

Sugar-to-Fiber Enzyme for Healthier Food

In collaboration with Kraft Heinz, Wyss scientists have created a micro-encapsulated enzyme product that can convert sugar to gut-healthy fiber in the human gut

Want to help make sugar healthier?

We are seeking partners and collaborators to help de-risk this technology and spin it out into a startup.

Platforms: Bioinspired Therapeutics and Diagnostics, Living Cellular Devices

Team Leads

[Donald Ingber](#) [James Collins](#) [David Weitz](#)

Key Features

- Enzyme product can convert sugar to fiber in the human gut
- Product can be added to existing food recipes and manufacturing techniques without modifying sugar content
- Reduces the amount of sugar absorbed into the bloodstream without sacrificing taste, mouthfeel, and other properties

The Problem

Sugar is delicious, but it's not good for our health. The Wyss Institute's sugar-to-fiber enzyme product converts sugar to fiber in the human gut, reducing the amount of sugar absorbed into the bloodstream without sacrificing the taste and texture of real sugar. Credit: Shutterstock /

Marie C Fields

The average American eats [60 pounds](#) of sugar a year, most of that from highly processed and refined foods that are linked to obesity, diabetes, heart disease, and other debilitating conditions. Many sugar alternatives are on the market to try to reduce this disease burden, but these alternatives often fail to reproduce sugar's positive effects on foods, like their flavor, texture, and browning.

Our Solution

Our team of researchers have created a product inspired by enzymes found in plants, which convert sugar to fiber. This enzyme has been engineered to only activate when it encounters a rise in pH, such as that which occurs in the transition from the human stomach to intestine. Crucially, this product can be incorporated into existing food recipes without modifying their sugar content, but reduces the amount of sugar absorbed into the bloodstream.

Product Journey

In 2018, Kraft Heinz executives came to the Wyss Institute with a seemingly impossible problem. The company had committed to reducing the total amount of sugar in its food products by more than 60 million pounds by 2025, and it wanted to find a sugar substitute that would replicate many of sugar's other physical and chemical properties, which are crucial in making foods we love taste, look, and feel good. Wyss Founding Director [Don Ingber](#), M.D., Ph.D.

responded to that challenge with an even crazier idea: what if they didn't have to replace the sugar at all, but just find a way to reduce its harmful effects on the human body?

The Wyss' sugar-to-fiber enzyme is encapsulated into spherical nanoparticles that protect it during food manufacturing processes, then break open in the human gut to release their cargo.

Credit: Wyss Institute at Harvard University

<https://wyss.harvard.edu/technology/sugar-to-fiber-enzyme-for-healthier-food/>

RESEARCH SPOTLIGHTS (December 20, 2022): [Kraft Heinz partners with Wyss Institute to make sugar healthier](#)