

MedTech Spectrum

EMPOWERING MEDTECH ECOSYSTEM



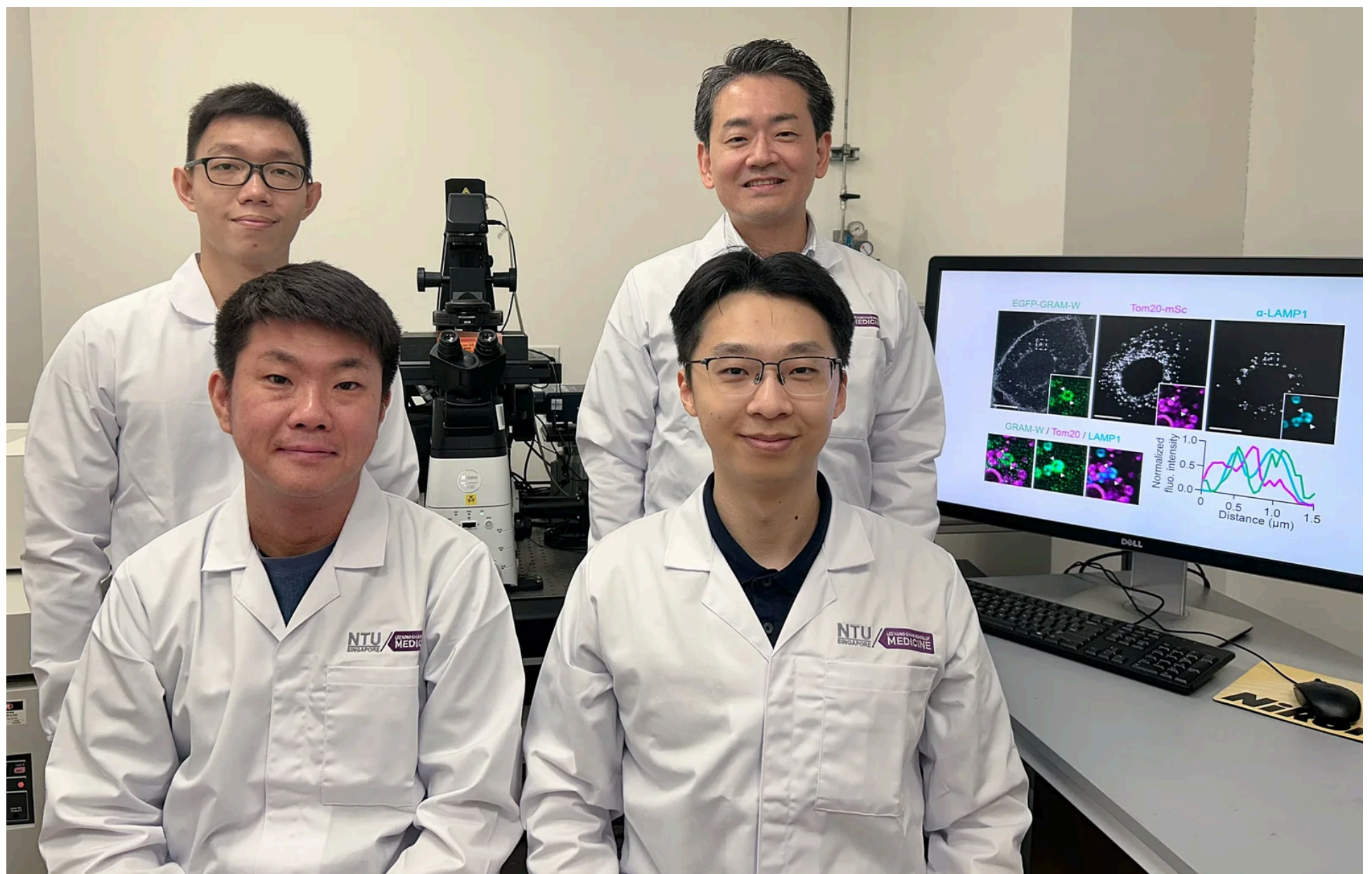
[Medical Devices](#) / [Clinical Trials and Research](#)
/ [NTU Researchers Discover Cholesterol's Role in Protecting Cellular Recycling Centres](#)

