

## New protein-making factory promises better medicines

April 22 2016, by Bill Hathaway



A Yale research team has created a mutant protein-making factory in bacteria that churns out proteins containing beta-amino acids, molecules not normally found in nature but capable of creating longer-lasting and life-saving medicines.



The <u>research findings</u>, published the week of April 18 in the *Journal of the American Chemical Society*, are the first to report creation of betaamino acid-containing proteins in a <u>living organism</u>.

Proteins containing beta-amino acids have been prepared before in <u>test</u> <u>tubes</u> but until now could not be produced in cells. The researchers designed a new ribosome, the cell's protein-making mechanism, that could insert a beta-amino acid into a growing peptide chain in bacteria. In theory, a variety of these novel amino acids can be produced and designed with the new system to fulfill a variety of functions.

"As far as we know, this is the first time that a protein containing a betaamino acid has been produced by a cell," said Yale's Alanna Schepartz, the Milton Harris '29 Ph.D. Professor of Chemistry, professor of molecular, cellular & developmental biology and senior author of the paper. "Bacteria that contain these factories may be able to make many unusual, useful new protein- or non-protein polymers—and then optimize their functions."

Proteins containing beta-amino acids possess two properties that could contribute to the creation of longer-lasting and life-saving medicines, said Schepartz. The first is stability: Beta-amino acid-containing proteins are less likely to degrade than those containing only naturally occurring alpha-amino acids, and this difference could translate into many advantages, including less-frequent dosing. The second property is the ability to either enhance or dampen the immune system response by design.

This has the potential to enhance the characteristics of already approved, best-selling antibody- or protein-based drugs by extending their lifespan and preventing damaging immune system response, Schepartz said.



## Provided by Yale University

Citation: New protein-making factory promises better medicines (2016, April 22) retrieved 26 April 2024 from <u>https://phys.org/news/2016-04-protein-making-factory-medicines.html</u>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.