WISE Program for One Health Frontier Graduate School of Excellence

A program that produces a philosophy of disease control and a balanced international perspective, seeing the health of animals, people, and the ecosystem from a higher point of view and designing solutions involving One Health.

“OH-chan” is our mascot. You can draw OH-chan with an O, H, and F, acronym for One Health Frontier.
One Health Frontier Graduate School of Excellence

The development of preventive and curative medicine and the promotion of preventive measures have made it possible to control certain infectious diseases. At the same time, however, emerging and re-emerging infectious diseases have increasingly occurred, posing a threat to humanity. In addition, health hazards to humans and animals due to chemicals and the destruction of the ecosystem continue to occur as people enjoy the convenience of life. These problems occur beyond national boundaries. We now have a mission to promote a healthy environment, reduce hazards from damaging hazards, and preserve a sustainable and healthy environment for future generations.

The One Health Frontier Graduate School of Excellence, promoted by Graduate School of Veterinary Medicine and Graduate School of Infectious Diseases, Hokkaido University, produces experts with a clear philosophy of disease control and a balanced international perspective who can see the health of humans, animals, and the environment as interdependent. We focus on the development of educational programs for the improvement of the health of all beings, with an emphasis on the sustainable design and implementation of global disease control solutions involving One Health professionals with knowledge and technological expertise.
Leveraging an international advanced research team

Leading an international advanced research team
Its aim is to serve as an advanced research center that is engaged in basic research as well as clinical research. The activities are focused on problems arising from the technical pursuit of scientific agents (diseased) and chemical substances (chemical hazard), such as poisons and health and socioeconomic damage due to chemical substances.

Bestowing exceptional educational strengths

Characteristics of the One Health, which is made available for graduate students in both humanities and sciences, unrivaled in Japan and the world, will be established. The center is intended to be a platform where diversity and equal participation are carried out under the University’s core values of educational and research and One Health in its true sense.

Assembling a diversity of human resources

The program globally promotes interdisciplinary and multidisciplinary education and research related to One Health. It also promotes the cooperation between the Center and other institutions.

What is One Health?

The concept of One Health originated in the 19th century idea of “zoonosis” introduced by German pathologist Robert Koch. The novelty of the One Health approach is interdisciplinary, collaborative effort by multiple sectors to control zoonoses and maintain the health of ecosystems, as proposed in the 2014 Marshall Principles of the Middle Conservation Society. The concept of One Health has been widely adopted and is being developed in the scientific community. The One Health approach is an interdisciplinary, collaborative effort by multiple sectors to control zoonoses and maintain the health of ecosystems.

Message

Program Coordinator
Mitsunori Horiuchi, MD, PhD, University of Veterinary Medicine

Zoonoses and emerging and re-emerging infectious diseases, such as avian flu, SARS, and MERS, have been emerging due to human activities. The re- sorted zoonotic diseases pose a serious threat to global public health. To address this threat, it is necessary to develop a comprehensive strategy for risk assessment and management. This program aims at fostering professionals in zoonosis and infectious diseases who will be able to tackle and resolve problems related to One Health, with a strong focus on disease control and prevention, both human and animal, with a human-centered and animal-centered approach.
Establishment of the One Health Ally Course as a touchstone of graduate school education reform

Hokkaido University plans to introduce the Hokkaido University Ally Minor System, which is intended to provide extra learning for graduate students and increase their value. This special educational program provides an opportunity for graduate students to acquire extra learning. It also special educational program that forms the foundation for competence required in VPH and other international organizations, for those who wish to work for such institutions.

One Health Ally Course

Inter-graduate school and inter-university special educational program to provide the essence of One Health for students in both humanities and sciences

To realize One Health, experts produced in this program are expected to become leaders of One Health, and also necessary for experts from various fields to participate in this initiative. The GM module in this program is practical education provided through industry-academia-government collaboration with the units of the DDC Center at its center. The participation of graduate school students from both humanities and sciences in this mandatory module allows students from different backgrounds to interact with each other, leading to future interdisciplinary activities. This GM is a meaningful course for students who are interested in international organizations and overseas activities but who have no such opportunities. This course is composed of the following four sub-modules. The hours required for learning can be converted to eight credits. Students who have completed this course receive a diploma.

Sub-module 1

One Health Ally Course

- Four sub-modules
- One Health Ally Course
- Hi-System
- Orientation and introduction of One Health
- One Health Ally Course
- One Health Ally Course
- Experience of awareness project

Sub-module 2

Learning of basics of One Health

- One Health Ally Course
- Hi-System
- Orientation and introduction of One Health
- One Health Ally Course
- One Health Ally Course
- Experience of awareness project

Sub-module 3

Acquisition of transferable skills

- One Health Ally Course
- Hi-System
- Orientation and introduction of One Health
- One Health Ally Course
- One Health Ally Course
- Experience of awareness project

Sub-module 4

Experience of collaboration practice

- One Health Ally Course
- Hi-System
- Orientation and introduction of One Health
- One Health Ally Course
- One Health Ally Course
- Experience of awareness project

Touchstones of graduate school educational reform to implement the Hokkaido University Ally Minor System, which is intended to provide extra learning for graduate students and increase their value.

