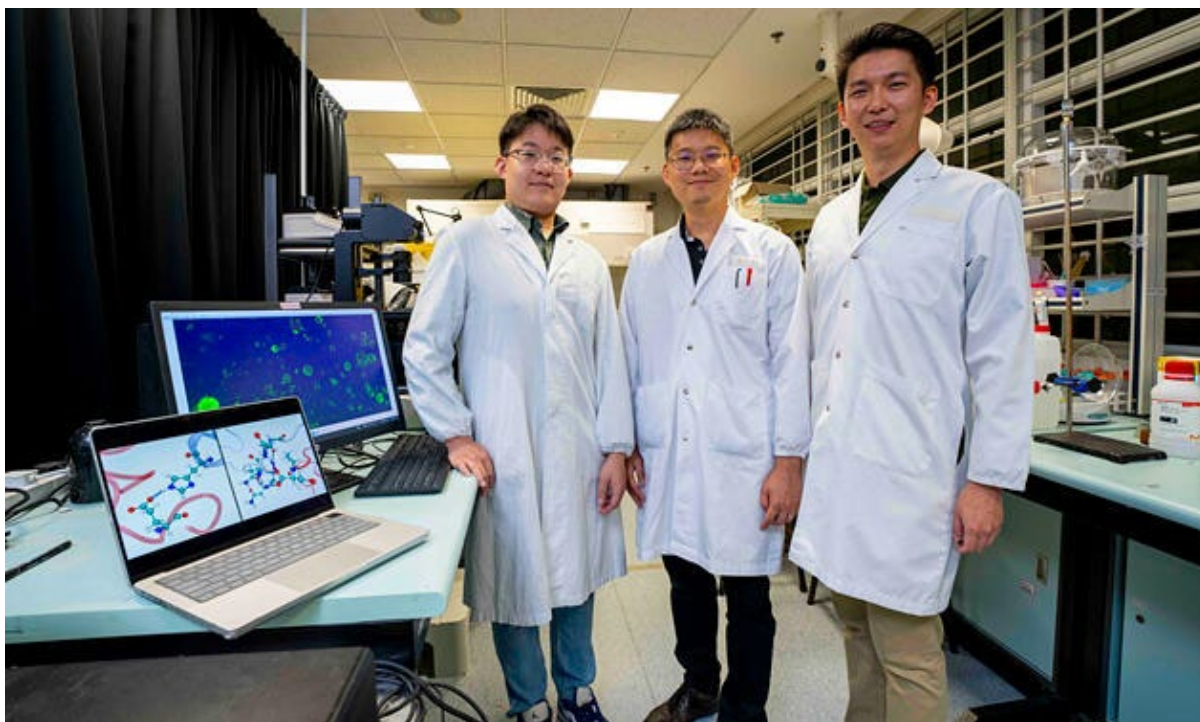


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Translated from Japanese

### Singapore develops versatile drug delivery system inspired by caterpillar skin

Scientists at Nanyang Technological University (NTU) in Singapore announced on April 30 that they have developed a versatile drug delivery system inspired by the self-assembling proteins found in caterpillars. Their findings were published in the journal Nature Nanotechnology.



Associate Professor Yu Jing (centre) of NTU's School of Materials Science and Engineering. (Source: NTU).

Molecules that self-assemble to form complex structures are commonly found in nature. For example, the outer covering of insects, known as the cuticle, is known to be rich in self-organizing proteins. NTU scientists have harnessed the self-organizing ability of proteins in the cuticle of the Asian corn borer (*Ostrinia furnacalis*) to create nano-sized capsules that can be used to deliver drugs or messenger RNA (mRNA).

Corn borer caterpillars live in areas from China to Australia and cause damage to corn crops. The cuticle on the head of the caterpillar protects the caterpillar and gives it

unique mechanical properties. The scientists analysed the proteins in the cuticle and identified three peptides that have the potential to self-assemble into hollow nanocapsules. They also created synthetic versions of the natural self-assembling peptides found in the caterpillar, dissolved them in water, and added acetone to form spherical hollow nanocapsules within 10 minutes. A patent is currently pending for this technology.

"To the best of our knowledge, this is the first time that peptide nanocapsules have been fabricated without a template," said Yu Jing, an associate professor at NTU's School of Materials Science and Engineering. "Our peptide nanocapsules may open up a variety of potential biomedical applications, including drug delivery and gene therapy."

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