

Cilia, Mucus & Mucociliary Interactions

February 13-18, 2011

Ventura Beach Marriott

Ventura, CA

Chairs:

Mary C. Rose & Burton F. Dickey

Vice Chairs:

Stephen M. King & Martina Brueckner

Program

SUNDAY

- 4:00 pm - 8:00 pm Arrival and Check-in (Office Closed 6:00 pm - 7:45 pm)
- 6:00 pm Dinner
- 7:30 pm - 7:35 pm Welcome / Introductory Comments by GRC Site Staff
- 7:35 pm - 9:30 pm **Towards Integrating Cilia, Mucins, and Mucociliary interactions: Prospects and Themes**
- Discussion Leaders: **Peter Satir** (Albert Einstein) and **Sandra Gendler** (Mayo Clinic, Phoenix)
- 7:35 pm - 7:40 pm **Peter Satir** (Albert Einstein) and **Sandra Gendler** (Mayo Clinic, Phoenix)
"Introduction"
- 7:40 pm - 8:05 pm **Gregory J. Pazour** (Univ. Mass.)
"Motile and primary cilia in biology and disease"
- 8:05 pm - 8:15 pm Discussion
- 8:15 pm - 8:40 pm **David Thornton** (Univ. of Manchester, UK)
"From mucins to mucus"
- 8:40 pm - 8:50 pm Discussion
- 8:50 pm - 9:20 pm **Richard Boucher** (Univ. of North Carolina, Chapel Hill)
"Mucociliary interactions: views from the respiratory tract"
- 9:20 pm - 9:30 pm Discussion

MONDAY

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Development of Cilia and of Secretory Cells**
- Discussion Leaders: **Mary Porter** (Univ. Minnesota, Minneapolis) and **Burton Dickey** (MD Anderson Cancer Ctr, Houston)
- 9:00 am - 9:05 am **Mary Porter** (Univ. Minnesota, Minneapolis)
"Introduction - cilia and development"
- 9:05 am - 9:25 am **Christopher Kintner** (Salk Institute, La Jolla)
"Developmental signals specify different cilia subtypes in Xenopus"

9:25 am - 9:35 am Discussion

9:35 am - 9:55 am **Eszter K. Vladar** (Stanford)
"Planar Cell Polarity Orients Respiratory Cilia"

9:55 am - 10:05 am Discussion

10:05 am - 10:25 am Group Photo / Coffee Break

10:25 am - 10:45 am **Steven Brody** (Washington Univ., St. Louis)
"Relationships between primary and motile ciliogenesis in developing and injured airway epithelium"

10:45 am - 10:55 am Discussion

10:55 am - 11:00 am **Burton Dickey** (MD Anderson Cancer Ctr)
"Introduction - secretory cells and development"

11:00 am - 11:20 am **Wellington Cardoso** (Boston Univ.)
"Notch signaling modulates the balance between ciliated and secretory cells"

11:20 am - 11:30 am Discussion

11:30 am - 11:50 am **Jeffrey Whitsett** (Cincinnati Children's Hospital)
"Transcriptional regulation of goblet cell differentiation"

11:50 am - 12:00 pm Discussion

12:00 pm - 12:20 pm **Scott Randell** (Univ. North Carolina, Chapel Hill)
"Micro RNA regulation of human airway epithelial phenotypes"

12:20 pm - 12:30 pm Discussion

12:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session A (1st viewing)

6:00 pm Dinner

7:30 pm - 9:30 pm **Signaling and regulation in Cilia and Mucins**
Discussion Leaders: **Susan Dutcher** (Washington Univ., St. Louis) and **Yin Chen** (University of Arizona)

7:30 pm - 7:35 pm **Susan Dutcher** (Washington Univ., St. Louis) and **Yin Chen** (University of Arizona)
"Introduction"

7:35 pm - 7:55 pm **Wallace Marshall** (Univ. CA, San Francisco)
"Ciliary Length Control Systems"

7:55 pm - 8:05 pm Discussion

8:05 pm - 8:30 pm **Zhaoxia Sun** (Yale Univ.)
"Cilia in the TSC/mTOR pathway"

8:30 pm - 8:35 pm Discussion

8:35 pm - 8:55 pm **Christopher Evans** (MD Anderson Cancer Center, Houston)

- "Life (and Death) without Muc5ac and Muc5b in murine airways"
- 8:55 pm - 9:05 pm Discussion
- 9:05 pm - 9:25 pm **Isabelle Van Seuning** (Inserm, Lille, France)
"Epigenetic regulation of mucin genes: a new family of biomarkers in lung cancers"
- 9:25 pm - 9:30 pm Discussion

