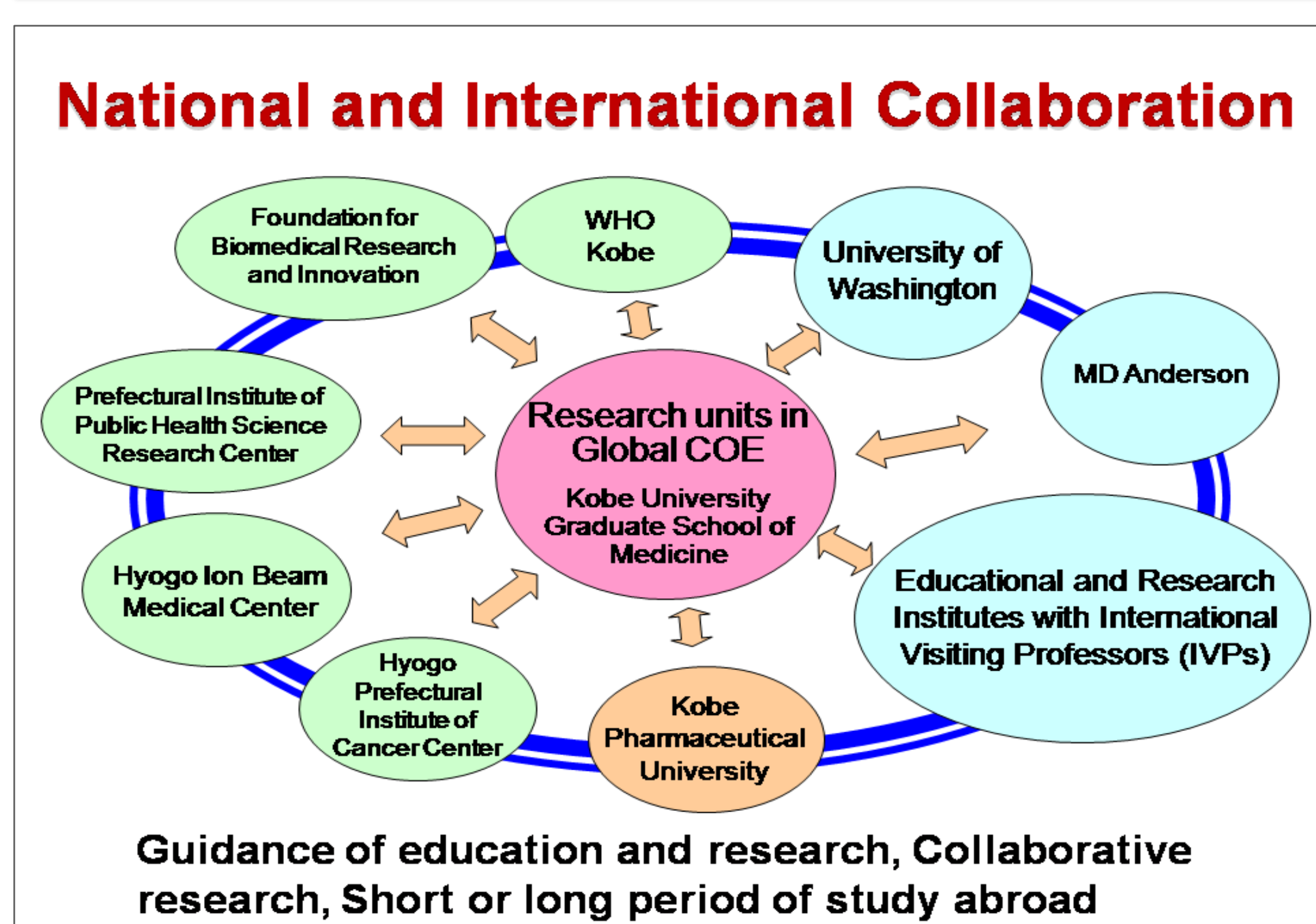
