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The Bulletin

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Contents

Editorial

Welcome to the July 2004 issue of *The* Bulletin!

Our review article for this issue is written by James Sharman and colleagues from the University of Queensland and the Wales Heart Research Institute. James presents some exciting data to suggest that exercise haemodynamics may be a powerful predictor of cardiovascular risk.

In the Secretary's Column, Dr Barbara McDermott highlights the forthcoming election of members to serve on the Society's Executive Committee. Ballott forms are enclosed with this issue. To assist you with, biographical summaries and statements from the candidates are published within this issue. Please help to elect the four candidates who you feel will benefit the Society by completing the ballot form and returning it to the Secretary by 31st August.

While preparations are well underway for this year's Autumn meeting, organised by Professor Ajay Shah and Dr Alison Cave of King's College, London (programme included in this issue), plans are also coming together for our Spring meeting for 2005 which will be organised by Professor Nilesh Samani. Preliminary details for this meeting can be found on page 16 of this issue.

Finally, we bring you the latest details of grants awarded to researchers in the Cardiovascular field, by the British Heart Foundation and the Wellcome Trust.

Helen Maddock and Nicola Smart

Prognostic Power of Exercise Haemodynamics: Significance of the Central Pressure Waveform

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A hypertensive response to exercise is associated with increased incidence of chronic hypertension during follow-up (Singh et al., 1999; Tanji et al., 1989; Manolio et al., 1994), and has been associated with outcome, independent of resting blood pressure (BP) (Fagard et al., 1996). Indeed, the propensity for an abnormally high BP response to exercise may be evident quite early in life, as has been observed in adolescents with a tendency to develop hypertension (due to parental history) but who have normal resting BP (114/69 mmHg) compared to controls (111/70 mmHg) with no family history of hypertension (Molineux and Steptoe, 1988). The BP response to submaximal exercise also appears to be informative. A series of epidemiological studies in apparently healthy men showed that the brachial systolic BP (SBP) response to moderate intensity aerobic exercise predicted cardiovascular mortality (Filipovsky et al., 1992; Mundal et al., 1994; 1996) and stroke (Kurl et al., 2001), independently of resting BP and other cardiovascular risk factors. In these studies the maximal SBP was not related to risk and the predictive calibre of exercise SBP was most pronounced with the pressures recorded early (5^{th} to 6^{th} minute) in the exercise protocols, which were only of light to moderate intensities (e.g. 100 to 164 W on a cycle ergometer) similar to that which may be experienced in every day life.

Arterial function and the hypertensive response to exercise

It is unknown why exercise haemodynamics provide additional prognostic information over resting values, but it may be due to the structural (e.g. arterial stiffness) and functional (e.g. endothelial-dependent vasoreactivity) characteristics of the arterial system that determine cardiovascular risk being profoundly affected by even light physical activity. Since the early twentieth century, clinicians have measured BP by cuff sphygmomanometry at the brachial artery, providing information on the extremes of pulse pressure at an artery in the upper arm. However, due to pressure wave travel through arteries with different viscoelastic properties, and the phenomenon of wave reflection, there is amplification of pulse pressure in arteries distal to the heart. At rest this occurs because SBP increases, whereas DBP and mean arterial pressure remain relatively constant (Pauca et al., 1992). Consequently, SBP and, therefore, pulse pressure measured at the brachial artery may be significantly higher than at the aorta. Moreover, due to individual variation in arterial compliance and the pattern of ventricular ejection, people with similar brachial BP may have significantly different aortic BP (Wilkinson et al., 2002; O'Rourke, 1970). This has clinical implications because stress on the myocardium, aorta and cerebral vessels may be grossly overestimated if only brachial BP is taken into

account. Indeed, it is known that central *not* peripheral BP determines left ventricular workload (Westerhof and O'Rourke, 1995), is a stronger predictor of all-cause mortality (Safar et al., 2002) and correlates with independent predictors of mortality (Boutouyrie et al., 1999). Having regard to this evidence, together with the outcome data from the haemodynamic response to exercise, it may be that determination of central BP and markers relevant to left ventricular performance during exercise will help explain the additional prognostic power of exercise BP. Before presenting some of our recent findings in this area, we discuss some concepts relating to the central pressure waveform.

Wave reflection and the central pressure waveform

Although there is only one ejection of blood with each cardiac contraction, the arterial pressure waveform usually contains a secondary wave and sometimes a tertiary wave due to wave reflection. The pressure pulse generated by systole travels distally through large arteries of low resistance and is reflected back towards the heart from peripheral sites and interacts with the wave that created it rather than any subsequent wave (O'Rourke and Kelly, 1993). As shown in **Figure 1**, the first systolic peak (P_1) is created by the transit of the impulse produced by the heart, whereas the second

