



UNIVERSITY OF PENNSYLVANIA MEDICAL CENTER  
University of Pennsylvania School of Medicine

# The Pennsylvania Muscle Institute

Spring, 2006

Volume 1, Number 1

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### PMI HOMEPAGE

<http://www.uphs.upenn.edu/pmi>

### PMI MEMBERS

<http://www.uphs.upenn.edu/pmi/members>

### PMI SEMINAR SERIES

<http://www.uphs.upenn.edu/pmi/schedule>

## A Message from our Director, Yale E. Goldman



The PMI is flourishing as noted by various events and publications in this newsletter. It's a wonderful moment for muscle and cell motility research because of the health care relevance, new experiments, technologies, and application to nano machines are converging.

Please leaf through and take note of our progress. If you have any questions or further interest in the PMI please contact me at [goldmany@mail.med.upenn.edu](mailto:goldmany@mail.med.upenn.edu), 215-898-4017

or Jennifer Petrina, our Business Administrator at [petrinaj@mail.med.upenn.edu](mailto:petrinaj@mail.med.upenn.edu), 215-898-4543.

## NEWS AND EVENTS

### Annual PMI Retreat - October 9, 2006

#### Symposium to Honor the Career of Dr. Sally Zigmond

This year the PMI will hold a special retreat to honor the career of Dr. Sally H. Zigmond. Dr. Zigmond has been on the faculty of the Department of Biology and a PMI member since 1976. Her work has provided fundamental insights into mechanisms governing actin dynamics and cell motility. In recognition of her great scientific and mentoring contributions, the PMI, the Department of Biology and the Department of Cell and Developmental Biology, will host a day-long symposium featuring the following distinguished speakers:

Anthony Bretscher, Molecular Biology & Genetics, Cornell University

Lynne Cassimeris, Biological Sciences, Lehigh University

Peter Devreotes, Biological Chemistry, Johns Hopkins University

David Drubin, Cell & Developmental Biology, UC Berkeley

Marc Kirschner, Systems Biology, Harvard Medical School

Tatiana Svitkina, Biology, University of Pennsylvania

Clare Waterman-Storer, Cell Biology, Scripps Research Institute

**\*\*Registration materials will be available later this Fall\*\***

Comments, suggestions?

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## RECENT FACULTY AWARDS

### E. MICHAEL OSTAP, PhD



- **2006 Dean's Award for Excellence in Graduate Training**

He is described by students and fellow faculty members as a superb lecturer and scientist and a dedicated educator. "Dr. Ostap is without question the most important and influential advisor and mentor that I have had in my entire career," stated a former trainee.

### YALE E. GOLDMAN, MD, PhD

- **Stanley N. Cohen Biomedical Research Award 2005**

### TEJ VIR S. KHURANA, MD, PhD

- **PECASE Award - Presidential Early Career Award for Scientists and Engineers**



President George W Bush and the recipients of the PECASE awards. Dr. Khurana is on the right of the second row.

## NEWLY ELECTED MEMBERS

John C. Crocker, PhD  
Department of Chemical and  
Biomolecular Engineering



Mechanical response of  
cells to applied  
mechanical stress

Peter L. Jones, PhD  
Institute for Medicine and Engineering



Pulmonary arterial  
hypertension

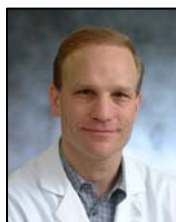
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Sanford Levine, MD  
Department of Surgery



Cellular and molecular  
remodeling

Kenneth B. Margulies, MD  
Cardiology Section  
Department of Medicine



Heart Failure and  
Transplant Research

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Jeffrey R. Peterson, PhD  
Basic Science Division  
Fox Chase Cancer Center



Actin Cytoskeleton and  
Cell Motility

Margaret M. Sleeper, VMD  
Department of Clinical Studies  
School of Veterinary Medicine



Inherited cardiomyopathies,  
Biochemical markers of  
cardiac disease and Real  
time 3D echocardiography

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## RECENT CORE MEMBER PUBLICATIONS

Iwase M., Luo J., Nagaraj S., Longtine M., Kim H.B., Haarer B.K., Caruso C., Tong Z., Pringle J.R., **Bi E.** Role of a Cdc42p effector pathway in recruitment of the yeast septins to the presumptive bud site. *Mol Biol. Cell* 17:1110-1125, 2006.

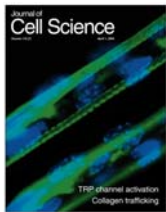
**Discher D.E.**, Bhasin N., Johnson C.P. Covalent chemistry on distended proteins. *Proc. Natl. Acad. Sci.* 103:7533-7534, 2006.

D.E. **Discher**, P. Janmey, Y.-L. Wang. Tissue cells feel and respond to the stiffness of their substrate. *Science* 310: 1139-1143, 2005.

M. Griffin, H. Feng, M. Tewari, P. Acosta, M. Kawana, H.L. **Sweeney**, and D.E. **Discher**. gamma-Sarcoglycan deficiency increases cell contractility, apoptosis, and MAPK pathway activation but does not affect adhesion. *Journal of Cell Science* 118:1405-1416, 2005.

