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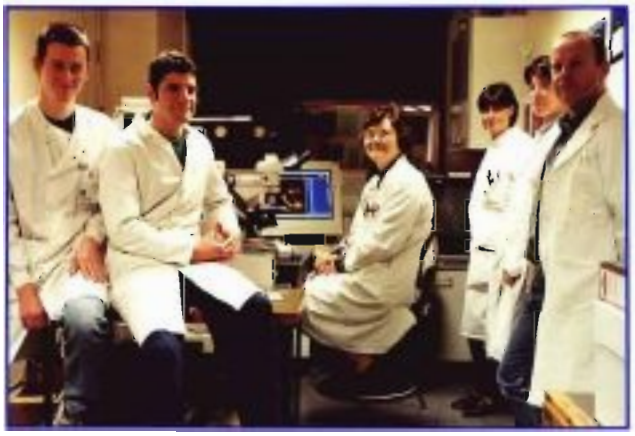
The Physiological Society Magazine

Glasgow & Chile Meetings

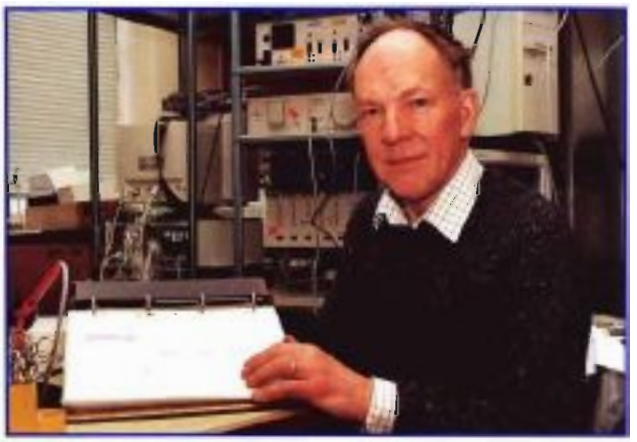
Feature on Magnesium Transport

Departmental News

Autumn 1999
No 36



Part of the Vascular Group



Oliver Holmes

Sarah Kettlewell and Francis Burton

The Myocardial Goup

David Maxwell

Photography courtesy of Martin Rosenberg

Front cover photograph: Courtesy of Martin Rosenberg

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ACTION POINTS

Affiliate Travel Grant Scheme: The next two deadlines for receipt of applications are 30 September and 30 November 1999.

Change of Address: Please can Members inform the Administration Office of any changes of address, telephone or fax numbers.

Email Addresses: The Society is making increasing use of email addresses. Please can Members inform the Administration Office of new email addresses, or changes to existing ones. If your email does not appear in the Grey Book it is unlikely that we have it. Changes can be emailed to admin@physoc.org.

Chile Meeting: Abstracts should be submitted to the Meetings Secretary's Office between 9 and 19 August 1999.

Birmingham Meeting: Abstracts should be submitted to the Meetings Secretary's Office between 20 and 30 September 1999.

Magazine: Letters and articles for inclusion in the next issue should reach the Editor by 27 August 1999. Advertisements and Notices should reach the Administration Office by 20 September 1999 whilst items for the Special Interest Group Forum should reach the Meetings Secretary's Office by 1 September 1999 and items for Committee News should reach the Committee Secretary's Office by 1 September 1999.

Membership Subscriptions: Payment of fees for the renewal of Ordinary Membership should reach the Administration Office by 1 January 2000.

Affiliation and Student Associateship Renewal Fees: Payment of fees for the renewal of Affiliation and Student Associateship for the academic year 1999 - 2000 should reach the Administration Office by 30 September 1999.

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GUIDELINES FOR CONTRIBUTORS

These guidelines are intended to assist authors in writing their contributions and to reduce the subsequent editing process. The Magazine Editorial Group is trying to ensure that all articles are written in a journalistic style so that they will have an immediate interest value for a wide readership and will be readable and comprehensible to non-experts. In particular, scientific articles should give a good overview of a field rather than focus on the authors' own research.

Format of articles
The main message or question posed should be introduced in the first paragraph. The background for the topic should then be established, leading up to the final dénouement or conclusion.

Length of articles
This will be determined by the subject matter and agreed between the contributor and the commissioning editor. Articles will vary in length from 200 words to a maximum of 800 words.

Submission of articles
Authors should submit text in the form of a disk accompanied by a printout wherever possible. Use of disks reduces the risk of introduction of errors during re-typing. It is helpful to give brief details of the computer, operating system and software package(s) used.

Deadlines for submission
Contact the Editors office or the Administration office for submission dates. Late submissions will not be accepted or publication will be deferred to a later issue.

Illustrations
Authors are encouraged to submit diagrams, drawings, photographs or other artwork to illustrate their articles or, if they cannot provide these themselves, to suggest what artwork might be appropriate. Photographs may be colour or black & white, prints or transparencies.

Author photographs
The Magazine normally includes photographs of the authors of articles. These may be colour or black & white; prints are preferable if cropping is required.

References
Authors are requested to keep the number of references to a minimum (preferably no more than two or three).

Suggestions for articles
These should be made (in writing, by phone, or in person at Scientific Meetings) either to the Editor, to the Editorial Assistant or to the relevant member of the Magazine Editorial Group (see left).

Magazine Online
As of the Autumn issue, the magazine will be available on our website.

PHYSIOLOGY AT GLASGOW

West Medical Building
Photograph courtesy of Martin Rosenberg

Glasgow University colleagues have been active in the Physiological Society since its inception. The history of the department continues to mirror the world-wide development of biomedical science. The Institute of Physic (subsequently Institute of Physiology) was created in the mid 19th Century. The Regius Chair of the Theory of Physic was established in 1839 and its 2nd incumbent, John Gray M'Kendrick was one of the nineteen present at the meeting in 1876 which set up the Society, proposing the rules of membership and those governing the Society's officers. Then Biochemistry and Pharmacology seceded in mid 20th Century before they all came together again in 1994, along with the rest of Biology, as the present incarnation, the Institute of Biomedical & Life Sciences (IBLS).

The University currently has 10 Professors who either have Physiology in their titles or are active Society members. Most are in IBLS's Division of Neuroscience and Biomedical Systems. IBLS is organised in a matrix system with separate management of teaching and research. It has 180 full-time academic staff in six Research Divisions, a graduate school (200 post-grads) and an Undergraduate School, which organises teaching & learning (sic: must be p.c. about these things).

Final Year Project
Photograph courtesy of Martin Rosenberg

Neuroscience & Biomedical Systems is located mainly in the West Medical Building, and the adjoining, recently constructed, Wolfson Building. Our Division currently has 37 academic staff, 37 post-docs. and 62 postgraduates. Historically the Division was well-founded on integrative biology at the cellular, organ and organismal levels and is steadily incorporating the molecular level. When the Biochemists left in the 1960s they took the precaution of leaving a 20 metre gap before starting their new building. The current generation decided to bridge the gap in recognition of the integrated direction of biomedical science and the Wolfson Foundation and MRC were good enough to back our arguments with hard cash. This has had an excellent scientific impact. The integrated nature of IBLS and the new physical proximity have lead to useful cross-fertilisation (or "transfection", as we now say). An unexpected benefit has been the Wolfson Courtyard, which has become a popular events venue. Registration for the meeting will take place here. Judge for yourself.

Wolfson Courtyard

The Division operates 3 main research themes, Cardiovascular Science,

Neuroscience (Spinal Cord Group; Neuropharmacology) and Exercise Science & Medicine, which follow the Thematic Research Priorities of the University. We play a leading role in university-wide Schools of Cardiovascular Studies, Neuroscience, and Respiratory Science. This has been extremely effective in facilitating collaborative programmes with clinical departments and between IBLS's Divisions.

Each of the thematic groups has successfully created major initiatives. The Cardiovascular Group (Martin, McCarron, McGrath, MacLean, Miller, Smith) have a close working relationship, initially set up under the MRC Clinical research Initiative in Heart failure, with clinical cardiologists and physicians, for whom we have provided accommodation in the Division, allowing closer interaction between clinical and basic science.

(l-r) David Maxwell, Willy Stewart and Matt Neilson
Photograph courtesy of Martin Rosenberg

John Riddell
Photograph courtesy of Martin Rosenberg

In Neuroscience we have established a Spinal Cord Research Group bringing together strengths in neuroanatomy and neurophysiology (Maxwell, Riddell and Todd). The Division is also home to the recently established Yoshitomi Research Institute for Neuroscience in Glasgow (YRING), a collaboration with the eponymous Japanese Pharmaceutical Company (Morris, Stone and Harvey & Pratt from Strathclyde University).

An exciting, new research initiative is the establishment of the Centre for Exercise Science and Medicine (CESAME; Director, Prof. Sue Ward), which brings together strengths in this field across the University, with an emphasis on exercise for health. This aims to use our strong biomedical research environment to bring cell and molecular science into whole body applied physiology.

Stuart Cobbe and Godfrey Smith
Photograph courtesy of Martin Rosenberg

The Division has particular strength in vital imaging, particularly in Ca^{2+} signalling and confocal microscopy applied to cardiac and vascular biology (Smith , McCarron, McGrath). The addition of the Spinal Cord Group, the introduction of molecular biology and transgenics through links within IBLS and strong links with Optoelectronics and Physiology at Strathclyde (Gurney) is creating a strong cross-thematic imaging centre.

We take the view that the thematic approach and integration across the science base allows us to cover the major bases of physiological science. It has been exciting coming this far from a traditional broadly-based Physiology department in less than a decade and we look forward with confidence. Each of our thematic groups hosts one of the symposia that accompany the Glasgow meeting, which we take as a sign that we are on the right tracks.

The Undergraduate school serves over 2,000 undergraduates from Science, Medicine, Veterinary Medicine and Dentistry. Virtually all of these students are taught (or learn) Physiology in their

first and second years, mostly in integrated courses which recognise no Disciplines. This seems to work since we earned "Excellent" in all teaching assessments: Cell & Molecular Biology, Organismal Biology and Medicine.