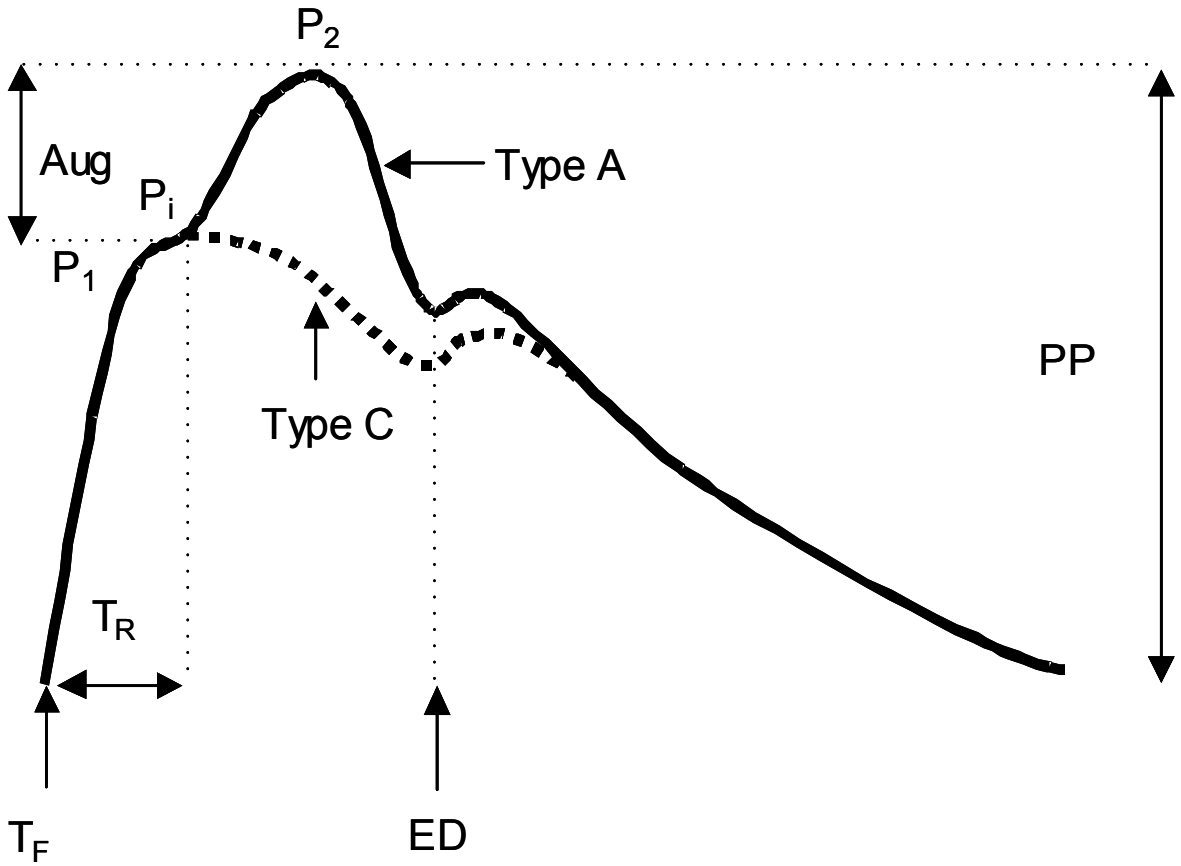

Figure 1. Examples of Murgo Type A and C central pressure waves.

The augmentation index (AIx) = Aug/PP(100). Aug = augmentation, ED = ejection duration, PP = pulse pressure, P_1 = first systolic peak, P_2 = second systolic peak, P_i = inflection point, T_F = foot of the pressure wave (diastolic BP), T_R = estimated aortic pulse wave velocity.

systolic peak (P_2) is formed by return of the pressure wave, mainly from the lower part of the body (Nichols and O'Rourke, 1998). The secondary wave has a lower amplitude than the primary wave and is distinct from the high frequency incisura caused by closure of the aortic valve (O'Rourke and Kelly, 1993). Overall, wave reflection is dependent on the viscoelastic properties of the entire arterial system, as well as the transmission velocity of the wave and distance to the major reflecting site(Nichols and Singh, 2002).

The main site of wave reflection is considered to be the high resistance arterioles (O'Rourke, 1982), but sizeable reflection also occurs at branching points of major vessels such as the renal arteries (Latham et al., 1985) and terminal aortic bifurcation (Murgo et al., 1980). In adolescence, ventricular-vascular interaction is optimised such that the reflected wave arrives at the ascending aorta after closure of the aortic valve, which boosts diastolic pressure without increasing left ventricular afterload (O'Rourke and Kelly, 1993). Conversely, with advancing age and diseases such as hypertension (Safar, 2001), the large central arteries become stiffened and the transmission time of the incident (outgoing) and reflected pressure wave is reduced, such that there is an early return to the heart of the reflected wave, which increases late systolic pressure (augmentation). This is deleterious because the myocardium is forced to pump against increased load, oxygen demand increases, stroke volume decreases and, over time, left ventricular mass increases (Marchais et al., 1993). These changes start to become apparent in healthy humans by middle age, and are obvious from the seventh decade onwards (Kelly et al., 1989).

