographical region of the country, so nominations can come from a single department or jointly from two or more. The visiting professor would be expected to spend several days at each institution giving seminars, meeting other investigators and holding sessions with the host department's graduate students.

The selection of the Senior Visiting Professor will be the responsibility of the Council of the Canadian Physiological Society and will be based on the scientific achievements of the candidate. Nominees for this award should be a member of the Canadian Physiological Society and have made a contribution to the Society. Normally, the Visiting Professorship will not be awarded to candidates before the tenth year from receiving their highest degree. Individuals who wish to be considered for the F.C. MacIntosh Visiting Professorship are encouraged to approach departments for sponsorship, but they cannot apply directly.

Nominations are now being received for the 2010 F.C. MacIntosh Senior Visiting Professorship. All information must be received by the Secretary before August 1st, 2010. Each nomination should include a letter from the sponsor/s setting out the proposed itinerary and include the curriculum vitae of the candidate. Letters of nomination and supporting documents should be sent to: Melanie A. Woodin, Department of Cell & Systems Biology, University of Toronto, 25 Harbord Street, Toronto, Ontario, M5S 3G5, ***m.woodin@utoronto.ca***

Upcoming Physiology Meetings

2010 APS Conference: Inflammation, Immunity and Cardiovascular Disease

Westminster, Colorado from August 25th- 28th 2010.
For detailed information please visit ***http://www.the-aps.org/meetings/aps/inflammation/***

6th International Muscle Symposium

Vienna, Austria from September 2nd- 4th 2010.
For detailed information please visit: ***http://www.musclesymposium2010.at***

Integrated Physiology of Exercise Meeting

Miami Beach, Florida from September 22nd- 25th 2010.
For detailed information please visit: ***http://www.acsm.org/AM/Template.cfm?Section=Roundtables_Specialty_Conf***

23rd Scientific Meeting of the International Society of Hypertension *"Global Cardiovascular Risk Reduction"*

Vancouver, Canada from September 26th- 30th 2010.
For detailed information please visit: ***http://www.vancouverhypertension2010.com***

Job Opportunities

PhD candidate and Post Doctoral Fellow Positions Available in Comparative Neurophysiology
Natural Anoxia-Tolerance and Anesthetic Mechanisms

Certain naturally anoxia tolerant animals, such as freshwater turtles, goldfish and pond snails, offer models of natural anoxia-tolerance and anesthetic mechanisms for investigation. In the Buck Lab we explore these cellular mechanisms in these animals using electrophysiological, fluorescent imaging, biochemical and molecular biological techniques. Candidates with electro-physiological training are especially encouraged to apply but all applicants will be considered. PhD positions begin in 2011 and candidates should apply through the Cell & Systems Biology website at: ***www.csb.utoronto.ca/graduate***. Postdoctoral fellows should apply directly to the Buck lab and the position will begin at a mutually agreeable time.

Email CV and letter of interest to: ***les.buck@utoronto.ca***

Prof L.T. Buck PhD
Professor and Associate Chair of Graduate Studies.
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25 Harbord St.
Toronto, Ontario M5S 3G5
Ph: (416) 978-3506

Tier 1 Canada Research Chair (CRC)
Department of Human Health and Nutritional Sciences (HHNS) "Nutrition, Metabolism and Health"

The University of Guelph invites applications for a Tier 1 Canada Research Chair (CRC) in the Department of Human Health and Nutritional Sciences (HHNS) in the area of "Nutrition, Metabolism and Health". The HHNS department is recognized for world class research in understanding how nutrition, exercise and metabolism influence health and disease. Particular areas of growth include the study of genetic polymorphisms, and how they impact both the handling of nutrients and the metabolic response to diet, exercise or other lifestyle factors. Recent hires in the fields of nutrigenomics, transcriptomics, and metabolomics reflect the strong intent of the HHNS department to become a recognized leader in these growing fields. The department is both concerned with the aspects of nutrition and exercise that lead to normal growth, development, and aging, as well as their roles in chronic disease development and treatment. The CRC position will compliment both College and University strategic plans in the areas of food, human health and wellness.

The CRC in “Nutrition, Metabolism and Health” will apply leading edge approaches in cellular, organismal and systems biology to unravel the biological complexity underlying the relationships between nutrition, exercise and health using animal models and/or human subjects. The candidate is expected to exploit knowledge obtained from the comprehensive study of gene, protein, and metabolite function, coupled with cellular and/or organismal function, to develop a research program with direct benefits to human health.

Job Opportunities *Continued...*

Candidates for this Chair must be internationally recognized, outstanding and innovative researchers who have made a major impact in their field; have superior track records in securing research funds, have superior records of attracting and supervising graduate students and postdoctoral fellows; and be proposing original research programs of the highest quality. The successful candidate must be compatible within the NSERC or CIHR domains to the Department of Human Health and Nutritional Sciences. The appointment will be tenured at the rank of Associate or Full Professor, with reduced teaching responsibilities. Tier 1 CRC appointments are tenable for seven years and are renewable.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. The University of Guelph is committed to an employment equity program that includes special measures to achieve diversity among its faculty and staff. We therefore particularly encourage applications from qualified aboriginal Canadians, persons with disabilities, members of visible minorities and women.

The CRC program ***(www.chairs.gc.ca)*** was established by the Government of Canada to enable Canadian Universities to foster world-class research excellence in the global, knowledge-based economy. Positions are subject to review and final approval by the CRC Secretariat. Review of applications and nominations will begin on August 15, 2010 and continue until the position is filled.

Applicants should submit electronically a curriculum vitae, a brief (2-3 page) seven year research program plan, and a record of teaching effectiveness along with contact information for five referees (who will not be contacted without the consent of the candidate), to:

Dean, College of Biological Sciences
Science Complex, University of Guelph
50 Stone Road
East, Guelph Ontario N1G 2W1
memes@uoguelph.ca

Funding Opportunities

John F. Perkins, Jr. Memorial Award for International Physiologists

Award: Up to $5,000
Deadlines: April 15 and October 15

The John F. Perkins, Jr. Memorial Award for International Physiologists promotes cultural exchange and scientific collaborations by providing supplementary aid to families of foreign scientists working for a minimum of 3 months in the U.S. In this way, young scientists are able to bring their families and thus make full use of the cultural exchange as well as the scientific benefits associated with an international collaboration. The program presupposes that the visiting scientist and his/her host already have made arrangements for scientific collaboration and have sufficient funds to cover the needs of the visiting scientist. Several awards are granted each year. Application for the Perkins Award must be made jointly by the host, who must be an APS member, and the visiting scientist. The recipient receives funds generally not exceeding $5,000. The size of the award depends on the estimated needs over and above the amount already available to the visiting scientist. For scientific visits beginning between January 1 and June 30, the application is due on October 15 the year before with notification by December 15. For scientific visits beginning between July 1 and December 31, the application is due on April 15 of the same year with notification by June 15. ***Applications will now only be accepted via online submission***. ***Please click here*** to apply.

Submissions & Contact Information

We welcome your contributions! If you would like to be featured in "Who am I? Where am I?" or write a historical perspective, send us a note.

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