



ON-SITE BIOLOGY COLLOQUIUM

Friday, 3 Nov 2023 | 4 pm | LT32

Hosted by Asst. Prof Chae Eunyoung

Map to Block S1A



Recent advances in green biologics for vaccines and protein drugs



By Inhwan Hwang

Pohang University of Science and Technology (POSTECH)

About the Speaker

Inhwan Hwang is Professor at the Department of Life Sciences, POSTECH. He received a bachelor degree at Seoul National University, Korea, PhD degree at UNC-Chapel Hill, and got postdoctoral training at Harvard Medical School. He got a position at Gyeongsang National University in Korea in 1993 and then moved to POSTECH in 1999. He was elected as a member of Korean Academy of Science in 2012. His research interest includes intracellular trafficking and targeting, organelle biogenesis and communication between organelles, and ABA metabolism and signaling in basic area, and production of biologics in plants for development of vaccine, pharmaceuticals and others. He published more than 220 papers and applied more than 60 patents. He also served as an editor and editorial board member in journals including Plant Cell, Plant Cell Reports, Plant Cell and Physiology, Mols Cells, and Journal of Plant Biology. He found several start-ups including BioApplications for translation of basic research outcomes to green biotech in Korea.

Extremely large number of genes have been identified and many of them are now used to produce valuable drugs and biomaterials. Now, it is a routine to produce recombinant proteins (biologics) from genes. Recently, plants gained a great deal of interest as a biologics production system. The idea of producing biologics in plants, so called molecular farming, have been introduced long time ago but the progress has been slow. Now, a few products of green biologics are commercialized as medicine or cosmetics. These include beta-glucocerebrosidase, EGF, pig vaccine against CSFV and human vaccine against COVID-19. Many approaches and tools have been developed for the production of biologics in plants. These include the high-level gene expression system and protein purification system. Many different gene expression vectors have been developed that showed as high as 5 g of protein per kg FW. However, we still need many more examples of success in the production of green biologics-based drugs and vaccines to gain more momentum in this area. At this seminar, I will talk about our effort on green vaccine development and production of recombinant proteins in plants along with the effort to develop various tools for production of recombinant proteins in plants.