Murgo et al., (1980) classified central arterial pressure waves based on the degree of augmentation. As detailed in **Figure 1**, the Type A wave, typically seen in older people, has P_2 occurring in late systole after an inflection point (P_i) and the augmentation index (AIx) is >12%. The AIx is the amount of pressure augmentation as a percentage of the central pulse pressure (augmentation [mmHg]/central pulse pressure [mmHg] x100) (Nichols and O'Rourke, 1998). The Type B wave (not shown) also has P_2 occurring in late systole but the AIx is between 0% and 12%. The Type C waves have a negative AIx, and are generally seen in individuals under 30 years of age (Kelly et al., 1989). The AIx provides a measure of systemic arterial stiffness, because the timing and amplitude of the reflected wave depends on the stiffness of the small (pre resistance) and large arteries. It may be considered a risk factor for cardiovascular disease because chronic elevation of left ventricular systolic pressure often results in left ventricular hypertrophy, a strong determinant of death (Levy et al., 1990).

Until recently, the only means to obtain central (aortic) pressure was by invasive intra arterial introduction of a catheter with a mounted pressure sensor. However, O'Rourke (1993) suggested that aortic BP could be obtained from the radial artery pressure waveform without the need for catheterisation. Subsequent work led to the development of a device to non-invasively determine central BP using applanation tonometry and pulse wave analysis (O'Rourke et al., 2001). Computer software applies a generalised transfer function to the radial artery pressure waveform in order to generate a pressure waveform at the ascending aorta, from which central BP and markers of systemic arterial stiffness are determined. The generalised transfer function has been validated to provide a remarkably robust means of determining central pressure in subjects of different disease status, age, heart rate, BP and pulse pressure amplification (Karamanoglu et al., 1993; Pauca et al., 2001; Chen et al., 1997). Importantly, these studies also showed that accurate synthesis of the central pressure waveform could be attained, even after acute haemodynamic changes were induced which resulted in pressure changes to within that expected during light exercise. The main problem of this technique is the requirement to calibrate the waveform to brachial sphygmomanometric pressure, which can be inaccurate. Currently there is widespread use of this method for cardiovascular investigations in the clinical and epidemiological settings (Nichols and Singh, 2002).

Central pressure and exercise

Rowell et al., (1968) simultaneously recorded intra-arterial BP from central (aortic arch) and peripheral (radial artery) sites during upright cycling in four healthy men and showed that pulse pressure amplification was significantly elevated by exercise. They found radial artery BP increased on average from 133/66 mmHg at rest to 236/58 mmHg at maximal aerobic capacity, whilst aortic BP changed from 112/68 mmHg to 154/70 mmHg during the same period. Therefore, if only the peripheral BP response to maximal exercise was assessed, central SBP would have been overestimated by over 80 mmHg and central DBP underestimated by 12 mmHg.

We recently undertook a series of studies using servo-controlled applanation tonometry to non-

invasively examine central and peripheral BP during aerobic exercise in healthy men, and also those with cardiovascular risk factors. In one of the studies, healthy young men (aged <50 years; n=20), healthy older men (aged >50 years; n=20) and 10 matched older hypercholesterolaemic men (aged >50 years; n=10; matched by brachial BP, age, height and weight) had recordings taken whilst cycling at 60% of age-predicted maximal heart rate, which is an effort similar to higher intensity activities of daily living that is often reported as "very light" to "fairly light" (or "9" to "11" out of 20 in the Borg scale) (Sharman et al., 2004). Of particular interest was the finding that hypercholesterolaemics (defined by total cholesterol >6.0 mmol/l) had significantly higher AIx, central SBP, central DBP and blunted pulse pressure amplification during exercise compared to controls *despite no differences in baseline haemodynamics* or the brachial SBP response to exercise. The significant disparity in markers of central systolic stress between groups were remarkable considering the small subject numbers, the light exercise intensity, the close matching of subjects by resting peripheral BP values and the relatively small mean difference in plasma total cholesterol between hypercholesterolaemics (6.77 ± 0.71 mmol/l) and controls (4.97 ± 0.70 mmol/l). We also noted an age-related increase in central SBP and AIx, at rest and during exercise.

The elevated central BP apparent during light exercise in the older subjects and those with high blood cholesterol may have occurred as a consequence of increased systemic arterial stiffness resulting in amplified wave reflection boosting aortic late systolic pressure. This idea is supported by a significant negative association ($r = -0.7$; $P<0.001$) between resting AIx and the amplification of pulse pressure during exercise and other data showing that the SBP response to exercise is correlated to systemic arterial compliance (Mottram et al., 2002). It is possible that at very light exercise intensity, a small reduction in large artery compliance causes appreciable elevation in central BP, without significantly increasing brachial SBP above the normal amplification that occurs with exercise (Rowell et al., 1968). However, at higher intensity exercise the effect of reduced arterial compliance may then be evidenced at peripheral arteries, since a non-compliant aorta cannot accept the increased stroke volume associated with vigorous exercise without an exaggerated rise in brachial BP.