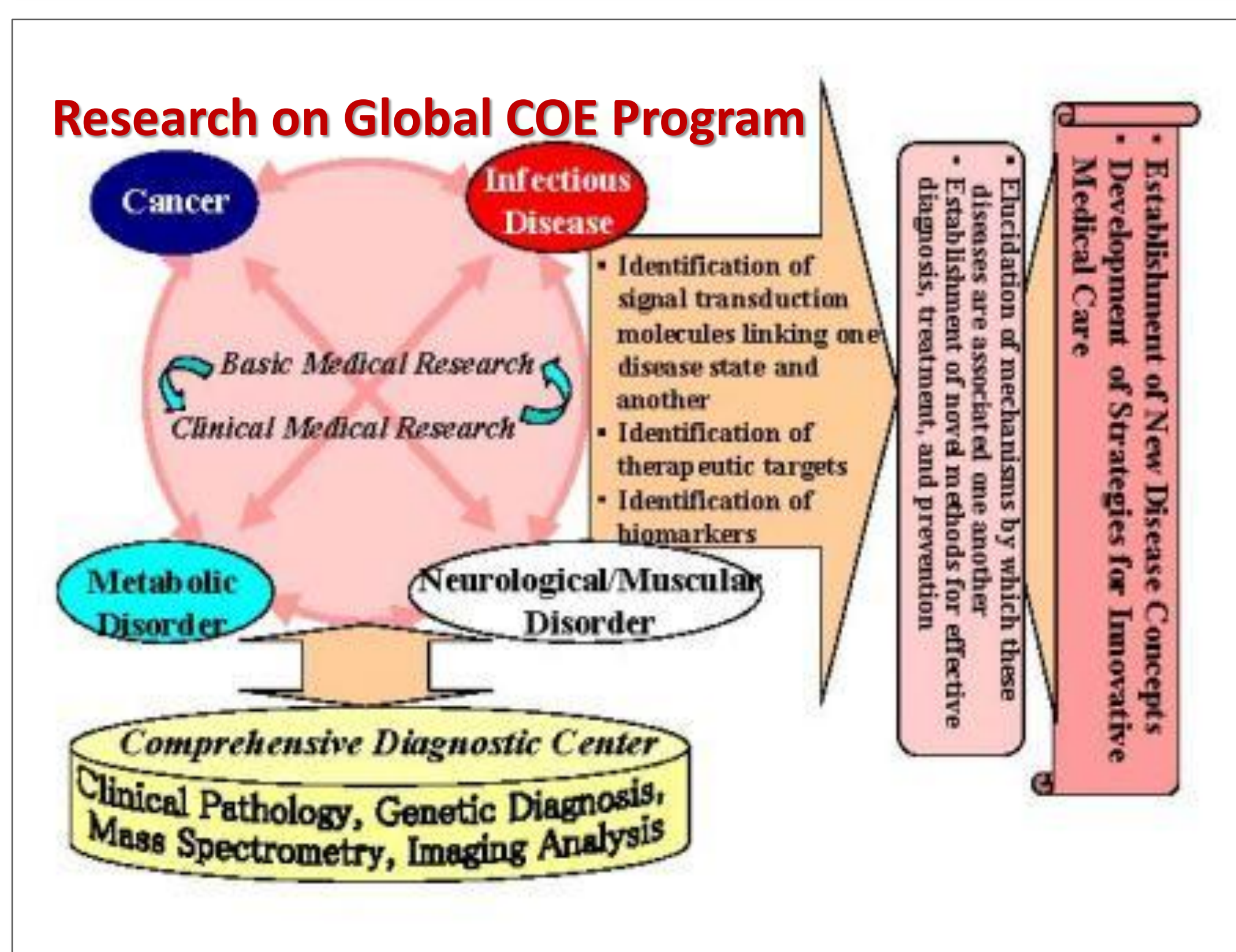
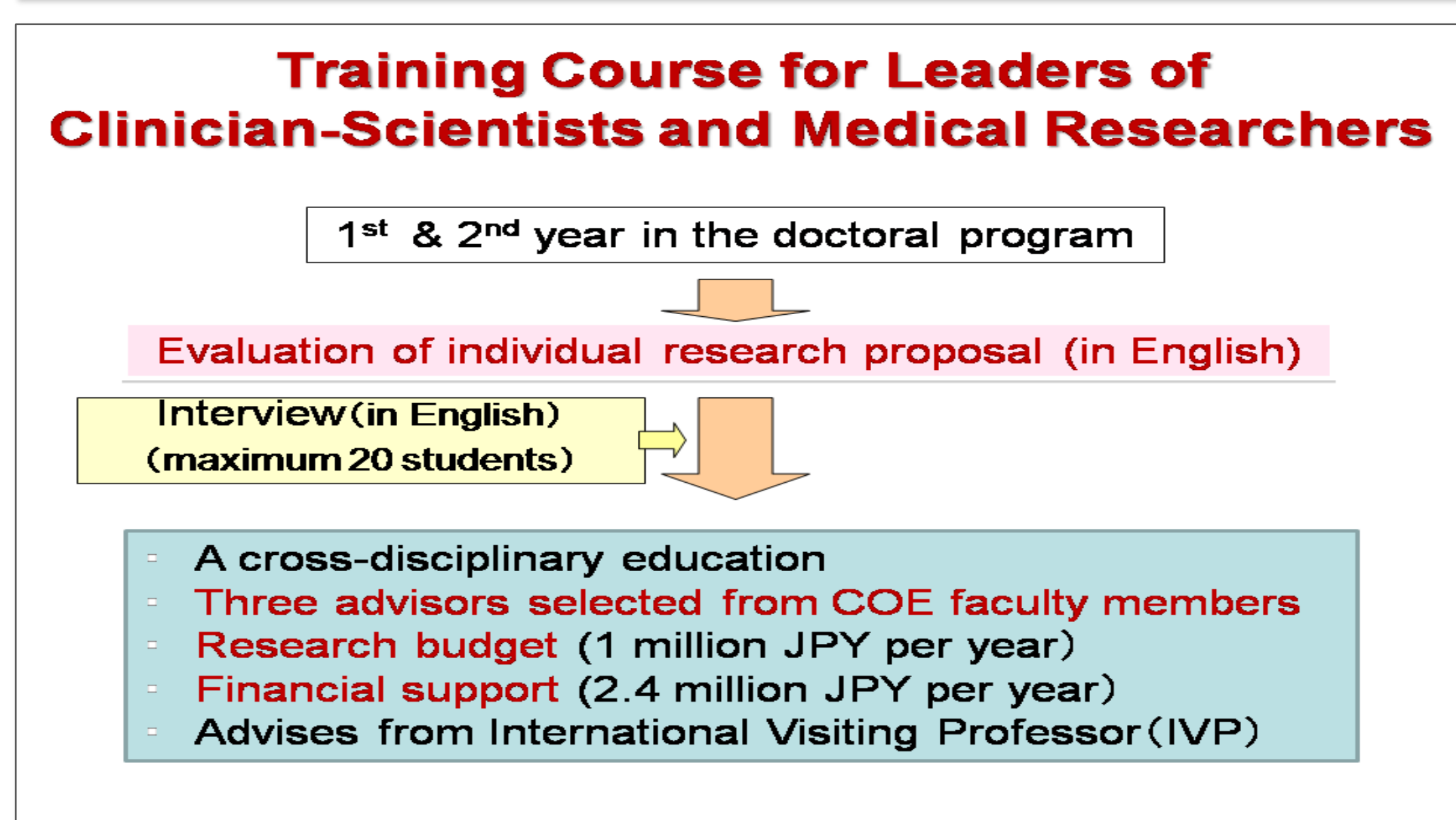
