WHEN in the future the great accomplishments of the twentieth century are written, the success of molecular biology and genetics will rank high. It started with Miescher, Avery, Delbrück, Chase, Watson and Crick (see a previous issue of Past Truth & Present Poetry). Since then ingenious experimentation has made it possible to visualize, purify and analyze DNA. Most importantly, DNA has been spliced, transferred between cells, and the relationship to protein synthesis has been established. Lewis Thomas wrote in 1983, “almost every important experiment that moved the feet forward ..., has come as a total surprise, most of all surprising to the investigators doing the work.” Unquestionably the vigor of youth of the new science was responsible for the diversity, the originality and the tempo of discovery. But this knowledge has not yet led to the better treatment of disease. The fruits have not yet ripened, and clinical application is still in the future. The acquisition of knowledge has been its reward.

Gene therapy is the introduction of normal or modified genes into the somatic cells of a target organism to correct or prevent disease. Before gene therapy could be attempted the basic facts of molecular biology had to be established, for instance, what is a gene and how can it be isolated. It has become apparent that a gene is composed of base pairs, arginine, cytosine, guanine and thymine. We also have learned from Chargaff of the A:T (adenine: thymine) and G:C (guanine: cytosine) ratios. In 1954, it became clear that with four types of bases to code for 20 amino acids, two successive nucleotides were not enough to specify a single amino acid. It was thought that triplet code was required. Seymour Benzer, then at Purdue University working with bacteriophage identified the location of two of its genes and most importantly showed that each gene was composed of hundreds of nucleotides. Each nucleotide had a specific location on the gene. A gene is not a discrete point but a long string along the chromosomes. As Benzer said, “my discovery at Purdue was a gene and a phage and a set of bacterial strings which had the right unit of property, so that one could in the sense split the gene into its terminal parts and construct a map of them....”

Of equal importance for gene therapy was the establishment of the sequence of the base pairs first accomplished by Sanger. Frederick Sanger, a biochemist, was a quiet man who loved to work in his laboratory with his hands, a disappearing trait. Sanger was only a junior fellow in Cambridge, England during World War II, and according to his co-workers, still had only a minor fellowship while he was doing his pioneering work. Sanger used the new technique of chromatography to determine the amino acid sequence of the insulin molecule. He proved that the sequences were unique and always the same for the insulin molecule. Sanger received the Nobel prize in chemistry in 1958; in 1980, he shared another Nobel prize for sequencing nucleic acids.

Another important step leading to gene therapy was the discovery of the restriction enzymes which recognize specific base sequences in double helical DNA and cleave both its strands. Restriction enzymes have made possible the isolation of genes and sequencing long DNA molecules. Normally, restriction enzymes cleave foreign DNA, a defense mechanism. Different restriction enzymes recognize different sequences of base pairs and hybridize a phosphodiesterase based on each strand.

The discovery of restriction enzymes followed decades of basic research. Hamilton Smith in his Nobel lecture in 1979 describes how it began in the early 1950’s with observations by Luria and Human and by Bertani and Weigle who observed that phage grown on two different strains of bacteria grew poorly on one strain (it was restricted) while it grew well on the other. They noticed also that some phage always
escaped restriction and grew well on a new host. The biochemical basis of this observation was discovered in 1966 by Werner Arber who showed that restriction was the result of degradation of the phage DNA. This was the first time that the action of a restriction enzyme was defined. Meselson and Yuan later demonstrated that the restriction enzymes cleave only unmodified phage DNA. Later, Hamilton O. Smith et al. working at the Johns Hopkins University, found that phage DNA undergoes restriction. This led to the discovery of a new and highly active enzyme. This enzyme could be purified; it selectively degrades duplex but not single-stranded DNA to fragments averaging 1000 base pairs. They found that the cleavage of DNA is site-specific. A great boost to the knowledge of restriction enzymes came from Nathans’s group who introduced gel electrophoresis for analysis of DNA restriction cleavage fragments, and from Sharp’s group, who used ethidium bromide as a fluorescent stain for DNA. In his Nobel lecture of 1979, Hamilton O. Smith listed more than 25 restriction enzymes together with their recognition sequence.