Schienda J, Engleka KA, Jun S, Hansen MS, **Epstein JA**, Tabin CJ, Kunkel LM, Kardon G. Somitic origin of limb muscle satellite and side population cells. *Proc. Natl. Acad. Sci.* 103:945-950, 2006.

Lang D, Lu MM, Huang L, Engleka KA, Zhang M, Chu EY, Lipner S, Skoultchi A, Millar SE, **Epstein JA**. Pax3 functions at a nodal point in melanocyte stem cell differentiation. *Nature* 433:884-887, 2005.



N. Bhasin, R. Law, G. Liao, D. Safer, J. Elmer, B.M. Discher, H.L. **Sweeney**, and D.E. **Discher**. Molecular extensibility of mini-dystrophins and a dystrophin rod construct. *Journal of Molecular Biology* 352:795-806, 2005. (cover article and editor's highlight)

Rock, R.S., Ramamurthy, B., Dunn, A.R., Beccafico, S., Rami, B.R., Morris, C., Spink, B.J., **Franzini-Armstrong, C.**, Spudich, J.A. and **Sweeney, H.L.** A flexible domain is essential for the large step size and processivity of Myosin VI. *Molecular Cell* 17:603-609, 2005.

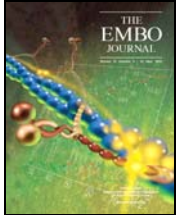
Brochet, D.X.P., Yang, D., Di Maio, A., Lederer, W.J., **Franzini-Armstrong, C.** and Cheng, H. Ca<sup>2+</sup> blinks: rapid nanoscopic store calcium signaling. *Proc. Natl. Acad. Sci.* 102:3099-3104, 2005.



Di Biase, V. and **Franzini-Armstrong, C.** Evolution of skeletal type E-C coupling: a novel means of controlling calcium delivery. *J. Cell Biol.* 171:695-704, 2005. (cover and editor's highlight)

Schredelseker, J., Di Biase, V., Obermair, G.J., Felder, E.T., Flucher, B.E., **Franzini-Armstrong, C.** and Grabner, M. The b1a subunit is essential for the assembly of dihydropyridine-receptor arrays in skeletal muscle. *Proc. Natl. Acad. Sci.* 102:17219-17224, 2005.

Ross, J.L., Wallace, K., **Shuman, H.**, **Goldman, Y.E.**, and **Holzbaur, E.L.** Processive bidirectional motion of Dynein-Dynactin complexes in vitro. *Nature Cell Biol.* 8:562-570, 2006.



Syed S., Snyder G.E., **Franzini-Armstrong** C., Selvin P.R., **Goldman** Y.E.  
Adaptability of myosin V studied by simultaneous detection of position and orientation.  
EMBO J. 25:1795-1803. 2006 (cover and lead article)

Toprak, E., Enderlein, J., Syed, S., McKinney, S.A., Petschek, R.G., Ha, T., **Goldman**, Y.E., and Selvin, P.R. 3-d orientation and position imaging of Myosin V. Proc. Natl. Acad. Sci. 103:6495-6499, 2006.

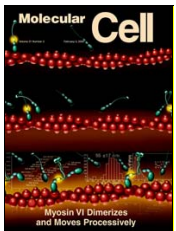
Levy J.R., Sumner C.J., Caviston J.P., Tokito M.K., Ranganathan S, Ligon L.A., Wallace K.E, LaMonte B.H., Harmison G.G., Puls I., Fischbeck K.H., **Holzbaur** E.L. A motor neuron disease-associated mutation in p150Glued perturbs dynactin function and induces protein aggregation. J. Cell Biol. 172:733-45, 2006.

Bogdanovich S., Perkins K.J., Krag T.O., Whittemore L.A., **Khurana** T.S. Myostatin propeptide-mediated amelioration of dystrophic pathophysiology. FASEB J. 19:543-549, 2005.

T. Lin, N. Tang, and E.M. **Ostap**. Biochemical and motile properties of myo1b splice isoforms. J. Biol. Chem. 280:41562-41567, 2005.

D.E. Hokanson and E.M. **Ostap**. Myo1c binds tightly and specifically to PIP2 and InsP3. Proc. Nat. Acad. Sci.. In press.

Collet J.P., **Shuman** H., Ledger R.E., Lee S, **Weisel** J.W. The elasticity of an individual fibrin fiber in a clot. Proc. Nat. Acad. Sci. 102:9133-7, 2005.



Park, H., Ramamurthy, B., , Travaglia, M., Safer, D., Chen, L-Q., **Franzini-Armstrong**, C., Selvin, P.R. and **Sweeney**, H.L. Full-length myosin VI dimerizes and moves processively along actin filaments upon monomer clustering. Molecular Cell 21:331-336, 2006. (cover article)

## FALL SEMINARS

STAY TUNED TO OUR WEBSITE FOR UPCOMING SEMINARS THIS FALL!!