Bridging the Gap Between Fundamental and Applied Peptide Science

February 11 - 16, 2018

Chairs
Jennifer R. Cochran and James S. Nowick

Vice Chairs
Richard W. Roberts and Natia Tsomaia

Ventura Beach Marriott
2055 Harbor Boulevard
Ventura, CA, US

Conference Description

Although more than a century has elapsed since the first synthesis of a dipeptide by Emil Fischer in 1901, the field of Peptide Science is more dynamic and vibrant than ever. The 2018 Chemistry and Biology of Peptides Gordon Research Conference will focus on New Frontiers in Peptide Science. The conference will explore cutting edge advances of synthetic and combinatorial methodologies for the design, engineering, production, analysis, delivery of complex peptides and peptide-like polymers. In addition, strong focus will be placed on translational applications of peptides, including their use as diagnostics, therapeutics, and materials.

The 2018 program will feature invited talks from academic and industry leaders in the field from around the world; poster sessions; and, of course in the GRC tradition, plenty of time for discussion and scientific exchanges to continue to build the peptide-science community. To foster discussion of new frontiers being facilitated by early career scientists, this year's program will feature a session highlighting rising stars in peptide science. The GRC has several programs to encourage and support attendance by underrepresented groups, which we endorse and encourage application for.

Following the success of past meetings, the 2018 GRC will also be preceded by a GRS organized by young researchers, and a GRC Power Hour for men and women attendees to discuss topics surrounding diversity and inclusion in the sciences.

Related Meeting

This GRC will be held in conjunction with the "Chemistry and Biology of Peptides (GRS)" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRS in addition to an application for the GRC. Refer to the associated GRS program page for more information.

Conference Program

Sunday	
4:00 pm - 8:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	**Keynote Session: Bridging the Gap Between Fundamental and Applied Peptide Science** Discussion Leaders: **Jennifer Cochran** (Stanford University, USA) and **James Nowick** (University of California, Irvine, USA)
7:40 pm - 8:20 pm	**Peter Dervan** (California Institute of Technology, USA) "Bridging the Gap Between Fundamental and Applied Science in DNA Recognition by Py-Im Polyamides"
8:20 pm - 8:35 pm	Discussion
8:35 pm - 9:15 pm	**James Wells** (University of California, San Francisco, USA) "Engineering New Peptide Ligases"
9:15 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast

9:00 am - 12:30 pm	**Stabilized Peptide Therapeutics** Discussion Leaders: **Peter Dervan** (California Institute of Technology, USA) and **Terry Moore** (University of Illinois at Chicago, USA)
9:00 am - 9:25 am	**Rami Hannoush** (Genentech, Inc., USA) "Challenges and Emerging Approaches in Peptide Drug Discovery"
9:25 am - 9:40 am	Discussion
9:40 am - 10:05 am	**Dinesh Patel** (Protagonist Therapeutics Inc., USA) "Orally Stable Peptides - Fact or Fiction? Or Discovery and Development of Orally Stable Peptides for Gastro-Intestinal (GI) Diseases"
10:05 am - 10:20 am	Discussion
10:20 am - 10:35 am	**James Checco** (University of Illinois at Urbana-Champaign, USA) "Exploring the Signaling of D-Amino Acid-Containing Neuropeptides"
10:35 am - 10:40 am	Discussion
10:40 am - 11:10 am	Coffee Break
11:10 am - 11:35 am	**Jutta Eichler** (University of Erlangen-Nuremberg, Germany) " Mimicking Protein-Protein Interactions Through Peptide-Peptide Interactions: CXCR4 and HIV-1 gp120"
11:35 am - 11:50 am	Discussion
11:50 am - 12:15 pm	**James Olson** (Fred Hutchinson Cancer Research Center, USA) "The Optide Platform: Designing, Engineering, and Evolving Peptide Drug Candidates"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time

