



# American College of Epidemiology (ACE) Preconference Workshops

June 11, 2003 • The Atlanta Marriott Marquis Hotel • Atlanta, GA

— Workshop registration is separate from meeting registration —

Name \_\_\_\_\_  
first middle last degree

Institution \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Telephone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

## Workshop Registration

June 11, 2003 • Full-Day Workshops, 1-5

### Workshop 1 – Molecular Genetics for Epidemiologists: From the Basics (a.m.) to More Advanced Topics (p.m.);

Jack Taylor, NIEHS

- Full Day
- Half Day (a.m.)
- Half Day (p.m.)

- Workshop 2 – Multilevel Analysis in Public Health;** Ronald B. Harrist Ph.D. Associate Professor of Biometry, School of Public Health, University of Texas Health Science Center at Houston, Kay T. Kimball, Ph.D. Statistical Design and Analysis, Austin, Texas

- Workshop 3 – An Introduction to Bayesian Methods in Epidemiology;** Dalene Stangl, ScD. Professor and Director, Institute of Statistics and Decision Sciences Duke University

- Workshop 4 – Applying Quantitative Sensitivity Analysis to Epidemiologic Data;** Timothy Lash, Department of Epidemiology, Boston University School of Public Health, Aliza Fink, Department of Epidemiology, Boston University School of Public Health, Sander Greenland, Departments of Epidemiology and Statistics, University of California Los Angeles

- Workshop 5 – Cognitive Issues Related to the Design of Valid Survey Questions;** Richard B. Warnecke, Ph.D., Associate Director, Cancer Control and Population Science, University of Illinois at Chicago, Diane P. O'Rourke, M.A., Consultant

## Registration Fees

	Before May 20	After May 20	
<b>Full Day Workshop</b>			
Member of ACE or SER	\$160	\$210	\$ _____
Non-Member	\$215	\$265	\$ _____
Student*	\$105	\$155	\$ _____
<b>Half-Day Workshop (one only — a.m. or p.m.)</b>			
Member of ACE or SER	\$100	\$150	\$ _____
Non-Member	\$160	\$210	\$ _____
Student*	\$80	\$130	\$ _____

Total Enclosed: \$ \_\_\_\_\_

\*Proof of student status is required  
Registrations received after May 20, 2003 will be processed on-site.

## Special Services

- Please check if you require special accommodations to fully participate. Attach a written description.

## Payment Information

**Check or credit card information must be received with the workshop registration form.**

- Check (US currency, payable to American College of Epidemiology)
- Master Card     Visa     American Express

Authorized Cardholder  
(please print) \_\_\_\_\_

Signature \_\_\_\_\_

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

## Please mail or fax this form with payment to:

American College of Epidemiology  
1500 Sunday Drive, Suite 102  
Raleigh, North Carolina 27607

Fax: (919) 787-4916

**Please either fax OR mail registration form. Do not fax AND mail registration form!**

**Do not mail or fax to the SER office.**

## Questions?

Phone: (919) 861-5573

Website: [www.acepidemiology.org](http://www.acepidemiology.org)

E-mail: [info@acepidemiology.org](mailto:info@acepidemiology.org)

**For descriptions of each workshop, please see the reverse side of this form.**

# Workshop Descriptions

## Workshop 1: Molecular Genetics for Epidemiologists: From the Basics to More Advanced Topics

*Faculty: Jack A. Taylor, M.D., Ph.D., Chief, Molecular and Genetic Epidemiology Section, Laboratory of Molecular Carcinogenesis and Senior Investigator, Epidemiology Branch, NIEHS, NIH*

This will be a two-part workshop. The morning will consist of a review of molecular genetics designed to provide a background in the techniques of DNA analysis for epidemiologists. The workshop will provide a basic background for those who wish a more clear understanding of concepts and techniques used in molecular epidemiology, and a basis from which to move on to the afternoon course on advanced topics.