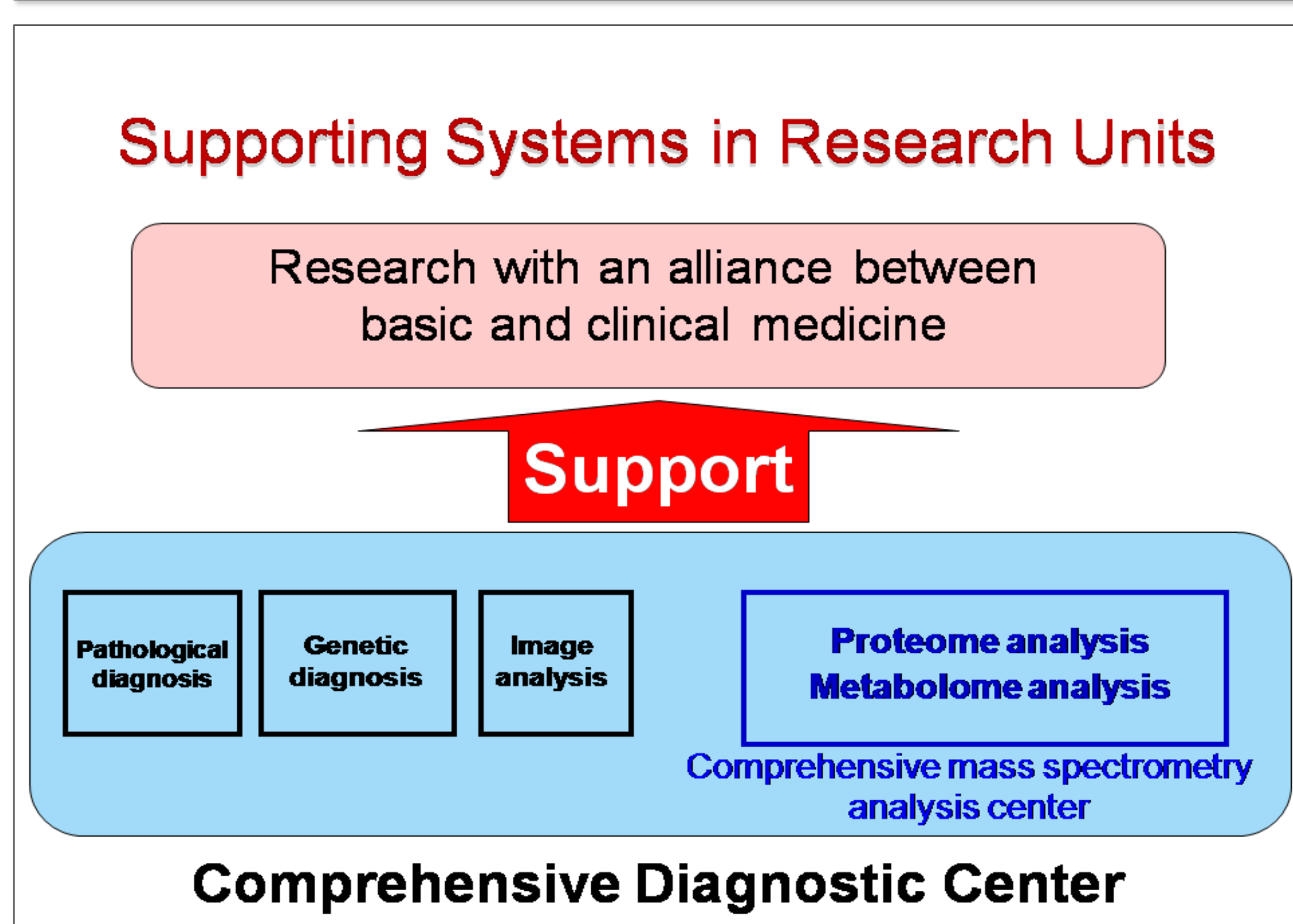