3:00 pm - 4:00 pm	**Power Hour** *The GRC Power Hour is an optional informal gathering open to all meeting participants. It is designed to help address the challenges women face in science and support the professional growth of women in our communities by providing an open forum for discussion and mentoring.* Organizer: **Natia Tsomaia** (Elucidata, USA)
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Advances in Peptide and Protein Synthesis** Discussion Leaders: **James Wells** (University of California, San Francisco, USA) and **Caroline Proulx** (North Carolina State University, USA)
7:30 pm - 7:55 pm	**Brad Pentelute** (Massachusetts Institute of Technology, USA) "Automated Flow Peptide Synthesis: Toward Amide Bonds at Nature's Pace"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Lauren Goodrich** (Roche Madison, USA) "Massively Parallel Synthesis and Screening of Linear Peptides and Macrocycles Using Peptide Microarrays"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**James Tam** (Nanyang Technological University, Singapore) "Ligases: Specific Peptide Staplers"
9:15 pm - 9:30 pm	Discussion
Tuesday	
7:30 am - 8:30 am	Breakfast
8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	**Peptide Design** Discussion Leaders: **Lauren Goodrich** (Roche Madison, USA) and **Laura Kiessling** (Massachusetts Institute of Technology, USA)

9:00 am - 9:25 am	**Derek Woolfson** (University of Bristol, United Kingdom) " Peptide Design and Assembly: From Fundamental Principles to Real-Life Applications"
9:25 am - 9:40 am	Discussion
9:40 am - 10:05 am	**Jonathan Lai** (Albert Einstein College of Medicine, USA) " Structure-Based Design of Broad Flavivirus Immunogens"
10:05 am - 10:20 am	Discussion
10:20 am - 10:35 am	**He Dong** (University of Texas at Arlington, USA) "Shape-Specific Nanostructured Protein Mimics from *De Novo* Designed Chimeric Peptides"
10:35 am - 10:40 am	Discussion
10:40 am - 11:10 am	Coffee Break
11:10 am - 11:35 am	**William Pomerantz** (University of Minnesota, USA) "Design and Synthesis of Highly Fluorinated Biopolymers as 19F MRI Contrast Agents"
11:35 am - 11:50 am	Discussion
11:50 am - 12:15 pm	**Gabriel Rocklin** (University of Washington, USA) "Massively Parallel Investigation of *De Novo* Miniprotein Folding and Binding"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Amyloids and Peptide Self-Assembly** Discussion Leaders: **Derek Woolfson** (University of Bristol, United Kingdom) and **Aphrodite Kapurniotu** (Technical University of Munich, Germany)

7:30 pm - 7:55 pm	**Charles Glabe** (University of California, Irvine, USA) "Conformational Polymorphisms of the Amyloid Aβ Peptide in Alzheimer's Disease"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Wei Qiang** (Binghamton University, State University of New York, USA) "Understanding the Cellular Membrane Disruption Induced by Early-Stage Aggregation of Beta-Amyloid Peptides"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**Jevgenij Raskatov** (University of California, Santa Cruz, USA) "Chirality, Alzheimer's Disease and Amyloid Beta"
9:15 pm - 9:30 pm	Discussion
Wednesday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Peptide Engineering** Discussion Leaders: **Greg Thurber** (University of Michigan, USA) and **Marcey Waters** (University of North Carolina at Chapel Hill, USA)
9:00 am - 9:25 am	**Andreas Plueckthun** (University of Zurich, Switzerland) "Engineering Armadillo Repeat Proteins as Modular Peptide Binders"
9:25 am - 9:40 am	Discussion
9:40 am - 10:05 am	**Amy Keating** (Massachusetts Institute of Technology, USA) "Exploring the Landscape of Bcl-2 Family Binding Peptides"
10:05 am - 10:20 am	Discussion
10:20 am - 10:35 am	**Gaurav Bhardwaj** (University of Washington, USA) "Accurate Computational Design of Heterochiral Constrained Peptides"
10:35 am - 10:40 am	Discussion

