Executive Summary of Report

Human life will always entail threats from infectious diseases. Here we report on a collaborative research program undertaken by Thai and Japanese researchers to improve the prevention, diagnosis, and treatment of infectious diseases in Thailand and Japan, and in other parts of Asia and the world. This program has consistently maintained a tight focus on supporting research on infectious diseases and in related areas only, with appropriate modifications as necessitated by the progress of that research.

During ten years (1999 through 2008) this program has supported collaborative research on the five topics described below.

1. Nosocomial infections and drug-resistant microorganisms: Resistance to anti-bacterial drugs is a major problem worldwide. This work focused on trends in antibiotic resistance in Asia, factors responsible for the spread of drug-resistant bacteria, and possibilities for preventing or controlling such infections.

2. New and re-emerging infections (malaria): Each year, malaria kills millions of people worldwide. Suppression of malaria is a high priority for clinical medicine and public health. Support from this program led to the discovery of several previously-unknown human genes involved in the development of severe forms of malaria, and to new knowledge about the genetic basis of resistance to anti-malarial drugs and its spread mechanism.

3. Maternal-child infections in Asia, and their relation to nutrition and education: Maternal-child infections interfere with children's normal development, and can greatly hinder economic progress in Asian countries. In this research, a new technique was developed to detect many pathogenic viruses in only one test using multiplex PCR method, and infection of microorganisms including previously-unknown virus that causes food poisoning was identified.

4. Ethnoepidemiology of infectious diseases in Thailand (Epstein-Barr (EB) virus): The EB virus is known to cause cancer. These studies led to development of a new method for rapid diagnosis of infection with this virus, and work continues on the unique geographic and ethnographic distribution of EB virus infection in Asia. We alerted that the smoking habit was one of the definitive risk factors for cervical cancer development. In NPC, genetic polymorphisms of some detoxifying enzymes predict the risk to develop the cancer. In addition to these cancers, description of a novel disease entity, EBV associated Southeast Asian T cell syndrome (EBASEAT), is our contribution to the study on human hematological neoplasm.

5. Interactions between human and viral genes in the progression from HIV infection to AIDS: The devastation caused by AIDS is well known. Among all Asian countries, Thailand has been particularly severely affected. This research was begun in 2003 to identify genetic interactions between the HIV virus and its human host that are associated with the worsening of symptoms as HIV infection becomes AIDS.

The research on nosocomial infections and drug-resistant micro-organisms (#1 above) progressed quickly and was very productive, and the program’s Thai coordinators decided that support for it should be temporarily stopped. The decision to begin the new research topic (#5 above) was made in recognition of the urgency of the need to establish highly reliable diagnostic systems and effective treatments for HIV infection and AIDS in Thailand.