Alternatively, an impaired or delayed vasodilatory response of peripheral arterial beds during exercise may also help explain the haemodynamic changes related to augmented wave reflection. In healthy young individuals there is a rapid increase in limb blood flow in the first few seconds of exercise, which reaches an initial plateau at ˜ 5 to 7 s and is followed by a slower increase in blood flow (at ˜ 15 to 20 s) that advances to a higher steady-state level (Shoemaker and Hughson, 1999). The exercise blood flow regulatory mechanisms are complex and incompletely understood. However, the second phase of slow increases in blood flow may be modulated by endothelial-derived factors such as nitric oxide, which is released following shear stress induced by elevated blood flow (Rubanyi et al., 1986). It is possible that decreased bioavailability of nitric oxide during exercise affects a rise in peripheral vascular resistance and mean pressure, thus augmenting wave reflection. Certainly this is an attractive hypothesis since advancing age and hypercholesterolaemia are characterised by endothelial dysfunction of peripheral resistance vessels and decreased physiological availability of nitric oxide (Gerhard et al., 1996; Chowienczyk et al., 1992).

In conclusion, our data suggests that further work needs to be undertaken on the physiological mechanisms underlying an inappropriate blood pressure response to exercise. It also highlights that helpful clinical and prognostic information may be lost if only peripheral BP is taken into consideration. The findings are of particular value because firstly, brachial BP during exercise is not predictive of central haemodynamics. Secondly, since central BP governs myocardial afterload, left ventricular hypertrophy (Marchais et al., 1993; Westerhof and O'Rourke, 1995) and more reliably predicts mortality (Safar et al., 2002), it is likely that the central BP response to exercise would be a more powerful predictor of cardiovascular risk than brachial BP. This hypothesis remains to be tested.

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*** Notice to current student members ***

Membership of the BSCR is now free to all students registered for a higher degree.

If you pay your membership of the BSCR by direct debit, please cancel and make this known to antonio.cavalheiro@kcl.ac.uk

There will continue to be a fee for Joint membership of the BSCR/ ISHR

Secretary's Column

The recent event of note on the BSCR calendar was the symposium which took place during the British Cardiac Society annual scientific meeting at the end of May in Manchester. A good audience, of about eighty, was attracted to the subject 'The promise of stem cells for repairing the broken heart'. Significant advances in cardiomyocyte differentiation from embryonic stem cells (Mummery, Utrecht), the biology of circulating endothelial progenitor cells (Dimmeler, Frankfurt), skeletal myoblast transplantation (Menasche, Paris) and use of endothelial progenitors (Zeiher, Frankfurt) were carefully distilled in a summing up (Poole-Wilson, London) which engendered lively debate about the viability of new treatment strategies for myocardial regeneration.

The end of this year will see a number of changes on the BSCR Committee when Professor Gavin Brooks, Dr Gillian Gray, Professor Ajay Shah and Dr Saadeh Suleiman will finish their terms of office. Gillian Gray (Edinburgh) is standing for re-election and further nominations have been received from Drs Andrew Baker (Glasgow), Katrina Bicknell (Reading), Chris Jackson (Bristol) and Nicola King (Bristol). The biographies of the individuals are given in this issue of the Bulletin. It is necessary now to hold a postal ballot to elect 4 of the 5 candidates and a voting paper for the purpose has also been included. I would encourage you all to make your choice known, using only the official stamped form and by no later than 31 August. The result will be announced and approval sought from the membership present at the next AGM to be held in London on 10 September. Notice of the AGM is given also with this issue. It will take place during the autumn scientific meeting organized by Professor Ajay Shah and Dr Alison Cave on the Guy's Campus of King's College. The programme for the 2-day meeting on 9-10 September, 'Integrative cardiovascular physiology in gene-modified models', will have a broad appeal and a large attendance is expected.

Barbara McDermott

For up to date information on forthcoming meetings, workshops and symposia,

please remember to check the new BSCR Website:

http://www.bcs.com/affiliates/bscr.html

Nominations for Membership of the BSCR Executive Committee

Andrew Baker

I graduated from the University of London in 1990 with a BSc (Joint Hons) in Pharmacology and Toxicology and then studied for a PhD with the Leukaemia Research Fund, graduating in 1994. I then joined the group led by Professor Andrew Newby and developed adenoviral vectors for overexpression studies in the vascular system that then transferred to a lectureship at the University of Bristol (Bristol Heart Institute) to continue studies on adenovirus-mediated gene transfer to assess vascular function in different model systems. In 1999, I joined Professor Anna Dominiczak's group at the University of Glasgow as a Senior Lecturer in Molecular Medicine where I am a Reader in Molecular Medicine at the British Heart Foundation/Glasgow Cardiovascular Research Centre (GCRC).

