EPITHELIAL TRANSPORT GROUP NEWSLETTER

Spring, 2004

MESSAGE FROM THE CHAIR

Well, EB04 is nearly upon us. This will I think be an exciting meeting. In particular I would like to draw your attention to the sessions sponsored by the ETG: The Trp channel symposium chaired by Dr. Peter Smith, the two featured topic sessions on Na^+ and K^+ Channels, organized by Drs. Jim Stockand and Scott O'Grady, and Membrane Traffic in Epithelial Cells, organized by Dr. Kevin Kirk. I think these will be excellent sessions. I would also like to highlight the session on Na^+ and K^+ channels, as it is at this session that we shall be making the presentations to our two award winners this year, Christopher Ferrante (University of Cincinnati, pre-doctoral) and Dr. Erik-Jan Kamsteeg (University of Nijmegen, post-doctoral). I strongly encourage you to come to see these two young scientists receive their awards and congratulate them with us.

The steering committee of the ETG also meets annually at this time and I would like to take this opportunity to thank those members of the steering committee that will be rotating off the committee at this meeting, Klaus Beyenbach, Mike Duffey, Kevin Kirk, John Pritchard and Jim Stockand. All of these individuals have made significant contributions to the running of the group, particularly Klaus, whom as I have mentioned previously has been working on the by-laws, and Mike Duffey who has spent some considerable time editing the newsletters, a role taken over since the Fall Newsletter by Matthias Hediger. Editing this newsletter is an enormous task requiring considerable effort on behalf of the Editor, and the work of both Mike and Matthias is greatly appreciated. Our new councilors (Mike Romero, Moshe Levi, Neil Bradbury and Doug Eaton) will also take up their positions at this meeting. If you have any issues that you would like to bring to the attention of the committee for discussion at the April meeting, please do not hesitate to contact either myself (fuller@physiology.uab.edu) or Matthias at mhediger@rics.bwh.harvard.edu. In the meantime, I wish you all safe trips with your spring and summer travel plans and if you are attending EB, I look forward to seeing you in Washington.

Yours,

Cathy Fuller

EXPERIMENTAL BIOLOGY 2004

For complete details about the program please visit the EB2004 WEB site at:
http://www.faseb.org/meetings/eb2004/

Sessions of Interest to ETG Members at EB04

Given the many aspects of physiology that involve epithelial transport, sessions of potential interest to ETG members are scheduled not only by the epithelial transport group but also by various APS sections. Below please find a comprehensive list of symposia and featured topics of broad interest to scientists working in the area of epithelial biology and/or membrane transport:

Epithelial Transport Group:

Symposium:

The TRP Superfamily of Cation Channels: Emerging Roles in Epithelial Physiology. Organizer: Peter Smith, Ph.D. Dept. of Physiology and Biophysics, University of Alabama at Birmingham. Monday, April 19, 2004, 10:30 AM-12:30 PM, Room 147 A.
Speakers:
Craig Montell, Ph.D., Johns Hopkins School of Medicine, "Overview of the TRP superfamily"
Michael Zhu, Ph.D. Ohio State University, "TRPCs and their associated proteins"
David Cohen, M.D. Oregon Health and Science University, "The tonicity gated channel TRPV4 and its regulation by src family kinase"
Matthias A. Hediger, Ph.D. Harvard Medical School, "Epithelial calcium channels (TRPV5 and TRPV6)".

Featured Topics:

Membrane Traffic in Epithelial Cells. Organizer: Kevin Kirk, Ph.D., University of Alabama at Birmingham. Speaker: Keith Mostov, M.D. Ph.D., University of California, San Francisco. Monday, April 19, 2004, 3:15 – 5:15 PM, Room 140 A. The abstract presenters will be Stow (Abstract # 8512), Zou,(Abstract # 6251), Kolb (Abstract # 8514), Bradbury (Abstract # 6154), Yoo (Abstract # 6860) and Mason (Abstract # 6298).

Epithelial Na^+ and K^+ Channels. Organizers: Scott O'Grady Ph.D., University of Minnesota, and Jim Stockand, Ph.D., University of Texas Health Sciences Center, San Antonio. Speaker: Larry Palmer, Ph.D., Cornell University. Tuesday, April 20, 2004, 8:00-10:00 AM, Room 140 B. Those presenting abstracts in this session are Jones (Abstract # 6072), Palmer-Densmore, (Abstract # 1066), Ji (Abstract # 4125), Ma (Abstract # 2839), Awayda (Abstract # 440) and Staruschenko (Abstract # 4785).

Special Symposia:

Guyton Memorial: Arthur C. Guyton: **The Man and His Science**. Joey Granger. Tuesday, April 20, 2004. 3:15-5:15 PM, Ballroom B.

