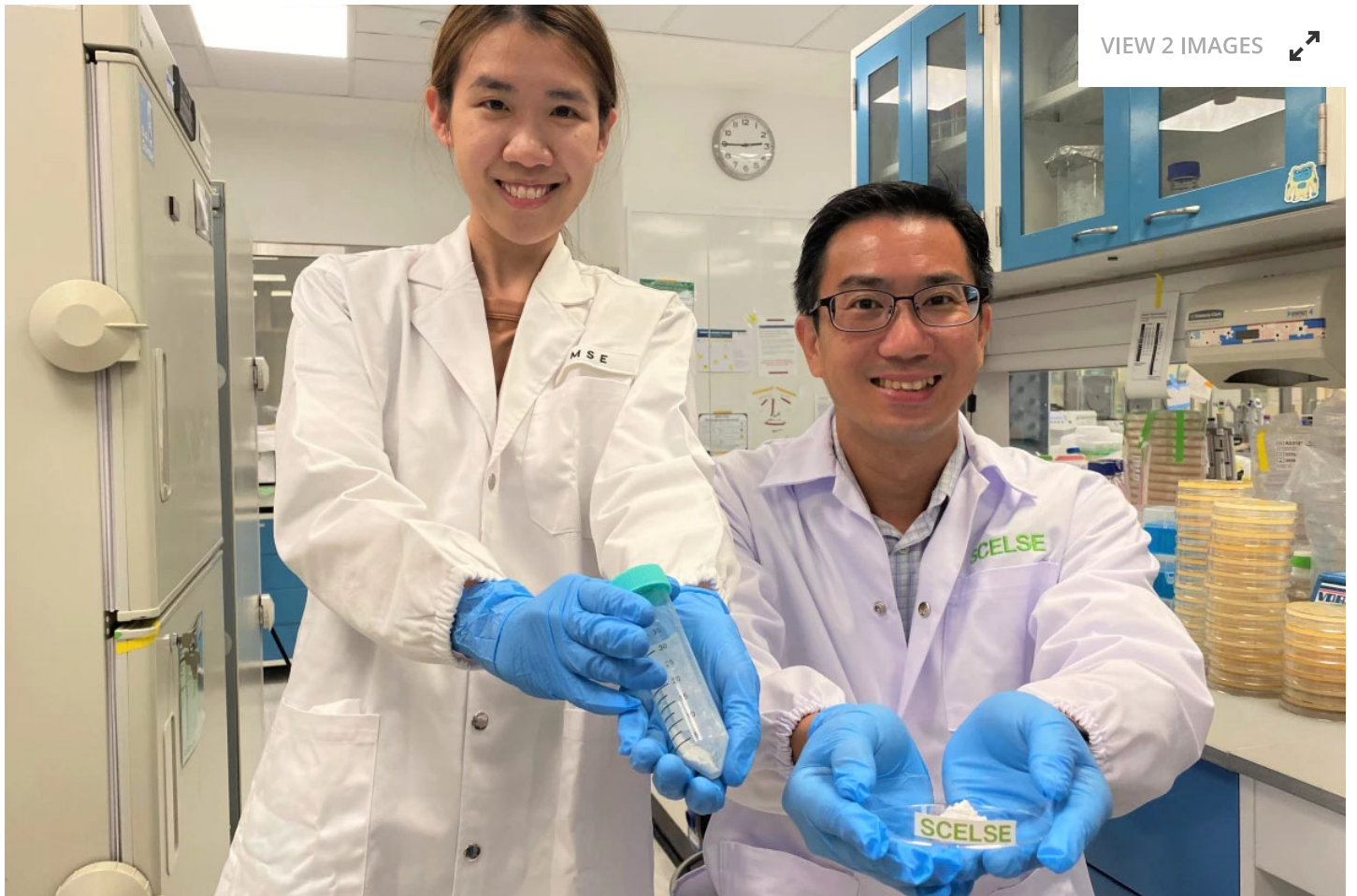


HEALTH & WELLBEING

Algae-derived coating gets probiotics safely past the stomach

By Ben Coxworth
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PhD student Tan Li Ling (left) and Assoc. Prof. Joachim Loo, with their coated bacteria powder NTU Singapore

