Personal information and employment records

Kenta Okamoto, PhD

Date of birth: 14 March 1983
Gender: Male
Nationality: Japan
Affiliation: Program of Molecular Biophysics, Department of Cell and Molecular Biology (ICM), Uppsala University, Sweden
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Docentship
Docent in Molecular Life Science, Uppsala, 24 Oct, 2023

Current employment
2023 - present: Visiting Professor, Nagasaki University, Japan
2019 - present: Research PI, ICM, Uppsala University, Sweden

Previous employment
2012 - 2019: Researcher, ICM, Uppsala University, Sweden
2012: Postdoctoral fellow, Nagasaki University, Japan
2010 - 2012: JSPS fellow (DC2), Nagasaki University, Japan
2006 - 2007: Visiting Researcher, Tokyo metropolitan Institute of Medical Science, Japan
2006 - 2007: Research Assistant, Institute for Molecular Science, Japan

Educations
2008 - 2012: Ph.D. in Biomedical Sciences, Department of Virology, Nagasaki University
2006 - 2008: M.S. in Pharmacy, Nagoya City University
2002 - 2006: B.S. in Pharmacy, Nagoya City University

Pedagogical education
Academic Teacher Training Course, Autumn 2019, 5-weeks
Supervising PhD student, Autumn 2019, 3-weeks
Picture a Scientist, April 2021, 1.5-hrs
Social Power in Practice, February 2020, 2-hrs
Doctoral Supervisor Training, spring 2016, 2-days

Appointments/Board participation
Committee member of Biophysics Network in Uppsala University
Committee member of Uppsala Network of EM (UNEM)
Conference organizing member of SCANDEM2023, Uppsala
Program committee of Applied Biotechnology master program in Uppsala University
Laboratory/Biosafety responsibility of Molecular Biophysics Program

Distinctions and Awards
2010 - 2011: Grant-in-Aid for JSPS Fellows (DC2), 2010-2011, Nagasaki University
2008 - 2009: Global Center of Excellence research scholarship, Nagasaki University
2009: Grant-in-Aid for medical research, Alumni Association of Nagasaki University School of Medicine
2008: Grant-in-Aid for research on tropical diseases, Alumni Association of Institute of Tropical Medicine, 2008, Nagasaki University

Research Achievements

1. List of Scientific Works

1.1 Articles in International Scientific Journals

Published peer-reviewed papers (*Corresponding authors)

1. Wang, H., Gianluca, M., Munke, A., Hassan, MM., *Lalle, M., ***Okamoto, K.** High-resolution comparative atomic structures of two Giardiavirus prototypes infecting G. duodenalis parasite. ***PLoS Pathog***, 20 (4), e1012140 (2024)
2. Konold, P., Monrroy, L., Bellisario, A., Filipe, D., Adams, P., Alvarez, R., Bean, R., Bielecki, J., Bodizs, S., Ducroq, G., Grubmueller, H., Kirian, R., Kloos, M., Koliyadu, J., Koua, F., Larkiala, T., Letrun, R., Lindsten, F., Maihofer, M., Martin, A., Meszaros, P., Mutisya, J., Nimmrich, A., **Okamoto, K.**, Round, A., Sato, T., Valerio, J., Westphal, D., Wolter, A., Yenupuri, T., You, T., Maia, F. Westenhoff, S. Microsecond time-resolved X-ray scattering by utlizing MHz repetition rate at second-generation XFELs. ***Nat Methods*** 21 (9), 1608-11 (2024)
3. ***Okamoto, K.**, Song, C., Wang, H., Sakaguchi, M., Chalkiadaki, C., Miyazaki, N., Nebeshima, T., Morita, K., Inoue, S., *Murata, K. Structure and its transformation of elliptical nege-like virus Tanay virus. ***J Gen Virol***, 104 (6) (2023)
4. Wang, H., Salaipeth, L., *Miyazaki, N., *Suzuki, N., ***Okamoto, K.** Capsid structure of a fungal dsRNA megabirnavirus reveals its previously unidentified surface architecture. ***PLoS Pathog***, 19 (2), e1011162 (2023)
5. Chihara, A., Burton-Smith, RN., Kajimura, N., Mitsuoka, K., Okamoto, K., Song, C., Murata, K. A novel capsid protein network allows the characteristic internal membrane structure of Marseilleviridae giant viruses. ***Sci Rep*** 12 (1), 1-15 (2022)
6. *Munke, A., Yoshida, K., Mito, S., Wang, H., Kimura, K., Tomaru, Y., ***Okamoto, K.** Primordial capsid and spooled CRESS-DNA genome structures penetrate into ancestral events of eukaryotic viruses. ***mBio***, 13 (4), e00156-222 (2022)
7. Wang, H., Munke, A., Li, S., Tomaru, K., ***Okamoto, K.** Structural insights into common and host-specific receptor-binding mechanisms in algal picorna-like viruses. ***Viruses*** 14 (11), 2369 (2022)
8. Wang, H., ***Okamoto, K.** A full-length infectious cDNA clone of a dsRNA totivirus-like virus. ***Virology*** 576, 127-133 (2022)
9. ***Okamoto, K.**, Ferreira, RJ., Larsson, SDD., Maia, RNCF., Isawa, H., Sawabe, K., Murata, K., Hajdu, J., Iwasaki, K., Kasson, PM., *Miyazaki, N. Acquired functional capsid structures in metazoan totivirus-like dsRNA virus. Structure, 28 (8), 888-896 (2020), *Corresponding authors
10. *Munke, A., Kimura, K., Tomaru, Y., ***Okamoto, K.** Capsid structure of a marine algae virus of the order Picornavirales. ***J Virol***, 94 (9), e01855-19 (2020)
11. Sobolev, E., Zolotarev, S., Giewekemeyer, K., Bielecki, J., **Okamoto, K.**, Reddy, H., Andreasson, J., Ayyer, K., Barák, I., Bari, S., Barty, A., Bean, R., Bobkov, S., Chapman, H., Chojnowski, G., Daurer, B., Dörner, K., Ekeberg, T., Flückiger, L., Galzitskaya, O., Gelisio, L., Hauf, S., Hogue, B., Horke, D., Hosseinizadeh, A., Ilyin, V., Jung, C., Kim, C., Kim, Y., Kirian, R., Kirkwood, H., Kulyk, O., Letrun, R., Loh, D., Messerschmidt, M., Mühlig, K., Ourmazd, A., Raab, N., Rode, A., Rose, M., Round, A., Sato, T., Schubert, R., Schwander, P., Sellberg, J., Sikorski, M., Silenzi, A., Song, C., Stern, S., Sztuk-Dambietz, J., Teslyuk, A., Timneanu, N., Trebbin, M., Uetrecht, C., Weinhausen, B., Williams, G., Xavier, PL., Xu, C., Vartaniants, I., Lamzin, V., Mancuso, A., Spence, J., Küpper, J., Lorenzen, K., Maia. F., Megahertz single particle imaging at the European XFEL. ***Commun Phys***, 3, 97 (2020)
12. Haldar S., **Okamoto K.**, Dunning RA., Kasson, PM. Precise triggering and chemical control of single virus fusion within endosomes. ***J Virol***, 95 (1), e01982-20 (2020)
13. Xie, L., Gu, X., **Okamoto, K.**, Westermark, TG., Leifer, K. 3D analysis of human islet amyloid polypeptide crystalline structures in Drosophila melanogaster. ***PLoS one***, 14 (10), e0223456 (2019)

