

# AMERICAN PHYSIOLOGICAL SOCIETY

## CELL & MOLECULAR SECTION NEWSLETTER

Winter 2002

### CHAIR'S MESSAGE

#### What is Cell and Molecular Physiology?

Some years ago at an NSF grant review panel meeting, I used the term "Cell Physiology" in a discussion of a proposal. At the coffee break one of the other panelists (a physical biochemist) asked me what Cell Physiology is and how it differs from Cell Biology, Molecular Biology, Biochemistry, or Biophysics. I don't remember my exact answer, but it was something about seeking a quantitative understanding of biological function, measured at the level of the cell (rather than an individual molecule, organ system, or whole animal). Cell and Molecular Physiology in fact encompasses many aspects of Cell Biology, Molecular Biology, Biochemistry, and Biophysics, and it is difficult to make sharp distinctions among these fields, because they all overlap with each other. However, a major strength of Cell and Molecular Physiology is that, perhaps more than the other fields mentioned above, it is conducted with the function of the whole organism in mind.

Cell and Molecular Physiology is an integrative discipline. This may sound odd to our colleagues who study organ systems at a higher level of integration, but it is important to remember that an individual cell is a complex system, the understanding of which will require integrative approaches. As technologies for DNA arrays and proteomics become more advanced, it is not hard to envision a time when we will know how many copies of each of thousands of different proteins are in a given cell, and how the levels of each protein change in various physiological and pathophysiological states. The challenge for physiologists will be to try to figure out how all these molecules (proteins, nucleic acids, lipids, carbohydrates, and small molecules) work in concert to maintain homeostasis and perform specialized functions. This will require integrating the functions of many different enzymatic activities, transporters, channels, receptors, cytoskeleton, extracellular matrix, signaling pathways, and other molecular processes. In addition to optical, electrophysiological, and other analytical methods, new computational approaches will undoubtedly be necessary to do this kind of integration.

Although the individual cell itself is a system of profound complexity, it is far simpler than tissues, organ systems, and intact organisms. Accordingly, the study of Cell and Molecular Physiology represents a level of integration that is intermediate between individual molecules and the whole organism. It is impossible, for example, to make sense of the phenotype of a knockout mouse (or a human genetic disorder) without understanding the cellular basis of that defect. The first step in understanding such phenotypes is knowing where the protein is normally expressed among different organs, cell types within an

organ, and among subcellular structures within a given cell type. After finding where the protein is expressed, the job is to understand, as quantitatively as possible, the function and regulation of the protein, at the level of transcription, translation, targeting, post-translational modification, interaction with other proteins, and the effect of the cellular environment on the function of the protein. These are the challenges of Cell and Molecular Physiology.

The Cell and Molecular Physiology Section is eager to foster interaction with other Sections of APS, and we urge members of other Sections to establish secondary affiliation with the Cell and Molecular Section. Because of the growing importance of cellular and molecular techniques in the study of physiology of all the organ systems, there is more reason than ever for all APS members to participate in the activities of our Section. We also hope that the events sponsored by the Cell and Molecular Section will help attract new members to the APS.

As the new Chair of the Cell and Molecular Section, I want to extend my thanks to the outgoing Chair, Bob Gunn, the continuing Vice-Chair, Martha O'Donnell, and the members of the Steering Committee for their outstanding service to the Section. The terms of two members of the Steering Committee, Simon Lewis and Chip Montrose, ended in April, 2001. Now that Simon has rotated off the Steering Committee, Pete Cala is the senior Program Officer and will be joined in Program duties by Ron Lynch, who was elected as a new Steering Committee member last spring. Chip Montrose's role as Councillor in charge of Awards will be taken over by Peter Lauf, a new member of the Steering Committee. John Cuppoletti, another new member of the Steering Committee, will work with Martha O'Donnell on Communications. Caroline Sussman is the newly-elected Post-doctoral fellow representative on the Steering Committee; as a developmental neurobiologist, Caroline will bring a valuable new perspective to the Section. I look forward very much to working with all the members of the Steering Committee.