One vexing problem for gene therapy has yet to be solved: the introduction of a gene into the somatic cell. This has been attempted by both ex vivo and in vivo methods. In the former, transfection of the cells is accomplished in vitro in cell cultures, while in vivo, gene transfection or transduction (when viral vectors are employed) takes place in the organism. Both noninfectious and infectious approaches have been used. The noninfectious approaches are mostly based on the use of cationic liposomes, while infectious approaches use viruses such as retroviral vectors or adenovirus or adenovirus-augmented receptors. The most widely used approach has been that of transduction with adenoviral vectors. In the noninfectious approach, liposomes, positively charged artificial lipid vesicles that incorporate negatively charged DNA, deliver nucleic acid to the cells through fusion with the cell membrane and receptor-mediated endocytosis. The simplest approach for gene delivery is transfer by unmodified (naked) DNA.

Gene therapy of cardiovascular disease is still a matter of trial and error. It has been tried in the prevention of restenosis of coronary arteries following angioplasty and in the treatment of hyperlipidemias and of myocardial infarction. In the treatment of restenosis of coronary arteries following angioplasty, two technical steps are involved: the delivery system and the vector. Most delivery systems use catheters. A number of vectors have also been used. For example, ex vivo gene transfer of porcine endothelial cells expressing beta galactosidase gene from a murine amphotropic retroviral vector has been successfully accomplished by directly introducing a catheter into the denuded arteries to deliver the recombinant virally infected cells. Subsequent studies have employed adenoviral vectors, herpes simplex virus, antisense oligonucleotide technology, and introduction of cytostatic protein. The genetic treatment of hyperlipidemias has shown some encouraging developments, but here too reproducible clinical success has not been achieved. Several methods have been attempted to reduce the hyperlipidemia by in vivo and ex vivo manipulation, using recombinant adenoviruses containing the low-density lipoprotein (LDL) receptor gene through hepatic delivery. Autologous hepatocytes, genetically corrected ex vivo with recombinant retroviruses, have also been used.

In myocardial infarction, one goal has been to replace dead cardiac myocytes with viable, contracting myocytes. Adult cardiomyocytes cannot regenerate after injury, and new viable cardiomyocytes have to be introduced into the still viable heart muscle or into the infarcted sclerotic area. This has been attempted by means of engrafting viable myocytes into the infarcted area. Engrafting has also been attempted by means of the use of fetal cells. Another approach has been transplantation of fibroblasts. Apparently cardiac fibroblasts can be converted into skeletal muscle by forced expression of the MyoD gene. Fibroblasts isolated from rat hearts were infected with retrovirus carrying the MyoD gene. Histochemical analysis identified successful transfection in several hearts. Another effort was transplantation of skeletal muscle cells into heart muscle in the hope that transplanted skeletal muscle cells can undergo transformation to myocytes.

I have only touched on some of the discoveries which form the basis of gene therapy in cardiology. The field has attracted many clinicians and biologists, because it is still young and has a definite attraction for the granting agencies. This is all to the good, as long as we recognize the reality, that we are only at the beginning and not at the end of the path which leads to clinical success.

Reference


Richard J. Bing, M.D.
Money!
For national opera houses, international golf tournaments and even the ISHR, sponsorship has become an essential component of many organisations. For years, our Society has benefitted from pharmaceutical sponsorship of symposia, speakers and publications. At our most recent World Congress many major symposia were only possible because of the help of our pharmaceutical friends - one such friend was Servier, the French research-driven pharmaceutical company that places a great emphasis on: (i) research (spending a higher percentage of its income on research and development than any other drug company), (ii) complementing conventional pharmacology with the metabolic approach to the management of cardiovascular disease and (iii) the publication of high quality journals for world-wide dissemination. Servier were major sponsors of Greece ‘98; their financial support, together with their design and publication skills, made possible our superb Final Programme. It therefore comes as excellent news that Servier have now agreed to sponsor HEART NEWS AND VIEWS - the publication that has become such an important means of communication for our Society and its members. It goes without saying that our new sponsors respect entirely our editorial freedom - for this and their generous sponsorship we are exceedingly grateful. The financial security afforded by the new sponsorship contract will allow Tom Ruigrok to continue to enhance and expand the bulletin and we all wish him well in this important endeavour.

