This creation of the body will "elevate the status of the MOST in the national science and technology enterprise", says Cong Cao, a science-policy researcher at the University of Nottingham in Ningbo, China.

To streamline the ministry's policymaking, some of its current administrative tasks – such as allocating budgets in agriculture, ecology and environmental protection, and public health – will be handed to other ministries. This could result in some cost savings and prevent duplication of research efforts, says Cao. The work of attracting talent from abroad will also move to be under the Ministry of Human Resources and Social Security.

Funding boost

Science and technology funding is also expected to continue to rise. The government's expenditure on research and development is projected to reach 328 billion yuan (US$48 billion) in 2023 – an increase of 2% on 2022 levels, according to a draft budget report. Overall, China's spending on R&D has increased from 2.1% to more than 2.5% of gross domestic product (GDP) over the past five years. At a press briefing, Wang emphasized that investment in basic research will need to expand.

Researchers expect this funding will flow principally to areas in which China faces increasing pressure from the United States and other Western countries. These include AI, big data, energy storage, semiconductors, biotechnology and the clean-energy transition.

The choice of delegates to the two sessions demonstrates the importance of these technologies, say researchers. The heads of e-commerce firm Alibaba and tech platform Tencent have attended previous meetings. This year saw leaders of the AI software company SenseTime, the semiconductor manufacturer Hua Hong Semiconductor and representatives of chip design, automobile and battery firms. This reflects a "clear change of the focus of the country's innovation policy", says Zhang.

China's emphasis on home-grown technology raises questions about its openness to collaboration, says researchers. Some are concerned that no country can achieve self-reliance in the current global economy. "It's pretty unrealistic to expect different countries to be able to develop totally sovereign technological bases," says Scott Moore, a political scientist at the University of Pennsylvania in Philadelphia.

Jing says the increased emphasis on self-reliance will restrict international research collaborations in certain areas. Moore notes that, despite China's focus on security and competition in recent years, the Chinese research community has so far continued to welcome international collaboration. But, he adds, he is not sure that the non-Chinese academics who engage in these collaborations will be given the same access as they have in the past, especially on technologies deemed sensitive.

GIGANTIC MAP OF FLY BRAIN IS A FIRST FOR A COMPLEX ANIMAL

Fruit fly 'connectome' could lead to a deeper understanding of neurological diseases.

By Miryam Naddaf

Scientists have generated the first complete map of the brain of a small insect, including all of its neurons and connecting synapses.

The research, published on 9 March in *Science*, provides a brain-wiring diagram known as the connectome of a complex animal for the first time – the fruit fly *Drosophila melanogaster* (M. Winding *et al. Science* **379**, eadd9330; 2023). The map shows all of the 3,016 neurons and 548,000 synapses that were tightly packed in a young *Drosophila*'s brain, which is smaller than a poppy seed.

The map is a milestone in understanding how the brain processes the flow of sensory information and translates it into action. "Now we have a reference brain," says Marta Zlatic, a neuroscientist at the University of Cambridge, UK, and co-author of the paper. "We can look at what happens to connectivity in models of Alzheimer's and Parkinson's diseases and of any degenerative disease."

Until now, the only connectomes to have been mapped were those of the worms *Caenorhabditis elegans* and *Platynereis dumerilii*, and the larva of the sea squirt *Ciona intestinalis*. *Drosophila* was an ideal model for connectome studies, because scientists have already sequenced its genome, and the larvae have transparent bodies. Fruit flies also exhibit sophisticated behaviours – including learning, navigating landscapes, processing smells and weighing the risks and benefits of an action. "Its size is manageable for current technology," says Chung-Chuan Lo, a computational neuroscientist at the National Tsing Hua University in Hsinchu, Taiwan.

EYE OF SCIENCE/SPL

The fruit fly *Drosophila melanogaster* is an important model organism.

"If you had asked me in the Eighties, when the *C. elegans* work was being done, about this project in the fruit fly, it would have been impossible," says Albert Cardona, a neuroscientist at the University of Cambridge and co-author of the paper.

The authors spent a year and a half capturing images of the brain of a single six-hour-old *Drosophila* larva with a nanometre-resolution electron microscope. Using a computer-assisted programme, they then pinpointed the neurons and synapses and spent months manually checking them.

The team identified 3,016 neurons, 93% of which were paired with a partner neuron in the opposite brain hemisphere. Most of the unpaired neurons were Kenyon cells, key neurons in the learning and memory centre.

The researchers then traced the twisting connections of each neuron and annotated 548,000 synapses, which could be grouped into four types. "This is really time-consuming and labour-intensive," says Kei Ito, a neuroscientist at the University of Cologne, Germany.

The wiring diagram showed that the insect's brain was multilayered, with pathways of varying lengths connecting brain inputs and brain outputs.

It is "a nice, nested structure", says Michael Winding, a neuroscientist at the University of Cambridge and co-author of the paper. But some of the brain networks have shortcuts, skipping layers. The authors suggest that such shortcuts increase the brain's computational capacity and compensate for the limited number of neurons.

The team also found that 41% of the brain neurons form 'recurrent loops', providing feedback to their upstream partners. These shortcuts and loops resemble state-of-the-art artificial neural networks that are being used in artificial-intelligence research. "It's interesting that the computer-science field is converging onto what evolution has discovered," says Cardona.