14. Satoh, T., Yagi-Utsumi, M., **Okamoto, K.**, Kurimoto, E., Tanaka, K., and Kato, K. Molecular and structural basis of the proteasome alpha subunit assembly mechanism mediated by the proteasome assembling chaperone PAC3-PAC4 heterodimer. ***IJMS***, 20 (9), 2231 (2019)
15. Bielecki, J., Hantke, MF., Daurer, BJ., Reddy, HKN., Hasse, D., Larsson, SDS., Gunn, LH., Svenda, M., Munke, A., Sellberg, J., Flueckiger, L., Pietrini, A., Nettelblad, C., Lundholm, I., Carlsson, G., **Okamoto, K.**, Timneanu, N., Westphal, D., Kulyk, O., Higashiura, A., Schot, G., Loh, D., Wysong, TE., Bostedt, C., Gorkhover, T., Iwan, B., Seibert, MM., Osipov, T., Walter, P., Hart, P., Bucher, M., Ulmer, A., Ray, D., Carini, G., Ferguson, KR., Andersson, I., Andreasson, J., Hajdu, J., Maia, FRNC. Electrospray sample injection for single-particle imaging with X-ray lasers. ***Sci Adv***, 5 (5), eaav8801 (2019)
16. Lundholm, IV., Sellberg, JA., Ekeberg, T., Hantke, MF., **Okamoto, K.**, Van der schot, G., Andreasson, J., barty, A., Bielecki, J., Bruza, P., Bucher, M., Carron, S., Daurer, B., Ferguson, K., Hasse, D., Krzywinski, J., Larsson, DSD., Morgan, A., Muehlig, K., Mueller, M., Nettelblad, C., Pietrini, A., Reddy, HKN., Pupp, D., Sauppe, M., Seibert, MM., Svenda, M., Swiggers, M., Timneanu, N., Ulmer, A., Westphal, D., Williams, G., Zani, A., Faigel, G., Chapman, HN., Mouller, T., Bostedt, C., Hajdu, J., Gorkhover, T. and Maia, FRNC. Considerations for three-dimensional image reconstruction from experimental data in coherent diffractive imaging. ***IUCrJ***, 5, 531-541 (2018)
17. ***Okamoto, K.**, Miyazaki, N., Reddy, KNH., Hantke, FM., Maia, RNCF., Larsson, SDD., Abergel, C., Claverie, JM., Hajdu, J., *Murata, K and Svenda, M. Cryo-EM of a Marseilleviridae virus particle reveals a large internal microassembly. ***Virology***, 516, 239-245 (2018), *corresponding authors
18. Gorkhover, T., Ulmer, A., Ferguson, K., Bucher, M., Maia, F., Bielecki, J., Ekeberg, T., Hantke, FM., Daurer, JB., Nettelblad, C., Andreasson, J., Barty, A., Bruza, P., Carron, S., Hasse, D., Krzywinski, J., Larsson, SDD., Morgan, A., Mühlig, K., Müller, M., **Okamoto, K.**, Pietrini, A., Rupp, D., Sauppe, M., van der Schot, G., Seibert, M., Sellberg, AJ., Svenda, M., Swiggers, M., Timneanu, N., Westphal, D., Williams, G., Zani, A., Chapman, NH., Faigel, G., Möller, T., Hajdu, J. & Bostedt, C. Femtosecond X-ray Fourier holography imaging of freeflying nanoparticles. ***Nat Photonics***, 12, 150-153 (2018)
19. Zawada, EK., **Okamoto, K.**, Kasson, MP. Influenza hemifusion phenotype depends on membrane context: differences in cell-cell and virus-cell fusion. ***J Mol Biol***, 430 (5), 594-601 (2018)
20. ***Okamoto, K.**, Miyazaki, N., Song, C., Maia, RNCF., Reddy, KNH., Abergel, C., Claverie, JM., Hajdu, J., Svenda, M., and *Murata, K. Structural variability and complexity of the giant Pithovirus sibericum particle revealed by high-voltage electron cryo-tomography and energy-filtered electron cryo-microscopy. ***Sci Rep***, 7 (1), 13291 (2017)
21. Kurimoto, E., Sato, T., Ito, Y., Ishihara, E., Okamoto, K. , Yagi-Utsumi, M., Tanaka, K., and Kato, K. Crystal structure of human proteasome assembly chaperone PAC4 involved in proteasome formation. Protein Sci, 26 (5), 1080-1085 (2017)
22. †Daurer, B., **†Okamoto, K.**, Bielecki, J., Maia, F., Mühlig, K., Seibert, M., Hantke, M., Nettelblad, C., Benner, H., Svenda, M., Timneanu, N., Ekeberg, T., Loh, D., Pietrini, A., Zani, A., Rath, A., Westphal, D., Kirian, R., Awel, S., Wiedorn, M., Van der Schot, G., Carlsson, G., Hasse, D., Sellberg, J., Barty, A., Andreasson, J., Boutet, S., Williams, G., Koglin, J., Andersson, I., Hajdu, J., and Larsson, D. Experimental strategies for imaging bioparticles with femtosecond hard X-ray pulses. ***IUCrJ***, 4 (3), 251-263 (2017) †These authors are equally contributed to this work.
23. ***Okamoto, K.**, Miyazaki, N., Larsson, D.S., Kobayashi, D., Svenda, M., Mühlig, K., Maia, F.R., Gunn, L.H., Isawa, H., Kobayashi, M., Sawabe, K., *Murata, K., and Hajdu, J. The infectious particle of insect borne totivirus-like Omono River virus has raised ridges and lacks fibre complexes. ***Sci Rep***, 6, 33170 (2016), *corresponding authors
24. Ulanday, G.E., **Okamoto, K.**, Morita, K. Development and utility of an in vitro, fluorescence-based assay for the discovery of novel compounds against dengue 2 viral protease. ***Trop Med Health***, 44 (22), PMC4979183 (2016)
25. Munke, A., Andreasson, J., Aquila, A., Awel, S., Ayyer, K., Barty, A., Bean, R.J., Berntsen, P.,Bielecki, J., Boutet, S., Bucher, M., Chapman, H.N., Daurer, B.J., DeMirci, H., Elser, V., Fromme, P., Hajdu, J., Hantke, M.F., Higashiura, A., Hogue, B., Hosseinizadeh, A., Kim, Y., Kirian, R.A., Kumar, H., Ti-Yen, Larsson, D.S.D., Liu, H., Loh, N.D., Maia, F.R.N.C., Mancuso,

