

Preliminary Program

WITH IMS AND SECTIONS OF ASA

Hyatt Regency Washington
on Capitol Hill – Washington, DC



The Eastern North American Region of the International Biometric Society welcomes you to our 2012 Spring Meeting to be held April 1–4 in Washington, DC together with the IMS and Sections of the ASA.

With the help of many of you, we have assembled scientific and educational programs we hope you will find exciting. We introduce two new program initiatives, and advance a student initiative begun last year, to broadly incorporate and recognize our members' contributions. We will host old favorites including a Young Investigator Workshop, a Diversity Workshop, roundtables, student paper awards and a networking and social event. Finally, our site of Washington, DC, with disclosure that I am a native, can be glorious during our early spring meeting dates. Our hotel sits in sightline of the Capitol Building. The 2012 meeting occurs in the heart of the 100th National Cherry Blossom Festival.

Our Program Chair, Debashis Ghosh of Penn State University, Co-Chair Jonathan Schildcrout of Vanderbilt University, and their Program Committee have assembled a roster of invited sessions to appeal to a broad variety of scientific interests. Topics span clinical trial design and analysis, causal inference, high-dimensional and functional data analysis, genomics, risk prediction and diagnosis, general methodology, and specific application areas spanning diseases to environmental epidemiology to health policy. Additionally we will have special sessions featuring noteworthy papers from the Journal of Agricultural, Biological and Environmental Statistics, surveying grant funding opportunities, and commemorating our colleague who made so many contributions to his colleagues and students, ENAR and our profession, Tom TenHave. Sincere thanks go to Debashis, Jonathan, their committee—representing ENAR, IMS, and eight ASA Sections, and the many who submitted invited paper proposals.

I am particularly excited about our Presidential Invited Address, "Engaging, Inspiring, and Training the Next Generation: Past Successes, Future Challenges and Opportunities," to be given by Professor Marie Davidian of the North Carolina State University. Among honors too numerous to recount here, Professor Davidian is our former ENAR President (2004), President-elect-elect of the American Statistical Association, and the recipient of two COPSS awards. Professor Davidian's contributions to our profession span statistical discovery, advancement of scholarship in pharmacokinetics, pharmacodynamics, and clinical research, outstanding mentorship of junior researchers, vigorous efforts to attract students for our field, and extensive service in ENAR, our other societies, and national panels. Informed as she is by these wide ranging and dedicated perspectives, I could not imagine a leader among us to better stimulate or energize our thinking on the challenges, opportunities and future for our field both generally and as they relate to attracting talented students to our profession. I thank her for her willingness to share her thoughts with us. Additionally, we are fortunate that the IMS will be hosting a first with us: The recently established IMS Tweedie Lecture recognizing an outstanding researcher within five years of receiving his or her doctoral degree. Congratulations to our Tweedie lecturer, Hui Zou of the University of Minnesota.

Our 2012 Spring Meeting has much to offer for scholars of all ages. ENAR is proud to offer an outstanding array of short courses and tutorials across topics ranging from cutting-edge general biostatistical methodology, to clinical trials and translation, to biological applications, to computing and software implementation. Additionally roundtables offer discussion opportunities relating to professional development, specialized methodology, and advancement

of our field for statisticians in academia, industry and the federal government. Sincere thanks for their help in brainstorming and identifying these outstanding offerings to our 2012 Educational Advisory Committee of Brad Carlin, Dean Follmann, Joe Hogan, Gene Pennello, and Jose Pinheiro, as well as RAB. We hope you will partake of the outstanding learning and networking opportunities to occur.

For those of you who are emerging into our profession, we have planned many additional opportunities. The ENAR Regional Advisory Board has established a Graduate Student and Recent Graduate Council to help ENAR better address the needs of students and recent graduates. This council is organizing ENAR's first-ever student-organized invited session. Other events for our student registrants include a Monday evening student mixer, our new RAB Poster Awards, and of course ENAR's annual student paper competition. In addition, we will host both of our two extremely popular workshops for prospective and emerging statisticians at our meeting: On Saturday, our Workshop for Junior Investigators, and on Sunday, a Diversity Workshop. In recent years both of these workshops have filled to capacity very quickly, so that interested attendees should be sure to register early. Finally, for those seeking employment, don't miss our ever-growing Career Placement Center.

We hope you will join us in the networking and social event we have planned for Tuesday evening of the meeting: A dinner outing to the Mount Vernon site featuring private access to the Donald W. Reynolds Museum and Education Center. Our site visiting team was delighted by this outstandingly well done and engaging museum facility on the life and living environment of George Washington.

The drive out along Washington's lovely George Washington Parkway, dinner, and museum time to be offered by the event present opportunity to network with colleagues in a beautiful setting: We hope that many of you will join us! Please see page 5 for details. Additionally, our Local Arrangements Committee and ENAR officers have recommended other fun activities for you to pursue while in Washington (see pages 6–8). We encourage you to enjoy several while you're in town for the meeting. Finally, we are working on plans to continue our recent tradition of community outreach: Watch for details on our website and future communications. Thanks so much to our Local Arrangements Chair, Rochelle Tractenberg of Georgetown University, and the Local Arrangements Committee, for their help on all these fronts.

Finally, I wish to thank Kathy Hoskins, our ENAR Executive Director, Laura Yarborough Jennifer Weitz, and their other colleagues at Drohan Management for their amazing, year-round efforts to maintain ENAR as a professional organization of value to its members. If you have a chance, please stop by the registration desk to thank them for all they have done in making the ENAR 2012 Spring Meeting a success.

We hope to see you in Washington in April!

Karen Bandeen-Roche
ENAR 2012 President

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MEETING DATES

Sunday, April 1, 2012 through Wednesday, April 4, 2012 at 12:15 pm

Location

Hyatt Regency Washington on Capitol Hill

400 New Jersey Avenue, NW
Washington, D.C., USA 20001
Tel: 202-737-1234
Fax: 202-737-5773
washingtonregency.hyatt.com

Registration

Advance registration using either the Registration Form on page 80 or at www.enar.org is preferred and costs less

Registration Hours:

Saturday, March 31 – 3:00 to 5:00 pm
Sunday, April 1 – 7:30 am to 6:00 pm

The registration fee includes refreshment breaks and the opening mixer. The registration fee, less a \$100 administrative fee, is refundable if written notice of cancellation is received by **March 1, 2012**.

New Member Reception, Opening Mixer, and Poster Session

A new member reception will be held from 7:30 to 8:00 pm on Sunday, April 1. All new ENAR members are cordially invited to attend. The Opening Mixer and Poster Session (included in the registration fee) will take place from 8:00 to 11:00 pm on Sunday, April 1.

Roundtable Luncheons

This year, the roundtable luncheons will be held on Monday, April 2, from 12:15 to 1:30 pm. Space for each roundtable is limited and pre-registration is advised. The fee is **\$35** per person and includes lunch. For topic information, please see pages 73-75.

Short Courses

The 2012 ENAR meeting will begin with an exciting set of short courses on Sunday, April 1. See below for the registration fees for these Short Courses.

Be sure to register in advance, since courses close once they are full. Use either the registration form on page 80 or the electronic registration form on the ENAR website (www.ENAR.org/meetings.cfm).

Tutorials

Tutorials are offered on Monday and Tuesday, concurrent with the scientific program. These offerings provide a presentation of a continuing education topic in a briefer time period (1 hour and 45 minutes). Fees for the tutorials are **\$75** for members (**\$85 after March 1**) and **\$85** for non-members (**\$95 after March 1**). Be sure to register in advance, since tutorials close once they are full.

Student Mixer

All students are invited to attend the student mixer on Monday, April 2, from 6:30 to 7:30 pm. Registration is not required.

MEETING REGISTRATION FEES

	RECEIVED	
	BY March 1	AFTER March 1
ENAR/WNAR/IBS Member	\$ 335	\$ 375
ASA Member (Not a Member of ENAR/WNAR/IBS)	\$ 355	\$ 400
IMS Member (Not a Member of ENAR/WNAR/IBS) (\$355 – \$20 IMS contribution = \$335)	\$ 335	\$ 375
Student Member	\$ 150	\$ 160
Guest Fee	\$ 40	\$ 50
Nonmember (Of Any Participating Society)	\$ 465	\$ 510
Student Nonmember	\$ 185	\$ 200

SHORT COURSE REGISTRATION FEES

	RECEIVED			
	BY March 1		AFTER March 1	
	Half Day	Full Day	Half Day	Full Day
Member	\$ 160	\$ 250	\$ 185	\$ 275
Nonmember	\$ 200	\$ 300	\$ 225	\$ 320

Register for two half day courses and save!

See Pages 67-70 for Course Details

Savings Information Provided on Page 80

Hotel Accommodations

Hyatt Regency Washington on Capitol Hill

400 New Jersey Avenue, NW
Washington, DC, USA 20001
Tel: 202-737-1234
Fax: 202-737-5773
washingtonregency.hyatt.com

Transportation

From Ronald Reagan National Airport

Taxi: Taxis to the hotel are available outside the baggage claim area. The fare is approximately \$14 to \$18 (10–20 minutes)

Metro Subway: Take the Yellow line from Ronald Reagan National Airport to the Gallery Place/Chinatown stop. Transfer to the Red line to Union Station (2nd stop). The Union Station Metro stop is located three blocks from the hotel. The fare is approximately \$2.70 (20–25 min). Fares may vary based on time of day. To check fares visit www.wmata.com.

Super Shuttle: Available 7 days a week. Shuttle vans are located at Ronald Reagan National Airport, outside the baggage claim area at Ground Transportation. Look for the blue vans with yellow lettering. The shuttles make multiple stops and drop off directly at the hotel. Advance reservations may be made by calling 800-BlueVan (800-258-3826) or online at www.supershuttle.com. Approximate fare is \$14 one way, timing is dependant upon number of stops required by passengers.

From Dulles International Airport

Taxi: Taxis are available on the lower level outside baggage claim. The fare is approximately \$60 to \$80 (50–60 minutes)

Super Shuttle: The approximate fare is \$26 one way (\$10 for additional passengers within same party).

From Baltimore/Washington Airport

Taxi: Taxis are available on the lower level outside baggage claim. Fare is approximately \$63 (1 hour)

MARC Train

This is a commuter train from BWI to Union Station, which is three blocks from the hotel. The approximate cost is \$7 one way. The MARC train runs weekdays only.

Super Shuttle: The approximate fare is \$37 one way (\$12 for additional passengers within same party).

From Amtrak/Union Station

Walking: The hotel is located 3 blocks from Union Station. Follow exit signs to get to the front of Union Station. Take E Street (between the semi-circle of flags) to the intersection of E Street, NW and New Jersey Avenue, NW. The hotel will be directly in front of you.

Taxi: Taxis are available outside the main entrance of Union Station. Approximate fare is \$5.50, with possible surcharges.

Getting Around Town

Metro: For assistance in planning your travel, contact the hotel concierge, or visit: www.wmata.com for complete maps, schedules, fares and trip ideas.

Parking

Hyatt Regency Washington on Capitol Hill is pleased to offer indoor valet parking for hotel guests at the rate of \$41 per night (Including in/out privileges).

For conference attendees and visitors to the hotel, hourly valet parking is available:

0–1 hours = \$20
1–2 hours = \$25
2–10 hours = \$28
10–24 hours = \$41

Abstract Book - Go Green & Save

At this year's spring meeting, you have the option of receiving the abstracts in hard copy, or Go Green and opt for online access only. Receive a \$5 discount off the registration fee when you select the Green "online only" option on the registration form.

All attendees will receive a hard copy of the booklet containing all session and speaker names, times, and talk locations.

Placement Service

There will be a job placement service at the 2012 Spring Meeting. Additional information and registration forms are located on pages 78 & 79.

TUESDAY EVENING NETWORKING AND SOCIAL EVENT

Dinner and Private Tour at the Mount Vernon Estate

This event will take us back in time to the 18th century and the life and times of George Washington. We will take motor coaches from the hotel along a 35–40 minute scenic route over the Potomac River to Mount Vernon, one of America's most visited historic home sites. The evening will begin with a three-course, candle-lit dinner at the Mount Vernon Inn, which is located at the front of the estate's property. After dinner, as our highlight, we will have hour-long private access to the Mount Vernon Museum and Education Center – a unique experience that includes a traditional museum as well as an interactive educational tour. Both the Museum and Education Center feature interactive displays, movies, and high-tech, and immersive experiences in addition to more than 700 artifacts. It is important to note that this evening event does not include a tour of the

Mount Vernon Mansion, which closes at 5:00 pm at this time of year. More information on this historic site can be found by visiting: www.mountvernon.org

This optional event includes a private tour of the Mount Vernon Museum and Education Center and dinner at the Mount Vernon Inn. *(Please note that there will be a cash bar and that the registration fee does not include the cost of alcoholic beverages.)*

We hope you will join us!

Our nation's capital, Washington, DC, might be one of the few places that the majority of US citizens “have” visited if they've been outside their home state.



Whether with your grade school class on a field trip or with your family, there are an incredible number and variety of events, exhibits, and experiences that, because they're often described as "can't miss", have not been missed! While you can arrange a tour of the White House through your member of Congress or Senator, through your congressperson's office up to six months in advance of any visit, there are many other attractions that you might not have had time for in earlier visits. The Local Arrangements Committee for ENAR 2012 wants to invite you to consider some of these "other" opportunities. For example, if you're flying into/out of BWI, you could visit the nearby National Cryptologic Museum which, because it is not in DC, might be one site you have not yet seen. If you're flying out of Dulles instead, there is an airport shuttle that will take you to and

from the expanded Air and Space Museum, the Udvar-Hazy Center, where the Space Shuttle, among other astonishing aeronautical exemplars, is now housed. Again, Udvar-Hazy is not on the National Mall but it is a site worth devoting the "extra" time to.

On or near the National Mall are several exceptional museums, galleries, and exhibits that you might not yet have experienced, or that have been recently updated, renovated, or otherwise improved. For example, in 2008 the American History Museum opened its new gallery to showcase the actual "star-spangled banner", and the National Portrait Gallery has a new exhibit on the Civil War coinciding with the 150th anniversary of the start of the war, as well as artifacts and letters from both Generals Grant and Lee, and an exhibit on "American Origins" (1600–1900). The Petersen House, where Lincoln died, and Ford's Theatre (across the street from it), have both been renovated and rehabilitated and will be reopened by the time of the ENAR meeting. The National Museum of Health and Medicine is in the process of moving to a new location (not on the National Mall) and has both Lincoln and Civil War exhibits.

Ongoing opportunities that you might not yet have experienced include the 70th season of concerts in the National Gallery of Art (beginning September 2011), bringing an additional dimension to the art showcased here (in both the East and West Buildings); a 5-month exhibition of Picasso drawings at the National Gallery of Art closes 6 May 2012. For outdoor exhibits, the Hirshhorn Museum and Sculpture Garden and National Arboretum, with its grove of state trees from nearly all 50 states, are excellent choices (the National Gallery of Art also has a sculpture garden). The National

Building Museum will open a new exhibition about architectural and urban design proposals for DC (unbuilt) from the 1790s to today (starting November 2011) and the National Postal Museum (across from Union Station) has a unique collection of Amelia Earhart's personal artifacts, and will open a new exhibition about mail and US military troops in November 2011. One last Mall-based suggestion is the Smithsonian Castle itself, where you will find a display representing *all* of the Smithsonian collections.

There are many other interesting museums and opportunities beyond the museums and monuments near or on the National Mall, including the Spy Museum, the Newseum, and the National Firearms Museum. Tours of DC that you might not yet have experienced include Monuments by Night - one of which departs from Union Station, and a TV and Movie Sites Tour of Washington, DC. In between all of these museums and tours are innumerable options for eating and drinking (including the Capital City Brewing Company, "the first brewpub in Washington, DC since prohibition" across the street from Union Station).

Walking between sites (for touring or meals!) is a fantastic variety of architecture and design – including the Capitol Rotunda, located very nearby the conference hotel. The Local Arrangements Committee welcomes you to Washington, DC and hopes you enjoy every aspect of your visit, whether you try new museums or exhibits or re-visit your favorites!



Karen Bandeen-Roche
2012 ENAR President

The National Air and Space Museum

Feeling you could use an injection of awe in your workaday life? The thrill of imagination transformed into invention... the grandeur of our universe... the dizzying speed with which technology has advanced our power for discovery? The National Air and Space Museum never disappoints.

Take an easy 20 minute stroll from our hotel – brief jogs up New Jersey Avenue, Louisiana Avenue, and First Street to in front of the Capitol, and then an easy shot to Air and Space across the mall just past the National Museum of the American Indian (NMAI). If you're coming around noon, stop inside NMAI for the best lunch on the Mall: First Nations fare at the Mitsisam Café.

As you walk inside Air and Space, soak in the array of balloons, gliders, prop planes, jets, and rockets roundabout and above you. If you're a history buff, be sure to seek out the Wright Flyer (and the very cool simulation of its Kitty Hawk flights), Lindbergh's Spirit of St. Louis, Sputnik 1, the Mercury 7, Gemini 4 and Apollo 11 capsules and more – all these the actual craft. For science lovers there are the Einstein Planetarium and galleries on our exploration of the solar system and cosmos. Tech types will marvel at the leaps by which the biplane evolved from the Wright flyer and the jet from the biplane; the ballistic missile from Robert Goddard's model-rocket and the Saturn V from the ballistics. When a foot rest is needed, the museum's IMAX features provide a great respite. Best of


all may be a personal connection – whether it be the sight of a fighter plane like your father or grandfather flew, reminiscence of grainy images coming in from Apollo 11, or recalling your first wonderment seeing nebulae and galaxies courtesy of the Hubble Telescope. In

my case it's the "Looking at Earth" exhibit where I can see the TIROS, ITOS and GOES satellites my dad helped send up, savor the thrill of those years for him, and honor the reams of satellite analysis he brought home as the genesis of my interest in data.

If you can't get enough, don't forget the museum's Udvar-Hazy Center out by Dulles Airport, where you can see a mind-boggling array of planes, capsules and the Enterprise space shuttle, or the Visitor Center at the Goddard Space Flight Center in Greenbelt, MD. If you share my experience, the time will have passed before you know it, and before getting nearly enough.

Amy Herring
2012 ENAR Past President

International Spy Museum

Do you want to "Get Smart" at ENAR? Would you like to see an iconic lipstick or umbrella pistol even though you lack a "License to Kill"? Then put on your shoe  phone and walk 0.8 mile to the International Spy Museum (www.spymuseum.org). The vast array of gadgets on display makes this museum, which tells the story of an all-but-invisible profession, a treat not to be missed. Because "You Only Live Twice," allow plenty of time for the exhibits, fill up your money belt before you go (\$18 admission), and dress appropriately for crawling through the air conditioning ducts (optional but fun!). Note that all exhibits are "For Your Eyes Only" as photography is strictly NOT allowed!

Mike Daniels
2010-2011 ENAR Treasurer

Capitol Lounge
231 Pennsylvania Ave, SE

Though only a select few seemed to take my recommendation in Miami at ENAR 2011 of putting back a few cold ones at The Democratic Republic of Beer (you missed out on a great place!), I will try again to identify a comfortable and well-stocked watering hole for ENAR 2012. Make your way over to the Capitol Lounge with a very nice selection of bottled beers including Bear Republic Racer 5 IPA (from the left coast and one of my personal favorites) and Duvel (from Belgium). Finish off the night with Young's Double Chocolate Stout (from the UK) for dessert (yummy!). The Capitol Lounge is just a one mile walk from the hotel, a stone's throw from the Library of Congress, behind the Capitol.

Jeffrey S. Morris
2011-2012 ENAR Secretary

Inexpensive Family Fun:
The National Zoo
DC by Foot Walking Tour
Ben's Chili Bowl

If you are bringing children with you or are just an animal lover yourself, you might enjoy the Smithsonian's National Zoo that is right in the city. The zoo has many exotic animals, and is especially known for its giant pandas that are the Asia Trail. The park is open from 10am to 6pm daily, and admission is free!!! It is located at 3001 Connecticut Avenue, and is easily accessible by Metro (BTW, Metro is by far the easiest way to get around Washington, DC, and day passes allowing unlimited riding are only \$8.30). The best Metro stop to take is the Cleveland Park stop from which you walk downhill to the zoo, which is better than the "Zoo" stop which requires you to walk uphill. If this is the first time in DC for either you or your children, you could see the major sites in the National Mall with DC by Foot, which gives free walking tours that are kid-friendly and includes games, trivia questions, and fun facts (gratuity is recommended). It is the highest rated walking tour

in DC. You can find details of the times and places of tours on the website (dcbyfoot.com) closer to the date. BTW, they also have other tours including a Lincoln Assassination tour, which currently takes place every Saturday evening at 7 pm and every Wednesday at 7 pm in the summer. For an inexpensive but incredible lunch or snack, I recommend getting the famous chili half-smoke at Ben's Chili Bowl. This



includes ¼ lb. of pork and beef smoked sausage on a steamed bun with mustard, onions, and their famous homemade chili

sauce. It only costs \$5.45

and has been voted Washington's signature dish. They also have chili, hot dogs, hamburgers, etc., so if you have your kids with you they should find something they like. Ben's is located on 1213 U Street, NW, across from the 13th street entrance of the U street Metrorail station on the Green Line.

Hormuzd Katki

2010–2011 Former RAB Chair

Theodore Roosevelt Island National Monument

Theodore Roosevelt Island is one of the natural treasures of the DC area. The island honors the president who founded the National Park System with a statue and monument with some of his best quotes. Situated on the Potomac River, it affords a scenic view of Georgetown and the Kennedy Center. A path and boardwalk rings the small island (1 mile in circumference), allowing one to see all kinds of wildlife unexpected for Washington DC, including migratory birds.

Glen Echo Park

Glen Echo Park is a magical place situated on the Potomac palisades near Bethesda, Maryland. Originally a Chautauqua retreat, then an amusement park, this National Park now presents vibrant arts and cultural programs. Take a class in pottery, painting, photography, art glass, music, silversmithing, or textiles. Enjoy a puppet show or theater performance with your kids and ride the historic Dentzel carousel. At night, the Spanish Ballroom opens up and features dancing: swing, contra, blues, waltz, Cajun,

Zydeco, salsa, tango, and more. Most of the dances feature a pre-dance introductory lesson and dancing to live music from renowned local and national bands. Fall in love at Glen Echo Park (my wife and I did, New Year's Eve 1995).

Debashis Ghosh

2012 ENAR Program Chair

Washington Restaurant Scene

Washington D.C. has an absolutely first-rate restaurant scene with an incredibly diverse food culture. Just hop on the D.C. Metro at the Union Station stop (the nearest one to the Capitol City Regency Hyatt), and you will get to almost anywhere. Here are a few of my favorite places to eat.

(1) Bodega

3116 M Street NW, DC
202-333-4733

This is a Spanish restaurant that specializes in tapas (Wikipedia defines tapas as "small savory Spanish dishes"; I would recommend the sangria and standard Spanish fare such as Bacalao a la Bilbaína con Lentejas de León (Sauteed cod fillet) and paella.

(2) Vidalia

1990 M Street NW, DC
202-659-1990

Vidalia features American cuisine with Southern stylings. It has standards such as New York Strip Steak and tuna steak, but with neat variations and sides. Plus, the desserts are really good, such as the apple tart! If you don't want to trek on over there, its sister restaurant,



(3) Bistro Bis

15 E Street NW, DC
202-661-2700
just around the corner from the hotel.

(4) Zed's

1201 28th Street NW, Georgetown
202-333-4710
If you are in the mood for Ethiopian food, then you can't go wrong with Zed's. It serves savory Ethiopian dishes (both vegetarian and non-vegetarian) on injera (traditional Ethiopian bread with a spongy texture).

(5) Woodley Park-Zoo and Adams Morgan Metro Stop Areas

(On the red line, as is the Union Station stop) boasts a variety of restaurants, ranging from Greek to Middle Eastern to Indian, that are quite tasty and affordable.

Kathy Hoskins

ENAR Executive Director

Union Station – Not Just a Train Station!

Within walking distance from the Hyatt Regency Washington on Capitol Hill, Union Station is one of the most visited destinations in the nation's capital. Washington's train station is also a premier shopping mall and serves as a venue for world-class exhibitions and international cultural events.

Union Station features more than 100 specialty shops selling a variety of items from jewelry and apparel to gifts and boutique items. There are more than 35 establishments offering international cuisine and six full service restaurants: America, B. Smith's, Center Cafe, East Street Cafe, Pizzeria Uno, The Station Grill and Thunder Grill.

The Food Court at Union Station is a great place to enjoy a snack or take the family for a quick and inexpensive meal. Union Station also offers a multitude of services including shoe repair, a pharmacy, car rental services, florist, 24-hour automatic teller machines, photo processing, gourmet delicatessen, and foreign currency exchange.

Union Station also offers plenty of sightseeing tours options including the Gray Line, Old Town Trolley, DC Ducks, and Tourmobile.

Saturday, March 31

9:00 am – 9:00 pm	Workshop for Junior Researchers
3:30 pm – 5:30 pm	Conference Registration

Sunday, April 1

7:30 am – 6:30 pm	Conference Registration
8:00 am – 12:00 pm	<p>Short Courses</p> <p>SC4: Statistical Methods for Next Generation Sequencing SC6: Current Methods for Evaluating Prediction Performance of Biomarkers and Tests</p>
8:00 am – 5:00 pm	<p>Short Courses</p> <p>SC1: Bayesian Adaptive Methods for Clinical Trials SC2: Regression Modeling Strategies SC3: Sensitivity Analysis with Missing Data: Statistical Methods and Case Studies</p>
12:30 am – 5:30 pm	Diversity Workshop
1:00 pm – 5:00 pm	<p>Short Courses</p> <p>SC5: Latent Variable Models for Networks and Relational Data SC7: The Statistical Impact on Biopharmaceutical Drug Development of the ICH Efficacy Guidelines</p>
3:00 pm – 5:00 pm	Exhibits Open
4:30 pm – 7:30 pm	ENAR Executive Committee
4:00 pm – 7:30 pm	Placement Service
8:00 pm – 11:00 pm	<p>Social Mixer and Poster Session</p> <ol style="list-style-type: none"> 1. Posters: Bayesian Methods 2. Posters: Survival Analysis 3. Posters: Statistical Genetics / Genomics 4. Posters: Clinical Trials / Biopharmaceuticals / Medical Devices 5. Posters: Computationally Intensive Methods / High Dimensional Data 6. Posters: Environmental, Epidemiological, Health Services and Observational Studies 7. Posters: Correlated and Longitudinal Data 8. Posters: Multivariate, Non-Parametric and Semi-Parametric Models 9. Posters: Modeling, Prediction, Diagnostic Testing, Variable Selection and Consulting



Monday, April 2

7:30 am – 5:00 pm	Conference Registration
7:30 am – 5:00 pm	Speaker Ready Room
8:30 am – 5:30 pm	Exhibits Open
8:30 am – 10:15 am	Tutorial T1: Methods for Reproducible Research in R
8:30 am – 10:15 am	Scientific Program 10. Statistical Genomics in Sequencing Era, from Data Analysis to Personal Medicine 11. Variable Selection for Complex Models 12. Optimal and Personalized Treatment of HIV 13. Statistical Methods for Hospital Comparisons 14. Statistical Evaluation of Diagnostic Performance Using ROC Analysis 15. Statistical Applications in Food Safety 16. Topic Contributed Papers: Synthetic Health Data for Confidentiality Control 17. Topic Contributed Papers: Statistical Issues Arising from Alternatives to Double-Masked Randomized Controlled Trials 18. Contributed Papers: Statistical Genetics 19. Contributed Papers: Spatial/Temporal Modeling 20. Contributed Papers: Non-Linear, PK-PD, and Dose-Response Models 21. Contributed Papers: Longitudinal Data
9:30 am – 5:00 pm	Placement Service
10:15 am – 10:30 am	Refreshment Break and Visit Our Exhibitors
10:30 am – 12:15 am	Tutorial T2: Object Oriented Data Analysis
10:30 am – 12:15 pm	Scientific Program 22. Correlated High-Dimensional Data 23. Current Developments in Bayesian Clinical Trials 24. Causal Inference and Measurement Error 25. Two-Phase Estimation 26. Semi-Competing Risks 27. Graduate Student and Recent Graduate Council Invited Session: Careers in Biostatistics 28. Topic Contributed Papers: Statistical Challenges of Spatial Multi-Pollutant Data in Environmental Epidemiology 29. Topic Contributed Papers: Sample Size Adjustments for Clinical Trials with Multiple Comparisons 30. Contributed Papers: Adaptive Design/Adaptive Randomization 31. Contributed Papers: Biomarkers I 32. Contributed Papers: Causal Inference 33. Contributed Papers: Epidemiologic Methods
12:15 pm – 1:30 pm	Roundtable Luncheons

1:30 pm – 4:30 pm	Regional Advisory Board (RAB) Meeting
1:45 pm – 3:30 pm	<p>Tutorial</p> <p>T3: Comparative Effectiveness Research: Opportunities and Challenges</p>
1:45 pm – 3:30 pm	<p>Scientific Program</p> <p>34. Recent Advances on High-Dimensional Medical Data Analysis</p> <p>35. Bayesian Approaches with Applications to Genomics</p> <p>36. New Trends in Statistical Analysis of Biological Networks</p> <p>37. Mathematical Modeling of Disease</p> <p>38. High Dimensional Multi-Drug Combinations: From Preclinical Models to Clinical Trials</p> <p>39. Group Testing Methodology: Recent Developments and Applications to Infectious Disease</p> <p>40. Topic Contributed Papers: Novel Developments in Statistical Blind Source Separation and Independent Components Analysis</p> <p>41. Topic Contributed Papers: Causal Inference and Survival Analysis</p> <p>42. Contributed Papers: Clinical Trials</p> <p>43. Contributed Papers: Competing Risks</p> <p>44. Contributed Papers: Functional Data Analysis</p> <p>45. Contributed Papers: Genome Wide Association Studies</p>
3:30 pm – 3:45 pm	Refreshment Break and Visit Our Exhibitors
3:45 pm – 5:30 pm	<p>Tutorial</p> <p>T4: Towards High-Performance Computing with R</p>
3:45 pm – 5:30 pm	<p>Scientific Program</p> <p>46. Statistical Models for Omics Data</p> <p>47. Tweedie Award</p> <p>48. Recent Development in Optimal Treatment Strategies – Estimation, Selection and Inference</p> <p>49. Challenging Issues in Functional Connectivity Analysis</p> <p>50. Recent Advances in Clinical Trial Design: Utilities and Pitfalls</p> <p>51. Recent Advances in Methodology for the Analysis of Failure Time Data</p> <p>52. Topic Contributed Papers: New Methods and Theory in Functional/Longitudinal Data Analysis</p> <p>53. Topic Contributed Papers: Multivariate Methods in High Dimensional Data</p> <p>54. Contributed Papers: Bayes and other Approaches to Variable and Model Selection</p> <p>55. Contributed Papers: Clustered / Repeated Measures Survival Analysis</p> <p>56. Contributed Papers: Genomics</p> <p>57. Contributed Papers: Health Services / Health Policy</p>
6:00 pm – 7:30 pm	President's Reception

