南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Leica MICROSYSTEMS

AGENDA

冷冻电镜样品制备前沿技术演示及研讨会

南方科技大学冷冻电镜中心

2021 年 9 月 29 日

9:00-9:05	开场致辞		南科大和徕卡双方领导
9:05-9:10	南科大-徕卡示范实验室揭牌仪式		南科大和徕卡双方领导
9:10-9:40	报告：徕卡冷冻电镜样品制备流程		徕卡显微系统 肖丽国
9:40-9:50	合影		
9:50-10:00	步行至南方科技大学冷冻电镜中心		
10:00-12:00	操作演示与上机实操		分三组
	EM ICE	**EM GP2**	**CLEM/ACE600/VCT500**
10:00-10:40	Group A	Group C	Group B
10:40-11:20	Group B	Group A	Group C
11:20-12:00	Group C	Group B	Group A
12:00-13:30	午餐		
13:30-14:00	报告：Structure Determination of Excitation-Contraction Coupling Complex in Myocyte		南方科技大学 刘铮
14:00-14:30	报告：眼见为实——低温透射电镜制样及相关技术介绍		同济大学 祝建
14:30-14:50	茶歇		
14:50-15:30	报告：Moving Beyond Particles in Cryo EM. High Pressure Freezing and Freeze Fracture, essential preparation tools for cryo SEM and cryo FIB.		伦敦国王学院超结构成像中心主任 Roland Fleck
15:30-16:10	报告：Leica Cryo CLEM Solutions – 有的放矢：获得目标结构高分辨数据		徕卡显微系统 CLEM 应用经理 Jan De Bock
16:10-16:40	讨论与交流		
16:40-16:50	总结陈词		南科大冷冻电镜中心主任 王培毅

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Symposium and Demonstration of Cutting Edge Technology for Cryo-EM Sample Preparation

Southern University of Science and Technology, Cryo-EM Center
Sep 29th, 2021

9:00-9:05	Opening Speech		Leaders from SUST and Leica Microsystems
9:05-9:10	Opening Ceremony - demonstration lab of SUST-Leica		Leaders from SUST and Leica Microsystems
9:10-9:40	Report: Leica workflow of Cryo EM sample preparation		Leica Microsystems Liguo Xiao
9:40-9:50	Group Photo		
9:50-10:00	Walking to Cryo-EM lab		
10:00-12:00	demo and Hands-on by 3 groups		
	EM ICE	**EM GP2**	**CLEM/ACE600/VCT500**
10:00-10:40	Group A	Group C	Group B
10:40-11:20	Group B	Group A	Group C
11:20-12:00	Group C	Group B	Group A
12:00-13:30	Lunch		
13:30-14:00	Lecture: Structure Determination of Excitation-Contraction Coupling Complex in Myocyte		Prof. Zheng Liu, Southern University of Science and Technology
14:00-14:30	Lecture: Seeing is believing – Cryo-TEM sample preparation technology and its applications		Prof. Jian Zhu, Tongji University
14:30-14:50	Break		
14:50-15:30	Lecture: Moving Beyond Particles in Cryo EM. High Pressure Freezing and Freeze Fracture, essential preparation tools for cryo SEM and cryo FIB.		Roland Fleck, King's College London, United Kingdom
15:30-16:10	Lecture: Achieve High Resolution Data of Target Structures - Leica´s Cryo CLEM Solutions		Jan De Bock, Application Manager of Correlative Light and Microscopy, Leica Microsystems
16:10-16:40	Questions & Discussion		
16:40-16:50	Summarize		Prof. Peiyi Wang, Southern University of Science and Technology

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Profile of **ROLAND A. FLECK**

ROLAND A. FLECK, PhD, FRCPath, FRMS, is Professor of Ultrastructural Imaging, Royal Society Industry Fellow and Director of the Centre for Ultrastructural Imaging at King's College London, United Kingdom.

He is also a visiting Professor of the Faculty of Health and Medical Sciences, University of Copenhagen and Professor of the UNESCO Chair in Cryobiology, National Academy of Sciences of Ukraine, Institute for Problems of Cryobiology, Kharkiv, Ukraine. He joined King's College London in 2013 from the National Institute for Biological Standards and Control (NIBSC), where he was head of Biological Imaging and Assay Development. At NIBSC he developed advanced imaging techniques for the control and standardisation of biological medicines and had research interests in developing differentiation protocols for myeloid leukemic and human embryonic stem cell lines as substrates for functional biological assays. He has extensive specialist knowledge of freeze fracture/freeze etch preparation of tissues and wider cryo-microscopic techniques.

As academic director of the Centre for Ultrastructural Imaging he collaborates widely with colleagues in neuroscience and parasitology and promotes advanced three dimensional studies of cells and tissues using both room temperature and cryo electron microscopy techniques. He has extensive experience and knowledge of low temperature biology and cryopreservation having researched how cells and tissues both avoid and are damaged by chilling and freezing events. His current research interests focus on developing tools and protocols for enhancing the preservation of tissues for characterisation by electron microscopy as a capacity to enhance wider scientific collaborations.

Areas of expertise: Advanced electron microscopy techniques, cryo electron microscopy preparation techniques and electron tomography, application of serial block face and focused ion beam for the life sciences.

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Profile of **Jan De Bock**

Jan studied biology and did his PhD in the field of olfaction, characterizing olfactory neurons in their response to odorants.
Jan has worked as a microscopy expert in different roles since 2003. He joined Leica Microsystems in 2011 as a product specialist for confocal microscopy. In 2017, he became member of the newly formed Workflow and Application Team responsible for correlative workflows, in particular involving sample preparation and imaging under cryogenic conditions.

Abstract

Cryo Electron Microscopy workflows are a state-of-the-art tool to investigate proteins in the cellular context with subnanometer resolution. To succeed in this, light microscopes performing under cryogenic conditions are essential for an early quality check and to identify target structures for the subsequent EM analysis.
In this webinar we show Leica Microsystem´s cryo microscope solutions for the assessement of the sample quality, a safe sample transfer and super resolution imaging under cryogenic conditions as a basis for precise targeting.