My main focus has been on the development of gene delivery technology and therapy for treatment of diverse cardiovascular diseases. This initially included the generation of replication-defective adenovirus vectors that mediated overexpression of a variety of genes including TIMPs, inhibitors of matrix degradation. These vectors were used successfully to inhibit vein graft neointimal thickening in human and pig models and this concept has recently been extended to other pro-apoptotic genes. I am currently engaged in research to further develop gene therapy aimed at different aspects of vein graft biology, as well as development of vectors that mediate more efficient and/or sustained gene overexpression *in vivo*.

Gene delivery to the vasculature is extremely poor compared to other tissues. My work has therefore developed vectors with improved efficiency and selectivity for vascular cells and tissue, focusing on adenoviral and adeno-associated (AAV) vectors. To this end it has become clear that vectors can now be rationally designed for specified applications through a combination of virus engineering and use of selective promoters. This combination of techniques will lead to more effective gene-based medicines for application to cardiovascular disease.

I have thus developed experience in vascular biology and therapy that are important for my nomination to serve on the committee. Together with Sarah George, I recently organized a BSCR meeting in Glasgow.

Joined Society: 1996 **Proposed by**: Barbara McDermott **Seconded by**: Michael Marber

Katrina Bicknell

I completed my BSc (Hons) at The University of Melbourne in 1994. I undertook my PhD studies in the Department of Medicine (St. Vincent's Hopsital), The University of Melbourne and was the recipient of a Melbourne University Postgraduate Studentship and a Faculty of Medicine Postgraduate Studentship. My PhD studies (1994-1998), in the fields of prohormone processing and cancer biology, investigated the role of prohormone processing in regulating the biological activity of parathyroid hormone-related protein. Following my PhD studies, I was awarded a Juvenile Diabetes International Junior Fellowship to continue my work on prohormone convertases at the Barbara Davis Center for Childhood Diabetes, The University of Colorado Health Sciences, Denver, USA.

In 2000, I joined the laboratory of Professor Gavin Brooks to study the role that cell cycle regulators play in controlling cardiac myocyte proliferation and cardiac hypertrophy and in 2003 was awarded a BHF Intermediate Fellowship to enable me to develop my own research interests. My current research aims to elucidate the roles that Forkhead transcription factors play in regulating cardiac myocyte growth. I have been a member of BSCR since 2000 and would welcome the opportunity to serve on the BSCR Committee and become further involved in the running of the Society. I have a particular interest in encouraging researchers in the early stages of their research careers to become further involved in the Society and promoting the importance of the interaction between clinical and basic scientists in the cardiovascular field.

Joined Society: 2000 **Proposed by**: Gavin Brooks **Seconded by**: Peter Weinberg

Gillian Gray

I am currently a senior lecturer in Pharmacology at the University of Edinburgh with research interests in myocardial infarction, endothelium-derived factors and sex steroid hormones. In 2002, I was voted onto the BSCR executive committee and have found membership to be both an enjoyable and educational experience. During this period I have a taken the opportunity to organise a successful meeting of the BSCR in Edinburgh in September 2004 on 'Oxidative Stress: from measurement to management', hosted by the Edinburgh Centre for Cardiovascular Science. This meeting also allowed me to meet one of my initial aims on my appointment to the BSCR, which was to increase the participation of Scottish cardiovascular scientists in the activities of the BSCR, through holding the meeting jointly with the Scottish Cardiovascular Forum. I hope that we can continue to involve scientists from around the UK in the activities of the BSCR. The recent initiative from the committee to allow PhD students free membership of the BSCR should also increase participation. Having now got to know the other committee members and come to grips with the operation of BSCR I hope to be able to continue to contribute to its future development and success.

Joined Society: 1998 **Proposed by**: Ian Megson **Seconded by**: David Bell

Chris Jackson

I spent my early research career working at Rhône Poulenc Rorer, and then was fortunate enough to be able to study part-time for my PhD with Dr David Bowyer at the University of Cambridge, investigating the effects of calcium channel blockers on smooth muscle cell proliferation in injured arteries. I took up a postdoctoral fellowship with Professor Michael Reidy at the University of Washington in Seattle, looking at plasminogen activators and smooth muscle cell migration and proliferation. After two brief further stints in industry, at Pfizer in Kent and DuPont Merck in Pennsylvania, I joined Professor Gianni Angelini's team at the University of Bristol in 1995.

During my 9 years at Bristol I have developed animal models of endothelial regrowth, homocysteinaemia, and plaque rupture, and have been successful in obtaining generous funding from the BHF and from industry. My lab is now entirely focused on our murine plaque rupture model, which is beginning to yield unique insights into plaque destabilisation.

I would like to serve on the BSCR committee because I think my experience of both academia and industry would provide useful links. Also, I think it is important that the vascular aspects of cardiovascular science continue to be an important part of the Society's efforts, and I would like to do what I can to support efforts in this area.

Joined Society: 1995 **Proposed by**: Sarah George **Seconded by**: Mark Bond

Nicola King

My current employment is as a BHF funded Intermediate Research Fellow at the Bristol Heart Institute. I moved to the Department of Physiology in Bristol in 1995 after successfully completing my PhD. This marked the beginning of my investigations of the role of amino acids in heart, which has been the main focus of my research all the way through to the present day. In more detail my research has been concentrated on investigating the expression and function of amino acid transporters in the normal and hypertrophied heart together with the use of amino acids as cardioprotective agents. Recently I have also become interested in the problems caused by reactive oxygen species production in heart and have investigated methods of bolstering cardiac antioxidant defence mechanisms.

