

**Pacific Coast Protease
Spring School**

**Palm Canyon Resort
Borrego Springs, California
April 14 – 17, 2019**



Organized by Matt Bogyo and Guy Salvesen

ABOUT THE WORKSHOP

This workshop is designed to provide a stimulating expert environment for the discussion of new information on proteolytic enzymes, their substrates, their inhibitors, and their function. It is organized by Guy Salvesen and Matt Bogyo and is made possible with funding from the NIH and our sponsors.

The objective is to provide trainees (junior faculty, post-docs, and graduate students) with experience in presenting their work to an expert audience, chairing scientific sessions, and to foster collaborations. Expert external faculty will give guest presentations and stimulate discussions.

The work presented here is state-of-the-art and much is yet to be published. Consequently, professional use of the data and ideas learned at the workshop is prohibited without the expressed consent of the respective presenters and their supervisors.



There will be awards at the end of the workshop, including the coveted "Half Moon" for the best presentation.

SPONSORS

Pacific Coast Protease Spring School is pleased to recognize support by:



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BenchSci intro:

BenchSci is a free online platform that helps you find antibodies from publications. They use a machine learning algorithm to screen the literature and identify which antibody has been cited, as well as the experimental contexts in which the antibody has been used. Register using university email for free access at benchsci.com

Website URL: <https://landing.benchsci.com/academic>

Search

- Search for the protein of interest in the search bar
- BenchSci links various aliases of a protein back to the gene level
- Select the protein from the drop down
- Results show published figures from papers that have examined the protein

Filter

- “Figure usage data” filter contains experimental context info as described in the papers
- “Product specs” filter contains properties intrinsic to the antibodies
- Apply multiple filters to narrow down figure results to the ones that are most relevant to your experiment

Search Results

- Data are displayed as a list of figures or a list of antibody products
- Figure results can be sorted by “Published Date” or “Impact Factor”
- Individual figures can be reviewed directly on the platform along with the figure legend, with the antibody used shown to the left of the figure. Direct link to the original full text is just below the figure
- Antibody product results are ranked by the number of published figures that match the filter contexts

Product Info

- On the product page for any antibody, there is a “rainbow chart” that shows how that specific antibody was used across papers, broken down by the technique used
- All published figures produced by the antibody is also shown
- Additional info about the protein target is also available, including aliases, known functions, and gene ontology annotations
- Link to the original vendor page



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PRESENTATIONS AND ABSTRACTS

Trainee talks are 20 min (15 min + 5 min discussion).

Guest faculty talks are 30 min (25 min + 5 min discussion).

Speaker abstracts are listed in order of presentation.



Sunday, April 14th

3:00 pm	Matt, Guy, Anthony, OJ and Tony	Welcome!	Location: Upstairs Conference Room
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Chairs: Guy Salvesen and Laura Keller

Time	Speaker	Title	Lab
3:20 pm	Marcin Drag	Mass cytometry compatible activity-based probes (TOF-probes) to decipher proteolytic enzymes fingerprint in the activome	Outside Expert
3:50 pm	Neri Amara	Fragment-based screen for inhibitors of cell death	Bogyo
4:10 pm	Zhenze Jiang	Peptidomics and substrate profiling approach in characterizing proteolysis of neuropeptides in chromaffin dense core secretory vesicles	O'Donoghue
4:30 pm	Ben Ewanchuk	A novel role for the lysosomal thiol reductase GILT in osteoclast-mediated bone resorption.	Yates
5:00 pm	Coffee break	Location: Conference Room	



Chairs: Irina Kramerova and Rhiannon Campden

Time	Speaker	Title	Lab
5:20 pm	William Gerwick	Protease inhibitors from marine cyanobacteria: Discovery and development of the camaphycins	Outside Expert
5:50 pm	Daniel Young	Profiling proteomic changes during cardiovascular adaptation and injury of extreme ultra-marathon running	Dufour
6:10 pm	Joshua J. Yim	Translating Optical Chemical Probes for Colon Cancer Imaging	Bogyo
6:30 pm	Amy Weeks	Mapping proteolysis at the surface of living cells	Wells
6:50 pm	Betsaida Bibo-Verdugo	Substrate specificity and activation of inflammatory caspases	Salvesen
7:30 pm	Dinner	Location: Big Horn Bar and Grill	

Monday, April 15th

Chairs: William Gerwick and Amy Weeks

Time	Speaker	Title	Lab
8:00am	Breakfast	Location: Big Horn Bar and Grill	
9:00 am	Irina Kramerova	Calpain 3 and pathogenesis of Limb Girdle Muscular Dystrophy 2A: from lab bench to patients	Outside Expert
9:30 am	Anthonia Anowai	N-terminomics and proteomics investigation of Calpain substrates during calcium signalling in macrophages	Dufour
9:50 am	Rhiannon Campden	Cathepsin Z increases the production of the cytokine IL-1 β through the α 5 integrin in NLRP3 inflammasome activation.	Yates
10:10 am	John C. Widen	Dual quenched protease substrates for optically guided tumor resections	Bogyo
10:30 am	Coffee break	Location: Conference Room	



