

**FY2012 Annual Report**

**Molecular Cryo-Electron Microscopy Unit**

**Matthias Wolf, Assistant Professor**



**Abstract**

The Molecular Cryo-Electron Microscopy Unit has started operations at OIST 13 months ago. During this time, essential lab operations have been established and necessary equipment has been acquired. A biosafety level 2 sample preparation area is in operation and the required permits for work with recombinant organisms have been obtained. Initial problems with respect to automated image acquisition and image quality have been solved. Our unit has entered its productive phase. National and international collaborations have been established. A small collaborative research grant with the University of Tokyo has been secured. Two rotation students and one summer intern student have participated in ongoing projects. The unit will hire additional research staff in order to expand its capacity to produce significant scientific results.

### **1. Staff**

- Dr. Matthias Wolf, Professor
- Dr. Shun-Jen Jacob Yang, Researcher
- Dr. Vladimir A Meshcheryakov, Researcher
- Rika Yoshizawa, Research Administrator

Past members:

- Zak Kulberg, rotation student
- Lee James O’Riordan, rotation student
- Alina Aseeva, summer intern student
- Kikuko Matsuo, Administrative Assistant
- Yoko Fujitomi, Administrative Assistant

### **2. Collaborations**

Theme: Structure of Poliovirus isoforms

- Type of collaboration: Joint research
- Researchers:
  - Professor James M. Hogle, Harvard Medical School, Boston, MA, USA

Theme: Structure of Papilloma- and Polyomaviruses

- Type of collaboration: Joint research
- Researchers:

- Professor Robert L. Garcea, University of Colorado at Boulder, Bio Frontiers Institute, USA

Theme: Structural and Functional Aspects of Herpes Simplex Virus

- Type of collaboration: Joint research
- Researchers:
  - Professor Yasushi Kawaguchi, Institute of Medical Science at the University of Tokyo (IMSUT), Japan

Theme: Structure of Rosettasome Variants and Sulfolobus Cell Morphology

- Type of collaboration: Joint research
- Researchers:
  - Professor Jonathan Trent, NASA Ames Research Center, Mountain View, CA, USA

Theme: 30S Ribosome – Methyltransferase Complex

- Type of collaboration: Joint research
- Researchers:
  - Professor Petr Sergiev, Belozersky Institute, Moscow State University, Russian Federation

Theme: Novel Method for Subvolume Averaging in Electron Tomography

- Type of collaboration: Joint research
- Researchers:
  - Dr. Mike Strauss, Harvard Medical School, Boston, MA, USA
  - Dr. Mihnea Bostina, OCEM, University of Otago, Dunedin, New Zealand

Theme: Common data validation for x-ray crystallography and EM

- Type of collaboration: Joint research
- Researchers:
  - Assistant Professor, Kevin D. Corbett, UC San Diego Dept. of Cellular and Molecular Medicine, Ludwig Institute for Cancer Research, San Diego branch, USA

OIST-internal collaborations:

- Prof. M.Sowwan: ultrastructure of inorganic nanoparticles

- Prof. Y.Qi: structure-function relation of organic thin films for solar cells
- Prof. K.Dani: novel TEM specimen support

Project: Ion Channel Structure:

- Researcher: Dr. Vladimir Meshcheryakov

Project: Structure of Flagellar Proteins in Thermophiles

- Researcher: : Dr. Vladimir Meshcheryakov

Project: Novel Methods for Determining Drosophila Brain Structure

- Researcher: : Dr. Shun-Jen Yang
- Techniques: SEM, Correlative Light- and EM (CLEM), High Pressure Freezing

### **3. Activities and Findings**

Nothing to report

### **4. Publications**

Nothing to report

### **5. Intellectual Property Rights and Other Specific Achievements**

Nothing to report

### **6. Meetings and Events**

Nothing to report