



# STEM CELL ADVANCES FOR BETTER PERSONALIZED MEDICINE

ONE OF CHINA'S LEADING STEM CELL BANKS is on a mission to boost precision medicines.

## The collection and cryopreservation of stem cells

for use in future treatments is the core of the stem cell industry. Since Beike Biotech was founded in Shenzhen in 2005, it has earned a reputation as one of China's leading stem cell repositories, having assembled an impressive team of stem cell specialists and with an eventual goal of being able to store more than 1.7 million tubes.

Storing stem cells involves a sequence of steps that begins with sample collection in hospitals and spans the transportation and manufacturing processes, until the samples are placed in a tank of liquid nitrogen. The complex process demands great technical expertise and strict quality control, explains Cheguo Cai, the company's chief scientist.

One notable advance at Beike Biotech, according to Cai, is its freezing medium, which can be stored or transported at room temperature. This eliminates the need for pre-cooling before cell storage, reducing turnaround time whilst boosting efficiency.

The company's protocols are rigorous, explains Cai. "We have around 60 patents and have adopted 580 standard operating procedures and 740 quality control records for each sample to be stored," he says. "Now that we have a better understanding of stem cells, we are ready to apply the knowledge gained from the bench to drug development and use it to inspire more real-world impacts."

During his time leading a lab at Wuhan University, Cai focused on human breast organoids, three-dimensional tissue cultures derived in vitro

from stem cells, which mimic the biological features of the breast. When Cai sought a partnership with Junyuan Hu (formerly known as Xiang Hu), Beike Biotech's founder, the two scientists came up with an idea to develop patient-derived organoids (PDOs) for use as an in vitro model system.

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Often patients with malignant tumours must choose between treatment options — such as radiotherapy, immunotherapy or cell therapy — partly because each person responds differently to treatments. Now, scientists

at Beike Biotech are using their expertise in stem-cell based discoveries to enable personalized medical decisions.

Using breast cancer stem cells or tumour tissues from patients, they were able to culture PDOs in just 10 days, which mimic the biological characteristics of primary tumours. This may help clinicians to screen drugs and predict patients' responses to therapeutic regimens.

The development of PDOs is one example of the company's rich innovation pipeline. A number of candidate PDOs are due for release in late 2022. "We are committed to improving human health with the breadth of PDOs, as well as our expertise and capabilities in stem cell-based discoveries, and we are confidently planning more partnerships and recruitments," Cai adds. ■

▲ (Images, from left to right) The Beike Biotech building in Shenzhen, China; Cheguo Cai (seated) with some of his team; The company's goal is to store more than 1.7 million tubes of stem cells.

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