# BIOSTATISTICS GRAND ROUNDS

**"Dedicated to Advancing the Practice of Biostatistics at the Johns Hopkins Medical Institution"**

### Statistical Challenges in Modeling Human Fecundity

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Division of Epidemiology, Statistics and Prevention Research
*Eunice Kennedy Shriver* National Institute of Child Health and Human Development

| Time | Schedule |
|------|----------|
| 3:45 - 4:00 | Introduction<br>Germaine Buck Louis, Division of Epidemiology, Statistics and Prevention Research *Eunice Kennedy Shriver* National Institute of Child Health and Human Development |
| 4:00 - 4:45 | Statistical Issues<br>Rajeshwari Sundaram, Division of Epidemiology, Statistics and Prevention Research, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development |
| 4:45 - 5:00 | Floor discussion |

ABSTRACT

Human fecundity, defined as the biologic capacity of men and women for reproduction irrespective of pregnancy intentions, is of considerable public health interest, given growing evidence supporting its worldwide decline. Some researchers argue that environmental reproductive and/or developmental toxicants are responsible for the decline while others posit that behavior is the culprit, given that couples are intentionally postponing childbearing. As clinical and public health groups work toward the implementation of preconception clinical guidance for couples at risk for pregnancy and more globally reproductive health, it is imperative to understand both male and female determinants of fecundity and fertility. To accomplish this goal, biologically relevant couple-based statistical models need to be built, which is challenging given the lack of biomarkers indicative of key processes such as ovulation or conception.

We will first briefly describe the critical data gaps underlying human fecundity and their implications for the development of statistical models followed by an overview of available statistical models ranging from discrete survival time through Bayesian approaches for day specific probabilities of

pregnancy.  We will also discuss challenges in viewing such data in classical survival framework. Lastly, we will discuss issues in assessing the effects of highly correlated as well as longitudinally measured exposures on fecundity as applied to the LIFE and Stress and Time-to-Pregnancy Studies.

Dr Buck Louis will begin the session with issues of interest to epidemiologists and clinicians followed by Dr Sundaram's talk on statistical challenges.

**WEDNESDAY, NOVEMBERF 18, 2009**
**ROOM W2030, WOLFE STREET, SCHOOL OF PUBLIC HEALTH BUILDING**

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