A.P., Mühlig, K., Nakagawa, A., Nam, D., Nelson, G., Nettelblad, C., **Okamoto, K.**, Ourmazd, A., Rose, M., van der Schot, G., Schwander, P., Seibert, M.M., Sellberg, J.A., Sierra, R.G., Song, S., Svenda, M., Timneanu, N., Vartanyants, I.A., Westphal, D., Wiedorn, M.O., Williams, G.J., Xavier, P.L., Yoon, C.Y., Zook, J., Coherent diffraction of single Rice Dwarf Virus particles using hard X-rays at the Linac Coherent Light Source. ***Sci Data***, 3,160064 (2016)

26. Inoue, M., **Okamoto, K.**, Uemura, H., Yasuda, K., Motohara, Y., Morita, K., Hiromura, M., Reddy, EP., Fukuma, M., and Horikoshi, N. Identification and characterization of a cell division-regulating kinase AKB14-3-3 (associated kinase of Trypanosoma brucei 14-3-3) with a substrate specificity similar to AMP activated protein kinase. ***J Biochem***, 158 (1), 49-60 (2015)
27. Uchida, L., Espada-Murao, L., Takamatsu, Y., **Okamoto, K.**, Hayasaka, D., Yu, Fuxun., Nabeshima, T., and Morita, K. The dengue virus conceals double-stranded RNA in the intracellular membrane vesicles to escape from an interferon response. ***Sci Rep***, 4, 7395 (2014)
28. Nabeshima, T., Inoue, S., **Okamoto, K.**, Guillermo, PH., Yu, H., Uchida, L., Ichinose, A., Sakaguchi, M., Sunahara, T., Buerano, CC., Tadena, FP., Orbita, I., Natividad, FF., Morita, K. Tanay virus, a newly isolated mosquito virus from the Philippines. ***J Gen Virol***, 95 (Pt 6), 1390-5 (2014)
29. Takamatsu, Y., **Okamoto, K.**, Dinh, TD., Yu, F., Hayasaka, D., Uchida, L., Nabeshima, T., Buerano, CC., and Morita, K. NS1' protein expression facilitates production of Japanese encephalitis virus in avian cells and embryonated chicken eggs. ***J Gen Virol***, 95 (Pt 2), 373-83 (2014)
30. Raekiansyah, M., Murao, L., **Okamoto, K.**, Kubo, T., Morita, K. Dengue virus neither directly mediates hyperpermeability nor enhances TNF-α-induced permeability in vitro. ***JJID***, 67 (2), 86-94 (2014)
31. Huy TN., Trieu TH., **Okamoto, K.**, Ninh THD., Ha TNT., Lan TPN., Thuy, TT., Tuan, MH., Nga, TPC., Tuong, VV., Dat, VT., Kikuchi, M., Morita, K., Huong, TQV., Kuroda, N., Karbwang, J., Ohyama, K., Hirayama, K. Proteomic profile of circulating immune complexes in dengue infected patients. ***J Trop Dis***, 1 (2), 1000109 (2013)
32. Takamatsu, Y., Uchida, L., Nga, PT., **Okamoto, K.**, Nabeshima, T., Thao, DT., Hai, DT., Tuyet, NT., Duc, HM., Hasebe, F., and Morita, K. An approach for differentiating echovirus 30 and Japanese encephalitis virus infections in acute meningitis/encephalitis: a retrospective study of 103 cases in Vietnam. ***Virology J***, 10 (1), 280 (2013)
33. Boamah, D., Kikuchi, M., Huy, NT., **Okamoto, K.**, Chen, H., Ayi, I., Boakye, DA., Bosompem, KM., and Hirayama, K. Immunoproteomics identification of major IgE and IgG4 reactive Schistosoma japonicum adult worm antigens using chronically infected human plasma. ***Trop Med Health***, 40 (3), 89-102 (2012)
34. **Okamoto, K.**, Kinoshita, H., Parquet, MC., Raekiansyah, M., Kimura, D., Yui, K., Islam, MA., Hasebe, F., and Morita, K. Dengue virus strain DEN2 16681 strain utilizes specific glycochain of Syndecan-2 proteoglycan as a receptor. ***J Gen Virol***, 93 (Pt 6), 761-770 (2012)
35. Nga, PT., Parquet, MC., Lauber, C., Parida, M., Nabeshima, T., Yu, F., Thuy, NT., Inoue, S., Ito, T., **Okamoto, K.**, Ichinose, A., Snijder, EJ., Morita. K., and Gorbalenya, AE. Discovery of the First Insect Nidovirus, a Missing Evolutionary Link in the Emergence of the Largest RNA Virus Genomes. ***PLoS Pathog***, 7 (9), e1002215 (2011)
36. **Okamoto, K.**, Endo, Y., Inoue, S., Nabeshima, T., Nga, PT., Guillermo, PH., Yu, F., Loan, do P., Trang, BM., Natividad, FF., Hasebe, F., and Morita, K. Development of a rapid and comprehensive proteomicsbased arboviruses detection system. ***J Virol Methods***, 167 (1), 31-36 (2010)
37. Sugiyama, M., Hamada, K., Kato, K., Kurimoto, E., **Okamoto, K.**, Morimoto, Y., Ikeda, S., Naito, S., Furusaka, M., Itoh, K., Mori, K., Fukunaga, T. SANS simulation of aggregated protein in aqueous solution. ***Nucl Instr Meth in Phys Res A***, 600 (1), 272-274 (2009)
38. Hirano, Y., Kaneko, T., **Okamoto, K.**, Bai, M., Yashiroda, H., Furuyama, K., Kato, K., Tanaka, K., and Murata, S. Dissecting beta-ring assembly pathway of the mammalian 20S proteasome. ***Embo J***, 27 (16), 2204-2213 (2008)
39. Yashiroda, H., Mizushima, T., **Okamoto, K.**, Kameyama, T., Hayashi, H., Kishimoto, T., Niwa, S., Kasahara, M., Kurimoto, E., Sakata, E., Takagi, K., Suzuki, A., Hirano, Y., Murata, S., Kato, K., Yamane, T., and Tanaka, K. Crystal structure of a chaperone complex that contributes to the assembly of yeast 20S proteasomes. ***Nat Struct Mol Biol***., 15 (3), 228-236 (2008)

Preprint papers

1. Munke, A., Gamil, AAA., Mikalsen, AB., Wang, H., *Evensen, O., ***Okamoto., K.** Structure of the T=13 capsid of infectious pancreatic necrosis virus (IPNV) – a salmonid birnavirus. ***bioRxiv*** (2024), Revision stage in Journal of Virology.
2. Burton-Smith, RN., Reddy, HKN., Svenda, M., Abergel, C., **Okamoto, K.**, Murata, K. The 4.4Å structure of the giant Melbournevirus virion belonging to the Marseilleviridae family. ***bioRxiv*** (2021), Revision stage in Structure.

1.2 Book and book chapters

1. **Okamoto, K.** and Murata, K. "Structural analysis of giant viruses: a new challenge in cryo-electron microscopy.", Jikkenigaku (Experimental Medicine), Yodosha Co. ltd. (Japanese), **35** (8), 1344-1348 (2018)
2. Morita, K. and **Okamoto, K.** Arbovirus book chapter, Iyaku (Medicine and Drug) Journal Co. ltd. (Japanese)**, section 6,** 82-90 (2012)
3. Morita, K. and **Okamoto, K.** Arbovirus review, Kagakuryouhou-no-ayumi**,** Iyaku (Medicine and Drug) Journal Co. ltd. (Japanese)**, 27** (1)**,** 3-10 (2011)

