

## **Natural products-based chemical biology for drug discovery**

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Chemical biology based on forward/reverse chemical genetics is a new research paradigm that accelerates drug development and the functional analysis of genes and proteins. Diversity of small molecules is one of the most important points to facilitate the success of chemical biology. As such, we have been screening two types of chemical libraries: a natural products library and a synthetic chemical library. After identifying bioactive small molecules, their modes of actions and targets are investigated using a chemical biology-based approach. Recent major projects in our laboratory are as follows:

1. Advanced chemical biology research for establishing system chemotherapy in order to cure multi-factorial diseases; *e.g.* cancer, immunodeficiency, diabetes, and neuronal diseases.
2. HCS (high-contents screening) and HTS (high throughput screening) for identifying useful small molecules (bioprobes).
3. Natural product chemistry for mining novel bioactive small molecules.
4. Biosynthetic studies of natural products and their application to combinatorial biosynthesis.

In this symposium, our recent results on new natural products regulating apoptosis and angiogenesis will be presented.