We are in the third year of a new Medical Curriculum, which is "student centred" with most learning being undertaken in small groups. Students undertake clinically based exercises from first year rather than having pre-clinical followed by clinical years. At its core is an integrated programme of clinical and scientific work, which is pervaded by Physiology, and "special study modules" - designed to allow study in depth, which have a strong Physiology content. Theoretically this should mean less systematic Physiology in years 1 and 2 but more physiological science in years 3 to 5. We are only up to years 3-4 so the jury is still out. Certainly the amount of teaching by Physiologists has not declined!

The ability of the Institute to provide integrated courses for Science (BSc) students from year 1 has resulted in far more students throughout the Biomedical and Life Sciences learning some basic physiology. The majority of our 900ish BSc cohort take Physiology modules in year 2 while in the Honours years (3 and 4) Units and Modules containing Physiology are taken by around 300 students. In terms of specialisation, Honours in Physiology is taken by around 20 and Honours in Physiology & Sports Science by an apparently uncontrollable number, currently heading towards 150 (with Neil Spurway keeping chaos at bay).

Neil Spurway
Photograph courtesy of Martin Rosenberg

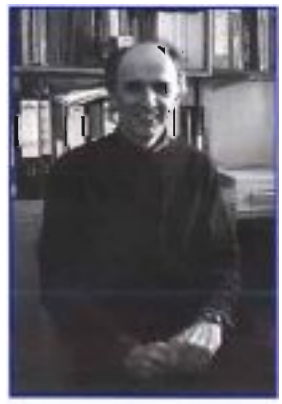
Glasgow Physiologists, safely recovered from IUPS 1993, look forward to welcoming the Society back to our fair City of Architecture & Design 1999. For more information visit our Divisional web site at: www.neuroscience.co.uk.

.Glasgow "Professors of Physiology"

- Ian McGrath holds the Regius Chair of Physiology and is Head of the Division of Neuroscience & Biomedical Systems (the two posts are not connected; HoDiv is a 4-6 year appointment)

Jay Rosenberg and David Halliday
Photograph courtesy of Martin Rosenberg

- Godfrey Smith is Professor of Cardiovascular Physiology
- Neil Spurway is Professor of Exercise Physiology
- Sue Ward is Professor of Exercise Science & Medicine
- Jay Rosenberg is Professor of Neurophysiology



David Miller
Photograph courtesy of Martin Rosenberg

Margaret Gladden
Photograph courtesy of Martin Rosenberg

• Trevor Stone is Professor of Pharmacology
• Janet Allen is Professor of Molecular Medicine
• Peter O'Shaughnessy is Professor of Reproductive Biology and Head of the Division of Veterinary Physiology
• Julian Dow is Professor of Molecular and Integrative Physiology
• Peter Holmes is Professor of Veterinary Physiology and also Vice Principal for Research.

Niall MacFarlane
Photograph courtesy of Martin Rosenberg

Readers in Physiological Sciences include Hugh Elder, Bill Ferrell, Margaret Gladden, David Miller, Mandy MacLean, David Maxwell and Andrew Todd.
Senior Lecturers in Physiology are Ron Bayenda, Richard Burton, Des Gilmore, John McCarron and Robin Orchardson.

Lecturers in Physiology are John Gordon, Mike Lucas, Niall MacFarlane, Jim Morrison, and John Riddell.

Ian McGrath
University of Glasgow

Ian McGrath (Head of Division)
Photograph courtesy of Martin Rosenberg

THE BENEVOLENT FUND OF THE PHYSIOLOGICAL SOCIETY
Nominations for new Trustee

Professor Richard Creese is due to retire as a Trustee of The Benevolent Fund in April 2000.Nominations are invited for a replacement Trustee.If you are interested in serving on The Benevolent Fund Committee, or know of someone who would be a suitable replacement for Professor Creese,please would you contact:

Grace Murray
Benevolent Fund Administrator
Dilke House
Malet Street
LONDON WC1E 7JN

Tel: 0171 631 1456
Email: gmurray@physoc.org

MUCH MORE THAN A MEETING

We spent the day on the summit, and I never enjoyed one more thoroughly. Chile, bounded by the Andes and the Pacific, was seen as in a map ..... The setting of the sun was glorious; the valleys being black, whilst the snowy peaks of the Andes yet retained a ruby tint.

Charles Darwin, August 1834

Joint Physiological Society Meeting, Pucón, Chile, November 13-16 1999

Though you can travel from Santiago to Temuco by plane in one and a half hours (then overland to Pucón), the drive down is certainly slower, a full 12 hour day on the Panamerican Highway going south, but it is truly a schoolroom for some of Chile's natural beauties. Just outside Santiago, in a "perfect climate", miles of neat green vineyards quietly produce some of the best wines in the world. Further south, the roadside fills with fruit orchards, heavy with apples, peaches and pears, while later the view is positively yellow with fields galore of bobbing sunflowers, harvested for cooking oil, and corn-on-the-cob crops alongside mountains of loose sweetcorn drying in the hot sun. As Pucón approaches, dairy cows chew the lusher landscape which cruises finally into dark fir forests, whose whole tree trunks are precariously transported hither and thither by tremendous lorries.

Really the best way to get to know the country and its people is on foot, much as Darwin did during his historic Voyage of the Beagle in 1834. The region around Temuco and Pucón is home to the several hundreds of thousands of remaining native Mapuches. Land farmers and skilled handicraftsmen, their peculiar language and customs still thrive in modern Chile. In Temuco, the Museum Regional de la Araucania recounts the history of the Mapuche people, the conquest and European immigration that have shaped today's southern Chile.

In this, the Chilean Lake District, the region's National Parks, including Villarica and Huerquehue, always beckon visitors. Here you can savour beautifully scenic forests, lakes and mountains that create a quite magical paradise of tranquillity and a haven for naturalists. A former zoologist myself, I can easily understand Darwin's fascination for the local fauna and flora. It is just delightful to be chaperoned by shiny lizards as you walk through bamboo groves, beech and larch woods or monkey puzzle forests. Green mossy matting and yellow slime mould blobs cover stones and fallen trees. And it is easy to follow the many waterfall trails. Some of the best are the resplendent Salto del Leon, the vertically-challenged Salto del Chino and the gaping Ojos de Caburgua.

Pucón itself, with much Swiss chalet style architecture has become one of the regions most popular tourist spots, with many options for both tame and adventurous. You can laze on black volcanic ash shores or jet ski across Lake Villarica; choose between the sweaty trek up Villarica volcano, or sip tea and munch küchen in a cafe; or try throwing yourself to the rapids in white water rafting on the river Trancura, or stripping off and steaming in nearby natural hot springs. (Hot springs are fantastic, but probably best kept until last, as the sulphurous perfume binds perfectly to body and clothes, clinging for days afterwards).

It is very easy to arrange any of these excursions, via the Hotel itself or through one of the numerous agencies in the town. One seasoned meeting scientist talks about his volcano trek. "The agencies supply all the clothing and gear you need, plus a guide. The hike to the top takes about four hours, from lowland forests to crunchy highland snows and the view from the top is simply spectacular. You can see the Andes, the glacial valley and other nearby lakes, such as Lake Calafquén." One of the most active volcanoes in Chile, he

continues that "within the crater, boiling lava bubbles and tear-inducing whiffs of yellow sulphur make this an unforgettable trip," adding that "the best part of it all, is that you can descend the volcano in only 20 minutes - tobogganing on your bottom!"

The Gran Hotel Pucón itself has been the site of the annual meetings of the Chilean Physiological Society and the Biological Society for several years now. Convention Manager of the Hotel, Maria Amelia Robles explains why the location is particularly attractive for these purposes. "With our new large Salón Pucón, finished in April 1998, we now have enough space, supported by state of the art technology, to cater for a conference party of 1400 and we can also offer full board accommodation within the hotel itself for up to 800 people," she says. This unique combination is probably the reason why most meeting participants prefer to stay in the hotel rather than in nearby chalets or hostels. She adds that "together with the Hotel's location in Pucón, it is really an ideal and complete conference destination."

Real adventurers may however prefer the more authentic Darwinian accommodation option. Camping in tents, Darwin enthused over the "inexpressible calm in living in the open air", though in my experience, the best part is waking up alive each morning. Noises in the night, scratching and wailing, can only be Roald Dahl beasties lurking and leering. Too near are the long claws of the carnivorous Mile High Monster. But of course by dawn, all is always well. The Giant Woffling Muncher who refused to let me out one night when I was desperate to visit Nature's bathroom, appeared next day as a docile pink pig. Even so, I think I shall opt for the Hotel this time - solid walls, many metres above ground, sound very appealing.

Karen Everett,
Joint Meeting Coordinator

The Cycle Cuba Charity Challenge

The Cycle Cuba Charity Challenge is a sponsored cycle ride organised by The National Deaf Children's Society in order to raise much needed funds for the charity. The planned route covers the 250 or so miles on and off road from Havana to Trinidad.

The National Deaf Children's Society is a registered charity which for over 50 years, has provided valuable help and support to deaf children and their families all over the UK. However, there are many more that need their help and funds are currently needed to develop services such as the Technology Information Centre and Helpline.

I will be participating in this challenge at the end of November and have promised to raise at least £2,300, so if anyone would like to support this worthy cause by making a donation, please contact Craigie Chapas at the Administration Office or on Tel: (0171) 631 1459 or Email: Any help would be very greatly appreciated.

Many thanks.

Craigie Chapas
EditorialAssistant (Magazine)

PHYSIOLOGY & PHARMACOLOGY AT STRATHCLYDE

The department was established in 1966, two years after the old Royal College of Science & Technology became Strathclyde University. Its primary role is to provide the physiology and pharmacology teaching for the School of Pharmacy, and for joint honours degrees in Biochemistry & Pharmacology and Immunology & Pharmacology. Under the direction of its first professor, Bill Bowman, the department became known for its work on muscle relaxants, and was centrally involved in the development of the range of cleaner and safer neuromuscular blockers which replaced tubocurarine in the operating theatre. It is remarkable that the School of Pharmacy is responsible for the two leading muscle relaxants in current use. Atracurium was synthesised by the chemist John Stenlake and developed by Wellcome, while the properties of vecuronium and later rocuronium, both Organon compounds, were characterised by Ian Marshall and the late Nick Durant. The resulting royalties accruing to the university from atracurium, running at over a £1M p.a. at its peak, proved of great benefit during the 1980's.

