

## Highlight

### Genetics and statistics to elaborate risks

Dr Nan Laird and Dr Daniele Fallin speaking at today's plenary session explain how statistics and the operation of genes can clarify the process of gene-environment interactions.

#### Why is this topic of interaction between genes and environmental threats important for you ?

**Daniele Fallin:** Environmental toxins have variable consequences among individuals. Indeed, people differ in their abilities for detoxification and processing, likely determined at least in part by genes. So I think it's important to know how genes work and what additional contributions individual DNA variability may have on the ultimate risk conferred by particular exposures.

**Nan Laird:** There are now several important examples where seemingly harmless genetic polymorphisms have serious adverse effects in the presence of certain environmental exposures. That's why my talk will address how recent developments in statistical methods for genetic association analysis offer promise for identifying gene-environment interactions in complex diseases.

#### What will your conclusions bring to environmental epidemiology?

**Daniele Fallin:** An important point is that

understanding the relationship between genetic or epigenetic variation and exposure can help to clarify the mechanism of an exposure's effects, helping then to focus new prevention or treatment for diseases related to exposure.



Dr. Daniele Fallin  
Johns Hopkins  
Bloomberg School of  
Public Health, USA



Dr. Nan Laird  
Department of  
Biostatistics, Harvard  
School of Public Health,  
USA

**Nan Laird:** My talk will deal with study designs for finding disease genes. Studies which use family data have a major advantage over those which use unrelated individuals in that they permit tests of gene effects on disease which are completely robust to any confounding effects, including population substructure, and can also help to address the multiple comparisons problem.

#### What do you need in order to develop further your studies?

**Daniele Fallin:** We require funds of course, but also some talented statisticians, epidemiologists and statistical geneticists interested in environmental epidemiology to create new necessary statistical tools.

**Nan Laird:** The use of large cohort studies with repeated measures will be very valuable, especially where data on families are collected.



## Conference in numbers

**213** students are attending the conference this year. A new record. It is mainly due to the proactive policies implemented to support the participation of students: a student committee organising a number of student events, a workshop, awards and low student rate. The students

come from **30** different countries.

## Viewpoint



Dr Michael Dellarco  
ISEA President  
Environmental  
Protection Agency  
Washington DC, USA

### Strengthening the impact of exposure assessment on environmental policy

*Paris, the enchanting "City of Lights" is the ideal setting to convene this important international meeting of exposure science and environmental epidemiology, providing the grandeur that mirrors the growing importance of these disciplines to public health. Increasingly these disciplines will improve our understanding about exposure to stressors in our environment, factors associated with susceptibility to them, and their association with disease.*

*Therefore, it is fitting that we convene this meeting with our colleagues at the French Agency for Environmental and Occupational Health Safety (AFSSET), well positioned to address environmental and occupational risks through research, training, and information exchange with their many national and international partners. AFSSET shares a common goal with the ISEA to foster and advance the science of exposure related to environmental contaminants, to encourage dialogue between all disciplines including environmental epidemiology.*

## Yesterday - ISEE and ISEA awards

### Collaborative research should be improved.

Dr Klea Katsouyanni received the ISEE John Goldsmith award yesterday. She was recompensed for her fantastic ability at coordinating an enormous international team. *"Collaborative research has to be improved, she said, but statistics show that the number of partners should be controlled for better carried out studies."*



Dr Larry Needham was given the ISEA award for his work on biomonitoring for disease prevention. *"There is still a lot more to do in terms of interpretation in biomonitoring he said. All numbers are not created equally and different laboratories have different measures."*



ISEA and ISEE presidents also granted a special award to Adrienne Pittman, Matti Jantunen, and Denis Zmirou-Navier for their excellent organisation of the conference.



## Breakthrough

**Nicole Janssen**  
National Institute for Public Health  
and the Environment (RIVM), Netherlands.

Wednesday, 8.30am, WM2-0, Air Pollution Long-term Effects



## Linking toxicology and epidemiology to assess the health effects of traffic-related air pollution

The HEPMEAP (Health Effect of Particles from Motor Engine Exhaust) study compared the toxicity of ambient particulate matter (PM) collected from sites with established contrast in traffic density, with the results from epidemiological studies. It is one of the first studies aimed at integrating results from toxicology and epidemiology.

Over a complete year, scientists collected air samples at four sites chosen to represent locations where a previous epidemiological study on respiratory health of children had

been conducted. They then assessed the potency of PM to induce oxidative and inflammatory responses by using in-vitro models. Results show that PM oxidative activity and release of inflammatory mediators are associated with chronic respiratory symptoms, allergic sensitisation and bronchial hyper responsiveness. These findings support the plausibility of PM-induced respiratory health effects.

## Today's question

After the conference, what field of research would you want to see developed further

**Boris Katsnelson, Russia, ISEE member.**

*I'd like to see more research in the area I spend most of my time, which is heavy metals. In the region where I live, there are a lot of metal industry companies settled. Heavy metal exposure can cause dangerous diseases particularly when it occurs during pregnancy.*

**Algernon Africa, South Africa.**

*I would like to see more research on pesticides. Because first of all I work with local farmers and they use pesticides every day. I can see the damage they may cause. Also in Africa these studies are not well supported, so we need funding to carry out more studies in that field.*

**Chih-Hung Ku, Taiwan, ISEE member.**

*Each one has its own interest I think. So as far as I am concerned, I'd like to see more research on occupational epidemiology. I also want to see more funding, and especially coming from Indonesian companies. I hope they learn from other experiences and decide to get more involved in environmental studies sponsorship.*

**Halina Rollin, South Africa, ISEE member.**

*Seeing the amount of people who attended the sessions on exposure during pregnancy and early age, I definitely wish there will be more studies in that area during the coming years in order to provide better prevention and then help us prevent most environmental diseases.*

## Memo

**8.30-10.00:** Plenary "Environment and Genetics". Daniele Fallin & Nan Laird. Gaston Berger Auditorium

**12.30-2.00:** Lunch - Young scientist awards, ISEA 2007 and ISEE Mexico 2007: Espace Condorcet

**2.00-4.00:** IUAPPA symposium. Room 3

**6.45:** Gala diner and cruise on the Seine. Coach transfers at 6.45pm. Registration required. Please visit the information desk.

## What's on today

By Benoit Vergriette, Afsset, France

## Environmental equity, a growing area of research

The concept of environmental equity is based on differential exposure to environmental stressors of some population groups. Environmental equity research studies the effects of such cumulative exposures and how they translate into burden of disease according to a variety of "disparity indicators". Analysing data on a routine basis according to different characteristics of the population may cause political and ethical concerns. Risk assessment and risk management would be better targeted should equity issues be better appreciated. In France, the Constitution was amended in 2005 to state that "Everyone should live in a balanced, health-friendly environment". Will this impact French research in environmental and occupational health? The first two presentations "Separating fact from artefact" and "Give them what they want or make them want what you give them" will certainly trigger debates within this morning session.

## Partners of the conference

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