

Molecular Virology

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Other Faculty Member

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Major Scientific Interests of the Group

The research aim of this group is to understand the molecular mechanism of replication and pathogenicity of animal viruses such as influenza virus. The structure and function of virus-encoded factors and host cell-derived factors involved in virus replication are being studied at the atomic, molecular and body levels. We also focus on the host innate immune responses against virus infection.

Projects for Regular Students in Doctoral or Master's Programs

- 1) Identification and characterization of novel factors in virus replication
- 2) Molecular mechanism of host innate immune responses to virus infection
- 3) Control of virus infections through development of novel anti-viral drugs

Study Programs for Short Stay Students (one week – one trimester)

- 1) Molecular mechanism of host factors involved in influenza virus replication
- 2) Action mechanism of anti-virus drugs

Selected Publications

- 1) Lee S, Hirohama M, Noguchi M, Nagata K, **Kawaguchi A**. Influenza A virus infection triggers pyroptosis and apoptosis of respiratory epithelial cells through the type I interferon signaling pathway in a mutually exclusive manner. *J. Virol.*, 2018; 92(14): e00396-18.
- 2) **Kawaguchi A**, Hirohama M, Harada Y, Osari S, Nagata K. Influenza virus induces cholesterol-enriched endocytic recycling compartments for budzone formation via cell cycle-independent centrosome maturation. *PLoS Pathog.*, 2015; 11(11): e1005284.
- 3) Sugiyama K, **Kawaguchi A**, Okuwaki M, Nagata K. pp32 and APRIL are host cell-derived regulators of influenza virus RNA synthesis from cRNA. *eLife*, 2015; 4: e08939.
- 4) **Kawaguchi A**, Matsumoto K, Nagata K. YB-1 functions as a porter to lead influenza virus ribonucleoprotein complexes to microtubules. *J. Virol.*, 2012; 86(20): 11086-95.
- 5) Obayashi E, Yoshida H, Kawai F, Shibayama N, **Kawaguchi A**, Nagata K, Tame JR, Park SY. The structural basis for an essential subunit interaction in influenza virus RNA polymerase. *Nature*, 2008; 454(7208): 1127-31.
- 6) **Kawaguchi A**, Nagata K. De novo replication of the influenza virus RNA genome is regulated by DNA replicative helicase, MCM. *EMBO J.*, 2007; 26(21): 4566-75.