While still primarily a pharmacology department, the department since then has diversified, and now has a somewhat eclectic range of physiologists, pharmacologists and biochemists on staff, reflecting the broadening and intermixing of disciplines characteristic of modern research. A core academic staff of 17 members is complemented by 13 research staff and 36 post-graduate students/research assistants. The department has three basic research groupings-Neuroscience, Cardiovascular and Biochemical Pharmacology.

The cardiovascular group is probably the largest within the department, with much of the work focusing on vascular and myocardial ischaemia. Recent work by Jim Parratt has demonstrated the importance of nitric oxide and bradykinin in myocardial pre-conditioning, where brief periods of ischaemia provide subsequent prolonged protection. Research is carried out on a broad front, ranging from Cherry Wainwright & Roger Wadsworth's whole animal models of restenosis after balloon angioplasty, to Alison Gurney's patch clamp cell studies on O^2 sensitive K channels in pulmonary vascular smooth muscle. The biochemical group, which includes Nigel Pyne, Sue Pyne and Robin Plevin, has strong interests in the cellular and molecular basis of inflammatory and proliferative disorders, particularly asthma, endotoxaemia and pulmonary hypertension. Interests focus on the regulation of the MAP kinase and JNK cascades, in airway and vascular smooth muscle. The neuroscience group again covers a broad range, from Judy Pratt's binding and 2-deoxyglucose neuronal activity studies of benzodiazepine actions in the rat brain, to Alan Harvey and Eddy Rowan's work in characterising the selectivity of potassium channels toxins, and Charles Kennedy's and Peter Sneddon's work on the role of ectoATPase enzymes in purinergic transmission.

The Strathclyde Institute for Biomedical Sciences (SIBS) building

Finally, a recent series of bids to the Joint Infrastructure Fund and Scottish Higher Education Funding Council, by Alison Gurney, in collaboration with physicists, Alister Ferguson and John Girkin (from

the university's Photonics Institute) and Godfrey Smith (Glasgow University, IBLS), will allow the foundation of a biophotonics facility within the department. The aim is to develop a regional microscopy facility, capable of harnessing the available expertise in laser physics to develop new forms of high speed multi-photon confocal imaging systems, and applying it to biological problems.

The new SIBS building

This year has seen the department move into its new home – the Strathclyde Institute for Biomedical Sciences (SIBS), which it shares with the Departments of Pharmaceutical Sciences and Immunology. The SIBS building is the culmination of 17 years of effort to improve the accommodation of biological sciences within the university and to permit renovation of the university's Victorian Royal College building. The £14M building was funded with a minimum of funding council support, partly by a generous donation from the Robertson Trust, Parke-Davis, support from European Regional Development Fund and the Glasgow Development Agency, and a certain amount of borrowing, underpinned by the income from enterprises such as the School of Pharmacy's twinned Pharmacy degree programme with the International Medical University in Kuala Lumpur.

The move to the building, which was (not quite) completed, a month before the start of the academic year, proved as traumatic as one might expect, although it is a tribute to the staff, and university Estates & Buildings personnel that classes did in fact start on time and nothing major got broken. The same, unfortunately, could not be said for the animal house which was completed only 9 months later.

SIBS was formed with the aim of sharing resources and increasing collaboration in teaching and research. However, although it is called an "Institute", the departments therein, are nevertheless functionally separate, each with their own strong individual identity. This is in contrast to many of the other universities in Scotland, and elsewhere, who have tended to submerge departmental identities and management into larger units, such as the Institute for Biomedical & Life Sciences at Glasgow University. (A, perhaps ironic, outcome of this is that it might not be long before the only department in Scotland with the word "Physiology" in its title will be a pharmacology department.)

Strathclyde, instead, established its Institute for Drug Research (SIDR, not to be confused with SIBS, the building) as a vehicle for promoting cross-disciplinary research within the biological science departments. SIDR, under its director Alan Harvey, acts as an interface between university researchers and industry, negotiating industrial contracts, and providing seed corn funds and staff for potentially interesting projects. It has now been running for 10 years, and has been largely successful in its aims of bringing a diverse mixture of chemists, immunologists and pharmacologists together. It has a strong focus on drug discovery, particularly from natural products where it has established an extensive plant library, and a network of collaborative links throughout the world.

In recent years, there has also been increasing collaboration between the

Princess Anne with Alison Gurney at the official opening

department and its equivalents within IBLS at Glasgow University. A jointly managed unit researching into schizophrenia (YRING – Yoshitomi Research Institute in Neuroscience at Glasgow), involves SIDR, but is located at Glasgow University, and is managed and staffed by Glasgow (Brian Morris) and Strathclyde (Judy Pratt) pharmacologists. Similarly, important elements of the biophotonics project, mentioned above, involve Glasgow University researchers. The value of this kind of collaboration is recognised at the highest levels within the universities, with a memorandum of understanding being signed recently by the principles of the two universities. This document, given the title "Synergy" (not an acronym, but a metaphor), views the two universities as preferred partners, and seeks to promote joint initiatives between the two institutions both in pure and applied research, and in the joint exploitation of discoveries. This is an interesting development, and it remains to be seen whether this heralds the way of the future for the universities in Glasgow.

John Dempster
University of Strathclyde

PhD Studentship

Rehabilitation Strategies in Severe Chronic Obstructive Pulmonary Disease

Supervisors: Professor SA Ward, Dr C Clark and Dr Y Pitsiladis

Centre for Exercise Science and Medicine, Institute of Biomedical & Life Sciences and Clinical Medical Planning Unit, University of Glasgow, Glasgow, Scotland, UK

The proposed Research Project will develop new approaches for rehabilitating patients with severe Chronic Obstructive Pulmonary Disease (COPD) through improvements in exercise tolerance and activities of daily living, to reduce prevailing levels of disability and handicap, enhance quality of life and reduce the cost of care for this patient population. The major limitation to work performance in COPD is a compromised ventilatory capacity. The research will focus on the extent to which functional gains in work tolerance in patients with COPD accrue from several novel interventions, such as exercise-training formats, dietary manipulation; and pharmacological interventions. Particular emphasis will be placed on modes of domiciliary administration where, it is proposed, adherence and outcome will be enhanced, thus promoting longer-term lifestyle modification. Techniques to be utilised include: dynamic exercise testing and interpretation approaches; perceptual analysis; muscle oxygenation and high-energy phophate profiles; and muscle cellular and molecular biology functions The project will involve collaboration with Professor B.J. Whipp (Visiting Professor).
Two 3-year funded studentships are available. Applications from Masters-qualified individuals are encouraged.

Applications, consisting of a full c.v. and the names and addresses of at least two academic or appropriate professional referees, should be sent to: Graduate School of Biomedical and Life Sciences
Joseph Black Building
University of Glasgow tel: (+44) 0141-330-5800 / fax: (+44) 0141-330-6093
Glasgow G12 8QQ Email: biograd@gla.ac.uk
Scotland, UK

Informal enquiries may be addressed to:Prof.essor S.A. Ward
Centre for Exercise Science and Medicine
West Medical Building
University of Glasgow tel: (+44) 0141-330-6287 / fax: (+44) 0141-330-6345
Glasgow G12 8QQ Email: S.A.Ward@gla.ac.uk
Scotland, UK

SOCIETY GOVERNANCE AND MANAGEMENT: The Way Ahead

The Committee is seeking to improve the way the Society is governed and managed. Here Maynard Case, Chairman of the "Governance Working Party", summarises progress and points the way forward.

Background

In general terms, the governance of the Society has changed little during the last 50 years. During this period the Society has been run by a series of four officers [committee secretary, meetings secretary, foreign secretary and treasurer] who have benefited from an increasing amount of professional (e.g. secretarial) support. Throughout this time the Society's journals (and other publications) have been run in a semi-autonomous manner.

Although considerable changes have been successfully introduced in recent years (e.g. the formation of special interest groups, publication of a magazine), these initiatives have been bolted on to the existing framework of governance. Together with the increasing size of the Society and the increasing complexity of its affairs, these changes are causing the structure to buckle. For example, the huge workload shouldered by Society officers and, to a lesser extent by Committee members and sub-committee chairs, is becoming intolerable. The Committee therefore established a "Governance Working Party" comprising: Maynard Case (chair), Clive Ellory, Julian Jack, Alan North and Peter Stanfield in order to consider ways of improving the way the Society is governed and managed.

Aim

The key role of the Physiological Society is to promote research and education in physiological sciences. To fulfill that role demands that we capitalise on the enormous talent represented in Physiological Society members so as to maximise the impact of physiology on National and International Science.

Therefore, the Working Party's aim was to devise a structure which will:

- effectively and efficiently promote the Society's chief activities
- enhance the influence of the Society
- quickly respond to National and International initiatives
- manage the Society cost-effectively
- serve the membership better
- be proactive rather than reactive
- reduce the burden of work on the Society's officers and Society

To achieve these aims, the Working Party agreed unanimously that, rather than tinker with the existing structure, the time was ripe for a major reorganisation. Its first proposals were discussed by the Committee in June 1998. Since then they have been modified in response to suggestions from Committee members and following discussions with other societies.

Proposal

The Working Party's aim, overwhelmingly endorsed by the Committee, is: (1) to split the major functions of the current Committee by the creation of a relatively small Executive Committee ("the government") led by a Chairman, and a larger consultative Council ("the parliament") chaired by a President; and (2) to form a cohesive, centralised Administrative Team, led by an Executive Secretary.

- The Executive Committee would be the governing body of the Society (currently the role of the Society Committee). It is envisaged to comprise a Chairman, Vice-Chairman, (who would be the next Chairman), International Secretary, Meetings Secretary, Publications Co-ordinator, Treasurer and Executive Secretary. It is envisaged that the Chairman and Vice-Chairman would be elected by Council with the other officers being elected by members following nomination by the Executive Committee (i.e. essentially as at present). The Executive Secretary would be appointed by the Executive Committee.
- The Council would be a consultative body with wide-ranging representation. It would be chaired by a President who

would be a senior and highly regarded Physiologist capable of acting as a figurehead for the Society. It is envisaged to comprise the Executive Committee, some special interest group convenors, some sub-committee chairs and some directly elected members. (The total number of Council members and the precise mechanism of their election is yet to be determined). The Council would probably meet twice a year and decide overall strategy and planning.

