Abstract: The purpose of this study is to develop statistical and informatics tools for analyzing and visualizing actigraphy data linked to fatigue in sleep medicine center patients. An actigraph is a watch-like device attached to the wrist that uses an accelerometer to measure movement nearly continuously over several days. An American Academy of Sleep Medicine 2002 report defines the practice parameters for the use of actigraphy as a useful tool for detecting sleep in healthy individuals, assessing specific aspects in insomnia and restless leg syndrome, and a useful adjunct to a detailed history and subjective sleep diary for diagnosing and treating insomnia, circadian-rhythm disorders, and excessive sleepiness. Concurrent with these recommendations is an increased interest in the use of actigraphy as a tool for objectively measuring fatigue.

With improved high-end statistical methods for analyzing this data, actigraphy has the potential to become more important as an objective diagnostic tool for determining fatigue, sleep abnormalities and assessing response to treatment. Other special areas of neurology and medicine where actigraphy can be used more effectively include restless leg syndrome, the elderly and nursing home patients with and without dementia, newborns, infants, children, and adolescents, hypertensive individuals, depressed or schizophrenic patients, and individuals in inaccessible situations.

Host: Dr. Arye Nehorai

Monday, March 2, 2009
10:00 a.m. in Bryan Hall, Room 305

Short Bio: Dr. Shannon is an Associate Professor of Biostatistics in Medicine at Washington University conducting statistical methodology research and providing biostatistical consulting services. As Director of the Department of Medicine’s Biostatistical Consulting Center he has significant applied data analysis experience providing comprehensive statistical consultation and computational services to members of the University for all stages of research, including preparation of grants and contracts, experimental design and sample size calculations, assistance in analyzing and presenting research data, and statistical review of manuscripts in many areas of medicine as evidenced by numerous publications in oncology, surgery, infectious disease, radiology, cardiology and others.

Dr. Shannon has developed numerous new statistical methods in applied areas of medicine, often are related to high-dimensional data such as is obtained with microarrays. This includes work on decision theory in melanoma research for selecting patients to recruit onto a tumor vaccine trial research (Logan, Shannon, et al. 1993; Shannon, Bryant et al., 1995); methods for combining classification models to improve estimation (Shannon and Banks 1999); patient subgroup selection to increase the power of standard genetic epidemiology models (Shannon, Province, Rao 2001); methods for correlating high-dimensional gene expression data directly with patient clinical covariates (Watson, Perry et al. 2001; Shannon, Watson 2002); and efficient computational methods for analyzing gene-gene interactions (Culverhouse, Klein, Shannon 2004); selecting significant genes from DNA microarray data (Li, Culverhouse et al. 2005; Shannon, Steinmeyer et al. 2005); and identifying DNA copy number changes from comparative genomic hybridization arrays using statistical process control charts.