

---

## Princeton-Trenton Chapter



AMERICAN  
STATISTICAL  
ASSOCIATION

---

You are Invited to an Exciting Seminar on

**Local and Bayesian optimal designs in binary bioassay**

By Dr. David Smith

Expert Statistical Methodologist, Clinical Information Sciences,  
Novartis Pharmaceuticals.

**&**

**What's new (almost) in the world of statistics of value to the Quality professional**

By Dr. J. Stuart "Stu" Hunter,

Professor Emeritus, School of Engineering and Applied Science, Princeton University.

**When: Tuesday, 15 May, 2007**

1<sup>st</sup> talk: 4:00 pm - 4:45 pm

Mixer: 4:45 pm - 5:15 pm

2<sup>nd</sup> talk: 5:15 pm - 6:00 pm

**Where: Rider University, College of Business Administration Auditorium**

The auditorium is in Anne Brossman Sweigart Hall (College of Business administration - #24 on the campus map) of Rider University.

Address: 2083 Lawrenceville Road, Lawrenceville, NJ. Take exit 7A off of I-95 to U.S. Route 206 south (Trenton). Rider is a quarter mile on the right. For further directions see <http://www.rider.edu/> "Get Directions" link or call 609 896-5042.

Visitor parking is available (front of buildings #2 & #3; see campus map <http://www.rider.edu/images/map-lville-full.jpg>).

**There is no cost. Refreshments and snacks will be provided at the mixer.**

Please RSVP on or before 10 May, 2007 to [Venkat.Sethuraman@novartis.com](mailto:Venkat.Sethuraman@novartis.com)

## Local and Bayesian optimal designs in binary bioassay.

Optimal designs are investigated for binary bioassays involving just a single substance, or two substances where estimating relative potency is the main interest. Local and Bayesian D-optimal designs are considered, as well as DS-optimal designs where, for example, the mean response of one substance (standard) is regarded as of no interest. A range of link functions relating expected response to  $\log(\text{dose})$  are considered. The range of prior distributions used for the Bayesian optimal designs includes uniform, trivariate normal and a bivariate normal with an independent uniform for  $\log(\text{potency})$ . Optimality of the designs is confirmed using a directional derivative function. Because of the lack of closed form solutions for Bayesian optimal designs, much of the investigation is numerical.

**Brief vita:** David M Smith is an Expert Statistical Methodologist in Clinical Information Sciences, Clinical Development & Medical Affairs, Novartis Pharmaceuticals. He has worked in scientific and medical research as well as academia in the UK, Australia and the USA. He is a Chartered Statistician of the Royal Statistical Society and an Accredited Statistician of the Statistical Society of Australia, as well as being a member of the International Biometric Society, American Statistical Association, Statisticians in the Pharmaceutical Industry (UK), and the International Association for Statistical Computing. His interest in bioassay and optimal design stems from a time early in his career working in the pre-clinical area for a pharmaceutical company.

## What's new (almost) in the world of statistics of value to the Quality professional

The "Six Sigma" movement, now well established within the Quality community, finds its origins in W. Edwards Deming famous lectures and in Joe Juran's monumental /Quality Handbook/. Today's certified "Black Belt" 6-Sigma professional is actually a worker-statistician, handy with control charts, components of variance analyses, simple regression and basic design of experiments. Remarkably the education of this para-statistician has largely ignored the applications of time series in the pursuit of Quality. This lecture will expisit the use of simple charting techniques designed for forecasting and control of a time dependent process.

**Brief vita:** J. Stuart Hunter, "Stu", is Professor Emeritus, School of Engineering and Applied Science, Princeton University. He has long been associated with the theory and practice of experimental design as an author, lecturer and consultant. He is a member of the National Academy of Engineering and an Honorary Member of the American Society for Quality. He is a co-author of the text "Statistics for Experimenters", the founding editor of the journal /Technometrics/ and was President of the American Statistical Association (1993). He has been awarded the Shewhart (1970), Deming (1986) and Wilks US Army (1987) Medals and the Founder's Award of the ASA.