NTU Researchers Discover Cholesterol's Role in Protecting Cellular Recycling Centres

 September 29, 2026 | Tuesday | [NEWS](#)

Share:    

The study describes how cells rapidly transport cholesterol to lysosomal membranes when these organelles take in damaged mitochondria



Researchers at Nanyang Technological University, Singapore (NTU Singapore) Lee Kong Chian School of Medicine (LKC Medicine) have identified a previously underappreciated role for cholesterol in protecting lysosomes, the cell's recycling centres, during the breakdown of damaged mitochondria.

Published in *Nature Communications*, the study describes how cells rapidly transport cholesterol to lysosomal membranes when these organelles take in damaged mitochondria. The researchers say the mechanism helps lysosomes withstand the stress associated with digesting large cellular cargo while maintaining the acidic environment required for efficient waste breakdown.

Mitochondria generate energy for cells but become damaged over time. Cells remove these dysfunctional mitochondria through a quality-control process known as mitophagy, in which the damaged organelles are delivered to lysosomes for degradation. Failure of this process has been associated with cellular dysfunction and age-related neurodegenerative conditions, including Parkinson's and Alzheimer's diseases.

Using advanced cellular imaging, NTU Research Fellows Dr Yang Haoning and Dr Koji Matsuhisa, who is now an Associate Professor at Nagasaki University, Japan, tracked the molecular events occurring during mitochondrial degradation.

The study found that when damaged mitochondria reach a lysosome, the enzyme PI4KII α generates the signalling lipid PI4P on the lysosomal surface. This signal recruits oxysterol-binding protein (OSBP), which facilitates the transfer of cholesterol from the endoplasmic reticulum (ER) to the lysosomal membrane.

The researchers also found that cholesterol depletion from the ER temporarily signals the cell to increase cholesterol production, helping maintain the supply needed during the recycling process.

"Lysosomes need to maintain an extremely acidic interior to digest cellular waste effectively. We discovered that as lysosomes take in damaged mitochondria, they reinforce their membranes with cholesterol," said corresponding author Associate Professor Yasunori Saheki, Irene Tan Liang Kheng Chair Professor in Neuroscience at LKC Medicine.

The team further observed that successful digestion of mitochondrial membranes releases free fatty acids. The researchers are investigating how cells manage these potentially toxic lipids, adding another layer to the mechanisms that maintain cellular homeostasis.

The findings provide new insights into how lysosomes maintain their structural integrity and function during mitophagy. The researchers suggest that understanding these mechanisms could contribute to future research into how impaired cellular waste clearance may be linked to neurodegenerative diseases.



Medtech Special



AI can help imaging services do more with existing workforce and infrastructure: Ari Wood

28 Sep 2026 | [Interviews](#)



Glutamine Strategy Shows Early Promise in Extending Survival for Pancreatic Cancer

16 Sep 2026 | [Influencers](#)



AI MedTech's Real Test Begins After FDA Clearance

16 Sep 2026 | [Interviews](#)



Stryker Strengthens Peripheral Vascular Strategy With Amplitude Vascular Systems Acquisition