Prizes!
It is timely to remind our members that Winnipeg 2001 will be the venue for the next Richard J Bing Young Investigators Competition; it will also be the occasion when the Society will announce the winner of the Peter Harris Distinguished Scientist Award and to all of this we can now add a new prize: The ISHR Research Achievement Award. While the Bing Award is directed to young scientists forging their career and the Harris Award recognises a lifetime of achievements, the new Award will recognise those researchers who have established an international reputation but whose research trajectory is expected to proceed to even greater heights. Roberto Bolli, our Secretary General, is in the process of finalizing the details of this award and will distribute details in the near future. For information on all prizes and other Society activities, consult the ISHR web site (http://www.ishrworld.org), issues of this bulletin or contact Roberto Bolli.

Missions!
Lest it should appear that this letter is concerned only with things material, let me take this opportunity to draw our readers attention to the formalisation of an official mission statement for the ISHR. After 12 months of soundings, a working party chaired by Jim Downey, has delivered its recommendations for a concise description of the aims of the ISHR: “To promote discovery and dissemination of knowledge in the cardiovascular sciences on a world-wide basis through publications, congresses and other media”. This text will form the heart of a new ISHR brochure that is currently under preparation, this brochure will provide key information for anyone interested in joining the ISHR and will complement our rapidly growing web site.

Faster than the Speed of Sound!
Rick Walsh has now taken over the baton as Editor-in-Chief of the Journal of Molecular and Cellular Cardiology and again we all wish him well in this task. As authors, we have all benefitted enormously from the dramatic improvement in manuscript review times that has been achieved by many journals over the past few years. Gone are the times of waiting months for an editorial decision - first there were the faxed requests to potential reviewers, then came the courier packs containing the manuscript for review and now Rick has taken the process one step further by faxing manuscripts to the reviewer - clearly, couriers are far too slow for our dynamic new Editor! Although this has come as a bit of a shock to harassed reviewers who had hoped for a few days respite before their new work arrived, we should applaud and support Rick in his latest innovation - even those of you with old fax machines who have to sort out 40-50 curled up sheets of paper lying on the office floor!

David J. Hearse
It is a great pleasure to assume the editorship of the Journal of Molecular and Cellular Cardiology. The "Yellow Journal" is now 29 years old and has been served by four prior distinguished editors: Richard Bing, Lionel Opie, Arnold Katz and, most recently, by Norman Alpert. As the official journal for the International Society for Heart Research, it has reflected the prior scientific focus of the Society with an initial emphasis on cardiac metabolism, which has persisted, albeit in a less pronounced fashion, in recent years.

Journals, like organisms, evolve and the major emphasis of the new editorial regime will be to attract and to publish the finest work in molecular and cellular cardiovascular biology. Integrative physiological studies, which have a mechanistic focus, in particular, utilizing genetically engineered animals naturally complement this focus. In order to accomplish the task, we have appointed eight associate editors and 80 members of the new editorial board. Each is an active investigator committed to the goal of advancing the quality and quantity of publications in our journal.

In order to attract the best papers in the field of molecular and cellular cardiovascular disease it is necessary to guarantee a rapid, fair and high quality review process. In this regard, our editorial policy is to provide a first decision within three weeks. Our publisher, Academic Press, in close partnership with the editorial office, has targeted a production time of 8-10 weeks in the next calendar year with a reduction to eight weeks in the following year. In addition, we will be publishing selected articles directly within three weeks of decision on the JMCC Internet Address (http://www.academicpress.com/jmcc) within this calendar year. The Journal will have an increased emphasis on topical concise reviews and focussed issues. In addition, the editor and associate editors are committed to the identification of select high quality papers of unusual scientific interest and importance for a 48-hour review time in a new "fast-track" format. Some of the cosmetic changes we will implement include simplified instructions to authors, the listing of references in a sequential rather than alphabetical format, and a 48-hour turnaround of galley proofs by the authors.