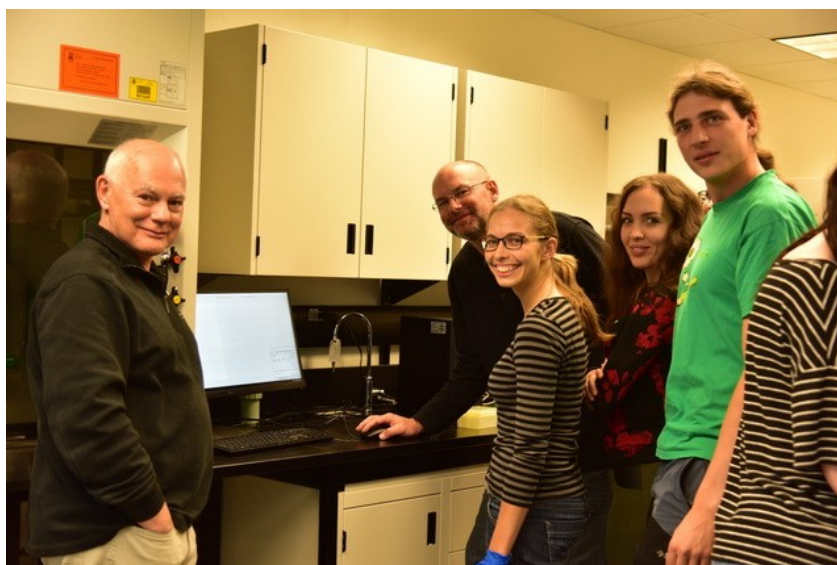
Chairs: Olivier Julien and Matt Ravalin

Time	Speaker	Title	Lab
11:00 am	John Ngo	Drugs, light, and force: new tools to probe and program biology	Outside Expert
11:30 pm	Sumin Lee	Imaging tools of <i>S. aureus</i> serine hydrolase	Bogyo
11:50 am	Raelynn Brassard	Understanding PARL-dependent cleavage of PINK1 in mitochondrial health and Parkinson's disease	Lemieux
12:10 pm	Corey Arnold	Bead-Assisted Discovery of Antigen Scissile Sites	Yates
12:30 pm	Laura Keller	Manipulating microbial communities: Using chemical tools to identify and inhibit serine hydrolases in commensal bacteria	Bogyo
1:00 pm	Lunch	Location: Big Horn Bar and Grill	
2:00 pm	Afternoon activities		
7:30 pm	Dinner	Location: Pablito's Mexican Bar & Grill	

Tuesday, April 16th

Chairs: Marcin Drag and Bridgette Hartley

Time	Speaker	Title	Lab
8:00am	Breakfast	Location: Big Horn Bar and Grill	
9:00 am	Micah Niphakis	Chemoproteomic Interrogation of the Serine Hydrolase Superfamily	Outside Expert
9:30 am	Nabangshu Das	Proteolytic Regulation of Lubricin/PRG4 Structure and Function in Inflammation	Dufour
9:50 am	Lei Liang	Construction of a serine hydrolase inhibitor library: modification of 7-amino-4-chloroisocoumarin scaffold by peptidyl warhead	Bogyo
10:10 am	Jie Zhou	Comprehensive Profiling of ADAMs Protease Substrates Using a Human Proteome Phage Library	Wells
10:30 am	Coffee break	Location: Conference Room	



Chairs: Micah Niphakis and Michael Yoon

Time	Speaker	Title	Lab
11:00 am	Euna Yoo	Antimalarial Salinipostin A targets essential lipid metabolism pathways in <i>P. falciparum</i> parasites	Bogyo
11:20 am	Bridgette Hartley	Proteolytic Degradation in Cardiac Ischemia-Reperfusion Injury	Julien
11:40 am	Brett Babin	Identification and characterization of novel serine hydrolase drug targets in <i>Mycobacterium tuberculosis</i>	Bogyo
12:00 pm	Pavla Fajtova	Development of proteasome inhibitors to target <i>Trichomonas vaginalis</i>	O'Donoghue
12:20 pm	Markus Lakemeyer	Tailored peptide phenyl esters block ClpXP proteolysis by an unusual breakdown into a heptamer-hexamer assembly	Bogyo
1:00 pm	Lunch	Location: Big Horn Bar and Grill	

Chairs: Joanne Lemieux and Corey Arnold

Time	Speaker	Title	Lab
3:10 pm	Ouma Onguka	Biochemical characterization of select <i>Toxoplasma gondii</i> and <i>Plasmodium falciparum</i> serine hydrolases	Bogyo
3:30 pm	Seiya Kitamura	Ultra-high-throughput lead optimization platform enabled by SuFEx click chemistry	Wolan
3:50 pm	Michael Yoon	The cleavage specificity of secretory vesicle enzymes PC1, PC2, Cathepsin V, and Cathepsin L using multiplex substrate profiling by mass spectrometry	O'Donoghue
4:10 pm	Jordan L. Woehl	Discovery of selective covalent inhibitors of human neutrophil elastase. / Potent SpeB inhibitors promote <i>S. pyogenes</i> killing through complement-mediated phagocytosis.	Wolan
4:30 pm	Luam Araya	Proteolysis in Cellular differentiation	Julien
4:50 pm	Matt Ravalin	Specificity for latent C-termini links the E3 ubiquitin ligase CHIP to caspase signaling	Craik
7:30 pm	Dinner and Awards	Location: Big Horn Bar and Grill	

Wednesday, April 17th

9:00 am	Departure
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