The afternoon will be an extension of the morning workshop and will cover selected advanced and emerging areas of genetics and genomics. The course will focus initially on topics related to DNA polymorphism, mutation and DNA repair, and discuss application of these issues to the study of disease etiology with a focus on cancer. DNA chips, expression arrays, and other technologies have gathered considerable interest within the epidemiology community, although they have seldom been applied in epidemiology studies. The course will provide the epidemiologist with a conceptual understanding of these technologies and the current limitations on their application. Finally, the workshop will try to anticipate near and intermediate-term applications of emerging genomic technologies on epidemiology studies, and suggest practical aspects of tissue procurement and storage, and consent.

### Goals of this workshop:

- Review selected technical topics of DNA of interest to the epidemiologist including, polymorphism discovery, spontaneous and induced mutation, DNA repair, DNA as a lifetime dosimeter of exposure
- Describe the basis of emerging technologies for genetic analysis including DNA chips, expression arrays, and mass spectroscopy
- Discuss how such technologies and the field of genomics may be applied in epidemiology studies and tissue sample requirements

## Workshop 2: Multilevel Analysis in Public Health

*Faculty: Ronald B. Harrist Ph. D. Associate Professor of Biometry, School of Public Health, University of Texas Health Science Center at Houston*

*Kay T. Kimball, Ph.D. Statistical Design and Analysis, Austin, Texas*

Multilevel analysis has emerged as a powerful new statistical tool with many applications in public health and epidemiology. This workshop will (1) review the rationale for the use of multilevel analysis in epidemiological studies ; (2) summarize fundamental concepts of multilevel statistical models, including models for continuous and dichotomous outcomes, and explain similarities and differences of multilevel models and other regression models; and (3) provide examples of applications of multilevel models involving individuals nested within groups and repeated measures nested within individuals. The use of two different software packages will also be briefly illustrated. Although previous understanding of basic linear and logistic regression analysis will be assumed, no previous experience with multilevel analysis is necessary. The workshop will emphasize fundamental issues, concepts, interpretation, and application rather than mathematical derivations.

### Goals of this workshop:

- Understand the basic concepts of multilevel analysis
- Understand the situations in which multilevel models are useful, and how these models differ from standard epidemiologic approaches
- Understand the strengths and limitations of multilevel analysis in public health and epidemiology
- Understand the basics of fitting multilevel models and interpreting key results using available software

## Workshop 3: An Introduction to Bayesian Methods in Epidemiology

*Faculty: Dalene Stangl, ScD. Professor and Director, Institute of Statistics and Decision Sciences Duke University*

This 1-day course will introduce the Bayesian paradigm of statistics from an applied perspective. This means that Bayesian ideas will be taught through presentation of examples from clinical and community trials, epidemiology, and health policy. This course is designed for persons who use statistics in their applied work.

It will be designed for people who would like to read the book "Bayesian Biostatistics" edited by Berry and Stangl, but who have not yet had enough exposure to Bayesian ideas to be able to do so. It assumes no previous knowledge of Bayesian theory or methods. Attendees need only be familiar with the concept of a probability distribution and enthusiastic about examining statistics from a different perspective.

### Goals of this workshop:

- Distinguish the conceptual differences between the Bayesian and Classical/Frequentist paradigms of statistics.
- Explain Bayes Theorem and examine each of the components of a Bayesian model, including priors, likelihoods, posteriors, predictive distributions, and utilities.
- Introduce approaches to the elicitation of prior distributions.
- Teach how to calculate posterior and predictive distributions for simple conjugate distributions, and demonstrate techniques for calculating posterior and predictive distributions for more complex cases.
- Present examples of published epidemiological research that use Bayesian methods.
- Demonstrate software useful for Bayesian analysis and explain how to gain access to this software.

## Workshop 4: Applying quantitative sensitivity analysis to epidemiologic data

*Faculty: Timothy Lash, Department of Epidemiology, Boston University School of Public Health, Aliza Fink, Department of Epidemiology, Boston University School of Public Health, Sander Greenland, Departments of Epidemiology and Statistics, University of California Los Angeles*

**Audience:** Epidemiologists familiar with threats to validity (selection bias, misclassification, and confounding), basic algebra, and statistical computing.