Cross-Sectional Symposium: **Intracellular Trafficking of Membrane Proteins in Renal Epithelia**, Paul Welling and Michael Caplan, Sunday, April 18, 2004, 3:15-5:15 PM, Room 145 A.

Cell and Molecular Physiology Section:

Hugh Davson Distinguished Lectureship:

Peter Agre, Johns Hopkins School of Medicine, "Aquaporin Water Channels at the Convergence of Physiology and Medicine". Monday, April 19, 2004, 8:00-9:00 AM, Ballroom B.

Featured Topics:

Capacitative Ca^{2+} Entry. Pam Bounelis and Richard Marchase, Sunday, April 18, 2004, 10:30 AM -12:30 PM, Room 145 B.

Vacuolar-type H^{+}-ATPases: Structure and Cellular Function in Mammalian Cells. Raul Martinez-Zaguilan and Souad Sennoune, Tuesday, April 20, 2004, 8:00-10:00 AM, Room 147 B.

Comparative Physiology Section:

August Krogh Distinguished Lectureship:

William Dantzler, University of Arizona. "A Vertebrate Renal Odyssey – Organic Solute Excretion and Water Conservation in Reptiles, Birds and Mammals" Monday, April 19, 2004, 2:00-3:00 PM, Room 146 C.

Featured Topics:

Insect Models of Epithelial Tissue Transport. Karl Karnaky, Tuesday, April 20, 2004, 3:15-5:15 PM, Room 140 A.

Comparative Regulation of Renal and Intestinal Phosphorus Processing and Transport: From Molecules to Environment. Shozo Sugiura and Ronaldo P. Ferraris, Monday, April 19, 2004, 8:00-10:00 AM, Room 140 B.

Gastrointestinal and Liver Section:

Horace W. Davenport Distinguished Lectureship:

John Forte, University of California, Berkeley. “The Gastric Hydrogen Ion Cycle”. Monday, April 19, 2004, 3:15-4:15 PM, Room 146 C.

Featured Topics:

Regulation of Intestinal Transporters During Development. Mrinalini Rao, Sunday, April 18, 2004, 10:30 AM-12:30 PM, Room 140 B.

Intestinal, Renal and New Model Systems for the Study of Oligopeptide Transporters. Fred Leibach, Tuesday, April 20, 2004, 3:15-5:15 PM, Room 147 B.

Renal Section:

Carl W. Gottschalk Distinguished Lectureship:

Thomas Jentsch, University of Hamburg. “Chloride Transport in the Kidney: Insights from Mouse Models and Human Disease”. Sunday, April 18, 2004, 8:00-9:00 AM, Room 146 B.

Featured Topic:

Renal Epithelial Transport. Volker Vallon and Jeff Garvin, Tuesday, April 20, 2004, 10:30AM-12:30PM, Room 140 B.

Symposia:

Polycystic Kidney Disease: From Bench to Bedside. Arlene B. Chapman and Jing Zhou, Monday, April 19, 2004, 8:00-10:00 AM, Room 145 B.

Claudin Expression and Function in the Kidney; Raymond C. Harris, Wednesday, April 21, 2004, 8:00-10:00 AM, Room 145 A.

Respiration Section:

Symposium:

Integrated Control of Lung Fluid Balance, Dolly Mehta and Asrar B. Malik, Monday, April 19, 2004, 8:00-10:00 AM, Room 146 B.

Featured Topics:

Spectrum of Ion Channels in Alveolar Epithelial Cells: Implications in Alveolar Fluid Balance and Cell Volume Regulation. Kwang-Jin Kim and Paul Kemp, Sunday, April 18, 2004, 3:15-5:15 PM, Room 145 B.

Cell-Cell Contacts in Regulating Lung Function. Michael Koval, Wednesday, April 21, 2004, 10:30 AM -12:30 PM, Room 145 B.

Water and Electrolyte Section:

Ernest H. Starling Distinguished Lectureship:

Christopher Wilcox, Georgetown University. "Oxidative Stress and Functional NO Deficiency in the Kidney: A Critical Link to Hypertension" Tuesday, April 20, 2004, 2:00-3:00 PM, Room 146 A.

Muscle Biology Group:

Symposium:

Store-Operated Calcium Channels and Control of Muscle Contraction. Jianjie Ma and James Putney, Tuesday, April 20, 2004, 10:30AM-12:30PM, Room 145 B.

Physiological Genomics Group:

A Bioinformatics How-to for the Wet-Lab Physiologist. Howard Jacob, Sunday, April 18, 2004, 3:15-5:15 PM, Ballroom B.

