

# SINGAPORE NATIONAL ACADEMY OF SCIENCE YOUNG SCIENTIST AWARDS 2021

## BIOLOGICAL & BIOMEDICAL SCIENCES CATEGORY

### **Dr Sarah Luo**

Principal Investigator, Institute of Molecular and Cell Biology, Agency for Science,  
Technology and Research

Adjunct Assistant Professor, Department of Physiology, National University of Singapore  
Yong Loo Lin School of Medicine

### ***“For her research in the neural circuit underpinnings of appetite regulation”***

Dr Luo's research focuses on brain regulation of feeding behaviour and the implications of its impairment in metabolic disorders like obesity and diabetes. Her work brings together neuroscience and metabolic research, to understand how the brain and body interact to control whole body metabolism.

Dr Luo has discovered a novel region in the brain, the tuberal nucleus, that regulates feeding behaviour and uncovered its signalling pathway leading to food consumption. When this brain region was activated in mouse models, it led to increased food consumption even when mice were not hungry. Furthermore, together with Dr Luo's colleagues at IMCB, they discovered the same brain region contributes to excessive feeding in defined environments. This pioneering research has challenged the existing notion that only two groups of neurons in the brain control feeding behaviour and demonstrated that environment also plays a part in regulating feeding. Dr Luo and her team are also working further to establish a link between this brain region and metabolic dysfunction in neurodegenerative disease, as many such diseases have a metabolic component and show feeding dysregulation symptoms. Further studies in understanding bidirectional communication between the brain and body could contribute new translational approaches to help patients affected by feeding dysregulation and metabolic disorders.

Dr Luo's team is building up expertise and inter-RI collaborations under A\*STAR's Brain-Body Initiative, using multiomics approaches and advanced imaging to identify critical neural circuits, as well as uncovering their contributions to metabolic regulation and feeding behaviour. Dr Luo is also an Adjunct Assistant Professor at the Department of Physiology at NUS Yong Loo Lin School of Medicine, and collaborates with one of its research groups. These research initiatives and collaborations contribute to understanding feeding behaviour and the conditions that lead to increased food intake, which is key to tackling the increased prevalence of obesity and metabolic disorders worldwide.

Dr Luo has mentored and trained over 20 young scientists. She is also actively involved in scientific outreach to promote science, technology, engineering and mathematics (STEM) in youths and encourage gender diversity in science. She is the Events Director for the Society for Neuroscience-Singapore Chapter, and organises events and symposiums to promote neuroscience research locally. She participated in the A\*STAR Scientist in School programme, 2019 STAR Lecture, and was a judge in the National Science Challenge 2021.

Dr Luo is a recipient of the 2021 National Research Foundation Fellowship, the 2019 National Medical Research Council Young Individual Research Grant (YIRG) and the National Science Scholarship. She has nine peer-reviewed publications with a h-index of 7, including those in Science and Nature Neuroscience.