

Want a personalized diet to prevent disease? Nutrition scientists are working on it

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You know that phrase "you are what you eat"? Nutrition scientists are

getting to the bottom of what that means with an emerging area of research called precision nutrition.

It's a growing field of study that assumes each person may have unique responses to eating [specific foods](#) and nutrients – and blends data based on genetics, behavior, socioeconomics, environment and eating patterns to potentially develop diets that are personalized to improve [health](#) and help prevent chronic conditions like cardiovascular disease.

"There's no question that diet influences our health and can help prevent disease, but now this science will advance through carefully detailed research and intervention efforts to identify exactly what type of diet is best suited to what type of individual," said Linda Van Horn, one of the many senior principal investigators nationwide who are leading a \$170 million program funded by the National Institutes of Health called Nutrition for Precision Health.

"It's very exciting, comprehensive, and highly likely to change the way diets are prescribed, the way medicine is practiced, and the way life in the future will be addressed as far as promoting healthy eating for all," said Van Horn, professor of preventive medicine at Northwestern University's Feinberg School of Medicine in Chicago.

A recent American Heart Association scientific statement giving dietary guidance to improve cardiovascular health pointed to the future of this new area of research and its potential to provide personalized diets to prevent [heart](#) disease and stroke.

Instead of taking a typical hypothesis-driven approach, precision [nutrition](#) researchers collect data to study an individual's DNA, [gut microbiome](#), metabolism and response to what they eat, and are able to determine how it affects a person's psychological and biological profile, Van Horn said.

While researchers formerly relied exclusively on participants being able to recall what they ate, how much they ate, and how it was prepared, the NIH program will develop algorithms to predict individual response to nutrition and diet.

"Most people can't remember or don't know or have limited ability to recall specifically what they ate, how much they ate, or how it was seasoned or prepared – things that are very important in terms of their influence on health," Van Horn said. Precision nutrition homes in on identifying "specific relationships between what a person eats and outcomes we can measure such as [blood pressure](#), [blood glucose](#) or body weight and any other measures of interest related to prevention of disease."

José M. Ordovás, a professor of nutrition and a senior scientist at Tufts University in Boston, is encouraged by what he considers "the first serious attempt to conquer personalized nutrition."

"I think this is like a seed in order to crystallize the field of precision nutrition," Ordovás said. "This is a priority now."

The new research project is hoping to recruit 10,000 people from NIH's All of Us Research Program, its attempt to build what it says is one of the most diverse health databases in history by signing up participants from all races, ethnicities and economic backgrounds. One of the aims is to attempt to address some of the health disparities caused by structural racism and socioeconomic status.

"It's a sample of people from all over the country so these questions can address matters of diversity, cultural preferences, demographics and other factors that influence dietary choices and biological response across a wide range of individuals," Van Horn said.

But while on some levels precision nutrition strategies could help even the playing field and reduce socioeconomic, racial and ethnic disparities in [cardiovascular disease](#), Ordovás cautioned that personalized approaches could widen health disparities if they are only accessible to small segments of the population.

Because the research is still at early stages with science and research hurdles ahead, Ordovás believes it is critical that precision nutrition technologies be combined with public health strategies when addressing health issues.

"Most of the genetics we know is about white Europeans, so this study starts with the right mindset because it's going to make sure minorities are represented," Ordovás said. "But the next challenge is to make sure that the information generated from this does not benefit a few but is open to everybody, and that requires education on many levels. And one of those levels is to convince people about the advantages of preventive medicine versus traditional reactive medicine."

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