Tuesday, April 3

7:30 am – 5:00 pm	Conference Registration
7:30 am – 5:00 pm	Speaker Ready Room
9:00 am – 3:30 pm	Placement Service
8:30 am – 5:30 pm	Exhibits Open
8:30 am – 10:15 am	Tutorial T5: Slippery Slopes: A Practical Introduction to Spatially Varying Slopes in Regression Models
8:30 am – 10:15 am	Scientific Program 58. Towards Omics-Based Predictors for Patient Management 59. Functional Data Analysis 60. The Analysis of Social Network Data in Public Health 61. Novel Methodological Issues in Analyzing and Designing Longitudinal Biomarker Studies 62. Advances in Cancer Risk Prediction Models 63. Adaptive Design in Vaccine Trials 64. Topic Contributed Papers: Mixing: Inferences using Frequentist and Bayesian Methods and for Mixed Discrete and Continuous Data 65. Contributed Papers: Bayesian Methods for Longitudinal and/or Survival Data 66. Contributed Papers: Complex Study Designs and Bias Corrections 67. Contributed Papers: High Dimensional Data 68. Contributed Papers: High Dimensional Data: Machine Learning, Multivariate Methods and Computational Methods 69. Contributed Papers: Variable and Model Selection Methods
10:15 am – 10:30 am	Refreshment Break and Visit Our Exhibitors
10:30 am – 12:15 pm	70. Presidential Invited Address and Student Paper Awards
12:30 pm – 4:30 pm	Regional Committee Meeting
1:45 pm – 3:15 pm	Tutorial T6: Introduction to MATLAB for Statisticians
1:45 pm – 3:30 pm	Scientific Program 71. Recent Advances in Statistical Methods for Diagnostic Medicine 72. JABES Special Session on Climate Change 73. Grant Funding Opportunities for Biostatisticians 74. Causal Mediation analysis: Definitions, Identification, Inference and Controversies 75. Advances in Brain Imaging and Signal Biomarkers for Behavior 76. Recent Development in Imputation Methods and Their Applications 77. Topic Contributed Papers: Joint Modeling and Its Applications 78. Contributed Papers: Bayesian Methods I 79. Contributed Papers: Correlated / Longitudinal Data 80. Contributed Papers: Imaging

- 3:30 pm – 3:45 pm 81. Contributed Papers: Longitudinal and Time Series Data Analysis
- 3:45 pm – 5:30 pm 82. Contributed Papers: Survival Analysis and Risk Prediction
- Refreshment Break and Visit Our Exhibitors
- Scientific Program**
83. Statistical Methods and Applications in Rare Variant Sequencing Studies
84. Causal Inference Methods for HIV Research
85. Modern Statistical Machine Learning for Complex and High Dimensional Data
86. Statistical Challenges in Reproductive and Environmental Epidemiology
87. Combining Population Data from Multiple Sources
88. Spatial Uncertainty in Public Health Problems
89. Topic Contributed Papers: New Statistical Tools for High Dimensional Problems
90. Contributed Papers: Bayesian Methods II
91. Contributed Papers: Diagnostic and Screening Tests
92. Contributed Papers: Meta-Analysis
93. Contributed Papers: Missing Data I
94. Contributed Papers: Semiparametric and Nonparametric Methods for Survival Analysis
- 5:30 pm – 6:00 pm ENAR Business Meeting
- 6:30 pm – 10:30 pm Tuesday Night Event



Wednesday, April 4

7:30 am – 12:00 noon

Speaker Ready Room

7:30 am – 9:00 am

Planning Committee Meeting

8:00 am – 12:30 pm

Conference Registration

8:00 am – 12:00 pm

Exhibits Open

8:30 am – 10:15 am

Scientific Program

- 95. New Statistical Challenges in Functional Data Analysis
- 96. Estimation of Covariance Matrices with Applications to Longitudinal Data and Graphical Models
- 97. Analyses of Incomplete Longitudinal Data: How Robust are the Results?
- 98. Statistics in Mental Health Research: A Prelude to a Proposed New ASA Section
- 99. High-Impact Statistical Methods and the Fight Against HIV in the Developing World
- 100. Memorial Session for Tom Ten Have
- 101. Topic Contributed Papers: Advanced Statistical Modeling for Complex Omics Data
- 102. Contributed Papers: Biomarkers II
- 103. Contributed Papers: Dynamic Treatment Regimens
- 104. Contributed Papers: Missing Data II
- 105. Contributed Papers: Multiple Testing
- 106. Contributed Papers: Power / Sample Size Calculations

10:15 am – 10:30 am

Refreshment Break and Visit Our Exhibits

10:30 am – 12:15 pm

Scientific Program

- 107. Imaging, Omics and High-Dimensionality
- 108. Statistical Methods for Modeling SEER Population-based Cancer Data
- 109. Powerful Statistical Models and Methods in Next Generation Sequencing
- 110. Recent Developments in Subgroup Analysis in Randomized Clinical Trials
- 111. Individualized Risk Prediction using Joint Models of Longitudinal and Survival Data
- 112. Recent Advances in Dynamic Treatment Regimes Research
- 113. Topic Contributed Papers: A Review of Established and New Methods of Multiple Imputation of Missing Data with the Emphasis on Available Software Packages
- 114. Contributed Papers: Accelerated Failure Time Models
- 115. Contributed Papers: Environmental and Ecological Applications
- 116. Contributed Papers: Next Generation Sequencing
- 117. Contributed Papers: Nonparametric Methods
- 118. Contributed Papers: Semi-Parametric and Non-Parametric Models





Sunday, April 1

8:00 pm – 11:00 pm | Poster Presentations

1. POSTERS:

Bayesian Methods

Sponsor: ENAR

- 1a. Bayesian Modeling of ChIP-Seq Data for Detecting Chromatin Regions Attached to the Nuclear Envelope Based on Lamin B1**
*Sabrina Herrmann and Holger Schwender**, TU Dortmund University Dortmund, Germany; *Shoudan Liang, Yue Lu and Marcos Estecio*, University of Texas MD Anderson Cancer Center; *Katja Ickstadt*, TU Dortmund University, Dortmund, Germany and *Peter Mueller*, University of Texas at Austin
- 1b. Bayesian Learning in Joint Models for Longitudinal and Survival Data**
*Laura A. Hatfield**, Harvard Medical School; *James S. Hodges and Bradley P. Carlin*, University of Minnesota
- 1c. Bayesian Semiparametric Regression Analysis of Bivariate Current Status Data**
*Naichen Wang** and *Lianming Wang*, University of South Carolina
- 1d. A Phase I Trial Design for Incorporating Efficacy Outcomes that are Conditional Upon Absence of Dose-Limiting Toxicities**
*Thomas M. Braun, Shan Kang** and *Jeremy M G Taylor*, University of Michigan
- 1e. An Empirical Bayes Hierarchical Model for Inference in Time-course RNA-seq Experiments**
*Ning Leng**, University of Wisconsin-Madison; *Victor Ruotti, Ron M. Stewart and James A. Thomson*, Morgridge Institute for Research and *Christina Kendziorowski*, University of Wisconsin-Madison
- 1f. Bayesian Indirect and Mixed Treatment Comparisons across Longitudinal Time Points**
*Ying Ding** and *Haoda Fu, Eli Lilly and Company*
- 1g. Sample Size Estimation for Joint Modeling of Efficacy and Safety**
*Brandi Falley** and *James Stamey*, Baylor University
- 1h. Implementation of Continuous Bayesian Interim Monitoring for Single Arm Phase II Trials with the Oncore System**
*Stacey Slone**, *Emily Van Meter and Dennie Jones*, Markey Cancer Center, University of Kentucky
- 1i. Joint Modeling of Time-to-event and Tumor Size**
*Weichao Bao** and *Bo Cai*, University of South Carolina
- 1j. Bayesian Order Restricted Inference of Measurement Agreement with an Application to the Physician Reliability Study**
*Zhen Chen**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health
- 1k. Quantal Responses of the Weibull Risk Function**
*Douglas Moore**, University of North Carolina at Wilmington
- 1l. Bayesian Effect Estimation Accounting for Adjustment Uncertainty**
*Chi Wang**, University of Kentucky; *Giovanni Parmigiani, Dana-Farber Cancer Institute and Harvard School of Public Health and Francesca Dominici, Harvard School of Public Health*
- 1m. Bayesian Semiparametric Regression Models for Semicompeting Risks Data**
*Kyu Ha Lee**, *Sebastien Haneuse and Francesca Dominici*, Harvard School of Public Health
- 1n. Bayesian Restricted Contour Estimation Method for X-inactivation Ratio from Pyro-Sequencing Data**
*Alan B. Lenarcic**, *John Calaway, Fernando de Pardo and William Valdar*, University of North Carolina at Chapel Hill
- 1o. Multiple Imputation of Latent Counts from Heaped Self-Reported Measurements of Daily Cigarette Consumption**
*Sandra D. Griffith**, University of Pennsylvania; *Saul Shiffman*, University of Pittsburgh and *Daniel F. Heitjan*, University of Pennsylvania
- 1p. Bayesian Graphical Models in Epigenetic Applications**
*Riten Mitra**, University of Texas, MD Anderson Cancer Center; *Peter Mueller*, University of Texas at Austin and *Yuan Ji*, University of Texas, MD Anderson Cancer Center
- 1q. Bayesian Nonparametric Estimation of Finite Population Quantities in Absence of Design Information on Nonsampled Units**
*Sahar Zangeneh**, *Robert W. Keener and Roderick J.A. Little*, University of Michigan

2. POSTERS:**Survival Analysis**

Sponsor: ENAR

2a. Commonality Analysis for Survival Data, with an Application to Data from Breast Cancer Patients with Newly Diagnosed Brain Metastases*Binglin Yue**, Moffitt Cancer Center; *Xianghua Luo, Haitao Chu and Paul Sperduto*, University of Minnesota**2b. An AIPCW Estimator of the Cumulative Incidence Function Under Multiple Competing Censoring Mechanisms***Brian Sharkey**, *Michael Hughes and Judith Lok*, Harvard University**2c. Incorporating Sampling Plan and Competing Risks in Analysis of Prospective Pregnancy Studies***Kirsten J. Lum**, Johns Hopkins Bloomberg School of Public Health; *Rajeshwari Sundaram, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health and Thomas A. Louis*, Johns Hopkins Bloomberg School of Public Health**2d. Estimation of Cox Proportional Hazards Models for Two Negatively Correlated Processes***Wenjing Xu**, *Qing Pan and Joseph L. Gastwirth*, George Washington University**2e. Recursive Partitioning Based Weights for Censored Quantile Regression***Andrew Wey**, *Lan Wang and Kyle D. Rudser*, University of Minnesota**2f. Development and Evaluation of Multimarker Panels for Clinical Prognosis***Benjamin French**, University of Pennsylvania; *Paramita Saha Chaudhuri*, Duke University; *Bonnie Ky and Thomas P. Cappola*, University of Pennsylvania and *Patrick J. Heagerty*, University of Washington**2g. Generalized Odds-Rate Hazard Models for Interval-Censored Failure Time Data***Bin Zhang**, University of Alabama-Birmingham and *Lianming Wang*, University of South Carolina**2h. A Semi-Parametric Joint Model for Semi-competing Risk Data***Renke Zhou** and *Jing Ning*, University of Texas, MD Anderson Cancer Center and *Melissa Bondy*, Baylor College of Medicine**2i. Informative Age Reduction Model for Recurrent Event***Li Li** and *Timothy Hanson*, University of South Carolina**2j. Parameter Estimation in Cox Proportional Hazard Models with Missing Censoring Indicators***Naomi C. Brownstein**, *Eric Bair, Jianwen Cai and Gary Slade*, University of North Carolina at Chapel Hill**2k. Challenges from Competing Risks and Recurrent Events in Cardiovascular Device Trials: A Regulatory Reviewer's Perspective***Yu Zhao**, Center for Devices and Radiological Health, U.S. Food and Drug Administration**2l. Bayesian Semiparametric Model for Spatial Interval-Censored Failure Time Data***Chun Pan**, *Bo Cai, Lianming Wang and Xiaoyan Lin*, University of South Carolina**2m. Analysis of Variance for Right Censored Survival Data***Chetachi A. Emeremni**, University of Pittsburgh**2n. Sample Size and Power Calculation for Proportional Hazards Model with Time-dependent Variables***Songfeng Wang** and *Jiajia Zhang*, University of South Carolina and *Wenbin Lu*, North Carolina State University**3. POSTERS:****Statistical Genetics/Genomics**

Sponsor: ENAR

3a. Simultaneous Functional Category Analysis*Qiuling He** and *Michael A. Newton*, University of Wisconsin-Madison**3b. Combining Linkage Analysis and Next Generation Sequencing to Identify Rare Causal Variants in Complex Diseases***Silke Szymczak**, *Qing Li and Claire L. Simpson*, National Human Genome Research Institute, National Institutes of Health; *Robert Wojciechowski*, Johns Hopkins Bloomberg School of Public Health; *Xilin Zhao*, National Institute of Diabetes, Digestive, and Kidney Diseases, National Institutes of Health; *Mary Pat S. Jones*, National Human Genome Research Institute, National Institutes of Health; *Richa Agarwala and Alejandro A. Schaeffer*, National Center for Biotechnology Information, National Institutes of Health; *Stephen A. Wank*, National Institute of Diabetes, Digestive, and Kidney Diseases, National Institutes of Health and *Joan E. Bailey-Wilson*, National Human Genome Research Institute, National Institutes of Health

- 3c. Using Growth Mixture Modeling to Identify Loci Associated with the Progression of Disease**
*Tong Shen**, Duke University
- 3d. Data Preprocessing: Quantification and Normalization of the Luminex Assay System**
*Eileen Liao** and David Elashoff, University of California at Los Angeles
- 3e. Borrowing Information across Genes and Experiments for Improved Residual Variance Estimation in Microarray Data Analysis**
*Tieming Ji**, Peng Liu and Dan Nettleton, Iowa State University
- 3f. Joint Modeling of Disease and Endophenotype to Characterize the Effect of Genes and their Interactions**
*Alexandre Bureau**, Jordie Croteau and Molière Nguilé Makao, Université Laval - Robert-Giffard, Université Laval, Québec, Canada
- 3g. Epistasis Enriched Network and Risk Score Modeling of Continuous Multifactor Dimensionality Reduction**
*Hongying Dai**, Children's Mercy Hospital; Richard Charnigo, Mara Becker and Steve Leeder, University of Kentucky
- 3h. Joint Analysis of SNP and Gene Expression Data in Genome-Wide Association Studies**
*Yen-Tsung Huang**, Xihong Lin and Tyler VanderWeele, Harvard University
- 3i. A Robust Test for Detecting Differentially Methylated Regions**
*Hongyan Xu** and Varghese George, Georgia Health Sciences University
- 3j. Testing for Gene-Environment and Gene-Gene Interactions Under Monotonicity Constraints**
*Summer S. Han**, Philip S. Rosenberg and Nilanjan Chatterjee, National Cancer Institute, National Institutes of Health
- 3k. Bayesian Gene Set Test, the Proportion of Significant Genes in the Set as the Summary Statistic**
*Di Wu**, Ke Deng, Ming Hu and Jun Liu, Harvard University
- 3l. Adjustment for Population Stratification via Principal Components in Association Analysis of Rare Variants**
*Yiwei Zhang**, Weihua Guan and Wei Pan, University of Minnesota
- 3m. Reprioritizing Genetic Associations in Hit Regions using LASSO-based Resample Model Averaging**
William Valdar, Jeremy Sabourin*, Andrew Nobel, University of North Carolina at Chapel Hill and Chris Holmes, University of Oxford, United Kingdom
- 3n. Multilayer Correlation Structure of Microarray Gene Expression Data**
*Linlin Chen**, Rochester Institute of Technology; Lev Klebnov, Charles University and Anthony Almudevar, University of Rochester
- 3o. Statistical Methods for Identifying Batch Effects in Copy Number Data**
*Sarah E. Reese**, Virginia Commonwealth University; Zerry M. Therneau and Elizabeth J. Atkinson, Mayo Clinic; Kellie J. Archer, Virginia Commonwealth University and Jeanette E. Eckel-Passow, Mayo Clinic
- 3p. Distribution of Allele Frequencies and Effect Sizes and Their Interrelationships for Common Genetic Susceptibility Variants**
*Ju-Hyun Park** and Mitchell H. Gail, National Cancer Institute, National Institutes of Health; Clarice R. Weinberg, National Institute of Environmental Health Sciences, National Institutes of Health; Raymond J. Carroll, Texas A&M University; Charles C. Chung, Zhaoming Wang, Stephen J. Chanock, Joseph F. Fraumeni and Nilanjan Chatterjee, National Cancer Institute, National Institutes of Health
- 3q. Selecting a Statistical Test to Detect Associations with Groups of Genetic Variants: A User's Guide**
John Ferguson and Hongyu Zhao, Yale University; William Wheeler, IMS; Yi-Ping Fu, Ludmila Prokunina-Olsson and Joshua N. Sampson*, National Cancer Institute, National Institutes of Health
- 3r. A New Penalized Regression Approach to Testing Quantitative Trait-Rare Variant Association**
*Sunkyung Kim**, Wei Pan and Xiaotong Shen, University of Minnesota
- 3s. Incorporating Heterogeneity into Meta-Analysis of Genomic Data: A Weighted Hypothesis Testing Approach**
*Yihan Li** and Debashis Ghosh, Pennsylvania State University
- 3t. Modeling Haplotype Effects in a Genetic Reference Population: A Bayesian Collaborative Cross Toolkit**
*Zhaojun Zhang**, Wei Wang and William Valdar, University of North Carolina at Chapel Hill
- 3u. Integrated Analysis of miRNA-mRNA Expression Profiles using Canonical Correlation Analysis**
*Guy Brock**, Partha Mukhopadhyay, Robert Greene and Michele Pisano, University of Louisville
- 3v. Multi-Marker Association Analysis with Multiple Phenotypes in Families**
*Yiwei Zhang** and Saonli Basu, University of Minnesota

3w. Multi-Stage Sequence/Imputation Design

Thomas J. Hoffmann and John S. Witte, University of California San Francisco*

3x. An Application of the Proportional Odds Model to Genetic Association Studies

Kai Wang, University of Iowa*

3y. An Empirical Evaluation of Array Normalization for Agilent microRNA Expression Arrays

Li-Xuan Qin, Qin Zhou, Jaya Satagopan and Samuel Singer, Memorial Sloan-Kettering Cancer Center*

3z. Association Analysis of Rare Variants with Incomplete Genetics Data

Yijuan Hu, Emory University and Danyu Lin, University of North Carolina at Chapel Hill*

3aa. A Weighted Average Likelihood Ratio Test with Application to RNA-seq Data

Yaqing Si and Peng Liu, Iowa State University*

3ab. Order Statistic for Robust Genomic Meta-analysis

Chi Song and George C. Tseng, University of Pittsburgh*

3ac. Asymptotic Properties and Convergence Rate in Solving Models of Linkage Disequilibrium Mapping

Jiangtao Luo, University of Nebraska Medical Center*

4. POSTERS:**Clinical Trials/Biopharmaceuticals/
Medical Devices**

Sponsor: ENAR

4a. A Phase II Factorial Design for Combination Codevelopment in Oncology based on Probability of Correct Selection

Xinyu Tang, University of Arkansas for Medical Sciences and William Mietlowski, Novartis Oncology*

4b. Bayesian Application for a Clinical Trial with Correlated Continuous and Binary Outcomes

Ross Bray, John W Seaman Jr. and James Stamey, Baylor University*

4c. Scaled Biosimilarity Margins for Higher Variable Biologic Products

Nan Zhang and Jun Yang, Amgen, Inc.; Shein-Chung Chow, Duke University; Eric Chi, Amgen, Inc. and Laszlo Endrenyi, University of Toronto*

4d. Dose Finding Designs for Modeling Immunotherapy Outcomes: A Practical Approach in a Metastatic Melanoma Phase I Trial

Cody C. Chiuzan and Elizabeth Garrett-Mayer, Medical University of South Carolina*

4e. Elliptical Likelihood Ratio Test for Homogeneity of Ordered Means

Xiao Zhang and Michael P. McDermott, University of Rochester*

4f. Analysis of Multiple Non-Commensurate Outcomes in Psychiatry

Frank B. Yoon, Mathematica Policy Research, Inc.; Garrett M. Fitzmaurice, Harvard School of Public Health; Stuart R. Lipsitz, Harvard Medical School; Nicholas J. Horton, Smith College and Sharon-Lise T. Normand, Harvard Medical School*

4g. Evaluation for Time to Onset of Drug Action

Ziwen Wei, University of Connecticut, Luyan Dai and Naitee Ting, Boehringer Ingelheim*

4h. Meta-Analysis of One Outcome from Group Sequential Trials with Composite Outcomes: Are Standard Methods Appropriate?

Abigail B. Shoben, The Ohio State University*

4i. Statistical Analysis of Evaluating the Clinical Utility of Quantitative Real-Time Loop-Mediated Isothermal Amplification for Diagnosis of Lower Respiratory Tract Infections

Peng Zhang, Peichao Peng, Yu Kang and Minping Qian, Peking University*

4j. Monotonicity Assumptions for Exact Unconditional Tests in Binary Matched-Pairs Designs

Xiaochun Li, Mengling Liu and Judith D. Goldberg, New York University*

4k. A Phase I/II Clinical Trial for Drug Combinations

Beibei Guo and Yisheng Li, University of Texas MD Anderson Cancer Center*

4l. Overview of Statistical Issues in the Analysis of Continuous Glucose Monitoring

Chava Zibman, U.S. Food and Drug Administration*

4m. Biological Optimum Dose Finding for Novel Targeted Agents

Hao Liu, Baylor College of Medicine*

4n. Hierarchical Bayesian Methods for Combining Efficacy and Safety in Multiple Treatment Comparisons

Hwanhee Hong and Bradley P. Carlin, University of Minnesota*

5. POSTERS:**Computationally Intensive
Methods / High Dimensional Data***Sponsor: ENAR***5a. Global Hypothesis Testing for High Dimensional Repeated Measures Outcomes***Yueh-Yun Chi*, University of Florida; Matthew Gribbin, Human Genome Sciences; Lamers Yvonne, University of British Columbia; Jesse F. Gregory and Keith E. Muller, University of Florida***5b. An Example of using Sweave to Create and Maintain a Large, Dynamic Statistical Report: Prevalence and Effects of Potentially Distracting Non-care Activities during Anesthesia Care***David Afshartous, Steve Ampah*, Samuel K. Nwosu, Jason Slage and Eric Porterfield, Vanderbilt University***5c. Iteratively Reweighted Poisson Regression for Fitting Generalized Linear Model with Multiple Responses***Yiwen Zhang* and Hua Zhou, North Carolina State University***5d. Joint Estimation of Multiple Precision Matrices***T. Tony Cai and Hongzhe Li, University of Pennsylvania; Weidong Liu, Shanghai Jiao Tong University and Jichun Xie*, Temple University***5e. How to Bootstrap fMRI Data?***Sanne Roels*, Tom Loeys and Beatrijs Moerkerke, Ghent University, Belgium***5f. The Hosmer-Lemeshow Goodness of Fit Test: Does the Grouping Really Matter?***Hillary M. Rivera*, Zoran Bursac and D. Keith Williams, University of Arkansas for Medical Sciences***5g. A Bayesian Non-Parametric Potts Model with fMRI Application***Timothy D. Johnson and Zhuqing Liu*, University of Michigan and Thomas E. Nichols, University of Warwick***5h. Oracle Inequalities for the High-Dimensional Cox Regression Model via Lasso***Shengchun Kong* and Bin Nan, University of Michigan***5i. Integrated Machine Learning Approach as a Tool for Testing SNP-SNP Interactions***Hui-Yi Lin*, H. Lee Moffitt Cancer Center & Research Institute***5j. A General Theory of Sufficient Dimension Reduction: Formulation and Estimation***Kuang-Yao Lee*, Bing Li and Francesca Chiaromonte, Pennsylvania State University***5k. Optimal Multi-Stage Single-arm Phase II Design Based on Simulated Annealing***Nan Chen* and J. Jack Lee, University of Texas MD Anderson Cancer Center***5l. SubLIME: Subtraction-based Logistic Inference for Modeling and Estimation***Elizabeth M. Sweeney* and Russell T. Shinohara, Johns Hopkins University and National Institute of Neurological Disorders and Stroke, National Institutes of Health; Colin D. Shea, National Institute of Neurological Disorders and Stroke, National Institutes of Health; Daniel S. Reich, Johns Hopkins University and National Institute of Neurological Disorders and Stroke, National Institutes of Health and Ciprian M. Crainiceanu, Johns Hopkins University***5m. Comparing Independent Component Analysis Estimation Methods with an Application to Neuroimaging of Resting State Functional Connectivity in Attention Deficit and Hyperactivity Disorder***Benjamin B. Risk*, David S. Matteson and David Ruppert, Cornell University***5n. Variable Selection Methods in Linear Models with Growing Dimension***June Luo*, Clemson University***5o. Family-based Association Studies for Next-generation Sequencing***Yun Zhu* and Momiao Xiong, University of Texas, Health Science Center at Houston***5p. Case-based Reasoning in Comparative Effectiveness Research***Marianthi Markatou* and T. J. Watson Research Center, IBM and Prabhani Kuruppumullage Don, The Pennsylvania State University***5q. Regularization with Latent Factors for Model Selection in Multivariate Multiple Regression with Application to eQTL Analysis***Yan Zhou* and Peter X. K. Song, University of Michigan; Sijian Wang, University of Wisconsin and Ji Zhu, University of Michigan***5r. Measurement Error Model in Shape Analysis***Jiejun Du*, Ian Dryden and Xianzheng Huang, University of South Carolina*

6. POSTERS:**Environmental, Epidemiological, Health Services, And Observational Studies***Sponsor: ENAR***6a. Publication Bias in Meta-Analysis***Min Chen*, ExxonMobil Biomedical Sciences, Inc.***6b. Regression Models for Group Testing Data with Pool Dilution Effects***Christopher S. McMahan* and Joshua M. Tebbs, University of South Carolina and Christopher R. Bilder, University of Nebraska***6c. Principal Stratification Based on Latent Survival Classes to Predict Treatment Outcomes for Localized Kidney Cancer***Brian L. Egleston*, Yu-Ning Wong and Robert G. Uzzo, Fox Chase Cancer Center***6d. Loss Functions for Identifying Regions with Minimum or Maximum Rates***Ronald E. Gangnon*, University of Wisconsin-Madison***6e. Time-to-event Analysis of Ambient Air Pollution and Preterm Birth***Howard H. Chang*, Emory University; Brian J. Reich, North Carolina State University and Marie Lynn Miranda, University of Michigan***6f. Dorfman Group Screening with Multiple Infections***Yanlei Peng*, Joshua M. Tebbs, University of South Carolina and Christopher R. Bilder, University of Nebraska-Lincoln***6g. Applying General Risk Scores in Special Populations***Cynthia S. Crowson*, Elizabeth J. Atkinson and Terry M. Therneau, Mayo Clinic***6h. Using Predictive Surfaces to Understand Disparities in Exposure to PM_{2.5} and Ozone in North Carolina***Simone Gray*, U.S. Environmental Protection Agency; Sharon Edwards and Marie Lynn Miranda, University of Michigan***6i. Probabilistic Risk Assessment of Air Quality Management Strategies for Ozone***Kristen M. Foley*, U.S. Environmental Protection Agency; Brian J. Reich, North Carolina State University and Sergey L. Napelenok, U.S. Environmental Protection Agency***6j. A Simulation Study of Estimators of Time-Varying Treatment Effects on Cancer Recurrence with Time Dependent Confounding***Jincheng Shen*, University of Michigan; Edward H. Kennedy, VA Center for Clinical Management Research; Douglas E. Schaebel, Lu Wang and Jeremy M.G. Taylor, University of Michigan***6k. Propensity Score Using Machine Learning***Yi-Fan Chen* and Lisa Weissfeld, University of Pittsburgh***6l. Assessing the Effect of Organ Transplant on the Distribution of Residual Lifetime***David M. Vock*, Anastasios A. Tsiatis and Marie Davidian, North Carolina State University***6m. Methods for Classifying Changes in Bacterial Prevalence over Time***Raymond G. Hoffmann*, Ke Yan and Pippa Simpson, Medical College of Wisconsin; Jessica Vandeville and Sandra McLellan, University of Wisconsin – Milwaukee***6n. Salivary Cortisol as a Predictor of Health Outcomes***Brisa N. Sanchez*, Ana V. Diez-Roux and TE Raghunathan, University of Michigan***6o. Retracing Micro-Epidemics of Chagas Disease Using Epicenter Regression***Michael Levy, Dylan Small* and Joshua Plotkin, University of Pennsylvania***6p. Comparing Cancer Rates by Age-stratified Zero-inflated Poisson Model***Xiaoqin Xiong*, Information Management Services, Inc. and Binbing Yu, National Institute on Aging, National Institutes of Health***6q. Use of the Continuous-time Markov Chain to Examine the Natural History of Alzheimer's Disease***Wenyaw Chan* and Julia Benoit, University of Texas, Health Science Center at Houston and Rachele S. Doody, Baylor College of Medicine***6r. Process-based Bayesian Melding of Two-Zone Models and Industrial Workplace Data***Joao V.D. Monteiro*, Sudipto Banerjee and Gurumurthy Ramachandran, University of Minnesota*

7. POSTERS:**Correlated and Longitudinal Data***Sponsor: ENAR***7a. Multilevel Joint Analysis of Longitudinal and Binary Outcome***Seo Yeon Hong* and Lisa A. Weissfeld, University of Pittsburgh***7b. Space-time Heterogeneities in One-dimensional Point Process Data: Modeling Sea Turtle Nesting Patterns via Log-Gaussian Cox Processes***Ming Wang*, Jian Kang and Lance A. Waller, Emory University***7c. Joint Modeling of Longitudinal Multivariate Measurements and Survival data with Applications to Parkinson's Disease***Bo He* and Sheng Luo, University of Texas at Houston***7d. Identification of Clinically Relevant Disease Subtypes using Supervised Sparse Clustering***Sheila Gaynor* and Eric Bair, University of North Carolina-Chapel Hill***7e. Multistate Markov Chain Transition Model for Clustered Longitudinal Data: Application to an Osteoarthritis Study***Ke Wang*, Bin Zhang and Yuqing Zhang, Boston University; Haiqun Lin, Yale University and Howard Cabral, Boston University***7f. A Bivariate Location-Scale Mixed-Effects Model with Application to Ecological Momentary Assessment (EMA) Data***Oksana Pugach* and Donald Hedeker, University of Illinois at Chicago***7g. The Influences of Utilized and Theoretical Covariance Weighting Matrices on the Estimation Performance of QIF***Philip M. Westgate*, University of Kentucky***7h. Group-based Trajectory Modeling of Cardiac Autonomic Modulation***Michele Shaffer*, Fan He and Duanping Liao, Penn State College of Medicine***7i. Statistical Inference on Temporal Gradients in Regionally Aggregated Data***Harrison S. Quick*, Sudipto Banerjee and Bradley P. Carlin, University of Minnesota***7j. Fitting Parametric Random Effects Models in very Large Data Sets with Application to VHA Data***Mulugeta Gebregziabher, Leonard E. Egede, Gregory E. Gilbert* and Kelly Hunt, Center for Disease Prevention and Health Interventions in Diverse Population; Paul Nietert, Medical University of South Carolina and Patrick Mauldin, Center for Disease Prevention and Health Interventions in Diverse Population***7k. Modeling and Estimation of Repeated Ordinal Data Using Gaussian Copula***Raghavendra R. Kurada, Old Dominion University; Roy T. Sabo, Virginia Commonwealth University and N. Rao Chaganty*, Old Dominion University***7l. Simulation Study of the Convergence Properties of Log Gaussian Cox Process Posteriors***Timothy D. Johnson and Ming Teng*, University of Michigan and Jian Kang, Emory University***7m. Sensitivity of a Longitudinal Analysis to Missing Data Hypotheses: A Study of the Mechanisms by which Weight Loss Reduces Arterial Stiffness***Jennifer N. Cooper*, Jeanine M. Buchanich, Ada Youk, Maria M. Brooks and Kim Sutton-Tyrrell, University of Pittsburgh***7n. Multivariate Spatial Analysis via Mixtures***Brian Neelon* and Rebecca Anthonopolos, Duke University***7o. Elliptic Spatial Scan Statistic on Trends***Jun Luo*, Information Management Services, Inc.***7p. Joint Modeling of Longitudinal Health Predictors and Cross-sectional Health Outcomes via Mean and Variance Trajectories***Bei Jiang* and Mike Elliot, University of Michigan; Mary Sammel, University of Pennsylvania and Naisyin Wang, University of Michigan***7q. Conditional Maximum Likelihood Estimation in Tumor Growth Models under Volume Endpoint Censoring***Kingshuk Roy Choudhury*, Duke University and Finbarr O'Sullivan, University College Cork, Ireland***7r. An Analytical Framework for HPV Transmission using Longitudinal Data on Couples***Xiangrong Kong*, Johns Hopkins Bloomberg School of Public Health***7s. Dimension Reduction Techniques in Application to Longitudinal Data Analysis***Tamika Royal-Thomas*, Winston-Salem State University; Daniel McGee, Debajyoti Sinha, Florida State University; Clive Osmond, University of Southampton and Terrence Forrester, University of the West Indies***7t. A Bayesian Semi-Parametric Joint Modeling for Longitudinal and Survival Data***Julius S. Ngwa* and L. Adrienne Cupples, Boston University*

