



The Biology of Calpain in Health and Disease

**July 17-22, 2016
Big Sky, Montana**

Organizers:

**Peter Greer, Queen's University, Kingston, ON, Canada
Kevin Wang, University of Florida, Gainesville, FL, USA
Athar Chishti, Tufts University, Boston, MA, USA**

Advisory Committee:

**Peter Davies, Queen's University, Canada
Hiroyuki Sorimachi, Tokyo Metropolitan Institute of Medical Science, Japan
Hiroshi Mamitsuka, Bioinformatics Center, Kyoto University, Japan
Stewart Martin, University of Nottingham, UK
Maralice Connacci-Sorrell, Fred Hutchinson Cancer Center, USA
Tianqing Peng, University of Western Ontario, Canada
Tim Parr, University of Nottingham, UK
Jim Geddes, University of Kentucky, USA**

Program Agenda

Sunday, July 17, 2016

- 4:00PM – 9:00PM Conference Registration
- 6:00PM – 7:00PM FASEB Opening Reception
- 7:00PM – 8:30PM Dinner
- 8:45PM – 9:00PM Welcoming Remarks
Peter Greer, Kevin Wang and Athar Chishti
- 9:00PM – 10:00PM **Keynote Lecture:**
Chris Overall, University of British Columbia
“Proteogenomic approaches to explore protease functions”

Monday, July 18, 2016

- 7:30AM – 9:00AM Breakfast
- Session 1: *Bioinformatics of Calpain Substrates and Measuring Activity***
9:00AM – 12:00PM Session Chair: Hiroshi Mamitsuka, Bioinformatics Center, Kyoto University, Japan
- 9:00AM – 9:15AM Welcome from FASEB
- 9:15AM – 9:45AM Lennart Martens, VIB, Ghent, Belgium
“PeptideShaker analysis of MS proteomic data”
- 9:45AM – 10:15AM Guy Salvesen, Burnham Institute, La Jolla, CA
“Design of ultrasensitive probes for human neutrophil elastase through hybrid combinatorial substrate library profiling”
- 10:15AM – 10:45AM Group Photo & FASEB Sponsored Coffee Break
- 10:45AM – 11:15AM Hiroyuki Sorimachi, Tokyo Metropolitan Institute of Medical Science
“Quantitative structure-activity relationship (QSAR) analysis of calpain substrate specificity - Can we predict cleavage by calpain?”
- 11:15AM – 11:45PM Hiroshi Mamitsuka, Kyoto University, Japan
“Hidden Markov Modelling”
- 12:00PM – 1:00PM Lunch
- 1:00PM – 4:00PM **Free Afternoon**

4:00PM – 6:00PM **Poster Session 1**

6:00PM – 7:00PM Dinner

Session 2: Calpains and Cancer

7:00PM – 9:45PM Session Chair: Stewart Martin, University of Nottingham, UK

7:00PM – 7:30PM Sarah Storr, University of Nottingham, UK
“Calpain in Breast Cancer: Role in Disease Progression and Treatment Response”

7:30PM – 8:00PM Victoria Hoskin, Queen’s University, Kingston, Canada
“Ezrin regulates focal adhesion and invadopodia dynamics by altering calpain activity to promote breast cancer cell invasion”

8:00PM – 8:15PM Selected short talk from abstracts

8:15PM – 8:30PM Break

8:30PM – 9:00PM Robert Geahlen, Purdue University, West Lafayette, IN
“Modulation by Syk of Bcl-2, calcium and the calpain-calpastatin proteolytic system in human breast cancer cells”

9:00PM – 9:30PM TBA

9:30PM – 9:45PM Selected short talk from abstracts

Tuesday, July 19, 2016

7:30AM – 9:00AM Breakfast

Session 3: Calpain in Autophagy

9:00AM – 11:45AM Session Chair: Maralice Conacci-Sorrell, UT Southwestern, Dallas

9:00AM – 9:30AM Jeannette Messer, University of Chicago, Chicago
“Cytosolic HMGB1 controls the cellular autophagy/apoptosis checkpoint during inflammation”

