

Synergy Center Overview



Director
Dr. Hiroshi KIYONO

cSIMVa is an institute dedicated to advancing our understanding of the mucosal immune system (MIS) and developing innovative **mucosal vaccines**.

- Our aim: promote the research and development of safe and reliable **mucosal vaccines**.
- **Mucosal vaccines**—such as oral and nasal vaccines—have the unique ability to induce secretory IgA antibodies at mucosal surfaces where pathogens invade in addition to systemic immunity (e.g., serum IgG).
- Mucosal vaccines are highly promising as true “**preventive vaccines**”, capable of both preventing infections and reducing the severity of diseases.
- A **Vaccinology course** and an **Infectious Diseases course** have been implemented in order to seamlessly and globally train the next generation of talented vaccine experts.



Vaccine development

Vaccine

Pathogen / infectious disease	Characteristics
Novel Coronavirus (COVID-19)	Nasal vaccine
Seasonal Influenza Virus	Nasal vaccine
Respiratory Syncytial Virus (RSV)	Nasal vaccine
Enterovirus A71/D68	Oral/Sublingual vaccine

Modality

Modality	Characteristics
Oral mucosal vaccines	Sublingual pill, Troche, Patch, Microneedle, Nanogel
Cold chain - free oral vaccine	MucoRice
Drinking type oral vaccine	Antibody-inducing lactic acid bacteria
Nasal vaccine	Microneedle, Novel spraying device

Organization structure



R&D Overview

Our Vision:

- ✓ Save Lives and Livelihoods by Safe and Friendly Mucosal Vaccines

Our Mission:

- ✓ Creating Pain-Free and Worry-Free Mucosal Vaccines Preventing Pathogen Invasion
- ✓ Developing Mucosal Vaccines with Society Fostering Vaccine Trust

Nasal Vaccine : We are developing nasal vaccine targeting respiratory tract infections using Cationic Nanogel-based antigen delivery system.



Oral Vaccine : We are developing oral vaccines aimed at preventing intestinal infections through mucosal immunity in the oral, pharyngeal, and intestinal tracts. (ex. **Cold chain and device-free oral vaccine: MucoRice**)



Integrated Three-Levels Strategic Planning System (iTSP)



New Knowledge:

Aim to elucidate the mechanisms of innate & adaptive immune induction and regulation in mucosal immunity

Novel Technology:

Aim to conduct research & development to identify & refine candidates for mucosal vaccines and adjuvants with AI & Data Science

Technology Integration:

Aim to advance & conduct human POC/Clinical trials for mucosal vaccines and manufacturing/distribution

All levels which compose iTSP are circularly interacting.