TUESDAY

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Fundamental Processes: Mucins and Cilia**
Discussion Leaders: **K.C. Kim** (Temple Univ.) and **Maureen Wirschell** (Emory)
- 9:00 am - 9:05 am **K.C. Kim** (Temple Univ.)
"Introduction - Mucins"
- 9:05 am - 9:25 am **Bradley Schroeder** (Univ. CA, San Francisco)
"Specialized ER proteins with critical roles in mucin production"
- 9:25 am - 9:35 am Discussion
- 9:35 am - 9:55 am **Mehmet Kesimer** (Univ. North Carolina, Chapel Hill)
"Unfolding a secreted mucin"
- 9:55 am - 10:05 am Discussion
- 10:05 am - 10:25 am Coffee Break
- 10:25 am - 10:45 am **Gunnar C. Hansson** (Univ. Gothenburg, Sweden)
"Intestinal mucin function and organization in relation to CFTR and the respiratory tract"
- 10:45 am - 10:55 am Discussion
- 10:55 am - 11:00 am **Maureen Wirschell** (Emory)
"Introduction - Cilia"
- 11:00 am - 11:20 am **Winfield Sale** (Emory Univ.)
"Regulation of cilia function in *Chlamydomonas*"
- 11:20 am - 11:30 am Discussion
- 11:30 am - 11:50 am **Elizabeth Smith** (Dartmouth College)
"Calcium and regulation of ciliary motility"
- 11:50 am - 12:00 pm Discussion
- 12:00 pm - 12:20 pm **Rebecca Burdine** (Princeton)
"Cilia structure and function in zebrafish development"
- 12:20 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm Poster Session A (2nd viewing)

6:00 pm	Dinner
7:30 pm - 9:30 pm	Genetic Approaches in Ciliopathies and Mucociliary Diseases
	Discussion Leaders: Heymut Omran (Univ. Freiburg) and Judith Voynow (Duke Univ.)
7:30 pm - 7:35 pm	Heymut Omran (Univ. Freiburg) and Judith Voynow (Duke Univ.) "Introduction"
7:35 pm - 7:55 pm	Khalid Fakhro (Yale Univ.) "Genetics of human heterotaxy"
7:55 pm - 8:05 pm	Discussion
8:05 pm - 8:25 pm	Philip L. Beales (University College, London) "Craniofacial and skeletal patterning in ciliopathies"
8:25 pm - 8:35 pm	Discussion
8:35 pm - 8:55 pm	Maimoona Zariwala (Univ. North Carolina, Chapel Hill) "Use of Whole-Exome Sequencing to Define Genetic Causes of Primary Ciliary Dyskinesia"
8:55 pm - 9:00 pm	Discussion
9:00 pm - 9:20 pm	David Schwartz (National Jewish Health, Denver) "Genetic studies implicate <i>MUC5B</i> in idiopathic pulmonary fibrosis"
9:20 pm - 9:30 pm	Discussion

WEDNESDAY

7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Mucociliary Diseases, Submucosal Glands and Mucus
	Discussion Leaders: Judith Voynow (Duke Univ.) and Stephen Ballard (Univ. South Alabama)
9:00 am - 9:05 am	Judith Voynow (Duke) "Introduction - models of mucociliary diseases"
9:05 am - 9:25 am	Larry Ostrowski (Univ. North Carolina, Chapel Hill) "Pathogenesis and Treatment of Primary Ciliary Dyskinesia in a novel mouse model"
9:25 am - 9:35 am	Discussion
9:35 am - 9:55 am	Michael Welsh (Univ. Iowa) "Airway alterations in the CF pig model"
9:55 am - 10:05 am	Discussion
10:05 am - 10:25 am	Coffee Break
10:25 am - 10:45 am	John Engelhardt (Univ. Iowa) "Airway alterations in the CF ferret model"
10:45 am - 10:55 am	Discussion

- 10:55 am - 11:00 am **Stephen Ballard** (Univ. South Alabama)
"Introduction - Submucosal glands and mucus"
- 11:00 am - 11:20 am **Jeff Wine** (Stanford Univ.)
"Submucosal Glands, Mucus, and Cystic Fibrosis"
- 11:20 am - 11:30 am Discussion
- 11:30 am - 11:40 am **Walter Finkbeiner** (UCSF)
"Characterization of Native and Cultured Human Tracheobronchial Gland Serous and Mucous Cells"
- 11:40 am - 11:45 am Discussion
- 11:45 am - 11:55 am **Silvia Kreda** (UNC)
"Rho signaling and VAMP8 are important mediators of airway goblet cell mucin secretion"
- 11:55 am - 12:00 pm Discussion
- 12:00 pm - 12:20 pm **Ken Adler** (North Carolina State Univ.)
"Circumvention of mucin hypersecretion by peptide inhibition"
- 12:20 pm - 12:30 pm Discussion
- 12:30 pm Lunch
- 1:30 pm - 4:00 pm Free Time
- 4:00 pm - 6:00 pm Poster Session B (1st viewing)
- 6:00 pm Dinner
- 7:00 pm - 7:30 pm Business Meeting
(Nominations for the next Vice Chair; Fill out Conference Evaluation Forms; Discuss future Site & Scheduling preferences; Election of the next Vice Chair)
- 7:30 pm - 9:30 pm **Structure-Function Interactions in Cilia and Mucus**
Discussion Leaders: **Stephen King** (Univ. Conn) and **C.W. Davis** (Univ. North Carolina, Chapel Hill)
- 7:30 pm - 7:50 pm **Daniela Nicastro** (Brandeis Univ.)
"CryoEM tomography: The axonemal dynein regulatory complex and nexin link"
- 7:50 pm - 8:00 pm Discussion
- 8:00 pm - 8:10 pm **Mary Porter** (U. Minnesota)
"Conserved subunits required for assembly of the nexin-DRC link and regulated microtubule sliding"
- 8:10 pm - 8:15 pm Discussion
- 8:15 pm - 8:35 pm **Chris O'Callaghan** (Univ. Leicester, UK)
"The interaction of cilia with pathogens"
- 8:35 pm - 8:45 pm Discussion