I am most grateful for the cooperation of our previous editor Dr Norman R. Alpert and his associate editor Dr Ellen J. Zeman during the transition period for review of new manuscripts, which began in Cleveland on February 1, 1999. The new editorial team is excited by and committed to our goal to make the Journal of Molecular and Cellular Cardiology the premier vehicle for publication of basic cardiovascular research.

Richard A. Walsh, M.D.
Editor-in-Chief

At the request of many readers, The SPEISENSTEIN Files will be published again. All 13 instalments will appear on the new web site of the ISHR (http://www.ishrworld.org) with a frequency of one per month. The first instalment will be available in August of this year.

The Editors
INTERNATIONAL SOCIETY FOR HEART RESEARCH
MOUSE HEART PERFUSION SURVEY

“Unravelling the pathogenesis of complex cardiovascular and pulmonary diseases requires the development of in vivo animal model systems. Although large animal models have long served as the gold standard, recent advances in transgenic and gene targeting approaches, mouse genetics and microsurgical technology are initiating a revolution that has led to the unexpected coupling of in vivo molecular physiology with genetically engineered mice.”


Dear Colleague:

If you are perfusing mouse hearts (from normal or transgenic animals) please complete the following survey - the ISHR is trying to establish a database to help the rapidly increasing number of investigators who are grappling with the challenge of establishing reliable mouse heart preparations. Please pass copies of this questionnaire to anyone who you know to be perfusing mouse hearts.

Until recently, rats, rabbits and guinea pigs were the small mammals of choice for cardiovascular studies and their hearts are readily used in several in vivo and ex vivo preparations. The induction of ischemia (regional or global) and reperfusion in these models is simple and results are very reproducible between laboratories. With the advent of transgenesis, the mouse is becoming the cornerstone species for studies of cardiac function and disease. This requires researchers to establish preparations in the mouse that have previously been limited to the rat and other species. Unfortunately, physiology lags badly behind molecular biology and not all laboratories possess the microsurgical skills or experience to adequately use murine preparations to assess the phenotypic consequences of genetic manipulations likely to influence cardiac function or response to stresses such as ischemia and reperfusion. There is also great variability between laboratories which hampers the comparison of studies.

The objectives of this survey are to pool experience in an attempt to establish a consensus on preferred procedures and to establish a network through which investigators can communicate. All respondents will receive a copy of the final analysis and an accompanying address database. Please send your replies as soon as possible to the address below.

Thank you for your help.

David J Hearse
President of the ISHR

RETURN THIS SURVEY TO: Ms Fiona Sutherland, Cardiovascular Research, Rayne Institute, Lambeth Wing (4th floor), St Thomas’ Hospital, London SE1 7EH, UK. Fax: +44 171 922 8139.
Perfusion fluid:
blood  □  buffer  □  washed red cells  □ 
composition of every perfusion solution used (mmol/l): ................................................................. 
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any special precautions (e.g. filtration): .................................................................................................. 
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Mice used:
sex: male  □  female  □  age: .........................  weight: ......................... 
strain(s): .................................................................................................................................................... 
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Anesthesia:
(give dose and route of administration): .......................................................................................... 
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Anticoagulation:
(if used, give dose and route of administration): .................................................................................. 
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Aortic cannulation:
in situ □ or after excision □
cannula size (diameter in mm or needle size): .................................................................
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Perfusion temperature:
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Model and conditions:
working heart □ Langendorff □
Langendorff:
constant flow used: .......... (ml/min or ml/min/g?)  constant pressure used: ..........(mmHg or cm H₂O?)
Working heart:
filling pressure used: ..........(mmHg or cm H₂O?)  afterload used: ..........(mmHg or cm H₂O?)

