

PSWC2023

"From Oriental Wisdom to Next Generation Therapeutics"

The overall title of PSWC 2023 is **"From Oriental Wisdom to Next Generation Therapeutics"**. First, the overall objective of PSWC2023, mentioning the meaning of "Oriental wisdom" will be explained.

Concerning the overall title of PSWC 2023:

Oriental wisdom-based medicine is based on empiricism and aims to improve the entire organism of each patient, *i.e.*, **"personalized medicine"**, by considering the complex biological system as a whole. It has developed differently from Western medicine, which involves direct intervention at the site of disease. In the same way that the multiple components of crude drugs used in Oriental medicine have been clarified one by one at the molecular level through the development of science, and the action mechanism of crude drugs has been clarified, the mechanism of maintaining homeostasis in complex biological systems and the mechanism of pathogenesis caused by its breakdown have been clarified through the recent development of science, and the development of new drugs for the identified therapeutic targets and the development of new drugs for the identified therapeutic targets have been promoted. In addition to the discovery of new drugs and the development of new formulations for identified targets, new modalities of treatment have been developed. At the same time, the use of machine learning / AI is necessary to utilize the vast amount of **"information"** obtained from research, as well as the vast amount of **"information"** obtained from patient medical record and real-time measurements. Machine learning / AI is a deductive approach based on empirical theory to reach conclusions, and in this respect, it can be seen as having similar characteristics to Oriental wisdom. By incorporating an inductive approach to the conclusions obtained by this deductive method (*i.e.*, by providing a theoretical foundation to the data obtained by statistical analysis), new medical developments are expected. In order to contribute to the maintenance of health and better medical care for people around the world through the development of the field of pharmacy, we would like to create a programme that will attract the interest of not only pharmaceutical science researchers but also pharmacists and pharmacy educators.

Structure of Scientific Programme

For convenience, the programme has been divided into five tracks, but since there are many points of contact between research areas within the pharmaceutical sciences, there will be some overlap in content between the tracks. In particular, as mentioned above,

"personalized medicine" and "information science", which are related to the general title "Oriental Wisdom," will be a common theme among all tracks. As for the overlap of contents between tracks, I have given specific examples in "**(#) Notes** " after the explanation of Tracks A ~ E.

Explanations on Tracks A ~ E

Track A: Cutting-edge pharmaceutical technology

Pharmaceutical technology is an important driving force to advance human health. The emerging pharmaceutical technologies are involved in the rapid development and employment of nanoparticle vaccines to control the COVID-19 pandemic. This symposium will focus on current and future developments in pharmaceutical technology including smart delivery systems such as nanomedicines and micro/nanorobots, functional materials, microfluidics, biological products, 3D printing of tissues and dosage forms, machine learning, artificial intelligence and automation innovation to speed up drug development and manufacture.

Track B: Drugs in our body and patient safety

Advances in various analytical techniques enable quantitative analysis and prediction of drug efficacy and toxicity expression in humans. In fact, individual differences in drug responsiveness and analysis of omics data have revealed determinants and predictors of pharmacokinetics and drug sensitivity, as well as disease-causing genes. In addition, new biomarkers (e.g., Tumor Infiltrating Lymphocytes (TIL), circulating cells, exosomes, microbiomes) are useful to understand the progression of cancer. In addition, if the molecular mechanisms leading to the expression of drug effects from the interaction between drugs and target molecules are clarified, it will be possible to quantitatively predict drug effects and toxicity in humans by using systems-biology/pharmacology methods. Furthermore, experimental models of cellular systems have been developed to accurately predict drug efficacy and toxicity expression. In Track B, we will discuss not only the above topics but also the latest research results on pharmacokinetics, which is the basis of drug reactivity.

Track C: Information Science and Emerging Technology

The meaning of information is broad and includes data obtained from patients as well as experimental data that has been accumulated up to now. Therefore, this session will cover a wide range of areas related to information science and emerging technology. Examples of data analysis involving patients include the development of wearable devices that detect physiological functions and their application to ultra-rapid diagnosis, and the analysis of the real

world data (e.g., healthcare records, insurance claims, registries) to identify adverse drug reactions. On the other hand, AI drug discovery (e.g., design of small molecular drugs and antibodies) based on the analysis of target protein structures and compound binding modes is an example of the analysis of a large amount of data that has been accumulated so far. In addition, theranostics, which is a coined word of therapeutics and diagnosis, is used to visualize tumor site information. In Track C, we will discuss the latest research results related to the above items.

Track D: Future medicines for better life

Medicines are no longer limited to the conventional forms like small molecular drugs, but expand to a large scope including cells (e.g., CAR-T), subcellular components (e.g., exosomes), microbes (e.g., oncolytic virus), proteins, nuclear acids, and gene editing machinery, as well as a combination of any of them (e.g., exosomes derived from CAR-T). Vaccine technologies, currently used for the treatment of COVID-19, may be also applicable for the treatment of other diseases such as cancer. The technoscientific revolution in medicines will continue, and future medicines could emerge in every possible form, even in the hardly recognized forms by current standards. The span between the present and future is getting shorter and shorter. Exemplified by genome editing and CRISPR-Cas9, a "future" has partially become a reality. Simultaneously, regulatory sciences for the development of new technologies need to be discussed. Track D will give a glimpse of them.

Track E: Promoting Medicines for Society

In order to achieve the FIP's goal of global human health, it is necessary to ensure accessibility of drugs, especially in limited resource areas, and to build a sustainable healthcare system. Furthermore, it is necessary to develop drugs for non-communicable diseases as well as for prevailing and emerging infectious diseases. On the other hand, in order to realize better medical care, research by pharmacists, who are the interface between society and medicine, and the practice of science-based pharmacotherapy must be enhanced. In Track E, we will also discuss the education at universities and graduate schools and lifelong education of pharmacists who can achieve these goals.

(#) Notes: Regarding the overlap of content between tracks.

For example, there are descriptions of vaccines in Tracks A and D. However, Track A focuses primarily on technologies of drug delivery and formulation, while Track D focuses on biological applications. In addition to Track E, research conducted by pharmacists can also be found in Track C if the content is related to drug repositioning. The ISPC will review the submitted

symposium proposals and ultimately decide which Track the submitted symposium proposals will be classified under.