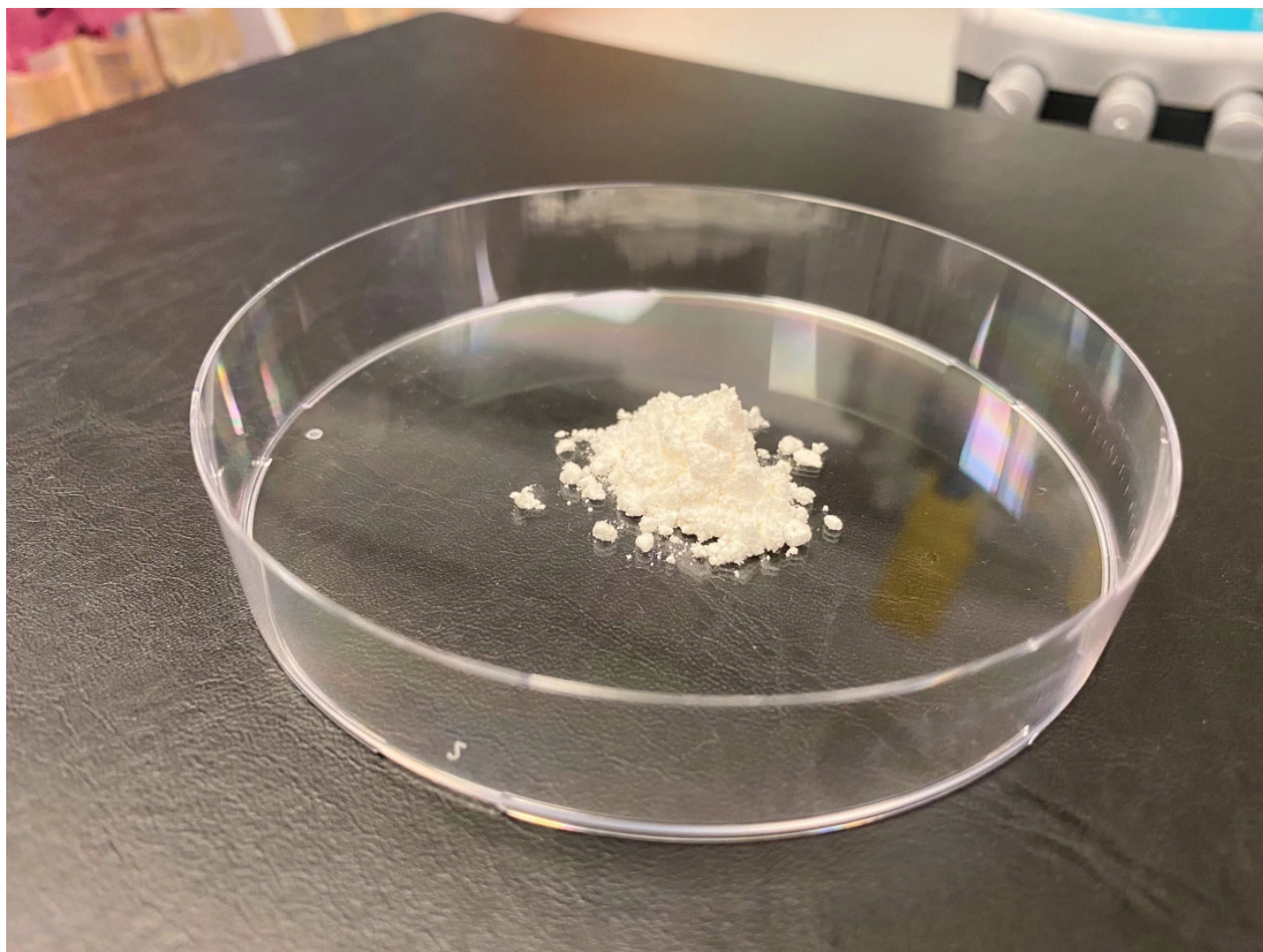
While live probiotic bacteria produce many health benefits when ingested, the microbes have to get past your stomach and into your intestinal tract in order to be effective. An experimental new algae-based coating could soon help them do so.

Among [other things](#), probiotics are claimed to boost the immune system, reduce inflammation, and treat conditions such as diarrhea and irritable bowel syndrome.

Unfortunately, when the bacteria are consumed in supplements or foods such as yogurt, many of them fall victim to harsh stomach acids before they can reach the intestines. In fact, according to scientists at Singapore's Nanyang Technological University, the *majority* of probiotics die off in this manner within 30 minutes of reaching the stomach.

In an effort to address that problem, the researchers started by cultivating *Lactocaseibacillus* probiotic bacteria, washing them in a salt solution, then coating them with alginate, which is a non-toxic carbohydrate derived from brown algae. Sugars were added to the alginate – to protect the bacteria during the coating process – along with calcium ions, to keep the coating from degrading in liquid environments.

Via a subsequent [spray-drying](#) process, the coated live bacteria were rendered into a powder that remains viable for up to eight weeks when refrigerated. By contrast, existing probiotic drinks typically have to be consumed within about seven weeks.



The alginate-coated bacteria remain alive for up to eight weeks when refrigerated NTU Singapore

When the probiotic powder was tested in a simulated human digestive tract, the coating allowed all of the microbes to survive exposure to stomach acids, so they could reach the small intestine. Once they were there, phosphate ions (which are naturally present in the intestines) caused the coating to break down, releasing the bacteria.

The scientists are now developing the probiotics delivery system further, which will include exploring its use with other types of probiotic bacteria.

"This technology is highly versatile, as the coated probiotics can be incorporated into many different product types, including dietary supplements and pills, food and beverages, and even animal feeds," said PhD student Tan Li Ling, first author of the study.

