

# FINDING NOVEL SOLUTIONS TO CHILDHOOD DISEASES

Through clinical teamwork, biobanks and resource sharing, a hospital in Guangdong is **FOSTERING INNOVATIVE WORK TO TRANSLATE RESEARCH INTO NEW TREATMENTS.**

**Guangzhou Women and Children's Medical Centre (GWCMC) in China** is a major hub for women's and children's healthcare. It is fostering innovation and international cooperation, while also blending medical practice and groundbreaking research.

The 2,400-bed hospital is a referral centre providing tertiary services in obstetrics, gynaecology, neonatology, paediatrics and paediatric surgery. In 2022 it treated 4.3 million outpatients, conducted 91,000 surgeries and delivered 28,000 babies.

Rated among China's top 100 hospitals, the medical centre holds 4th place nationally in paediatric surgery, and 6th place in paediatric internal medicine.

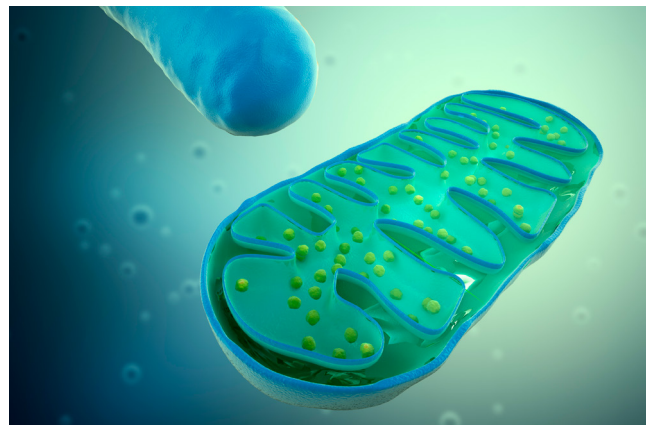
GWCMC is also the home to the School of Pediatrics at Guangzhou Medical University, where it runs a paediatrics residency and specialist training programme for future medical leaders.

**RESEARCH PROJECTS LIKE THESE ENABLE GWCMC TO COLLABORATE WITH MAJOR GLOBAL INSTITUTIONS.**

## DECODING SECRETS

The centre's big advantage is that through clinical teamwork, biobanks and resource sharing, it fosters collaboration between basic researchers and clinicians that leads directly to treatments.

Researchers at GWCMC recently shed light on mitophagy



▲ Research at Guangzhou Women and Children's Medical Centre (top) has shed light on the role of mitochondria (bottom) in Kawasaki disease.

— a cellular process for clearing out damaged mitochondria, the cell's energy producers. A team led by immunologist Yuxia Zhang, has studied Kawasaki disease (KD), which can cause dangerous bulges in the blood vessels of children's hearts.

The researchers discovered that levels of MCM8, a protein critical for vascular health through mitophagy regulation, fall in children with KD who develop coronary aneurysms.

Genetic variations in MCM8 reduce its mitophagy capacity, hinting at a genetic predisposition to vascular issues, explains Zhang, a finding which offers a promising pathway to

tackling vascular complications in KD and related conditions.

"Mitophagy is a major quality control pathway that removes unwanted or dysfunctional mitochondria and plays an essential role in vascular health," report authors, including Zhang, in *Nature Cardiovascular Research*<sup>1</sup>.

A further team at the Reproductive Maintenance and Reconstruction Research Centre, led by Wei Li is exploring the phenomenon of 'parental sacrifice', and asking why parents of many species prioritize their offspring's success over their own well-being.

"It is an example of altruistic behaviour that parents increase

the fitness of progeny at the expense of their own fitness," noted the researchers in *Science Bulletin*<sup>2</sup>.

To explain this, they turned to the concept of 'parental investment', whereby parents channel resources into their children to ensure their own genes are passed on.

The team argue that autophagy, a cellular process whereby cells break down old parts, provides the molecular basis for parental investment.

In mammals, autophagy steps up during reproduction — effectively reallocating resources from parents to offspring during reproductive processes.

## GLOBAL OUTLOOK

Research projects like these have enabled GWCMC to collaborate with 15 major global institutions.

One initiative is a partnership with the Children's Hospital of Philadelphia, that has resulted in training courses for 58 paediatric professionals across China.

Meanwhile, Guangzhou continues to attract global clinicians and researchers, with its unique advantages in large-scale disease cohorts, detailed clinical and biological data, and its dedication to children's health and treatment. ■

## REFERENCES

1. Lin, M. et al. *Nat Cardiovasc Res.* **2**, 778-792 (2023).
2. Liu C. & Li W., *Science Bulletin* **68**, 1350-1352 (2023).



www.gzfzcx.com