8. POSTERS:**Multivariate, Non-Parametric, and Semi-Parametric Models***Sponsor: ENAR***8a. Estimation of Kendall's Tau For Bivariate Survival Data with Truncation***Hong Zhu*, The Ohio State University***8b. Probabilistic Index Mixed Models for Clustered Data***Fanghong Zhang*, Ghent University, Belgium;
Stijn Vansteelandt, Ghent University, Belgium and
London School of Hygiene and Tropical Medicine, U.K.;
Jan De Neve and Olivier Thas, Ghent University, Belgium***8c. A Multi-dimensional Approach to Large-scale Simultaneous Hypothesis Testing using Voronoi Tessellations***Daisy L. Phillips* and Debashis Ghosh, The Pennsylvania State University***8d. Model Selection and Estimation in Generalized Additive Mixed Models***Dong Wang* and Daowen Zhang, North Carolina State University***8e. Clinical Variables Associated with Melanoma Brain Metastasis: A Meta Analysis***Meng Qian*, Michelle Ma, Ronald O. Perelman, Iman Osman and Yongzhao Shao, New York University School of Medicine***8f. Rank Based Estimation for Generalized Linear Models***Guy-vanie M. Miakonkana* and Asheber Abebe, Auburn University***8g. Exploring Multivariate Associations: A Graph Theoretic Approach Revisited***Sriresh G. Arunajadai*, Columbia University***8h. Comparison of Rank Based Tests in Combined Designs***Yvonne M. Zubovic*, Indiana University Purdue University Fort Wayne***8i. Factor Analysis for Binary Data used to Measure Patient's Expectations and Experiences with Health Services***Rebeca Aguirre-Hernandez*, Alicia Hamui-Sutton, Ruth García-Fuentes and Anselmo Calderon-Estrada, Ciudad Universitaria, Mexico***8j. Autoassociative Neural Network Approach for Nonlinear Principal Component Analysis***Siddik Keskin*, Yuzuncu Yil University and University of Toronto and W.Y. Wendy Lou, University of Toronto***9. POSTERS:****Modeling, Prediction, Diagnostic Testing, Variable Selection, And Consulting***Sponsor: ENAR***9a. Joint Modeling of Censored Multivariate Longitudinal and Event Time Data***Francis Pike* and Lisa Weissfeld, University of Pittsburgh***9b. Cross-sectional HIV-1 Incidence Estimation Utilizing Viral Genetic Diversity***Natalie M. Exner*, Vladimir A. Novitsky and Marcello Pagano, Harvard School of Public Health***9c. Jackknife Empirical Likelihood for ROC Curves with Missing Data***Hanfang Yang*, Georgia State University***9d. Profile Likelihood Based Confidence Interval of the Intraclass Correlation for Binary Outcomes, with Applications to Toxicological Data***Krishna K. Saha*, Central Connecticut State University***9e. Introductory Statistics for Medical Students—in 6 Lectures***Jacob A. Wegelin*, Virginia Commonwealth University***9f. Comparison of Tests in a Region around the Optimal Threshold***Donna K. McClish*, Virginia Commonwealth University***9g. Interquantile Shrinkage in Regression Models***Liewen Jiang*, Howard Bondell and Judy Wang, North Carolina State University***9h. A Joint Model for Quality of Life and Survival in Palliative Care Studies***Zhigang Li*, Tor Tosteson and Marie Bakitas, Dartmouth Medical School***9i. The Hosmer-Lemeshow Goodness of Fit Test for Multiply Imputed Data***Danielle Sullivan and Rebecca R. Andridge*, The Ohio State University*



9j. Reverse Kaplan-Meier Method for Analyzing Biomarkers with Limit of Detection

Tulay Koru-Sengul, University of Miami*

9k. Empirical Likelihood Based Tests for Stochastic Ordering in Right-censored Setting

Hsin-wen Chang and Ian W. McKeague, Columbia University*

9l. Efficient Estimation using Conditional Empirical Likelihood with Missing Outcomes

Peisong Han, Lu Wang and Peter X.K. Song, University of Michigan*

9m. A Perturbation Method for Prediction Accuracy with Regularized Regression

Jessica Minnier and Tianxi Cai, Harvard School of Public Health*

Monday, April 2

8:30 – 10:15 am

10. Statistical Genomics in Sequencing Era, from Data Analysis to Personal Medicine

Sponsor: ENAR

Organizer: Wei Sun, University of North Carolina at Chapel Hill

Chair: Wei Sun, University of North Carolina at Chapel Hill

8:30 **Quantitative Trait Analysis Under Trait-Dependent Sampling, with Applications to the NHLBI Exome Sequencing Project**
Danyu Lin* and Donglin Zeng, University of North Carolina at Chapel Hill

8:55 **A Survival-Supervised Latent Dirichlet Allocation Model for Genomic Based Studies of Disease**
John A. Dawson and Christina Kendziorski*, University of Wisconsin–Madison

9:20 **Detection of RNA and DNA Sequence Differences in the Human Transcriptome**
Mingyao Li*, University of Pennsylvania

9:45 **Estimation of Sequencing Error Rates in Short Reads**
Xin Victoria Wang*, Dana-Farber Cancer Institute, Harvard School of Public Health; Natalie Blades, Brigham Young University; Jie Ding, Dana-Farber Cancer Institute, Harvard School of Public Health; Razvan Sultana, Dana-Farber Cancer Institute, Boston University and Giovanni Parmigiani, Dana-Farber Cancer Institute, Harvard School of Public Health

10:10 **Floor Discussion**

11. Variable Selection for Complex Models

Sponsor: IMS

Organizer: Marie Davidian, North Carolina State University

Chair: Marie Davidian, North Carolina State University

8:30 **A ROAD to Classification in High Dimensional Space**
Jianqing Fan*, Princeton University; Yang Feng, Columbia University and Xin Tong, Princeton University

8:55 **Bayesian Nonparametric Variable Selection**
David Dunson*, Duke University

9:20 **Risk Prediction from Genome-Wide Data**
Ning Sun and Hongyu Zhao*, Yale School of Public Health

9:45 **Complete Least Squares for Screening and Variable Selection**
Leonard A. Stefanski*, Eric Reyes and Dennis Boos, North Carolina State University

10:10 **Floor Discussion**

12. Optimal and Personalized Treatment of HIV

Sponsor: IMS

Organizer: Michael Hudgens, University of North Carolina at Chapel Hill

Chair: Michael Hudgens, University of North Carolina at Chapel Hill

8:30 **Methods for Evaluating the Effects of Delayed ARV Regimen Change**
Brent A. Johnson*, Emory University

9:00 **Personalized Medicine for HIV Patients Initiating Therapy**
Brian Claggett*, Yun Chen, Michael Hughes, Heather Ribaud, Camlin Tierney, and Katie Mollan, Harvard School of Public Health

9:30 **Estimation of Constant and Time-Varying Dynamic Parameters of HIV Infection in a Nonlinear Differential Equation Model**
Hulin Wu*, Hongyu Miao and Hua Liang, University of Rochester

10:00 **Floor Discussion**

13. Statistical Methods for Hospital Comparisons

Sponsor: ASA Biometrics Section

Organizer: Tom Louis, Johns Hopkins University

Chair: Debashis Ghosh, Penn State University

8:30 **Hospital Comparisons, Issues and Approaches**
Arlene Ash, University of Massachusetts Medical School; Stephen E. Fienberg, Carnegie Mellon University; Thomas A. Louis*, Johns Hopkins Bloomberg School of Public Health; Sharon-Lise T. Normand, Harvard Medical School and Harvard School of Public Health; Therese Stukel, University of Toronto and Jessica Utts, University of California, Irvine

9:00 **Advantages of Unified Model-Based Approaches to Provider Profiling**
Frank E. Harrell Jr, PhD., Department of Biostatistics, Vanderbilt University School of Medicine

9:20 **Challenges Implementing a Hierarchical Model for Use in Public Reporting: The Case of “Hospital Compare.”**
Jeffrey H. Silber, MD, PhD., Departments of Pediatrics and Anesthesiology & Critical Care, School of Medicine; Department of Health Care Management, The Wharton School, University of Pennsylvania; Center for Outcomes Research, The Children’s Hospital of Philadelphia

9:40 **Discussion: Statisticians & Health Policy**
Sharon-Lise T. Normand*, Harvard University

10:00 **Floor Discussion**

14. Statistical Evaluation of Diagnostic Performance Using ROC Analysis

Sponsor: ASA Health Policy Statistics Section

Organizer: Kelly Zou, Pfizer Inc.

Chair: A. James O'Malley, Harvard Medical School

8:30 Combining Biomarkers to Improve Diagnostic Accuracy

Chunling Liu, Hong Kong Polytechnic University; Aiyi Liu*, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health and Susan Halabi, Duke University

9:00 Performance Evaluation in Tasks of Detection and Localization of Multiple Targets per Subject

Andriy I. Bandos*, University of Pittsburgh

9:30 The Use of the Invariance Property in ROC Analysis

Kelly H. Zou*, Pfizer Inc.

10:00 Discussant: Howard Rockette, University of Pittsburgh

15. Statistical Applications in Food Safety

Sponsor: ENAR

Organizer: Errol Strain, U.S. FDA Center for Food Safety and Applied Nutrition

Chair: Yoko Adachi, FDR Center for Veterinary Medicine

8:30 Disproportionality Analyses for Detection Food Adverse Events

Stuart J. Chirtel*, U.S. Food and Drug Administration

9:00 Statistical Methods for Analysis of DNA Aptamers

Yan Luo*, Jeffrey A. DeGrasse, Sara Handy, Andrea Ottesen and Errol Strain, U.S. Food and Drug Administration

9:30 Forensic Analysis of Bacterial Genomes for Foodborne Outbreaks

Errol A. Strain*, Allard Marc, Eric Brown and Luo Yan, U.S. Food and Drug Administration

10:00 Floor Discussion

16. TOPIC CONTRIBUTED PAPERS:

Synthetic Health Data for Confidentiality Control

Sponsor: ENAR

Organizer: Mandi Yu, National Cancer Institute, National Institutes of Health

Chair: Yulei He, Harvard Medical School

8:30 Imputation of Confidential Datasets with Spatial Locations using Point Process Models

Thais V. Paiva* and Jerome P. Reiter, Duke University

8:50 Multiple Imputation using Chained Equations for High Dimensional Longitudinal Missing Data in the DCCT/EDIC Study

Michael D. Larsen*, Paula McGee and John M. Lachin, The George Washington University

9:10 Assessing the Privacy of Randomized Multivariate Queries to a Database Using the Area under the Receiver-Operator Characteristic Curve

Gregory J. Matthews*, University of Massachusetts and Ofer Harel, University of Connecticut

9:30 Disclosure Control in the CanCORS

Bronwyn Loong* and David Harrington, Harvard University; Alan Zaslavsky and Yulei He, Harvard Medical School

9:50 Partial Synthetic Data for Population-based Cancer Registry Data

Mandi Yu*, Li Zhu, Benmei Liu, Eric (Rocky) Feuer and Kathleen Cronin, National Cancer Institute, National Institutes of Health

10:10 Floor Discussion

17. TOPIC CONTRIBUTED PAPERS:

Statistical Issues Arising from Alternatives to Double-Masked Randomized Controlled Trials

Sponsor: ENAR

Organizers: Scott Miller, Shiling Ruan, and Qin Li, U.S. Food and Drug Administration

Chair: Scott Miller, U.S. Food and Drug Administration

8:30 A Regulatory View of the Statistical Challenges for Alternatives to Double-Masked Randomized Controlled Trials

Gregory Campbell*, U.S. Food and Drug Administration

8:45 Study Design and Analysis issues with EFM-CAD

Bipasa Biswas*, U.S. Food and Drug Administration

- 9:00 **Assessing the “Success” of the Blind in Sham-Controlled Randomized Clinical Trials**
Valerie Durkalski and Qi Wu, Medical University of South Carolina*
- 9:15 **Practices of Using Propensity Score Methods in Drug-Eluting Stent Studies**
Hong Wang and H. Terry Liao, Boston Scientific Corporation*
- 9:30 **Study Designs for Postmarket Surveillance**
Theodore Lystig and Jeremy Strief, Medtronic, Inc.*
- 9:45 **Challenges in Non-Randomized Controlled Medical Device Trials**
Shelby Li and Shufeng Liu, Medtronic, Inc.*
- 10:00 **Floor Discussion**

18. CONTRIBUTED PAPERS:**Statistical Genetics**

Sponsor: ENAR

Chair: Kun Chen, Kansas State University

- 8:30 **Nonlinear Sufficient Dimension Reduction for Association Testing of Complex Traits**
Hongjie Zhu, Duke University; Lexin Li and Hua Zhou, North Carolina State University*
- 8:45 **A Graph-constrained Estimation and Regularization for Survival Analysis of Microarray Gene Expression Data**
Hokeun Sun, Columbia University and Hongzhe Li, University of Pennsylvania*
- 9:00 **Local Ancestry Inference in Admixed Nuclear Families using a Two-layer Clustering Model**
Wei Chen, University of Pittsburgh and Yongtao Guan, Baylor College of Medicine*
- 9:15 **A Flexible Varying Coefficient Model for the Detection of Nonlinear Gene-Environment Interaction**
Yuehua Cui and Cen Wu, Michigan State University*
- 9:30 **Permutation-based Expression Pathway Analysis, Without Permutation**
■ *Yi-Hui Zhou* and Fred A. Wright, University of North Carolina at Chapel Hill*
- 9:45 **Response-selective Sampling Designs for Rare Variant Analysis in Genetic Association Studies**
Yildiz E. Yilmaz, University of Toronto*
- 10:00 **Floor Discussion**

19. CONTRIBUTED PAPERS:**Spatial/Temporal Modeling**

Sponsor: ENAR

Chair: Victoria Liublinska, Harvard University

- 8:30 **A Geoadditive Imputation Approach to Measurement Error Correction with Spatially Misaligned Non-normal Data**
Lauren Hund and Till Baernighausen, Harvard School of Public Health; Frank Tanser, Africa Centre for Health and Population Studies and Brent Coull, Harvard School of Public Health*
- 8:50 **Modeling Air Pollution Mixtures in Southern California**
Reza Hosseini, Meredith Franklin, Duncan Thomas and Kiros Berhane, University of Southern California*
- 9:10 **Flexible Bayesian Predictive Process Spatial Factor Models for Misaligned Data Sets**
Qian Ren and Sudipto Banerjee, University of Minnesota*
- 9:30 **High-Dimensional State Space Models for Dynamic Gene Regulatory networks**
Iris Chen and Hulin Wu, University of Rochester*
- 9:50 **A Stochastic and State Space Mixture Model of Human Liver Cancer Multiple-Pathway Model Involving both Hereditary and Non-hereditary Cancer**
Xiaowei (Sherry) Yan, Geisinger Center for Health Research and Wai-Yuan Tan, University of Memphis*
- 10:00 **Floor Discussion**

20. CONTRIBUTED PAPERS:**Non-Linear, PK-PD, and Dose-Response Models**

Sponsor: ENAR

Chair: Howard Chang, Emory University

- 8:30 **Non-Linear Models for Multiple Flow Exhaled Nitric Oxide Data**
Sandra P. Eckel, Kiros Berhane, William S. Linn, Muhammad T. Salam, Yue Zhang, Edward B. Rappaport and Frank D. Gilliland, University of Southern California*
- 8:45 **An Empirical Approach to Sufficient Similarity: Combining Exposure Data and Mixtures Toxicology Data**
Chris Gennings, Virginia Commonwealth University; Scott Marshall, BioStat Solutions, Inc. and LeAnna G. Stork, Monsanto Company*

9:00 **Comparison of Different Biosimilarity Criteria under Various Study Designs**
Eric Chi, Amgen Inc.; Shein-Chung Chow, Duke University and Hao Zhang*, Amgen Inc.

9:15 **Semiparametric Modeling of Dose-Response Relationships in Ex-Vivo Experiments**
Samiha Sarwat* and Jaroslaw Harezlak, Indiana University School of Medicine and Clarissa Valim, Harvard School of Public Health

9:30 **Nonlinear Models for Meta-Analysis of Summary Exposure-Response Data**
Paul W. Stewart*, University of North Carolina at Chapel Hill and Vernon Benignus, U. S. Environmental Protection Agency

9:45 **Statistical Inference for Dynamic Systems Governed by Differential Equations with Applications to Toxicology**
■ Siddhartha Mandal* and Pranab K. Sen, University of North Carolina at Chapel Hill and Shyamal D. Peddada, National Institute of Environmental Health Sciences, National Institutes of Health

10:00 **A B-spline Based Semiparametric Nonlinear Mixed Effects Model**
Angelo Elmi*, George Washington University; Sarah Ratcliffe, Samuel Parry and Wensheng Guo, University of Pennsylvania School of Medicine

21. CONTRIBUTED PAPERS:

Longitudinal Data

Sponsor: ENAR

Chair: Benjamin French, University of Pennsylvania

8:30 **A Bayesian Semiparametric Approach for Incorporating Longitudinal Information on Exposure History for Inference in Case-control Studies**
Dhiman Bhadra*, Worcester Polytechnic Institute; Michael J. Daniels, University of Florida; Sung Duk Kim, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health; Malay Ghosh, University of Florida and Bhramar Mukherjee, University of Michigan

8:45 **Shared Parameter Models for Longitudinal Multiple Source Cost Data**
Mulugeta Gebregziabher*, Medical University of South Carolina and Ralph H. Johnson VA Medical Center, Charleston; Yumin Zhao and Clara E. Dismuke, Ralph H. Johnson VA Medical Center, Charleston; Kelly J. Hunt, Ralph H. Johnson VA Medical Center, Charleston and Medical University of South Carolina and Leonard E. Egede, Ralph H. Johnson VA Medical Center, Charleston

9:00 **A Mixture of Markov Models for Heterogeneous Longitudinal Ordinal Data with Applications to Analyzing Longitudinal Bacterial Vaginosis Data**
Kyeongmi Cheon*, Paul S. Albert and Marie Thoma, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health

9:15 **Semiparametric Regression with Nested Repeated Measures Data**
Rhonda D. VanDyke*, Resmi Gupta and Raouf S. Amin, Cincinnati Children's Hospital Medical Center

9:30 **Analysis of Longitudinal Data using ARMA(1,1) Correlation Model**
Sirisha L. Mushti* and N. Rao Chaganty, Old Dominion University

9:45 **Generalized p-value Method for Testing Zero Variance in Linear Mixed-effects Models**
Haiyan Su*, Montclair State University; Xinmin Li, Shan Dong University of Technology; Hua Liang and Wulin Wu, University of Rochester

10:00 **Variable Selection and Estimation for Multivariate Panel Count Data via the Seamless-L0 Penalty**
Haixiang Zhang*, University of Missouri and University of Jilin, China and Jianguo Sun, University of Missouri



Monday, April 2 (continued)

10:30 am – 12:15 pm

22. Correlated High-Dimensional Data*Sponsor: ASA Section on Statistical Learning and Data Mining**Organizer: Annie Qu, University of Illinois**Chair: Annie Qu, University of Illinois*

- 10:30 **Positive Definite Sparse Estimators of High-dimensional Covariance Matrices**
Adam J. Rothman, University of Minnesota*
- 10:55 **Statistical Models for Analysis of Human Microbiome Data**
Hongzhe Li, University of Pennsylvania*
- 11:20 **Joint Statistical Modeling of Multiple High-dimensional Data**
Yufeng Liu, University of North Carolina at Chapel Hill*
- 11:45 **On Maximum Likelihood Estimation of Multiple Precision Matrices**
Xiaotong Shen, Yunzhang Zhu and Wei Pan, University of Minnesota*
- 12:10 **Floor Discussion**

23. Current Developments In Bayesian Clinical Trials*Sponsor: ENAR**Organizer: Karen Price, Eli Lilly & Company**Chair: Karen Price, Eli Lilly & Company*

- 10:30 **Bayesian Applications in Drug Safety Evaluation**
Amy Xia, Amgen, Inc.*
- 11:00 **Commensurate Priors for Incorporating Historical Information in Clinical Trials using General and Generalized Linear Models**
Brian P. Hobbs, University of Texas MD Anderson Cancer Center; Daniel J. Sargent, Mayo Clinic and Bradley P. Carlin, University of Minnesota*
- 11:30 **Identifying Potential Adverse Events Dose-Response Relationships via Bayesian Indirect and Mixed Treatment Comparison Models**
Haoda Fu, Karen L. Price, Mary E. Nilsson and Stephen J. Ruberg, Eli Lilly & Company*
- 12:00 **Discussant: George Rochester, U.S. Food and Drug Administration**

24. Causal Inference and Measurement Error*Sponsor: IMS**Organizer: Tyler Vanderweele, Harvard University**Chair: Tyler Vanderweele, Harvard University*

- 10:30 **Analytic Results on the Bias due to Nondifferential Misclassification of a Confounder**
Elizabeth L. Ogburn and Tyler J. VanderWeele, Harvard University*
- 10:55 **Measurement Bias in Causal Inference: A Graph-based Perspective**
Judea Pearl, University of California at Los Angeles*
- 11:20 **Mediation Analysis when Mediator is Mis-measured or Mis-classified and Outcome is Continuous**
Linda Valeri and Tyler J. VanderWeele, Harvard University*
- 11:45 **Average Causal Effect Estimation Allowing Covariate Measurement Error**
Yi Huang and Xiaoyu Dong, University of Maryland, Baltimore County; Karen Bandeen-Roche, Johns Hopkins University and Cunlin Wang, U.S. Food and Drug Administration*
- 12:10 **Floor Discussion**

25. Two-Phase Estimation*Sponsor: ASA Survey Research and Methodology Section**Organizer: Phillip Kott, RTI International**Chair: Dan Liao, RTI International*

- 10:30 **Investigating Alternative ways of Estimating the Proportion of a Population with Serious Mental Illness from a Two-Phase Sample**
Phillip S. Kott, Dan Liao and Jeremy Aldworth, RTI International*
- 11:00 **Efficient Design and Inference for Gene X Environment Interaction, using Sequencing Data**
Kenneth Rice, University of Washington and Thomas Lumley, University of Auckland*
- 11:30 **A Model Assisted Approach to Combining Data from two Independent Surveys**
Jae-kwang Kim, Iowa State University and J.N.K. Rao, Carleton University, Canada*
- 12:10 **Floor Discussion**

26. Semi-Competing Risks*Sponsor: ENAR**Organizer: Qingxia Chen, Vanderbilt University**Chair: Qingxia Chen, Vanderbilt University*

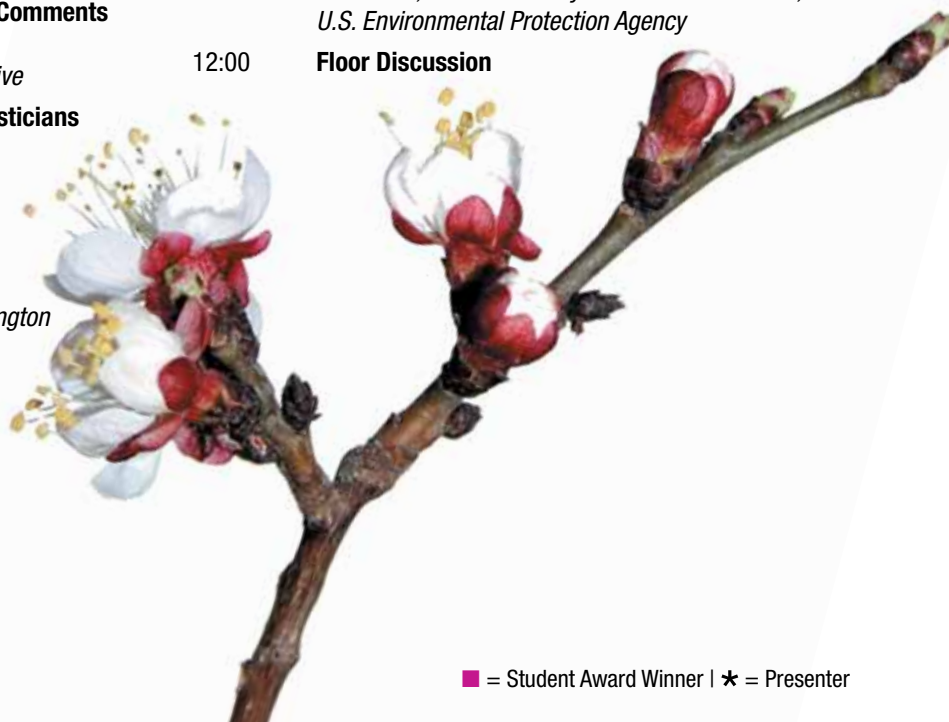
- 10:30 **Bayesian Gamma Frailty Models for Survival Data with Semi-Competing Risks and Treatment Switching**
*Yuanye Zhang and Ming-Hui Chen**, University of Connecticut; *Joseph G. Ibrahim and Donglin Zeng*, University of North Carolina at Chapel Hill; *Qingxia Chen*, Vanderbilt University; *Zhiying Pan and Xiaodong Xue*, Amgen Inc.
- 10:55 **Quantile Regression Methods for Semi-Competing Risks Data**
*Limin Peng**, Emory University
- 11:20 **Nonparametric Cause-specific Association Analyses of Multivariate Untied or Tied Competing Risks Data**
*Hao Wang and Yu Cheng**, University of Pittsburgh
- 11:45 **Estimation of Time-dependent Association for Bivariate Failure Times in the Presence of a Competing Risk**
*Jing Ning**, University of Texas MD Anderson Cancer Center and *Karen Bandeen-Roche*, Johns Hopkins University
- 12:10 **Floor Discussion**

27. Graduate Student and Recent Graduate Council Invited Session: Careers in Biostatistics*Sponsor: ENAR**Organizer: Hormuzd Katki, National Cancer Institute, National Institutes of Health**Chair: Reneé Moore, University of Pennsylvania*

- 10:30 **The Graduate Student and Recent Graduate Council**
*Hormuzd Katki**, National Cancer Institute, National Institutes of Health
- 10:55 **Are You a Hedgehog or a Fox? Brief Comments on a Career in Statistical Consulting**
*Jennifer Schumi**, Statistics Collaborative
- 11:20 **Careers of Statisticians and Biostatisticians in the Government**
*Telba Irony**, U. S. Food and Drug Administration/CDRH
- 11:45 **Living and Working in Academia Post Graduation**
*Kimberly L. Drews**, The George Washington University Biostatistics Center
- 12:10 **Floor Discussion**

28. TOPIC CONTRIBUTED PAPERS:**Statistical Challenges of Spatial Multi-Pollutant Data in Environmental Epidemiology***Sponsor: ENAR**Organizer: Stacey E. Alexeeff, Harvard School of Public Health**Chair: Brent A. Coull, Harvard School of Public Health*

- 10:30 **Methods for Spatially-varying Measurement Error in Air Pollution Epidemiology**
*Stacey E. Alexeeff**, Harvard School of Public Health; *Raymond J. Carroll*, Texas A&M University and *Brent A. Coull*, Harvard School of Public Health
- 10:50 **Reduced Bayesian Hierarchical Models: Estimating Health Effects of Simultaneous Exposure to Multiple Pollutants**
*Jennifer F. Bobb**, Johns Hopkins Bloomberg School of Public Health; *Francesca Dominici*, Harvard School of Public Health and *Roger D. Peng*, Johns Hopkins Bloomberg School of Public Health
- 11:10 **Spatial Variable Selection Methods for Estimating Health Effects of Speciated Particulate Matter**
*Laura F. Boehm**, North Carolina State University; *Francesca Dominici*, Harvard School of Public Health; *Brian J. Reich* and *Montserrat Fuentes*, North Carolina State University
- 11:30 **Bayesian Spatially-varying Coefficient Models for Estimating the Toxicity of the Chemical Components of Fine Particulate Matter**
*Yeonseung Chung**, Korea Advanced Institute of Science and Technology; *Francesca Dominici*, *Michelle Bell* and *Brent Coull*, Harvard School of Public Health
- 11:50 **A Bivariate Space-time Downscaler under Space and Time Misalignment**
*Veronica J. Berrocal**, University of Michigan, *Alan E. Gelfand*, Duke University and *David M. Holland*, U.S. Environmental Protection Agency
- 12:00 **Floor Discussion**



29. TOPIC CONTRIBUTED PAPERS:**Sample Size Adjustments for Clinical Trials with Multiple Comparisons**

Sponsor: ENAR

Organizer: Yi Tsong, U.S. Food and Drug Administration

Chair: Jinglin Zhong, U.S. Food and Drug Administration

- 10:30 **Sample Sizes for Trials Involving Multiple Correlated Must-win Comparisons**
*Steven A. Julious**, University of Sheffield and *Nikki E. McIntyre*, AstraZeneca
- 10:50 **Sample Sizes Accounting for Multiplicity: Importance in Phase 2**
*Brian L. Wiens**, Srichand Jasti and *John W. Seaman*, Alcon Laboratories, Inc.
- 11:10 **Power and Sample Size Determination in Clinical Trials with Two-Correlated Relative Risks**
*Toshimitsu Hamasaki**, Osaka University Graduate School of Medicine; *Scott Evans*, Harvard University School of Public Health; *Tomoyuki Sugimoto*, Hirosaki University and *Takashi Sozu*, Kyoto University School of Public Health
- 11:30 **Test and Power Considerations for Multiple Endpoint Analyses using Sequentially Rejective Graphical Procedures**
*Frank Bretz**, Willi Maurer and *Ekkehard Glimm*, Novartis
- 11:50 **Sample Size of Thorough QTc Clinical Trial Adjusted for Multiple Comparisons**
*Yi Tsong**, U.S. Food and Drug Administration and *Xiaoyu Dong*, University of Maryland at Baltimore County
- 12:10 **Floor Discussion**

30. CONTRIBUTED PAPERS:**Adaptive Design/Adaptive Randomization**

Sponsor: ENAR

Chair: Bo He, University of Texas at Houston

- 10:30 **Platform-based Clinical Trial Designs for Efficient Drug Development Strategies**
*Brian P. Hobbs** and *J. Jack Lee*, University of Texas MD Anderson Cancer Center
- 10:45 **A Bayesian Decision-Theoretic Sequential-Response Adaptive Randomization Design**
*Fei Jiang**, Rice University; *J. Jack Lee*, University of Texas MD Anderson Cancer Center and *Peter Mueller*, University of Texas at Austin