Sub-module 3

The care of the course, involving the following activities

1. Students experience activities at an international organization by hearing from its employees.
2. Students create disease risk profiles by region, by species, by habitat type, and by vector on a global basis. Using these profiles, they conduct a research assessment, perform development research on species, and examination and analysis. This enables them to create a disease risk profile that enables both national and international research that meets the needs of businesses.
3. Students experience regulatory science provided through collaboration between medicine, veterinary medicine, and epidemiology. Such activities include the monitoring of infected pets, disease control and drug-resistant bacteria in a global animal and human health system, and the detection of emerging viruses and their potential for the emergence of avian influenza.
4. Students participate in a joint research project to create databases and sample sites, which are promoted by the HBC Center to understand the need of collaboration to make this reality.
Center for Diagnosis and Disease Control (DCC Center)

A single collaborative center to join the forces of diverse organizations, laboratories, and departments in service of realizing One Health research goals and dreams.

New units have been established to realize our mission: the International Collaborative Unit, the Developmental Promoting Unit, the liaison Unit, and the Developmental Promoting Unit. Our motto, “In consensus and in action,” reflects the interdisciplinary approach to the varied aspects of One Health, including epidemiology, infectious disease, public health, and environmental health. This collaborative unit is also the lead organization for the extensive database of infectious diseases and one of the major contributors to the One Health database. The database contains comprehensive information on the transmission and control of infectious diseases, including vector-borne diseases, zoonoses, and emerging infections. This database is a valuable resource for researchers, healthcare professionals, policymakers, and the general public, providing critical information for the prevention, control, and eradication of infectious diseases. The center is dedicated to advancing the goals of One Health by promoting research, education, and outreach activities that foster collaboration and innovation in the field of infectious diseases.

Promotion of global advanced practical education

Collaborations with international organizations and institutions

International organizations

Dissemination of insights and on-site practical experience

Epidemiology, etc.

Overseas education and research institutes

Promotion of international exchange and joint research, collaborative education using the Co-Knowledge System

Asia, the United States, China, India, etc.

Domestic education and research institutes

Education for collaborative research, coordination, and human resource development

NHK, NARD, etc.

Examination, Diagnosis, and Integration Database Section

Examination system for research using the NHK/KHIS system

Integrate Data and use the technologies of next-generation sequencing

Center for Diagnosis and Disease Control (DCC Center)

One Health on the Earth

Promotion of global advanced practical education

Collaboration with domestic and overseas international organizations and institutions

International organizations

Dissemination of insights and on-site practical experience

Epidemiology, etc.

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Mitigation of health damage and social loss due to zoonoses and chemical hazards

New education and research center for One Health and Zoobiozology

Use of the achievements of joint large-scale education and research programs

Awards of Doctoral UP, SCOB, and INCOSE

Participation of graduate school students beyond their affiliate

Promotion of inter-disciplinary collaboration

Creating a sense of purpose for the One Health, the Good Health, and the transmission of information

Integrated pathogen DB

Integrated chemical molecule DB

Integrated animal genetic DB

Infectome

Chim Reactome

Oncop-Blipex
**Course outline**

The graduate school curriculum for earning a degree and the program to produce experts who can design and implement solutions for issues involved in One Health (professionals with knowledge and technological expertise) are comprised of four modules.

### One Health Frontier Degree Program

**Graduate school curriculum**

- PhD in infectious disease / veterinary medicine
- PhD in parasitology / natural product programs
- PhD in other disciplines

**Schooling Module**

- First year: Interdisciplinary Frame I
  - Academic English (optional): English learning for a native English-speaking Specialty. Specialized in veterinary belonging to the Faculty of Veterinary Medicine. A variety of classes are provided depending on the skills and needs of students. Custom-made follow-up classes are also available.
  - Research Ethics Exercise (optional): Students deepen their understanding of research ethics as researchers and workers in society.

- Second year: Specialized Frame I and Specialized Frame II
  - Students who have studied designated graduate school subjects and passed an accreditation test are certified as downtown control experts, chemical hazard control experts, and integrated clinical experts.

**Research Module**

- Modules to build the fitting foundation for expertise through experiments and research for writing a disserta-
  tion. The Qualifying Examination (QE) focusing on an oral exam to check the eligibility to submit a dissertation is conducted three times to ensure the quality of the degree and the transparency of the examination.

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One Health Module
Module to deepen students’ understanding of One Health and cultivate a balanced international sense and ability to collaborate

1 OH transferable skill training
Workshops to prepare solutions for international issues involved in One Health in a group discussion style. The training aims to cultivate group skills, explanation capability, quick decision-making capacity and an ability to collaborate.

2 OH collaborative training
The units of the Center for Diagnostics and Disease Control (page 7) create an industry-academic-government team to provide courses in which students can experience supporting international organization activities, technical cooperation and needs assessment for development research, medicine-veterinary medicine collaboration activities promoting Zoonotica and practical regulatory research. Students also improve their ability to collaborate by participating in joint research projects organized by the center.

3 OH on site training
Students experience assisting developing countries through JICA, an epidemiological survey in overseas fields, joint research and other practical overseas activities. On-site experiences are expected to improve student communication skills, expand their perspective, and enhance their learning motivation.

Independence Module [student-led program]
Module to cultivate a sense of responsibility, planning and operating abilities and the momentum to undertake cross-disciplinary research

1 Progress
Students freely discuss their own research.

2 Leading Seminar
Students take responsibility for all steps of the program, from the selection of lecturers to the organization of lecture meetings.

3 SaSSOH
Sponsors Summer Symposium for One Health
An international symposium planned and implemented by students and young faculty members to cultivate student independence, communication skills and planning ability. The event allows students to learn cutting-edge knowledge from overseas guests who are leading experts in One Health research. Students are also given the opportunity to present their research, receive feedback, and network with them with a training opportunity to play a role on the global stage. The symposium has been held since a year since 2013, and the Active Discussion Session and the Student Session were added at the fourth event to hold workshops to learn planning and operating abilities. The aim is to produce experts who can exercise leadership at the site of a crisis or chemical emergency.