

Program Agenda

Functional Disulfide Bonds in Health and Disease
June 17-22, 2018

Sunday, June 17, 2018

Time	Title/Topic Event	
7:30 PM - 9:30 PM	Keynote Address	<p>Ruma Banerjee (University of Michigan) <i>Redox Metabolic Reprogramming by Hydrogen Sulfide</i></p> <p>In Memoriam: Robert B. Freedman</p>
7:30 PM - 9:30 PM	Session 1: Protein disulfide structure function Chair: Deborah Fass	<p>Eranthie Weerapana (Boston College) <i>Chemical-proteomic approaches to investigate cysteine posttranslational modifications</i></p> <p>Philip Hogg (University of Sydney - Sydney, AUS) <i>Autoregulation of von Willebrand factor function by a disulfide bond switch</i></p> <p>Yimon Aye (Cornell University & Weill Cornell Medicine) <i>Precision electrophile signaling guides precision covalent ligand evolution</i></p>

Monday, June 18, 2018

Time	Title/Topic Event	
7:30 AM - 9:00 AM	BREAKFAST	
9:00 AM - 10:00 AM	Session 2: Protein folding and disulfide bond exchange Chair: Matthias J. Feige	<p>Deborah Fass (Weizmann Institute of Science - Rehovot, ISR) <i>Tunability of Redox Properties and Substrate Trapping by QSOX1 and PDI Family Enzymes</i></p>

Matthias Feige (Technical University of Munich - Garching, DEU)

Oxidative folding regulates interleukin biogenesis

10:00 AM - 10:15 AM COFFEE BREAK

10:15 AM - 11:45 AM

Dave Thirumalai (University of Texas)

Protein Folding Guides Disulfide Bond Formation

Colin Thorpe (University of Delaware, Chemistry and Biochemistry)

Extracellular Redox Status: from Small Molecule Thiols to Quiescin Sulfhydryl Oxidase

Arek Melkonian (Stanford University)

Protein-Protein Interactions in the Disulfide Exchange Reactions of Transglutaminase 2

12:00 PM - 1:00 PM LUNCH

1:00 PM - 2:30 PM *Career Development Workshop*

Rita Sarkar, PhD

DBDR, NHLBI

NIH

NIH Grant Writing and Career Development

Discussants: **Rita Sarkar, PhD** and

Henry Chang, MD

DBDR, NHLBI

NIH

2:30 PM - 4:00 PM Free time

4:00 PM - 6:00 PM Session 3: Engineering disulfide bonds
Chair: Rami Hannoush

Liz Nolan (MIT)

Disulfide bonds in human host-defense peptides and proteins: Psoriasis case study

Stefan Matile (University of Geneva - Geneva, CHE)

From Cell-Penetrating Poly(disulfide)s to Extreme Disulfide and Diselenide Chemistry

David Liu (Protagonist Therapeutics, Inc.)

Oral Peptide Therapeutics for IBD: Discovery to Clinical Development

Lars Ellgaard (University of Copenhagen - Copenhagen N., DNK)

Oxidative folding of disulfide-rich cone snail toxins in the ER (and in the cytosol of E. coli)

6:00 PM - 7:00 PM DINNER

7:00 PM - 8:00 PM Oral Presentations from Abstracts

Marc Mora (King's College London - London, GBR)
Forcing the reversibility of a bimolecular mechanochemical reaction

Joanna Sulkowska (University of Warsaw - Warsaw, POL)
Lassos and links with disulfide bridges in proteins

Brian Vaccaro (University of Michigan)
Thioredoxin Regulates Mercaptopyruvate Sulfurtransferase, a Major Source of Cellular Persulfide-Derived H₂S

Mathivanan Chinnaraj (Saint Louis University)
Reduced and Oxidized Conformations of Protein Disulfide Isomerase Revealed by Single-Molecule FRET