- 11:00 **Extending the TITE CRM to Multiple Outcomes**
*Joseph S. Koopmeiners**, University of Minnesota
- 11:15 **A Bayesian Adaptive Allocation Method for Clinical Trials with Dual Objectives**
*Roy T. Sabo**, *Ghalib Bello*, *Lauren Grant*, *Cathy Roberts*, *Amir A. Toor* and *John M. McCarty*, Virginia Commonwealth University
- 11:30 **A Simulation Study to Decide the Timing of an Interim Analysis in a Bayesian Adaptive Dose-finding Studies with Delayed Responses**
*Xiaobi Huang**, Merck & Co., Inc. and *Haoda Fu*, Eli Lilly and Company
- 11:45 **A Trivariate Continual Reassessment Method for Phase I/II Trials of Toxicity, Efficacy, and Surrogate Efficacy**
*Wei Zhong**, *Joseph S. Koopmeiners* and *Bradley P. Carlin*, University of Minnesota
- 12:00 **Floor Discussion**

31. CONTRIBUTED PAPERS:**Biomarkers I**

Sponsor: ENAR

Chair: Philip Westgate, University of Kentucky

- 10:30 **Lognormal and Gamma Models to Estimate Means for Skewed Biomarker Data Subject to Assay Pooling**
*Emily M. Mitchell** and *Robert H. Lyles*, Emory University; *Neil J. Perkins* and *Enrique F. Schisterman*, National Institute of Child Health and Development, National Institutes of Health
- 10:45 **Applying the Patient Rule Induction Method (PRIM) to Identify Prognostic and Predictive Biomarkers in Drug Development for Survival Data**
*Gong Chen** and *Viswanath Devanarayan*, Abbott Labs
- 11:00 **Prospective Pooling for Discrete Survival Outcome**
*Paramita Saha Chaudhuri**, Duke University School of Medicine; *David M. Umbach* and *Clarice R. Weinberg*, National Institute of Environmental Health Sciences, National Institutes of Health
- 11:15 **An Application of the Rare and Weak Model in Biomarker Discovery in Proteomics Study**
*Xia Wang**, University of Cincinnati and *Nell Sedransk*, National Institute of Statistical Sciences
- 11:30 **Meta-Regression Models to Detect Biomarkers Confounded by Study-level Covariates in Major Depressive Disorder Microarray Data**
*Xingbin Wang**, *Etienne Sibille* and *George C. Tseng*, University of Pittsburgh

- 11:45 **Estimation of C-index for Censored Biomarker Data in Cox Proportional Hazard Model**
*Yeonhee Kim**, *INC Research and Lan Kong*,
Penn State Hershey College of Medicine
- 12:00 **Logistic Regression Analysis of Biomarker Data Subject to Pooling and Dichotomization**
*Zhiwei Zhang**, U.S. Food and Drug Administration;
Aiyi Liu, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health; *Robert H. Lyles*, Emory University and *Bhramar Mukherjee*, University of Michigan

32. CONTRIBUTED PAPERS:**Causal Inference***Sponsor: ENAR**Chair: George Michailidis, University of Michigan*

- 10:30 **Causal Inference with Treatment Delay: Evaluating Medication use in Women with High Risk for Preterm Birth via Propensity Score Matching**
Erinn Hade, *Bo Lu** and *Hong Zhu*, *The Ohio State University*
- 10:45 **A New Distribution-free Approach for Longitudinal Mediation Analysis with Non-continuous Outcomes and Mediators**
*Douglas D. Gunzler**, *Case Western Reserve University*
- 11:00 **Large Sample Properties of Multiplicative Treatment Effect Estimate using Propensity-Score Matching**
*Diqiong Xie** and *Michael P. Jones*, *University of Iowa*
- 11:15 **Principal Stratification for Assessing Mediation with a Continuous Mediator**
*Robert Gallop**, *West Chester University*
- 11:30 **Targeted Minimum Loss Based Estimation of Causal Effects of Multiple Time Point Interventions**
Mark J. van der Laan, *University of California, Berkeley* and *Susan Gruber**, *Harvard School of Public Health*
- 11:45 **A Data-Adaptive Approach for Modeling Propensity Scores**
*Yeying Zhu** and *Debashis Ghosh*, *The Pennsylvania State University*; *Nandita Mitra*, *University of Pennsylvania* and *Bhramar Mukherjee*, *University of Michigan*
- 12:00 **Floor Discussion**

33. CONTRIBUTED PAPERS:**Epidemiologic Methods***Sponsor: ENAR**Chair: Ghideon Ghebregiorgis, U.S. Food and Drug Administration*

- 10:30 **A Path-Specific SEIR Model for use with General Latent and Infectious Time Distributions**
*Aaron T. Porter** and *Jacob J. Oleson*, *University of Iowa*
- 10:45 **Semi-parametric Methods for Relative Risk Center Effect Measures**
*Kevin He** and *Douglas E. Schaebel*, *University of Michigan*
- 11:00 **A General Binomial Regression Model for Estimating Standardized Risk Differences from Cohort Data**
*Stephanie A. Kovalchik**, *National Cancer Institute, National Institutes of Health*; *Ravi Varadhan*, *Johns Hopkins University School of Medicine*; *Barbara Fetterman* and *Nancy E. Poitras*, *Kaiser Permanente*; *Sholom Wacholder* and *Hormuzd A. Katki*, *National Cancer Institute, National Institutes of Health*
- 11:15 **prLogistic: An R Package for Estimation of Prevalence Ratios using Logistic Models**
*Leila D. Amorim**, *University of North Carolina at Chapel Hill* and *Raydonal Ospina*, *Federal University of Pernambuco, Brazil*
- 11:30 **Extending Matrix and Inverse Matrix Methods: Another Look at Barron's Approach**
*Li Tang** and *Robert H. Lyles*, *Emory University*; *David D. Celantano*, *Johns Hopkins Bloomberg School of Public Health* and *Yungtai Lo*, *Montefiore Medical Center and Albert Einstein College of Medicine*
- 11:45 **Pattern-Mixture Models for Addressing Outcome Misclassification from Proxies Responding on Behalf of Participants with Informatively Missing Self-Reports**
*Michelle Shardell**, *University of Maryland School of Medicine*
- 12:00 **Floor Discussion**

Monday, April 2 (continued)

12:15 – 1:30 pm | Roundtable Luncheons

1:45 – 3:30 pm

34. Recent Advances On High-Dimensional Medical Data Analysis*Sponsor: ASA Section on Statistical Learning and Data Mining**Organizer: Hua Liang, University of Rochester**Chair: Hua Liang, University of Rochester*1:45 **Feature Screening via Distance Correlation Learning***Runze Li*, Penn State University and Liping Zhu, Shanghai University of Finance and Economics*2:10 **Time-Varying Signal Detection for Correlated Data***Annie Qu*, University of Illinois at Urbana-Champaign; Lan Xue, Oregon State University and Colin Wu, National Heart, Lung and Blood Institute, National Institutes of Health*2:35 **SOFARE: Selection of Fixed and Random Effects in High-Dimensional Longitudinal Data Analysis***Yun Li, University of Michigan; Sijian Wang, University of Wisconsin-Madison; Peter X.K. Song*, Naisyin Wang and Ji Zhu, University of Michigan*3:00 **Variable Selection for Optimal Treatment Decision***Hao Helen Zhang*, University of Arizona; Wenbin Lu, North Carolina State University and Donglin Zeng, University of North Carolina at Chapel Hill*3:25 **Floor Discussion****35. Bayesian Approaches with Applications to Genomics***Sponsor: ENAR**Organizer: Steve Qin, Emory University**Chair: Hao Wu, Emory University*1:45 **Bayesian Inference of Chromosome Local 3D Structures from Hi-C Data***Ming Hu* and Ke Deng, Harvard University; Zhaohui S. Qin, Emory University and Jun S. Liu, Harvard University*2:10 **Inferring Social Networks from Molecular and Linguistic Data***Marc A. Suchard*, University of California at Los Angeles*2:35 **Bayesian Approaches for the Integration of Large-Scale Data***Marina Vannucci*, Rice University*3:00 **Bayesian Hierarchical Graph-Structured Model with Application to Pathway Analysis Using Gene Expression Data***Hui Zhou and Tian Zheng*, Columbia University*3:25 **Floor Discussion****36. New Trends in Statistical Analysis of Biological Networks***Sponsor: ASA Section on Statistical Learning and Data Mining**Organizer: Ali Shojaie, University of Washington**Chair: Peng Wei, University of Texas Health Sciences Center*1:45 **New Tools for Systems-Level Analysis of Regulation and Signaling Dynamics***Alexander Franks and Edoardo M. Airolidi*, Harvard University*2:10 **Dynamic Models for Baboon Grooming Networks***David L. Banks* and Yingbo Li, Duke University*2:35 **Biologically-Structured Latent Factor Models for Identification of Cellular Mechanism of Action***Lisa Pham, Eric D. Kolaczyk*, Luis E. Carvalho, Boston University; Stephane Robin, ParisAgroTech and Scott E. Schaus, Boston University*3:00 **Inferring Gene Regulatory Networks by Integrating Perturbation Screens and Steady-State Expression Profiles***Ali Shojaie*, University of Washington; Alexandra Jauhiainen, Michael Kallitsis and George Michailidis, University of Michigan*3:25 **Floor Discussion****37. Mathematical Modeling of Disease***Sponsor: IMS**Organizer: Franziska Michor, Dana-Farber Cancer Institute**Chair: Franziska Michor, Dana-Farber Cancer Institute*1:45 **Dynamics of Treatment Responses in Chronic Myeloid Leukaemia***Min Tang* and Franziska Michor, Dana-Farber Cancer Institute and Harvard School of Public Health; Mithat Gonen, Memorial Sloan-Kettering Cancer Center; Alfonso Quintas-Cardama, Jorge Cortes and Hagop Kantarjian, University of Texas MD Anderson Cancer Center; Chani Field, Timothy P. Hughes and Susan Branford, University of Adelaide, Adelaide, Australia*

- 2:15 **Mathematical Modeling of Pancreatic Cancer Progression Reveals Dynamics of Growth and Dissemination and Suggests Optimum Treatment Strategies**
Hiroshi Haeno, Dana-Farber Cancer Institute; Mithat Gonen, Memorial Sloan-Kettering Cancer Center; Meghan Davis, Joseph Herman and Christine Iacobuzio-Donahue, Johns Hopkins University and Franziska Michor, Dana-Farber Cancer Institute*
- 2:45 **Patient-Specific Mathematical Modeling of Glioma Proliferation and Invasion: Informing Treatment Design and Patient Stratification**
Kristin Swanson, Russ Rockne, Dave M. Corwin, Robert Stewart, Mark Philips, Clay Holdsworth, Andrew Trister, Jason Rockhill and Maciej Mrugala, University of Washington*
- 3:15 **Floor Discussion**

38. High Dimensional Multi-Drug Combinations: from Preclinical Models to Clinical Trials

Sponsor: ASA Biometrics Section

Organizer: Hong-Bin Fang, University of Maryland

Chair: Hong-Bin Fang, University of Maryland

- 1:45 **Statistical Methods for Preclinical Multi-Drug Combination**
Ming T. Tan, University of Maryland School of Medicine*
- 2:15 **Dose-finding Methods for Combinations of Agents**
Mark R. Conaway, University of Virginia*
- 2:45 **A Bayesian Dose-finding Design for Drug Combination Trials with Delayed Toxicities**
Suyu Liu and Ying Yuan, University of Texas MD Anderson Cancer Center*
- 3:15 **Discussant: Mourad Tighiouart, Samuel Oschin Comprehensive Cancer Institute**

39. Group Testing Methodology: Recent Developments and Applications to Infectious Disease

Sponsor: ASA Health Policy Statistics Section

Organizer: Elena Bordonali, University of North Carolina at Chapel Hill

Chair: Aiyi Liu, National Institutes of Health

- 1:45 **Marginal Regression Models for Multiple-Disease Group Testing Data**
Christopher R. Bilder, Boan Zhang, University of Nebraska-Lincoln and Joshua M. Tebbs, University of South Carolina*

- 2:15 **System of Equations Approach to Pooled Nucleic Acid Testing for Failing Antiretroviral Therapy**
Tanya S. Granston and Susanne May, University of Washington and Davey M. Smith, University of California at San Diego*
- 2:45 **Two-dimensional Informative Array Testing**
Christopher S. McMahan, Joshua M. Tebbs, University of South Carolina and Christopher R. Bilder, University of Nebraska-Lincoln*
- 3:15 **Floor Discussion**

40. TOPIC CONTRIBUTED PAPERS:

Novel Developments In Statistical Blind Source Separation And Independent Components Analysis

Sponsor: ENAR

Organizer: Brian Caffo, Johns Hopkins University

Chair: Vadim Zippunnikov, Johns Hopkins University

- 1:45 **A New Probabilistic Group ICA Method for Modeling Between-Subject Variability in Brain Functional Networks**
Ying Guo and Li Tang, Emory University*
- 2:05 **Nonparametric Independent Component Analysis with Application to EEG Data**
Seonjoo Lee, Henry Jackson Foundation; Haipeng Shen and Young Truong, University of North Carolina at Chapel Hill*
- 2:25 **Independent Component Analysis for Functional Imaging Data**
Ani Eloyan, Brian Caffo and Ciprian Crainiceanu, Johns Hopkins University*
- 2:45 **Independent Component Analysis via Distance Covariance**
David S. Matteson, Cornell University and Ruey S. Tsay, University of Chicago*
- 3:05 **A Bayesian Random Shape Model for fMRI and MRI Data**
Lijun Zhang, Jian Kang and F. DuBois Bowman, Emory University*
- 3:25 **Floor Discussion**

41. TOPIC CONTRIBUTED PAPERS:**Causal Inference And Survival Analysis**

Sponsor: ENAR

Organizer: Min Zhang, University of Michigan

Chair: Min Zhang, University of Michigan

- 1:45 **Estimating the Average Treatment Effect on Mean Survival Time when Treatment is Time-Dependent and Censoring is Dependent**
Douglas E. Schaubel and Qi Gong, University of Michigan*
- 2:05 **Matching Methods for Obtaining Survival Functions to Estimate the Effect of a Time-Dependent Treatment**
Yun Li and Douglas E. Schaubel, University of Michigan*
- 2:25 **Optimization of Dynamic Treatment Regimes for Recurrent Diseases**
Xuelin Huang and Jing Ning, University of Texas MD Anderson Cancer Center*
- 2:45 **Prediction of Survival and Variable Importance in Medical Informatics: Targeted Maximum Likelihood Estimation (T-MLE) and SuperLearning Applied to High Dimensional Longitudinal Data to Predict Survival Times among Severe Trauma Patients**
Alan Hubbard, University of California, Berkeley; Mitch Cohen, University of California, San Francisco; Anna Decker and Ivan Diaz, University of California, Berkeley and Matthew Kutcher, University of California, San Francisco*
- 3:05 **A Semiparametric Recurrent Events Model with Time-varying Coefficients**
Zhangsheng Yu, Indiana University School of Medicine and Lei Liu, University of Virginia*
- 3:25 **Floor Discussion**

42. CONTRIBUTED PAPERS:**Clinical Trials**

Sponsor: ENAR

Chair: Yanlei Peng, University of South Carolina

- 1:45 **Estimating Covariate-Adjusted Log Hazard Ratios in Randomized Clinical Trials using Cox Proportional Hazards Models and Nonparametric Randomization Based Analysis of Covariance**
Benjamin R. Saville, Vanderbilt University and Gary G. Koch, University of North Carolina at Chapel Hill*

- 2:00 **A Bayesian Phase I/II Design for Oncology Clinical Trials of Combinational Biological Agents**
Chunyan Cai, Ying Yuan and Yuan Ji, University of Texas MD Anderson Cancer Center*
- 2:15 **Empirical Bayesian Methods for Enrollment and Event Projection in Oncology Trials**
Jingyang Zhang, University of Iowa; Luyan Dai and Wei Zhang, Boehringer Ingelheim Pharmaceuticals, Inc.*
- 2:30 **Analysis of Zero-Inflated Count Data from Clinical Trials with Potential Dropouts**
Jingyuan Yang, Amgen Inc.; Xiaoming Li, Gilead Sciences, Inc. and Guanghan F. Liu, Merck & Co.*
- 2:45 **A Generalized Continual Reassessment Method for Two-Agent Phase I Trials**
Thomas M. Braun and Nan Jia, University of Michigan*
- 3:00 **A Hierarchical Bayesian Design in Randomized Phase II Clinical Trials with Multiple Subgroups Using Binary Endpoints**
Qian Shi, Mayo Clinic; Jun Yin, University of Iowa; Daniel J. Sargent, Charles Erlichman and Rui Qin, Mayo Clinic*
- 3:15 **Variable Selection for Covariate-Adjusted Semiparametric Inference in Randomized Clinical Trials**
Shuai Yuan, Helen Zhang and Marie Davidian, North Carolina State University*

43. CONTRIBUTED PAPERS:**Competing Risks**

Sponsor: ENAR

Chair: Ani Eloyan, Johns Hopkins University

- 1:45 **Frailty-based Competing Risks Model for Multivariate Survival Data**
Malka Gorfine, Technion – Israel Institute of Technology and Li Hsu, Fred Hutchinson Cancer Research Center*
- 2:00 **Semiparametric Estimation in the Proportional Subdistribution Hazards Model with Missing Cause of Failure**
Jonathan G. Yabes and Chung-Chou H. Chang, University of Pittsburgh*
- 2:15 **Hierarchical Likelihood Inference on Clustered Competing Risks Data**
Nicholas J. Christian, University of Pittsburgh*

- 2:30 **Subdistribution Regression with Left-Truncated Semi-Competing Risks Data**
*Ruosha Li**, University of Pittsburgh and
Limin Peng, Emory University
- 2:45 **Simulating Clustered Competing Risks Data**
*Ruta Brazauskas**, John P. Klein and Jennifer G.
Le-Rademacher, Medical College of Wisconsin
- 3:00 **Analysis of Dependently Censored Data based on Quantile Regression**
*Shuang Ji** and *Limin Peng*, Emory University;
Ruosha Li, University of Pittsburgh
and *Michael J. Lynn*, Emory University
- 3:15 **Floor Discussion**

44. CONTRIBUTED PAPERS: Functional Data Analysis

Sponsor: ENAR

Chair: Peng Wang, Bowling Green State University

- 1:45 **Longitudinal Survey Sampling of Functional Data**
*David Degras**, DePaul University
- 2:00 **Corrected Confidence Bands for Functional Data using Principal Components**
■ *Jeff Goldsmith**, Johns Hopkins Bloomberg
School of Public Health; *Sonja Greven*,
Ludwig-Maximilians-University and *Ciprian
Crainiceanu*, Johns Hopkins Bloomberg School
of Public Health
- 2:15 **Optimal Smoothing Bandwidth Selection Methods for Functional Data**
*Jingjing Yang**, *David W. Scott* and
Dennis D. Cox, Rice University
- 2:30 **Multiscale Adaptive Composite Quantile Regression Models for Neuroimaging Data**
*Linglong Kong** and *Hongtu Zhu*, University of
North Carolina at Chapel Hill
- 2:45 **Estimation of Functional Curve Peak Locations for Detection of Cervical Pre-cancer**
*Lu Wang** and *Dennis D. Cox*, Rice University
- 3:00 **Longitudinal Functional Regression Models with Structured Penalties**
*Madan G. Kundu**, *Jaroslav Harezlak*,
Indiana University School of Medicine and
Timothy W. Randolph, Fred Hutchinson Cancer
Research Center
- 3:15 **Functional Mixed-Effects Models for Multiple Outcomes**
*Stephanie A. Kliethermes** and *Jacob J. Oleson*,
University of Iowa

45. CONTRIBUTED PAPERS: Genome-Wide Association Studies

Sponsor: ENAR

Chair: Kristen Foley, U.S. Environmental Protection Agency

- 1:45 **Genome-wide Association Analysis for Multiple Continuous Secondary Phenotypes**
*Elizabeth D. Schifano**, *Lin Li*, *David C. Christiani*
and *Xihong Lin*, Harvard School of Public Health
- 2:00 **Longitudinal Genetic Analysis of Quantitative Traits**
*Ruzong Fan**, *Eunice Kennedy Shriver*
National Institute of Child Health and Human
Development, National Institutes of Health
- 2:15 **Incorporating Group Correlations in Genome-Wide Association Studies using Smoothed Group LASSO**
*Jin Liu**, Yale University; *Jian Huang*, University
of Iowa; *Shuangge Ma*, Yale University and
Kai Wang, University of Iowa
- 2:30 **A Penalized Likelihood Approach for Pharmacogenetic Studies via Understanding Haplotype Effect Structures for Gene and Gene-Drug Interactions**
*Megan L. Neely**, Duke University;
Howard D. Bondell and *Jung-Ying Tzeng*,
North Carolina State University
- 2:45 **The Effect of Population Stratification on Association Studies with Next Generation Sequencing**
*Qianying Liu**, *Lin Chen* and *Dan L. Nicolae*,
University of Chicago
- 3:00 **Family-Based Association Tests using Genotype Data with Uncertainty**
*Zhaoxia Yu**, University of California, Irvine
- 3:15 **Floor Discussion**



Monday, April 2 (continued)

3:30 – 3:45 pm | Break

3:45 – 5:30 pm

46. Statistical Models for OMICS Data*Sponsor: ENAR**Organizer: Yuan Ji, University of Texas MD Anderson Cancer Center**Chair: Wei Sun, University of North Carolina at Chapel Hill*

- 3:45 **Differential Principal Component Analysis of ChIP-seq**
Hongkai Ji and Yang Ning, Johns Hopkins University Bloomberg School of Public Health*
- 4:10 **Bayesian Hierarchical Functional Models for High-dimensional Genomics data**
Veera Baladandayuthapani, Jeffrey S. Morris and Yuan Ji, University of Texas MD Anderson Cancer Center*
- 4:35 **A Bayesian Graphical Model for ChIP-Seq Data on Histone Modifications**
Peter Mueller, University of Texas at Austin; Riten Mitra, Shoudan Liang, Lu Yue and Yuan Ji, University of Texas MD Anderson Cancer Center*
- 5:00 **A Bayesian Network Analysis for Single-Cell Mass Cytometry Data**
Riten Mitra and Yuan Ji, University of Texas MD Anderson Cancer Center and Peter Mueller, University of Texas at Austin*
- 5:25 **Floor Discussion**

47. Tweedie Award*Sponsor: IMS**Organizer: Yi Li, University of Michigan**Chair: Yi Li, University of Michigan*

- 3:45 **Statistical Learning with High-dimensional Data**
Hui Zou, University of Minnesota*
- 4:15 **Adaptive Estimation of Large Covariance Matrices**
Tony Cai, University of Pennsylvania and Ming Yuan, Georgia Institute of Technology*
- 4:45 **Discussant: Peter Hall, University of California-Davis and University of Melbourne**
- 5:00 **Floor Discussion**

48. Recent Development in Optimal Treatment Strategies — Estimation, Selection, And Inference*Sponsor: ASA Biometrics Section**Organizer: Wenbin Lu, North Carolina State University**Chair: Hao Helen Zhang, North Carolina State University*

- 3:45 **Evaluating Optimal Treatment Policies based on Gene Expression Profiles**
Ian McKeague and Min Qian, Columbia University*
- 4:10 **Iterative Outcome Weighted Learning for Estimating Optimal Dynamic Treatment Regime**
Donglin Zeng, Yingqi Zhao and Michael Kosorok, University of North Carolina at Chapel Hill*
- 4:35 **Up-front vs. Sequential Randomizations for Inference on Adaptive Treatment Strategies**
Abdus S. Wahed and Jin.H.Ko, University of Pittsburgh*
- 5:00 **Inference for Dynamic Treatment Regimes**
Eric B. Laber, North Carolina State University; Daniel J. Lizotte, University of Waterloo; Min Qian, Columbia University and Susan A. Murphy, University of Michigan*
- 5:25 **Floor Discussion**

49. Challenging Issues in Functional Connectivity Analysis*Sponsor: ASA Statistics in Neuroimaging**Organizer: Hongtu Zhu, University of North Carolina at Chapel Hill**Chair: Hernando Ombao, University of California at Irvine*

- 3:45 **Persistent Homological Network Modeling via Graph Filtration**
Moo K. Chung, University of Wisconsin-Madison*
- 4:10 **Predicting Neurological Disorders using Functional and Structural Brain Imaging Data**
Brian S. Caffo, Ciprian Crainiceanu, Han Liu, Ani Eloyan, John Muschelli, Fang Han and Tuo Zhao, Johns Hopkins University*
- 4:35 **Functional Connectivity through Color Independent Component Analysis**
Haipeng Shen, University of North Carolina at Chapel Hill*
- 5:00 **Spatial and Adaptive Models for Brain Functional Connectivity**
Hongtu Zhu, University of North Carolina at Chapel Hill and Japing Wang, Princeton University*
- 5:25 **Floor Discussion**

50. Recent Developments in Subgroup Analysis in Randomized Clinical Trials

Sponsor: ASA Biopharmaceutical Section
 Organizer: Mohammed Alosch, U.S. Food and Drug Administration
 Chair: Mohammed Alosch, U.S. Food and Drug Administration

- 3:45 **Key Statistical Considerations for Clinical Trials with Tailoring Objectives**
*Alex Dmitrienko**, *Quintiles and Brian Millen, Eli Lilly and Company*
- 4:15 **Predictive Analysis of Clinical Trials**
*Richard M. Simon**, *National Cancer Institute, National Institutes of Health*
- 4:45 **Multiplicity Considerations for Hypotheses Testing for a Targeted Subgroup Trial Design**
*Mohammad F. Huque** and *Mohammed Alosch, U.S. Food and Drug Administration*
- 5:15 **Discussant: Gary Koch, University of North Carolina-Chapel Hill**

51. Recent Advances in Methodology for the Analysis Of Failure Time Data

Sponsor: ENAR
 Organizer: Doug Schaubel, University of Michigan
 Chair: Doug Schaubel, University of Michigan

- 3:45 **Marginal Additive Hazards Model for Case-Cohort Studies with Multiple Disease Outcomes**
*Sangwook Kang, University of Connecticut; Jianwen Cai** and *Lloyd Chambless, University of North Carolina at Chapel Hill*
- 4:10 **Statistical Methods for Assessing Urgency and Transplant Benefit in the Presence of Dependent Censoring**
*Susan Murray** and *Fang Xiang, University of Michigan*
- 4:35 **Semiparametrically Efficient Treatment Effect Estimation in the Analysis of Recurrent Events**
*Adin-Cristian Andrei**, *Northwestern University*
- 5:00 **Estimating Treatment Effects from a Randomized Clinical Trial in the Presence of Post-study Treatment**
*Min Zhang**, *University of Michigan and Yanping Wang, Eli Lilly and Company*
- 5:25 **Floor Discussion**

52. TOPIC CONTRIBUTED PAPERS: New Methods and Theory in Functional/Longitudinal Data Analysis

Sponsor: ENAR
 Organizer: Yehua Li, University of Georgia
 Chair: Yehua Li, University of Georgia

- 3:45 **Spline Confidence Bands for Functional Derivatives**
*Guanqun Cao**, *Michigan State University; Jing Wang, University of Illinois at Chicago; Li Wang, University of Georgia and David Todem, Michigan State University*
- 4:05 **Generalized Functional Linear Regression**
*Xiao Wang, Purdue University and Pang Du**, *Virginia Tech*
- 4:25 **Regularized Smoothing in Functional Linear Models**
*Toshiya Hoshikawa** and *Tailen Hsing, University of Michigan*
- 4:45 **Simultaneous Variable Selection and Estimation in Semiparametric Modeling of Longitudinal / Clustered Data**
*Shujie Ma, University of California-Riverside; Qiongxia Song, University of Texas at Dallas and Lily Wang**, *University of Georgia*
- 5:05 **Robust Regularized Singular Value Decomposition for Two Way Functional Data**
*Lingsong Zhang**, *Purdue University; Haipeng Shen, University of North Carolina at Chapel Hill and Jianhua Huang, Texas A&M University*
- 5:25 **Floor Discussion**

53. TOPIC CONTRIBUTED PAPERS: Multivariate Methods in High Dimensional Data

Sponsor: ENAR
 Organizer: Abdus Sattar, Case Western Reserve University
 Chair: Abdus Sattar, Case Western Reserve University

- 3:45 **A Calibrated Multiclass Extension of AdaBoost**
*Daniel B. Rubin**, *U.S. Food and Drug Administration*
- 4:05 **Predicting Mortality in an Elderly Population using Machine Learning**
*Sherri Rose**, *Johns Hopkins Bloomberg School of Public Health*
- 4:25 **Efficient Multi-Marker Tests for Association in Case-Control Studies**
*Margaret A. Taub**, *Johns Hopkins University; Holger Schwender, TU Dortmund University, Dortmund, Germany; Ingo Ruczinski and Thomas A. Louis, Johns Hopkins University*



4:45 **Estimation of a Non-parametric Variable Importance Measure of a Continuous Exposure**
*Antoine Chambaz**, Université Paris Descartes and CNRS, Pierre Neuvial, Université d'Evry Val d'Essonne and Mark J. van der Laan, University of California, Berkeley

5:05 **Targeted Maximum Likelihood Estimation: Assessing Causal Effects using High-Dimensional Longitudinal Data Structures**
*Marco Carone** and Mark J. van der Laan, University of California, Berkeley

5:25 **Floor Discussion**

54. CONTRIBUTED PAPERS:

Bayes and Other Approaches to Variable and Model Selection

Sponsor: ENAR

Chair: Xin Huang, Fred Hutchinson Cancer Research Center

3:45 **Determining Associations Among Environmental Chemicals, Nutrition and Health Outcomes**
*Caroline Carr**, Chris Gennings and Roy Sabo, Virginia Commonwealth University and Pam Factor-Litvak, Columbia University

4:00 **Bayes Variable Selection in Semiparametric Linear Models**
 ■ *Suprateek Kundu**, University of North Carolina at Chapel Hill and David B. Dunson, Duke University

4:15 **Sure Screening for Estimating Equations in Ultra-High Dimensions**
 ■ *Sihai D. Zhao**, Harvard University

4:30 **Estimating Link Function Parameters in Robust Bayesian Binary Regression**
*Vivekananda Roy**, Iowa State University

4:45 **Calibrated Bayes Factors for Model Comparison**
*Xinyi Xu**, Pingbo Lu, Steven MacEachern and Ruoxi Xu, The Ohio State University

5:00 **A Systematic Selection Method for the Development of Cancer Staging Systems**
*Yunzhi Lin** and Richard J. Chappell, University of Wisconsin-Madison and Mithat Gönen, Memorial Sloan-Kettering Cancer Center

5:15 **Floor Discussion**

55. CONTRIBUTED PAPERS:

Clustered/Repeated Measures Survival Analysis

Sponsor: ENAR

Chair: Xuelin Huang, University of Texas MD Anderson Cancer Center

3:45 **Testing for Monotone Time Trend in Recurrent Event Processes**
*Candemir Cigsar**, Women's College Reserach Institute Princess Margaret Hospital

4:05 **Contrasting Group-specific Cumulative Mean Associated with Marked Recurrent Events in the Presence of a Terminating Event**
*Yu Ma** and Douglas E. Schaubel, University of Michigan

4:25 **Alternating Event Processes during Lifetimes: Population Dynamics and Statistical Inference**
 ■ *Russell T. Shinohara** and Mei-Cheng Wang, Johns Hopkins University