ETG STUDENT AND YOUNG INVESTIGATOR AWARDS

The Epithelial Transport Group Student and Young Investigator Awards ($250) are given to one pre-doctoral and one post-doctoral fellow each year for outstanding research in a topic related to epithelial physiology. This year's winners are Chris Ferrante (pre-doctoral) and Erik-Jan Kamsteeg (post-doctoral). These awards will be presented at the start of the Featured Topic session on Na^+ and K^+ Channels on Tuesday, April 20, 2004, 8:00-10:00 AM, Room 140 B. Congratulations!

EXPERIMENTAL BIOLOGY 2005 AND INTERNATIONAL UNION OF PHYSIOLOGICAL SCIENCES 2005

35TH CONGRESS OF THE INTERNATIONAL UNION OF PHYSIOLOGICAL SCIENCES (IUPS) 2005: FROM GENOMES TO FUNCTIONS

The 35th Congress of the International Union of Physiological Sciences (IUPS) will be held in San Diego, CA., March 31 - April 5, 2005. IUPS 2005 is being organized by the six member societies of the U.S. National Committee of the IUPS, the American Physiological Society, the Society for Neuroscience, the Microcirculatory Society, the Society of General Physiologists, the Biomedical Engineering Society, and the Society for Integrative and Comparative Biology, under the auspices of the U.S. National Academy of Sciences. For further details see the meeting website at http://www.iups2005.org/

EXPERIMENTAL BIOLOGY 2005

The Experimental Biology 2005 meeting will be a joint meeting with the International Union of Physiological Sciences. IUPS programming will replace the programming normally provided by APS sections and groups. Working in parallel with the USSPC is the International Scientific Programming Committee, (ISPC) which will make the final decisions concerning the program for EB05. Walter Boron is Chair of both of these committees. The format of the epithelial-focused sessions has now become much clearer. The majority if not all symposia and featured topic sessions have been organized into various tracks. Each track has custodians appointed by USSPC/ISPC who have overall responsibility for selecting symposia and FT sessions and for approving speakers for the symposia. Featured Topic sessions will be abstract driven as before and the presented abstracts will be selected by the chairs of those sessions as is usual for APS programming at EB. The track custodians for the “Epithelial Track” are Hannah Carey (University of Wisconsin), David Cook (University of Sydney) and Irene Schulz (Physiologisches Institut, Universitat des Saarlandes). The titles of both the symposia and the featured topic sessions have been decided, and potential speakers/chairs for these sessions are currently being contacted.

The initial symposium focuses on the transport role of epithelia and particularly on recent progress in defining the molecular mechanisms by which the activity of epithelial transporters is regulated. The transporters and regulatory systems to be discussed operate in many epithelial and non-epithelial cell-types, hence the symposium is thought to be of broad interest. The second symposium will focus on the mechanisms by which epithelia establish and maintain their polarity. In particular, the use of model organisms and genetic approaches has led to the identification of many of the molecules that play key roles in these processes. The symposium looks at the signaling systems that determine polarity formation, the protein targeting mechanisms that maintain epithelial polarity and the role of tight junctions. The third symposium will examine epithelial cells within their environment. It uses the specific example of gut epithelial cells to examine the interactions between epithelia and the gut flora, between epithelia and the immune system, between epithelia and the underlying myofibroblasts and between epithelial cells and neuroendocrine cells. It will facilitate the discussion from which a proper

understanding of how epithelial cells function in their "social environment" can develop. The final symposium will bring together the many roles that PDZ domains play in regulating the function and structure of epithelial cells. It ranges from considering their roles in regulating ion channels and carriers through to the assembly of the tight junctions and of the apical membrane. Over the past few years, PDZ domains have been found to be a key mechanism not only for the control of ion transporters, but also for the assembly of the macromolecular complexes that regulate the assembly of the apical membrane with its distinct complement of transporters and receptors, the processes of membrane trafficking and endocytosis, and the assembly of tight junctions. This symposium will present the broad range of functions of PDZ domains in epithelia and will highlight the key role that these domains have in maintaining the epithelial phenotype.

The first Featured Topic will deal with the application of Genomics, Proteomics and Genetic models to epithelia, and the second Featured Topic will focus on the Molecular Basis of Disease. The focus here will be on physiological studies that aim to link mutations in CFTR with the pathology observed in CF. The Featured Topic is, however, intended to cover the full range of epithelial conditions where the molecular cause is under study, including, for example, Dent's disease, nephrogenic diabetes insipidus and familial intrahepatic cholestasis. This is in recognition that the fundamental mechanisms involved in producing pathology, such as mistrafficking of mutant proteins, are a common theme throughout these conditions. As speakers and chairs are finalized for these sessions, we will be posting further updates via the ETG website and in the next issue of the newsletter.