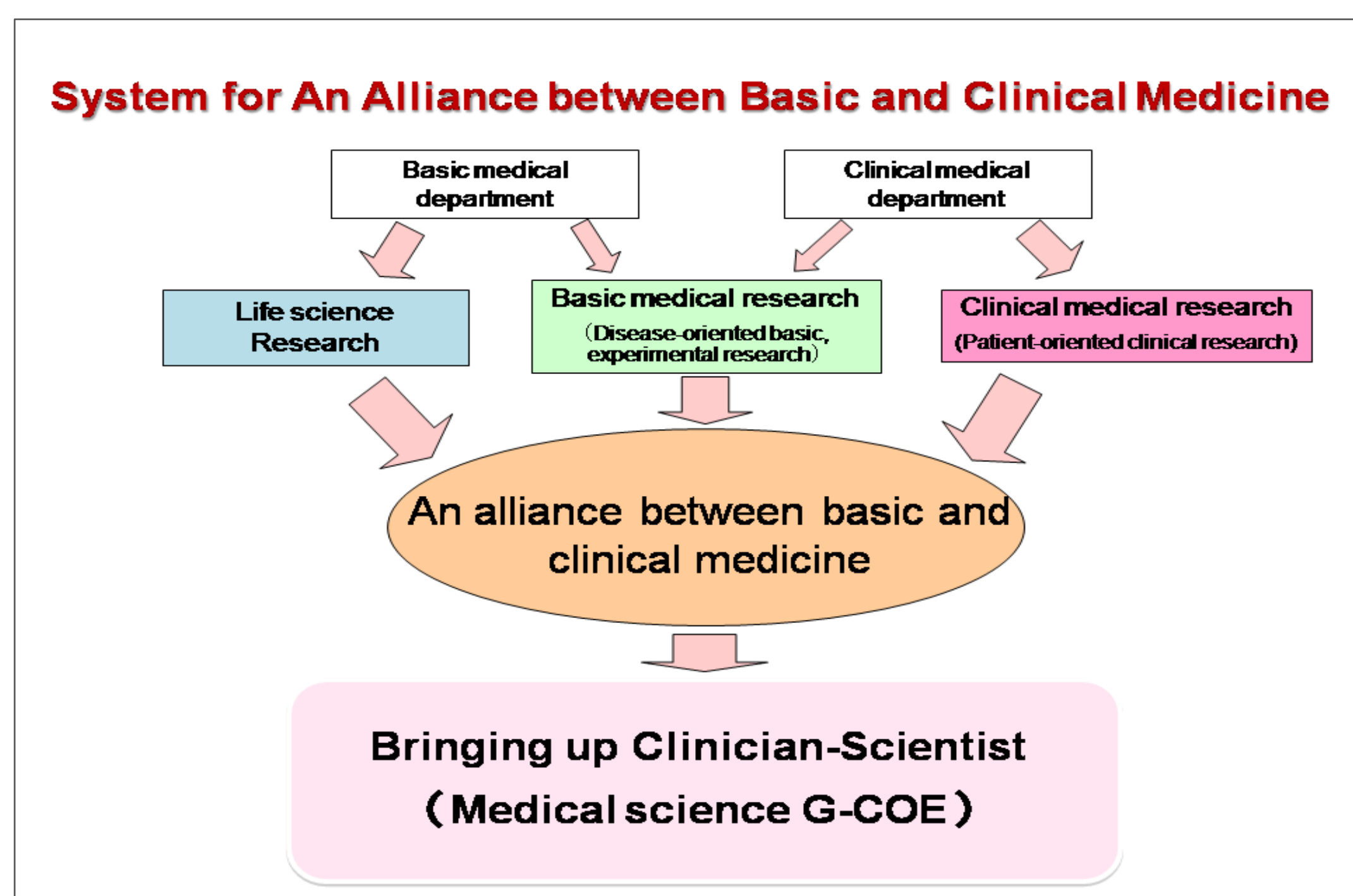