A paper on the research, which is being led by Assoc. Prof. Joachim Loo, was recently published in the journal *Carbohydrate Polymers*.

Source: [Nanyang Technological University](#)

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Probiotics and skin care : youth focus

Costa Kapnias, South African Health Review

Probiotics and skin care : youth focus

Costa Kapnias, South African Pharmaceutical and Cosmetic Review, 2012

Methods for improving survival of probiotics against harsh environments

Hati Subrota et al., International Journal of Fermented Foods, 2015

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Makoto Hashizume, Cyborg and Bionic Systems, 2021

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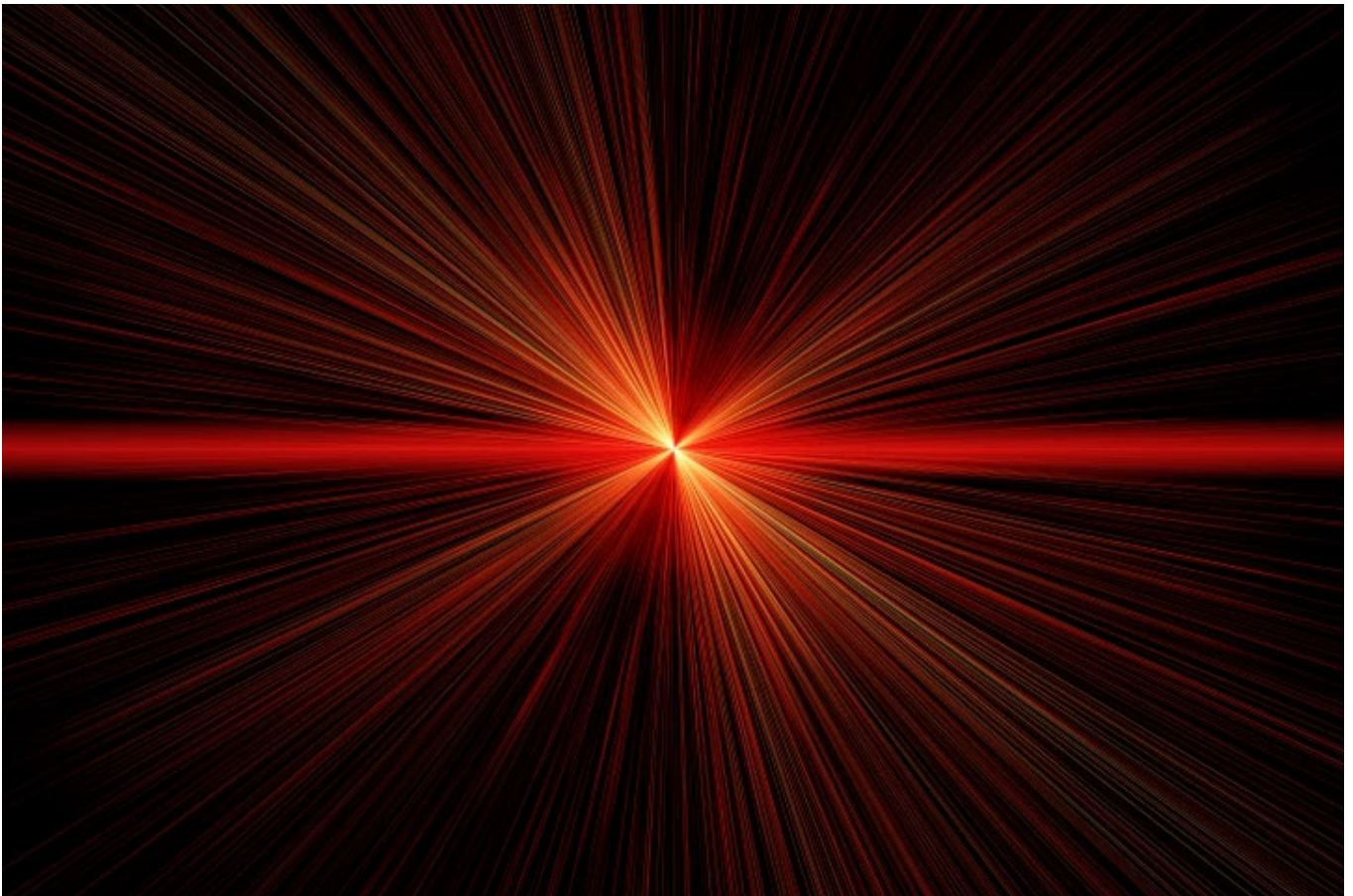
NO COMMENTS



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Based out of Edmonton, Canada, Ben Coxworth has been writing for New Atlas since 2009 and is presently Managing Editor for North America. An experienced freelance writer, he previously obtained an English BA from the University of Saskatchewan, then spent over 20 years working in various markets as a television reporter, producer and news videographer. Ben is particularly interested in scientific innovation, human-powered transportation, and the marine environment.

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