1.3 Contributions to conferences

- Wang, H., Munke, A., **Okamoto, K.** "Exploring functional structure of capsid in dsRNA viruses." 21th Smögen Summer Symposium on Virology, Smögen, 22-24 Aug, 2024
- Wang, H., Munke, A., **Okamoto, K.** "The emergence of extracellular life in dsRNA viruses." 27th Swedish Conference on Macromolecular Structure and Function, Tällberg, 14-17 Jun, 2024
- Munke, A., Kimura, K., Tomaru, Y., Wang, H., Yoshida, K., Mito, S., Hongo, Y., **Okamoto, K.** "Primordial capsid and spooled ssDNA genome structures unravel ancestral events of eukaryotic viruses." SCANDEM2023, Uppsala, 12-15 June, 2023
- Munke, A., Kimura, K., Tomaru, Y., Wang, H., Yoshida, K., Mito, S., Hongo, Y., **Okamoto, K.** "Primordial capsid and spooled ssDNA genome structures unravel ancestral events of eukaryotic viruses." 5th CryoNET Symposium, Copenhagen, 14-25 Oct, 2022
- Filipe, D., Wang, H. **Okamoto, K.** "Uncovering functions of unique structures in a mosquito totivirus-like virus." 19th Smögen Summer Symposium on Virology, Smögen, 25-27 Aug, 2022
- Wang, H., Munke, A., Li, S., Tomaru, Y., **Okamoto, K.** "Structures of algal bloom-regulating picorna-like viruses reveal their host-specific transmission mechanism. 19th Smögen Summer Symposium on Virology, Smögen, 25-27 Aug, 2022
- Munke, A., Kimura, K., Tomaru, Y., Wang, H., Yoshida, K., Mito, S., Hongo, Y., **Okamoto, K.** "Primordial genome organization and capsid structure unveil of early evolutional events in eukaryotic viruses" 19th Smögen Summer Symposium on Virology, Smögen, 25-27 Aug, 2022
- Munke, A., Kimura, K., Tomaru, Y., Wang, H., Yoshida, K., Mito, S., Hongo, Y., **Okamoto, K.** "Primordial capsid and spooled ssDNA genome structures unravel ancestral events of eukaryotic viruses." 25th Swedish Conference on Macromolecular Structure and Function, Tällberg, 17-20 Jun, 2022
- Wang, H., Filipe, D., Miyazaki, N., Suzuki, N., **Okamoto, K.** "The inspiration on dsRNA virus evolution brought by the cryo-EM structures." 25th Swedish Conference on Macromolecular Structure and Function, Tällberg, 17-20 Jun, 2022
- Munke, A., Tomaru, Y., Kimura, K., **Okamoto, K.** "Primordial structures of host-specific algal viruses, marnavirus and bacilladnavirus." Aquatic Virus Workshop 10, Kyoto (online), 27 Jun – 1 Jul, 2021
- Wang, H., Ferreira RJ., Iwasaki, K., Kasson, PM., Miyazaki, M., **Okamoto, K.** "Acquired structure-functions of the metazoan totivirus-like dsRNA viruses."17th Smögen Summer Symposium on Virology, Sweden (online), 21 Aug, 2020
- Munke, A., Tomaru, A., Kimura, K., **Okamoto, K.** "Structure of a marine algae virus and the evolution of Picornavirdiae viruses." 2nd CryoNET Symposium, Stockholm, 10 - 11 Oct, 2019

- **Okamoto, K.**, Ferreira, R., Kasson, P., Miyazaki, N. "Acquired functions on capsid of metazoan totivirus-like dsRNA viruses." 23nd Swedish Conference on Macromolecular Structure and Function, Tällberg, 14-17 Jun, 2019
- Munke, A., Tomaru, Y., Kimura, K., **Okamoto, K.** "Structure of an algae picorna-like virus and the evolution of Picornaviridae viruses." 23nd Swedish Conference on Macromolecular Structure and Function, Tällberg, 14-17 Jun, 2019
