

Amami Laboratory of Injurious Animals

奄美病害動物研究施設

Professor Tomoji Mashimo, Ph.D.
 Visiting Associate Professor Takeshi Annoura, Ph.D.
 Assistant Professor Shin-Ichi Yokota, D.V.M., Ph.D.

教授 博士(人間・環境学) 真 下 知 士
 客員准教授 医学博士 案 浦 健
 助教 博士(人間科学) 横 田 伸 一

The Amami Laboratory of Injurious Animals (since 1970) has a long history originating from the branch office of the Institute for Infectious Disease which was established in 1902. We have made great achievements in filariasis eradication from this island and prevention of Habu bites. Currently, we are maintaining the colonies of New World monkeys, and aiming to overcome endemic infectious diseases in the tropical and subtropical regions through infection experiments using primates.

Reproduction of squirrel monkeys and owl monkeys

Squirrel monkeys (*Saimiri boliviensis*) and Owl monkey (*Aotus lemurinus griseimembra*) are widely distributed in the tropical rainforest in Central and South America. The advantage of using both species for medical researches resides in its small size and gentle behavior. Squirrel monkeys and owl monkeys are phylogenetically close to each other, and both are well known as the best candidates for malaria model in primates. In our laboratory, squirrel monkeys have a breeding season between winter and early spring. They are polygamy. Their puberty is 3-4 years old in females and 4-5 years old in males. Their gestation period is about 150 days. In contrast, owl monkeys are annual breeding animals. They are monogamy. Their puberty is 3 years old for both sexes. Their gestation period is about 130 days. Ten newborns were given in reproductive groups of squirrel monkeys in 2022, and five of them were nursed by laboratory staffs due to neglect from their mothers. On the other hand, owl monkeys have become male-only colonies, and breeding has stopped at present. The construction work to install a large cage unit is under its way in our squirrel monkey room, and is scheduled to be completed by the end of March 2023.

Research using non-human primates

Notable aspect of our laboratory is the unique International Joint Usage and Research Center capability of conducting infection experiment using squirrel monkeys, owl monkeys, and cynomolgus monkeys. Our laboratory is currently in the process of renovating the 3rd building equipped with BSL3 animal experimental rooms, which allows for experiments on mosquito-borne infectious diseases in primates (scheduled to be completed next spring or next summer). Our BSL3 animal experimental rooms still await completion, however, experimental rooms up to BSL2 for infection experiments in primates have completed renovation in early 2021. We are working with collaborators from several institutions to develop an experimental squirrel monkey infection model to assess the anti-malarial activity of new compounds and vaccines.

Research on the control of snakebite envenoming

Snakebite envenoming is still a serious health problem in many tropical and subtropical countries. It was recognized by the World Health Organization (WHO) as a neglected tropical disease in 2009, and was elevated into Category A of the Neglected Tropical Diseases list in 2017. Amami laboratory used to be an important facility for research and development of antivenom serum for Habu (*Protobothrops flavoviridis*), which is a species endemic to Japan. Even now, we are continuing research aimed to elucidate the detail

components of Habu venom through genome analysis, etc. and that will contribute to control of snakebite

envenoming in the world.