4:45 **Semiparametric Probit Model for Clustered Interval-Censored Data with Unknown Distribution of Random Effects**
*Haifeng Wu** and Lianming Wang, University of South Carolina

5:05 **A Flexible Copula Model for Bivariate Survival Data**
*Zhen Chen**, David Oakes, Ollivier Hyrien and Changyong Feng, University of Rochester Medical Center

5:25 **Floor Discussion**

56. CONTRIBUTED PAPERS:**Genomics**

Sponsor: ENAR

Chair: Hulin Wu, University of Rochester

- 3:45 **The Practical Effect of Batch on Prediction**
Hilary S. Parker and Jeffery T. Leek, Johns Hopkins School of Public Health*
- 4:00 **Identifying and Correcting Sample Mix-ups in High-Dimensional Data**
Karl W. Broman, Mark P. Keller and Aimee T. Broman, University of Wisconsin-Madison; Danielle M. Greenawalt, Merck & Co., Inc.; Christina Kendziorowski, University of Wisconsin-Madison; Eric E. Schadt, Pacific Biosciences, Saunak Sen, University of California, San Francisco; Brian S. Yandell and Alan D. Attie, University of Wisconsin-Madison*
- 4:15 **Detecting Differential Binding of Transcription Factors with ChIP-seq**
Kun Liang and Sunduz Keles, University of Wisconsin-Madison*
- 4:30 **Applying Whole Genomic Prediction across Populations for Predictive and Prognostic Purposes**
Robert Makowsky, Kirk Yancy B. Williams, U.S. Food and Drug Administration and Gustavo de los Campos, University of Alabama at Birmingham*
- 4:45 **Segmenting the Human Genome Based on Mutation Rates**
Prabhani Kuruppumullage Don, Guruprasad Ananda, Francesca Chiaromonte and Kateryna D. Makova, Pennsylvania State University*
- 5:00 **Identifying Protein Binding Sites from Genomic ChIP-seq Data Using Reversible Jump MCMC**
Rasika V. Jayatilake and Nak-Kyeong Kim, Old Dominion University*
- 5:15 **Change-point Analysis of Paired Allele-specific Copy Number Variation Data**
Yinglei Lai, The George Washington University*

57. CONTRIBUTED PAPERS:**Health Services/Health Policy**

Sponsor: ENAR

Chair: Yulei He, Harvard Medical School

- 3:45 **Identifying Individual Changes in Performance with Composite Quality Indicators while Accounting for Regression-to-the-Mean**
Byron Gajewski and Nancy Dunton, University of Kansas*
- 4:00 **Alcohol Outlets and Violence in the City of Philadelphia: The Role of Land Use**
Tony H. Grubestic, Loni Philip Tabb and Dominique Williams, Drexel University and William Pridemore, Indiana University-Bloomington*
- 4:15 **Calibrated Sensitivity Analysis for the Instrumental Variables Method for Observational Studies**
Jesse Yenchi Hsu, Scott A. Lorch and Dylan S. Small, University of Pennsylvania*
- 4:30 **A Research Agenda: Does Geocoding Positional Error Matter in Health GIS Studies?**
Geoffrey M. Jacques, BioMedware*
- 4:45 **Methodology for Scoring the EQ-5D**
Eleanor M. Pullenayegum and Feng Xie, McMaster University*
- 5:00 **Estimating 95% Confidence Interval for Percentile Rank – Using Bootstrap – Application: RSMR & RSRR**
Yahya A. Daoud, Yumi Y. Sembongi, Monica Anand, Dunlei Cheng and Edward B. De Vol, Baylor Health Care System*
- 5:15 **Optimization and Simulation of an Evolving Kidney Paired Donation (KPD) Program**
■ *Yijiang J. Li*, Peter X. K. Song, Yan Zhou and Alan B. Leichtman, University of Michigan; Michael A. Rees, University of Toledo Medical Center and John D. Kalbfleisch, University of Michigan*



Tuesday, April 3

8:30 – 10:15 am

58. Towards Omics-Based Predictors for Patient Management

Sponsor: ASA Biometrics Section

Organizer: Kevin Dobbin, University of Georgia

Chair: Kevin Dobbin, University of Georgia

- 8:30 **Validating Clinical Performance of Predictors**
Michael L. LeBlanc, Fred Hutchinson Cancer Research Center*
- 9:00 **A Regulatory Perspective on Omics-Based Predictors**
Gene A. Pennello, U.S. Food and Drug Administration*
- 9:30 **Statistical Issues in the Design of Clinical Trials to Establish the Utility of Biomarker-based Tests for Guiding Therapy Decisions**
Lisa M. McShane, National Cancer Institute, National Institutes of Health*
- 10:00 **Discussant: Tracy Lively, National Cancer Institute**

59. Functional Data Analysis

Sponsor: IMS

Organizer: Hans-Georg Muller, University of California, Davis

Chair: Hans-Georg Muller, University of California, Davis

- 8:30 **Methodology and Theory for Partial Least Squares Applied to Functional Data**
Peter Hall, The University of Melbourne and the University of California, Davis and Aurore Delaigle, The University of Melbourne*
- 8:55 **Time-Dynamic Functional Additive Model**
Jane-Ling Wang and Xiaoke Zhang, University of California at Davis and Byeong Park, Seoul National University*
- 9:20 **Continuously Additive Models for Functional Regression**
Hans-Georg Mueller, University of California at Davis; Yichao Wu, North Carolina State University and Fang Yao, University of Toronto*
- 9:45 **Movelets: A Dictionary of Movement**
Bai Jiawei, Jeffrey Goldsmith and Ciprian M. Crainiceanu, Johns Hopkins University*
- 10:10 **Floor Discussion**

60. The Analysis of Social Network Data in Public Health

Sponsor: ASA Section on Statistical Learning and Data Mining

Organizers: Debashis Ghosh, Penn State University

Chair: Yeying Zhu, Penn State University

- 8:30 **Network Based Methods for Accessing Hard-to-Reach Groups**
Tyler H. McCormick, University of Washington and Tian Zheng, Columbia University*
- 9:00 **Using Retrospective Sampling to Study Factors Affecting Relationships in Large Longitudinal Social Networks**
A James O'Malley and Sudeshna Paul, Harvard Medical School*
- 9:30 **Point Process Modeling for Directed Interaction Networks**
Patrick O. Perry, New York University and Patrick J. Wolfe, Harvard University*
- 10:00 **Discussant: Melanie Wall, Columbia University**

61. Novel Methodological Issues in Analyzing and Designing Longitudinal Biomarker Studies

Sponsor: ASA Biopharmaceutical Section

Organizers: Paul Albert and Enrique Schisterman, National Institutes of Health

Chair: Enrique Schisterman, National Institutes of Health

- 8:30 **Outcome Dependent Sampling for Longitudinal Binary Response Data Based on a Time-Varying Auxiliary Variable**
Jonathan S. Schildcrout, Vanderbilt University; Sunni L. Mumford and Zhen Chen, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health; Patrick J. Heagerty, University of Washington and Paul J. Rathouz, University of Wisconsin*
- 8:55 **A Principal Interactions Analysis Framework for Repeated Measures Data on Quantitative Traits: Application to Longitudinal Studies of Gene-Environment Interactions**
Bhramar Mukherjee and Yi-An Ko, University of Michigan*
- 9:20 **Pooling Designs for Outcomes Under a Gaussian Random Effects Model**
Yaakov Malinovsky, University of Maryland, Baltimore County; Paul S. Albert and Enrique F. Schisterman, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health*

- 9:45 **A Bayesian Order Restricted Model for Hormonal Dynamics During Menstrual Cycles of Healthy Women**
Anindya Roy*, University of Maryland Baltimore County; Michelle Danaher, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health and University of Maryland Baltimore County; Zhen Chen, Sunni Mumford and Enrique Schiesterman, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health
- 10:10 **Discussant: Paul Albert, National Institutes of Health**

62. Advances in Cancer Risk Prediction Models

Sponsor: ENAR

Organizer: Donna Ankerst, University of Munich

Chair: Donna Ankerst, University of Munich

- 8:30 **Model Validation and Updating**
Ewout W. Steyerberg*, Erasmus University Medical Center, Rotterdam, the Netherlands
- 8:55 **Dynamic Prediction: Updating Medical Prediction Models in Real Time Using Routinely Collected Clinical Data (Or: Why Can't Nomograms be More Like Netflix?)**
Andrew J. Vickers*, Memorial Sloan-Kettering Cancer Center
- 9:20 **Deploying Statistical Prediction Models**
Michael W. Kattan*, Cleveland Clinic
- 9:45 **On Joint Risk Prediction**
Ruth Pfeiffer*, National Cancer Institute, National Institutes of Health
- 10:10 **Floor Discussion**

63. Adaptive Design in Vaccine Trials

Sponsor: ASA Biometrics Section

Organizers: Zhi Wen and Estelle Russek-Cohen, U.S. Food and Drug Administration

Chair: Zhi Wen, U.S. Food and Drug Administration

- 8:30 **A 2-Stage Adaptive Design for Assessing Vaccine Efficacy with Uncertain Incidence Rate**
Ivan SF Chan*, Merck Research Laboratories; Xiaoming Li, Gilead Sciences and Keaven M. Anderson, Merck Research Laboratories
- 9:00 **Adaptive Designs for Vaccine Clinical Trials**
Ghideon Ghebregiorgis*, U.S. Food and Drug Administration

- 9:30 **Determining which Subpopulations Benefit from a Vaccine, Using Adaptive Designs**
Michael Rosenblum*, Johns Hopkins Bloomberg School of Public Health
- 10:00 **Floor Discussion**

64. TOPIC CONTRIBUTED PAPERS:

Mixing: Inferences Using Frequentist and Bayesian Methods and for Mixed Discrete and Continuous Data

Sponsor: ENAR

Organizer: Gang Zheng, National Heart, Lung, and Blood Institute, National Institutes of Health

Chair: Gang Zheng, National Heart, Lung, and Blood Institute, National Institutes of Health

- 8:30 **Flexible Random Effects Copula Models for Clustered Mixed Outcomes: Application in Developmental Toxicology**
Alexander R. de Leon*, University of Calgary
- 8:50 **Joint Analysis of Binary and Quantitative Traits with Data Sharing and Outcome-Dependent Sampling**
Jungnam Joo*, National Cancer Center, Korea
- 9:10 **Bayes Factor Based on a Maximum Statistic for Case-Control Genetic Association Studies**
Linglu Wang*, The George Washington University
- 9:30 **Analysis of Case-Control Qualitative and Quantitative Trait Data for Genetic Association**
Minjung Kwak*, National Heart Lung and Blood Institute, National Institutes of Health
- 9:50 **Hybrid Inference for Association Studies**
Qizhai Li*, Academy of Mathematics and Systems Science, Chinese Academy of Sciences; Jing Qin, National Institute of Allergy and Infectious Diseases, National Institutes of Health and Ao Yuan, Howard University
- 10:10 **Floor Discussion**

65. CONTRIBUTED PAPERS:

Bayesian Methods for Longitudinal and/or Survival Data

Sponsor: ENAR

Chair: Madan Gopal Kundu, Indiana University Purdue University, Indianapolis

- 8:30 **Posterior Predictive Model Assessment for Incomplete Longitudinal Data**
Arkendu Chatterjee* and Michael Daniels, University of Florida

- 8:45 **A Novel Bayesian Approach for Analyzing Interval-Censored Failure Time Data Under the Proportional Hazards Model**
Xiaoyan Lin, Bo Cai and Lianming Wang, University of South Carolina and Zhigang Zhang, Memorial Sloan-Kettering Cancer Center*
- 9:00 **Semiparametric Bayesian Survival Analysis Using Models with Log-Linear Median**
■ *Jianchang Lin* and Debajyoti Sinha, Florida State University; Stuart Lipsitz, Brigham and Women's Hospital and Adriano Polpo, University of São Paulo*
- 9:15 **A Model-based Approach to Limit of Detection in Studying Environmental Chemical Exposures and Time to Pregnancy**
Sungduk Kim, Zhen Chen, Enrique F. Schisterman, Neil Perkins, Rajeshwari Sundaram and Germaine M. Buck Louis, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health*
- 9:30 **A Semiparametric Bayesian Approach for Joint Modeling of Longitudinal Trait and Event Time: Application to Soybean Data**
Kiranmoy Das, Temple University*
- 9:45 **Hierarchical Bayesian Approach for Analysis of Longitudinal Count Data with Overdispersion Parameters: A Simulation Study**
Mehreteab F. Aregay, University of Leuven, Belgium; Geert Molenberghs, I-BioStat Belgium and Ziv Shkedy, Hasselt University, Belgium*
- 10:00 **Bayesian Modeling Dependence in Longitudinal Data via Partial Autocorrelations and Marginal Variances**
■ *Yanpin Wang* and Michael Daniels, University of Florida*

66. CONTRIBUTED PAPERS:**Complex Study Designs and Bias Corrections**

Sponsor: ENAR

Chair: Yvonne Zubovic, Indiana University Purdue University Fort Wayne

- 8:30 **Two-Stage Designs for Adaptive Comparative Effectiveness Trials**
John A. Kairalla, University of Florida; Mitchell A. Thomann and Christopher S. Coffey, University of Iowa and Keith E. Muller, University of Florida*
- 8:45 **More Efficient Estimators for Case-Cohort Studies**
SoYoung Kim and Jianwen Cai, University of North Carolina at Chapel Hill*

- 9:00 **Estimating Multiple Treatments Effects Using Two-Phase Regression Estimators**
Cindy Yu, Iowa State University; Jason Legg, Amgen Inc. and Bin Liu, Iowa State University*
- 9:15 **A Semi-parametric Approach to Select Optimal Sampling Schedules for Measuring the Mean Profile and Variability in Longitudinal Studies**
Meihua Wu and Brisa N. Sánchez, Trivellore E. Raghunathan and Ana V. Diez-Roux, University of Michigan*
- 9:30 **An Improved Paired Availability Design for Historical Controls**
Stuart G. Baker, National Cancer Institute, National Institutes of Health and Karen S. Lindeman, Johns Hopkins University*
- 9:45 **Bias Correction and Likelihood Based Inference Under Model Misspecification**
■ *Yang Ning*, Johns Hopkins University and Kung-Yee Liang, National Yang-Ming University*
- 10:00 **Floor Discussion**

**67. CONTRIBUTED PAPERS:
High Dimensional Data**

Sponsor: ENAR

Chair: Eileen Liao, University of California at Los Angeles

- 8:30 **Sparse Meta-Analysis With Applications to High-Dimensional Data**
■ *Qianchuan He*, University of North Carolina at Chapel Hill; Helen Hao Zhang, North Carolina State University; Danyu Lin and Christy L. Avery, University of North Carolina at Chapel Hill*
- 8:50 **Universal Probabilistic Dependency Discovery: Theory and Application**
Hesen Peng, Emory University; Yun Bai, Philadelphia College of Osteopathic Medicine and Tianwei Yu, Emory University*
- 9:10 **Investigating Pyrosequence Data from Ecological Applications**
Karen Keating, Gary L. Gadbury, Ari Jumpponen and Karen A. Garrett, Kansas State University*
- 9:30 **Exploration of Reactant-Product Lipid Pairs in Mutant-Wild Type Lipidomics Experiments**
Lianqing Zheng and Gary L. Gadbury, Kansas State University; Jyoti Shah, University of North Texas and Ruth Welti, Kansas State University*
- 9:50 **Factor Analysis Regression for Predictive Modeling with High Dimensional Data**
Netsanet T. Imam, Randy L. Carter and Russell W. Bessette, State University of New York at Buffalo*
- 10:10 **Floor Discussion**



68. CONTRIBUTED PAPERS:

High Dimensional Data: Machine Learning, Multivariate Methods and Computational Methods

Sponsor: ENAR

Chair: Frank B Yoon, Mathematica Policy Research, Inc.

- 8:30 **Majorization Minimization by Coordinate Descent for Concave Penalized Generalized Linear Models**
Dingfeng Jiang and Jian Huang, University of Iowa*
- 8:45 **Reducing Dimension to Improve Computational Efficiency in High Dimensional Studies**
Kevin K. Dobbin, University of Georgia*
- 9:00 **Additive Kernel Machine Regression Based Analysis of Genomic Data**
Jennifer Clark and Mike Wu, University of North Carolina at Chapel Hill*
- 9:15 **Variable Selection for High-Dimensional Multivariate Outcomes with Application to Genetic Pathway/Network Analysis**
■ *Tamar Sofer*, Harvard School of Public Health; Lee Dicker, Rutgers University and Xihong Lin, Harvard School of Public Health*
- 9:30 **Enhancements of Sparse Clustering with Resampling**
■ *Wenzhu Bi*, George C. Tseng, Julie C. Price and Lisa A. Weissfeld, University of Pittsburgh*
- 9:45 **Generalized Reduced Rank Regression for Multivariate Response**
Zakaria S. Khondker, University of North Carolina at Chapel Hill and PAREXEL International; Hongtu Zhu and Joseph G. Ibrahim, University of North Carolina at Chapel Hill*
- 10:00 **Floor Discussion**

69. CONTRIBUTED PAPERS:

Variable and Model Selection Methods

Sponsor: ENAR

Chair: Yang Feng, Columbia University

- 8:30 **Simultaneous Rank Determination and Variable Selection in Multivariate Reduced-rank Regression**
Kun Chen, Kansas State University and Kung-Sik Chan, University of Iowa*
- 8:45 **Variable Selection for Fixed and Random Effects in Multilevel Models When Missing Data is Present**
Miguel Marino, Harvard University and Yi Li, University of Michigan*
- 9:00 **Variable Selection in Parametric and Non-Parametric Regression**
Trang T. Duong, The University of West Georgia*
- 9:15 **Penalized Variable Selection with U-estimates**
Xiao Song, University of Georgia and Shuangge Ma, Yale University School of Public Health*
- 9:30 **Variable Selection with Iterated Penalization for Semiparametric Regression Models**
Ying Dai and Shuangge Ma, Yale University School of Public Health*
- 9:45 **Sparsity Recovery from Multivariate Smoothing Functions Using the Nonnegative Garrote Method**
Zaili Fang, Inyoung Kim and Patrick Schaumont, Virginia Polytechnic Institute and State University*
- 10:00 **Floor Discussion**

Tuesday, April 3 (continued)**10:15 – 10:30 am | Break***Grand Ballroom Pre-function Area***10:15 am – 12:15 pm****70. Presidential Invited Address****Ballroom***Sponsor: ENAR**Organizer/Chair: Karen Bandeen-Roche, Johns Hopkins
Bloomberg School of Public Health***10:30 Introduction****10:35 Distinguished Student Paper Awards****10:45 Engaging, Inspiring, and Training the Next
Generation: Past Successes, Future Challenges
and Opportunities***Marie Davidian, Department of Statistics,
North Carolina State University***1:45 – 3:30 pm****71. Recent Advances in Statistical Methods
for Diagnostic Medicine***Sponsor: ENAR**Organizer: Haitao Chu, University of Minnesota**Chair: Joseph Koopmeiers, University of Minnesota***1:45 Semiparametric Estimation of the Covariate-
Specific ROC Curve in Presence of Ignorable
and Non-Ignorable Verification Bias***Xiao-Hua Andrew Zhou* and Danping Liu,
University of Washington***2:15 Estimation and Design for Logistic Regression
Under an Imperfect Population Identifier***Paul S. Albert*, Aiyi Liu and Tonia Nansel,
Eunice Kennedy Shriver National Institute
of Child Health and Human Development,
National Institutes of Health***2:45 Designing Studies to Evaluate Biomarkers
for Selecting Patient Treatment***Holly Janes*, Margaret Pepe, Ying Huang
and Marshall Brown, Fred Hutchinson Cancer
Research Center***3:15 Floor Discussion****72. JABES Special Session on Climate Change
and Health***Sponsor: ENAR**Organizer: Montserrat Fuentes, North Carolina State University**Chair: Bo Li, Purdue University***1:45 Estimating the Health Impact of Climate Change
with Calibrate Climate Model Output***Montse Fuentes, North Carolina State University***2:10 Flexible Distributed Lag Models using
Random Functions with Application to
Estimating Mortality Displacement from
Heat-Related Deaths***Roger Peng, Johns Hopkins University***2:35 A Compartmental Model for Meningitis:
Separating Transmission from Climate
Effects on Disease***Roman Jandarov, Penn State University***3:00 Bivariate Downscaling with Asynchronous
Measurements***Yunwen Yang*, Drexel University and
Xuming He, University of Michigan***3:25 Floor Discussion****73. Grant Funding Opportunities for Biostatisticians***Sponsor: ASA Section for Teaching in the Health Sciences**Organizer: Michelle Dunn, National Cancer Institute, National
Institutes of Health**Chair: Angela Marriotto, National Cancer Institute***1:45 New Opportunities for Research Funding at NSF**
Haiyan Cai, National Science Foundation***2:10 Overview of NIH Application Processes**
Michelle C. Dunn, National Cancer Institute,
National Institutes of Health***2:35 Peer Review at the National Institutes of Health**
Tomas Drgon, Center for Scientific Review, National
Institutes of Health***3:00 NIH Statistical Methodological Grant Application
and Review***Xihong Lin*, Harvard School of Public Health***3:25 Floor Discussion****74. Causal Mediation Analysis: Definitions,
Identification, Inference and Controversies***Sponsor: ASA Biometrics Section**Organizer: Eric Tchetgen Tchetgen, Harvard School of
Public Health**Chair: Ilya Shipster, Harvard School of Public Health***1:45 Alternative Graphical Causal Models and the
Identification of Direct Effects***Thomas Richardson*, University of Washington and
James Robins, Harvard School of Public Health*

- 2:10 **Why is Mediation Analysis Not Easy?**
*Vanessa Didelez**, University of Bristol, UK
- 2:35 **Causal Mediation Analysis for Dichotomous and Time-to-event Outcomes**
*Tyler VanderWeele**, Harvard School of Public Health
- 3:00 **Semiparametric Theory for Causal Mediation Analysis: Robustness, Efficiency and Sensitivity**
*Eric J. Tchetgen Tchetgen** and *Ilya Shpitser*, Harvard University
- 3:25 **Floor Discussion**

75. Advances in Brain Imaging and Signal Biomarkers For Behavior

Sponsor: IMS

Organizer: *Hernando Ombao*, University of California at Irvine

Chair: *Dipak Dey*, University of Connecticut

- 1:45 **How Restful is Resting State fMRI? — A Population Functional Change-Point Analysis Investigation**
*John A.D. Aston**, University of Warwick and *Claudia Kirch*, Karlsruhe Institute of Technology
- 2:10 **Predicting Disease Status Using a Novel Support Vector Classifier for Longitudinal Neuroimaging Data**
*DuBois Bowman** and *Shuo Chen*, Emory University
- 2:35 **Developing fMRI-based Biomarkers for Pain**
*Martin A. Lindquist**, Columbia University
- 3:00 **Novel Measures of Dependence in Time Series as Biomarkers**
*Hernando Ombao** and *Mark Fiecas*, Brown University and *Cristina Gorrostrieta*, University of California at Irvine
- 3:25 **Floor Discussion**

76. Recent Development in Imputation Methods and Their Applications

Sponsor: ASA Biometrics Section

Organizer: *Qixuan Chen*, Columbia University

Chair: *Sijian Wang*, University of Wisconsin

- 1:45 **A Multiple Imputation Approach to Misreporting and Mismeasurement from Multiple Sources**
*Yulei He**, *Mary Beth Landrum* and *Alan Zaslavsky*, Harvard Medical School
- 2:10 **Doubly Robust Nonparametric Multiple Imputation for Ignorable Missing Data**
*Qi Long**, Emory University; *Chiu-Hsieh Hsu*, University of Arizona and *Yisheng Li*, University of Texas MD Anderson Cancer Center

- 2:35 **Why are There Multiple Hypothesis Testing Combining Rules for Multiply Imputed Data Sets?**
*Xiao-Li Meng**, Harvard University and *Xianchao Xie*, Two Sigma Investments, LLC
- 3:00 **Imputing Modes for Missing Data Based on the Laplace Approximation to the Marginal Likelihood**
*Myunghee Cho Paik**, Columbia University
- 3:25 **Floor Discussion**

77. TOPIC CONTRIBUTED PAPERS:

Joint Modeling and Its Applications

Sponsor: ENAR

Organizer: *Yangxin Huang*, University of South Florida

Chair: *Yangxin Huang*, University of South Florida

- 1:45 **An Estimation Method of Marginal Treatment Effects on Correlated Longitudinal and Survival Outcomes**
Qing Pan, George Washington University and *Grace Y. Yi**, University of Waterloo
- 2:00 **A Semiparametric Marginalized Model for Longitudinal Data with Informative Dropout**
*Mengling Liu**, New York University School of Medicine and *Wenbin Lu*, North Carolina State University
- 2:15 **Bayesian Semiparametric Nonlinear Mixed-Effects Joint Models for Data with Skewness, Missing Responses and Measurement Errors in Covariates**
*Yangxin Huang** and *Getachew A. Dagne*, University of South Florida
- 2:30 **Bayesian Hybrid Inference for Longitudinal and Survival Joint Models**
*Gang Han**, Moffitt Cancer Center & Research Institute; *Yangxin Huang*, University of South Florida and *Catherine Phelan*, Moffitt Cancer Center & Research Institute
- 2:45 **Joint Spatial Modeling of Recurrent Infection and Growth in Forest Ecology**
*Farouk S. Nathoo**, University of Victoria
- 3:00 **Bayesian Joint Model of Multivariate Ordinal Data with Competing Risks Survival Time**
*Satrajit Roychoudhury**, Novartis Pharmaceuticals Corporation
- 3:15 **A Joint Latent Class Model of Survival and Longitudinal Data**
*Yue Liu**, *Lei Liu* and *Jianhui Zhou*, University of Virginia

78. CONTRIBUTED PAPERS:**Bayesian Methods I**

Sponsor: ENAR

Chair: Jung-Ying Tzeng, North Carolina State University

- 1:45 **Bayesian Kappa Regression**
*Elande Baro**, University of Maryland Baltimore County; *Zhen Chen, Sung Duk Kim and Bo Zhang*, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health
- 2:00 **Sparse Data in Safety Data Analyses**
*Xiaowen Hu**, Southern Methodist University; *Luyan Dai and Tom Tang*, Boehringer Ingelheim Pharmaceuticals
- 2:15 **Minkowski-Weyl Priors for Models with Parameter Constraints: An Analysis of the BioCycle Study**
■ *Michelle R. Danaher**, University of Maryland, Baltimore County and Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health; *Anindya Roy*, University of Maryland Baltimore County; *Zhen Chen, Sunni L. Mumford and Enrique F. Schisterman*, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health
- 2:30 **A Predictive Bayesian Approach to the Design and Analysis of Bridging Studies**
*A. Lawrence Gould**, *Jin Tian, Li Xin Zhang and William W. B. Wang*, Merck Research Laboratories
- 2:45 **Bayesian Semiparametric Regression for Evaluating Pathway Effects on Zero Inflated Clinical Outcomes**
*Lulu Cheng** and *Inyoung Kim*, Virginia Tech
- 3:00 **Bayesian Sampling-Based Methods for Inverse Prediction from Longitudinal CD4 Profile Data**
*Miranda L. Lynch** and *Victor DeGruttola*, Harvard School of Public Health
- 3:15 **Robust Bayesian Inference for Longitudinal Multivariate Data with Normal/Independent Distributions**
*Sheng Luo** and *Junsheng Ma*, University of Texas at Houston; *Karl D. Kiebertz*, University of Rochester Medical Center and *Barbara C. Tilley*, University of Texas at Houston

79. CONTRIBUTED PAPERS:**Correlated / Longitudinal Data**

Sponsor: ENAR

Chair: Hongjie Zhu, Duke University

- 1:45 **A Semiparametric Latent Variable Transformation Approach for Modeling Multiple Outcomes of Mixed Types**
*Anna Snaveley**, Harvard University and *Yi Li*, Harvard University and University of Michigan
- 2:00 **Analysis of Asynchronous Longitudinal Observations**
*Hongyuan Cao**, University of Chicago; *Donglin Zeng and Jason P. Fine*, University of North Carolina at Chapel Hill
- 2:15 **Hierarchical Multiple Informant Models**
*Jonggyu Baek** and *Brisa N. Sanchez*, University of Michigan and *Emma V. Sanchez-Vaznaugh*, San Francisco State University
- 2:30 **Measures of Discrimination for Latent Group-Based Trajectory Models**
*Nilesh Shah** and *Chung-Chou Chang*, University of Pittsburgh
- 2:45 **Challenges in Estimation of Genetic Effects from Family-based Case-Control Data**
*Roula Tsonaka** and *Jeanine J. Houwing-Duistermaat*, Leiden University Medical Center
- 3:00 **The Analysis of Correlated Non-Gaussian Outcomes from Clusters of Size Two: Non-Multilevel-Based Alternatives?**
*Tom Loeys**, Ghent University and *Geert Molenberghs*, University of Leuven
- 3:15 **Conditional Inference Functions for Mixed-Effects Models with Unspecified Random-Effects Distribution**
*Peng Wang**, Bowling Green State University; *Guai-feng Tsai*, U.S. Food and Drug Administration and *Annie Qu*, University of Illinois at Urbana-Champaign

80. CONTRIBUTED PAPERS:**Imaging**

Sponsor: ENAR

Chair: James O'Malley, Harvard Medical School

- 1:45 **A Bayesian Hierarchical Framework for Modeling Brain Connectivity of Neuroimaging Data**
*Shuo Chen**, *F. DuBois Bowman* and *Lijun Zhang*, Emory University

- 2:00 **Simple Modifications of a t-test for Improved Power with FDR Control in fMRI**
Shuzhen Li, Medtronic, Inc.; Lynn E. Eberly, University of Minnesota and Brian S. Caffo, Johns Hopkins University*
- 2:15 **Adaptive Thresholding for fMRI Data**
Joke Durnez and Beatrijs Moerkerke, Ghent University, Belgium*
- 2:30 **Application of Cluster Analysis in Dementia Research**
Jay Mandrekar, Mayo Clinic*
- 2:45 **Three-dimensional Recognition of Stem Cells Using an Entropy Based Nonparametric Hypothesis Testing Approach**
Ran Liu and Dipak K. Dey, University of Connecticut*
- 3:00 **A Bayesian Approach to Determining Functional Connectivity in the Human Brain with Incorporation of Structural Connectivity**
Wengiong Xue and F. DuBois Bowman, Emory University*
- 3:15 **Floor Discussion**

81. CONTRIBUTED PAPERS:**Longitudinal and Time Series Data Analysis***Sponsor: ENAR**Chair: Raymond Hoffman, Medical College of Wisconsin*

- 1:45 **State-Space Time Series Clustering Using Discrepancies Based on the Kullback-Leibler Information and the Mahalanobis Distance**
Eric D. Foster and Joseph E. Cavanaugh, University of Iowa*
- 2:00 **Developmental Trajectories of Marijuana Use from Adolescence to Adulthood: Personality and Social Role Outcomes**
Judith S. Brook, Jung Yeon Lee and Elaine N. Brown, NYU School of Medicine; Stephen J. Finch, State University of New York, Stony Brook and David W. Brook, New York University School of Medicine*
- 2:15 **Modeling the Evolution of Neurophysiological Signals**
Mark Joseph A. Fiecas and Hernando Ombao, Brown University*
- 2:30 **Markov Regression Models for Count Time Series with Excess Zeros: A Partial Likelihood Approach**
Ming Yang, Gideon Zamba and Joseph Cavanaugh, University of Iowa*
- 2:45 **Semiparametric Approach to a Non-linear Random Effects Quantile Regression Model**
Mi-Ok Kim and Rhonda Vandyke, Cincinnati Children's Hospital Medical Center*