Kobe University Global COE Program

Global Center of Excellence for Education and Research on Signal Transduction Medicine in the Coming Generation

— Bringing up clinician-scientists in the alliance between basic and clinical medicine —



Outline

“Signal transduction medicine” is a field of medicine that investigates diseases from the view of information systems for maintaining homeostasis in the body, and studies their mechanisms, diagnosis, treatment, and prevention. While dramatically deepening our understanding of individual diseases, progress in signal transduction medicine has highlighted complexities that cannot be clarified by conventional approaches focusing on a single disease and specialty. The purpose for establishing this COE (Center of excellence) is to elucidate the pathogenesis and pathophysiology of diseases and understand their nature from a completely new viewpoint based on accumulating world top-level research in signal transduction medicine at Kobe University, to develop strategies for innovative medical care, and, in addition, to nurture young scientists to become leaders in the coming generation in the fields of medical sciences and medical care. To achieve these objectives, we have established a global COE for education and research on signal transduction medicine for diseases such as cancers, metabolic disorders, infectious diseases, and neurological and muscular disorders, for which radical solutions are urgently required. A cross-disciplinary and integrative approach based on the alliance between basic and clinical medicine has been adopted in this COE. This global COE aims to clarify the core mechanisms by which these diseases are associated with one another and establish novel methods for their effective diagnosis, treatment, and prevention, while also training clinician-scientists and medical researchers who are capable of creating new medical fields.

