

University of Massachusetts Medical School

eScholarship@UMMS

---

UMass Center for Clinical and Translational  
Science Research Retreat

2016 UMass Center for Clinical and  
Translational Science Research Retreat

---

May 20th, 12:30 PM


## Association between First Trimester Pregnancy Associated Plasma Protein–A and the Development of Gestational Diabetes Mellitus

Aylin Sert  
*University of Massachusetts Medical School*

*Et al.*

Let us know how access to this document benefits you.

Follow this and additional works at: [https://escholarship.umassmed.edu/cts\\_retreat](https://escholarship.umassmed.edu/cts_retreat)

 Part of the [Female Urogenital Diseases and Pregnancy Complications Commons](#), [Maternal and Child Health Commons](#), [Obstetrics and Gynecology Commons](#), [Translational Medical Research Commons](#), and the [Women's Health Commons](#)

---

### Repository Citation

Sert A, Leung K, Waring ME, Rojas-Rodriguez R, Corvera S, Moore Simas TA. (2016). Association between First Trimester Pregnancy Associated Plasma Protein–A and the Development of Gestational Diabetes Mellitus. UMass Center for Clinical and Translational Science Research Retreat. <https://doi.org/10.13028/26kq-0e73>. Retrieved from [https://escholarship.umassmed.edu/cts\\_retreat/2016/posters/77](https://escholarship.umassmed.edu/cts_retreat/2016/posters/77)

Creative Commons License



This work is licensed under a [Creative Commons Attribution-NonCommercial-Share Alike 3.0 License](#). This material is brought to you by eScholarship@UMMS. It has been accepted for inclusion in UMass Center for Clinical and Translational Science Research Retreat by an authorized administrator of eScholarship@UMMS. For more information, please contact [Lisa.Palmer@umassmed.edu](mailto:Lisa.Palmer@umassmed.edu).

# Association between First Trimester Pregnancy Associated Plasma Protein–A and the Development of Gestational Diabetes Mellitus

Aylin Sert, MEd<sup>1</sup>, Katherine Leung, MPH<sup>2</sup>, Molly E. Waring, PhD<sup>2,3,4</sup>, Raziel Rojas-Rodriguez<sup>4,5</sup>, Silvia Corvera, MD<sup>4,5</sup>, Tiffany A. Moore Simas, MD MPH MEd<sup>2,4,6</sup>

<sup>1</sup> Clinical Translational Research Pathway, University of Massachusetts Medical School

<sup>2</sup> Division of Research, Department of Obstetrics & Gynecology, University of Massachusetts Medical School/UMass Memorial Health Care

<sup>3</sup> Department of Quantitative Health Sciences, University of Massachusetts Medical School

<sup>4</sup> Graduate School of Biomedical Sciences, University of Massachusetts

<sup>5</sup> Program in Molecular Medicine, University of Massachusetts Medical School

<sup>6</sup> Department of Pediatrics, University of Massachusetts Medical School/UMass Memorial Health Care

Work funded by the Worcester Foundation for Biomedical Research. Support for Dr. Waring provided by NIH grant KL2TR000160.

**Background:** Gestational diabetes (GDM) is a common pregnancy complication with significant cardiometabolic consequences for mothers and offspring. Previous research from our group suggests that adipose tissue IGFBP-5 and its unique metalloprotease PAPP-A (**P**regnancy **A**ssociated **P**lasma **P**rotein-A) may play mechanistic roles in GDM development by regulating functional IGF-1 levels and lipid storage and metabolism.

**Aim:** To examine the relationship between circulating PAPP-A levels and GDM development. We hypothesized that high first trimester PAPP-A levels would be associated with decreased GDM risk.

**Methods:** A retrospective cohort of women delivering singleton gestations at UMass Memorial Healthcare (2009, 2010, 2014, 2015) was assembled by abstracting electronic medical records. PAPP-A was measured in first trimester (11-14 weeks), and reported as quartiles of multiples of the mean (MoM) based on gestational age and adjusted for maternal weight and race/ethnicity. GDM diagnosis based on standard 2-step protocol (~24-28 weeks; failed 50g 1hr glucola screen then  $\geq 2$  abnormal values per Carpenter-Coustan criteria on 100g 3hr glucose tolerance test). Crude and multivariable-adjusted logistic regression models estimated the association between PAPP-A MoM quartiles and GDM.

**Results:** Women (N=1,251) were 29.7 (SD:5.7) years old and 12.5 (SD:0.6) weeks gestation at PAPP-A measurement. 7.6% (n=95) developed GDM. Median PAPP-A MoM were 0.7 (inter-quartile range [IQR]=0.5-1.0) among women with GDM and 0.9 (IQR=0.6-1.3) among controls; 39% versus 23% were in the 1<sup>st</sup> quartile, respectively. After adjusting for pre-pregnancy body mass index, nuchal translucency, crown rump length, smoking status, and parity, women with PAPP-A MoM in 2<sup>nd</sup>, 3<sup>rd</sup>, and 4th quartiles had 52% (OR=0.48, 95%CI=0.26-0.88), 45% (OR=0.55, 95%CI=0.30-0.99) and 73% (OR=0.27, 95%CI=0.13-0.53) lower odds of GDM compared to women in the 1<sup>st</sup> quartile.

**Conclusion:** Higher PAPP-A MoM levels were associated with lower GDM risk. Future studies will assess whether higher PAPP-A levels are associated with enhanced IGF-1 signaling and improved pregnancy metabolic homeostasis.

## **My contact information is the following:**

Aylin Sert, Ed.M.

Cell: 781-367-4756

Editor, [AAP Medical Student News](#)

University of Massachusetts Medical School

MD Candidate ~ Class of 2016

[aylin.sert@umassmed.edu](mailto:aylin.sert@umassmed.edu)