8:00 PM - 9:30 PM Poster Session

Tuesday, June 19, 2018

Time	Title/Topic Event
7:30 AM - 9:00 AM	BREAKFAST
9:00 AM - 10:00 AM	Session 4: Cysteine S-alkylations Chair: Jonathan Stamler
	Jonathan Stamler (Case Western Reserve University) <i>Mechanisms of S-nitrosylation</i>
	Kenneth Tew (Medical University of South Carolina) <i>Glutathione S-transferase P and the S-glutathionylation cycle in hematopoiesis</i>
10:00 AM - 10:30 AM	COFFEE BREAK and Group Photo
10:30 AM - 12:00 PM	
	Garcia-Manyes Sergi (King's College London - London, GBR) <i>Linking mechanochemistry with protein folding with single bond resolution</i>

Oskar Eriksson (Harvard Medical School)

ERp57 targets and modulates the lectin pathway of complement activation

Pietro Ghezzi (Brighton & Sussex Medical School - Brighton, GBR)

Biomarkers and the Oxidative Stress Theory of Disease

12:00 PM - 1:00 AM LUNCH
Meet the Experts

1:00 PM - 4:00 PM Free time

4:00 PM - 6:00 PM Session 5: Functional disulfides
Chair: Freda Passam

David Essex (Temple University)

Protein Disulfide Isomerases in Thrombosis

Irwin Chaiken (Drexel University College of Medicine)

Irreversible Lytic Inactivation of HIV-1 through Env Disulfide Disruption

Tal Ilani (Weizmann Institute of Science - Rehovot, ISR)

Gut reaction: How disulfide bonding builds a healthy colon

Freda Passam (University of Sydney - Sydney, AUS)

Mechano-redox control of integrin de-adhesion

6:00 PM - 7:00 PM DINNER

7:00 PM - 8:00 PM Oral Presentations from Abstracts

Aster Pijning (Centenary Institute - Dee Why, AUS)

Identification of allosteric disulphides from labile bonds in X-ray structures

Sumi Rajagopalan (NIAID/NIH)

A role for allosteric disulfides in regulating the function of a human killer cell receptor

Oskar Eriksson (Harvard Medical School)

Reduction of Disulfides in GPCRs by PDI

Xiao He (Univ. of Utah)

Reduction of insulin is required for processing of an intra-chain disulfide bond in an A chain epitope and generation of Ab response in mice

8:00 PM - 9:30 PM Poster Session

Wednesday, June 20, 2018

Time	Title/Topic Event
7:30 AM - 9:00 AM	BREAKFAST
9:00 AM - 10:00 AM	Session 6: Endoplasmic reticulum stress Chair: Lars Ellgaard
	<p>Hetz Claudio (University of Chile - Santiago, CHL) <i>ALS-linked protein disulfide isomerase gene variants cause motor dysfunction</i></p> <p>Yair Argon (University of Pennsylvania) <i>A Functional Disulfide Regulates the Unfolded Protein Response</i></p>
10:00 AM - 10:15 AM	COFFEE BREAK
10:15 AM - 11:15 AM	
	<p>Roberto Sitia (San Raffaele University-Hospital MILAN ITALY - Milano, ITA) <i>Redox Signaling in and from the Early Secretory Compartment</i></p> <p>Greg Poet (St Jude Children's Research Hospital) <i>Toward understanding oxidative folding and quality control of BiP clients in the ER</i></p>
11:15 AM - 12:00 PM	Business Meeting
12:00 PM - 1:00 PM	LUNCH
1:00 PM - 4:00 PM	Free time
4:00 PM - 6:00 PM	Session 7: Functional disulfide bonds in cancer Chair: Nouri Neamati
	<p>Nouri Neamati (University of Michigan) <i>Targeting PDI in cancer</i></p> <p>Thomas Simmen (University of Alberta) <i>Redox-based signaling in cancer</i></p> <p>Rami Hannoush (Genentech Inc.) <i>Challenges and emerging approaches in peptide lead discovery</i></p> <p>Brian Law (University of Florida)</p>