Education system

Across-disciplinary, integrative education and research system by an alliance between basic and clinical medicine, a novel concept in Japan has been established. The faculty members are classified into (a) life science research, (b) basic medical research (disease-oriented basic, experimental research), and (c) clinical medical research (patient-oriented clinical research), and members in the class (b) and (c) are assigned to the same “Kouza”, an education and research unit in the university system in Japan corresponding to a “Department” or “Division” in universities in the USA.

Training young researchers and support for their independence

A three-stage system has been provided: a conventional post-doctoral course and, for young researchers who have completed post-doctoral training, Track A and Track B. Track A is a tenure track in which the researcher is promoted to a tenured position (associate professor) in 3 to 5 years, based on strict evaluation. In Track A, a young researcher (assistant professor) is a principle investigator (PI), and is assured complete independence in research and provided research funding and space. Track B is an intermediate position between post-doctoral fellowship and Track A, similar to that of a research associate in the USA. Promotion from Track B to Track A is also based on strict evaluation. Both Track A and Track B candidates have been recruited by international public advertisement and recommendation. Candidates have been selected only after strict evaluation, including review of research proposals written in English and past achievements. For outstanding students and post-doctoral fellows, a career path have been provided to continue their activities at Kobe University. For selection of young researchers to become leading clinician-scientists, advanced clinical skills have been evaluated as well as experimental research ability. The post-doctoral course and Track B include a career development education program in which research presentations at international meetings and short-term research abroad have been encouraged for researchers to develop their ability to conduct international activities. Various pathways for support of career development, including appointment to higher positions within the COE, research positions at other research facilities, and long-term research abroad, depending on their aptitude and ability, is available.

Reinforcement of postgraduate education

A cross-disciplinary “Training Course for Leaders of Clinician-Scientists and Medical Researchers” has been established. In this course, each year, outstanding 10 students in their first and second year of doctoral programs have been selected based on strict evaluation of their research proposals written in English. They have provided with grants for independent research, other financial support, and appropriate guidance by education and research coordinators to nurture them to become clinician-scientists and medical researchers who are capable of conducting original research activities at the international level. At the Graduate School of Medicine, an International Visiting Professor (IVP) system has been introduced to further enhance the quality of the graduate programs from the global viewpoint. Approximately 20 world top-level clinician-scientists and medical researchers (approximately half are female) have been invited annually. They hold regular seminars providing opportunities for graduate students to have intensive discussions in English. The IVPs have given advice on research proposals.

Research plan

By focusing on cancers, metabolic disorders, infectious diseases, and neurological and muscular disorders, signal transduction medicine aimed to elucidate mechanisms of the disease and to develop innovative strategies for medical care from a completely new viewpoint has been developed. To achieve these objectives, comprehensive analytical techniques including transcriptome, proteome, and metabolome analyses have been employed, in addition to techniques focusing on specific molecules. Each research program has been promoted by close cooperation with a Comprehensive Diagnostic Center comprising the Divisions of Clinical Pathology, Genetic Diagnosis, Mass Spectrometry, and Imaging Analysis. In addition, through the entire program period, research presentations and exchange meetings have been held regularly by attending research members to share comprehensive knowledge and methodologies, and interdisciplinary joint research in cooperation with the international community has been promoted. Furthermore, joint research with IVP research institutions and interactivity exchanges of postdoctoral fellows and faculty members have been promoted to strengthen international cooperation. All of the faculty members, postdoctoral fellows and graduate students attend a training-camp-style research meeting. Internal evaluation progress report meeting have been held at every year-end. A symposium consisting of progress report and external evaluation by the International External Review Committee was held in 2010.



The Lasker Award Memorial Lecture by Prof. Shinya Yamana



International Female Exchange Meeting by Dr Frances M. Ashcroft (IVP: International Visiting Professor)



Visiting Tour at the Integrated Center for Mass Spectrometry



The 2nd International Symposium at the Awaji Yumebutai International Conference Center