**Description:** Observational epidemiologic studies yield estimates of effect that differ from the true effect because of random error and systematic error. Epidemiologists design studies and analyses to minimize both sources of error. When presenting results, epidemiologists use statistics to quantify the impact of random error on estimates of effect, but only qualitatively describe residual systematic error (uncontrolled bias). Sensitivity analysis provides one method of quantifying residual systematic error. Participants in this workshop will learn how to use simple and probabilistic sensitivity analyses to account for systematic as well as random error in their estimates of effect.

The interactive workshop will present topics that address the objectives described below. After each segment, participants will interactively solve problems in a notebook that illustrate the preceding segment's objective. All of the presentation materials and the problems will be provided in the notebook, as will a bibliography of primary literature citations to the methods literature. Participants should bring a scientific calculator. Participants who attend with a laptop computer and an installed version of SAS 8.0 (including the IML component) will be able to implement the SAS code at the workshop. All participants will be able to follow the SAS implementation and will receive a copy of the SAS code and example data set on a floppy disk.

Participants should expect to gain new skills, as the emphasis of the workshop will be on the implementation and conduct of sensitivity analysis, rather than statistical theory.

### Goals of this workshop:

- Participants who complete the workshop will be able to:
1. Describe methods to estimate systematic error in observational data and compare the advantages and disadvantages of these methods.
  2. Quantify error arising from selection bias — or from misclassification of exposure, disease, or a covariate — using simple sensitivity analysis.

3. Calculate bounds on the relative risk due to confounding arising from an unmeasured confounder.
4. Implement probabilistic methods of sensitivity analysis that (a) impute data to calculate a distribution of estimates of effect, or (b) apply bias parameters to the original estimates of effect.
5. Compare the similarities, differences, advantages and disadvantages of the two aforementioned methods of Monte Carlo sensitivity analysis.
6. Use bootstrapping in combination with the imputation method to obtain a distribution of estimates of effect that quantifies both random and systematic error.
7. Implement provided SAS software, in conjunction with a sample data set, to accomplish both methods of probabilistic sensitivity analysis.

## Workshop 5: Cognitive Issues Related to the Design of Valid Survey Questions

*Faculty: Richard B. Warnecke, Ph.D., Associate Director, Cancer Control and Population Science, University of Illinois at Chicago\**

*Diane P. O'Rourke, M.A., Consultant\*\**

As there is increasing diversity in the population of the United States, there is increasing reason to question whether standard survey questions are valid in these new populations. There is also growing evidence that even with the general population, there are real questions regarding the validity of responses to standard questions. The workshop will focus on the cognitive processes individuals use to understand and process questions. It will also examine how the understanding and processing of survey questions is affected by ethnicity and culture. We will consider some general issues of questionnaire design and how these are likely to be affected by the way individuals process information in order to answer questions. Finally, we will examine and discuss some issues around response rates to surveys and what impact they might have on the overall validity of the conclusions that are drawn from surveys using various modes of data collection.

### Goals of this workshop:

- Review the ways in which one can assess the cognitive framework a group of respondents might bring to a survey questionnaire.
- Review cognitive processes related to:
  - Understanding the questions being asked.  
"Is the respondent responding to the question you have asked?"
  - How the respondent retrieves information that will be used to answer the question.  
"How accurate is the respondent's answer?"  
"How specific are the data that are used to form the response?"
  - Formation of judgments in response to questions requiring a judgment to be made  
"How accessible is the information that is used by the respondent to form a judgment?"  
"What processes are involved in forming judgments?"  
"How are the judgments affected by the wording of the question or the response scale offered to the respondent?"  
"Does the response scale matter?" "Are labels better than numbers for response categories?"
  - Does the respondent fully report the information retrieved or the judgment that is formed or is it edited?  
"What is response bias?"  
"How much effect does social desirability have on responses?"  
"How can you assess that the respondent is telling you everything that is relevant?"
  - What is the latest information on response rates?
  - What effect does the mode of the interview have on response?
  - To what extent do ethnicity and other factors affect response to the request for information?
  - What is the role of incentives? Are they needed?

*\* Dr. Warnecke was previously Director of the University of Illinois at Chicago Survey Research Laboratory.*

*\*\* Ms. O'Rourke recently retired as Assistant Director for Survey Operations of the University of Illinois at Chicago Survey Research Laboratory.*