

# Joint efforts for healthy ageing

**Shanghai University is advancing interdisciplinary research on biomedicine to combat ageing-associated diseases.**

The pace of global population ageing is accelerating. By 2030, 1 in 6 people will be 60 years or older, and diseases associated with ageing are a top research priority. The School of Life Sciences at Shanghai University has had an excellent history of biomedical research since it was founded in 1958. It's renowned for breakthrough achievements by scientists such as Yinglai Wang, known for pioneering work on synthesizing insulin. The school is now tackling ageing-associated issues with interdisciplinary collaborations.

"We have built up three research areas: biomedicine, material biology, and brain science, across basic and translational studies to combat ageing-associated diseases," says the school's dean, Robert Chunhua Zhao, a professor of cell biology.

The interdisciplinary environment is fostering frontier scientific research. Changsheng Liu, the university's president and a member of the Chinese Academy of Sciences, is a leader in new biomaterials. He has developed a variety of active bone tissue repair materials and technologies, including self-setting calcium phosphate cement to treat fractures, worn joints, osteoporosis and other bone defects, used more than 240,000 times across 500 Chinese hospitals.

Researchers are also focusing on mechanisms behind different ageing-associated problems. Zhao is the president of the International Society on Aging and Disease and his team focuses on tissue engineering using small molecule technologies and cellular therapy, and is undertaking

a National Key Research & Development Project in this field. Scientists at the school have also made breakthroughs in investigating the potential of the actin-binding protein L-plastin (LPL) as an anabolic therapy for bone loss, the effect of the NF- $\kappa$ B ligand-receptor stimulating factor signaling pathway to regulate bone formation, and the role of the *ATP11B* family in degenerative disease. Junjie Xiao has led a team in studies to reveal that non-coding RNA — a genetic motif — regulates the death of heart muscle cells through an enzyme (DDX17).

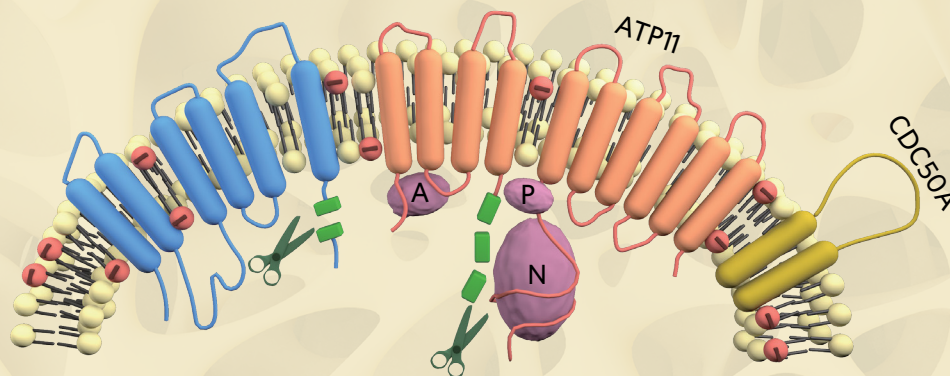
Aike Guo, a biophysicist and neuroscientist, and a member of the Chinese Academy of Sciences, is making discoveries in brain science and brain-like intelligence. Using deep sequencing, imaging and machine learning technologies,

Guo focuses on understanding the genetic control of learning and memory, which has a great impact on the creation of brain-like chips and brain-computer interfaces.

The university has also established a new platform to develop innovative drugs for ageing-associated diseases. Their animal model facility supports the discovery and assessment of new drugs using flies and mice, as well as large animals. The chemistry facility supports the identification, purification and chemical design of active components from traditional Chinese herbs. The antibody facility provides nano-array technologies for developing new antibody-based therapies against cancer. So far, several drugs developed by this platform are undergoing clinical trials, including Danshensu, also known as 'salvianic acid A', the main active ingredient in *Salvia miltiorrhiza*.

"We are committed to responding to various ageing-associated problems with scientific research and biomedical innovation. Scientists at our school are free to explore their interest, and we provide them with excellent academic foundation and resources," says Zhao.

He welcomes innovative young scientists who want to forge a career in Shanghai. ■



**Shanghai University scientists found that the function of ATP11 proteins is associated with neurological diseases that impair vision and movement.**