Fighting disease with genetically modified bacteria

Several companies are testing whether engineered bacteria can treat conditions that affect the brain, liver and other organs — and even kill other, harmful microbes. But although US regulators have approved trials of several types of engineered bacteria as a form of gene therapy, questions remain about whether microbes' ability to share DNA with one another will create long-term safety risks.

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Matthew Chang, a synthetic biologist at the National University of Singapore, says that genetically modified bacteria have the potential to treat many types of disease. His group is engineering the gut bacteria Escherichia coli and Lactobacillus to recognize and destroy harmful microbes1.

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In April, Synlogic began a trial of engineered E. coli that make enzymes to clear the toxic build-up of ammonia in the blood of people with metabolic liver diseases.

Another firm, Intrexon of Germantown, Maryland, has altered Lactococcus lactis, a bacterium used in cheese production, to make a protein that protects the outer layers of the skin. One ongoing clinical trial that has enrolled about 200 people with cancer is testing whether an L. lactis mouthwash can prevent oral sores.

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Challenges remain before these engineered bacteria can enter the market. Scientists need a better understanding of how the bacteria interact with the body, [Synlogic executive Aoife] Brennan says, because their effects are less straightforward than those of drugs.

Read full, original post: Genetically modified bacteria enlisted in fight against disease