- The Administrative Team would be centralised to Dilke House under the leadership of the Executive Secretary. It would be responsible for "servicing" the Executive Committee, Council, sub-committees, etc. It would be responsible for converting decisions into action and, increasingly, would assume responsibility for the administrative tasks currently shouldered by officers, sub-committee chairs etc.

Progress

A key feature of the new structure is the creation of a small Executive Committee and the appointment of an Executive Secretary who would be responsible to the Executive Committee for implementing its decisions and for overseeing administration of the Society's affairs. Clearly an early appointment to this position was essential in order that the person appointed could be involved in the detailed planning of the new structure. The Committee therefore gave approval to the recruitment of an Executive Secretary and to that end established an Appointments Committee comprising Maynard Case and Alan North (representing the Governance Working Party), Chris Fry and David Brown (representing Officers), Joan Abbott and Bridget Lumb (representing the Committee), David Eisner (representing the Journal of Physiology) and including Glyn Jones from the Biochemical Society as an external advisor.

This group drew up further particulars of the post which was advertised in the Sunday Times (23 May) and The Times (27 May). Interviews were set for 6 July so that, by the time this article appears, an Executive Secretary should have been appointed.

The Way Ahead

Assuming the Executive Secretary can begin work by September, a three-month period is envisaged during which time the person appointed will become familiar with the current organisation of the Society. Thereafter, the draft proposals concerning Governance of the Society will be further refined, with input from the Executive Secretary and, following approval by the Committee, will be submitted for Society approval at an extraordinary General Meeting hopefully convened during the scientific meeting at Imperial College in April 2000, or, if that proves not to be possible, at the Cambridge meeting in July 2000.

In the meantime, members of the Governance Working Party would welcome feedback on these proposals.

Maynard Case
Chairman
Governance Working Party

G L Brown Lecture 2000

Autonomic Control of Cardiac Excitability

The G L Brown Prize Lecturer for 2000 is Dr David Paterson of the University of Oxford. The Lecture can be given from January until the end of March 2000 and Heads of Department wishing to invite the G L Brown Lecturer to their departments should contact the Committee Secretary by 1 September stating preferred dates.

Honorary Members

The Society is delighted to offer its congratulations to the following who were elected Honorary Members at the Semi Annual General Meeting at Manchester in March.

Professor Gerhard Giebisch
Professor Syogoro Nishi

Molecular Techniques Workshop

The Molecular Techniques Workshop will be held from 6 September to 17 September 1999. The course was, as usual, heavily over-subscribed but the Selection Committee has now informed the 16 successful applicants. Details of next year's workshop will be publicised via Heads of Departments and on the Physiological Society Web Page (http://physiology.cup.cam.ac.uk/index.html)

Hodgkin-Huxley-Katz Prize Lecture

The Committee has decided that a prize lecture be established to celebrate the work of Alan Hodgkin, Andrew Huxley and Bernard Katz. Further details will be published in the new Grey Book which will be distributed later this year.

New Officers

Professor Peter Stanfield and Professor Chris Fry ended their respective tenures as Committee Secretary and Meetings Secretary on 14 July at the AGM in Newcastle. Chris Fry will be taking on the role of Committee Secretary and Professor Mark Dunne of Sheffield University will be taking up the challenge of Meetings Secretary. Their contact addresses are:

Professor Chris Fry
Committee Secretary
The Physiological Society
PO Box 11319
London WC1E 7JF

Personal Assistant: Sheila Greaves
Tel: 0171 631 1461
sgreaves@physiology.demon.co.uk

Professor Mark Dunne
Meetings Secretary
Dept of Biomedical Science
The University of Sheffield
Western Bank
Sheffield S10 2TN

Personal Assistant: Melanie Rees
Tel: 0114 2222 390
email: physiology@sheffield.ac.uk

Christina Docchar
Committee Secretary's Office

If you have any items that you feel the Committee should discuss, please contact the Committee Secretary.

Prize Lecturers

The Prize Lecturers for 1999 are:

Lecture	Lecturer	Title	To be given at
Bayliss Starling	Salvador Moncada	To be confirmed	Imperial College
Joan Mott	Lucilla Poston	To be confirmed	Aberdeen
Wellcome	Daniela Riccardi	Cell Surface Ion-Sensing Receptors	King's College (To be confirmed)
Annual Review	To be confirmed	To be confirmed	To be confirmed

(further details will be confirmed in the next issue of the magazine and on the Society's Web Site)

Cardiovascular/Respiratory Control

Members of this Special Interest Group we concerned when they read the pre-circulated programme for the University College London and Royal Free & University Medical School Meeting, and the realisation dawned that our Designated Sessions were due to occur bright and early the morning after the Society dinner. Nevertheless, a refreshingly different (if rather loud for some) Society dinner at Dingwalls in Camden did not deter us, as a thoroughly enjoyable and stimulating day at the Royal Free Campus followed. The group was represented by 14 oral communications, 4 poster communications and a remarkable 11 demonstrations/demonstrated communications. The latter format, considered it would seem unfashionable these days, worked particularly well and I know this is something the Society is trying to encourage.

Congratulations must surely go to Dr Julian Paton (Department of Physiology, University of Bristol), not only for his calmness when the gremlins in the slide projectors played up (in *both* of his presentations!), but more so for his superb Sharpey-Schafer Lecture on the Tuesday evening '*Nucleus tractus solitarii*: an integrating structure'. He guided us seamlessly it appeared through this subject from molecular studies, into the *in vitro* situation and finally back into the whole animal. Inspirational I am sure for the younger physiologists in the audience.

In addition, many in the group attended the symposium on the Monday entitled 'Rhythm and Synchrony in the Nervous system: Physiological Significance' organised by Dr Mike Gilbey (Royal Free & University College Medical School, London). All of the talks were excellent, the discussion lively, the concepts and perspectives covered came across well and many of us benefited enormously from attending.

As many of you will know I am trying to update the e-mail address list for this SIG. If you do not receive e-mail from me about SIG events, or think for some reason you are not on the list and would like to be, just email me at:
teresat@rfhsm.ac.uk

Continue to submit your abstracts to Meetings at which our SIG have Designated Sessions. The group is thriving and we hope everyone is getting something out of it. As always, if you have any ideas for Designated Lecturers or Symposia *please* get in touch. Our next Designated Session is at the meeting in Birmingham this coming December. We also hope to have a Designated Lecture at that venue. It will be the last Physiological Society Meeting before the Millennium so please aim to be there as it promises to be a good one!

Teresa Thomas

Magnesium transport and its modulatory role in secretory epithelial cells

The physiological importance of magnesium has become gradually recognised over the past two to three decades. At present, pathologies as common as diabetes, arrhythmias, coronary heart disease and hypertension are being associated with an altered metabolism of magnesium. Magnesium (Mg^{2+}) is the second most abundant intracellular cation, exceeded only by potassium. Within cells, Mg^{2+} plays a vital role in innumerable processes. Apart from being a cofactor for over 300 enzymes, it is involved in the synthesis and maintenance of DNA and RNA, the secretion of such hormones as insulin, and the transmembrane movement of ions through the regulation of pumps (eg. Ca^{2+}- and N^{+}:K^{+}-ATPases) and ion channel (eg. K^{+} and Ca^{2+}) activities. It has been questioned how intracellular Mg^{2+} can exert its actions. To answer this, two viewpoints should be considered. First, it seems clear that the resting intracellular free Mg^{2+} concentration ($[Mg^{2+}]_i$) will impart certain features to the cell physiology. Second, it is possible that $[Mg^{2+}]_i$ can change under certain conditions, this mediating its biological effects. This article focuses on the mechanisms controlling (Mg^{2+}_i) in pancreatic acinar cells and other secretory epithelia, with emphasis on its role as a modulator of the secretory activity of these cells.

Mg^{2+} transport in non-stimulated epithelial cells

Studies over the past few years have established a resting $[Mg^{2+}]_i$ lower than 1 mM in most cell types which, together with the existence of large electrical inward driving forces for this cation, suggest that at least one active transport system is controlling $[Mg^{2+}]_i$ by extruding Mg^{2+} out of the cell. Mg^{2+} efflux can not be determined in non-stimulated pancreatic acinar cells unless these are artificially loaded with Mg^{2+}. If the cells are then placed in a Mg^{2+}-deficient medium, a high rate of Mg^{2+} efflux can be measured by atomic absorption spectrometry (AAS) analysis of magnesium content in the effluent. Under these conditions, the Mg^{2+} extrusion system shows the following characteristics (**1,2**):

a. Although it is not associated with either the Na^{+}:K^{+} ATPase, the Na^{+}:K^{+}:Cl- co-transporter or the Cl-:HCO3- exchanger, Mg^{2+} efflux seems to occur through a Na^{+}-dependent system, given that it is markedly attenuated by both the substitution of extracellular Na^{+} with N-methyl-D-glucamine and the presence of either amiloride, quinidine or lidocaine.

b. It is energy-dependent, as showed by the drastic reduction in Mg^{2+} efflux after the addition of the metabolic inhibitor dinitrophenol.

These findings suggest the existence of either a Na^{+}-dependent Mg^{2+} pump or a Na^{+}/Mg^{2+} exchanger driving Mg^{2+} extrusion in resting pancreatic acinar cells.