10:40 am - 11:10 am	Coffee Break
11:10 am - 11:35 am	**Les Miranda** (Amgen, USA) "Engineering Complimentary Peptide and Antibody Attributes for Efficient Hybridization"
11:35 am - 11:50 am	Discussion
11:50 am - 12:15 pm	**Laura Kiessling** (Massachusetts Institute of Technology, USA) "Molecular Basis of Protein-Carbohydrate Interactions"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	**Business Meeting** *Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair*
7:30 pm - 9:30 pm	**Cell Penetration and Drug Delivery** Discussion Leaders: **Amy Keating** (Massachusetts Institute of Technology, USA) and **Joshua Kritzer** (Tufts University, USA)
7:30 pm - 7:55 pm	**Tomi Sawyer** (Merck Research Laboratories, USA) " Exploring Macrocyclic Peptide Cell Permeability: Screening Tools and Design Rules"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Greg Thurber** (University of Michigan, USA) " Molecular Engineering of Helical Peptides: Designing Intracellular Therapeutics"
8:35 pm - 8:50 pm	Discussion

8:50 pm - 9:15 pm	**Yftah Tal-Gan** (University of Nevada, Reno, USA) "Peptide-Based Tools to Study Cell Signaling in Bacteria"
9:15 pm - 9:30 pm	Discussion
Thursday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	**Next-Generation Peptide Therapeutics** Discussion Leaders: **Carrie Haskell-Luevano** (University of Minnesota, USA) and **Ivan Korendovych** (Syracuse University, USA)
9:00 am - 9:15 am	**Terry Moore** (University of Illinois at Chicago, USA) "Stapled Peptide Inhibitors of the Estrogen Receptor/Coactivator Interaction"
9:15 am - 9:20 am	Discussion
9:20 am - 9:35 am	**Joshua Kritzer** (Tufts University, USA) "Cell Penetration Profiling Using the Chloroalkane Penetration Assay"
9:35 am - 9:40 am	Discussion
9:40 am - 10:05 am	**Eun Ji Chung** (University of Southern California, USA) "Targeting Peptides for Nanomedicine"
10:05 am - 10:20 am	Discussion
10:20 am - 10:35 am	**Jacqueline Wilce** (Monash University, Australia) "Rational Development of Bicyclic Peptides Targeting the Grb7 Cancer Target"
10:35 am - 10:40 am	Discussion
10:40 am - 11:10 am	Coffee Break
11:10 am - 11:35 am	**William Schief** (The Scripps Research Institute, USA) "Reductionist Vaccine Design for HIV"
11:35 am - 11:50 am	Discussion

11:50 am - 12:15 pm	**David Craik** (The University of Queensland, Australia) "Plants as Biofactories for Producing Peptide-Based Pharmaceuticals"
12:15 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Peptide-Based Materials** Discussion Leaders: **Natia Tsomaia** (Elucidata, USA) and **Richard Roberts** (University of Southern California, USA)
7:30 pm - 7:55 pm	**Sarah Heilshorn** (Stanford University, USA) "Peptide-Based Materials for Regenerative Medicine Applications"
7:55 pm - 8:10 pm	Discussion
8:10 pm - 8:35 pm	**Vince Conticello** (Emory University, USA) "Peptide and Protein Nanomaterials: The Design Challenge"
8:35 pm - 8:50 pm	Discussion
8:50 pm - 9:15 pm	**Joel Schneider** (National Cancer Institute, NIH, USA) "Racemic Hydrogels from Mirror Image Peptides: Predictions from Pauling and Corey"
9:15 pm - 9:30 pm	Discussion
Friday	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

Contributors


Gordon Research
Conferences
Frontiers of Science


Carl Storm
Underrepresented
Minority Fellowship
Program


FERRING
PHARMACEUTICALS


novo nordisk


AMERICAN
PEPTIDE
SOCIETY


AMGEN


CEM


IPSEN
Innovation for patient care


entrada
THERAPEUTICS


BACHEM


MERCK
INVENTING FOR LIFE


Biochemistry


ACS
central
science


CPC
scientific


BC Bioconjugate
Chemistry


ACS
SyntheticBiology