

Program

International Conference on

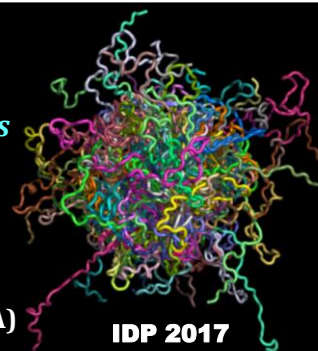
Intrinsically Disordered Proteins: *Forms, Functions and Diseases*

Venue: Auditorium, Lecture Hall Complex

Indian Institute of Science Education and Research (IISER) Mohali

December 9-12, 2017

Organizers: Samrat Mukhopadhyay (IISER Mohali, India)
Elizabeth Komives (University of California San Diego, USA)



December 9, 2017 (Saturday)

9:00 am	Welcome and Opening Remarks by the Organizers
Session 1: Keynote Session Chair: P. Balaram (Indian Institute of Science, Bangalore, India)	
9:15 am	Christopher Dobson (University of Cambridge, UK) The Amyloid State of Proteins and its Significance in Biology and Medicine
EMBO Keynote Lecture	
Session 2: Disorders, Functions and Dysfunctions Chair: Elizabeth Komives (University of California San Diego, USA)	
10:00 am	Jane Dyson (Scripps Research Institute, La Jolla, USA) Disorder Rules: How Cells and Viruses use Disordered Proteins
10:30 am	Richard Kriwacki (St. Jude Children's Hospital, Memphis, USA) Exploring the Diverse Conformations and Biological Functions of IDPs
11:00 am	Vladimir Uversky (University of South Florida, Tampa, Florida, USA) Unusual Biophysics and Strange Biology of Intrinsic Disorder
11:30 am	Group Photo and Coffee
Session 3: Phase Separation and Membrane-less Organelles Chair: Peter Wright (Scripps Research Institute, La Jolla, USA)	
12:00 am	Rohit Pappu (Washington University in St. Louis, USA) Huntingtin Structure, Aggregation and Phase Behavior
12:30 pm	Peter Tompa (VIB Structural Biology Research Center, Brussels, Belgium) Structural Disorder Promotes Phase Separation of C9orf72 Dipeptide Repeats in ALS
1:00 pm	Lunch
2:00 pm	Poster and Tea
Session 4: Amyloids in Disease and Function Chair: Christopher Dobson (University of Cambridge, UK)	
4:00 pm	Jayant Udgaonkar (NCBS Bangalore and IISER Pune, India) Mechanism of Prion-like Conformational Change by the Tau Protein
4:30 pm	Matthew Chapman (University of Michigan, Ann Arbor, USA) Discouraging Amyloid Formation with Beta-Rich Proteins
5:00 pm	Daniel Otzen (Aarhus University, Denmark) Self-Organizing Amyloid in Bacteria
Session 5: Special Evening Session Chair: Jayant Udgaonkar (NCBS Bangalore and IISER Pune, India)	
5:45 pm	P. Balaram (Indian Institute of Science, Bangalore, India) G. N. Ramachandran and the Origins of the Field of Polypeptide and Protein Conformations
6:30 pm	Dinner

December 10, 2017 (Sunday)

