

The Human Placenta Project

The Human Placenta Project aims to revolutionize our understanding of the placenta and ultimately improve the health of mothers and children.

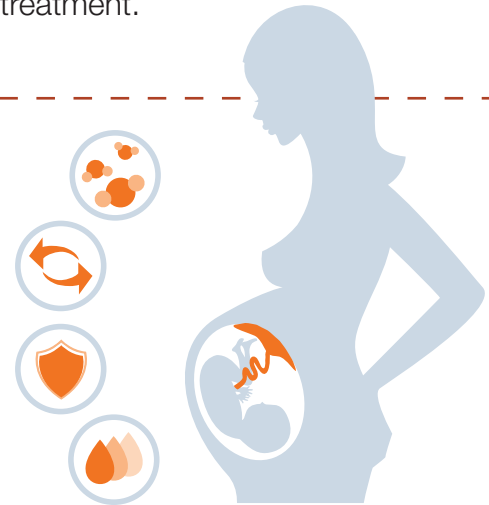
The human placenta is immensely important, affecting not just pregnancy, but lifelong health. Yet it is the least understood, and least studied, of all human organs.

Through the Human Placenta Project, we aim to develop new tools to study in real time how the placenta develops and functions throughout pregnancy. That knowledge may one day help treat, and even prevent, a range of common pregnancy complications, while providing insights into other areas of science and medicine, such as organ transplantation and cancer treatment.

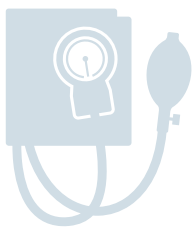
A Closer Look at the Placenta

The placenta has many critical functions, such as:

- ▶ Bringing nutrients and oxygen to the fetus
- ▶ Removing harmful waste
- ▶ Providing immune protection
- ▶ Producing hormones to support fetal development



Problems with the placenta can lead to serious consequences, such as:



Preeclampsia



Gestational diabetes



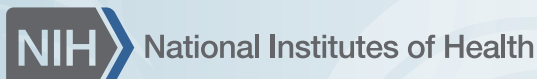
**Preterm birth
and growth restriction**



Stillbirth

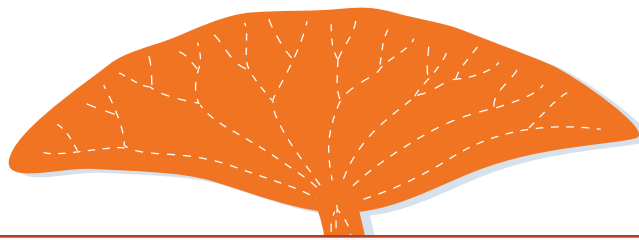


Scientists have many questions about how the placenta develops normally and what causes placental problems. New technologies may make it possible, for the first time, to answer those questions.



Learn more:

<http://nichd.nih.gov/hpp>
NICHDHPP@mail.nih.gov



The Goal

Understand placental development, function, and structure throughout all stages of pregnancy

Our Approach

Develop safe, effective ways to assess placental health in real time

Through the Human Placenta Project, we are interested in exploring the potential of many different methods for placental assessment. That includes new applications of existing tools, as well as emerging technologies still under development.

Examples include:

- ▶ Advanced magnetic resonance imaging (MRI) and ultrasound that enable a more detailed view of the placenta's structure and of blood, oxygen, and nutrient flow
- ▶ New methods to identify components in maternal blood, such as proteins, lipids, or RNA, that reflect the health and function of the placenta

Ultimately, the success of the project relies on collaborations among creative thinkers from many different fields—from obstetrics and placental biology to bioengineering and data science.

Our Work

The National Institutes of Health supports the Human Placenta Project in several ways:



Research funding

To date, the NIH has invested more than \$46 million in this project to support development of safe, noninvasive methods to monitor the placenta and to assess environmental impacts on placental function.



Workshops

The NIH convenes regular gatherings of scientists from diverse backgrounds to share their ideas and expertise and foster innovative research on the placenta.



Partnerships

The Human Placenta Project has elicited global interest. The NIH seeks collaborations with research organizations, professional societies, industry groups, and other funders to advance the goals of the project.



Unlocking the secrets of the placenta may yield tremendous benefits—for science and for health.