- 3:00 **Building a New Control Chart for Biosurveillance**
Yiyang Fan, Cleveland State University*
- 3:15 **Robust Estimation of Mixed Effects Model for Finite Normal Mixtures**
Tingting Zhan, Temple University; Inna Chervoneva, Thomas Jefferson University and Boris Iglewicz, Temple University*

82. CONTRIBUTED PAPERS:**Survival Analysis and Risk Prediction***Sponsor: ENAR**Chair: Hilary Parker, Johns Hopkins School of Public Health*

- 1:45 **Partly Conditional Estimation of the Effect of a Time-Dependent Factor in the Presence of Dependent Censoring**
■ *Qi Gong* and Douglas E. Schaubel, University of Michigan*
- 2:00 **Regression Analysis of Clustered Interval-Censored Failure Time Data with the Additive Hazards Model**
Junlong Li, University of Missouri; Chunjie Wang, Mathematics School and Institute of Jilin University and Jianguo Sun, University of Missouri*
- 2:15 **Landmark Risk Prediction of Residual Life for Breast Cancer Survival**
Layla Parast and Tianxi Cai, Harvard University*
- 2:30 **Estimating Restricted Mean Job Tenures for Compensatory Damages in Promotion Discrimination Cases: Application to Alexander vs. Milwaukee**
Qing Pan and Joseph Gastwirth, George Washington University*
- 2:45 **Statistical Methods of Time-Conditional Survival**
Victoria Gamerman and Phyllis A. Gimotty, University of Pennsylvania*
- 3:00 **100 Years On: A New Look at Survivorship on the Titanic**
Stephen D. Walter, Hedy Jiang, McMaster University and Corinne A. Riddell, McGill University*
- 3:15 **Adjusted Survival Analysis with Inverse Probability Weights in Community-based Primary Care Practices**
Zugui Zhang, Edward Ewen and Paul Kolm, Christiana Care Health System*

Tuesday, April 3 (continued)**3:30 – 3:45 pm | Break***Grand Ballroom Pre-function Area***3:45 – 5:30 pm****83. Statistical Methods and Applications in Rare Variant Sequencing Studies***Sponsor: ENAR**Organizers: Xihong Lin, Harvard School of Public Health and Michael Wu, University of North Carolina at Chapel Hill**Chair: Xihong Lin, Harvard School of Public Health*

- 3:45 **Joint Moment Test for Rare Variants**
Daniel J. Schaid, Mayo Clinic*
- 4:10 **A Novel Permutation Strategy to Correct for Confounders in Case-Control Studies of Rare Variation**
Michael P. Epstein, Richard Duncan, Yunxuan Jiang and Karen N. Conneely, Emory University; Andrew S. Allen, Duke University and Glen A. Satten, Centers for Disease Control and Prevention*
- 4:35 **Investigating the Impact of the Rare Spectrum of Variation on Drug Repositioning and Drug Response**
Matthew R. Nelson, GlaxoSmithKline*
- 5:00 **Kernel Machine Based Testing of Rare Variant by Environment Interactions**
Michael C. Wu, University of North Carolina at Chapel Hill*
- 5:25 **Floor Discussion**

84. Causal Inference Methods for HIV Research*Sponsor: ASA Biometrics Section**Organizer: Miguel Hernan, Harvard School of Public Health**Chair: Miguel Hernan, Harvard School of Public Health*

- 3:45 **Practical Applications of Principal Stratification in HIV Research**
Bryan E. Shepherd, Vanderbilt University*
- 4:15 **Estimation of Joint Effects of Multiple Time-Varying Exposures in Infectious Disease Research**
Stephen R. Cole, University of North Carolina at Chapel-Hill and Chanelle J. Howe, Brown University*
- 4:45 **Mediation Analysis for Observational Event Time Data**
Jing Zhang and Joseph W. Hogan, Brown University; Catherine Gichunge, Edwin Sang and Abraham Siika, Moi University*
- 5:15 **Discussant: James Robbins, Harvard University**

85. Modern Statistical Machine Learning for Complex and High Dimensional Data*Sponsor: ASA Section on Statistical Learning and Data Mining
Organizer: Yufeng Liu, University of North Carolina at Chapel Hill**Chair: Yufeng Liu, University of North Carolina at Chapel Hill*

- 3:45 **High-Dimensional Pharmacoepidemiology**
David Madigan, Columbia University*
- 4:10 **HDLSS Discrimination with Adaptive Data Piling**
Myung Hee Lee, Colorado State University; Jeongyoun Ahn, University of Georgia and Yongho Jeon, Yonsei University*
- 4:35 **Likelihood Adaptive Modified Penalty and Its Properties**
Tengfei Li, Fudan University, Yang Feng and Zhiliang Ying, Columbia University*
- 5:00 **Regularized Multiple-Index Model for Group Variable Selection**
Sijian Wang, University of Wisconsin, Madison*
- 5:25 **Floor Discussion**

86. Statistical Challenges in Reproductive and Environmental Epidemiology*Sponsor: ASA Section on Statistics and the Environment**Organizer: Raji Sundaram, National Institute of Child Health and Development, National Institutes of Health**Chair: Raji Sundaram, National Institute of Child Health and Development, National Institutes of Health*

- 3:45 **Conceptual & Methodologic Challenges Underlying the Assessment of Environmental Reproductive and Developmental Toxicants: An Overview**
Germaine M. Louis, National Institute of Child Health and Development, National Institutes of Health*
- 4:10 **Modeling Time-To-Pregnancy in Terms of Variability of Menstrual Length**
Amita Manatunga, Emory University; Huichao Chen, Harvard University; Limin Peng and Michele Marcus, Emory University*
- 4:35 **Analysis of In-Vitro Fertilization Data with Multiple Outcomes Using Discrete Time to Event Analysis**
Arnab Maity, North Carolina State University; Paige Williams, Harvard School of Public Health; Louise Ryan, Commonwealth Scientific and Industrial Research Organisation; Stacey Missmer, Brent Coull and Russ Hauser, Harvard School of Public Health*

5:00 **Bayesian Borrowing of Information Across High-Dimensional Exposures and Outcomes**
*Amy H. Herring**, University of North Carolina at Chapel Hill; *David B. Dunson*, Duke University and *Andrew F. Olshan*, University of North Carolina at Chapel Hill

5:25 **Floor Discussion**

87. Combining Population Data from Multiple Sources

Sponsor: ASA Survey Research and Methodology Section

Organizer: Michael Elliott, University of Michigan

Chair: Trivellore Raghunathan, University of Michigan

3:45 **Combining Information from Multiple Complex Surveys**
*Qi Dong**, Trivellore Raghunathan and Michael Elliott, University of Michigan

4:10 **Estimating Effectiveness of Health Care Combining Information from Different Surveys**
 Trivellore Raghunathan and Irina Bondarenko*, University of Michigan

4:35 **Longitudinal Analysis of Linked Data: A Case Study**
*Guangyu Zhang**, Jennifer Parker and Nathaniel Schenker, National Center for Health Statistics

5:00 **Combining Data from Probability and Non-probability Surveys**
*Michael R. Elliott**, Alexa Resler, Carol Flannagan and Jonathan Rupp, University of Michigan

5:25 **Floor Discussion**

88. Spatial Uncertainty in Public Health Problems

Sponsor: ASA Section on Statistics and the Environment

Organizer: Li Zhu, National Cancer Institute, National Institutes of Health

Chair: Li Zhu, National Cancer Institute, National Institutes of Health

3:45 **CSpatial Uncertainty in Health Data: Does It Matter and Why Should I Worry About It?**
*Geoffrey Jacques**, Biomedware

4:10 **Relating Public Health to Environmental Factors: Quantifying Uncertainty when Exposure is Predicted**
*Linda J. Young** and Kenneth K. Lopiano, University of Florida and Carol A. Gotway, U.S. Centers for Disease Control and Prevention

4:35 **Spatial Uncertainty and Spatial Measures of Performance**
*Lance Waller**, Emory University

5:00 **Visualizing Statistics and Uncertainty Patterns with Micromaps**
*Daniel B. Carr**, George Mason University and Linda W. Pickle, StatNet Consulting LLC

5:25 **Floor Discussion**

89. TOPIC CONTRIBUTED PAPERS:

New Statistical Tools for High Dimensional Problems

Sponsor ENAR

Organizer: Yichao Wu, North Carolina State University

Chair: Yichao Wu, North Carolina State University

3:45 **Discovering Graphical Granger Causality in Sparse High-dimensional Networks with Inherent Grouping Structure**
*George Michailidis** and Sumanta Basu, University of Michigan and Ali Shojaie, University of Washington

4:05 **Quantile Regression in Ultra-high Dimension**
*Lan Wang**, University of Minnesota; Yichao Wu, North Carolina State University and Runze Li, The Pennsylvania State University

4:25 **Statistical Tools for Identifying and Predicting Multiple Pathways**
*Joseph S. Verducci**, Samuel Handelman and Steven Bamattre, The Ohio State University

4:45 **Selecting the Number of Principal Components in Functional Data**
*Yehua Li**, University of Georgia; Naisyin Wang, University of Michigan and Raymond J. Carroll, Texas A&M University

5:05 **Robust Estimation of Large Gaussian Graphical Model**
Peng Tang, Georgia Institute of Technology; Huijing Jiang, IBM T.J. Watson Research Center and Xiwnei Deng*, Virginia Tech

5:25 **Floor Discussion**

90. CONTRIBUTED PAPERS:**Bayesian Methods II**

Sponsor: ENAR

Chair: Donna McClish, Virginia Commonwealth University

- 3:45 **A Bayesian Approach for Rank Aggregation**
Ke Deng and Xuxin Liu, Harvard University;
Jiong Du, Peking University and Jun S. Li,
Harvard University*
- 4:00 **Bayesian Inference for Case-Control Studies
with Multiple Non-Gold Standard Exposure
Assessments: With an Application in
Occupational Health**
Jing Zhang, University of Minnesota*
- 4:15 **A Nonparametric Bayesian Model for
Local Clustering**
Juhee Lee, University of Texas MD Anderson
Cancer Center; Peter Mueller, University of Texas at
Austin and Yuan Ji, University of Texas MD Anderson
Cancer Center*
- 4:30 **A Bayesian Characterization for a Weighted Sum
of Environmental Chemicals**
Stephanie M. Pearson and Roy T. Sabo, Virginia
Commonwealth University*
- 4:45 **Estimating Reproductive Inhibition Potency
in Aquatic Toxicity Testing When Excess
Zeros Observed**
Jing Zhang, A. John Bailer and James T. Oris,
Miami University*
- 5:00 **Bayesian Armitage-Doll Multistage
Carcinogenesis Model in Estimating
Cancer Mortality**
Zhiheng Xu and Vicki Hertzberg, Emory University*
- 5:15 **Floor Discussion**

91. CONTRIBUTED PAPERS:**Diagnostic and Screening Tests**

Sponsor: ENAR

Chair: Patrick Perry, New York University

- 3:45 **Discrete Survival Analysis with
Misclassified Events**
Abidemi Adeniji, University of Pittsburgh*
- 4:00 **A New Approach to Adjust for Verification Bias
in Assessment of Binary Diagnostic Tests**
Qingxia Chen, Vanderbilt University*
- 4:15 **Diagnostic Tests Based on Multiple Cutpoints for
Not Proper ROC Curves**
Peter R. Dawson and Phyllis A. Gimotty,
University of Pennsylvania*

- 4:30 **Estimation of the Volume Under the ROC Surface
with Three Ordinal Diagnostic Categories Using
Kernel Smoothing**
Le Kang and Lili Tian, University at Buffalo*
- 4:45 **A Simple Bayesian Inference of Odds
Ratios in Misclassified Binary Data with
a Validation Study**
Meijuan Li, U.S. Food and Drug Administration*
- 5:00 **Soft ROC Curves**
*Yixin Fang, New York University; Narayanaswamy
Balakrishnan, McMaster University and Xin Huang*,
Fred Hutchinson Cancer Research Center*
- 5:15 **Evaluating Incomplete Multiple
Imperfect Diagnostic Tests with a Probit
Latent Class Model**
Yi Zhang, University of North Carolina at Chapel
Hill; Haitao Chu, University of Minnesota and Donglin
Zeng, University of North Carolina at Chapel Hill*

92. CONTRIBUTED PAPERS:**Meta-Analysis**

Sponsor: ENAR

Chair: Brian Neelon, Duke University

- 3:45 **Meta-Analysis of Binary Rare Adverse Event**
*Dulal K. Bhaumik, University of Illinois at Chicago;
Anup K. Amatya*, New Mexico State University;
Sharon-Lise Normand, Harvard University;
Joel Greenhouse, Carnegie Mellon University;
Eloise Kaizar, The Ohio State University; Brian
Neelon, Duke University and Robert Gibbons,
University of Chicago*
- 4:00 **Regulatory Network Analysis by Meta-Analysis
of Multiple Transcriptomic Studies in Major
Depressive Disorder**
Ying Ding, Etienne Sibille and George Tseng,
University of Pittsburgh*
- 4:15 **Meta-Analysis Framework for the Dimension
Reduction of Genomic Data**
Dongwan D. Kang and George C. Tseng,
University of Pittsburgh*
- 4:30 **Meta-Analysis of Observational Studies with
Unmeasured Confounders**
Lawrence C. McCandless, Simon Fraser University,
Canada*
- 4:45 **Comprehensive Comparative Study of
Microarray Meta-Analysis Methods**
Lun-Ching Chang, Hui-Min Lin and
George C. Tseng, University of Pittsburgh*

5:00 **Imputation of Truncated p-values for Meta-Analysis Methods and Its Genomic**

■ Shaowu Tang* and George C. Tseng, University of Pittsburgh

5:15 **Merging Clustered or Longitudinal Cohort Data with Cohort-specific Missing Covariates**

Fei Wang*, Lu Wang and Peter X.-K. Song, University of Michigan

93. CONTRIBUTED PAPERS:

Missing Data I

Sponsor: ENAR

Chair: Zhi (Kevin) He, University of Michigan

3:45 **A Multiple Imputation Based Approach to Sensitivity Analyses and Effectiveness Assessments in Longitudinal Clinical Trials**

Teshome Birhanu*, I-BioStat, Universiteit Hasselt, Belgium; Ilya Lipkovich, Eli Lilly & Company; Geert Molenberghs, I-BioStat, Universiteit Hasselt, Belgium and I-BioStat, Katholieke Universiteit Leuven, Belgium and Craig H. Mallinckrodt, Eli Lilly & Company

4:00 **Estimation of Rate of Change in Longitudinal Studies with Varying Degrees of Missingness and Informative Dropout: A Simulation Study**

Jamie E. Collins*, Boston University; Robin Bliss and Elena Losina, Brigham and Women's Hospital

4:15 **On Cluster Size, Ignorability, Ancillarity, Completeness, Separability, and Degeneracy: Sequential Trials, Random Sample Sizes, and Missing Data**

Geert Molenberghs*, I-BioStat, Universiteit Hasselt & Katholieke Universiteit Leuven, Belgium; Michael G. Kenward, London School of Hygiene and Tropical Medicine; Marc Aerts, I-BioStat, Universiteit Hasselt, Belgium; Geert Verbeke, I-BioStat, Katholieke Universiteit Leuven & Universiteit Hasselt, Belgium; Anastasios A. Tsiatis and Marie Davidian, North Carolina State University and Dimitris Rizopoulos, Erasmus University Rotterdam

4:30 **Diagnostic Plots for Evaluation of Bias in Missing Data from Clinical Trials**

Gerry W. Gray*, U.S. Food and Drug Administration

4:45 **Time-to-event Analysis with Partial Adjudication of Potential Events Using Fractional Imputation**

Jason C. Legg*, Amgen Inc. and Jae Kwang Kim, Iowa State University

5:00 **Multiple Imputation for Generalized Linear Models with Censored Covariates**

Paul W. Bernhardt*, Huixia Wang and Daowen Zhang, North Carolina State University

5:15 **Multiple Imputation for Measurement Error with Internal and External Calibration Samples**

Roderick J. Little*, University of Michigan

94. CONTRIBUTED PAPERS:

Semiparametric and Nonparametric Methods for Survival Analysis

Sponsor: ENAR

Chair: Lily Wang, University of Georgia

3:45 **A Family of Weighted Generalized Inverse Weibull Distribution**

Broderick O. Oluyede*, Georgia Southern University and Jing Kersey, East Georgia College

4:00 **Stratified and Unstratified Log-Rank Tests in Survival Analysis**

Changyong Feng*, David Oakes and Yao Yu, University of Rochester Medical Center

4:15 **Nonparametric Estimation of the Mean Function for Recurrent Events Data with Missing Event Category**

Feng-Chang Lin*, Jianwei Cai and Jason P. Fine, University of North Carolina at Chapel Hill and HuiChuan J. Lai, University of Wisconsin-Madison

4:30 **Median Tests for Censored Survival Data: Contingency Table Approach**

Shaowu Tang and Jong-Hyeon Jeong*, University of Pittsburgh

4:45 **Pointwise Confidence Intervals for a Survival Distribution for Right Censored Data with Small Samples or Heavy Censoring**

Michael P. Fay*, Erica Brittain and Michael A. Proschan, National Institute of Allergy and Infectious Diseases, National Institutes of Health

5:00 **Further Thoughts on the Proportional Mean Residual Life Model**

David Oakes*, University of Rochester Medical Center

5:15 **Frailty Models with Covariates Subject to Limit of Detection**

Abdus Sattar*, Case Western Reserve University; Liang Li, Cleveland Clinic Foundation and Pingfu Fu, Case Western Reserve University

Wednesday, April 4

8:30 – 10:15 am

95. New Statistical Challenges in Functional Data Analysis

Sponsor: ASA Biometrics Section

Organizer: Ana-Maria Staicu, North Carolina State University

Chair: Michele Guindani, University of Texas MD Anderson Cancer Center

- 8:30 **Bayesian Variable Selection for Identifying Genetic Effects on Functional Connectivity**
*Brian J. Reich**, North Carolina State University;
Michele Guindani, University of Texas MD Anderson Cancer Center; *Abel Rodriguez*, University of California at Santa Cruz and *Vince Calhoun*, University of New Mexico
- 8:55 **Regression Models for Spatially Correlated Multilevel Functional Data**
*Ana-Maria Staicu**, North Carolina State University; *Damla Sentürk*, University of California at Los Angeles and *Raymond J. Carroll*, Texas A&M University
- 9:20 **Varying Coefficient Models for Sparse Noise-Contaminated Longitudinal Data**
*Damla Senturk**, University of California, Los Angeles and *Danh Nguyen*, University of California, Davis
- 9:45 **Longitudinal High Dimensional Data Analysis**
*Vadim Zipunnikov**, Johns Hopkins University; *Sonja Greven*, Ludwig-Maximilians-University; *Brian Caffo*, Johns Hopkins University; *Daniel S. Reich*, Johns Hopkins University and National Institute of Neurological Disorders and Stroke, National Institutes of Health and *Ciprian M. Crainiceanu*, Johns Hopkins University
- 10:10 **Floor Discussion**

96. Estimation of Covariance Matrices with Applications to Longitudinal Data and Graphical Models

Sponsor: IMS

Organizer: Michael Daniels, University of Florida

Chair: Dhiman Bhadra, Worcester Polytechnic Institute

- 8:30 **Estimating Large Correlation Matrices by Banding the Partial Autocorrelation Matrix**
Yanpin Wang and *Michael Daniels**, University of Florida
- 9:00 **Antedependence Models for Normal and Categorical Longitudinal Data**
*Dale L. Zimmerman**, University of Iowa

- 9:30 **Doubly Regularized Estimation and Selection in Linear Mixed-Effects Models for High-Dimensional Longitudinal Data**
Yun Li, University of Michigan; *Sijian Wang*, University of Wisconsin; *Peter X.K. Song*, Naisyin Wang and *Ji Zhu**, University of Michigan

10:00 **Floor Discussion**

97. Analyses of Incomplete Longitudinal Data – How Robust are the Results?

Sponsor: ASA Biometrics Section

Organizer: Donna Kowalski, Astellas Pharma Global Development, Inc

Chair: Donna Kowalski, Astellas Pharma Global Development, Inc

- 8:30 **Bayesian Influence Measures for Joint Models for Longitudinal and Survival Data**
*Joseph G. Ibrahim** and *Hongtu Zhu*, University of North Carolina at Chapel Hill and *Niansheng Tang*, Yunnan University, China
- 9:00 **Robust Analyses of Randomized Clinical Trials with Incomplete Longitudinal Data**
*Devan V. Mehrotra**, Merck Research Laboratories
- 9:30 **On the Usefulness of Sensitivity Analyses**
*James M. Robins**, Harvard School of Public Health
- 10:00 **Floor Discussion**

98. Statistics in Mental Health Research: A Prelude to a Proposed New ASA Section

Sponsor: ENAR

Organizers: *Naihua Duan*, Columbia University and *Robert Gibbons*, University of Chicago

Chair: *Naihua Duan*, Columbia University

- 8:30 **Evolution of Psychopharmacology Trial Design and Analysis: Six Decades in the Making**
*Andrew C. Leon**, Weill Cornell Medical College
- 8:55 **Modeling Between- and Within-Subject Mood Variance in Ecological Momentary Assessment (EMA) Data using Mixed-Effects Location-Scale Models**
*Donald Hedeker**, *Robin J. Mermelstein* and *Hakan Demirtas*, University of Illinois at Chicago
- 9:20 **Are Antidepressants Effective and Do They Cause Suicidal Thoughts and Behavior? Methodology and Findings for Synthesizing Findings Across Multiple Randomized Antidepressant Trials**
*Hendricks Brown**, University of Miami; *Robert D. Gibbons*, University of Chicago; *Kwan Hur*, University of Chicago and *Hines VA Hospital Center for Medication Safety*; *John J. Mann*, Columbia University and *Bengt O. Muthen*, University of California at Los Angeles

9:45 **The Future of Mental Health Measurement**
*Robert D. Gibbons**, University of Chicago

12:00 **Floor Discussion**

99. High-Impact Statistical Methods and the Fight Against HIV in the Developing World

Sponsor: ENAR

Organizer: Joseph Hogan, Brown University

Chair: Joseph Hogan, Brown University

8:30 **Using Auxiliary Biomarkers to Improve Pooling Strategies for HIV Viral Load Testing**

*Tao Liu**, Joseph W. Hogan, Shangxuan Zhang and Rami Kantor, Brown University

8:55 **The Role of Network Analyses in Research on Prevention of HIV Infection**

Ravi Goyal, Joseph Blitzstein and Victor DeGruttola*, Harvard University

9:20 **Estimation from Double-Sampled Semi-Competing Risk Data**

*Constantin T. Yiannoutsos**, Menggang Yu and Hai Liu, Indiana University School of Medicine

9:45 **Traditional and 'Causal' Models for Evaluating the Effectiveness of the Switch to Second Line Therapy in a Large, Ongoing HIV/AIDS Treatment and Care Program in a Resource Limited Setting**

*Sehee Kim and Donna Spiegelman**, Harvard School of Public Health; *Claudia Hawkins*, Northwestern University; *Aisa Muya and Eric Aris*, Management and Development for Health Dar es Salaam, Tanzania; *Ester Mungure and Aveika Akum*, Harvard School of Public Health; *Guerino Chalamilla*, Management and Development for Health Dar es Salaam, Tanzania and *Wafaie W. Fawzi*, Harvard School of Public Health

10:10 **Floor Discussion**

100. Memorial Session for Tom Ten Have

Sponsor: ENAR

Organizers: Dylan Small and Marshall Joffe, University of Pennsylvania

Chair: Dylan Small, University of Pennsylvania

8:30 **Celebrating the Life of Thomas R. Ten Have**
*J. Richard Landis**, University of Pennsylvania

8:55 **Sizing Sequential, Multiple Assignment, Randomized Trials for Survival Analysis**
Zhiguo Li, Duke University and *Susan Murphy**, University of Michigan

9:20 **Post-Randomization Modification of Intent-to-Treat Effects in Randomized Clinical Trials**
*Rongmei Zhang**, U.S. Food and Drug Administration; *Marshall Joffe and Thomas Ten Have*, University of Pennsylvania

9:45 **Mediation Analysis on the Basis of Initial Randomization**
Marshall Joffe, University of Pennsylvania

10:10 **Floor Discussion**

101. Topic Contributed Papers: Advanced Statistical Modeling for Complex OMICS Data

Sponsor: ENAR

Organizer: Hua Zhou, North Carolina State University

Chair: Hua Zhou, North Carolina State University

8:30 **Bayesian Model for Identifying Spatial Interactions of Chromatins**
*Shili Lin** and *Liang Niu*, The Ohio State University

8:50 **Testing and Estimation of Partial Correlation Networks**
*Fred A. Wright** and *Min Jin Ha*, University of North Carolina at Chapel Hill

9:10 **Statistical Methods for Inference from Multiple ChIP-seq Samples**
*Sunduz Keles**, University of Wisconsin, Madison

9:30 **Statistical Models for Analyzing Sequencing Applications**
*Zhaohui S. Qin**, Emory University

9:50 **A Gene-Trait Similarity Regression Method for Common and Rare Variants with General Trait Values**
*Jung-Ying Tzeng**, North Carolina State University

10:10 **Floor Discussion**

102. Contributed Papers: Biomarkers II

Sponsor: ENAR

Chair: Ewout Steyerberg, Erasmus University Medical Center

8:30 **The Application of Non-Linear Models to Understanding Sociodemographic Distributions of Health Over Time**
*David Rehkopf**, Stanford University

8:45 **Adjusting for Matching and Covariates in Linear Discriminant Analysis**
*Josephine K. Asafu-Adjei**, Harvard School of Public Health; *Allan R. Sampson and Robert A. Sweet*, University of Pittsburgh

- 9:00 **Adjustment for Measurement Error in Evaluating Diagnostic Biomarkers by Using an Internal Reliability Sample**
 ■ *Matthew T. White* and Sharon X. Xie, University of Pennsylvania*
- 9:15 **Integrating Multiple Modalities of High Throughput Assays Using Item Response Theory: An Application to Identify Genes Altered in Ovarian Cancer**
Pan Tong, University of Texas Health Science Center at Houston and Kevin R. Coombes, University of Texas MD Anderson Cancer Center*
- 9:30 **Estimating the Correlation Between Two Variables Subject to Limit of Detection**
Courtney E. McCracken, Emory University and Stephen W. Looney, Georgia Health Sciences University*
- 9:45 **Modeling Complex Structures in Neuropsychiatric Testing Data for Subjects with Pediatric Disorders**
Vivian H. Shih, Laurie A. Brenner, Carrie E. Bearden, Catherine A. Sugar and Steve S. Lee, University of California at Los Angeles*
- 10:00 **Floor Discussion**

103. CONTRIBUTED PAPERS: Dynamic Treatment Regimens

Sponsor: ENAR

Chair: Douglas Gunzler, Case Western Reserve University

- 8:30 **Q-learning for Estimating Optimal Dynamic Treatment Rules from Observational Data**
Erica E. Moodie, McGill University and Bibhas Chakraborty, Columbia University*
- 8:50 **Weighted Log-rank Statistic to Compare Shared-Path Adaptive Treatment Strategies**
Kelley M. Kidwell and Abdus S. Wahed, University of Pittsburgh*
- 9:10 **A Comparison of Q- and A-Reinforcement Learning Methods for Estimating Optimal Treatment Regimes**
Phillip J. Schulte, Marie Davidian and Anastasios A. Tsiatis, North Carolina State University*
- 9:30 **Estimating Individualized Treatment Rules Using Outcome Weighted Learning**
 ■ *Yingqi Zhao* and Donglin Zeng, University of North Carolina at Chapel Hill; A. John Rush and Michael R. Kosorok, University of North Carolina at Chapel Hill*

- 9:50 **Choice of Optimal Estimators in Structural Nested Mean Models With Application to Initiating HAART in HIV Positive Patients After Varying Duration of Infection**
Judith J. Lok, Victor DeGruttola, Ray Griner and James M. Robins, Harvard School of Public Health*
- 10:10 **Floor Discussion**

104. CONTRIBUTED PAPERS: Missing Data II

Sponsor: ENAR

Chair: R. Lakshmi Vishnuvajjala, U.S. Food and Drug Administration

- 8:30 **A Joint Longitudinal-Survival Model to Analyze Risk Factors for Death of Patients on the Liver Transplant Waiting List**
Arwin Thomasson, Peter Reese, David Goldberg and Sarah Ratcliffe, University of Pennsylvania*
- 8:45 **Missing Covariates and the Plausibility of the Missing at Random Assumption**
Jonathan W. Bartlett and James R. Carpenter, London School of Hygiene & Tropical Medicine, UK; Kate Tilling, University of Bristol, UK; Michael G. Kenward, London School of Hygiene & Tropical Medicine, UK and Stijn Vansteelandt, Ghent University, Belgium*
- 9:00 **Missing Value Imputation in Phenome Data**
Ge Liao and George C. Tseng, University of Pittsburgh*
- 9:15 **Weighted Semiparametric Estimation of the Cox Model for Interval-Censored Data with Missing Covariates**
Lu Wang and Bin Nan, University of Michigan; Peng Zhang, Peking University and Andrew Zhou, University of Washington*
- 9:30 **Goodness-of-Fit Test to Distribution-Free Models for Longitudinal Studies with Informative Missing Data**
Pan Wu and Xin M. Tu, University of Rochester*
- 9:45 **Joint Empirical Likelihood Confidence Regions for the Evaluation of Continuous-Scale Diagnostic Tests in the Presence of Verification Bias**
Binhuan Wang and Gengsheng Qin, Georgia State University*
- 10:00 **Floor Discussion**

105. CONTRIBUTED PAPERS:**Multiple Testing**

Sponsor: ENAR

Chair: Elizabeth L. Ogburn, Harvard University

- 8:30 **Step-up-down Multiple Testing Procedures and Their Control of False Rejections**
*Alexander Y. Gordon**, University of North Carolina at Charlotte
- 8:45 **An Improved Hochberg Procedure for Multiple Tests of Significance**
*Dror M. Rom**, PSI Center for Statistical Research
- 9:00 **Robust Identification of Conditional Gene Expression in Development of Onthophagus Beetles**
*Guilherme V. Rocha**, Karen Kafadar and Armin Moczek, Indiana University; *Emilie Snell-Rood*, University of Minnesota; *Teiya Kijimoto and Justen Andrews*, Indiana University
- 9:15 **Estimating the Number of Genes that are Differentially Expressed in Both of Two Independent Experiments**
*Megan C. Orr**, Peng Liu and Dan Nettleton, Iowa State University
- 9:30 **An Adaptive Resampling Test for Detecting the Presence of Significant Predictors**
*Ian W. McKeague and Min Qian**, Columbia University
- 9:45 **Joint Modeling of Multiple Partially Observed Outcomes from Clinical Trials**
*Nicholas J. Horton**, Smith College; *Kypros Kypri*, University of Newcastle, Australia; *Frank B. Yoon*, Mathematica Policy Research; *Garrett M. Fitzmaurice and Stuart R. Lipsitz*, Harvard Medical School and *Sharon-Lise T. Normand*, Harvard Medical School and Harvard School of Public Health
- 10:00 **A Tight Prediction Interval for False Discovery Proportion under Dependence**
*Shulian Shang**, Mengling Liu and Yongzhao Shao, New York University

