

5° Ice Binding Proteins Conference

Milano, 1-5 September 2025

Conference Schedule

Day 1

Registration/Check-in 14:30-15:30

Welcome reception 15:30-16:30

Visit to Botanic Garden 16:30-17:30

Day 2

Session 1 9:00 – 10:30 AM

Introduction - 9:00

Keynote Lecture 1 - 9:30 Prof. Konrad Meister *Molecular Principles of Protein-Mediated Ice Nucleation*

Break 10:30 – 11:00 AM

Session 2 11:00 – 12:30 PM

PL1 – 11:00 Prof. Thomas Koop *Experimental Studies on the Ice Recrystallization Inhibition by Molecular Compounds*

PL2 – 11 :25 Prof. Thomas Reus *Uncovering Local Effects in Ice Recrystallization Inhibition: From Sucrose Assays to Advanced Analytical Frameworks*

PL3 – 11:50 Prof. Iddo Heller *Pinning of ice-water interfaces by ice-binding proteins inhibits ice recrystallisation*

Lunch 12:30 – 13:45 PM

Session 3 13:45 – 15:30

Flash presentations 13:45

PS1 – 14:15 Dr. Eilam Gibeon *Spontaneous Formation of a Sustainable Antifreeze Coating by Peptide Self-Assembly*

PS2 – 14:30 Dr. Akalabya Bissoyi *Remote control of intracellular ice growth with polyampholytes*

PS3 – 14:45 Dr. Federica Marelli *Polysaccharide monolayers and ice adhesion control with liquid water at the interface*

PS4 – 15:00 Dr. Irene Tagliaro *Ice adhesion on polysaccharide materials from psychrophilic bacteria*

Break 15:30 – 16:00

Poster Session 16:00 – 17:30

Day 3

Session 4 9:00 – 10:30 AM

PL4 – 9:00 Prof. Ran Drori *Two classes of AFPs and Their Journey to Gain Superior Activity*

PL5 – 9:25 Dr. Daniëlle van den Broek *The relation between thermal hysteresis and ice recrystallization inhibition of AFP type III (QAE) and its mutants*

PL6 – 9:50 Prof. Katie Marshall *Ice binding protein activity is common in Pacific intertidal invertebrates*

Break 10:30 – 11:00 AM

Session 5 11:00 – 12:45 PM

PS5 – 11:00 Dr. Yuqing Qiu *Topographical Defects Can Confer Exceptional Ice Nucleation Ability to Mediocre Nucleants*

PS6 – 11:15 Prof. Kenji Mochizuki *Crystallization of Ice Ic from Ice XVII*

PS7 – 11:30 Dr. Jocelyn Lee *Investigating ice nucleation and ice binding of proteins using yeast surface display*

PS8 – 11:45 Prof. Paul Bieber *Engineering the bacterial protein inaZ to study the ice nucleation mechanism using high speed cryo-microscopy*

PS9 – 12:00 Dr. Jannick van Ossenbruggen *Computational design of ice-binding proteins*

PS10 – 12:15 Prof. Fiona Harris *Recombinant Screening of Microbial Ice Binding Proteins from Polar Environments*

PS11 – 12:30 Prof. Zhaoru Sun *De Novo Design of Antifreeze Proteins for Enhanced Cryopreservation*

Lunch 12:45 – 2:00 PM

Cultural Program (Visit to Sforza Castle) 2:00 – 5:30 PM

Day 4

Session 6 9:00 – 10:30 AM

PL6 – 9:00 Prof. Tatsuya Arai *Discovery and characterization of beetle-type antifreeze proteins in distantly related snakeflies*

PL7 – 9:25 Prof. Meital Reches *Bioinspired Short Peptides as Self-Assembling Antifreeze Coatings*

PL9 – 9:50 Prof. Volker Gaukel *Investigation of k-Carrageenan's Ice-Binding Properties Using Molecular Dynamics Simulation*

Break 10:30 – 11:00 AM

Session 7 11:00 – 12:30

PL10 – 11:00 Prof. Valeria Molinero *Elucidation of Bacterial Ice Nucleating Protein Aggregates Sizes, Abundance and Hierarchical Assembly*

PS12 – 11:25 Prof. Thomas Hansen *Cold cases reopened: Revisiting unsolved AFP structures with AlphaFold*

RM1 – 11:40 Prof. Chunlei Wang *Fully Atomistic Molecular Dynamics Simulation of Ice Nucleation Near an Antifreeze Protein*

RM2 – 12:00 Prof. Li Liao *Characterization, mutation and biotechnological applications of a new antifreeze protein from Arctic sea ice bacterium *Marinomonas arctica* BSI20414*

Lunch 12:30 – 2:00 PM

Session 8 2:00 – 3:15 PM

RM3 – 2:00 Prof. Biman Jana *Understanding the mechanism of ice nucleation and ice growth inhibition by ice binding proteins (IBPs)*

RM4 – 2:25 Dr. Jeongmoon Choi *How do Antifreeze Proteins Inhibit Ice Recrystallization?*

RM5 – 2:45 Dr. Maria Palomeque Sánchez *Ina gene expression in *Pseudomonas syringae* R10.79 is affected by aerosolization*

Break 3:15 – 3:45 PM

Session 9

RM6 – 3:45 Prof. Peter Davies *State of the IBP field: activities and nomenclature*

RM7 – 4:05 Prof. Laurie Graham *Unique β -solenoid antifreeze protein found in winter-hunting spiders*

RM8 – 4:25 Prof. Amish Patel *Molecular Determinants of the Interactions between Antifreeze Proteins and Ice*

RM9 – 4:45 Dr. Yusheng Cai *How do the Molecular Characteristics of an Antifreeze Protein's Non-Binding Site Influence its Ability to Resist Engulfment by Ice?*

RM10 – 5:05 Prof. Emily Chiao *Method Development for Biochemical Characterization of Nano Ice-Nucleating Particles in Leaf Litter, Needles, and Ambient Aerosols*

RM11 – 5:25 Prof. Cianna Calia *Combining Simulations and Deep Learning to Explore Potential Strategies for Designing Ice-Binding Biomolecules*

Gala Dinner 7:30 PM

Day 5

Session 10 9:00-10:00

Keynote Lecture 2 – 9:00 Prof. Ilja Voets *New methods and materials for a molecular perspective on structure-activity relations of ice-binding proteins*

Break 10:00-10:30

Session 11 (Lifetime achievement award ceremony, closing remarks) 10:30-12:00