Secretagogue-evoked changes in $[Mg^{2+}]_i$

$[Mg^{2+}]_i$ in the exocrine pancreas is altered by receptor-mediated mechanisms (see Figure 1). The changes are very rapid (a few minutes) and may have physiological importance. In both single and suspensions of rat pancreatic acinar cells loaded with the Mg^{2+}-sensitive

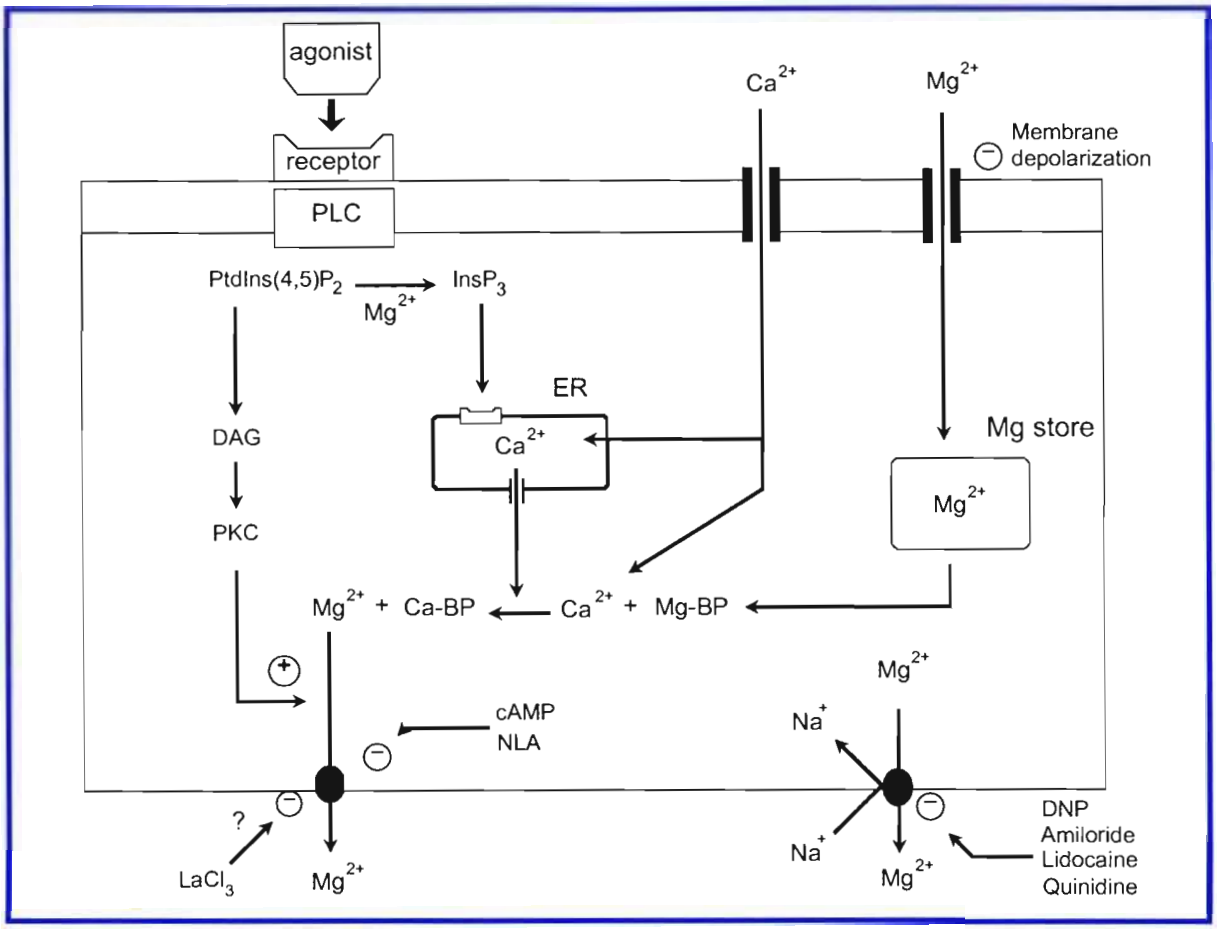


Figure 1: Schematic model of the events in the regulation of magnesium homeostasis in rat secretory epithelial cells. It is proposed that the influx of Mg^{2+} is associated with changes in the membrane potential since it can be inhibited by either monensin, ouabain or perfusion with K^+-rich solution. Once in the cell, Mg^{2+} is taken into a store and subsequently released, where it combines with cytoplasmic proteins. In relation to Mg^{2+} efflux, Ca^{2+} released from the stores displaces magnesium from the binding proteins (BP). Agonists such as ACh and CCK-8 can now evoke Mg^{2+} efflux, which is sensitive to nitro-L-arginine (NLA), cAMP and perhaps $LaCl_3$. On the other hand, protein kinase C can stimulate Mg^{2+} efflux. Passive Mg^{2+} efflux is Na^+-dependent and it is sensitive to dinitrophenol (DNP), amiloride, quinidine and lidocaine.

fluorescent probe Magfura-2 AM, either acetylcholine (ACh), carbamylcholine or cholecystokinin-octapeptide (CCK-8) evoke marked dose-dependent changes in $[Mg^{2+}]_i$ consisting of a gradual decline to reach a steady-state significantly lower than the resting value, which is maintained as long as the secretagogues are present (**2-8**). In contrast, adrenaline, noradrenaline and histamine are unable to modify $[Mg^{2+}]_i$ (**3,5**) indicating that only potent Ca^{2+}-mobilising secretagogues (ACh or CCK-8) share this capacity, at least in pancreatic acinar cells.

Furthermore, once one secretagogue (e.g. ACh) has mobilized cellular magnesium, the other (e.g. CCK-8) has no effect, suggesting that both of them can stimulate Mg^{2+} release from a common intracellular pool (**5**). Perfusion experiments comprising determination of magnesium by AAS (**2-4,6,9,10**), as well as the use of Magfura-2 tetrapotassium salt (the non-permeant form of the probe) as a tool to measure extracellular Mg^{2+} concentration ($[Mg^{2+}]_o$) (**5**) confirm that the above secretagogue-induced effects represent a true Mg^{2+} efflux and not Mg^{2+} uptake into intracellular stores.

The opposite direction of the $[Mg^{2+}]_i$ and $[Ca^{2+}]_i$ changes upon ACh and CCK-8 stimulation is by itself suggestive of a reciprocal relation between both events during this process, which has been recently demonstrated in perfused single mouse pancreatic acinar cells: The decrease in $[Mg^{2+}]_i$ is abolished when cellular Ca^{2+} is chelated with BAPTA at a concentration that totally prevents Ca^{2+} mobilisation (**11**). The link between the $[Ca^{2+}]_i$ increases and the $[Mg^{2+}]_i$ decreases is not known, although it could be postulated an indirect action involving the mobilised Ca^{2+}, which may displace intracellular Mg^{2+} from certain binding sites to be then extruded to the outside (Figure 1). In agreement with a Ca^{2+}-dependent Mg^{2+} transport, there is our observation that alterations in the metabolism of several intracellular mediators (such as protein kinase C or the NO/cGMP system) have a marked effect on CCK-8-induced Mg^{2+} extrusion (**7**). The precise mechanism whereby these mediators modulate the changes in $[Mg^{2+}]_i$ is unclear, mainly because their role in the stimulus-secretion coupling process has not been fully defined yet. However, since they all have been associated with the Ca^{2+} signal, it is tempting to suggest that these mediators may regulate Mg^{2+} transport through regulation of Ca^{2+} mobilisation.

In relation to the mechanisms supporting Mg^{2+} extrusion during secretagogue stimulation, some differences exist between the rat and mouse pancreas, which may be a species variation. In the rat (**1,2**) the process seems to be dependent on extracellular Na^+ and insensitive to $LaCl_3$ (a plasma membrane Ca^{2+} channel blocker) whereas the opposite is observed in the mouse (**11**). Additional studies in the latter species showed that the secretagogue-evoked $[Mg^{2+}]_i$ decrease is not associated with changes in membrane potential while, interestingly, the return of $[Mg^{2+}]_i$ to resting values after removal of the stimulants may occur via a conductive pathway along the electrochemical gradient (**11**).

Relationship between calcium and magnesium signalling in the exocrine pancreas

In perfused rat and mouse pancreatic segments, raising $[Mg^{2+}]_o$ to 10 mM markedly inhibits ACh-, CCK-8- and electrical field stimulation (EFS)-induced protein, trypsinogen and amylase release as compared to the responses in a normal (1.1 mM) and nominally low (0 mM) $[Mg^{2+}]_o$ media (**6,8,10,12,13**). The same is observed in the isolated intact pancreas preparation in terms of flow rate and protein output (**10**). These inhibitory effects seem to be mediated through a derangement of the Ca^{2+} signalling events. Thus, in the presence of elevated $[Mg^{2+}]_o$, either ACh or CCK-8 induce a significant reduction in $[Ca^{2+}]_i$ (both the peak and the plateau phases) (**6,10,12**). Accordingly, a significant attenuation in both oscillatory spike amplitude and frequency is found after submaximal agonist stimulation (**8**). Both the reduction in the plateau phase and the inability of the secretagogues to sustain the oscillations suggest that Mg^{2+} is acting, at least in part, by blocking Ca^{2+} entry from the extracellular medium, which agrees with the parallel attenuation of the secretagogue-evoked $^{45}Ca^{2+}$ influx (**6,10,12**). The presence of