- Munke, A., Tomaru, Y., Kimura, K., **Okamoto, K.** "Structure of an algae picorna-like virus and the evolution of Picornaviridae viruses. 7th European Congress of Virology, Rotterdam, 28 Apr – 1 May, 2019
- **Okamoto, K.**, Miyazaki, N., Reddy, KNH., Hantke, FM., Jean-Michel, C., Chantal, A., Hajdu, J., Murata, K., Svenda, M. "Three-dimensional structure of large icosahedral Marseilleviridae virus." Consortium of Biological Sciences 2017, Kobe, 6-9 Dec, 2017
- **Okamoto, K.** "Three-dimensional structure of giant amoebal icosahedral and amphora-shaped viruses." Annual meeting of the Japanese Society for Virology, Osaka, 24-26 Oct, 2017
- **Okamoto, K.**, Miyazaki, N., Reddy, KNH., Hantke, FM., Jean-Michel, C., Chantal, A., Hajdu, J., Murata, K., Svenda, M. "Three-dimensional imaging of giant amoebal viruses." 22nd Swedish Conference on Macromolecular Structure and Function, Tällberg, 15-18 Jun, 2017
- **Okamoto, K.** "Structural evolution of icosahedral viruses." 3rd meeting of STINT-JSPS research collaboration (STINT-JSPS), Osaka, 16-17 Mar, 2017
- **Okamoto, K.** "Cryo-EM and X-ray laser imaging of entire large and giant amoebal viruses." The 39th Annual Meeting of the Molecular Biology Society of Japan, Yokohama, 30 Nov-2 Dec, 2016
- **Okamoto, K.** "Electron microscopy and FEL studies on viruses." Joint SPring-8-Max IV Laboratory workshop on new light sources and biological applications, Lund, 8-9 Sep, 2016
- **Okamoto, K**. "Structural evolution of small dsRNA viruses." 1st meeting of STINT-JSPS research collaboration (STINT-JSPS), Uppsala, 14-15 Jan, 2016
- **Okamoto, K.** "Large and Giant viruses in the beam of an electron and an X-ray laser." 3rd Ringberg Meeting on Structural Biology with FELs (MAX-PLANK-GESELLSCHAFT), Tegernsee, 10-13 Feb, 2016
- **Okamoto, K.,** Miyazaki, N., Reddy, KNH., Hantke, FM., Jean-Michel, C., Chantal, A., Hajdu, J. "Cryo-EM Imaging of Entire Large and Giant Amoebal Viruses." 2nd Ringberg Symposium on Giant Virus Biology (MAX-PLANK-GESELLSCHAFT), Tegernsee, 15-18 Nov, 2015
- **Okamoto, K.** "X-ray laser imaging of mosquito-borne viruses." NIPS research conference (Medical and biological applications of electron microscope imaging), Aichi, 13-14 Nov, 2014
- **Okamoto, K.**, Rawekiensya, M., Kimura, D., Yui, K., Islam, MA., Hasebe, F., Morita, K. "DEN2 strain derived from DHF patient utilizes SDC2 for infection in erythroid cells." International Union of Microbiological Societies Congress (IUMS), 6-16 Sep 2011

1.4 Popular science publications

Okamoto, K. Lab Report, Jikkenigaku (Experimental Medicine), Yodosha Co. ltd. (Japanese), **38** (9), 1538-1540 (2020)

1.5 Other scientific publications/reports

Our structural studies of viruses were picked up by Japanese news media. Asahi Shinbun GLOBE+ (2020)

https://globe.asahi.com/article/13715593
https://globe.asahi.com/article/13732037

The Pithovirus paper (Okamoto et al., Sci Rep 2017) was picked up by Japanese news media for its new approach in studying giant viruses.