Disulfide bond disrupting agents in cancer

6:00 PM - 7:00 PM DINNER

7:00 PM - 8:00 PM Oral Presentations from Abstracts

Oluwatoyosi Muse (BIDMC/HARVARD MEDICAL SCHOOL)*Activation of the Unfolded Protein Response causes generation of Prothrombotic Mediators by Pancreatic Cancer Cells***OJORE OKA (UNIVERSITY OF GLASGOW - GLASGOW, GBR)***PDI oxidoreductases regulate the function of ATF6 during the UPR stress response***Andres Trostchansky (School of Medicine, Universidad de la Republica - Montevideo, URY)**
*ROL OF PROTEIN DISULFIDE ISOMERASE (PDI) ON PHAGOCYtic NADPH OXIDASE INHIBITION BY NITROARACHIDONIC ACID***Joyce Chiu (University of Sydney)***Quantification of the redox state of alphaIIb/beta3 cysteines*

8:00 PM - 9:30 PM Poster Session

Thursday, June 21, 2018**Time Title/Topic Event**

7:30 AM - 9:00 AM BREAKFAST

9:00 AM - 10:00 AM Session 8: Functional disulfide bonds in thrombosis
Chair: Bruce Furie**Wolfram Ruf (Johannes Gutenberg University Medical Center - Mainz, DEU)***Thiol isomerases and Tissue Factor***Bruce Furie (Harvard Medical School/BIDMC)***Master Switch Hypothesis: Regulation of Thrombus Formation*

10:00 AM - 10:15 AM COFFEE BREAK

10:15 AM - 11:45 AM

José López (Bloodworks Northwest)*N-acetylcysteine in Thrombotic Thrombocytopenic Purpura***Jeffrey Zwicker (BIDMC/Harvard Medical School)***Isoquercetin as an antithrombotic therapeutic in humans targeting PDI activity***Andrew Barazia (3I Imaging)***Intravital microscopy and functional disulfide bonds*

12:00 PM - 1:00 PM LUNCH

1:00 PM - 4:00 PM Free time

4:00 PM - 6:00 PM Session 9: Functional disulfide bonds in neuroprotection
Chair: Daphne Atlas

Tom Hollis (Wake Forest School of Medicine)*The SAMHD1 dNTP triphosphohydrolase is controlled by a redox switch***Daphne Atlas (The Hebrew University - Jerusalem, ISR)***Thioredoxin-mimetic peptides (TXM-peptides) protect cells by inhibiting inflammatory and apoptotic pathways***Julie Atkin (Macquarie University - North Ryde, AUS)***The broad protective activity of PDI family members in Amyotrophic Lateral Sclerosis/Motor Neuron Disease***Danilo Medinas (University of Chile - Santiago, CHL)***Role of ERp57 in the pathogenesis of amyotrophic lateral sclerosis*

6:00 PM - 7:00 PM DINNER

7:00 PM - 8:00 PM Oral Presentations from Abstracts

Percília Oliveira (University of São Paulo, School of Medicine - São Paulo, BRA)*Protein Disulfide Isomerase (PDIA1) levels discriminate contrasting phenotypic signatures in plasma from healthy individuals***Emma-Ruoqi Xu (European Molecular Biology Laboratory - Hamburg, DEU)***Impact of dynamics-restricting disulfide bridges on the overall architecture and functional regulation of the C-terminal stem of the Von Willebrand factor*

Benjamin Roberts (University of North Carolina Chapel Hill)

Lipase Maturation Factor 1 in the ER Redox Community

Carolina Fernandes (University of Sao Paulo, School of Medicine - São Paulo, BRA)

Enhanced vascular remodeling in protein disulfide isomerase-A1 overexpressing mice: correlation with Nox NADPH oxidase subtype expression

Friday, June 22, 2018

Time	Title/Topic Event
7:30 AM - 9:00 AM	BREAKFAST
9:00 AM	Boxed snacks to go and DEPARTURE