

# Epithelial Transport Group

## SPECIAL POINTS OF INTEREST:

- **New Ussing Award Lecture**
- **ETG reception**

SPRING NEWSLETTER 2008

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## Message From the Chair

I send my greetings to all epithelial transport lovers.

This year we have assembled an exciting program and we hope that you will all join us in San Diego.

The ETG is sponsoring 1 Symposium on *Novel Fluorescence Microscopy Techniques to Image Single Molecules including Channels and Transporters in living cells and tissues*. This symposium will be co-chaired by Janos Peti-Peterdi and Moshe Levi.

The ETG is also co-sponsoring a symposium on *Regulatory Mechanisms in Diseases of Epithelial Transport* which will be co-chaired by Jerrold Turner and Asma Nusrat.

In addition the ETG is sponsoring 2 Featured Topics: **a) Regulation of Epithelial Ion and Water Channels** to be co-chaired by Mark Knepper and My Helms and **b) Regulation of Epithelial Transporters and Signaling Processes** to be co-chaired by Michael Caplan and Monica Cormanino.

A new inaugural activity this year includes the *Ussing Lecture* which will be the named lectureship for ETG.



San Diego

Symposium on Sunday evening where we will honor all of our undergraduate and graduate students, post-doctoral fellows, young investigators, the Ussing Lecturer and the invited speakers for the Symposium.

We are very happy to acknowledge generous support from Coherent Laser Group and Zeiss Imaging Group for the ETG Reception and the Ussing Lectureship.

We hope to see you all in San Diego.

*Moshe*

Moshe Levi, Chairman ETG

The first inaugural lecture this year will be given by *Thomas Kleyman*, MD from University of Pittsburgh. Tom has been a past chair and active member of ETG and he is an internationally acclaimed investigator in epithelial Na channels.

Our lecturer for next year will be *Peter Aronson*, MD from Yale University. Peter has performed exemplary novel work in regulation of renal and intestinal transport. We are indeed honored to have two such outstanding investigators deliver the Ussing lectures.

Another new activity this year will be an *ETG Reception* immediately following the Microscopy

SAN DIEGO CONVENTION CENTER, SAN DIEGO, CALIFORNIA

APRIL 5-APRIL 9, 2008

EXPERIMENTAL  
BIOLOGY 2008  
TODAY'S RESEARCH. TOMORROW'S HEALTH





## ETG Student and Young Investigator Award

**W**e offer congratulations to the

recipients of this years ETG awards. These awards are made for the best abstracts submitted by a predoctoral trainee and a post-doctoral fellow. This years winners are:

### Regulation of Epithelial Ion and Water Channels

**Nicolas Picard:** Post-doc: *Aldosterone dependent and independent effects on renal potassium excretion.*

**Sung Huhn Kim:** Post-doc: *Regulation of ENaC mediated sodium transport by glucocorticoids in Reissner's membrane epithelium.*

**Hanne B Moller:** Grad Student: *Phosphorylation of serine-256 is essential for downstream phosphorylation of AQP2*

**Elaine Chow:** Grad Student: *Distribution and regulation of aquaporins in intestinal epithelial cells*

### Regulation of Epithelial Transporters and Signaling Processes

**Trairak Pitsukin:** Post-doc: *Vasopressin activates Akt1 through PI-3K in rat inner medullary collecting duct (IMCD)*

**Marcela Herrera:** Post-doc: *Endothelin-1 induced NOS3 activation is mediated by the PI3K/Akt pathway in the thick ascending limb.*

**Jose Ponce-Coria:** Grad student: *Regulation of NKCC2 by WNK3 and SPAK*

**Misa Mizumori:** Grad student: *Brush border intestinal alkaline phosphatase inversely regulates luminal ATP signaling in rat duodenum*



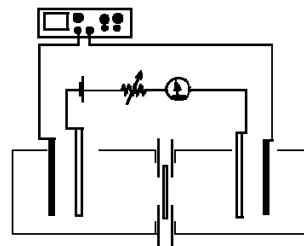
San Diego  
Convention  
Center



## Inaugural "Ussing Lecture"

The Epithelial Transport Group is pleased to announce the First "Ussing Lecture". Professor Ussing revolutionized the study of ion transport with his early studies on frog skin, by combining electrophysiologic measurements with isotopic ion fluxes to dissect active and passive transport. The "Ussing Chamber" is now

the work-horse of many labs working on epithelial ion transport.



Given the enormous contribution Professor Ussing has made to epithelial transport, it is fitting that the ETG name a lecture for him. "Ussing Lecturers" will be selected for their work on understanding the mechanisms underlying epithelial transport.

# Tom Kleyman to be first Ussing Lecture Awardee

Tom Kleyman MD. is Chief of the Renal-Electrolyte Division and Professor of Medicine, Cell Biology and Physiology, and Pharmacology at the University of Pittsburgh.

Dr Kleyman has been at the forefront in understanding sodium transport in polarized renal epithelia. Studies on epithelial sodium channel (ENaC) activation have identified protease cleavage sites on the channel that must be cleaved before the channel can actively transport sodium ions.



