



THE ACHIEVEMENTS OF

Professor Dr. Watchara Kasinrerak

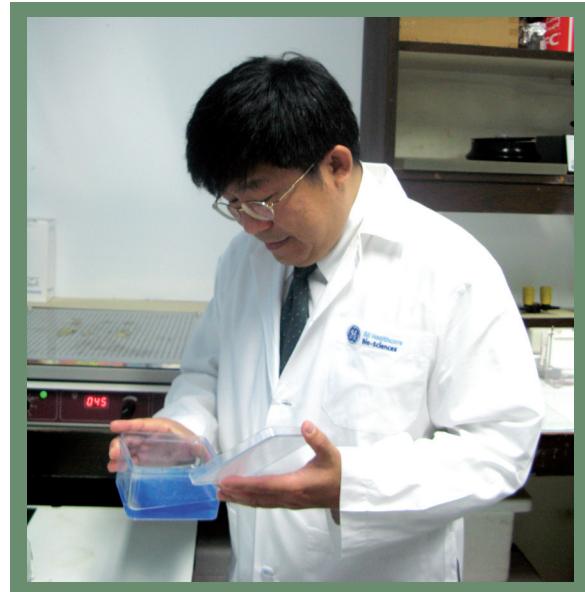


Professor Dr. Watchara Kasinrerak was born on 6 November 1958 in Phrae province, Thailand. He received his B.Sc. in Medical Technology and M.Sc. in Microbiology from Chiang Mai University. He later received Ph.D. in Immunology from Universitat fur Bodenkultur Wien, Vienna, Austria, in 1992. He began his academic career in the Department of Medical Technology, Faculty of Associated Medical Sciences, Chiang Mai University until today. In the Department, he teaches Immunology to both undergraduate and graduate students, and also conducts both basic and applied research in Immunology. He was appointed Professor of Medical Technology in 2006.



Monoclonal antibody is a protein that has 2 special properties. First, monoclonal antibody can specifically react to its recognized antigen. Second, monoclonal antibody can be produced by hybridoma technique in any laboratory. Currently, monoclonal antibodies become an important tool for basic research in many areas and also are employed for prevention and treatment of various diseases. In addition, monoclonal antibodies are utilized for development of various immunodiagnostics. After Ph.D. study, Professor Kasinrerak carries his research on the establishment of efficient method for production of monoclonal antibodies and using of monoclonal antibodies for biochemical characterizations and function studies of leukocyte surface molecules and development of immunodiagnostic kits for various diseases.

At the Biomedical Technology Research Center, Department of Medical Technology, Faculty of Associated Medical Sciences, Chiang Mai University, Professor Kasinrerak conducts research on the development of various technologies for



production of monoclonal antibodies. In his laboratory, the antibodies are generated using various platforms. These include the production of antibody from chicken eggs by IgY technology, production of monoclonal antibodies by DNA immunization, antigen-bead immunization, and immunization of recombinant protein produced from prokaryotic and mammalian cells. In addition, various home-made supplements for hybridoma technology are also produced for replacing of imported materials. From these research works, various monoclonal antibodies can be effectively produced in Professor Kasinrerak's research unit.

The immune system composes of many types of leukocytes that work together. Leukocyte surface molecules are demonstrated to be involved in leukocyte communications and immune-regulation. Biochemical characterizations and functional studies of leukocyte surface molecules, therefore, will lead to a better understanding of the function of the immune system. To study the function of leukocyte surface molecules, in Professor Kasinrerak's laboratory, various monoclonal antibodies against leukocyte surface molecules are produced. The



produced antibodies are further exploited in basic researches on leukocyte surface molecules. He has demonstrated that CD147 is a leukocyte surface molecule which contains at least two bioactive domains. Triggering of CD147 by specific ligands induces signal transductions and lead to the regulation of leukocyte functions. This information may lead to the development of new strategy or new drug for regulation of immune responses. In addition, by using a generated monoclonal antibody, he has also uncovered a novel leukocyte surface molecule. By the 8th Human Leukocyte Differentiation Antigen (HLDA) Workshop held in Adelaide, Australia, December 2004, this molecule was defined as a new leukocyte surface molecule, named CD298. This is the CD molecule discovered by Thai researchers.

In addition, Professor Kasinrerak has utilized and applied the produced monoclonal antibodies for development of high performance

immunodiagnostic kits for several diseases. Recently, he has developed a novel non-flow cytometric method for enumeration of CD4⁺ lymphocytes. In stead of using a flow cytometer, the method requires only an automatic hematoanalyzer (Complete Blood Count or CBC machine). This method is therefore an alternative for enumerating CD4⁺ lymphocytes for assessing HIV/AIDS patients, particularly in limited-resource countries. In collaboration with Associate Professor Dr. Chatchai Tayapiwatana and Professor Suthat Fuchareon, he has developed an immunochromatographic strip test for rapid screening of α -thalassemia 1 carriers. The developed method is simple and need no sophisticated equipment and is suitable for screening and ruling out of α -thalassemia 1 carrier in the mass populations. The developed immunodiagnostics have now already transferred to a private company for commercialization.