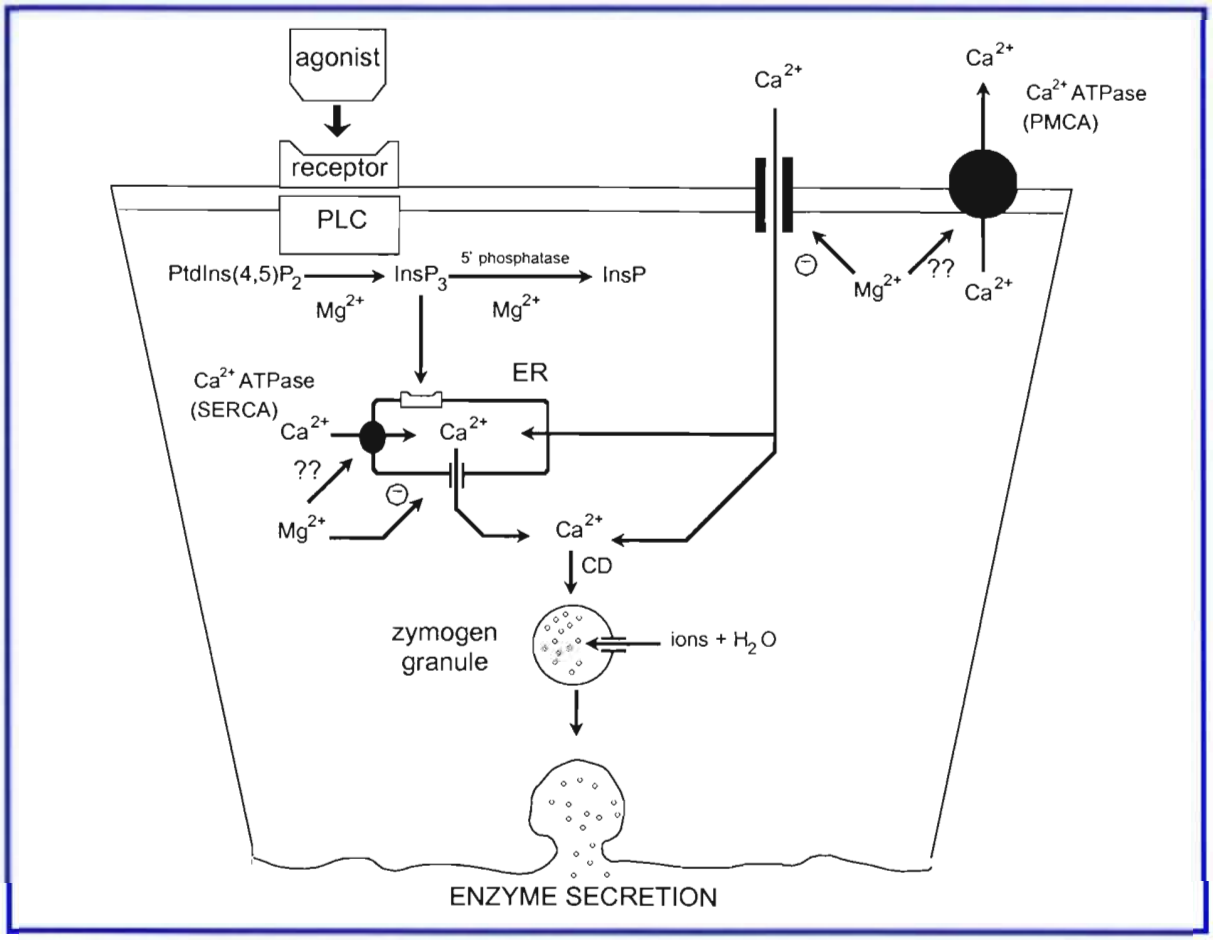


Figure 2: Schematic model illustrating the relationship between Mg^{2+} and Ca^{2+} signalling during enzyme secretion in pancreatic acinar cells in response to such agonists as ACh and CCK-8. Secretagogues-evoked increase in $[Ca^{2+}]_i$ stimulates calmodulin (CD), which phosphorylates regulatory proteins on the zymogen granules resulting in the influx of ions and water and subsequent swelling of the granules. The granules then migrate towards the luminal pole where they dock and fuse with the membrane to bring about exocytosis and secretion. It is proposed that Mg^{2+} can regulate the metabolism of IP3, Ca^{2+}-ATPase pumps (SERCA and PMCA) in the endoplasmic reticulum (ER) and plasmic membrane, Ca^{2+} release from the ER, and Ca^{2+} influx from the extracellular medium respectively. High $[Mg^{2+}]_o$ and subsequently high $[Mg^{2+}]_i$ seems to attenuate Ca^{2+} release from the ER and its entry into the cell. PLC=phospholipase C;IP3=inositol trisphosphate.

high $[Mg^{2+}]_o$ also reduces the initial rise in $[Ca^{2+}]_i$, suggesting that Ca^{2+} release from intracellular stores is affected too. Based on the results of other authors and our own findings, we propose a number of mechanisms (see Figure 2) to explain the above effects. All of them require an increase in $[Mg^{2+}]_i$ subsequent to the rise in $[Mg^{2+}]_o$, which, indeed, has been observed (**6,10**).

i) Elevated $[Mg^{2+}]_i$ may increase the activity of the Mg^{2+}-dependent enzyme 5-phosphatase, this causing reduced IP3 levels and a consequent attenuation in initial Ca^{2+} release from the endoplasmic reticulum stores.

ii) It is suggested that a high $[Mg^{2+}]_i$ decreases the open-state probability of the caffeine-sensitive channels involved in calcium-induced calcium release. The release of Ca^{2+} from IP3-sensitive stores may as well be directly affected.

iii) A rise in $[Mg^{2+}]_i$ may favour the action of the Ca^{2+}-ATPases in the plasma membrane (PMCA) and endoplasmic reticulum (SERCA) during stimulated conditions. In this situation,

these Mg^{2+}-dependent enzymes play a significant role in the maintenance of the secretagogue-induced oscillations, by actively extruding Ca^{2+} to the external medium and reuptake to the ER stores, respectively.

It can thus be inferred that for optimal generation and maintenance of the Ca^{2+} signal and the consequent enzymes secretion, a low $[Mg^{2+}]_i$ must exist. Certainly, ACh and CCK-8 induce a significant fall in $[Mg^{2+}]_i$. On the other hand, in the presence of high $[Mg^{2+}]_o$, cells take up Mg^{2+}. In these circumstances, agonists are still able to reduce $[Mg^{2+}]_i$, but to a smaller extent, which is likely the reason for the inhibitory effects. This role of Mg^{2+} in the stimulus-secretion coupling process is not restricted to the exocrine pancreas but shared by other secretory cells. In rat gastric parietal cells (**14**), an increase in $[Mg^{2+}]_o$ (and subsequently $[Mg^{2+}]_i$) attenuates Ca^{2+} responses to carbachol and abolishes acid production. Recent experiments with rat parotid gland (unpublished observations) show that ACh-stimulated amylase secretion and Ca^{2+} mobilisation are also affected by $[Mg^{2+}]_o$. Moreover, Mg^{2+} might be involved in intracellular pathways other than the phospholipid-calcium signalling, as suggested by the facts that i) high $[Mg^{2+}]_o$ inhibits histamine-stimulated cAMP production in rat parietal cells (**14**). ii) Secretin, which acts on the exocrine pancreas through cAMP formation, has been shown to attenuate in this tissue Ca^{2+} mobilisation and Mg^{2+} extrusion evoked by both ACh and CCK-8 (**4,9**).

Concluding remarks

The natural antagonism that Mg2+ appears to exert may be crucial, not only in health states but also during the establishment of such pathologies as pancreatitis, Sjörgen syndrome and gastric ulcers. Experiments are in progress to further characterize intracellular Mg^{2+} transport and homeostasis in both normal and diseased conditions.

Maria D. Yago and Jaipaul Singh
University of Central Lancashire

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THE TALE OF A TROLL

Once upon a time, long ago, when there were only a few physiologists, all the papers in *The Journal of Physiology* could be copy-edited by one person. The consistent style that this allowed remains a hallmark of *The Journal of Physiology* even today, when not one, but nine people are responsible for the copy-editing. The secret of this consistency lies in the existence of *The Black Book*, the Publications Office equivalent of *The Bible*. Within this tome are recorded accepted spellings, abbreviations, units, statistical tests, and guidance on tricky points such as the ever-changing nomenclature used in molecular biology. New terms are constantly added, old ones are updated and advice is sought from experts where *Journal* style might conflict with accepted practice in specialized fields.

So far, so good, but where do Trolls come into all this ? Well, for many years the abbreviation for the troland, the unit of retinal illumination, has appeared in *The Black Book* and, hence, in papers as td. Recently an interesting question was raised by an author who, as an ex-Press Secretary, is alert to stylistic subtleties. 'Why', he asked, 'should it be td and not Td in conformity with all the other abbreviations for units derived from names of people' ? As examples he cited V, Pa and N for volts, pascals and newtons. Always willing to cooperate with authors, the Publications Office took the problem to the National Physical Laboratory (NPL) at Teddington. The NPL came back with the disconcerting information that *The Black Book* is WRONG – the abbreviation for troland is not td but neither is it Td, which stands for townsend, a totally different unit. The proper abbreviation for troland is Trol. Unfortunately the ex-Press Secretary doesn't, at present, like the idea of a paper full of Trols. In the hope that he may eventually develop an affinity for them, he has been presented with Townsend, a yellow-haired Troll. Townsend wears a blue tunic embroidered on the front with Td (which also happen to be the first two initials of the recipient); a label round his neck reads 'I am Townsend (Td) the troland (Trol)'.

Ann Silver
University of Cambridge

Townsend the Troll
Photograph courtesy of Trevor Lamb

Essays in Biochemistry, Volume 33, Portland Press

Molecular Biology of the Brain, Edited by Steve Higgins (1998), pp196, Price £18.00

In this immensely useful and readable volume, Dr Higgins has drawn together fourteen chapters that together illustrate the impact of molecular biology on our understanding of brain function. The book illustrates very clearly the impossibility of drawing distinct boundaries between biochemistry, physiology and pharmacology in the Neurosciences. Much of the information presented cannot easily be found in current textbooks.

Each chapter is presented in a similar format with a straightforeward introduction to the topic, clear diagrams, future perspectives, a very useful summary and an extensive set of references. As can be seen from the contents lis, the book covers many key issues including neural connectivity, neurotransmission, apoptosis, memory, olfactory receptors and the loecular basis of neurodegenerative diseases and affective disorders, including schizophrenia, Alzheimer's disease, prion diseases and Huntington's disease. Finally Susan Greenfield contributes and interesting final chapter on "Future developments" in which she poses topical questions on the many uses of signal molecules in the brain.

Dr Higgins is to be congratulated for ensuring that a diverse group of authors worked to a common format. The book should be of great value both to those who teach in these rapidly moving research areas, and to their students. At £18 it is good value for money.

Contents

Bill Winlow
Dept of Biological Siences
University of Central Lancashire

University of Glasgow Meeting September 15-17th 1999

The staff of the Division of Neuroscience and Biomedical Systems at Glasgow are beginning preparations for the meeting . The number of designated sessions and symposia have increased since the initial announcement in 1998. Currently the meeting will run designated sessions of the following special interests groups:

Cellular Neurophysiology
Sommatosensory Control
Heart & Cardiac Muscle
Somatosensory Functions
Smooth muscle
Human Physiology.

There will also be a series of symposia associated with the designated sessions.

Sensory and motor integration in the spinal cord (full day)
Cardiac function in health and disease (half day)
Regulation of ion channels and Ca2+ in smooth muscle (half day)
Challenges to human thermoregulation (full day).
Look forward to seeing you there!
Godfrey Smith **

MAGAZINE EDITORIAL GROUP

2 vacancies

Unfortunately John Chad and Frances Ashcroft have had to resign from the Magazine Editorial Group due to pressures of work. We thank them for their hard work and contribution to the Magazine over the years.