9:30AM – 10:00AM Zixu Mao, Emory University, Atlanta, GA
“Stress Induces p38 MAPK-Mediated Phosphorylation and Inhibition of Drosha-Dependent Cell Survival”

10:00AM – 10:15AM Selected short talk from abstracts

10:15AM – 10:30AM FASEB Sponsored Coffee Break

10:30AM – 11:00AM Maralice Conacci-Sorrell, UT Southwestern, Dallas
“Stress-induced cleavage of Myc promotes cancer cell survival”

11:00AM – 11:30AM TBA

11:30AM – 11:45AM Selected short talks from abstracts

12:00PM – 1:00PM Lunch

1:00PM – 6:00PM **Free Afternoon**

6:00PM – 7:00PM Dinner

Session 4: Calpains in Diabetes and its Complications

7:00PM – 9:45PM Session Chair: Tianqing Peng, University of Western Ontario

7:00PM – 7:30PM Ingrid Fleming, Goethe-Universität, Frankfurt, Germany
“Dicer cleavage by calpain determines platelet microRNA levels and function in diabetes”

7:30PM – 8:00PM Hong Wang, Temple University School of Medicine, Philadelphia
“Hyperhomocysteinemia and hyperglycemia induce and potentiate endothelial dysfunction via m-calpain activation”

8:00PM – 8:15PM Selected short talk from abstracts

8:15PM – 8:30PM Break

8:30PM – 9:00PM Ezra Aksoy, Queen Mary University of London, London, UK
“The p110delta isoform of the kinase PI(3)K controls the subcellular compartmentalization of TLR4 signaling and protects from endotoxic shock”

9:00PM – 9:30PM Tianqing Peng, London Health Sciences Centre, London, Canada
“Inhibition of calpain reduces oxidative stress and attenuates endothelial dysfunction in diabetes”

9:30PM – 9:45PM Selected short talk from abstracts

Wednesday, July 20, 2016

7:30AM – 9:00AM Breakfast

Session 5: Calpains in Neural Development and Degeneration

9:00AM – 11:45AM Session Chair: Kevin Wang, University of Florida, Gainesville

- 9:00AM – 9:30AM Jing Yang, The Rockefeller University, New York
“Regulation of axon degeneration after injury and in development by the endogenous calpain inhibitor calpastatin”
- 9:30AM – 10:00AM Zihui Yang, University of Florida, Gainesville, Florida
“Human traumatic brain injury induces autoantibody response against glial fibrillary acidic protein and its breakdown products”
- 10:00AM – 10:15AM Selected short talk from abstracts
- 10:15AM – 10:30AM FASEB Sponsored Coffee Break
- 10:30AM – 11:00AM Sandra Cooper, University of Sydney, Australia
“Calpain cleavage within dysferlin exon 40a releases a synaptotagmin-like module for membrane repair”
- 11:00AM – 11:30AM Yubin Wang, Western University of Health Sciences
“Differential roles of calpain isoforms in the brain: from basic science to drug development”
- 11:30AM – 11:45AM Selected short talks from abstracts
- 12:00PM – 1:00PM Lunch
- 1:00PM – 4:00PM **Free Afternoon**
- 4:00PM – 6:00PM **Poster Session 2**
- 6:00PM – 7:00PM Dinner

Session 6: Cardiovascular Disease and Aging

7:00PM – 9:45PM Session Chair: Athar Chishti, Tufts University, Boston

- 7:00PM – 7:30PM Yo-ichi Nabeshima, Institute of Biomedical Research and Innovation, Kobe, Japan
“Calpain 1 inhibitor BDA-410 ameliorates alpha-klotho-deficiency phenotypes resembling human aging-related syndromes”
- 7:30PM – 8:00PM Johan W.M. Heemskerk, Maastricht University, The Netherlands
“Calpain regulation of integrin closure in procoagulant platelets”
- 8:00PM – 8:15PM Selected short talk from abstracts
- 8:15PM – 8:30PM Break
- 8:30PM – 9:00PM Athar Chishti, Tufts University School of Medicine, Boston
“A novel calcium and calpain regulated switch for integrin activation”
- 9:00PM – 9:30PM Ke Liu, Sichuan University, China

“Altered ubiquitin causes perturbed calcium homeostasis, hyperactivation of calpain, dysregulated differentiation, and cataract.”