- Mike Jennings

## **EXPERIMENTAL BIOLOGY 2002**

The Experimental Biology 2002 meeting will be held in New Orleans, LA from April 20<sup>th</sup> through 24<sup>th</sup> 2002. Some of the meeting highlights that should be noted are:

### ***HUGH DAVSON DISTINGUISHED LECTURE:***

Monday, April 22, 2:00 PM - 3:00 PM

Hugh Davson Distinguished Lectureship of the APS Cell & Molecular Physiology Section

Speaker: Harvey Lodish, Whitehead Institute for Biomedical Research

Title: ACRP30 and Fatty Acid Transport Proteins – New Approaches to Obesity and Diabetes

## ***EB 2002 SYMPOSIA AND FEATURED TOPICS SPONSORED BY THE CELL AND MOLECULAR SECTION***

### ***SYMPOSIA:***

Sunday, April 21, 10:30 AM - 12:30 PM

Viruses, Ion Channels and Ion Transporters

John M. Russell

Wednesday, April 24, 10:30 AM - 12:30 PM

Hypoxia, Ischemia, Na, Ca, and Cytoprotection

Steve Anderson

### ***FEATURED TOPICS:***

Monday, April 22, 8:00 AM - 10:00 AM

Membrane Transport Autoinhibitory Domains

Mark Milanick

Tuesday, April 23, 8:00 AM - 10:00 AM

Emerging Views of Epithelial Chloride Channels

N.K. Willis and P. Fong

Tuesday, April 23, 3:15 PM - 5:15 PM

Molecular Bases of Local Calcium Signaling

J. Kevin Foskett

## ***UPCOMING ELECTIONS – NOMINATIONS ARE NEEDED NOW!***

### **APS CELL AND MOLECULAR SECTION STEERING COMMITTEE POSITIONS**

Two positions are opening on the APS Cell and Molecular Section Steering Committee: Vice-Chair and one of the Program Advisor positions. Who would you like to see fill these positions?

Please send nominations to Martha O'Donnell at [meodonnell@ucdavis.edu](mailto:meodonnell@ucdavis.edu) by February 8<sup>th</sup>. Ballots will be mailed out to Section members for this election in February.

Also.....

## APS COMMITTEES

*(This message was sent out via Listserv on December 17, 2001. It's included here as a last minute reminder to send your nominations!)*

### **Opportunity calls! get involved and make a difference!**

The APS is composed of a set of interesting and important decision making committees. Right now nominations are being accumulated for terms that begin in 2003. There are many openings this year (listed below). The Cell and Molecular Physiology section can only impact APS if we are represented, and our representation is quite modest. These Committees are looking for a mixture of talent from students to junior to senior Physiologists, so there is no reason to pass up this opportunity to apply your talents.

The best way for this process to go forward is for you to indicate *your own* interest in a specific committee to the Cell section "Committee on Committees" representative Alicia McDonough at [mcdonoug@hsc.usc.edu](mailto:mcdonoug@hsc.usc.edu) who will then nominate you. **NOMINATIONS ARE NEEDED AS SOON AS POSSIBLE** to be submitted by the mid-January deadline. Better late than never - late applications are accepted by the Committee so don't let the deadline stop you. You are welcome and encouraged to nominate outstanding individuals from any section of APS and forward these to Alicia, but do consider self-nomination as a Molecular and Cell section member.

The successful candidate has an average of 5 nomination forms submitted on their behalf, so recruit your colleagues and friends to fill out the short easy form which can be downloaded from the APS site: <http://www.the-aps.org/committees/nominst.htm>.

**Information on committee charge and responsibilities can be accessed :** <http://www.the-aps.org/about/opguide/committees.html>

### **Openings:**

Animal Care and Experimentation - two openings and a student opening, no current Cell reps

Awards Committee - six openings, no Cell reps after 2002

Career Opportunities in Physiology - two openings, half members under 45, no current Cell reps

Communications - two openings, no current Cell reps

Education - six openings, need Cell rep

International Physiology - 3 openings, one Cell rep

Long Range Planning - 3 openings for one past president, one senior, one junior, one Cell rep

Membership - 3 openings, one Cell rep

Porter Physiology Development - 2 openings, one Cell rep

Public Affairs - 2 openings, no current Cell reps

Publications - one opening

Senior Physiologists - two openings, no Cell reps

Women in Physiology - 3 openings and one student opening, one Cell rep

NIPS managing Board - one opening

FASEB committees - Research conference committee opening, and AAAS opening.