We will therefore be looking to fill two vacancies. If you are interested in taking one of these positions, please contact Bill Winlow on Email:

wwinlow@uclan.ac.uk

No notice is carried for more than three successive editions. Notices are starred so that readers can see at a glance whether this is the first (one star) or final (three stars) appearance of the notice. Notices for the Winter 1999 edition (to be distributed on 5 November 1999) should reach the ***Administration Office by 20 September.***

The Maternal Brain: An International Meeting on Neurobiological and Neuroendocrine Adaptation and Disorders in Pregnancy and Postpartum.

Topics: Neuroendocrine adaptations: neurosteroids, lactational infertility, prolactin, plasticity of oxytocin neurones, and modulation of stress hormone responses.

Neurobiological systems: maternal behaviour, neuroimmune mechanisms, desensitisation to pain, puerperal psychosis, and regulation of apetite.

The presentations will consist of molecular through to clinical research. There will be plenary speakers, free communications and poster presentations.

For further details see Web site:-
http://www.phl.ed.ac.uk/~mbrain/ or contact Dr Richard Windle by email at:
maternal.brain@bristol.ac.uk or at Dept of Anatomy University of Bristol Bristol, BS8 1TD. **

ARE YOU AN EXPERT WITNESS?

Readers will be only too aware that litigants are ever more willing to resort to courts to seek redress. However, like all problems, this presents opportunities for some professionals. Possible one of the most interesting is to become an expert witness.

Strictly speaking, an expert witness is an individual who possesses knowledge or experience beyond that expected of a layman and who makes that knowledge available to a court. As a result, the role carries a heavy burden of responsibility and ethical obligation: the opinion must not be biased by any personal, professional or financial interest, and must reflect the current developments in the field. The expert witness must obviously be knowledgeable, but should also be able to communicate clearly and be willing to moderate opinion in the light of new evidence. The *UK Register of Expert Witnesses* is the first point of contact for any readers who feel they have the qualities needed for this demanding role. Your details can be listed in the printed *Register* and distributed to over 3,000 firms of solicitors throughout the UK. Once passed for inclusion a unique range of services becomes available to you, such as: access to factsheets in issues connected to your expert witness activities, a quarterly newsletter, a helpline and specially negotiated rates for PI insurance.

For more information contact Kate Porter at J S Publications,POBox 505, Newmarket, Suffolk, CB8 7TF. Tel: 01638 561590 Fax 01638 560924, E-mail: **ukrew@jspubs.com** **

1999 World Congress on Neurohypophysial Hormones

August 28 – September 2, 1999
Edinburgh, Scotland
Secretariat:
WCNH 1999, Alison J Douglas / Mike Ludwig, Department of Physiology, University Medical School, Teviot Place, Edinburgh EH8 9AG, UK
Phone: +44 (0) 131 650 3274 or 3275
Fax: +44 (0) 131 650 6527
Email: WCNH.1999@ed.ac.uk
Website: http://www.bms.ed.ac.uk/wcnh/

Scientific Organising Committee: Alison J Douglas, Mike Ludwig, Gareth Leng, John A Russell **

Unused Lloyd-Haldane/ Scholander Gas Analysis System required.

Professor Sue Ward (Centre for Exercise Science & Medicine, University of Glasgow) is anxious to locate an unused Lloyd-Haldane or Scholander gas analysis system for purchase or donation. If any colleagues can help, please could they contact Sue at :
s.a.ward@bio.gla.ac.uk

News on personal security precautions

The RDS has always advised members that, if they work with animals and may become a target for animal rights protesters, they should ensure that, as far as possible, their home address is not publicly listed.

Until recently, we had assumed that it was a legal requirement for your name to be on the electoral register, which is a public document. However, we are now informed by one member that the Electoral Registration Officer at his local authority has agreed to list him under a pseudonym.

We understand that this has been done before for other people who have a genuine need to keep their home address confidential.

It is now possible to buy (for under stlg20) a CD-ROM called the UK Info Disc, which contains all UK names and addresses on electoral registers in a searchable format. Local authorities are finalising electoral registers at the moment, so we would urge you to act rapidly if you wish to apply to use a pseudonym.

We suggest you telephone the Electoral Registration Officer at your local authority and explain that you are at risk from animal rights extremists, explain about the CD-ROM and ask if you can use a pseudonym for future elections.

If you need any further advice or information, please telephone the RDS Office on 0171-287-2818.**

50th HARDEN CONFERENCE; ANNEXINS

1-5 September 1999 Wye College, Kent, UK
Conference Organiser: S. Moss (London)
Organising Committee: A. Brisson (Groningen), R. Donato (Perugia), V. Gerke (Muenster), A. Lewit-Bentley (Paris), F. Russo-Marie (Paris)
Harden Lecture: H. Haigler (California, USA), Annexin XII flips out on acid and inserts into membranes
Keynote Lectures: C. Creutz (Charlottesville, USA), Calcium-dependent, membrane-binding proteins: Annexins, copines, and tricalbins
R. Huber (Martinsreid, Germany), Versatility and conservation in the annexin family of proteins. J. Dedman (Cincinnati, USA), Annexins: The Search for Function
Titles of lectures are subject to change.
Speakers include: M.-F. Bader (France), A. Brisson (Netherlands), R. Donato (Italy), J. Ernst (USA), M. Fernandez (Spain), R. Flower (UK), V. Gerke (Germany), J. Gruenberg (Switzerland), K. Hajjar (USA), S. Jäckle (Germany), A. Lewit-Bentley (France), S. Moss (UK), G. Nelsestuen (USA), A. Noegel (Germany), H. Pollard (USA), C. Reutelingsperger (Netherlands), F. Russo-Marie (France), B. Seaton (USA), K. Simons (Germany), J. Tait (USA), D. Waisman (Canada), J. Walker (UK), R. Wuthier (USA)
Information
The full programme and registration form is available at:
http://www.biochemsoc.org.uk/meetings/harden/default.htm
Deadline for application: 2 July 1999.
The meeting is limited to 150 participants.
Registration fee: £300.00 (ensuite), £280.50 (standard).Covers registration, accommodation and meals. There will be a limited number of bursaries for younger members of the Biochemical Society and other sponsoring societies.
The Harden conferences are residential research conferences held annually under the auspices of he Biochemical Society. Each conference covers a specialist topic and is aimed at the forefront of biological research.
The conferences are planned to be of an interdisciplinary nature, bringing together scientists from various backgrounds who have a common interest in, but different approaches to, the topic of the conference. To maintain a suitably high level of discussion and presentation at the conference, it is desirable that participants be experienced in the field covered; most of the participants will be expected to have postdoctoral or equivalent experience, although Ph.D. students will also be welcome. Each conference lasts four to five days, with planned scientific sessions morning and evening, and the afternoon left clear for informal scientific interchange and recreation. The planned scientific sessions feature speakers invited by the Conference Chairman and, in addition, time is left for discussion andcontributions by other participants.
For further information contact: The Meetings Office, Biochemical Society, 59 Portland Place, London W1N 3AJ
Tel: 0171 580 3481 Fax: 0171 637 7626
E-mail: meetings@biochemsoc.org.uk **

Biochemical Society Meetings University of Cork, 7 - 9 September 1999

Programme

Predoctoral Meeting: Monday 6th September, 1999
Medal/Plenary Lectures:
EMBO: Tuesday 7th September - **J. Walker** (MRC Cambridge)
Colworth Medal Lecture: Wednesday 8th September - **N. Scrutton** (Leicester)

Scientific Programme

- Neuronal signal transduction and Alzheimer's Disease
- Chemoprotection
- Growth factors and cytokines at the maternal/foetal interface
- Promotion of Biochemistry in the public domain
- Cell survival and apoptosis
- Biosensors and novel bioanalytical methods
- Evolution of sequences, structures and genomes
- Organisms, Organs, Cells and Organelles: *in vivo* and *in vitro* experimental systems
- Ageing and the immune system

Organisers:

B. Anderton (London); T. Cotter (Cork); M. Coughtry (Dundee); S. Eaton (London); D. Higgins (Cork); D. Jenkins (Cork); L. Kelleher (Cork); D. Kipling (Cardiff); J. Lord (Birmingham); T. McCarthy (Cork); R. O'Connor (Cork); C. O'Neill (Cork); D. Papkovsky (Cork); P. Quant (London); R. Ramsay (St. Andrews); D. Sheehan (Cork); G. Williamson (IFR, Norwich)

Information:

The full programme and registration form is available at:
http://www.biochemsoc.org.uk/meetings/cork99/default.htm

Deadline for poster abstracts: 18 June 1999
Deadline for application: 6 August 1999
Registration fee: Members £25.00 Non-member registration: £100.00 per day

Contact details:

For further information contact: The Meetings Office, Biochemical Society, 59 Portland Place, London W1N 3AJ, Tel: 0171 580 3481
Fax: 0171 637 7626
e-mail: ***meetings@biochemsoc.org.uk***

Speakers:

A. Akbar (London); D. Allsop (Lancaster); B. Anderton (London); J. Aplin (Manchester); R. Aspinall (London); J. Barnes (Glaxo Wellcome); G. Barton (EBI, London); M. Berry (South Australia); S. Bingham (Cambridge); C. Bradley (Cork);
K. Breen (Dundee); J.-P. Brion (Brussels); C. Chothia (Cambridge); R. Coleman (Birmingham); S. Cook (Cambridge); C. Cooper (Essex); R. Cowburn (Stockholm);
C. Dive (Manchester); K. Duff (New York); S. Eaton (London); P. Ebbesen (Aarhus); P. Engel (Dublin); G. Evan (ICRF, London); R. Evans (Oxford); R. Faragher (Brighton); L. Fothergill-Gilmore (Edinburgh) ; P. Fraser (Toronto); F. Gellerich (Halle, Germany); L. Ghibelli (Rome); A. Ghindilis (New Jersey);
T. Gibson (Heidelberg); H. Glatt (Berlin); M. Goedert (Cambridge); I. Graham (Glasgow);
G. Guilbault (Cork); A. Halestrap (Bristol); E. Hall (Cambridge); J. Hardy (Jacksonville); D. Harrison (Edinburgh); J. Hayes (Dundee); P. Johnson (Liverpool); D. Keppler (Heidelberg);
D. Kipling (Cardiff); W. Kunz (Bonn); P. Le Bouteiller (Toulouse); L. Lian (Leicester); R. Lightowlers (Newcastle); Y. Loke (Cambridge);
J. Lord (Birmingham); S. Lovestone (London); R. Lutz (Cambridge, USA); M. Manson (Leicester); T. Mantle (Dublin); U. Martens (Freiburg); M. Mattson (Kentucky);
T. McCarthy (Cork); E. McVeigh (Oxford); R. Miller (Ann Arbor); R. Neve (Harvard); R. Nitsch (Hamburg); N. O'Brien (Cork); R. O'Connor (Cork); T. Ohm (Berlin);
C. O'Neill (Cork); C. Orengo (London); D. Papovsky (Cork); K. Parkinson (Glasgow); C. Pickett (New Jersey); M. Raff (London); R. Ramsay (St Andrews); W. Reville (Cork); C. Rice-Evans (London); D. Rigden (Edinburgh);
S. Romagnani (Florence);
E. Saggerson; F. Scheller (Berlin); P. Sharpe (Nottingham); D. Sheehan (Cork);
M. Smith (Dublin); S. Soboll (Duesseldorf);
E. Soini (Turku); R. Strange (Keele);
W. Strittmatter (North Carolina); W. Taylor (MRC, Mill Hill); B. Trench (Dublin);
F. Van Leuven (Leuven); R. Vernon (Hannah Research Institute); R. Wanders (Amsterdam);
G. Williamson (IFR, Norwich); B. Winchester (London); R. Wolf (Dundee); K. Wolfe (Dublin); S. Yan (Columbia); Y. Yevdokimov (Moscow);
V. Zammit (Hannah Research Institute)

Babraham Calcium Conference '99

On the 8th September 1999 we will host the 2nd Babraham Calcium Conference at the Babraham Institute in Cambridge. The main purpose of this meeting is to offer a forum for the entire field of calcium signalling and to foster interactions between researchers that normally do not come into contact with one another.

Main Topics:

- Confocal imaging of single synapses (Tim Bliss, Mill Hill)
- Cell cycle calcium signals (Michael Whitaker, Newcastle)
- Calcium and sphingosine kinases (Ken Young, Leicester)
- Cardiac calcium signalling (David Eisner, Liverpool)
- Calcium and InsP3 receptors (Charles Adkins, Cambridge)
- Calcium signalling in plants (Colin Brownlee, Plymouth)
- Single channel behaviour of the InsP3 receptor (Ed Thrower, Norwich)
- Calcium and mitochondria (Michael Duchen, UCL)

In addition the Conference hosts the Feldberg Price Lecture given by Guenter Schulz (Berlin, Germany) on the role of G-proteins in cell function.
Apart from these oral communications, participants are encouraged to submit posters and numerous companies will display their latest developments, such as video-imaging and confocal microscopes.
Detailed information and the registration form can be found on the following website:
www.bi.bbsrc.ac.uk/WORLD/calconf/calcof.html
or contact Peter Lipp (peter.lipp@bbsrc.ac.uk) or Martin Bootman
(martin bootman@bbsrc.ac.uk) on (tel) 01223 496 515/ (fax) 01223 496 033.
Mail address: The Babraham Institute, LMS, Babraham Hall, Babraham, Cambridge CB2 4AT. *

XXXIV INTERNATIONAL CONGRESS OF PHYSIOLOGICAL SCIENCES

From Molecule to Malady
Christchurch, New Zealand, 26-31 August, 2001

For further information please visit out website:
http://www.iups2001.org.nz

The Physiological Society

THE DALE AND RUSHTON FUND

These funds will be amalgamated from 1999, with a budget of £40,000 per annum. The object of the Fund is to promote new physiological research in the UK and the Republic of Ireland. Priority will be given to Members and Affiliates of the Society.

Eligibility
Persons engaged in physiological research:

a) Resident in the British Isles.

i) Travel grants for visiting another laboratory, including those abroad, for collaborative research, acquiring new techniques, or attending a practical workshop or training courses.

ii) Travel grants for attending and presenting work at an international Symposium or Conference, abroad or in UK. Note also that an Affiliate may not apply for Dale & Rushton support to attend a meeting for which they have submitted an Affiliate Travel application.

b) Resident abroad, Members and Affiliates only. Travel grants for visiting a laboratory in the British Isles, for collaborative research, acquiring new techniques, or attending a practical workshop or training course relevant to their physiological studies, maximum £800. Note that registration fees, and travel costs within the UK, are generally not covered.

Awards
Resident in the British Isles, up to £800 for travel grants for collaborative work, practical workshops and courses. Travel to attend and present at international conferences and symposia up to £300, within the UK up to £100. (Note that Registration fees, and travel costs within the UK, are generally not covered.)

Applications
All applicants apart from those who are full Members of the Society should be sponsored by a Member, and should submit a brief CV with their application. Applicants should state the SPECIFIC benefit they expect to derive from the visit and successful applicants are asked to make a brief report of their activities after the conclusion of the visit.

Results of the application should normally be made known within three weeks. To assist in forward planning, the Society is usually prepared to make a grant before the results of other applications are known, with the proviso that the applicant returns any surplus resulting from awards from other agencies.

Application forms are available from The Administrator (Dale and Rushton Fund), The Physiological Society, PO Box 11319, LONDON WC1E 7JF

Tel (0171) 631 1458
Email **cparry@physoc.org**
Website **http://physiology.cup.cam.ac.uk**

The Physiological Society

DALE AND RUSHTON FUNDS

APPLICATION FORM

Name **Age**

Address Member/ Affiliate/ Associate/ Non-Member
Membership Number:
Degrees/ Years awarded:

Tel
Fax
Email

Post/ Status	
Academic Staff	
Principal/ Senior Research Fellow	
Postdoctoral Fellow	
Postgraduate Student/ Assistant	
Undergraduate	
Other (state)	

Place of proposed visit and likely dates

Estimated cost breakdown

Travel
Accomodation
Other (state)*

Total Total requested

Other funds awarded/ requested *(give expected dates of notification)*

Last three principal publications *(including titles)*

** Note that conference registration fees are not normally admissible for support by the Dale & Rushton Funds.*

Continued overleaf/

Please state the specific purpose of the visit and how it is expected to benefit your research.
Applications for attendance at conferences or specialized symposia should be accompanied by a copy of the submitted abstract or letter of invitation. Applications for attendance at training courses or workshops should be accompanied by a brief summary of the content and confirmation of acceptance of a place. Applications for a study visit to another laboratory should be accompanied by a letter of invitation from the intended host and/or the Head of the host Department or Institute. Affiliates, Student Associates and other non-Members of the Society should enclose a brief CV.

Signature of Applicant Date

This section to be completed only if the applicant is an Affiliate, Student Associate or other non-Member of the Physiological Society.

Sponsoring Member
Name
Address
Tel
Fax Email
The information given by the applicant is correct to the best of my knowledge. I support the application.
Signed

Endorsement by Head of Department/ Institute

Signed Name

If you are awarded a grant we would like to transfer the funds directly into your bank / building society account. Please complete. (all information is confidential).

Bank / Building Society Account Number

Name of account holder Sort Code

Please return completed form to: The Dale & Rushton Fund Managers, The Physiological Society, PO Box 11319, LONDON WC1E 7JF

Advance announcement

THE JOURNAL OF PHYSIOLOGY

SYMPOSIUM

Neuronal compartmentalization: channels, receptors and signalling

Society for Neuroscience
Annual Meeting, 23 October 1999
Miami Beach, FL, USA

Part 1: Cellular aspects

KEYNOTE LECTURE:
Carlos G. Dotti
(European Molecular Biology Laboratory, Heidelberg, Germany)
Establishment of neuronal polarity and protein targeting

Heinrich Betz
(Max-Planck-Institut für Hirnforschung, Frankfurt/Main, Germany)
Glycine receptors, gephyrin and gephyrin-associated proteins: novel insights into the assembly of inhibitory postsynaptic membrane specializations

Kathleen M. Buckley
(Department of Neurobiology, Harvard Medical School, Boston, MA, USA)
Regulation of plasma membrane neurotransmitter transporters by protein trafficking

Richard L. Huganir
(Department of Neuroscience, Johns Hopkins University, Baltimore, MD, USA)
Glutamate receptor clustering

Michele Jacob
(Department of Neuroscience, Tufts University, Boston, MA, USA)
Nicotinic acetylcholine receptor targeting to interneuronal synapses

Part 2: Physiological aspects

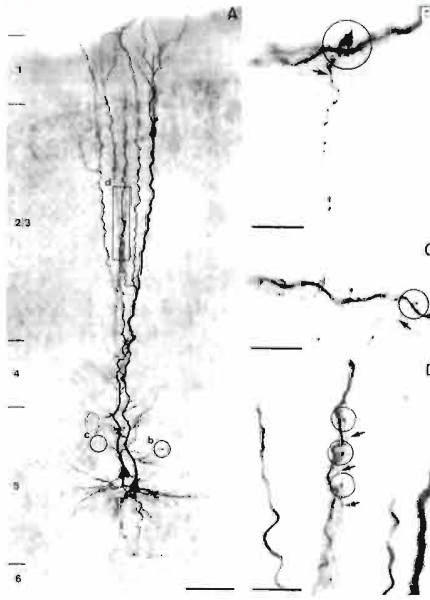
KEYNOTE LECTURE:
Bert Sakmann
(Max-Planck-Institut für Medizinische Forschung, Heidelberg, Germany)
Dendritic signalling

Dan Johnston
(Division of Neuroscience, Baylor College of Medicine, Houston, TX, USA)
Dendritic potassium channels

Chris J. McBain
(NICHD, NIH, Bethesda, MD, USA)
Target-specific expression of pre- and postsynaptic mechanisms

Lucas D. Pozzo-Miller
(Department of Neurobiology, University of Alabama, Birmingham, AL, USA)
Microheterogeneity of calcium signalling in dendrites

Peter Shrager
(Department of Neurobiology and Anatomy, University of Rochester Medical Center, Rochester, NY, USA)
Ion channel clustering and function in myelinated axons



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For further information go to
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