The title of Dr Kleyman's **Ussing Lecture** is

"Regulation of epithelial sodium channels by external cues"

## ETG Symposium Novel Fluorescence Microscopy Techniques

**In recent years there have been significant advances made in optics and imaging techniques that makes it possible to now image single molecules, including transporters, ion channels, receptors, protein-protein interactions and signaling complexes in live cells, as a function of time and space, that is spatial and temporal imaging of dynamic processes as a function of time. The proposed symposium will include speakers who have developed and applied these techniques to visualize biological processes that have not been possible before.**

Imaging transporters and the actin cytoskeleton in the apical membranes of living cells with Total Internal Reflection Fluorescence Microscopy (**TIRF**)

**Nicholas Barry, PhD**

Departments of Medicine, Physiology and Biophysics  
University of Colorado Health Sciences Center, Denver, Colorado

Imaging cellular fluorescent proteins at nanometer resolution with photoactivated localization microscopy (**PALM**)

**Hari Shroff, PhD**

Howard Hughes Medical Institute, Ashburn, VA 20147

The spatial-temporal identification of protein dynamics with Raster Scan Image Correlation Spectroscopy (**RICS**)

**Enrico Gratton, PhD**

Department of Bioengineering  
University of California at Irvine

Label-free molecular imaging of fibrosis, atherosclerosis and calcification in unstained tissues using combinatorial nonlinear optical microscopy: application of optical coherence tomography (**OCT**), two-photon excitation fluorescence (**TPE**), second harmonic generation (**SHG**), coherent anti-Stokes Raman scattering (**CARS**) microscopy to image fibrillary collagens, elastin, and lipid droplets.

**Bruce Tromberg, PhD**

Beckman Laser Institute, Department of Biomedical Engineering  
University of California at Irvine

Sunday April 6, 3:15 PM—5:15 PM  
San Diego Convention Centre—Room 22

Chaired: *Moshe Levi*  
*Janos Peti-Peterdi*

## ***FIRST ETG RECEPTION***

The ETG is pleased to announce its first "ETG Reception"

The reception will take place following the Microscopy Symposium.

**When:** Sunday, April 6, 5:30 pm

**Where:**  
Mission Hills Room, San Diego Marriott Hotel

All ETG members are invited to attend. We look forward to this opportunity to meet with our Student Award Winners, as well as our Ussing Lecture Awardee, Dr Kleyman.

We also wish to express our immense thanks to our reception sponsors [Zeiss](#) and [Coherent](#)



*San Diego Marriott Hotel*



San Diego  
Convention  
Center



## ***Symposium: Regulatory Mechanisms in Diseases of Epithelial Transport***

ETG is co-sponsoring a symposium on diseases of epithelial transport.

**Date:** Sunday Apr 6, 8:00AM-10:00 AM

**Location:** Convention Centre Rm 26

**Chairs:** **Jerrold Turner**, Univ Chicago

**Asma Nusrat**, Emory Univ

8:00 Playing in Traffic: membrane protein transport in health  
Michael Caplan: *Yale Univ Sch. Med.*

8:30 When and Where are polycystins needed?  
Jing Zhou: *Harvard Med. Sch.*

9:00 Ecto-regulatory System of duodenal ion secretion  
Jonathan D. Kaunitz: *UCLA Sch. Med.*

9:30 Molecular basis for the selectivity of the tight junction  
James M. Anderson: *UNC Chapel Hill*

## Featured Topics Sponsored by ETG

### Regulation of Epithelial Transporters and Signaling Processes

**Date:** Mon, April 7, 2008 — 8:00-10:00 AM

**Location:** Convention Center, Room 25B

**Chairs:** **Michael J. Caplan**, Yale Univ. Sch. of Med.

**Monica Carmosino**, Yale Univ. Sch. of Med.

8:00 Vasopressin Activates Ak1-1 through PI-3K in rat inner medullary collecting duct (IMCD) *abs 2697*

8:15 Endothelin-1-induced NOS3 activation is mediated by the PI3.Akt pathway in the thick ascending limb *abs 3354*

8:30 M3R stimulates endocytosis of two variants of SLC4A4 in rat ParC5 cells *abs 2711*

8:45 Phorbol ester stimulation enhances endocytosis and ubiquitination of the sodium chloride co-transporter *abs 7231*

9:00 Sorting of NKCCs in polarized epithelial cells

9:30 Regulation of NKCC2 by WNK3 and SPAK *abs 4748*

9:45 Brush border intestinal alkaline phosphatase inversely regulates luminal ATP signaling in rat duodenum *abs 4789*

## Featured Topics Sponsored by ETG

### Regulation of Epithelial Ion and Water Channels

**Date:** Tues, April 8, 2008—10:30AM—12:30 PM

**Location:** Convention Centre, Room 26B

**Chairs:** **Mark A. Knepper**, NIH  
**My N. Helms**, Emory Univ.