Control values:
first measure of control function: ................................................................. min after cannulation

Functional characteristics:
(give average values and units normally expected for):
Langendorff:
coronary flow: ........................................ perfusion pressure: ...........................................
heart rate: ........................................... systolic pressure: .............................................
diastolic pressure: ......................... left ventricular developed pressure: ..................
are these values from: paced □ or unpaced □ hearts?
Working:
coronary flow: ........................................ aortic flow: .....................................................
heart rate: ........................................... cardiac output: ............................................
are these values from: paced □ or unpaced □ hearts?
Pacing:
no □ yes □ rate (bpm): .................................................................
position of electrodes: .................................................................
Any exclusion criteria:

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Electrocardiogram:

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<tr>
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Ischemia:

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<td>or whole heart</td>
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<td>or both</td>
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Reperfusion measurements:

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Training:

Would you be interested in contributing to, or participating in, training workshops on murine physiology?

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The Growth of the ISHR Web Site

As you know, the ISHR web site has been improved and expanded significantly over the past twelve months thanks to the valiant efforts of Jim Downey (a true computer whiz!). Here I would like to highlight some features of our web site and ask for your assistance.

Membership Directory
Very soon, we will have completed our worldwide membership directory of the ISHR, which will be accessible to all of our members. I feel that this is an important accomplishment, one that will undoubtedly facilitate communication among scientists. The availability of addresses/phone numbers/fax numbers/e-mail addresses is particularly useful when trying to communicate with members from another country - such information is not provided by any other large Society I am aware of. Keeping the information up-to-date is critical if this directory is going to be useful. Accordingly, I would ask all members of the ISHR to check the accuracy of their personal information as listed in the directory. If you find errors or if your address has changed, please notify Jim Downey (jdowney@usamail.usouthal.edu) or myself (rbolli@louisville.edu). We need your help to keep this directory as current as possible!

Research Topics Message Board
A novel feature of our web site is the availability of a “chat site”, whereby members can post questions and (hopefully) receive answers. Again, to my knowledge, this service is also unique among major scientific societies. All too often, we encounter problems in our labs and wonder who may know the answer. Here is an opportunity to share these problems with the scientific community worldwide! I encourage you to use this feature, both in terms of posing questions and in terms of helping other scientists with answers.

Such an interaction among members from different countries or continents is quintessential to our mission of fostering scientific collaboration at a worldwide level.

Employment Service
A third unique feature of our web site is that we offer an opportunity for members to announce either an available position (if they are employers) or to indicate their availability for a position (if they are seeking employment). All of this is free of charge. This service is particularly useful when someone is seeking/offering a position in another country. At the time of this writing, there are 13 available positions and 4 applicants listed. Clearly, the service is much underutilized and I think the reason for this is that many people are not aware of the availability of our job bulletin. You can help to catalyze the widespread use of our employment service by informing your colleagues, friends, and institutions that they can post an ad at no cost as opposed to the astronomical costs that they would incur by using the classified section of scientific journals. If each of us starts using this bulletin and spreads the word, the number of positions and applicants will soon skyrocket. Please help us make this service as popular as possible.

Meetings Calendar
This page lists all of the upcoming meetings of the ISHR and we are also striving to include as many non-ISHR meetings as possible that may be of potential interest to our members. Our long-term goal is to provide you with all the information you need to plan your scientific conferences. If you would like a meeting to be listed, please send me the information.

Our New URL
Last, but not least, our web site now has a new URL (www.ishrworld.org), which is much easier to remember (the previous URL www.usouthal.edu/ishr continues to be in effect).

The ISHR web site is already linked to the American and Australasian Sections. We hope to establish soon links with all the other Sections, thereby enabling information to be shared worldwide at the click of a mouse.

Although the development of our web site required (and continues to require) significant work on the part of several people, all of the services are free. The cost of the site is underwritten by the Society and is an example of how dues are returned to ISHR members as valuable services.

