# Developmental Origins of Health and Disease FAQ

**What is the Moore Institute?**
The OHSU Moore Institute for Nutrition & Wellness was founded to confront one of the biggest contributors to chronic disease: poor early life nutrition. The institute's activities are grounded in the science of the *Developmental Origins of Health and Disease*, a body of research referred to by its initials as DOHad (doe-had). This research shows us how to reduce, even eliminate, the incidence of chronic disease in future generations.

**What are chronic diseases?**
These are diseases or health conditions that last a long time, are not preventable by vaccines or medications, and won't disappear on their own. Diabetes, cardiovascular disease and obesity are examples. Chronic diseases are the leading cause of death in the U.S.

**Is the incidence of chronic disease growing?**
Yes, and rapidly. This is a public health crisis. The economic and human costs of chronic disease are significant.

**What does DOHaD research tell us about the origins of chronic diseases?**
This research shows that gene-environment interactions, beginning in the womb, play a critical role in determining an individual's life-long health profile. In other words, our adult health experiences are shaped during the earliest moments of life. Specifically, poor nourishment in the womb increases the chance of developing chronic diseases as we age.

**How is it possible that adult diseases could be determined before birth?**
A fetus has many possible growth patterns at the moment of conception. The pattern depends on nutrition available from its mother and the social stress experienced by its mother. Poor nutrition at critical periods of development alters the structure and function of the body's organs and systems, increasing the vulnerability for adult disease.

**What happens biologically when a fetus is undernourished?**
When a fetus is undernourished it uses the available "fuel" to prioritize the growth of vital body parts, like the brain, by skimping on the growth of other body parts, like the kidneys or muscles. It's a form of biological triage. The organs of people who are undernourished in the womb don't develop to their full biological potential, increasing the chance of a chronic disease later. For example, an adult with a less developed pancreas will likely develop diabetes.

**Does the mother's nutrition *before* conception matter?**
Yes, a mother's diet before conception is as important as her diet during pregnancy. Why? Because a fetus is also nourished from the mother's preexisting body – the protein in her muscle, her fat and the other essential nutrients she stored as a girl,

teenager and young woman. Additionally, the human embryo is responds to available nutrients almost from the moment of conception. As the fertilized egg moves toward the uterus, it “reads” the nutritional environment of the mother's body and begins to chart a developmental path.

**Aren’t adult diseases determined by genetics?**
Not exclusively. The DOHaD research shows us that genes are not a rigid blueprint for health. This is known as epigenetics: where nature meets nurture. Environmental stimuli, including nutrition and toxic stress, affect the expression of our genes and, consequently, our health.

**Malnutrition is not a public health issue in the U.S. So how does the DOHaD model correlate with the increase in chronic diseases?**
While we think of malnourished children being born in the developing world, many babies born in the U.S. and other developed nations suffer from a different form of malnourishment: an excess of calories, lacking in nutrients. Called high calorie malnutrition, this is a marker of a damaging “fast-food” culture focused on highly-processed, low nutrient food. Hunger and food insecurity also play a role in poor nutrition in the U.S.

**Is it too late to change my adult disease profile?**
No. Good choices now can help reduce the probability outcomes associated with fetal disease programming. A person born with a genetic predisposition for, say, asthma, can very literally “switch off” the gene responsible for causing their asthma by eating a healthful diet and a healthy lifestyle.

**What is good food?**
Wholesome nutrition includes whole grains, fruit, vegetables and low-fat sources of protein and minimal amounts of sugars, sweetened drinks and animal-based fats.

**With this knowledge, is it possible to prevent – or vastly diminish – chronic diseases in future generations?**
Yes! A revolution in how we eat, especially among young girls, women of childbearing age and pregnant women, would immediately lead to dramatic improvements. Changing our food culture to make healthy nutritious options the easy choice, will lead to healthier communities, which, in turn, would translate into significant economic benefits for society.

**What role can I play in ending chronic disease?**
With this knowledge comes the responsibility to take action. Spread the word to women who may be thinking about becoming pregnant, make changes to your diet, and your family’s diet, encourage changes to the food culture at your place of business or school and support public policies that support health and help provide access to nutritious food across all income levels.