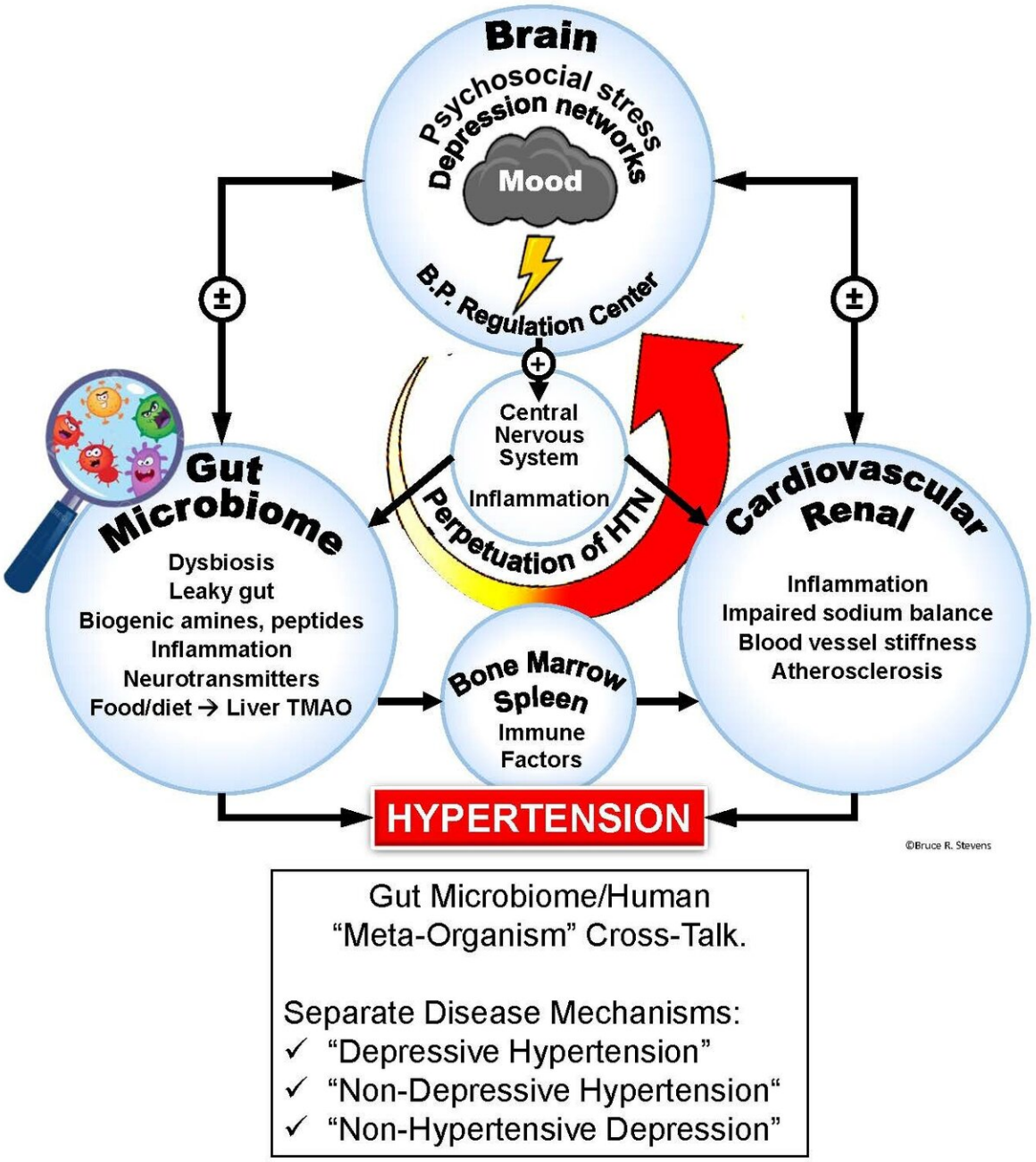
New research suggests gut bacteria may be linked to high blood pressure and depression

September 6 2019, by Bruce R. Stevens



This infographic illustrates the connection between the brain, central nervous system and other organs and how they interact with a person's gut microbes to show different patterns - from people with high blood pressure plus depression; high blood pressure without depression; depression with healthy blood pressure; or healthy subjects without depression or high blood pressure. Credit: American Heart Association

A study of bacteria in the gut identified differences between people with high blood pressure compared to those with high blood pressure plus depression, according to preliminary research presented at the American Heart Association's Hypertension 2019 Scientific Sessions.

"People are 'meta-organisms' made up of roughly equal numbers of human cells and bacteria. Gut bacteria ecology interacts with our bodily physiology and brains, which may steer some people towards developing high blood pressure and depression," said Bruce R. Stevens, Ph.D., lead author of the study and professor of physiology & functional genomics, medicine and psychiatry at the University of Florida College of Medicine in Gainesville, Florida. "In the future, health professionals may target your gut in order to prevent, diagnose and selectively treat different forms of high blood pressure."

Stevens said there's potential for this research to uncover treatment approaches that could improve outcomes in people with treatment-resistant hypertension. Nearly 20 percent of patients with high blood pressure don't respond well to treatment, even with multiple medications.

The researchers isolated DNA (deoxyribonucleic acid, the carrier of genetic information) from gut bacteria obtained from the stool samples of 105 volunteers. They used a new technique involving artificial-intelligence software to analyze the bacteria, which revealed four distinct types of bacterial genes and signature molecules. Surprisingly, the investigators discovered unique patterns of bacteria from people with 1) high blood pressure plus depression; 2) high blood pressure without depression; 3) depression with healthy blood pressure; or 4) healthy subjects without depression or high blood pressure.

Stevens said the results suggest different medical mechanisms of high

blood pressure that correlate with signature molecules produced by gut bacteria. These molecules are thought to impact the cardiovascular system, metabolism, hormones and the nervous system.

"We believe we have uncovered new forms of high blood pressure: "Depressive Hypertension' (high blood pressure with depression), which may be a completely different disease than "Non-Depressive Hypertension' (high blood pressure without depression), which are each different from "Non-Hypertensive Depression,"" Stevens said.

Provided by American Heart Association