OTHER EVENTS AND ANNOUNCEMENTS OF INTEREST TO THE EPITHELIAL TRANSPORT GROUP:

2003 Rank Prize awarded to Drs. Vadivel Ganapathy, Matthias Hediger, and Frederick Leibach

In recognition of their work on the identification, molecular characterization and control of cellular nutrient transporters, **Drs. Ganapathy** and **Leibach** of the Medical College of Georgia in Augusta and **Dr. Hediger** of Harvard Medical School in Boston received the 2003 Rank Prize awarded by the Rank Prize Funds in Surrey, UK. The award ceremony was held in London on February 9, 2004. The trustees of the Rank Prize Fund aim to identify individuals who have made significant scientific contributions in the areas of human and animal nutrition and crop husbandry and opto-electronics. For more information on the Rank Prize Funds visit their website at: www.rankprize.org.

2004 FASEB Summer Research Conference: Trace Element Metabolism: Integrating Basic and Applied Research. June 26-July 1, 2004. Snowmass Village, Colorado. Co-organizers: Drs. Richard Eisenstein and David Eide. For more information please visit the FASEB summer conferences website at: http://src.faseb.org

Gastrointestinal Response to Injury: Canada 2004
September 29 to October 3, 2004, Chateau Montebello, Quebec, Canada. 5th in a series of triennial meetings that began as part of the FASEB Summer Research Conferences. Topics for the 2004 meeting include: Part I - Factors Regulating Gastrointestinal Responses to Injury (Sessions 1, "The mucosal barrier", and 2, "The immune system"); Part II – Agents and Mechanisms of Gastrointestinal Injury (Sessions 3, "Acid-pepsin, NSAIDs, oxidative stress, and other agents of mucosal injury", and 4, "Microbial host interactions – friend or foe?"); and Part III – Manifestations of Gut Injury and Potential Therapeutic Targets (Sessions 5, "Healing and repair, or the path to cancer", and 6, "Chronic inflammation and its consequences"). For further information please contact the conference co-organizers, Dr. Sheila Crowe (scrowe@virginia.edu, 434-924-2734) or Dr. Jonathon Kaunitz (jake@ucla.edu, 310-268-3879).

Gordon Research Conference on Membrane Transport Proteins: Physiological and Pathophysiological Implications. October 3-8, 2004. Les Diablerets, Switzerland. Chair: Heini Murer. Vice Chair: Jonathan Javitch. Topics include "Towards 2D/3D-Structure of Membrane Transport Proteins," "Structure/Function Relationship in Membrane Transport Proteins," "Recently Discovered Mammalian Transporter Families," "Transporter Proteins as Components of Heteromultimeric Complexes," "Transporter Proteins in Intracellular Organelles," "Regulation of Membrane Transport Proteins," "Mutations/Polymorphisms of Membrane Transport Proteins," "Gene Modified Animals and Membrane Transport Proteins," and "Paracellular Transport." For information, please visit the conference website at: http://www.grc.uri.edu/programs/2004/memtrans.htm

Human Membrane Transporter Database and Biomedical Transporters 2005 Conference:
The SLC tables of the HUGO Transporter Gene Families are now available on-line: http://www.bioparadigms.org. The tables are based on the mini-reviews recently published in the Pflügers Archiv / European Journal of Physiology Special Issue, entitled "The ABC's of solute carriers: Physiological, pathological and therapeutic implications of human membrane transport proteins", volume 447, number 5, February 2004 – See www.link.springer.de/link/service/journals/00424/.

BioMedical Transporters 2005 (formally called PharmaConference): The conference will be held from August 14-18, 2005 in St. Gallen, Switzerland. The focus will be on "Membrane Transporters: Bridging Basic and Applied Sciences"**.** Please see our website for more information (under construction): http://www.bioparadigms.org

POSITIONS AVAILABLE

The **Department of Molecular and Cellular Physiology** at the **University of Cincinnati** is recruiting multiple faculty at the level of **ASSISTANT** or **ASSOCIATE PROFESSOR**. We seek colleagues that can contribute to a broadly interpreted theme of membrane physiology, building upon departmental and institutional strengths in membrane transport, epithelial biology, cell and tissue development, contractility, and hormonal regulation. A strong modern infrastructure (including bioinformatics, mutant mouse models, and imaging) will support research approaches studying molecular events in biologic systems that span the scale from single cells to whole organisms. Faculty members are expected to sustain an externally funded research program, have a strong commitment to graduate and medical education, and contribute to our vigorous collaborative environment. Candidates should have a doctoral degree, and will be considered for a faculty rank and track commensurate with experience. Review of applications will commence upon receipt, and will continue until all positions are filled. Please send a curriculum vitae, statement of research interests, and the names of four potential references to: Marshall H. Montrose, Ph.D., Chair Department of Molecular and Cellular Physiology, University of Cincinnati College of Medicine, 4251 Medical Sciences Building, 231 Albert Sabin Way, Cincinnati, OH 45267-0576 E-mail: *marilyn.paolo@uc.edu*

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