

KAZUMA OKADA

DVM, PhD

SA Assistant Professor

Center for Infectious Disease Education and Research (CiDER), Osaka University

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PROFESSIONAL SUMMARY

Virologist and veterinary scientist with expertise in viral pathogenesis, RNA biology, and molecular virology. Currently investigating human rhinovirus (HRV) pathogenesis through the development of recombinant reporter viruses and in vivo models. Extensive experience in reverse genetics, in vivo virology including precision tissue dissection, and epidemiological surveillance of infectious diseases. Committed to understanding the fundamental mechanisms that determine viral disease severity.

EDUCATION

PhD in Veterinary Science

Gifu University (United Graduate School of Veterinary Sciences) | April 2013 – March 2017

Doctoral research on rabies virus phosphoprotein isoforms and their roles in pathogenesis.

DVM (Doctor of Veterinary Medicine)

Gifu University | April 2007 – March 2013

PROFESSIONAL EXPERIENCE

SA Assistant Professor

Center for Infectious Disease Education and Research (CiDER), Osaka University | April 2023 – Present

Research on human rhinovirus pathogenesis, development of recombinant reporter viruses, and investigation of non-respiratory tract symptoms caused by rhinovirus infection.

Researcher

Osaka Institute of Public Health | April 2019 – March 2023

Epidemiological surveillance and molecular characterization of respiratory viruses and other infectious diseases in the Osaka region.

Postdoctoral Fellow

Gifu University, Laboratory of Zoonotic Disease | April 2017 – March 2019

Research on rabies virus molecular biology and development of novel live rabies vaccine strains.

RESEARCH GRANTS

Investigation of cell death suppression function of rabies virus P gene

JSPS KAKENHI Grant-in-Aid for Early-Career Scientists | Principal Investigator

Institution: Osaka University

Period: April 2024 – March 2027 [Active]

Elucidating the mechanisms of severe non-respiratory symptoms in rhinovirus-positive patients

JSPS KAKENHI Grant-in-Aid for Early-Career Scientists | Principal Investigator

Institution: Osaka University (2023) / Osaka Institute of Public Health (2021–2022)

Period: April 2021 – March 2024 [Completed]

Elucidation of cell type-dependent IFN suppression activity of rabies virus P protein isoforms

JSPS KAKENHI Grant-in-Aid for Research Activity Start-up | Principal Investigator

Institution: Gifu University

Period: August 2017 – March 2019 [Completed]

RESEARCH INTERESTS

Virology, Human Rhinovirus, Pathogenesis, Infectious Diseases, RNA Biology, Molecular Biology, Bioinformatics

PUBLICATIONS

- Hirano J, Hayashi T, Someya Y, Okada K, Uemura K, Yeh MT, Ono C, Taguwa S, Matsuura Y (2025). Establishment of a green fluorescent protein (GFP)-based reporter for picornaviral 3C proteases. *bioRxiv*, 2025-07.
- Okada K, Hirai Y, Ushikai Y, Kaida A (2025). Full-length and near-full-length genomes of human rhinovirus A105 detected in patients with non-respiratory tract symptoms in Osaka, Japan. *Microbiology Resource Announcements*, 14(9), e00228–25.
- Hirano J, Hayashi T, Kitamura K, Nishimura Y, Shimizu H, Okamoto T, Okada K, Uemura K, Yeh MT, Ono C (2024). Enterovirus 3A protein disrupts endoplasmic reticulum homeostasis through interaction with GBF1. *Journal of Virology*, 98(7), e00813–24.
- Kanbayashi D, Kurata T, Kaida A, Kubo H, Yamamoto SP, Egawa K, Hirai Y, Okada K, Kaida Y, Ikemori R (2023). Shedding of rubella virus in postsymptomatic individuals; viral RNA load is a potential indicator to estimate candidate patients excreting infectious rubella virus. *Journal of Clinical Virology*, 160, 105377.
- Sethi A, Rawlinson SM, Dubey A, Ang CS, Choi YH, Yan F, Okada K, Rozario AM, Brice AM, Ito N (2023). Structural insights into the multifunctionality of rabies virus P3 protein. *Proceedings of the National Academy of Sciences*, 120(14), e2217066120.
- Anindita PD, Sasaki M, Okada K, Ito N, Sugiyama M, Saito-Tarashima N, Minakawa N, Shuto S, Otsuguro S, Ichikawa S (2018). Ribavirin-related compounds exert in vitro inhibitory effects toward rabies virus. *Antiviral Research*, 154, 1–9.
- Nakagawa K, Kobayashi Y, Ito N, Suzuki Y, Okada K, Makino M, Goto H, Takahashi T, Sugiyama M (2017). Molecular function analysis of rabies virus RNA polymerase L protein by using an L gene-deficient virus. *Journal of Virology*, 91(20), 10–1128.
- Nakagawa K, Nakagawa K, Omatsu T, Katayama Y, Oba M, Mitake H, Okada K, Yamaoka S, Takashima Y, Masatani T (2017). Generation of a novel live rabies vaccine strain with a high level of safety by introducing attenuating mutations in the nucleoprotein and glycoprotein. *Vaccine*, 35(42), 5622–5628.
- Yamaoka S, Okada K, Ito N, Okadera K, Mitake H, Nakagawa K, Sugiyama M (2017). Defect of rabies virus phosphoprotein in its interferon-antagonist activity negatively affects viral replication in muscle cells. *Journal of Veterinary Medical Science*, 79(8), 1394–1397.
- Okada K, Ito N, Yamaoka S, Masatani T, Ebihara H, Goto H, Nakagawa K, Mitake H, Okadera K, Sugiyama M (2016). Roles of the rabies virus phosphoprotein isoforms in pathogenesis. *Journal of Virology*, 90(18), 8226–8237.

