The objective of this FOA is to support awards to teach summer courses in biomedical statistics for advanced undergraduates and beginning graduate students in order to encourage them to pursue careers in biostatistics. It would comprise an innovative introduction to some basics of probability and elementary statistical methods motivated by a series of examples illustrating the use of probability and statistical reasoning applied to the design and analysis of data from studies including those of the heart, lung, blood, and sleep disorders. An essential aspect of the course will be the training in problem solving and hands-on experience through a research project with analysis of real data. Instruction of basic programming languages, such as R or S-plus, would comprise part of the early classroom instruction. The curriculum will include an introduction to biomedical big data. Applicants are encouraged to be as creative as possible, including utilization of web platforms and social media, to achieve the primary goal of attracting the interest of potential biostatistics students.

Depending on the level and interest of the students, the following are examples of the concepts to be covered and the approach to be used in their assignments.

- Descriptive statistics (measures of central tendency and dispersion, histograms, box plots) are formally presented followed by a PC-based demonstration using real data. Student assignments would repeat these calculations on individually chosen samples from real data sets.
- Students learn to draw random samples from data sets and compute measures of central tendency and sample proportions. With this skill they explore the nature of the distributions of these quantities in the context of repeated sampling from a large data set. This sets the stage for introducing the normal, Student's t, and binomial probability distributions.
- Using an epidemiology cohort study data set, instructors demonstrate the concept of adjusted (for age, race, gender, etc.) rates of disease incidence and mortality. Students learn how to compute and compare these rates in different subsets of the cohort.
- A classroom exposition of some of the details underlying the results of an actual epidemiologic cohort study reported in the media.
- The principles underlying the randomized clinical trial are introduced using data from one of the clinical trials related to disorders of the heart, lung, blood, or sleep. Students learn some of the subtleties of the conduct and interpretation of data using, for example, the Cardiac Arrhythmia Suppression Trial as a case study.
• A review of several published studies where flawed analyses have produced misleading results.
• Guest lectures by one or more investigators who have recently completed studies that have attracted media attention.
• An illustration of the problems of multiple hypothesis testing that arise in genome-wide association studies.
• An illustration of how computing aids interpretation of very complex data.

LIMIT ON NUMBER OF PROPOSALS PER ORGANIZATION
One application per institution is allowed.

KEY DATES
Internal Letter of Intent Due: March 31, 2015 (by midnight)
Sponsor Proposal Due: June 1, 2015

SUBMITTING A MANDATORY LETTER OF INTENT
Faculty members interested in this funding opportunity are required to submit a letter of intent (LOI). An LOI is required but not binding.

1. Click here to access the LOI form.
2. Name the LOI as follows: “LastName-FirstInitial-LOI-NIH-Biostats”, replacing “LastName” with your last name and “First Initial” with your first initial.
3. Click on the Vault ticket: https://vault2.northwestern.edu/xythoswfs/webui/_xy-e6485382_1-t_BJFAR5tt
4. Click the Upload button.
5. Click the Browse button and navigate to your file on your hard drive or network.
6. Click the OK button.

Note: You will get a tiny confirmation message upon upload. If you do not see it, you may contact Karen Cielo k-cielo@northwestern.edu for a confirmation.

COLLABORATION OPPORTUNITIES
The Office of Research Development offers assistance in identifying and facilitating collaborations, putting together interdisciplinary teams, programmatic and administrative development of large, cross-school proposals, and leveraging institutional resources for outreach and education. Contact Fruma Yehiely (yehiely@northwestern.edu), Director of ORD, for more information.

CONTACT AND ADDITIONAL INFORMATION
Fruma Yehiely, Director of ORD, 847-491-1074, yehiely@northwestern.edu
Limited Submissions web site: http://www.research.northwestern.edu/ord/funding/limited-submissions/