I would like to serve on the committee because I believe in the promotion of cardiovascular research and the benefits to all that follow from discussion and collaboration amongst researchers. This belief also includes facilitating communication between clinical and non-clinical researchers with common interests. In addition as a relatively young researcher who is just beginning to establish herself, I feel I can reach out to the younger membership and to new cardiovascular researchers in order to support and encourage them.

Joined Society: 1997 **Proposed by**: Saadeh Suleiman **Seconded by**: Gianni Angelini

British Society for Cardiovascular Research

AUTUMN 2004 MEETING

INTEGRATIVE CARDIOVASCULAR PATHOPHYSIOLOGY IN GENE-MODIFIED MODELS

9-10 September 2004,

King's College London

DAY 1 P.M.

A. Cardiac Disease

Models of myocardial ischaemia and infarction	Michael Marber (London)
Cardiac hypertrophy models	Alison Cave (London)
Studying electrophysiology in mice	Andrew Grace Cambridge)
Gene modification and physiology in myocytes	Godfrey Smith (Glasgow)

British Cardiac Society Lecture:

State-of-the-art assessment of murine LV haemodynamics
David Kass (Baltimore, USA)

POSTERS

DAY 2 A.M.

B. Vascular Disease

Studying atherosclerosis and restenosis in mice	Keith Channon (Oxford)
Thrombosis	Alberto Smith (London)
The interface between metabolic and vascular dysfunction	Mark Kearney (London)
Angiogenesis	Jean-Sebastian Silvestre (Paris)

SELECTED ORAL ABSTRACTS

L U N C H

DAY 2 P.M.

C. Imaging

Echocardiography in mice	Martin Denvir (Edinburgh)
Functional nuclear imaging	Andre Constantinesco (Strasbourg)
Murine MRI	Stefan Neubauer (Oxford)
In situ imaging in cardiac cells	Mathias Gautel (London)

National Heart Research Fund Lecture:

Identification of murine models of CV disease using mutagenesis

Karen Svenson, Jackson Labs (USA)

BSCR Spring Meeting 2005

Theme: '**Atherothrombosis**'

organized by Professor Nilesh Samani.

Thursday 21 and Friday 22 April

Stamford Hall, University of Leicester

Articles for *The* Bulletin

Would you like to write a Review or Laboratory Profile for the BSCR Bulletin? These articles provide an excellent opportunity to let BSCR members know about your research activities and also provide an insight into your research field.

We are keen to hear from anyone in cardiovascular research who would be willing to write for *The* Bulletin.

If you are interested, please contact the Bulletin editors with your ideas: Helen (h.maddock@coventry.ac.uk) or Nicola (N.Smart@ich.ucl.ac.uk)

Submission Deadlines for *The* Bulletin:

Volume	*Date*	*Deadline*
17 (4)	***October 2004***	*September 1st*
18 (1)	***January 2005***	*December 1st*
18(2)	***April 2005***	*March 1st*
18 (3)	***July 2005***	*June 1st*

Cardiovascular Related Meetings

XVIII World Congress of the International Society for Heart Research, August 7-11, 2004, Brisbane, Australia. Enquiries: ISHR 2004 Congress, PO Box 164, Fortitude Valley QLD 4006, Australia. Tel +61 7 3854 1611; Fax +61 7 3854 1507; E-mail: heart2004@ozaccom.com.au; Website: www.baker.edu.au/ISHR

Cellular Injury in Ischaemia (a Satellite Symposium of the XVIII World Congress of the ISHR). August 13-15, 2004. Kruger National Park, South Africa. Enquiries: Dr J. van Rooyen, Department of Physiological Sciences, University of Stellenbosch, Matieland, Stellenbosch, South Africa. Fax +27 21 808 3145; E-mail:jvrooy@sun.ac.za; Website: http://ishr.sun.ac.za/

Endothelial Factors and Coronary Disease: New Understandings and Effects of Natural Products (a Satellite Symposium of the XVIII World Congress of the ISHR). August 13-15, 2004. Hong Kong. Enquiries: Dr R. Y. K. Man, Department of Pharmacology, Faculty of Medicine, The University of Hong Kong, 2/F, Laboratory Block, 21 Sasoon Road, Hong Kong. Fax + 852 2817 0859; E-mail: ISHR-Satellite@hkuhk.hku.hk; Website: www.ISHR-satellite.hku.hk

3rd European Meeting on Vascular Biology and Medicine 2005, Hamburg, 28th-30th September, 2005. For further details: German Cardiac Society, Goethstr. 38a, 40237 Dusseldorf, Germany. E-mail: info@dgk.org; Website: www.dgk.org

European Society of Cardiology Congress 28th August - 1st September, 2004, Munich, Germany. For further information: congress@escardio.org; Website: www.escardio.org.

