



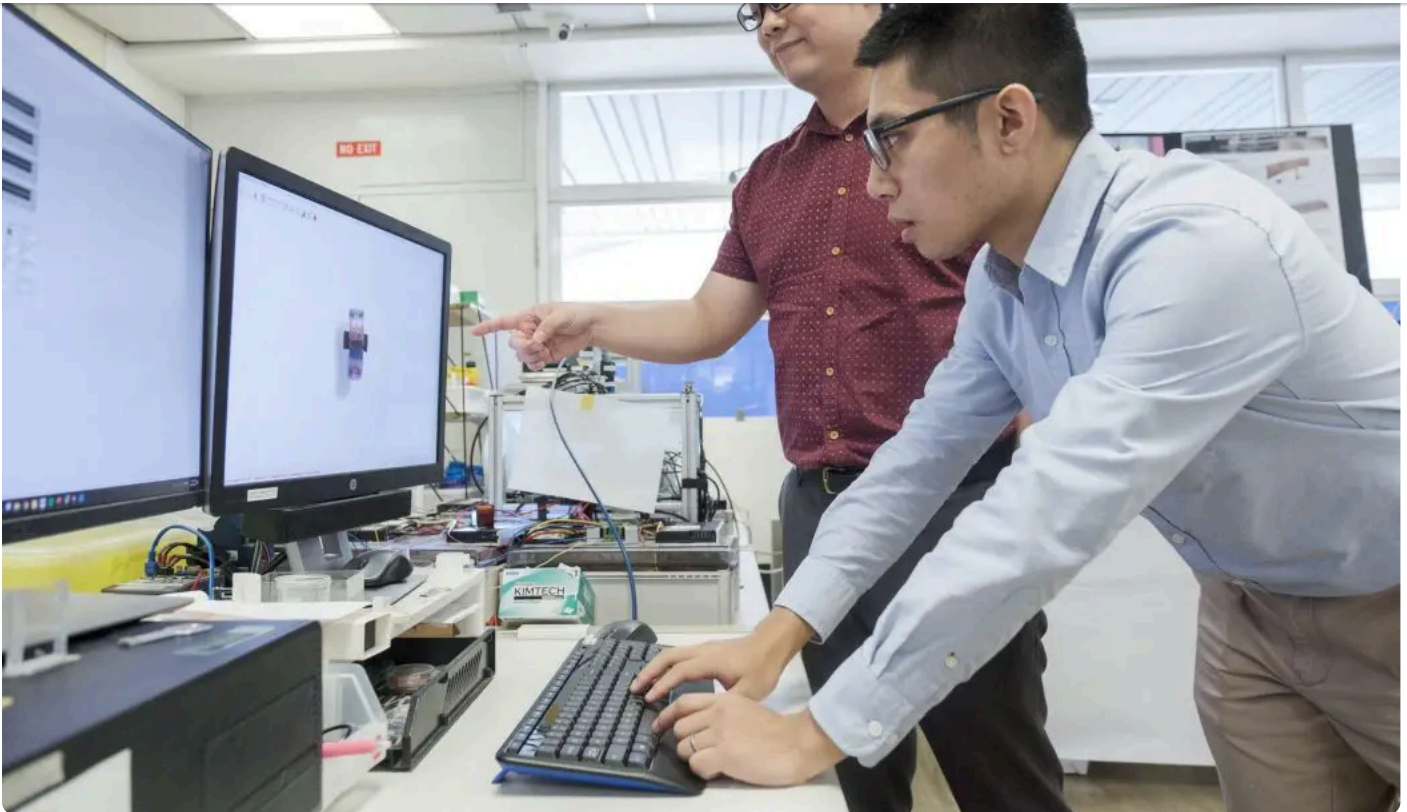
# Scientists develop grain-sized drug courier robots that can treat cancer



by ASTIG.PH 19 hours ago



SINGAPORE – Scientists at Nanyang Technological University, Singapore (NTU Singapore) have created grain-sized soft robots controlled by magnetic fields to advance targeted drug delivery. The innovation, developed by NTU's School of Mechanical and Aerospace Engineering, was detailed in a study published in *Advanced Materials*.



Nanyang Technological University's Assistant Professor Lum Guo Zhan, School of Mechanical and Aerospace Engineering (MAE) and co-author Research Fellow Yang Zilin controlling the miniature robots using magnetic fields

These new robots can carry and release up to four different drugs in programmable doses, surpassing previous small-scale robots, which could transport fewer drugs and lacked reprogrammable functions. The robots can roll and crawl with dexterity, navigating complex environments within the body. Initial lab tests showed they can release drugs with high precision while minimizing leakage, making them a promising tool for precise treatments like cancer therapy.

The team is currently working on making the robots smaller for use in treating conditions like brain tumors and bladder cancer.



The grain-sized robot was created using smart magnetic composite materials (magnetic microparticles and polymer) that are non-toxic to humans and can transport up to four different drugs

#### FAQ:

Q: What is the main innovation from NTU Singapore scientists?

A: They developed grain-sized soft robots controlled by magnetic fields for precise drug delivery.

Q: How do these robots improve on existing drug delivery systems?

A: They can carry up to four different drugs and release them in programmable orders and doses, offering greater precision.

Q: What materials are the robots made of?

A: They are made of smart magnetic composite materials that are non-toxic to humans.

Q: How do the robots move within the human body?

A: They can roll and crawl, allowing them to navigate complex, unstructured environments.

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What are the potential medical applications of this technology?

A: The robots could be used for precise drug delivery in treatments for conditions like cancer, brain tumors, and bladder cancer.

Q: What are the next steps in this research?

A: The NTU team plans to further evaluate the robots using organ-on-chip devices and animal models.