9:30PM – 9:45PM Selected short talks from abstracts

Thursday, July 21, 2016

7:30AM – 9:00AM Breakfast

Session 7: Calpastin and other calpain inhibitors

9:00AM -11:45AM Session Chair: Tim Parr, University of Nottingham, UK

9:00AM – 9:30AM Naren Banik, Medical University of South Carolina, Charleston
“SNJ-1945, a calpain inhibitor, protects SH-SY5Y cells against MPP⁺ and rotenone”

9:30AM – 10:00AM Rudolf Allemann, Cardiff University, Cardiff, UK
“The structural basis of differential inhibition of human calpain by indole and phenyl α -mercaptoacrylic acids”

10:00AM – 10:15AM Selected short talk from abstracts

10:15AM – 10:30AM FASEB Sponsored Coffee Break

10:30AM – 11:00AM Tim Parr, University of Nottingham, UK
“Quantity vs quality: calpastatin and muscle growth”

11:00AM – 11:30AM Masayuki Hirata, Senju Pharmaceutical Co., Ltd, Japan
“Amelioration of retinal ganglion cell death by SNJ-1945: a potential medication against glaucoma”

11:30AM – 11:45AM Selected short talks from abstracts

12:00PM – 1:00PM Lunch

1:00PM – 2:30PM **Meet the Expert Session**
Peter Davies, Stewart Martin, Hiroyuki Sorimachi, Jim Geddes

2:30PM – 6:00PM **Free afternoon**

6:00PM – 7:00PM Dinner

Session 8: Calpain 3

7:00PM – 10:00PM Session Chair: Hiroyuki Sorimachi, Tokyo Metropolitan Institute of Medical Science

7:00PM – 7:30PM Peter Davies, Queen’s University, Kingston, Canada

“Structural-Function Relationships in CAPN3”

- 7:30PM – 8:00PM Yasuko Ono, Tokyo Metropolitan Institute of Medical Science, Calpain Project, Tokyo
“Novel insights into CAPN3 regulation”
- 8:00PM – 8:15PM Selected short talk from abstracts
- 8:15PM – 8:30PM Break
- 8:30PM – 9:00PM Emilia Maellaro, University of Siena, Siena, Italy
“Calpain-3 Impairs Cell Proliferation and Stimulates Oxidative Stress-Mediated Cell Death in Melanoma Cells”
- 9:00PM – 9:30PM Isabelle Richard, Genethon, CNRS Evry, France
“CAPN3-mediated processing of C-terminal titin replaced by pathological cleavage in titinopathy”
- 9:30PM – 10:00PM Business Meeting

Friday, July 22, 2016

- 7:30AM – 9:00AM Breakfast

Session 9: *Novel insights for calpain functions*

- 9:00AM – 12:00PM** Session chair: Jim Geddes, University of Kentucky, Lexington, Kentucky

- 9:00AM – 9:30AM Leah Kottyan, University of Cincinnati, Cincinnati, Ohio
“Genome-wide association analysis of eosinophilic esophagitis provides insight into the tissue specificity of this allergic disease”
- 9:30AM – 10:00AM Vimala Bondada, University of Kentucky, Lexington, Kentucky
“Calpain 5 Is Highly Expressed in the Central Nervous System (CNS), Carries Dual Nuclear Localization Signals, and Is Associated with Nuclear Promyelocytic Leukemia Protein Bodies”
- 10:00AM – 10:30AM Katherine Wert, Columbia University, New York, NY
“CAPN5 mutation in hereditary uveitis: the R243L mutation increases calpain catalytic activity and triggers intraocular inflammation in a mouse model”
- 10:30AM – 10:45AM Break
- 10:45AM – 10:55AM Suzuki Award Winner – Predoctoral
- 10:55AM – 11:05AM Murachi Award Winner – Postdoctoral

11:05AM – 11:15AM Goll Award Winner – Junior Faculty

11:15AM – 11:45PM Discussion and Planning for Next Conference

11:45PM – 12:00PM Closing Remarks

12:00PM Departure

END OF CONFERENCE