

# Investing in the future of drug discovery

Osaka University's International Drug Discovery Incubation Group opened its doors to drug discovery researchers in western Japan in April 2011, providing access to high throughput technologies including Tecan's Freedom EVO® liquid handling workstations and Infinite® M1000 microplate reader.

In Japan, Osaka has been known as the city of medicine since the 17<sup>th</sup> century. The chemical industry, helped particularly by pharmaceutical companies, is today the most lucrative of Osaka's industries and shows great promise for future growth. This setting is ideal for the International Drug Discovery Incubation Group at Osaka University's Office for University-Industry Collaboration to serve as a shared-use facility funded by the Japan Science and Technology Agency (JST). The Group's primary purpose is to accelerate collaborative research between academia and industry by directly supporting the drug discovery research activities of universities and businesses throughout the Kansai region of Japan.

Dr Yoon-Jeong Kim, Leader of the International Drug Discovery Incubation Group, explained how the thinking behind much of the Group's strategy stems from the pharmaceutical industry's 'gap issue'.



Dr Yoon-Jeong Kim



Osaka University's International Drug Discovery Incubation Group

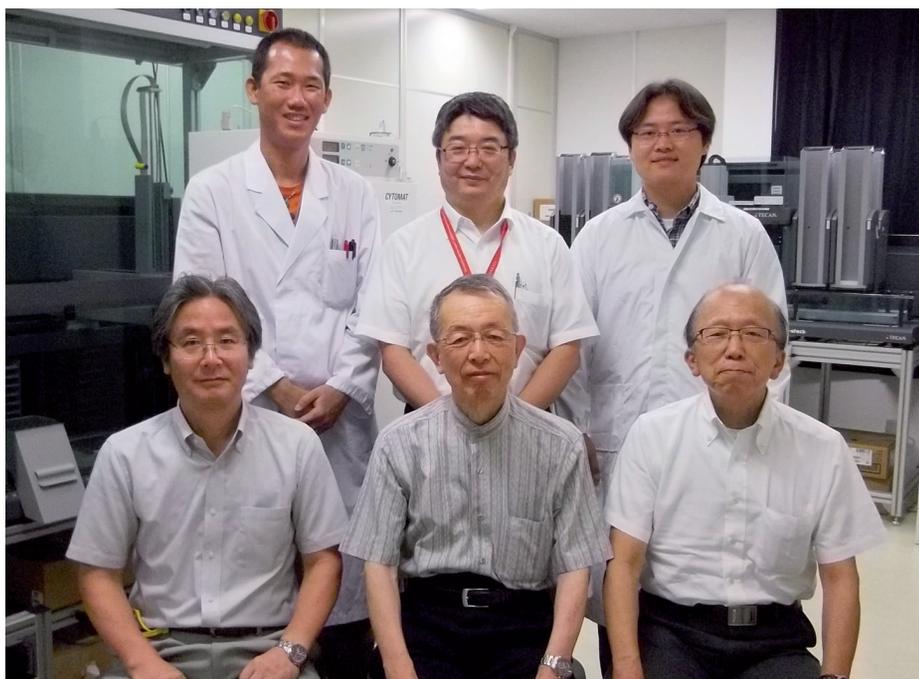
"The whole process from hit discovery to final drug-to-market was traditionally handled within a pharmaceutical company. It would routinely take 15 to 20 years for a new target to be developed into a drug which would have a 25 year patent, resulting in the actual trading life of 10 years for that drug. In the early 2000s, an average candidate success rate was only one in ten thousand. As a result, pharmaceutical companies began to focus their activities on the later phases of drug development, to help them recover their investment more quickly. At the same time, they tried to extend the period of the patent of drugs that were already on the market by changing the drug formulation."

"Universities continued to work on early stages of drug discovery and the discovery of new targets, but a gap between this work and the later development phases performed by pharmaceutical companies began to widen. As a result, there are very few new

candidates coming through the drug discovery portfolio. With a rush of patents having expired around 2010, many companies are now struggling to maintain a steady stream of business revenue."

"This gap is a big problem throughout the pharmaceutical industry which must be addressed. We are tackling this issue head on by furnishing our laboratories with a variety of modern, high throughput instruments and employing methods that traditionally only pharmaceutical companies would have used."

The Group has two Freedom EVO workstations: a Freedom EVO 100 used mainly for plate replication, and a custom-configured Freedom EVO 200 equipped with a Liquid Handling Arm, an integrated incubator, a Tecan Carousel HS™ for microplate logistics, a plate washer, and an Infinite M1000 microplate reader. This system is fitted with a



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Steering committee members of the International Drug Discovery Incubation Group. Front row, left to right: Dr Toshimasa Yasuhara, Dr Hachiro Senoo, Dr Zenichi Terashita. Back row, left to right: Dr Kazuto Nunomura, Dr Yoon-Jeong Kim and Dr Bangzhong Lin

## New approach – dealing with drug discovery

A strategy to fill the gap between new targets and preclinical drug discovery



HEPA filter because many users are performing cell-based assays which require aseptic conditions. Plates are transferred automatically to the Infinite M1000 to collect the data for some assays, but both the reader and the plate washer can be used independently, even while the Freedom EVO 200 is performing unrelated tasks.

Dr Kim added: “These instruments are very popular, and are being used almost every day. Many scientists who use our facilities are performing high throughput (HT) methods for the first time and, as an organization dedicated to supporting research, we provide a substantial amount of specialized training as required. We teach various techniques from how to process compounds and set up cell-based assays to data collection, and we train researchers so that they can independently perform HT methods themselves. In reality, this probably forms the bulk of our work.”

Dr Kim had already had positive experience of working with Tecan’s liquid handling workstations from his earlier career in a major pharmaceutical company: “I remembered many strong advantages for using Tecan and I knew these would also be relevant for our Group here. Tecan has a lot of experience in the types of applications we were looking for. We wanted a HT robot that allows many tasks to be performed by a small number of people, and Tecan’s Freedom EVO workstation was chosen as a platform to fulfill this concept. We were confident that the Company and its instruments would be a good fit for our laboratory. Tecan’s technical staff members are constantly in touch to support us and ensure that the instruments are working as efficiently and reliably as possible.”

He concluded: “In the future, we plan to develop our group with the addition of more instruments that would benefit researchers

who use the Incubation Group’s facilities. Clearly, if we stick to the old ways of doing things, we will inevitably meet difficulties. There are always processes that need new techniques to push them forward and, with a broad range of innovative instruments, we are working to build a set-up that will do just that.”

To find out more on Tecan’s Freedom EVO liquid handling workstation, visit [www.tecan.com/freedomevo](http://www.tecan.com/freedomevo)

To find out more on Tecan’s Infinite M1000 microplate reader, visit [www.tecan.com/infinitem1000](http://www.tecan.com/infinitem1000)

To find out more about the International Drug Discovery Incubation Group at Osaka University, visit [www.uic.osaka-u.ac.jp/JST/index.htm](http://www.uic.osaka-u.ac.jp/JST/index.htm) (Japanese)