- 8:45 **Comparison of Four-Period and Two-Period Crossover Studies for Comparing Within-Subject Variances of Two Treatments**
*Donald J. Schuirmann**, U.S. Food and Drug Administration
- 9:00 **Use of Longitudinal Registry Data for Optimal Design of Clinical Trials: An Example in Huntington's Disease**
*Elizabeth L. Turner** and *Chris Frost*, London School of Hygiene and Tropical Medicine
- 9:15 **Assessing Probability of Success for Clinical Trials with Correlated Binary Endpoints**
*Michael Dallas**, Guanghan Liu, Ivan Chan and Joseph Heyse, Merck Research Laboratories
- 9:30 **Interim Design Resampling for Sample Size Re-estimation**
*Sergey Tarima**, Peng He, Tao Wang and Aniko Szabo, Medical College of Wisconsin
- 9:45 **A General Approach for Estimating Stopping Probability of Large Confirmatory Group Sequential Clinical Trial in Life-Threatening Conditions Monitoring Binary Efficacy and Safety Outcomes**
*Yanqiu Weng**, Wenle Zhao and Yuko Y. Palesch, Medical University of South Carolina
- 10:00 **GEE Method for Longitudinal Data Analysis in SMART Trials and the Associated Sample Size Formula**
*Zhiguo Li**, Duke University

106. CONTRIBUTED PAPERS:**Power / Sample Size Calculations**

Sponsor: ENAR

Chair: Gerry W. Gray, U.S. Food and Drug Administration

- 8:30 **Sample Size Estimation in Randomized Clinical Trials (RCTs) Designed to Establish the Interaction Between Prognostic Factor and Treatment: Impact of Prognostic Factor Distribution Misspecification**
*William M. Reichmann**, Boston University School of Public Health and Brigham and Women's Hospital; *Michael P. LaValley and David R. Gagnon*, Boston University School of Public Health and *Elena Losina*, Brigham and Women's Hospital and Boston University School of Public Health



Wednesday, April 4 (continued)**10:15 – 10:30 am | Break***Grand Ballroom Pre-function Area***10:30 – 12:15 pm****107. Imaging, Omics, and High-Dimensionality***Sponsor: IMS**Organizer: Bin Nan, University of Michigan**Chair: Bin Nan, University of Michigan*

- 10:30 **Multiple Comparison Procedures for iQTL analysis**
Debashis Ghosh and Wen-Yu Hua, Penn State University and Thomas E. Nichols, University of Warwick*
- 10:55 **Test for SNP-set Effects with Applications to Sequencing Association Studies**
Xihong Lin, Harvard School of Public Health*
- 11:20 **Analyzing Joint and Individual Variation in Multiple Data Sets**
Andrew B. Nobel, Eric S. Lock and J. S. Marron, University of North Carolina at Chapel Hill*
- 11:45 **What is in the News: Automatic and Sparse Summarization of Large Document Corpora**
Bin Yu and Luke Miratrix, University of California at Berkeley; Jinzhu Jia, Peking University; Brian Gawalt, Laurent El Ghaoui and Jas Sekhon, University of California at Berkeley*
- 12:10 **Floor Discussion**

108. Statistical Methods for Modeling Seer Population-Based Cancer Data*Sponsor: ASA Section on Statistics and the Environment**Organizer: Kathy Cronin, National Cancer Institute, National Institutes of Health**Chair: Eric Feuer, National Cancer Institute, National Institutes of Health*

- 10:30 **Introduction: An Overview of Population-based SEER Cancer Registry Data**
Hyunsoo Cho and Nadia Howlader, National Cancer Institute, National Institutes of Health*
- 10:55 **Using SEER Data to Develop Models of Absolute Cancer Risk**
Mitchell H. Gail, National Cancer Institute, National Institutes of Health*

11:20 Detecting Multiple Change Points in Piecewise Constant Hazard Functions*Yi Li*, University of Michigan; Mitchell H. Gail, National Cancer Institute, National Institutes of Health and Jeanne Mandelblatt, Lombardi Cancer Center at Georgetown University***11:45 Mammography, Modeling and Politics***Jeanne Mandelblatt*, Lombardi Cancer Center at Georgetown University; Kathy Cronin, National Cancer Institute, National Institutes of Health; Don Berry, University of Texas MD Anderson Cancer Center; Harry DeKoning, Erasmus University Medical Center; Sandra Lee, Harvard University; Sylvia Plevritis, Stanford University; Clyde Schechter, Albert Einstein College of Medicine; Natasha Stout, Harvard Pilgrim Healthcare; Marvin Zelen, Harvard University and Eric Feurer, National Cancer Institute, National Institutes of Health***12:10 Floor Discussion****109. Powerful Statistical Models and Methods in Next Generation Sequencing***Sponsor: ASA Biometrics Section**Organizer: Lin Chen, University of Chicago**Chair: Pei Wang, Fred Hutchinson Cancer Research Center***10:30 Analytical Challenges in Association Studies with Whole-Genome Sequencing***Dan L. Nicolae*, University of Chicago***11:00 Association Analysis of Genome-wide Genetic Data***Li Hsu*, Fred Hutchinson Cancer Research Center***11:30 Exponential Combination Procedure for Set-Based Tests in Sequencing Studies***Lin S. Chen*, University of Chicago; Li Hsu, Fred Hutchinson Cancer Research Center and Dan L. Nicolae, University of Chicago***12:00 Floor Discussion****110. Recent Advances in Clinical Trial Design: Utilities And Pitfalls***Sponsor: ASA Biopharmaceutical Section**Organizer: Yeh-Fong Chen, U.S. Food and Drug Administration**Chair: Yeh-Fong Chen, U.S. Food and Drug Administration***10:30 Complex Clinical Trial Designs: An Overview**
H.M. James Hung, U.S. Food and Drug Administration***10:55 A Doubly Enriched Clinical Trial Design Merging Placebo Lead-in and Randomized Withdrawal**
Roy N. Tamura, Eli Lilly and Company and Anastasia Ivanova, University of North Carolina at Chapel Hill*

- 11:20 **Utility and Pitfalls with Adaptive Selection Design**
*Sue-Jane Wang**, U.S. Food and Drug Administration
- 11:45 **A Two Part Design for Evaluating Antiepileptic Drugs**
*Eugene Laska**, New York University School of Medicine
- 12:10 **Floor Discussion**

111. Individualized Risk Prediction Using Joint Models of Longitudinal and Survival Data

Sponsor: ENAR

Organizer: Hormuzd Katki, National Cancer Institute, National Institutes of Health

Chair: Raji Sundaram, National Institute of Child Health and Development, National Institutes of Health

- 10:30 **A Joint Model of Cervical Cancer, PAP Smears, and HPV Tests for Use in Developing Cancer Screening Guidelines**
*Hormuzd A. Katki**, National Cancer Institute, National Institutes of Health and Rajeshwari Sundaram, National Institute of Child Health and Human Development, National Institutes of Health
- 10:55 **Prediction of Multivariate Binary Data with Multi-Scale Informative Dropout—A Joint Modeling Approach**
*Alexander C. McLain** and Rajeshwari Sundaram, Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health
- 11:20 **Different Parameterizations for Joint Models for Longitudinal and Survival Data, and How They Affect Individualized Predictions**
*Dimitris Rizopoulos**, Erasmus University Medical Center
- 11:45 **Joint Latent Class Models of Longitudinal and Time-to-Event Data in the Context of Individual Dynamic Predictions**
*Cécile Proust-Lima** and Mbéry Séne, INSERM, France; *Jeremy MG Taylor*, University of Michigan and *Hélène Jacqmin-Gadda*, INSERM, France
- 12:10 **Floor Discussion**

112. Recent Advances in Dynamic Treatment Regimes Research

Sponsor: ENAR

Organizer: Bibhas Chakraborty, Columbia University

Chair: Bibhas Chakraborty, Columbia University

- 10:30 **Practical Issues in the Design, Conduct, and Analysis of Randomized Oncology Trials Comparing Dynamic Treatment Regimes**
*Peter Thall**, University of Texas MD Anderson Cancer Center
- 10:55 **A Policy Search Method for Estimating Treatment Policies**
*Xi Lu** and *Susan A. Murphy*, University of Michigan
- 11:20 **Comparing Dynamic Treatment Regimes Via the G-Formula**
*Miguel A. Hernan**, Harvard School of Public Health
- 11:45 **Realistic as Treated Dynamic Treatment Regimes**
*Andrea Rotnitzky**, Universidad Di Tella and Harvard University and *Sebastien Haneuse*, Harvard School of Public Health
- 12:00 **Floor Discussion**

113. TOPIC CONTRIBUTED PAPERS:

A Review of Established and New Methods of Multiple Imputation of Missing Data with the Emphasis on Available Software Packages

Sponsor: ENAR

Organizer: Victoria Liublinska, Harvard University

Chair: Donald B. Rubin, Harvard University

- 10:30 **Flexible Imputation with MICE**
*Stef van Buuren**, TNO
- 10:50 **Multiple Imputation by Ordered Monotone Blocks with Application to the Anthrax Vaccine Adsorbed Trial**
*Fan Li**, Duke University; *Michela Baccini* and *Fabrizia Mealli*, University of Florence; *Constantine Frangakis*, Johns Hopkins University; *Elizabeth Zell*, Centers for Disease Control and Prevention and *Donald B. Rubin*, Harvard University
- 11:10 **New Multiple Imputation Methods in SOLAS, Including a Combination of Two Hot-Deck Methods with Appealing Properties**
Donald B. Rubin and *Victoria Liublinska**, Harvard University
- 11:30 **Convergence Properties of Sequential Regression Multiple Imputation Approach**
*Trivellore Raghunathan** and *Jian Zhu*, University of Michigan
- 11:50 **Making Multiple Imputation Accessible to Non-Statisticians**
*Leland Wilkinson**, University of Illinois at Chicago
- 12:10 **Floor Discussion**

114. CONTRIBUTED PAPERS:**Accelerated Failure Time Models***Sponsor: ENAR**Chair: Margaret Taub, Johns Hopkins University*

- 10:30 **Accelerated Failure Time Model for Case-Cohort Design with Longitudinal Covariates Measured with Error**
Xinxin Dong, University of Pittsburgh; Lan Kong, Penn State Hershey College of Medicine and Abdus S. Wahed, University of Pittsburgh*
- 10:45 **Accelerated Failure Time Modeling of Genetic Pathway Data Using Kernel Machines for Risk Prediction**
Jennifer A. Sinnott and Tianxi Cai, Harvard University*
- 11:00 **A Semiparametric Accelerated Failure Time Partial Linear Model and Its Application to Breast Cancer**
Yubo Zou and Jiajia Zhang, University of South Carolina and Guoyou Qin, Fudan University, Shanghai, PR China*
- 11:15 **Parametric Inference on Accelerated Failure Time Model with Random Effects**
KyungAh Im and Jong-Hyeon Jeong, University of Pittsburgh and Rhonghui Xu, University of California-San Diego*
- 11:30 **Bayesian Semiparametric Accelerated Failure Time Model for Arbitrarily Censored Data Subject to Covariate Measurement Error**
Xiaoyan Lin and Lianming Wang, University of South Carolina*
- 11:45 **Subsample Ignorable Maximum Likelihood for Accelerated Failure Time Models with Missing Predictors**
Nanhua Zhang, University of South Florida and Roderick J. Little, University of Michigan*
- 12:15 **Floor Discussion**

115. CONTRIBUTED PAPERS:**Environmental and Ecological Applications***Sponsor: ENAR**Chair: Eleanor Pullenayegum, McMaster University*

- 10:30 **The Effect of Air Pollution Control on Life Expectancy in the United States: An Analysis of 545 U.S. Counties for the Period 2000 to 2007**
Andrew W. Correia and Francesca Dominici, Harvard University*
- 10:45 **Modeling Space-Time Quantile Surfaces for Nonstationary Random Fields**
Dana Sylvan, Hunter College of the City University of New York*
- 11:00 **Fast Copula-Based Spatial Regression for Discrete Geostatistical Data**
John Hughes, University of Minnesota*
- 11:15 **Mortality Effects of Particulate Matter Constituents in a National Study of U.S. Urban Communities**
Jenna R. Krall, Johns Hopkins Bloomberg School of Public Health; Francesca Dominici, Harvard School of Public Health; Michelle L. Bell, Yale University and Roger D. Peng, Johns Hopkins Bloomberg School of Public Health*
- 11:30 **Estimating Covariance Parameters and Generalized Least Squares Estimators in Linear Models with Spatially Misaligned Data**
Kenneth K. Lopiano and Linda J. Young, University of Florida and Carol A. Gotway, Centers for Disease Control*
- 11:45 **Comparing Maps Across Time: Spatio-Temporal Moran's I in STARMA Models**
Nathan M. Holt and Linda J. Young, University of Florida and Carol A. Gotway, Centers for Disease Control and Prevention*
- 12:00 **Modeling Low-rank Spatially Varying Cross-covariances using Predictive Process with Application to Soil Nutrient Data**
■ *Rajarshi Guhaniyogi*, University of Minnesota; Andrew O. Finley and Rich Kobe, Michigan State University and Sudipto Banerjee, University of Minnesota*

116. CONTRIBUTED PAPERS:**Next Generation Sequencing**

Sponsor: ENAR

Chair: Simone Gray, U.S. Environmental Protection Agency

- 10:30 **Statistical Modeling of Closely Located Protein Binding Sites using Paired-End Tag (PET) ChIP-Seq Data, with Application to the Study of sigma70 Factor in Escherichia coli**
Dongjun Chung, Jeff Grass, Kevin Myers, Patricia Kiley, Robert Landick and Sunduz Keles, University of Wisconsin, Madison*
- 10:50 **A Generalized Linear Model for Peak Calling in ChIP-Seq Data**
Jialin Xu and Yu Zhang, The Pennsylvania State University*
- 11:10 **A Dynamic Signal Profile Algorithm Combined with a Bayesian Hidden Ising Model for ChIP-seq Data Analysis**
Qianxing Mo, Baylor College of Medicine*
- 11:30 **Determining Probability of Rare Variants: Design Implications for Family-based Sequencing Studies**
Wenyi Wang and Gang Peng, University of Texas MD Anderson Cancer Center*
- 11:50 **A Powerful Test for Multiple Rare Variants Association Studies that Incorporate Sequencing Qualities**
Z. John Daye, Hongzhe Li, University of Pennsylvania School of Medicine and Zhi Wei, New Jersey Institute of Technology*
- 12:10 **Floor Discussion**

117. CONTRIBUTED PAPERS:**Nonparametric Methods**

Sponsor: ENAR

Chair: Ruosha Li, University of Pittsburgh

- 10:30 **Bounded Influence Nonlinear Signed-Rank Regression**
Huybrechts Frazier Bindele, Auburn University*
- 10:45 **Asymptotic Optimality and Efficient Computation of the Leave-subject-out Cross-Validation**
■ *Ganggang Xu* and Jianhua Huang, Texas A&M University, College Station*
- 11:00 **Unconditional Tests to Measure Agreement for Categorical Data in Applications to a Brain Trauma Study**
Guogen Shan, Brain Trauma Foundation; Gregory Wilding and Changxing Ma, University at Buffalo; Alison Schonberger and Jamshid Ghajar, Brain Trauma Foundation*

- 11:15 **General Pivotal Goodness of Fit Test Based on Kernel Density Estimation**
Hani M. Samawi and Robert Vogel, Georgia Southern University*
- 11:30 **Berry-Esseen-Type Bounds for General Nonlinear Statistics, with Applications to Pearson's and Non-Central Student's and Hotelling's**
Iosif Pinelis, Michigan Technological University*
- 11:45 **Bayesian Quantile Regression using Mixture of Polya Trees Prior**
Minzhao Liu and Michael Daniels, University of Florida*
- 12:00 **Confidence Intervals Under Order Restriction**
Yong Seok Park, John D. Kalbfleisch and Jeremy MG Taylor, University of Michigan*

118. CONTRIBUTED PAPERS:**Semi-Parametric and Non-Parametric Models**

Sponsor: ENAR

Chair: Jing Zhang, University of Minnesota

- 10:30 **Locally Efficient Estimation of Marginal Treatment Effects Using Auxiliary Covariates in Randomized Trials with Correlated Outcomes**
Alisa J. Stephens, Eric Tchetgen Tchetgen and Victor De Gruttola, Harvard University*
- 10:45 **Kernel Machine Quantile Regression of Multi-Dimensional Genetic Data**
Dehan Kong, Arnab Maity and Jung-Ying Tzeng, North Carolina State University*
- 11:00 **An Improved Method for Choosing the Smoothing Parameter in a Semi-Parametric Change-point Model**
Sung Won Han, Theresa Busch and Mary Putt, University of Pennsylvania*
- 11:15 **Semiparametric Bayesian Joint Modeling of a Binary and Continuous Outcome**
Beom Seuk Hwang and Michael L. Pennell, The Ohio State University*
- 11:30 **Semiparametric Single Index Interaction Model in 1-m Matched Case-Crossover Studies**
Chongrui Yu and Inyoung Kim, Virginia Polytechnic Institute and State University*
- 11:45 **Generalized Method of Weighted Moments: A Robust Estimator of Polytomous Logistic Model**
Xiaoshan Wang and Pranab K. Sen, University of North Carolina at Chapel Hill*
- 12:00 **Floor Discussion**





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Engaging, Inspiring, and Training the Next Generation: Past Successes, Future Challenges and Opportunities

Marie Davidian

Department of Statistics | North Carolina State University



Our discipline is in an unprecedented and enviable position. Scientific inquiry, public policy, and decision-making in industry are all increasingly dependent on the

collection and interpretation of what are often vast amounts of complex data, and we – statisticians – are uniquely qualified to address the challenges posed by this data “explosion” and to ensure that the inferences drawn are sound and that the results are communicated appropriately.

Opportunities for statisticians abound; the position of statistician has even been called “the sexy job in the next ten years.” Advanced Placement (AP) statistics courses in high school have seen a tremendous rise in enrollment in the past decade. So why aren’t more US students pursuing graduate training in our discipline and choosing statistics as a career? My experience and that of numerous colleagues in academia, industry, and government is that many qualified US students still do not know enough about the opportunities for statisticians or the training required and are diverted by other Science, Technology, Engineering, and Mathematics (STEM) disciplines that may be more familiar.

This shortage of US students entering our graduate programs and profession is nothing new. For example, two workshops were held by NIH in the early 2000s to discuss the need for increasing the pipeline of biostatisticians to meet the expanding needs of the nation’s health sciences research enterprise and resulted in a white paper (DeMets et al. 2006) calling for more training programs and opportunities to encourage US students to pursue biostatistics careers. In 2003, the National Heart, Lung, and Blood Institute (NHLBI) took action,

soliciting applications for a “Summer Institute for Training in Biostatistics” (SIBS), restricted to US citizen and permanent resident undergraduates, to expose these students to biostatistical science and practice and the myriad career opportunities available and to encourage them to seek graduate training. What began as three such programs in 2004 was expanded to eight in 2010, and over the past eight summers, hundreds of students have participated, and scores who might otherwise have pursued training in other STEM disciplines have entered graduate programs in statistics and biostatistics nationwide. However, this and the small number of other government-funded statistics programs cannot alone address the challenge we face in bringing talented, diverse students to our field.

Since 2004, I have been privileged to co-direct one of the eight SIBS programs, which is a joint effort between my Department and Duke Clinical Research Institute (DCRI). I also direct a NHLBI-funded predoctoral training program that provides US PhD students in my department with unparalleled collaborative experience at DCRI. I have seen firsthand how such opportunities have been transformative, altering the career aspirations of so many US students. In this talk, I will review the history of all eight SIBS programs and my experience with training the next generation more generally. I will then argue that, if we are to achieve the statistical workforce required to meet the demand, there must be a broader effort in which stakeholders from all sectors, industry, government, and academia, come together to conceive of and support programs to increase the numbers of US students entering graduate programs in statistics and biostatistics and to provide them with essential practical experience and skills while they are still in training. I hope to inspire all of you to join me in making such an effort a reality.

DeMets, D.L.; Stormo, G.; Boehnke, M.; Louis, T.A.; Taylor, J.; Dixon, D. (2006). *Training of the Next Generation of Biostatisticians: A Call to Action in the U.S. Statistics in Medicine* 25, 3415–3429.

Biography

Marie Davidian is William Neal Reynolds Distinguished Professor of Statistics at North Carolina State University (NCSU). She received bachelors and master’s degrees in applied mathematics in 1980 and 1981 from the University of Virginia and received a Ph.D. in statistics from the University of North Carolina at Chapel Hill in 1987 under the direction of Raymond J. Carroll.

She joined the Department of Statistics at NCSU in 1987 and returned in 1996 after serving on the faculty in the Department of Biostatistics at Harvard School of Public Health from 1994-1996. Marie is an elected Fellow of the American Statistical Association (ASA), the Institute of Mathematical Statistics (IMS), and the American Association for the Advancement of Science (AAAS) and is an elected member of the International Statistical Institute (ISI).

She has served as Coordinating and Executive Editor of Biometrics; as chair of the National Institutes of Health Biostatistical Methods and Research Design (BMRD) study section; on the International Biometric Society (IBS) and IMS Councils; as chair of a number of IBS committees, including the Editorial Advisory Committee; and as ENAR president. She is a recipient of the Janet L. Norwood Award for Outstanding Achievement by a Woman in the Statistical Sciences, the ASA Award for Outstanding Statistical Application, an IMS Medallion Lecturer award, and the Committee of Presidents of Statistical Societies (COPSS) G.W. Snedecor and F.N. David Awards, as well as several distinguished lectureships.

She is currently ASA President-Elect. Since 2004, she has co-directed the NCSU–Duke Clinical Research Institute (DCRI) Summer Institute for Training in Biostatistics (SIBS) program, funded by a grant from the National Heart, Lung and Blood Institute (NHLBI) and the National Center for Research Resources. The program and its seven current counterparts at Boston University, Emory University, University of Iowa, University of Pittsburgh, University of South Florida, Washington University in St. Louis, and University of Wisconsin have inspired scores of talented US undergraduates to pursue graduate training in biostatistics. Marie is also Program Director of a NHLBI-funded predoctoral training grant program in cardiovascular disease biostatistics, also joint with DCRI.

Richard Lewis Tweedie played a significant role throughout his professional career in mentoring young colleagues at work and through professional society activities. With funds donated by his friends and family the IMS created the "Tweedie New Researcher Award." The award provides funds for travel to present the "Tweedie New Researcher Invited Lecture" at the IMS New Researchers Conference.

Statistical Learning with High-Dimensional Data

Hui Zou

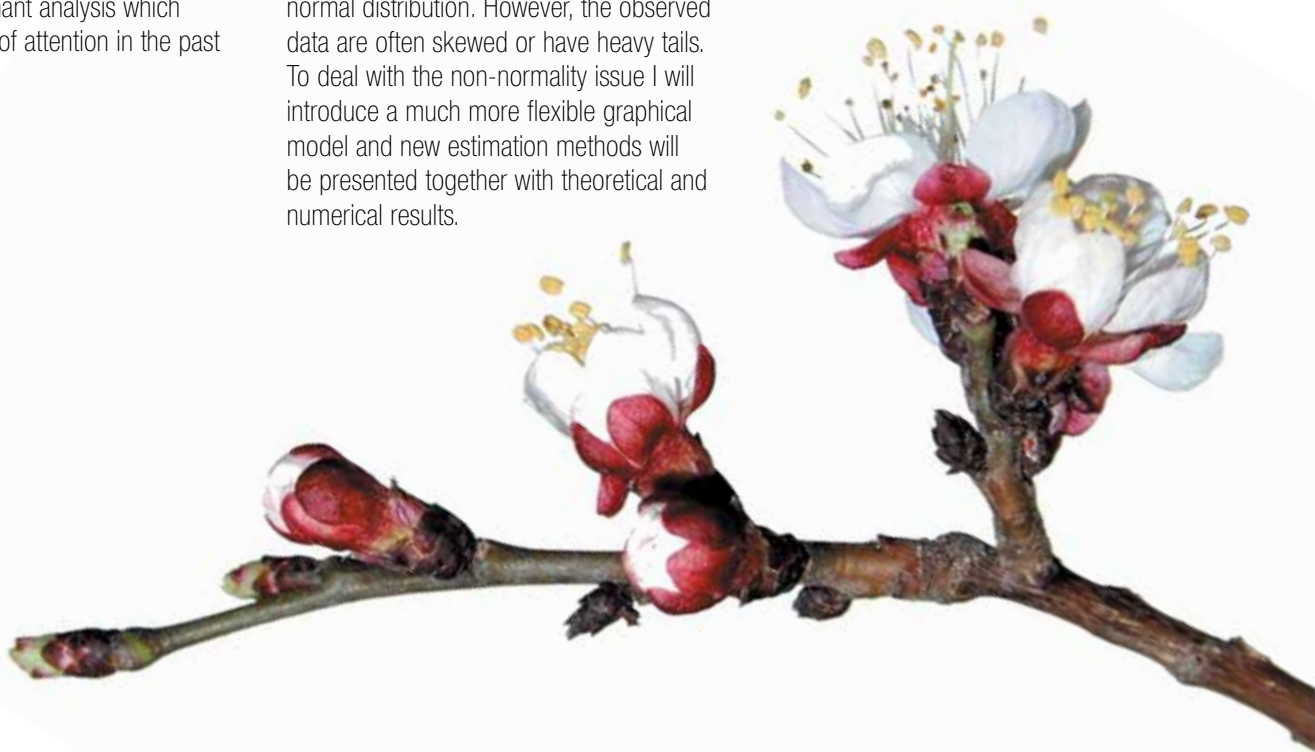
University of Minnesota



High-dimensionality has revolutionized the landscape of statistical inference and learning. After a brief literature review I will use two examples to illustrate some

strategies to exploit the sparsity assumption in high-dimensional learning. In the first example I will discuss the problem of sparse discriminant analysis which has received a lot of attention in the past

decade. This is a classical supervised learning problem. Some fundamental drawbacks of existing proposal will be pointed out and a new approach to sparse discriminant analysis will be presented and demonstrated by theoretical analysis and many numerical examples. The second example concerns learning graphical models with non-Gaussian data. Under normality assumption graphical model learning is often formulated as estimating the precision matrix of a multivariate normal distribution. However, the observed data are often skewed or have heavy tails. To deal with the non-normality issue I will introduce a much more flexible graphical model and new estimation methods will be presented together with theoretical and numerical results.





Short Courses – Sunday, April 1, 2012

	REGISTRATION PAYMENT RECEIVED					
	BY March 1			AFTER March 1		
	Half Day	Second Half Day	Full Day	Half Day	Second Half Day	Full Day
MEMBER	\$ 160	\$ 120	\$ 250	\$ 185	\$ 140	\$ 275
NONMEMBER	\$ 200	\$ 160	\$ 300	\$ 225	\$ 180	\$ 320

Register for Two Half Day Courses and Save!

SC1 Bayesian Adaptive Methods for Clinical Trials

FULL DAY: 8:00 am – 5:00 pm

Instructors:

Scott Berry

Berry Consultants *and*

Brad Carlin

University of Minnesota

Overview:

Thanks in large part to the rapid development of Markov chain Monte Carlo (MCMC) methods and software for their implementation, Bayesian methods have become ubiquitous in modern biostatistical analysis. In submissions to the U.S. FDA Center for Devices and Radiological Health, where data on new devices are often scanty but researchers typically have access to large historical databases, Bayesian methods have been in common use for over a decade and in fact were the subject of a recently-released FDA guidance document. Statisticians in earlier phases (especially Phase I oncology trials) have long appreciated Bayes' ability to get good answers quickly. Moreover, an increasing

desire for adaptability in clinical trials (to react to trial knowledge as it accumulates) has also led to heightened interest in Bayesian methods.

This full-day course (4 consecutive sessions) introduces Bayesian methods, computing, and software, and then goes on to elucidate their use in Phase I, II, and III trials. We include descriptions of how the methods can be implemented in WinBUGS, R, and BRugs, the version of the BUGS package callable from within R. In particular, we will illustrate the different ways a Bayesian might think about power when designing a trial, and how a Bayesian procedure may be calibrated to guarantee good long-run frequentist performance (i.e., low Type I and II error rates), a subject of keen interest to the FDA.

Morning Session 1:

Introduction to Hierarchical Bayes Methods and Computing

Bayesian inference: point and interval estimation, model choice Bayesian computing: MCMC methods; Gibbs sampler; Metropolis-Hastings algorithm Hierarchical modeling and metaanalysis Principles of Bayesian clinical trial design: predictive probability, indifference zone, Bayesian and frequentist operating characteristics (power, Type I error)

Morning Session 2: Bayesian Design and Analysis for Phase I Studies

- Rule-based designs for determining the MTD (e.g., 3+3)
- Model-based designs for determining the MTD (CRM, EWOC, TITE monitoring, toxicity intervals) Dose ranging and optimal biologic dosing
- Efficacy and toxicity
- Examples and software

Afternoon Session 1: Bayesian design and analysis for Phase II Studies

- Standard designs: Phase IIA (single-arm) vs. Phase IIB (multi-arm)
- Predictive Probability-based methods
- Sequential stopping: for futility, efficacy
- Multi-arm designs with adaptive dose allocation
- Hierarchical Phase II models and examples

Afternoon Session 2: Bayesian Design and Analysis for Phase III Studies

- Confirmatory trials
- Adaptive confirmatory trials: adaptive sample size, futility analysis, arm dropping
- Modeling and prediction
- Examples from FDA-regulated trials
- Seamless Phase II-III trials
- Multiplicity and Subset Analysis
- Summary and Floor Discussion

Students are invited to bring their own laptop computers to the session, and to have the latest versions of WinBUGS and R already installed on these computers. Both of these programs are freely available from www.mrc-bsu.cam.ac.uk/bugs/winbugs/contents.shtml and www.r-project.org respectively. The presentation will assume familiarity with basic Bayesian methods and MCMC algorithms, at the level of, say, Chapters 2 and 3 of Carlin and Louis (2009) or Chapters 2, 3, 5, and 11 of Gelman et al. (2004). The workshop's goal is to make these methods come alive in the software through real data examples that the students try for themselves during the presentation.

SC2 Regression Modeling Strategies

FULL DAY: 8:00 am – 5:00 pm

Instructor:

Frank Harrell

Vanderbilt University School of Medicine

Description:

Regression models are frequently used to develop diagnostic, prognostic, biomarker, and health resource utilization models in clinical, health services, outcomes, pharmaco-economic, and epidemiologic research, and in a multitude of non-health-related areas. Regression models are also used



to adjust for patient heterogeneity in randomized clinical trials, to obtain tests that are more powerful and valid than unadjusted treatment comparisons. Models must be flexible enough to fit nonlinear and non-additive relationships, but unless the sample size is enormous, the approach to modeling must avoid common problems with data mining or data dredging that result in overfitting and a failure of the predictive model to validate on new subjects.

All standard regression models have assumptions that must be verified for the model to have power to test hypotheses and for it to be able to predict accurately. Of the principal assumptions (linearity, additivity, distributional), this short course will emphasize methods for assessing and satisfying the first two. Practical but powerful tools are presented for validating model assumptions and presenting model results. This course provides methods for estimating the shape of the relationship between predictors and response.

The first part of the course presents the following elements of multivariable predictive modeling for a single response variable: using regression splines to relax linearity assumptions, perils of variable selection and overfitting, where to spend degrees of freedom, shrinkage, imputation of missing data,



data reduction, and interaction surfaces. Then a default overall modeling strategy will be described, with an eye towards "safe data mining". This is followed by methods for graphically understanding models (e.g., using nomograms) and using re-sampling to estimate a model's likely performance on new data.