Nikkei: https://www.nikkei.com/article/DGXLRSP462478_W7A101C1000000/

Mainichi: https://mainichi.jp/articles/20171118/ddh/041/040/002000c/
Yomiuri: http://www.yomiuri.co.jp/science/20171123-OYT1T50034.html

2. List of acquired external funding

Carl-Tryggers Stiftelse, Main-applicant
Project Title: In situ structure-functions of acquired structures in metazoan dsRNA totivirus-like viruses.
Project duration: 2024-2026
Funding: sum 883 000 SEK

VR project grant for research into viruses and pandemics, Main-applicant
Project Title: Acquired structural remnants in flaviviruses: Exploring structural targets for developing rational non-ADE inducing vaccines
Project duration: 2024-2026
Funding: sum 3 600 000 SEK

STINT, Initiation Grant, Main-applicant
Project Title: Initiating a Structural Virology Network for Future Pandemics: Discovering Therapeutic Structural Targets in Global Zoonotic Flaviviruses.
Project duration: 2023
Funding: sum 140 000 SEK

FORMAS, International network grant for the SDGs, Main-applicant
Project Title: On-demand intercontinental networking for synergistic structural and genomics studies on viral factors capable of controlling harmful algal blooms.
Application number: 2022-02347
Project duration: 2022-2023
Funding: sum 200 000 SEK

Norwegian Research Council, FORSKER21, Co-applicant
Project Title: Rational vaccine design as an approach to protect against PMCV infection in salmon.
Application number: ES681145 (Project number: 324266)
Project duration: 2022-2027
Funding: sum 12 000 000 NOK (sub total 1 225 000 NOK)

KAW, SciLifeLab medel för insatser avseende COVID-19, Main applicant
Project Title: Large-scale production of a bio-safe antigen of COVID-19 and chimeric bat coronaviruses.
Application number: VC-2020-0015
Project duration: 2020-06-01 – 2020-12-31 (extended to 2021-12-31)
Funding: sum 500 000 SEK

VR, Starting Grant, Main applicant
Project Title: Structural acquisitions of capsid functions in icosahedral dsRNA viruses: three hypotheses.
Application number: 2018-03387
Project duration: 2019-01-01 - 2022-12-31
Funding: sum 4 800 000 SEK

FORMAS, Future Research Leaders, Main applicant
Project Title: Life-and-death dynamics of algal blooms: Studies on host-specific algal RNA viruses.
Application number: 2018-00421
Project duration: 2019-01-01 - 2021-12-31 (extended to 2022-12-31)
Funding: sum 2 687 136 SEK

KVA, Biosciences 2018, Main applicant
Project Title: Life-and-death dynamics of algal blooms: Studies on host-specific algal RNA viruses in Baltic Sea.
Application number: BS2018-0053
Project duration: 2018-11-23 to 2019-11-22
Funding: sum 66 000 SEK

STINT, Joint Japan-Sweden Research Collaboration, Co-applicant
Project Title: STRUCTURAL STUDIES ON LIVE VIRUSES WITH X-RAY LASERS
Application number: JA2014-5721
Project duration: 2015-04-01 to 2019-03-31 (extended to 2019-12-31)
Funding: sum 800 000 SEK

3. Other scientific merits/achievements

Merits of relevance to structural biology

- Qualified to conduct cryo-EM experiments at the National Institute of Physiological Sciences (OB, Aichi, Japan), Institute of Protein Sciences (Osaka University, Osaka, Japan) and SciLife laboratory, performed experiments and analyzed the data.
- I am a part of Uppsala cryo-EM BAG application and Uppsala Network of Electron Microscopy (UNEM).
- Qualified to conduct X-ray crystallography experiments at the European Synchrotron Radiation Facility (ESRF, Grenoble, France) and the Photon Factory (KEK, Tukuba, Japan), SPring-8 (RIKEN/JASRI), performed experiments and analyzed the data.
- Qualified to conduct XFEL experiments at the Linac Coherent Light Source (SLAC National Accelerator Center, Stanford, CA.) and SACLA (RIKEN/JASRI) and performed experiments with the X-ray laser.

Merits of relevance to virus researches

- I have performed isolations of emerging viruses from field-collected mosquitoes in Japan and in Sweden, and characterized them.
- I have completed BSL2/3 safety training and performed experiments with hemorrhagic and encephalitis/meningitis viruses in Japan. I have also completed BSL2 safety training and performed experiments in Sweden.
- I am a part of SciLifeLab COVID-19 research network (High-throughput and high-content serology).

Pedagogical Achievements

1. Teaching experience

Teaching experience

- **Degree project for the Master Programme in Applied Biotechnology (1BG354: 30 hp, 1BG355: 45 hp),** Uppsala University, Second cycle studies, Course coordinator, 60 hr per year, 2020 – present, English, 20-25 students
- **Introduction to Molecular Biology, Genetics and Evolution (1MB439: 15 hp),** Uppsala University, Second cycle studies, Course coordinator (total 20 hr) and Lecturer (30 hr for 15 lectures/seminars per year), 2020 – present, English, 5-10 students
- **Elektronmikroskopi, Applied Electron Microscopy (FTN0026: 10 hp),** Uppsala University**,** Third cycle studies, Lecturer (1 hr for one lecture per year), 2020 – present, English, 5-10 students
- **Structure and Function of Macromolecules (1BG349: 15 hp),** Uppsala University, Second cycle studies, Guest Lecturer (2 hr for one lecture per year), 2020 – present, English, 15-20 students
- **Microbiology and Immunology (3MK000: 30 hp),** Uppsala University, Second cycle studies, Mentor (2-weeks lab project) and guest lecturer, 2020 - present, English, 20-30 students
- **Applied Molecular Biophysics (1MB518: 15 hp),** Uppsala University, Second cycle studies, Mentor (6-weeks lab project), 2021, English, 3 students
- **Biotechnology Project (1BG357: 15 hp),** Uppsala University, Second cycle studies, Mentor (10 hr per year), 2020-2021, English, 4-5 students
- **Protein engineering (1BG301: 15 hp),** Uppsala University, Second cycle studies, Lab Teaching Assistant (10 hr), 2019, English, 10-20 students

