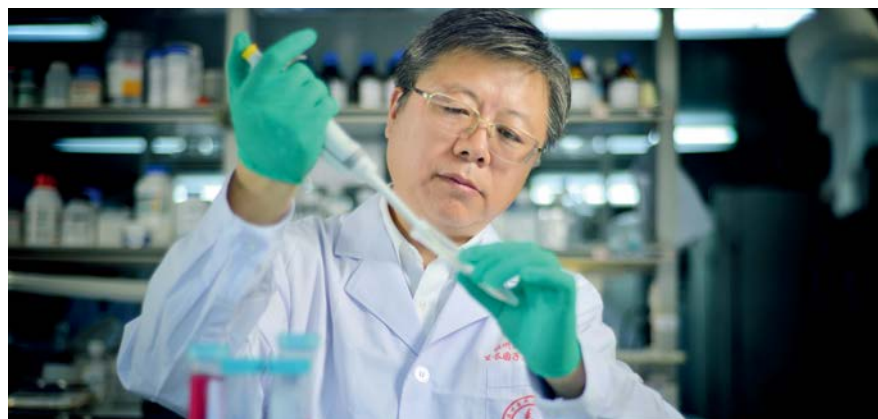


NEW FACTORS IN DRUG DESIGN SUCCESS



Li Xiaokun, the president of WMU, leads a team that pursues drug discovery exploiting the power of FGFs.

Growth factors (GFs) constitute a large and versatile family of signalling proteins that govern cell growth, division and survival, and therefore have great potential as therapeutics. At Wenzhou Medical University (WMU), researchers in the School of Pharmaceutical Sciences are spearheading basic GF research, and the development of novel biological drugs.

Formally established in 2001, the WMU School of Pharmaceutical Sciences offers a comprehensive programme, encompassing clinical pharmacy, traditional Chinese medicine, biopharmacy and medicinal chemistry. The school has gathered a large research team focusing on fibroblast growth factors (FGFs), a family of polypeptide growth factors crucial to a plethora of vital functions in development, metabolism, tissue homeostasis and wound repair. Guided by its leading professor, Li Xiaokun, the team has developed programmes on biological drug development, intervention and target therapy for metabolic and cardiovascular diseases, medicinal chemistry and new drug design, regenerative medicine and material preparation, clinical pharmacology and toxicology, drug analysis, and metabolomics.

Research by the FGF team has led to a series of novel drugs, including three Class I drugs (rb-bFGF®, rh-bfgf®, rhaFGF®) and one Class III medical device (FGF+ Collagen). These novel drugs have provided a safe and effective tool for wound repair and tissue regeneration, improving on traditional, anti-infection-based treatments.

These breakthroughs stem from theoretical research on growth factors and explorations of new mechanisms and functions of FGFs. Li's team was the first to resolve the crystal structure of the ternary complex, consisting of the ageing suppressor, α -Klotho, FGFR1c, and FGF23, a key hormone that regulates metabolic and physiological functions. This work, published in *Nature*, uncovered the structural basis for

understanding how α -Klotho interacts with the endocrine FGFs, opening up new avenues for structure-based drug design.

Their earlier work revealed that FGF21 lowers blood glucose, regulates lipid metabolism, and increases insulin sensitivity by regulating the expression and secretion of adiponectin, a protein that regulates glucose levels. Clinical trials of the use of FGF21 in treating diabetes are underway.

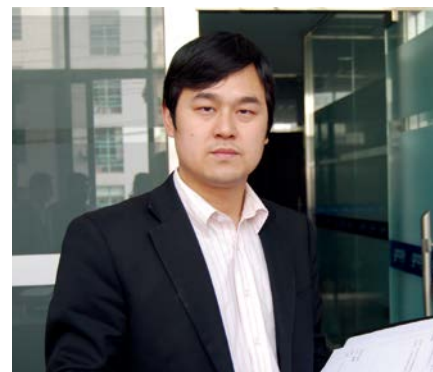
The team's biological research discoveries have promoted the development of FGF drugs for metabolic diseases and won WMU prestigious awards, including the first and the second prizes at the National Science and Technology Advancement Awards, and the National Technology Invention Awards.

FGF research has boosted the development and reputation of WMU's pharmaceutical sciences. The school has also established innovative teams for protein drug technologies, and new drug development for inflammatory diseases. Housing the Zhejiang Provincial Key Laboratory of Biotechnology and Pharmaceutical Engineering, Zhejiang Provincial Engineering Laboratory for Growth Factor Drug Development and the National Engineering Research Center for Genetic Engineering Drugs, the school has lab space of more than 8,700 square metres, and many advanced instruments, including 600MHz NMR spectrometers.

Its research strength has also been growing. The pharmacology and toxicology discipline was ranked among the global top 1% in the Essential Science Indicators.

The school is integrating industry, research, education and medical care, having built multiple translational medicine platforms with its affiliated hospitals and other partnerships. With 70-plus awarded patents and a strong translational focus, many of its inventions are licensed. In 2018, its aFGF gels and KGF-2 eye drops, which were licensed for RMB 10 million each, were approved for clinical trials.

The school has established close partnerships with world-renowned universities, including New York University and the University of Queensland. It was the first in China to launch an undergraduate pharmacy programme for international students. ■



Liang Guang

Dean, WMU School of Pharmaceutical Sciences

“ WE HAVE AN EXCELLENT TEAM FOR PROTEIN DRUG RESEARCH. BY INTEGRATING INNOVATIVE RESEARCH WITH DRUG DISCOVERY, LEVERAGING OUR HOSPITALS AND INDUSTRIAL PLATFORMS, AND FOSTERING PHARMACEUTICAL TALENT, WE ARE BUILDING A FIRST-CLASS PHARMACY PROGRAMME IN CHINA. ”