## MESSAGE FROM THE EDITOR OF THE AMERICAN JOURNAL OF PHYSIOLOGY: CELL

### *AJP-Cell Physiology Update*

I am glad to have the opportunity to update the membership of the Cell and Molecular Physiology Section with some news from *AJP-Cell Physiology*. It has been another good year for the *Journal*. We are now fully established with the on-line submission and review system, APS Central, having been one of the first AJP's to make the shift. In fact, our last remaining paper manuscript was accepted for publication several months ago now. I hope that you will agree that APS Central offers significant advantages for both authors and reviewers. From a personal standpoint, the system means that I can access the full text of manuscripts and all editorial correspondence from anywhere in the world that provides internet access; certainly an improvement over the reams of faxes that used to follow me to meetings and even on vacations. The system has also clearly saved much of the time and expense entailed in mailing manuscript packets back and forth, and has doubtless contributed to the fact that our average time to first decision is now less than thirty days. A timely, rigorous and fair review process can only be good for the *Journal*. Another indicator of our healthy state lies in the recently-released impact factors for 2000. We have seen a very gratifying increase in this critical indicator – from 3.485 in 1999 to 4.086 in 2000. This ranks us seventh of all journals in the physiology sphere, which is especially notable since three of the higher ranked journals publish only review articles. Among the AJP's, only *AJP-Renal* is ranked marginally higher than *AJP-Cell*, with an impact factor of 4.129 based on approximately one third less total articles. Moreover, *AJP-Cell* also ranks very credibly with other journals in the general area of cell biology, the most relevant comparison group. In this latter ranking, *AJP-Cell* is 29<sup>th</sup> of 147 publications. While we always hope to improve this, we believe it reflects a strong performance in the context of many of the higher-ranked journals, which include many of the Nature group publications, *Cell*, review journals, and the *FASEB Journal*. Similarly, while arguments can be made regarding the importance of impact factor rankings, there is no denying that many authors consider this parameter when choosing where to submit their work, and for colleagues in Europe, it has become a feature of the academic review process in many institutions. Since we seek to publish the best and most exciting work in the area of cell physiology, I am gratified by any development that improves our ability to garner such high caliber submissions.

This is also a time of transition for the *Journal* in other ways. At the time of writing, the Publications Committee of the APS is soliciting nominations for the next Editor of *AJP-Cell Physiology*, and a new Editor is likely to be selected by the fall for a term to begin in July 2002. I can scarcely believe that I, and my team of Associate Editors, have already begun the last year of our final term. I would like to thank the members of the section, the core constituency for the *Journal*, for all the support and assistance they have provided over the last five years. Suggestions from the membership, and submission of their exciting work, have been vital in enlivening and updating our pages. I hope that the section will provide an equal degree of support for the incoming editor and whomever she or he chooses for their editorial team. And in closing, I would like to thank the section for the honor of having served as Editor of *AJP-Cell Physiology*; it has certainly been a highlight of my professional career thus far and is a responsibility I will greatly miss.

[This message was written in Fall 2001, before the selection of the new Editor for *AJP:Cell*. It is now a pleasure to be able to announce that one of the current Associate Editors, Dennis Brown, will assume the role of Editor-in-Chief on July 1, 2002. Please join me in congratulating him on his appointment; I know, from having worked with him, what a strong commitment he has to the *Journal*, and I have no doubt he will take it to new heights].

Kim E. Barrett  
San Diego, California

## APS CELL & MOLECULAR SECTION STEERING COMMITTEE ROSTER

### **Chair:**

Michael L. Jennings, Ph.D. (2001-2004)  
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