Invited guest lectures

- **Okamoto, K.** "Unearthing primordial and adapted traits of icosahedral viruses." Institute for Virology, Philipps University Marburg (International Symposium on Emerging RNA Viruses), Marburg, Germany 6 Dec, 2023
- **Okamoto, K.** "Exploring acquired structural remnants of icosahedral viruses." Institute of Plant Science and Resources, Okayama University, Okayama, Japan 2 May, 2023
- **Okamoto, K.** "Exploring acquired structural remnants of icosahedral viruses." Institute for Life and Medical Science, Kyoto University (International Mini-Symposium on Virus Structure and Function), Kyoto, Japan 1 May, 2023
- **Okamoto, K.** "The structure and the evolution of RNA viruses and giant viruses." National Institute of Advanced Industrial Science and Technology (AIST), Hiroshima, Japan 16 Jul, 2019
- **Okamoto, K.** "The structure and the evolution of dsRNA viruses and giant viruses." Kyoto University, Kyoto, Japan, 15 Nov, 2018
- **Okamoto, K.** "Three-dimensional imaging of giant viruses." Hiroshima University, Hiroshima, Japan, 31 Aug, 2018
- **Okamoto, K.** "Electron microscopy and FEL studies on large and giant amoebal viruses." Phillipps-University of Marburg (Jun, 2017), Marburg, Germany, 22 Jun, 2017
- **Okamoto, K.** "Electron microscopy and FEL studies on large and giant amoebal viruses." Special lecture of the Pharmaceutical Society of Japan (Tokai branch). Aichi, Japan, 21 Mar, 2017

Experience of different teaching and examination methods: I have experience of these teaching methods: lectures/guest speeches (1MB439, FTN0026, 1BG349), seminars (1MB439), computer laboratory exercises (1BG301), group assignments (1BG357), short research projects

(1BG518, 3MK000, 1BG357), degree project (1BG354, 1BG355), and industrial visit (1BG357). I have experienced these examination methods: written examinations (1MB439), executive project plan (1BG357), lab report (1BG301), project reports (1BG518, 3MK000, 1BG357, 1BG354, 1BG355), and presentation (1BG518, 3MK000, 1BG357, 1BG354, 1BG355).

2. Experience as supervisor

B.Sc. students

- **Emy Vu,** Research Training in Biology **(1BG225, 15 hp, 10-weeks)**, 2016, Uppsala University, **Main supervisor**
- **Miranda Berg,** Research Training in Biology **(1BG225, 15 hp, 10-weeks)**, 2016, Uppsala University, **Main supervisor**

M.Sc. students

- **Rishabh Rajeswaran,** Degree Project in Applied Biotechnology **(1BG355, 45 hp, 30-weeks)**, 2024 – present, Uppsala University, **Main supervisor**
- **Dags Macs,** Degree Project in Biology **(1BG329, 45 hp, 30-weeks)**, 2023 – present, Uppsala University, **Main supervisor**
- **Gabriela Garcia Hernández,** Degree Project in Biology **(1BG358, 60hp, 40-weeks)**, 2023 2024, Uppsala University, **Main supervisor**
- **Mohammad Maruf Hassan,** Degree Project in Biology **(1BG329, 45hp, 30-weeks)**, 2023 - present, Uppsala University, **Main supervisor**
- **Miranda Åström,** Degree Project in Biology **(1BG358, 60hp, 40-weeks)**, 2022-2023, Uppsala University, **Main supervisor**
- **Björn Ancker Persson,** Degree Project in Molecular Biotechnology **(1MB930, 30hp, 20-weeks)**, 2022-2023, Uppsala University, **Main supervisor**
- **Hélène de Munck,** Introductory Course for the Master Programme in Physics **(1FA002, 3hp, 2-weeks)**, 2022, Uppsala University, **Main supervisor**
- **Claudia González Valdivia,** Research Training in Master Programmes, Bioinformatics **(1MB804, 15hp, 10-weeks)**, 2022, Uppsala University, **Main supervisor**
- **Diogo de Matos Filipe**, Biology Degree Project **(1BG329, 45 hp, 30-weeks)**, 2021-2022, Uppsala University, **Main supervisor**
- **Diyar Ayranci**, Degree Project in Biology **(1BG329, 45 hp, 30-weeks)**, 2021, Uppsala University, **Main supervisor**
- **Shradha Mohanty**, Master's Thesis in Global Health **(3PE148, 30 hp, 20-weeks)**, 2021, Uppsala University, **Main supervisor**
- **Siqi Li**, Research Training in Master Programmes, Bioinformatics **(1BG803, 10 hp, 7-weeks)**, 2021, Uppsala University, **Main supervisor**
- **Sibel Ismetova Ahmedova**, Research Training in Applied Biotechnology **(1BG364, 15 hp, 10-weeks)**, 2021, Uppsala University, **Main supervisor**
- **Christina Chalkiadaki**, Research Training in Biology **(1BG364, 15 hp, 10-weeks**), 2021, Uppsala University, **Main supervisor**
- **Dylan Valli,** Degree Project in Applied Biotechnology **(1BG354, 30 hp, 20-weeks)**, 2020, Uppsala University, **Main supervisor**
- **Sahar Abdul Wahed Shammakhi,** Biology Degree Project **(1BG328, 30 hp, 20-weeks)**, 2020 Uppsala University**, Main supervisor**
- **Afonso de Sousa Vieira,** Project Course in Medical Biochemistry and Microbiology **(3BL351, 15 hp, 10-weeks)**, 2020, Uppsala University**, Main supervisor**
- **Nora Euler,** Research Training in Applied Biotechnology **(1BG364, 15 hp, 10-weeks)**, 2020, Uppsala University, **Main supervisor**
- **Maike Lüftner,** Research Training in Applied Biotechnology **(1BG364, 15 hp, 10-weeks)**, 2020, Uppsala University, **Main supervisor**
- **Shruti Ravi,** Research Training in Applied Biotechnology **(1BG364, 15 hp, 10-weeks)**, 2020, Uppsala University, **Main supervisor**

