

DATE: Day 17 Month May Year 2017

SUMMARY of
2016 RESEARCH RESULTS REPORT
For International Collaborative Research with IPR, Osaka University

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|---|----------------------|---|
| Research Title | | Structural studies on viruses with a beam of an X-ray and an electron |
| Applicant | Name | Janos Hajdu |
| | Affiliation | The laboratory of Molecular Biophysics, BMC, Uppsala University |
| | Present Title | Professor |
| Research Collaborator (Host PI) | | Atsushi Nakagawa, Professor |
| Summary | | |
| <p>IPR, Osaka University and Uppsala University have established collaboration since 2014. The successful collaboration has provided exchanging ideas, developing new algorithms and software, and finding biological interests in the field of a structural biology. In the recent decade of dramatic developments in coherent X-ray diffractive imaging (CXDI) and cryo-EM single particle analysis (SPA), we have inspired to tackle the challenge on solving an atomic model of entire near-native viruses without the crystallization. We proposed an extensive size range of reproducible viruses such as Paramecium bursaria chlorella virus 1 (PBCV-1), PR772 bacteriophage, mosquito-borne Omono River virus (OmRV) and Rice Dwarf Virus (RDV) for this collaboration.</p> <p>In line with this collaboration, we reconstructed clear and high-quality edged PBCV-1 particles images by having suppressed the buffer caking on the particles during the CXDI experiment using an electrospray aerolization source and by analyzing the valid data using in-house algorithms and pipelines. We also have achieved to determine a structure of the totivirus-like OmRV and PR772 particles in 3D at a resolution of 3.95 Å and 8.20 Å, respectively using high-resolution particles images collected using Titan Krios cryo-EM. These results show clear progresses on improving the structural model of the proposed viruses.</p> | | |

***Deadline: May 19, 2017**

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