

Researchers identify a gene that causes excessive androgen production in polycystic ovary syndrome

April 1 2014, by Frances Dumenci

Researchers from Penn State College of Medicine and Virginia Commonwealth University School of Medicine have found that a specific protein is increased in theca cells, the source of excess male sex hormones, or androgens, that characterizes polycystic ovary syndrome (PCOS). The results of the study will be published in an upcoming issue of the *Proceedings of the National Academy of Sciences (PNAS)* as the journal cover article. The paper will be available in this week's online Early Edition.

PCOS is a common disease affecting 7 percent of reproductive-aged women worldwide. Symptoms of PCOS include increased male sex hormone levels, which cause hirsutism and acne; infertility due to the failure to ovulate; and enlarged ovaries with follicle cysts. In addition, obesity and diabetes are often associated with PCOS.

"There is a consensus that theca [cells](#) of [ovarian follicles](#) are the primary source of excess androgens that characterizes PCOS," said Jan M. McAllister, Ph.D., lead author of the study and professor of pathology and obstetrics and gynecology at Penn State College of Medicine.

Studies conducted over the past decade have built a convincing argument that genetic factors contribute to PCOS. However, despite advances in genetic technologies, few if any PCOS susceptibility genes have been validated. The current study found that an alternative product of the

DENND1A gene, DENND1A.V2, is increased in PCOS theca cells.

McAllister noted, "Prior to our studies, there was no pathophysiological link between DENND1A to reproduction or ovarian function. Our observations suggest that DENND1A is involved in a signaling cascade that subsequently results in increased androgen production."

The study showed that raising DENND1A.V2 in normal theca cells increases the expression of genes that lead to elevated androgen production. It also found that silencing DENND1A.V2 in PCOS theca cells reverts them to a normal phenotype.

"Our findings establish that increased DENND1A.V2 expression is sufficient to promote a PCOS phenotype in human theca cells," said Jerome F. Strauss, M.D., Ph.D., senior author of the study and dean of the VCU School of Medicine. "This information can inform development of diagnostic tests for PCOS based on measurements of DENND1A.V2, and may one day lead to novel therapeutic interventions, including drugs or antibodies that neutralize the action of DENND1A.V2."

More information: Overexpression of a DENND1A isoform produces a polycystic ovary syndrome theca phenotype, www.pnas.org/cgi/doi/10.1073/pnas.1400574111

Provided by Virginia Commonwealth University

Citation: Researchers identify a gene that causes excessive androgen production in polycystic ovary syndrome (2014, April 1) retrieved 31 January 2023 from <https://medicalxpress.com/news/2014-04-gene-excessive-androgen-production-polycystic.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.