



## Opening Speech from Head of The Institute for Research and Community Service IPB University

Assalamu 'alaykum warahmatullah wabarakaatuh,

Honorable Speaker  
Participants  
Ladies and Gentlemen

Indonesia's biodiversity is the second largest in the world after Brazil. There are more than thirty thousand types of flora spread from Aceh to Papua. Of these thousands of species, 940 of them have medicinal properties and have been widely used in traditional medicine and passed down from one generation to another by various ethnic groups or tribes in Indonesia. This means that there is still a lot of Indonesia's biodiversity, especially flora, which has not been explored yet.

Exploration of Biodiversity to find alternative medicinal plants as herbal medicine is an important agenda that is encouraged to optimize the potential of Indonesia's biodiversities. In 2008 the government declared "Jamu Brand Indonesia" as a form of government attention and support in the utilization of Jamu as traditional medicine and wants herbal medicine to be used in doctor's prescriptions. Therefore, the government through the Ministry of Health is determined to make herbal medicine the host of traditional medicine in its own country through Minister of Health Regulation No. 003 of 2010 concerning Herbal Medicine Scientification which is a government breakthrough program.

Scientification of Jamu is scientific evidence of herbal medicine that is built through evidence-based research. In contrast to traditional herbal medicine, which proves its efficacy based on empirical evidence as well as testimonials, for modern herbal medicine, proof of efficacy should be based on scientific studies ranging from in silico, in vitro tests, in vivo/preclinical tests and clinical trials. In Indonesia, herbs that have proven efficacy preclinically are categorized as "standardized herbal medicines" and herbs that have clinically proven efficacy are categorized as "phytopharmaca". With the exploration of biodiversity and the scientification of Jamu, it is hoped that methods to modernize herbal medicine can be developed, so that Indonesia's role in utilizing biodiversity to face global challenges is getting bigger. One of these global challenges is health-related issues, where one of the goals is to create ideal and precision medicines. The era of technology 4.0 directs the application of Artificial Intelligence (AI) to perform optimizations in all aspects, including in the health sector, one of which is related to drug discovery (search for drugs) or drug repurposing (searching for new drug properties).

The drug discovery process is also influenced by a paradigm shift from the original single target single component to multi target multi component. The single target single component paradigm reduces the complexity of the disease to be represented by a target protein. Furthermore, a screening process for active compounds is carried out in accordance with the target protein of the disease. In fact, disease is associated with complex biological processes involving many target proteins. Therefore, a new multi-target multi-component paradigm was introduced by building a network of interactions between compounds and proteins, for further analysis.

The Tropical Biopharmaca Research Center of IPB (TropBRC) as one of the leading centers of national science and technology seeks to support the government's efforts in exploring biodiversity and conducting scientific or modernization of Jamu. TropBRC follows up the modernization of herbal medicine by proposing a new, comprehensive approach, based on the Multi Target and Multi Component paradigm and enriched by analysis using AI, in silico, and metabolomic analysis to explore Indonesian plant biodiversity that can be used as candidate herbal formulas for certain diseases. Therefore, to share this paradigm we organize a Summer Course entitled Herbal Medicine: Utilization Biodiversity through Bioinformatics and Metabolomics Approach.

Finally, by saying Bismillahirrahmaanirrahim, I open this summer course.

Thank you

Wassalamu 'alaykum warahmatullah wabarakaatuh