<u>Session 6: Disorder-to-Function Relationships</u>	
Chair: Peter Tompa (VIB Structural Biology Research Center, Brussels, Belgium)	
9:00 am	Peter Wright (Scripps Research Institute, La Jolla, USA) Allosteric Regulation of Cellular Signaling Pathways by Intrinsically Disordered Proteins
9:30 am	Elizabeth Komives (University of California San Diego, USA) The Role of Intrinsic Disorder in NF κ B Signaling
10:00 am	Timothy Lohman (Washington University in St. Louis, USA) Glutamate Promotes SSB Protein-Protein Interactions via Intrinsically Disordered Regions
10:30 am	Paul Gooley (University of Melbourne, Australia) The Complex Binding Mode of Relaxin for its Receptor RXFP1
11:00 am	Coffee
<u>Session 7: Coupled Folding, Binding and Assembly</u>	
Chair: Jane Dyson (Scripps Research Institute, La Jolla, USA)	
11:30 am	Ashok Deniz (Scripps Research Institute, La Jolla, USA) Biophysics of Protein Disorder, Single-Molecules to Mesoscales
12:00 pm	Perdita Barran (University of Manchester, UK) Using Mass Spectrometry to examine Disordered Proteins – The Perfect Tool to Report on Self Solvation and Complex Formation?
12:30 pm	Raffaele Mezzenga (ETH Zürich, Switzerland) Amyloid Crystals Occupy the Absolute Minimum in the Protein Folding Energy Landscape
1:00 pm	Lunch
2:00 pm	Poster and Tea
<u>Session 8: Conformational Plasticity and Fuzziness</u>	
Chair: Richard Kriwacki (St. Jude Children's Hospital, Memphis, USA)	
4:00 pm	Monika Fuxreiter (University of Debrecen, Hungary) Fuzziness in Protein Adaptation
4:30 pm	Edward Lemke (EMBL Heidelberg, Germany) Surface Solvation and Molecular Recognition Plasticity in IDPs
<u>Session 9: Amyloidogenic IDPs: Order in Disorder</u>	
Chair: Joan-Emma Shea (University of California Santa Barbara, USA)	
5:00 pm	Sudipta Maiti (Tata Institute of Fundamental Research, Mumbai, India) Designing Ligands for Structure-less Proteins
5:30 pm	Samrat Mukhopadhyay (IISER Mohali, India) Biological Water in Amyloidogenic IDPs
6:30 pm	Conference Dinner

December 11, 2017 (Monday)

<u>Session 10: Amyloid Conversion and Toxicity</u>	
Chair: Matthew Chapman (University of Michigan, Ann Arbor, USA)	
9:00 am	Joan-Emma Shea (University of California Santa Barbara, USA) Aggregation of the Tau Protein: Insights from Atomistic and Mesoscale Simulations
9:30 am	Jerson Silva (Federal University of Rio de Janeiro, Brazil) Targeting the Prion-Like Aggregation of Mutant p53 Against Cancer

10:00 am	Per Hammarström (Linköping University, Sweden) Polymorphic Influence on Amyloid Toxicity and Replication
10:30 am	Samir Maji (Indian Institute of Technology, Bombay, Mumbai, India) Role of p53 Amyloid Formation in Cancer
11:00 am	Coffee
<u>Session 11: Dynamics and Disorder</u> Chair: Monika Fuxreiter (University of Debrecen, Hungary)	
11:30 am	Payel Das (IBM Watson Research Center, New York, USA) Structure-Function Paradigm of Disordered Peptides Through the Computational Microscope
12:00 pm	Parbati Biswas (University of Delhi, India) Understanding Intrinsic Disorder in Proteins
12:30 pm	Neelanjana Sengupta (IISER Kolkata, India) Oligomeric Assembly of the Alzheimer's Amyloid β Peptide under Perturbing Conditions: A Computer Simulation Approach
1:00 pm	Lunch
2:00 pm	Poster and Tea
<u>Session 12: Young Researcher Talks</u> (Selected from Submitted Abstracts) Chairs: Sudipta Maiti (Tata Institute of Fundamental Research, Mumbai, India) Purnananda Guptasarma (IISER Mohali, India)	
4:00 pm	Shana Elbaum-Garfinkle (Princeton University, USA) Phase Behavior of Disordered Proteins Underlying Low Density and High Permeability of Liquid Organelles
4:15 pm	Abhinav Nath (University of Washington, Seattle, USA) Understanding How Chaperones, Polyanions, and Novel Small Molecules Modulate Tau's Aggregation Pathway
4:30 pm	Anupam K. Chakravarty (Stanford University California, USA) Intrinsically Disordered Regions of a Conserved RNA Binding Protein Drive Self-Templating: A New Paradigm in Gene Regulation?
4:45 pm	Priyanka Joshi (University of Cambridge, UK) A Fragment-Based Strategy of Creating Small-Molecule Libraries to Target the Aggregation of Intrinsically Disordered Proteins: An Update
5:00 pm	Neha Jain (University of Michigan, Ann Arbor, USA) Cross-talk Between Human and Bacterial Amyloids and its Consequence in Neurodegenerative Diseases
5:15 pm	Suman De (University of Cambridge, UK) A Quantitative Assay to Measure Protein Aggregate Induced Toxicity
5:30 pm	Rajanish Giri (Indian Institute of Technology, Mandi, India) Molecular Recognition Features in the Dark Side of Zika Virus Proteome
5:45 pm	Ashutosh Kumar (Indian Institute of Technology Bombay, Mumbai, India) Histone 4 Facilitates the Conformational Flexibility of the N-terminus of CENP-ACse4
6:00 pm	Technical Presentations Malvern Horiba
6:30 pm	Dinner

