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Researchers unravel the developmental origins of immune disease

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(Medical Xpress)—The ability to predict and implement preventative measures for common diseases, such as diabetes and asthma, even before a baby is born, is one step closer following a breakthrough by University of Sydney researchers, their findings published in *The Journal of Immunology*.

Paper senior author, Professor Ralph Nanan and his team at the Sydney Medical School Nepean have discovered that during pregnancy, important immune cells in the mother and developing baby are highly synchronised, likely through pregnancy-related hormones.

Professor Nanan said their four year study found mothers appear to program their baby's immune system, a concept referred to as fetal immune programming.

"Environmental and genetic factors, by themselves or in combination, program the development of disease, and the first environment we are exposed to as humans is that of our mother's womb," he said.

"Consequently, the concept that what happens to us in utero will influence our health later in life has been supported by several clinical observations. For example, if the mother's nutritional status is low, the baby will have an increased risk of developing diabetes and cardiovascular disease later in life.

"Most common diseases in developed countries, for example, diabetes,

allergies and cardiovascular disease, are associated with some sort of inflammation which is not well controlled by our immune system.

"The capacity to control inflammation is likely to be predetermined in utero. This suggests fetal immune programming is a central mechanism in the developmental origin of disease.

"This process has been poorly understood until now. But our study has discovered the first evidence of a link between the immune systems of mother and baby.

"We have been able to show what happens in the womb with immune system programming and this is likely to have long term implications. Our study makes a major contribution to better understanding the mechanisms involved."

More information: www.jimmunol.org/content/early … nol.1203165.abstract

Provided by University of Sydney

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