Participants should have a good working knowledge of multiple regression. The following articles might be read in advance:

- Harrell, Lee, Mark
Stat in Med
15:361-387, 1996
- Spanos, Harrell, Durack
JAMA
262:2700-2707, 1989
- Some participants may want to read Chapters 1-5 and 10 of the instructor's book *Regression Modeling Strategies* (NY: Springer, 2001).

See:

biostat.mc.vanderbilt.edu/rms
for more background information.



SC3 Sensitivity Analysis with Missing Data: Statistical Methods and Case Studies

FULL DAY: 8:00 am – 5:00 pm

Instructors:

Joseph Hogan

Brown University *and*

Daniel Scharfstein

Johns Hopkins Bloomberg School of Public Health

Description:

Missing data continues to be a concern in modern clinical trials and observational studies. The fundamental problem in drawing inference from incomplete data is that assumptions about the distribution of missing responses cannot be checked empirically.

In this course, we focus on the formulation and interpretation of sensitivity analyses, wherein sensitivity of estimates and inferences to assumptions about missing data can be represented. Key concepts related to handling missing data will be reviewed, but the primary focus is on formulating and conducting sensitivity analyses for reporting of treatment or exposure effects.

A key feature of the course is presentation of detailed case studies. We will provide detailed background on two recent randomized trials, compare and contrast potential methods of analysis, demonstrate a specific analysis, and give guidelines on interpreting and reporting results. Although we use randomized trials to illustrate methods and concepts, the principles taught in this course are applicable to observational studies as well.

SC4 Statistical Methods for Next Generation Sequencing

HALF DAY: 8:00 am – 12:00 noon

Instructors:

Zhijin (Jean) Wu

Brown University

Kasper D. Hansen

Johns Hopkins Bloomberg School of Public Health

Rafael Irizarry

Johns Hopkins Bloomberg School of Public Health

Description:

Next generation sequencing (NGS) technologies provide high throughput identification of DNA sequences. The popularity of NGS applications is rapidly increasing in biomedical research. These applications include quantification of gene expression and identification of isoform variation (RNA-seq), detection of protein-DNA interaction locations (CHIP-seq), DNA variant detection and

quantification of DNA methylation. As in all high throughput technologies, analysis of NGS data requires statistical methodology that appropriately accounts for the stochastic nature of biology and data generation processes. The half-day short course will provide an introduction to the technology and its applications, a review of the statistical issues related to each application, and statistical methods for a few typical applications including RNA-seq, SNP-calling and DNA methylation. It will also include hands-on exercise of sequence mapping and statistical analysis. No textbook will be followed, but handouts will be provided. Familiarity with R is a prerequisite and laptop computers are necessary for participants who wish to participate in the labs.

Learning Objectives:

The participants are expected to gain knowledge in the following areas:

1. How data are obtained in NGS and sources of variation
2. Statistical issues in major applications of NGS
3. Specific statistical methods that provide practical results for selected applications
4. Using R/bioconductor packages to perform data analysis

SC5 Latent Variable Models for Networks and Relational Data

HALF DAY: 1:00 pm – 5:00 pm

Instructor:

Peter Hoff

University of Washington

Description:

Network and relational data structures have increasingly played a role in the understanding of complex biological, social and other relational systems. Statistical models of such systems can give descriptions of global relational features, characterize local network structure, and provide predictions for missing or future relational data.

Latent variable models are a popular tool for describing network and relational patterns. Many of these models are based on well-known matrix decomposition methods, and thus have a rich mathematical framework upon which to build. Additionally, the parameters in these models are easy to interpret: Roughly speaking, a latent variable model posits that the relationship between two nodes is a function of observed and unobserved (latent) characteristics, potentially in addition to contextual factors.

In this course we will cover the statistical implementation and interpretation of latent variable modeling approaches to relational and network data. We first develop a mathematical justification for these models based on exchangeability and symmetry considerations. We then review fitting algorithms and illustrate several latent variable models in the context of hands-on statistical analysis of several network datasets. We then show how these models can be used to address a variety of statistical tasks, such as prediction and imputation,

data description and evaluating the relationship between network and nodal attribute data. Finally, we extend these models in a variety of directions, such as the identification of network communities and the modeling of multivariate relational data, such as longitudinal networks.

Participants should be familiar with matrix algebra and the basics of likelihood estimation for a general statistical model. Familiarity with one or more of the following would also be helpful but not necessary: Bayesian inference, factor analysis, linear regression, MCMC, data analysis with R.

SC6 Current Methods for Evaluating Prediction Performance of Biomarkers and Tests

Instructor:

Margaret Pepe

Fred Hutchinson Cancer Research Center

HALF DAY: 8:00 am – 12:00 noon

Description:

This course will describe and critique methods for evaluating the performance of markers to predict risk of a current or future clinical outcome. Examples from cancer, cardiovascular disease and kidney injury research will be presented. Course content will include:

- a. Three criteria for evaluating a risk model: calibration, benefit for decision making, accurate classification
- b. Comparing models
- c. Comparing baseline and expanded models
- d. Hypothesis testing and confidence interval construction
- e. Risk reclassification analysis strategies
- f. Relationships and differences with assessing discrimination
- g. Software

SC7 The Statistical Impact on Biopharmaceutical Drug Development of the ICH Efficacy Guidelines

Instructor:

Allan Sampson

University of Pittsburgh

HALF DAY: 1:00 pm – 5:00 pm

Description:

This four hour workshop will provide an introduction to the International Conference on Harmonization (ICH) Efficacy Guidelines, with the primary emphasis being on their statistical aspects. The ICH has issued a series of technical guidelines that have had a major impact on biopharmaceutical research worldwide. This workshop is intended to provide attendees with an overview of the set of guidelines that focus on clinical trials. To familiarize attendees with the ICH, we begin with a brief history concerning the ICH and also summarize the current structures of the biopharmaceutical regulatory authorities of Europe, Japan and the US. We will then proceed to consider the main statistical considerations in the ICH Efficacy Guidelines. Necessarily, with the exception of the E9 Guideline (“Statistical Principles for Clinical Trials”), only the more important statistical highlights of these can be touched upon. The major focus of the workshop is on E9 and we will provide a detailed examination of this highly influential statistical guideline. This workshop is intended for statisticians who have some familiarity with clinical trials and who want to familiarize themselves with the ICH and its effects upon the statistics of biopharmaceutical clinical development.

Tutorials – Monday, April 2 & Tuesday, April 3, 2012

	REGISTRATION PAYMENT RECEIVED											
	BY March 1						AFTER March 1					
	T1	T2	T3	T4	T6	T6	T1	T2	T3	T4	T5	T6
MEMBER	\$ 75						\$ 85					
NONMEMBER	\$ 85						\$ 95					

T1: Methods for Reproducible Research in R

Monday, April 2, 8:30 am – 10:15 am

Instructor:

Roger Peng

Johns Hopkins Bloomberg School of Public Health

Description:

The validity of conclusions from scientific investigations is typically strengthened by the replication of results by independent researchers. Full replication of a study's results using independent methods, data, equipment, and protocols, has long been, and will continue to be, the standard by which scientific claims are evaluated. However, in many fields of study, there are examples of scientific investigations which cannot be fully replicated, often because of a lack of time or resources. For example, epidemiological studies which examine large populations and can potentially impact broad policy or regulatory decisions, often cannot be fully replicated in the time frame necessary for making a specific decision. In such situations, there is a need for a minimum standard which can serve as an intermediate step between full replication and nothing. This minimum standard is reproducible research, which requires

that datasets and computer code be made available to others for verifying published results and conducting alternate analyses. The tutorial will provide an introduction to tools for conducting reproducible research using R and LaTeX. We will focus on the R statistical computing language and will discuss other tools that can be used for producing reproducible documents. Topics that will be discussed include Sweave, literate programming, and efficient caching of large computations.

Prerequisites:

Knowledge of R and some familiarity with the LaTeX typesetting system.

T2: Object Oriented Data Analysis

**Monday, April 2
10:30 am – 12:15 pm**

Instructor:

J. S. Marron

University of North Carolina

Description:

Object Oriented Data Analysis is the statistical analysis of populations of complex objects. This tutorial will begin with building basic ideas in the special case of Functional Data Analysis, where data objects are curves. In that case standard Euclidean approaches, such as principal components analysis, have been very successful.

The latter part of the tutorial will draw its motivation from medical image analysis, which leads naturally to the statistical analysis of populations of more com-

plex data objects. Cases discussed will include elements of mildly non-Euclidean spaces, such as geometric manifolds (e.g. shape spaces), and of strongly non-Euclidean spaces, such as populations of tree-structured data objects. These new contexts for Object Oriented Data Analysis create several potentially large new interfaces between mathematics and statistics.

T3: Comparative Effectiveness Research: Opportunities and Challenges

Monday, April 2, 1:45 – 3:30 pm

Instructor:

Sharon-Lise T. Normand

Harvard Medical School and
Harvard School of Public Health

Description:

Comparative effectiveness research (CER) "is the conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in real world settings." As such, it includes a variety of

NOTE: Wireless access will not be available in the classroom and participants should check the ENAR website (www.enar.org) for instructions on download prior to the meeting.

statistical designs, including randomized trials, pragmatic trials, and observational studies. With the growth of electronic health records and registries, opportunities to answer causal questions about therapies delivered in routine practice are increasing. Along with these opportunities, however, new statistical problems arise. This tutorial will describe the rationale for CER, common designs and analytical tools for CER, illustrations, and new challenges for statisticians. Participants should be familiar with randomized trials and regression techniques.

T4: Towards High-Performance Computing with R

Monday, April 2, 3:45 – 5:30 pm

Instructor:

John W. Emerson, Yale University

Description:

This tutorial assumes some basic familiarity with R but does not require advanced knowledge. It will start by reviewing the pros and cons of the core data structures (vector, factor, list, matrix, and data.frame) with an eye towards computational efficiency (speed and memory consumption). We will then learn about basic benchmarking with functions, loops, and loop alternatives (the apply family of functions, in particular). This leads naturally to topics in high-performance computing, including (a) foreach (and associated parallel backends) for parallel programming; (b) an introduction to the C/C++ interface and Rcpp; and (c) the use of shared memory and larger-than-RAM data sets. Participants are encouraged to download materials prior the tutorial and to work through the examples during the tutorial.



T5: Slippery Slopes: A Practical Introduction to Spatially Varying Slopes in Regression Models

Tuesday, April 3, 8:30 – 10:15 am

Instructor:

Lance A. Waller

Rollins School of Public Health
Emory University

Description:

Regression frameworks provide the basis for many statistical modeling methods. The assumptions of independent, Gaussian errors, fixed associations across the data set, and constant variance provide a comfortable arrangement leading to many of our favorite tools for variable selection, testing, and inference. With geographically referenced data, we often want to loosen each of these restrictions allowing correlated, non-Gaussian errors, spatially varying associations, and heteroskedasticity. This tutorial will provide an overview of recent modeling approaches to these settings including geographically weighted regression (GWR), hierarchical modeling with random effects (random intercepts to induce spatial correlation between observations and random slopes to allow associations to vary across space). It will compare and contrast the assumptions, implementation, and inference enabled by these two approaches. It will also explore the robustness of results and assumptions

required for successful implementation. Results on data involving violent crime, illegal drug arrests, and alcohol sales will be compared. Data and illustrative R and WinBUGS code will be provided to participants.

T6: Introduction to MATLAB for Statisticians

Tuesday, April 3, 1:45 – 3:15 pm

Instructor:

Wendy L. Martinez

Department of Defense

Description:

This course will provide a brief introduction to MATLAB for statisticians. In the first part of the class, an overview and demonstration of the MATLAB software will be provided, to include the desktop environment, programming tools, and basic graphics. In the remainder of the class, free and commercial toolboxes that would be of interest to statisticians will be introduced. Examples of commercial packages include the Statistics, Curve Fitting, and Bioinformatics toolboxes from The MathWorks. Examples of free software are the Computational Statistics, Exploratory Data Analysis, and Data Visualization toolboxes. Time permitting, the class will conclude with a brief discussion of ways to connect MATLAB and R.

Roundtables – Monday, April 2, 2012



REGISTRATION IS REQUIRED

\$ 35

Register Early – Space is Limited

R1: Latent Variable Modeling of High-dimensional Mixed Data

Discussion Leader:

David Dunson

Duke University

David Dunson will discuss how to collect high-dimensional data in biomedical studies and how models are needed for characterizing dependence with relatively few parameters. A very commonly used model is the Gaussian latent factor model, which has been widely used for gene expression data. However, latent factor models are much more broad and can be applied not only for continuous data, such as gene expression, but for general mixed domain data including not only simple cases (count, binary, categorical, continuous) but also complex “object data” (functions, images, text, shapes, etc). This roundtable will discuss recent developments and applications of latent variable models.

R2: Data Science: Redesigning Statistics PhD Programs to Enhance Relevance

Discussion Leader:

Scott Zeger

Harvard University

Scott Zeger's expertise has never been in greater demand, particularly at the interface with sciences such as astronomy, physics, economics, medicine, biology, and genetics. Throughout its history, statistics has been dramati-

cally advanced by engagement in these disciplines and others. But research at the science interface now requires more substantive knowledge to complement the statistical training. In addition, the questions being asked demand new skills of statisticians, for example, computing on large data sets.

This conversation will briefly review the core content of statistics and biostatistics programs across the US and then discuss essential revisions of the core to make PhD training maximally relevant to science.

R3: Navigating Promotion and Tenure in Schools of Medicine, Public Health, and Arts & Sciences

Discussion Leaders:

J. Richard Landis

University of Pennsylvania

Tom Louis

Johns Hopkins Bloomberg School of Public Health

James Rosenberger

The Pennsylvania State University

Description:

Academic biostatisticians and statisticians know well that promotion and tenure are awarded based on scholarship, education, and service. However, promotion and tenure criteria do vary amongst universities and schools within them. Moreover, schools of arts and science, medicine, and public health have different cultures, potentially leading to variation in weighting of the scholarship, education and service components. Roundtable leaders will summarize and contrast their views on these issues from the perspective of leading or having led a statistics department or a division of biostatistics

in three different universities and schools. Professor Landis directs the Division of Biostatistics in Penn's School of Medicine; Professor Louis is the former chair of the Division of Biostatistics, School of Public Health, University of Minnesota; and Professor Rosenberger chaired the Department of Statistics, Eberly College of Science at Penn State. Discussion topics will relate to navigating your professional career and include relative valuation of the teaching, research, and service criteria, publication portfolio, grant funding and roles, necessary and sufficient service and the advantages of effective mentoring. Participants should be ready to pose questions and discuss their experiences and concerns. All should leave the roundtable with broadened perspectives and understanding of the ingredients that will structure a career for success.

R4: Bayesian Statistics in Clinical Trials and the Role of the FDA

Discussion Leader:

Gregory Campbell

U.S. Food and Drug Administration

Description:

Bayesian designs and analyses are part of an increasing number of premarket submissions to FDA. An initiative, begun in FDA's Center for Devices and Radiological Health more than ten years ago, takes advantage of good prior information on safety and effectiveness that is often available for studies of the same or similar recent generation devices. A guidance document on the use of Bayesian

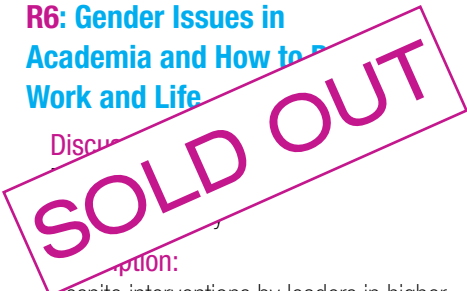
statistics in medical device clinical trials, finalized in 2010, explores not only the use information from prior trials but also designs that rely on no prior information but are planned to adapt to accumulating evidence during the course of the trial. The issue of simulation for Bayesian designs and software for Bayesian analyses is discussed. A number of important lessons in the design, conduct and analysis of clinical studies are explored, along with possible implications for drug trials or studies of diagnostic tests. Insights into success are addressed as well as challenges for the future.

R5: Longitudinal Data Analysis, Functional Data Analysis, Model Selection and Their Use in Applications

Discussion Leader:
Naisyin Wang
 University of Michigan

Description:
 There are many shared features between longitudinal and functional data analysis. Lately there is interest from researchers in both areas to investigate how to borrow strengths from each other. We will have a lively discussion on model building, model selection/regularization and how these issues matter conceptually and in real-life applications. In particular, we will discuss what could be the potential criteria to determine the simplicity and flexibility of model, whether these criteria should be modified to adjust for data structure, and whether researchers should try to pursue a common approach that fits both fields or should customize methods for their distinctive needs. Participants are also welcomed to send topics of interest to the discussion leader in advance so that handouts can be made and shared by all participants.

R6: Gender Issues in Academia and How to Balance Work and Life



Discussion Leader:
 Despite interventions by leaders in higher education, women are still under-represented in academic leadership positions. This dearth of women leaders is no longer a pipeline issue, raising questions as to the root causes for the persistence of this pattern. We have identified four themes as the root causes for the under-representation of women in leadership positions from focus group interviews of senior women faculty leaders at Johns Hopkins. These causes are found in routine practices surrounding leadership selection as well as in cultural assumptions about leadership potential and effectiveness. As part of this roundtable, I will discuss these findings and I will facilitate an informal discussion on how to balance work and life.

R7: Statistical Methods to Evaluate Diagnostic Medical Tests



Discussion Leader:
 Statistical evaluation of diagnostic medical tests may become increasingly challenging because of growth in areas such as personalized medicine, medical imaging, diagnostic software, and mobile applications. Statistical methods continue to evolve to evaluate diagnostic tests for specific intents of use. A basic challenge with diagnostic performance studies is their observational nature. Typically, the diagnostic result is examined for its association with a reference result (e.g., presence or absence of disease). Because subjects are not randomized, associations may not be causal. Many

sources of bias can be introduced into such studies. This roundtable will provide a forum to discuss statistical methods to evaluate diagnostic medical tests for specific intents of use. Specific uses include diagnosis in symptomatic subjects, screening of asymptomatic subjects, early detection, monitoring, risk assessment, prognosis, and tailoring of therapy. To frame the scope of discussion, diagnostic tests can be defined as providing results that are used alone or with other information to help assess a subject's past, present, or future health condition. Diagnostic tests include in vitro diagnostic tests (which examine specimens taken from the human body), diagnostic imaging systems (e.g., digital mammography), devices that provide biological measurements (e.g., bone density, blood glucose level, cardiac ejection fraction), and algorithms that combine subject data to yield a classification, score, or index (e.g., the Framingham risk score, the Gail score, Genomic Health's Oncotype Dx assay).

R8: The Role of Statisticians at the NIH

Discussion Leaders:
Dean Follmann
 National Institute of Allergy and Infectious Diseases
Nilanjan Chatterjee
 National Cancer Institute

Description:
 Statisticians at the NIH have diverse roles including collaborative research, oversight/monitoring of multi-center medical experiments, consultation services, and methodological research. NIH statisticians need strong methodological skills, superb communication, and the ability to creatively attack problems. At the NIH

there are two career paths; one is focused more on methodological research, has formal temporary positions and can culminate in tenure; the other focuses more on collaborative research. Topics to be discussed include typical career trajectories for visiting and permanent employees, what it takes to excel at NIH, the tenuring process, and the kinds of research studies statisticians conduct. Dr. Follmann is the Chief of the Biostatistics Research Branch (extramural) at the NIAID, and Dr. Chatterjee is the Chief of the Biostatistics Branch in the Division of Cancer Epidemiology and Genetics (intramural) at the NCI.

R9: Conducting Methodological Research in Statistics in the Biopharmaceutical Industry

Discussion Leader:

José Pinheiro

Johnson & Johnson PRD

Description:

The pipeline problem currently facing the pharmaceutical industry, with decreasing number of approved drugs and escalating development costs, has led to renewed interest in innovative designs and analysis methods aimed at improving the efficiency and overall success rate of drug development programs. Adaptive designs, model-based drug development, and clinical trial simulations are examples of current areas of great methodological interest and activity within the pharma industry. Although considerable amount of research in biopharmaceutical statistics takes place in academia, an increasing number of statisticians in industry have played a leading role in methodological development in the field. Motivated by this, several companies have created groups dedicated to methodological develop-

ment and implementation, with mixed success. This roundtable will discuss statistical methodology research within the biopharmaceutical industry, focusing on areas of ongoing and potential interest, strategies used by companies to promote and sustain methodology groups, and the outlook for the future.

R10: Beyond BMRD: Success in Statistical Grant Applications to Subject-Area Science Study Sections



Description:

In these times of threat to research funding, developing a portfolio of grant options takes on increasing importance. In this roundtable, you will participate in discussion of funding opportunities in subject-area science study sections at the NIH and NSF. Your discussion leader, Jun Liu, will describe options with promise beyond the Biostatistical Methodology and Research Design Study section, strategies for developing grant applications with appeal to interdisciplinary study sections, and insights into the dynamics and procedures of inter-disciplinary review. Participants will be encouraged to share experiences and engage in question-and-answer discussion. Professor Liu is a former IMS Medallion and Bernoulli Lecturer and COPSS Presidents' Award winner, among other honors, and a former member of the NIH GCAT (Genomics, Computational Biology and Technology) Study Section.





SPECIAL OPPORTUNITIES

for Our Student Members

Participate in Student-Focused Elements of the Scientific Program

The Sunday night mixer presents an ideal opportunity to obtain feedback on your work in our Annual ENAR Poster session. This year we inaugurate a Poster Competition for the session. Prizes will be announced within topical areas in the Tuesday morning Presidential Invited Address session. A student winner will be selected within each topical area. Watch for details on entering the competition on the website when the meeting registration goes live.

Additionally in 2012 we will host our first-ever student-organized Invited Paper Session. The session is being designed by ENAR's new Graduate Student and Recent Graduate Council. This Council has been established by the ENAR Regional Advisory Board to help ENAR better serve the needs of students and recent graduates. It will plan activities to help advance students' education and careers, improve student networking between institutions, and generally support the scientific and professional development of students and recent graduates, especially those from smaller schools, international students, and minorities.

Educational and Professional Development Opportunities

Be sure to take advantage of the educational offerings to be held during the meeting – short courses, tutorials, and roundtable discussions. (see pages 67–75)

Student Membership is
Only \$20 per Year!

Join ENAR Today at
www.enar.org

Don't Forget the Popular ENAR Career Placement Services!

(See pages 78 & 79)

Network with Your Fellow Students

Back by popular demand, a student mixer will be held during the evening of Monday, April 2. This is a great way to meet and greet your students from other graduate programs. Don't miss this opportunity to begin building connections with your future colleagues and friends (see page 4).

Join Us for the Tuesday Evening Social Event

Reduced registration fee offered to students to attend (see page 5).

HOURS OF OPERATION

Sunday, April 1	4:00 pm – 6:30 pm
Monday, April 2	9:30 am – 4:30 pm
Tuesday, April 3	9:30 am – 3:30 pm

General Information

The ENAR 2011 Career Placement Service helps match job seekers and employers. To improve efficiency and timeliness for all (and perhaps save a few trees), the placement service has been converted from a paper-based system to an electronic platform with on-site paper backup only. The service includes online registration and electronic uploading and distribution of applicant and employer materials through a password-protected online web-based facility. Visit the ENAR website at: www.enar.org/meetings/career_center to register for the placement center.

Job announcements and applicant information will be readily accessed electronically, applicant information will be opened before the meeting, and materials will remain available online for some months afterwards. As in previous years, there will be separate large reading/planning rooms for employers and applicants to review materials, dedicated personnel and a paper message desk to assist Placement Service users, and optional private interview rooms. Employer and applicant reading/planning rooms will provide small numbers of computers with Ethernet connections, printers,

and compiled books of listings for general use. However, to make most efficient use of the new Placement Center, we recommend that participants register listings in advance to maximize visibility, explore the database shortly before the meeting and, if attending, have a laptop computer on-site.

Employers

Each year numerous qualified applicants, many approaching graduation, look to the ENAR Placement Center to begin or further their careers. Organizations including government agencies, academic institutions, and private pharmaceutical firms all utilize the ENAR Career Placement Service. ENAR recognizes the value the Career Placement Service provides to members and, to make it more efficient and effective for both employers and applicants, has introduced electronic registration and an online database of applicant resumes. All registered employers will receive full access to the placement center for up to 3 company representatives, up to 4 job postings, pre-meeting access to the online applicant database of resumes, and access to the employer placement center room. ENAR is also offering those organizations seeking private interview rooms the option to reserve a private room for interviews in 4-hour increments. Please note that if you are planning to interview and participate on-site, you must also register for the conference and pay the meeting registration fee.

Employer Registration

The registration fee for employers includes up to four position postings and up to 3 representatives. The ENAR Career Placement Center also offers the following services during the meeting:

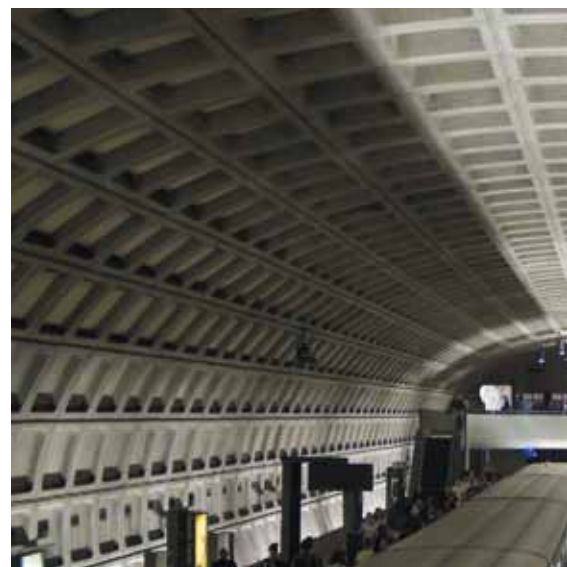
All registered employers will receive full access to the placement center for up to 3 company representatives, up to 4 job postings, pre-meeting access to the online applicant database of resumes, and access to the employer placement center room.

Employer Resource Area

ENAR will have internet access, computers, and printers available in the employer resource room for viewing the applicant resume database. However, for most efficient use we recommend employers have on-site access to a personal laptop computer.

Interview Suites

For an additional fee, employers may reserve private interview suites each day on a first-come, first-served basis.



EMPLOYER Registration Instructions, Deadlines, and Fees

	RECEIVED	
	BY March 16	AFTER March 16
Employer (3 reps/4 job postings)	\$ 500	\$ 550
Private Interview Room (Per 4-hour increments)	\$ 250	n/a
Additional Representatives (Cost per person)	\$ 100	\$ 125
Additional Job Postings	\$ 100	\$ 125

ALL employers must FULLY complete an online Employer Form located at:

www.enar.org/meetings2012/career_center/index.cfm for each position listing. Attachments may be included.

APPLICANT Registration Instructions, Deadlines, and Fees

	DEADLINES	
	BY March 16	AFTER March 16
Regular Registration	\$ 50	\$ 60
Student Registration	\$ 25	\$ 35

ALL applicants must FULLY complete an online Applicant Form located at:

www.enar.org/meetings2012/career_center/index.cfm for each job classification.

Applicants

If you have an interest in a career in biometrics, you can utilize the ENAR Career Placement Center to get started or get ahead. Many employers attend the ENAR Spring Meeting each year seeking qualified applicants. All registered applicants may register for up to three job classification types, and receive full access to the placement center applicant room and the online employer job posting database. Please note that to fully utilize the online database, we recommend applicants register in advance

to maximize visibility, explore the database shortly before the meeting and, if attending, have a laptop computer on-site. If you are planning to interview and participate on-site you must also register for the conference and pay the meeting registration fee.

Applicant Registration

The ENAR Career Placement Center provides opportunities for qualified applicants to meet employers and learn about organizations employing biostatisticians.

Please note that if you are planning to interview and participate on-site you must also register for the conference and pay the meeting registration fee.

The ENAR Career Placement Center also offers the following services to applicants:

Visibility to Employers

Applicants who register by March 16, 2012 will have their information included in the Online Applicant database made available to all employers prior to the opening of the placement center.

Applicant Resource Area

ENAR will have internet access, three computers, and printers in the applicant room for viewing the employer job posting database. However, for most efficient use we recommend applicants have on-site access to a personal laptop computer.



Hotel Registration Form

Please print or type

Reservation requests will be honored as space allows. You will receive confirmation directly from the hotel.
The cutoff date to receive the ENAR group rate is **March 5, 2012.**

NAME _____

MAILING ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____ COUNTRY _____

DAYTIME PHONE _____ FAX _____

Please Reserve _____ **Rooms For** _____ **People.**

Arrival Date _____ **Arrival Time** _____ **Departure Date** _____

Check-in time is 3:00 pm; checkout time is noon.

Room Preferences

Single \$ 189 Double \$ 200 Smoking Nonsmoking

Special Needs _____

Person(s) sharing with 1. _____
2. _____

Reservations

I am guaranteeing my reservation with the following:

Check Money Order
 MasterCard Visa AmEx Discover

CARD NO. _____ EXP. DATE _____

SIGNATURE _____

Make Your Reservation Online!

http://tiny.cc/hyatt_enar

Return Hotel Registration Form with payment to:

Hyatt Regency Washington on Capitol Hill
400 New Jersey Avenue, NW
Washington, DC, USA 20001

OR Fax 202-737-5773 OR Call 202-737-1234

<http://washingtonregency.hyatt.com>

Be sure to mention you are with the
ENAR SPRING MEETING



Membership Application

Eastern North American Region (ENAR) | 12100 Sunset Hills Road, Suite 130 | Reston, VA 20190
 Tel: 703-437-4377 | Fax: 703-435-4390 | E-mail: enar@enar.org

Please check one: New Member Renewal

Please print or type

NAME _____

DEGREE TITLE _____

ADDRESS _____

CITY STATE ZIP CODE COUNTRY _____

PHONE FAX EMAIL _____

MEMBERSHIP TYPE:

Regular Member: \$90

Includes electronic access to the *Biometrics* Journal, *JABES* Journal and *Biometric Bulletin* Newsletter

Regular Member: \$100

Includes print subscription of one journal, **either** *Biometrics* Journal or *JABES* Journal, and *Biometric Bulletin* newsletter

Regular Member: \$110

Includes print subscriptions to *Biometrics* Journal, *JABES* Journal, and *Biometric Bulletin* newsletter

Supporting Member: \$30

Student Member: \$20

Includes electronic access to the *Biometrics* Journal, *JABES* Journal and *Biometric Bulletin* Newsletter

I certify that _____ is a full-time student.

Signature: _____ Title: _____

A Regular Member who is a member of a Region/National Group, termed Region/Group [R], may elect to become a Supporting Member in another Region/National Group, termed Region/National Group [S]. Supporting Members will pay the International portion of the dues once and pay the additional Regional dues only to Region/National Group [S]. A Regular Member may become a Supporting Member of more than one Region or National Group. A Regular Member At-large may also become a Supporting Member in a Region/National Group of their choice. Supporting Members may not vote or hold any office in Regions/National Groups they support.

PLEASE INDICATE TWO AREAS OF INTEREST:

Agriculture (01)

Animal and Veterinary Science (02)

Clinical Trials (03)

Epidemiology (04)

Genetics and Heredity (05)

Molecular Biology and Biotechnology (06)

Toxicology (07)

Natural Resources:

Ecology (08)

Forestry (11)

Entomology (09)

Wildlife (12)

Fisheries (10)

PAYMENT INFORMATION:

Enclosed is my check, payable to ENAR (Remittance accepted only in US currency)

Please charge my membership dues to: Visa MasterCard AmEx

Card No. _____ Exp. Date: _____

Name on Card: _____

Signature: _____

MAIL TO:

Wachovia Bank/ENAR
 P.O. Box 758929
 Baltimore, MD 21275-8929





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