20 Apr 2026 | [Analysis](#)



Inside Amydis Strategy to Transform Neurodegenerative Disease Detection

24 Mar 2026 | [Interviews](#)



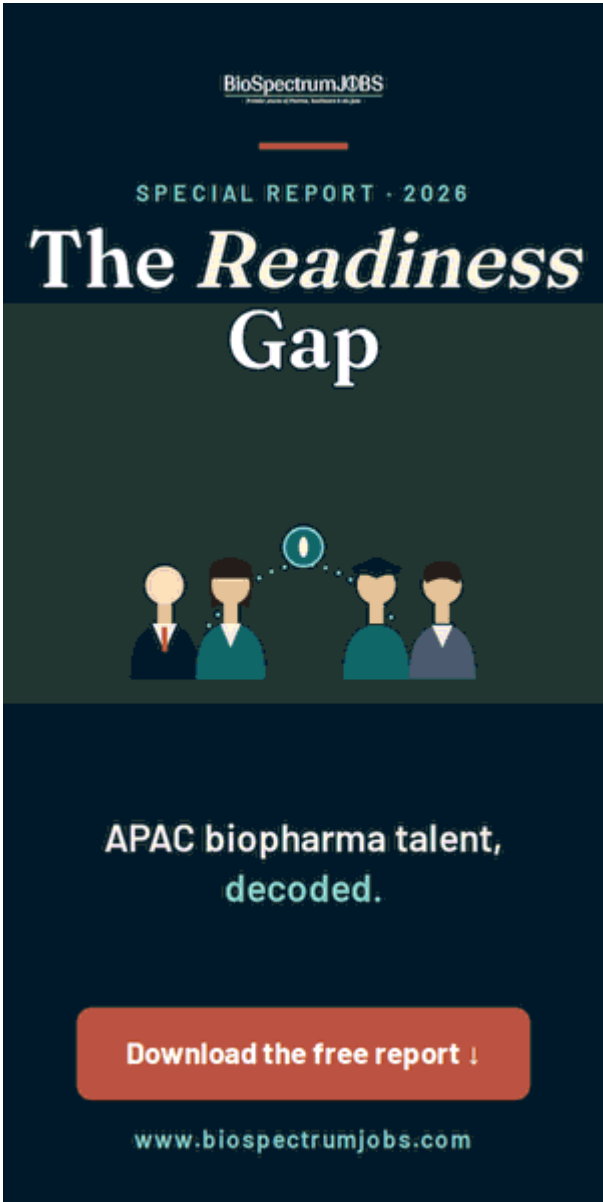
Women Shaping the Future of Digital Health

06 Mar 2026 | [Interviews](#)

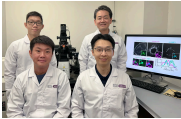


How Carvolix Is Democratizing TAVR and Stroke Care with AI Robotics

24 Feb 2026 | [Interviews](#)



Asia Pacific



NTU Researchers Discover Cholesterol’s Role in Protecting Cellular Recycling Centres

29 Sep 2026 | [News](#)



MIMS Scales Clinical Decision Support and Digital Healthcare Services

28 Sep 2026 | [News](#)



SOLA Japan to Accelerate Development of SOL-257 for ALS with AMED Grant

28 Sep 2026 | [News](#)



Taiwan shifts from MedTech hardware supplier to ASEAN co-innovation partner: Megan Liu

24 Sep 2026 | [Interviews](#)



Singapore deploys first AI-powered head CT model on AimSG for brain bleed detection

21 Sep 2026 | [News](#)

Ferronova reports early MAGMAP results for nanoparticle-guided cancer lymph node mapping

 18 Sep 2026 | [News](#)



Global / International



Zimmer Biomet Reorganises Leadership to Accelerate Commercial Transformation

 10 Sep 2026 | [News](#)

MedTech Spectrum



JAMES ELST
CEO, HIMPLANT
IMPLANT AND PROCEEDURE

Himplant and the Future of Penile Implantable Technology

 08 Sep 2026 | [Interviews](#)



Himplant Receives ANMAT Approval for Cosmetic Penile Implant in Argentina

 03 Sep 2026 | [News](#)



GE HealthCare expands Vivid cardiovascular ultrasound portfolio with three new systems

 31 Aug 2026 | [News](#)



Biosidus Commissions New Bioreactor Plant to Expand Biologics Production Capacity

 27 Aug 2026 | [News](#)



CellCarta

CellCarta Partners with Tempus AI to Advance Oncology Companion Diagnostics

 07 Aug 2026 | [News](#)

Get In Touch

 Ashirwad Bungalow, First floor,
36/A/2, S.No. 270, Pallod Farms,
Near Bank of Baroda, Baner Road,
Pune, Maharashtra, India 411045

 communications@mmactiv.com

 +91-9579069369

Enquiry

Name

Email

Phone

Message

Send Message

Newsletter

Stay connected with us.

your email

SignUp