- Okadera K, Mizutani T, Mitake H, Okazaki K, Sakoda Y, Nakagawa K, Takada A, Nagai M, Sugiyama M, Kishimoto M (2016). Isolation of a sp. nov. Ljungan virus from wild birds in Japan. *Journal of General Virology*, 97, 1818–1822.
- Mitake H, Fujii Y, Nagai M, Ito N, Okadera K, Okada K, Nakagawa K, Kishimoto M, Mizutani T, Okazaki K (2016). Isolation of a sp. nov. Ljungan virus from wild birds in Japan. *Journal of General Virology*, 97(8), 1818–1822.
- Okadera K, Abe M, Ito N, Mitake H, Okada K, Nakagawa K, Une Y, Tsunemitsu H, Sugiyama M (2016). Isolation and characterization of a novel type of rotavirus species A in sugar gliders (*Petaurus breviceps*). *Journal of General Virology*, 97(5), 1158–1167.
- Fujii Y, Mitake H, Yamada D, Nagai M, Okadera K, Ito N, Okada K, Nakagawa K, Mizutani T, Sugiyama M (2016). Genome sequences of rotavirus A strains Ty-1 and Ty-3, isolated from turkeys in Ireland in 1979. *Genome Announcements*, 4(1), 10–1128.
- Mitake H, Ito N, Okadera K, Okada K, Nakagawa K, Tanaka T, Katsuragi K, Kasahara K, Nihongi T, Sakurai S (2015). Persistence of the rotavirus A genome in mesenteric lymph nodes of cattle raised on farms. *Journal of General Virology*, 96(9), 2708–2713.
- Mitake H, Ito N, Okadera K, Okada K, Nakagawa K, Tanaka T, Katsuragi K, Kasahara K, Nihongi T, Tsunemitsu H (2015). Detection of avian-like rotavirus A VP4 from a calf in Japan. *Journal of Veterinary Medical Science*, 77(2), 221–224.
- Wiltzer L, Okada K, Yamaoka S, Larrous F, Kuusisto HV, Sugiyama M, Blondel D, Bourhy H, Jans DA, Ito N (2014). Interaction of rabies virus P-protein with STAT proteins is critical to lethal rabies disease. *The Journal of Infectious Diseases*, 209(11), 1744–1753.
- Wiltzer L, Brice A, Lieu K, Harrison A, Oksayan S, Bell T, Whelan D, Hossain A, Shilling P, Okada K (2014). 133: Mechanisms of lyssavirus evasion of innate immunity and roles in lethal rabies disease. *Cytokine*, 70(1), 60.
- Yamaoka S, Ito N, Ohka S, Kaneda S, Nakamura H, Agari T, Masatani T, Nakagawa K, Okada K, Okadera K (2013). Involvement of the rabies virus phosphoprotein gene in neuroinvasiveness. *Journal of Virology*, 87(22), 12327–12338.

SELECTED PRESENTATIONS

Construction of a recombinant human rhinovirus expressing a red fluorescent protein using a plasmid-based reverse genetics system

ASV 2025 (Selected for Flash talk and Poster Presentation) | July 2025

Construction of a recombinant human rhinovirus stably expressing red fluorescent protein

The 72nd Annual Meeting of the Japanese Society for Virology (Oral Presentation) | October 2025

Genetic analysis of human rhinovirus (HRV) detected from the patients with non-respiratory tract symptoms from 2014 to 2019

The 21st Awaji International Forum on Infection and Immunity (Poster Presentation) | September 2023

Different rabies virus P protein isoforms contribute to the suppression of IFN induction in neural and muscle cells

The 68th Annual Meeting of the Japanese Society for Virology (Oral Presentation) | October 2018

AWARDS & HONORS

Public Health Division Encouragement Award — Japanese Society of Veterinary Science, September 2018.
Awarded at the 161st Annual Meeting

68th Lindau Nobel Laureate Meeting — JSPS, June 2018. Selected to participate in the meeting dedicated to
Physiology and Medicine

TOBITATE! Young Ambassador Program (1st cohort) — Japan Public-Private Partnership Student Study
Abroad Program, April 2014. Study abroad at the University of Melbourne, Australia

SKILLS

Research Skills: Reverse Genetics, Molecular Virology, In Vivo Models & Tissue Dissection, Phylogenetic Analysis, Bioinformatics

Technical Skills: Cell Culture & Virus Isolation, RT-qPCR / Sequencing, Animal Experimentation & Welfare, Python / R

- **Advanced Microsurgery:** Sciatic nerve isolation, perfusion fixation, precise organ harvesting.
- **In Vivo Viral Infection Models:** Handling of infectious agents (BSL-2/3), route of administration (i.v., i.p., i.n., etc.).
- **Translational Research Support:** High-quality sample preparation for histopathology and molecular analysis.

LANGUAGES

Japanese: Native

English: Professional working proficiency