As the only truly international society devoted to the promotion of cardiovascular research, the ISHR needs an effective web site as an integral component of our operational infrastructure. The help and interest of our members is critical. We would like to hear from you regarding what you consider to be strengths and weaknesses of our web site, and any comments or suggestions that you may have. Please let us know how we can improve this service.

Roberto Bolli, M.D.
Secretary General

Roberto Bolli, M.D.
Professor Édouard Coraboeuf passed away on September 27, 1998 at the age of 72. He was one of the pioneers in cardiac cellular electrophysiology and has been a leader in the field for five decades. Prof. Coraboeuf has trained several generations of researchers who are now active in various fields of basic and clinical cardiology and pharmaceutical research.

The first study of Prof. Coraboeuf on cardiac research was published in 1949 in the *Comptes-Rendus de la Société de Biologie* (143, 1329-1331). The paper was jointly authored with Prof. Silvio Weidmann of Bern University with whom he was working at the time in Prof. Alan L. Hodgkin's Physiological Laboratory in Cambridge. In this communication they showed the first intracellular recordings of transmembrane action potentials of a cardiac muscle cell.

Fifty years later, we would like to commemorate Professor Coraboeuf’s immense contribution to the field of cardiac electrophysiology by organizing an international symposium entitled *1949-1999: 50 Years of Cardiac Cellular Electrophysiology, A Tribute to Professor Édouard Coraboeuf*. This meeting will be organized under the auspices of the European Working Group on Cardiac Cellular Electrophysiology (EWGCCE) and with the patronage of the European Section of the ISHR and the Société Française de Cardiologie (SFC), and will take place on September 8 to 10 in Orsay (near Paris) at the University of Paris-Sud where Prof. Coraboeuf has been working for over 30 years. It will be followed by the 23rd Annual Meeting of the EWGCCE which will be held on September 10 to 12 in Oxford (http://EWGCCE.physiol.ox.ac.uk/). All participants willing to attend both meetings will be able to travel on the afternoon of Friday, September 10, from Paris to Oxford.

The opening and closing lecture will be given by Edward Carmeliet (Leuven, Belgium): *From the first cardiac action potential to channelopathies: contribution of Édouard Coraboeuf*, and Harry A. Fozzard (Chicago, USA): *Cardiac ion channel diseases*, respectively. The other speakers include: Dario DiFrancesco (Milan, Italy), Akinori Noma (Kyoto, Japan), Robert Weingart (Bern, Switzerland), Martin Morad (Washington, USA), Joseph R. Hume (Reno, USA), Jürgen Hescheler (Cologne, Germany), Frances M. Ashcroft (Oxford, UK), Robert S. Kass (Columbia, USA), Michel Lazdunski, Sophia Antipolis, France), Joël Nargeot (Montpellier, France), Jeanne M. Nerbonne (St. Louis, USA), Hervé Le Marec (Nantes, France), André Kleber (Bern, Switzerland), Mohamed Boutjdir (Brooklyn, USA), Arthur A. Wilde (Amsterdam, Netherlands), Agnès Bénardéaue (Montreal, Canada), Ursula Ravens (Dresden, Germany), and Alessandro Mugelli (Florence, Italy)

The aim of our symposium is to gather basic scientists and research cardiologists to discuss the most current issues in cellular cardiac electrophysiology. Therefore, we cordially invite all ISHR members interested in this topic to participate in this symposium. For more information, please contact: Dr Rodolphe Fischmeister, INSERM U-446, Faculty of Pharmacy, University of Paris-Sud, F-92296 Châtenay-Malabry Cedex, France. Tel. +33 1 4683 5757; Fax +33 1 4683 5475; E-mail u446@vjf.inserm.fr
ISHR MEETINGS CALENDAR