PhD students

- **Han Wang**, 2019 – 2024, Uppsala University, **Main supervisor**
- **Anna Munke**, 2014 - 2020, Uppsala University, **Co-supervisor**

Post doctors/Researchers/Research Assistants

- **Gabriela Garcia Hernández,** 2024 – present, Uppsala University, **Main supervisor**
- **Victoria Goddio**, 2020 - 2021, Uppsala University, **Main supervisor**

3. University pedagogical education

University pedagogical courses

- **Academic Teacher Training Course**, Autumn 2019, **5-weeks**
- **Supervising PhD student**, Autumn 2019, **3-weeks**

Seminars and conferences

- **Picture a Scientist**, April 2021, **1.5-hrs**
- **Social Power in Practice**, February 2020, **2-hrs**
- **Doctoral Supervisor Training**, spring 2016, **2-days**

4. Pedagogical development work

Course development and course planning

I contributed to develop courses in Master's Programme in Biophysics (starting from autumn 2022): https://www.uu.se/en/admissions/master/selma/program/?pKod=TBF2M

- **Introduction to Molecular Biology (1MB850, 15 hp)**, Uppsala University, Second cycle studies, course planning, course coordinator and lecturer
- **Introduction to Biochemistry (1KB432, 10 hp)**, Uppsala University, Second cycle studies, course planning

Also, I am an examiner in the following course.

- **Basic Concepts in Molecular Biophysics (10 hp),** Uppsala University, Third cycle studies, Examiner (Supervisor of PhD student)

5. Pedagogical leadership

Participation in education committees

Program committee of Applied Biotechnology master program in Uppsala University

6. Pedagogical studies and dissemination of pedagogical vision/knowledge

Educational and degree programme assessment and evaluation work

- PhD half-time committee for Szabolcs Bodizs, Uppsala University, 5 Feb, 2024
- PhD half-time committee for Dylan Valli, Uppsala University, 12 Dec, 2023
- PhD half-time committee for Andrew Emmerich, Uppsala University, 19 Oct, 2021

Other Merits

1. Administrative merits

Staff responsibility

Laboratory responsibility representative in Molecular Biophysics Program, ICM
- Safety training for new employees
- Departmental safety inspection in ICM (every half years)
- Coordinating wet lab meetings and cleaning, and providing information
- Biosafety responsibility
- Radioactive materials responsibility
- Chemical inventory responsibility (Klara system)
- Laboratory and chemical waste responsibility
- Lab equipment responsibility (High-speed/Ultracentrifuges, Transmission electron microscope, and other small equipment)
- Room responsibility (BSL-2 rooms, Cold rooms)

Completed a required biosafety training course: Working with infectious substances – Risk Class 2" by Henrik Gradstedt, Biosafety Coordinator in BMC, Uppsala University, 7 Sep, 2017

Completed a required radiation protection course: Radiation Protection Fundamentals by Sviatlana Yahorava, Radiation Protection Chemist in Uppsala University, 29 Oct, 2019

Completed a required KLARA course: KLARA education by Maria Aveskogh, KLARA coordinator and course administrator in Uppsala University, 30 Sep, 2019

Principle investigator (PI) responsibility
- Recruiting new students and employees
- Coordinating weekly and quaternary goal meetings for students and employees
- Substantial support for VISA issues, business travels and accommodation of the employees
- Attending departmental and program PI meetings
- Coordinating research projects and paper writings
- Preparing individual study plans (ISPs) with PhD students

Budget responsibility

Coordination of own external research grants with economists in ICM
- Ordering research materials and equipment and the payment
- Coordinating budget of collaborative research grants
- Committee member for Equipment Grant in ICM

2. Decision-making and leadership

Steering research projects and group with own external research grants (2019 - present)

Coordinated joint Japan-Sweden research projects (2015-2019) supported by STINT Joint Japan-Sweden Research Collaborations (Uppsala University, Sweden), International Collaborative Research Promotion Program (Osaka University, Japan), International Collaborative Research with IPR (Osaka University, Japan) and Bilateral Cooperation Project (Japan Society for the Promotion of Science; JSPS, Japan).

- Coordinated annual meeting with Uppsala University and Osaka University

- Recruited three former PhD students in Molecular Biophysics Program (Max Hantke, Gijs van der Schot, Benedikt Daurer) as a short specially appointed assistant professorship position in Osaka University
- Coordinated a short visit of researchers and research PIs in Japan and Sweden
- Wrote an annual report of the joint project

Coordinated research collaborations with cryo-EM facility in National Institute for Physiological Sciences (NIPS), Japan (2016-2020) supported by small research grants in NIPS (yearly 200,000 yen/project).

3. Experience outside the university/college environment

Contributed to a research project in AstaReal company (https://www.astareal.se, Sweden) (2019-2020)

Collaborating with governmental agency: National Institute of Infectious Diseases (NIID; Sawabe's group, Japan) (2013-present), Japan Fisheries Research and Education Agency (FRA; Tomaru's group, Japan) (2017-present), and Swedish Meteorological Hydrological Institute (SMHI; Karlsson's group, Japan) (2019-present).