Scientific Sessions of the American Heart Association. November 7th-10th, 2004. Morial Convention Centre, New Orleans, Louisiana, USA. Enquiries: American Heart Association, Meetings and Councils, 7272 Greenville Avenue, Dallas TX 75231. Tel +1 214 706 1543; Fax +1 214 373 3406; E-mail: scientificconferences@amhrt.org; Website: www.americanheart.org

EUROECHO 8 Annual Meeting of the European Association of Echocardiography Athens, Greece, 1st-4th December, 2004. For further information, please call EUROECHO Secretariat: ESC, 2035 route des Colles, Les Templiers - BP 179, 06903 Sophia Antipolis Cedex, France. Tel: +33 (0) 4 92 94 76 00; Fax: +33 (0) 4 92 94 76 01; E-mail: euroecho@escardio.org; Website: www.escardio.org.

Travel Reports for *The* Bulletin

The Bulletin editors are happy to publishes travel reports written by BSCR members. These can be on any conference, course or laboratory visit of interest to other members and could perhaps contain photographs. If you are planning on travelling to a cardiovascular-related meeting and would like to write a report for the Bulletin, please contact the editors. A bursary of **£100** is available towards the cost of your visit, and this will be provided on receipt of the report. *Bon voyage!*

BRITISH HEART FOUNDATION GRANTS

PROJECT GRANTS COMMITTEE

January 2004

DEFERRED APPLICATIONS AWARDED

Ms K Nanchahal et al, London Sch of Hygiene & Trop Med. "Weight management in primary care" (1 year 9 months) £128,897

Dr M J Drinkhill & Prof R Hainsworth, University of Leeds. "Cardiovascular responses from pulmonary arterial baroreceptors; their reflex interactions" (2 years) £120,973

Professor D A Eisner et al, University of Manchester. "Does increasing the open probability of the ryanodine receptor produce arrhythmias?" (2 years) £126,474

Dr N J Brand & Dr P J R Barton et al, Harefield Hospital. "Cloning of HCB1 & 2, two novel cardiac-enriched transcription factors that bind the human cardiac troponin 1 gene" (3 years) £15,000

NEW APPLICATIONS AWARDED

Prof M R Bennett & Dr T Littlewood, Addenbrooke's Hospital, Cambridge. "Identification of substrates of Akt in vascular smooth muscle cell apoptosis and proliferation" (3 years) £53,268

Professor A M L Lever et al, Addenbrooke's Hospital, Cambridge. "Lentivirus vector mediated gene delivery for treatment of acute and chronic transplant rejection" (3 years) £152,639

Dr R H Stables et al, Royal Brompton Hospital, London. "The stent or surgery trial (SoS) five year follow up" (1 year) £44,000

Dr K T Hall et al, University of Leeds. "Characterisation of novel protein interactions involved in the regulation of matrix metalloproteinase-9 gene expression in cardiovascular disease" (1.5 years) £48,549

Professor R J Plevin & Dr A Paul, University of Strathclyde. "The specific roles of inhibitory kappa B kinases α and β in human vascular smooth muscle cells - potential of selective drug design in atherosclerosis" (2 years) £87,498

Dr C C Shoulders & Dr D J Stephens, Hammersmith Hospital, London. "Role of specific COPII-coat proteins in the intracellular transport of chylomicrons; a potential route to the management of post- prandial hyperlipidaemia" (2.5 years) £166,309

Dr S Bhattacharya, University of Oxford. "Genetic mechanisms controlling heart muscle growth during development" (3 years) £146,658

Dr P R Riley, Institute of Child Health (UCL). "Analysis of the role of the actin-binding protein thymosin beta-4 in *hand1* - mediated cardiac morphogenesis" (2 years) £118,080

Dr A M Randi et al, Hammersmith Hospital, London. "Role of the transcription factor Erg in endothelial homeostasis and angiogenesis" (3 years) £169,697

Professor K J Broadley, Cardiff University. "Do "ecstasy" and cathinone exert coronary vasoconstriction through trace amine mechanisms?" (2 years) £81,596

Dr D S Leake, University of Reading. "The effects of low extracellular pH on the responses of cells to oxidised low density lipoprotein" (3 years) £133,101

Dr M von Schantz et al, University of Surrey. "Characterisation of a truncated form of the clock gene *Per3* specifically enriched in the heart" (1 year) £47,211

Dr S Langley-Evans & Dr D Gardner, University of Nottingham. "Susceptibility to myocardial ischaemia-reperfusion injury after prenatal exposure to undernutrition" (2 years) £101,628

Dr F B Smith et al, University of Edinburgh. "Inflammatory gene polymorphisms, gene environment interactions and quantitative traits of subclinical atherosclerosis in the general population" (2 years) £60,409

Dr G S Frost et al, Hammersmith Hospital, London. "The effect of diets rich in slowly absorbed carbohydrate on arterial compliance in middle age men" (2 years) £83,677