- December 1-3, 1999. **XVI Annual Meeting of the Japanese Section.** Fukuoka, Japan. **Enquiries:** Dr K Hirano, Division of Molecular Cardiology, Research Institute of Angiocardiography, Kyushu University, Fukuoka 812-8582, Japan. Tel. +81 92 642 5550; Fax +81 92 642 5552; E-mail khirano@molar.med.kyushu-u.ac.jp

- June 14-18, 2000. **XXI Meeting of the American Section.** Louisville, Kentucky, USA. **Enquiries:** Dr R. Bolli, Division of Cardiology, University of Louisville, ACB, Third Floor, 550 South Jackson Street, Louisville, KY 40292, USA. Tel. +1 502 852 1837; Fax +1 502 852 6474; E-mail rbolli@louisville.edu

- July 1-4, 2000. **XXI Meeting of the European Section.** Stockholm, Sweden. **Enquiries:** Dr L. Kaijser, Karolinska Institute, Department of Clinical Physiology, Huddinge Hosptial, SE-141 86 Stockholm, Sweden. Fax +46 8 774 8082; E-mail lennart.kaijser@labtek.ki.se or Congrex Sweden AB, Attn: ISHR 2000, Box 5619, SE-114 86, Stockholm, Sweden. Fax +46 8 661 9125; E-mail ishr2000@congrex.se (Congress web site: http://www.congrex.se/ISHR2000)

- July 1-5, 2000. **International Muscle Energetics Conference.** Burlington, USA. **Enquiries:** Dr N.R. Alpert, c/o Department of Physiology & Biophysics, University of Vermont, College of Medicine, Given Medical Building, Burlington, VT, USA 05405-0068. Tel. +1 802 656 2540; Fax +1 802 656 0747; E-mail alpert@salus.med.uvm.edu

- July 6-11, 2000. **XVII World Congress of the International Society for Heart Research.** Winnipeg, Manitoba, Canada. **Enquiries:** XVII ISHR World Congress, c/o Institute of Cardiovascular Sciences, St. Boniface General Hospital Research Centre, University of Manitoba, Faculty of Medicine, 351 Taché Avenue, Winnipeg, Manitoba, Canada R2H 2A6. Tel. +1 204 235 3421; Fax +1 204 233 6723; E-mail ishr@cc.umanitoba.ca (Congress web site: http://www.umanitoba.ca/heart2001)

- July 2-5, 2000. **Regulation of Energy Metabolism in the Heart and Vasculature.** Banff, Canada. **Enquiries:** Dr G.D. Lopaschuk, c/o Cardiovascular Disease Research Group, Department of Pediatrics, University of Alberta, 423 Heritage Medical Research Centre, Edmonton, AB, Canada T6G 2S2. Tel. +1 403 492 2170; Fax +1 403 492 9753; E-mail gary.lopaschuk@ualberta.ca

- July 3-5, 2000. **Heart Failure Summit.** Toronto, Canada. **Enquiries:** Dr M.J. Sole, c/o The Centre for Cardiovascular Research, Eaton Wing 13 North - Suite 208, Toronto General Hospital, Toronto, ON, Canada M5G 2C4. Tel. +1 416 340 3471; Fax +1 416 340 5985; E-mail mssole@torhop.toronto.on.ca

- July 12-15, 2000. **Diseases of the Cardiovascular System and Immunity: Interactions and Therapeutics.** Montreal, Canada. **Enquiries:** Dr G. Bkaily, c/o Department of Anatomy and Cell Biology, Faculty of Medicine, University of Sherbrooke, 3001 12E Avenue North, Sherbrooke, PQ, Canada J1H 5N4. Tel. +1 819 564 5303; Fax +1 819 564 5320; E-mail g.bkaily@courrier.usherbro.ca

- July 12-15, 2000. **Remodeling and Progression of Heart Failure.** Minneapolis, USA. **Enquiries:** Dr I. Anand, c/o Department of Cardiology, VA Medical Center 111C, 1 Veterans Drive, Minneapolis, MN, USA 55417. Tel. +1 612 725 2000, ext. 3723; Fax +1 612 725 2262; E-mail anand001@maroon.tc.umn.edu

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