December 12, 2017 (Tuesday)

<u>Session 13: Dynamics, Interconversion and Heterogeneity</u>	
Chair: Rohit Pappu (Washington University in St. Louis, USA)	
9:00 am	Thomas Kiefhaber (Martin-Luther-Universität Halle-Wittenberg, Germany) Local and Long-Range Conformational Dynamics in the Unfolded State of Proteins and IDPs
9:30 am	Gautam Basu (Bose Institute, Kolkata, India) Insights into Slowly Inter-converting IDP Ensemble from Studies on Short Synthetic Peptides Containing Proline
10:00 am	Hue Sun Chan (University of Toronto, Canada) Conformational Heterogeneity and Theories of Sequence-Specific Liquid-Liquid Phase Coexistence of Intrinsically Disordered Proteins
10:30 am	Athi Naganathan (Indian Institute of Technology Madras, Chennai, India) Conditional Order in a Disordered Protein: A Continuum of Structural Order and Compactness Driven by Electrostatics
11:00 am	Coffee
<u>Session 14: Disorder and Lipid-Protein Interactions</u>	
Chair: Daniel Otzen (Aarhus University, Denmark)	
11:30 am	Frances Separovic (University of Melbourne, Australia) Membrane Interactions Affect Structure of Amyloid Peptides
12:00 pm	Amitabha Chattopadhyay (Centre for Cellular & Molecular Biology, Hyderabad) Interaction of a Partially Disordered Protein with Membrane Lipids and Fatty Acids
12:30 pm	Johnny Habchi (University of Cambridge, UK) Cholesterol Catalyses A β 42 Aggregation Through a Heterogeneous Nucleation Pathway in the Presence of Lipid Membranes
1:00 pm	Lunch
<u>Session 15: Folding Disorder: From Test Tubes to Cells</u>	
Chairs: Amitabha Chattopadhyay (Centre for Cellular & Molecular Biology, Hyderabad, India) Jerson Silva (Federal University of Rio de Janeiro, Brazil)	
2:15 pm	Rajiv Bhat (Jawaharlal Nehru University, New Delhi, India) Comparative Analysis of the Conformation, Aggregation, Interaction and Fibrillation of Human α , β , and γ Synuclein Proteins
2:45 pm	Purnananda Guptasarma (IISER Mohali, India) Intrinsic Blue Fluorescence in Ordered and Disordered Proteins
3:15 pm	Yann Gambin (University of New South Wales, Sydney, Australia) Mapping Co-aggregation Cascades in the Formation of Lewy Bodies
3:45 pm	Krishnananda Chattopadhyay (Indian Institute of Chemical Biology, Kolkata, India) Small Molecule Based Investigation on Different Stages of α -Synuclein Aggregation
4:15 pm	Tea
4:30 pm	Patrick D'Silva (Indian Institute of Science, Bangalore, India) Uncovering the Role of mtHSP70 Chaperone Network in the Maintenance of Mitochondrial Quality Control: Relevance in the Progression of Parkinson's Disease
5:00 pm	Deepak Sharma (Institute of Microbial Technology, Chandigarh, India) Autophagy and not Classical Chaperoning Function of the Yeast Hsp70 Protects Cell From α -Synuclein Toxicity
5:30 pm	Poster Awards and Concluding Remarks
6:30 pm	Dinner