Prof D I Wilson & Dr N A Hanley, Southampton General Hospital. "Investigating ALMS1 in cardiomyocytes and a possible novel mechanism causing dilated cardiomyopathy" (3 years) £237,716

Dr K Botham & Dr C Wheeler-Jones, Royal Veterinary College, London. "Dietary fats and macrophages: molecular mechanisms of foam cell formation" (3 years) £139,117

Dr S Bhattacharya et al, University of Oxford. "Phenotype driven screen to identify ENU-induced mutations that affect heart development" (3 years) £256,621

Dr J Wharton et al, Hammersmith Hospital, London. "Statins as a treatment for pulmonary hypertension" (3 years) £189,781

Cardiovascular Related Wellcome Trust Grants

February to May 2004

Wellcome Programme Grant

Professor David J Paterson, Laboratory of Physiology, University of Oxford. Heart Physiome. 60 Months £1,112,804

Technology Development Grants

Dr Julian L Griffin, Department of Biochemistry, University of Cambridge. NMR based metabolic profiling tools to cross correlate functional genomic data in multifactorial cardiac diseases. 36 Months £221,141

Prof Hugh S Markus, Division of Clinical Neuroscience, St George's Hospital Medical School, London. A DNA resource for Lacunar stroke. 48 months £918,049

Equipment

Dr David R Sargan, Department of Clinical Veterinary Medicine, University of Cambridge. Capillary Electrophoresis Equipment for genotyping And sequencing in the Centre for Veterinary Science, University of Cambridge. 36 Months £114,826

Project Grant

Professor Andrew B Tobin, Department of Cell Phys and Pharmacology, School of Medicine, Medical Science Bldg, University of Leicester. Investigation of the Mechanisms of the Muscarinic Receptor Anti-Apoptotic Response in Clonal Cells and Primary Neuronal Cell Cultures. 36 Months £205,599

Dr Johanna M Avis, Department of Biomolecular Sciences, Umist, Manchester. The Molecular Basis of Notch and Expanded Recognition by the Ww Domains of Suppressor of Deltex. 24 Months £116,468

Professor P V E Mcclintock, Department of Physics, University of Lancaster. Nonlinear Dynamics of Congestive Heart Failure and Hypertension. 36 Months £206,300

Training Fellowships for Medical and Dental Graduates

Dr Patricia M Kearney, Clinical Trial Service Unit and Epidemiological Studies Unit, Radcliffe Infirmary, Oxford. Large Scale Asessments of the Relevance of Genetic and Other Factors for Risk Reductions with Cholesterol Lowering Therapy. 24 Months £87,708

THE BRITISH SOCIETY FOR CARDIOVASCULAR RESEARCH

BSCR Autumn Meeting 2004

Integrative Cardiovascular Pathophysiology in Gene-Modified Models

Dates: 9th and 10th September, 2004

Venue: Guy's Campus, King's College London

Organisers: Professor Ajay Shah & Dr Alison Cave

Overall Aims: The aim is to provide state-of-the-art presentations that utilise modern molecular physiological and imaging methods and techniques with a focus on gene-modified *in vivo* and *in vitro* models. Both cardiac and vascular pathologies will be covered.

Invited Speakers include: Keith Channon *(Oxford)*, Andre Constantinesco *(Strasbourg)*, Martin Denvir *(Edinburgh)*, Mathias Gautel *(London)*, Andrew Grace *(Cambridge)*, David Kass *(USA)*, Mark Kearney *(London),* Michael Marber *(London)*, Stefan Neubauer *(Oxford),* Jean-Sebastian Silvestre *(Paris)*, Alberto Smith *(London),* Godfrey Smith *(Glasgow)*, Karen Svenson (*USA)*.

Travel & Accommodation: The conference will be held at the Guy's Campus of King's (nearest tube and BR: London Bridge), with accommodation available nearby at Great Dover Street Apartments.

Communications: Part of the meeting will be devoted to oral presentation of selected abstracts and posters. Prizes will be awarded for the best oral and best poster presentations given by young investigators.

Registration: Free to BSCR members, £40 for non-members.

Bursaries: The Society will consider awarding travel grants of up to £150 to bona fide PhD students.

Deadline for submission of abstracts, registration and application for student bursaries: 23 July 2004

A full programme, the abstract pro-forma, meeting registration form, and forms for application for BSCR membership or student bursaries can be downloaded from: http://www.bcs.com/affiliates/bscr.html

***Any further enquiries to*:** Professor Ajay Shah, GKT School of Medicine, King's College London, Bessemer Road, London SE5 9PJ; Tel: 020 7346 3865; Fax: 020 7346 4771; evelyn.harrison@kcl.ac.uk

Or: Barbara McDermott, BSCR Secretary, Department of Therapeutics and Pharmacology, Queen's University Belfast, Whitla Medical Building, 97 Lisburn Road, Belfast BT9 7BL; Tel: 02890-272242; Fax: 02890-438-346; Email: r.corr@qub.ac.uk.