

Engineered bacteria could be made into tiny, ingestible gut doctors

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In his lab at Rice University synthetic biologist Jeff Tabor is creating a kind of Lilliputian naval academy. The midshipmen are so small they can't be seen with the naked eye. But they're part of a vital mission to protect U.S. naval forces from internal enemies, ranging from metabolic disorders to anxiety and depression.

In 2014 Tabor received a three-year grant from the U.S. Office of Naval Research (ONR) to genetically modify a harmless species of *Escherichia coli* bacteria normally found in the human gut. The goal is to create an edible probiotic organism that can hone in on developing disease and stave it off, even before symptoms take hold. He has recently succeeded in engineering *E. coli* with sensors that can detect the presence of chemicals signaling disease—at least in the mouse gut.

His ultimate aim is to design “a precision gut bacterium that manipulates the intestinal environment in humans to keep it healthy,” he says. This involves rewiring the genes of *E. coli* to transform the cells into predictable and reliable microbial medics loaded with engineered genetic circuits that can sense specific chemical disturbances and fire off a battery of molecules to neutralize them. The cells would live only a short time in the gut, perhaps six hours or so, “just long enough to do their job,” Tabor says. Then they would die naturally or self-destruct.

Read full, original post: [U.S. Navy Recruits Gut Microbes to Fight Obesity and Disease](#)