- 8:45 pm - 8:55 pm **Diego Preciado** (Children's National, Washington DC)
"Bacterial Lysate Induction of Cxcl2 and Middle Ear Mucosal Metaplasia in Mice"
- 8:55 pm - 9:00 pm Discussion
- 9:00 pm - 9:20 pm **Richard Cone** (Johns Hopkins Univ.)
"Barrier properties of mucus"
- 9:20 pm - 9:30 pm Discussion

THURSDAY

- 7:30 am - 8:30 am Breakfast
- 9:00 am - 12:30 pm **Mucociliary Interactions**
Discussion Leaders: **Justin Hanes** (Johns Hopkins Univ.) and **Michael Rubinstein** (Univ. N. Carolina, Chapel Hill)
- 9:00 am - 9:05 am **Justin Hanes** (Johns Hopkins Univ.)
"Introduction to Mucus Fundamentals"
- 9:05 am - 9:15 am **Ying-Ying Wang** (Johns Hopkins University)
"Muco-inert nanoparticles reveal highly conserved microstructure of human mucus across entire physiological pH range"
- 9:15 am - 9:20 am Discussion
- 9:20 am - 9:40 am **John Fahy** (Univ. CA, San Francisco)
"Mechanisms of pathologic mucus formation in airway disease: roles for proteases and lectins"
- 9:40 am - 9:50 am Discussion
- 9:50 - 10:10 am **Paul Quinton** (Univ. CA, San Diego)
"A new intersection of electrolytes and mucus"
- 10:10 am - 10:20 am Discussion
- 10:20 am - 10:40 am Coffee Break
- 10:40 am - 10:45 am **Michael Rubinstein** (Univ. N. Carolina, Chapel Hill)
"Introduction to Mucus Interactions with Cilia"
- 10:45 am - 10:55 am **Liheng Cai** (Univ N.Carolina, Chapel Hill)
"New Insights on the Structure of Periciliary Layers of Lungs"
- 10:55 am - 11:00 am Discussion
- 11:00 am - 11:20 am **Susan Suarez** (Cornell Univ.)
"Sperm interactions with mucus and cilia"
- 11:20 am - 11:30 am Discussion
- 11:30 am - 11:50 am **Panteleimon Rompolas** (Univ. Conn.)
"Planarians as a molecular genetic system for analyzing cilia and force production against secreted mucus"
- 11:50 am - 12:00 pm Discussion

12:00 pm - 12:20 pm **Richard Superfine** (Univ. North Carolina, Chapel Hill)
 "Modeling mucociliary interactions for the generation of flow"

12:20 pm - 12:30 pm Discussion

12:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session B (2nd viewing)

6:00 pm Dinner

7:30 pm - 9:30 pm **Life at the Interface: Cilia and Fluid Interactions**
 Discussion Leader: **Martina Brueckner** (Yale Univ. New Haven)

7:30 pm - 7:35 pm **Martina Brueckner** (Yale Univ., New Haven)
 "Introduction"

7:35 pm - 7:55 pm **Hiroshi Hamada** (Osaka Univ., Japan)
 "Fluid dynamics at the node, left-right development"

7:55 pm - 8:00 pm Discussion

8:00 pm - 8:20 pm **Iain Drummond** (Harvard Univ.)
 "Fluid movement in the developing kidney"

8:20 pm - 8:30 pm Discussion

8:30 pm - 8:50 pm **Sergio Gradilone** (Mayo Clinic, Rochester)
 "Cholangiocyte primary cilia: Key sensory organelles in biliary tree fluid"

8:50 pm - 9:00 pm Discussion

9:00 pm - 9:20 pm **Matthias Salathe** (Univ. Miami)
 "New paradigms for regulation of ciliary function by secretions"

9:20 pm - 9:30 pm Discussion

FRIDAY

7:30 am - 8:30 am Breakfast

9:00 am Departure

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