

Third K. H. Kuo Summer School of Electron Microscopy and Crystallography
International Workshop of 3D Molecular Imaging by Cryo-Electron Microscopy

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**International Workshop of 3D Molecular Imaging by
Cryo-Electron Microscopy**
(program ver 5.0)

Day 1: Sunday, Aug. 8th, 2010

Day	Time	Speaker	Institute	Topic
Day 1, Sun day,	1:00pm– 6:30pm	Arrival and Registration		
Aug. 8 th , 2010	6:30pm- 8:30pm	Hua Tai Welcome Reception (for invited guests)		

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Day 2: Monday, Aug. 9th, 2010

Day	Time	Speaker	Institute	Topic
Day 2, Monday, Aug. 9 th , 2010	8:30am – 9:00am	Opening ceremony (Chair: Fei Sun)		
	Plenary Lecture I (Chair: Sengfang Sui)			
	9:00am – 10:00am	David DeRosier	Brandeis University, USA	History and perhaps the future of the electron microscopy of biological structures
	10:00am – 10:10am	Conference photo and tea break		
	Single particle analysis I : Technique and application (Chair: Kunpeng Li)			
	10:10am – 10:55am	Helen Saibil	Birkbeck College London, Institute for Structural and Molecular Biology, UK	Single particle cryo EM of a molecular machine
	10:55am – 11:40am	Hongwei Wang	Yale University, USA	Overcome technical difficulties in single particle reconstruction of biological molecules: a case study of the human RISC-loading complex.
	Sponsor lecture I (Chair: Fei Sun)			
	11:40am – 12:00pm	Ming Pan	Gatan Company	Imaging detector
	12:00pm – 2:00pm	Lunch and poster session		
	Single particle analysis II : Towards atomic resolution (Chair: Lingpeng Cheng)			
	2:00pm – 2:45pm	Wah Chiu	Baylor College of Medicine, USA	Near atomic resolution Single particle cryo-EM

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2:45pm – 3:30pm	Hong Zhou	University of California, Los Angeles, USA	Strategies for atomic resolution structure determination by cryo-EM
3:30pm – 4:15pm	Xing Zhang	University of California, Los Angeles, USA	A 3.3Å CryoEM Structure of a Non-enveloped Virus Reveals a Priming Mechanism for Its Cell Entr
4:15pm – 4:30pm	Tea break		
Single particle analysis III : Automation and modelling (Chair: Jianning Lei)			
4:30pm– 5:15pm	Bridget Carragher	The Scripps Research Institute, USA	The role of automation in addressing the challenges of macromolecular microscopy
5:15pm– 6:00pm	Jiang Zhu	National Institute of Health, USA	Building and refining atomic structures for proteins and nucleic acids within cryo-electron microscopy density maps
6:00pm – 8:00pm	Dinner		

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Day 3: Tuesday, Aug. 10th, 2010

Day	Time	Speaker	Institute	Topic
Day 3, Tuesday, Aug. 10 th , 2010	Plenary Lecture II (Chair: Changcheng Yin)			
	8:30am – 9:30am	Nigel Unwin	University of Cambridge, UK	Crystallographic experiments with membrane proteins
	Electron Crystallography (Chair: Changcheng Yin)			
	9:30am – 10:15am	Yoshinori Fujiyoshi	Kyoto University, Japan	Structural physiology of ion and water channels based on electron crystallography
	10:15am – 10:30am	Tea break		
	Electron Tomography I : Molecule structure <i>in situ</i> (Chair: Ping Zhu)			
	10:30am – 11:15am	Ken Taylor	Florida State University, USA	Molecular Tomography-extracting molecular conformations from electron tomograms
	11:15am – 12:00pm	Jun Liu	UT Houston Medical School, USA	Cryo-ET of Molecular Machines <i>in situ</i> : Towards Structural Basis of Infectious Diseases
	12:00pm – 1:30pm	Lunch		
	Single particle analysis IV : Technique and application (Chair: Yi Wu)			
	1:30pm – 2:15pm	Michael Radermacher	University of Vermont, USA	Single particle analysis of flexible macromolecular assemblies: The structure of Complex I.
2:15pm – 3:00pm	Yifan Cheng	University of California, San Francisco, USA	Structural studies of macromolecular complexes by single particle cryoEM	

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3:00pm– 3:10pm	Tea break		
3:10pm – 3:55pm	Qiuxing Jiang	UT Southwestern Medical Center, USA	Application of single particle reconstruction to the understanding of biological complexes
3:55pm – 4:40pm	Huilin Li	Brookhaven National Lab, NY, USA	Imaging molecular complexes at the eukaryotic DNA replication origin
Lastest technology (Chair: Wei Xu)			
4:40pm – 5:25pm	Kuniaki Nagayama	Okazaki Institute for Integrative Bioscience, NINS, Japan	Phase plates free from contaminant charging
Sponsor lecture II (Chair: Fei Sun)			
5:25pm – 6:05pm	Marc Storms	FEI Company	Latest developments in Cryo TEM
6:05pm – 8:00pm	Banquet		

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Day 4: Wednesday, Aug. 11th, 2010

Day	Time	Speaker	Institute	Topic
Day 4 Wed nesd ay Aug. 11 th , 2010	Electron Tomography II : Technique and application (Chair: Da-Neng Wang)			
	8:30am-- 9:15am	David Stokes	NYU Langone Medical Center, USA	Using tomography to study macromolecular complexes in situ
	9:15am – 10:00am	Haixin Sui	University of New York at Albany, USA	Application of image processing in microtubule structural studies
	10:00am – 10:10am	Tea break		
	10:10am – 10:55am	Hanspeter Winkler	Florida State University, USA	Computational methods in electron tomography: reconstruction and 3D data analysis
	10:55am – 11:40am	Peijun Zhang	University of Pittsburgh, USA	Cryo-electron microscopy/tomography applications in HIV-1 biology
	Sponsor lecture III (Chair: Ning Gao)			
	11:40am – 12:10pm	Guenter Resch	LEICA Company	Leica EM GP plunge freezer –design rationale and applications
12:10pm – 2:00pm	Lunch and poster session			

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Practice session

Practice:

Group I : Sample preparation and data collection (~10 persons)

Group II: Imaging processing (15~20 persons)

Group III: HREM imaging (~5 persons)

Time	Sample preparation and data collection (Group I)	Single particle analysis (Group II A)	Electron tomography (Group II B)	HREM Imaging (Group III)
Day 4, Wednesday, August 11 th , 2010				
2:00pm 6:00pm	Automatic plunge freezing (Vitrobot, CP3 and EM GP) <i>by FEI, Gatan and Leica</i>	Normal data processing <i>by Yifan Cheng</i>	Marker-based tomography <i>by Haixin Sui</i>	N.A.
6:00pm 9:00pm	N.A.	N.A.	N.A.	Hands-on strategies and experiences for obtaining high resolution image <i>by Lingpeng Cheng</i>
Day 5, Thursday, August 12 th , 2010				
8:30am - 12:00pm	Data collection for SPA <i>by CBI group</i>	High resolution reconstruction <i>by Xing Zhang</i>	Marker-free tomography <i>by Hanspeter Winkler</i>	N.A.
12:00pm – 2:00pm	Lunch and poster session			
2:00pm - 6:00pm	Data collection for cryoET <i>by FEI</i>	Visualization and modeling <i>by Jiang Zhu</i>	Batch tomography and 3D averaging <i>by Jun Liu</i>	N.A.