Graduate and Postdoctoral Training in Environmental Health and Technology

Brown University has several interdisciplinary training programs that provide opportunities for collaboration between campus-based and hospital-based faculty and for basic and translational research in environmental health as well as community outreach activities and remediation of toxic waste sites and Brownfields in Rhode Island.

1. NIEHS T32 Training Grant in Environmental Pathology
   Dr. Agnes Kane, Director
   Dr. Kim Boekelheide, Co-Director

2. Superfund Training Core – P42 Research Program Grant
   Dr. Agnes Kane, Director

3. Mellon Postdoctoral Fellowship
   Co-sponsored by the Center for Environmental Studies and the Department of Pathology and Laboratory Medicine.

4. Department of Education GAANN Training Grant:
   Interdisciplinary Training in Applications and Implications of Nanotechnology
   Dr. Robert Hurt, Director
   Dr. Agnes Kane, Co-Director

*Overall, these training grants provide support for 16-18 predoctoral students and 4 postdoctoral trainees in the biological sciences, physical sciences, social sciences, and engineering at Brown University and its affiliated hospitals.*
NIEHS T32: Training Grant in Environmental Pathology
1992-2012

Director: Agnes B. Kane, M.D., Ph.D.
Co-Director: Kim Boekelheide, M.D., Ph.D.

1. Supports 6 predoctoral and 3 postdoctoral trainees in environmental pathology and toxicology.

2. Objective: To train a new generation of scientists who will use the tools of cell biology, molecular biology, biochemistry and epidemiology to study basic mechanisms of disease related to environmental exposures.

3. Disease endpoints: Cancer, altered reproductive function, adverse developmental and pregnancy outcomes, genotoxicity, oxidative cell injury, and fetal basis of adult disease.
NIEHS T32 Predoctoral Trainees

Matt Maccani  
Mentor: Carmen Marsit  
*Placental MicroRNA Alterations Associated with Birth Outcomes and Exposures*

Ben Moyer  
Mentor: Mary Hixon  
*Effects of In-Utero Exposure to MEHP on the Adult Female*

Sara Pacheco  
Mentor: Kim Boekelheide  
*Genome-Wide Approaches to Identifying Sperm Biomarkers of Toxicant Exposure*

Jessica LaRocca  
Mentor: Mary Hixon  
*Adult Effects of In-Utero Exposure to Bisphenol A*

Camelia Saffarini  
Mentor: Kim Boekelheide  
*Human Fetal Prostate and Endocrine Disruption*

Jennifer Joukhadar  
Mentor: Surendra Sharma  
*Novel Targets of Pregnancy Disrupting Environmental Toxicants*
NIEHS T32 Postdoctoral Trainees

Carolyn Banister, PhD.  
*Mentor: Carmen Marsit*  
*The Significance of the Intrauterine Environment on Epigenetic Regulation*

Scott Langevin, PhD.  
*Mentor: Karl Kelsey*  
*Epigenetic Profiles in Human Blood as Biomarkers for Head and Neck Cancer*

Ashish Jackak, PhD.  
*Mentor: Agnes Kane and Robert Hurt*  
*Biocompatibility of Graphene Nanomaterials*

Pathology faculty are using systems biology and genomics to identify biomarkers of exposure and effect related to infertility and adverse pregnancy outcomes.

Internalization of graphene nanosheets by macrophages in vitro.
Superfund Training Core  
NIEHS P42 Research Program Grant  
2005-2014  
*Director: Agnes B. Kane, M.D., Ph.D.*

1. Supports 4 predoctoral students working on Superfund biomedical research projects, environmental remediation, nanotechnology, and community outreach.

2. **Objectives:**
   - To develop didactic courses and laboratory training opportunities related to environmental contaminants, human health effects and rehabilitation of Brownfields and Superfund sites in Rhode Island.
   - To organize interdisciplinary research teams of undergraduates, graduate students, and postdoctoral researchers involved in Superfund biomedical and engineering projects.
   - To provide opportunities for field work and community outreach in Rhode Island.
Superfund Trainees

Natasha Catlin  
*Microarray Studies of Low Dose Co-Exposures to Testicular Toxicants*
Mentor: Kim Boekelheide

Dave Ciplet  
*Community Environmental College; Community Advocacy*
Mentor: Phil Brown

Devin Koestler  
*Computational Algorithms for DNA Methylation and Exposure Biology*
Mentor: Carmen Marsit, E. Andres Houseman

Yang Qui  
*Structure-Activity Relationships for Carbon Nanotubes*
Mentor: Robert Hurt, Agnes Kane

Peterson/ Puritan, Inc. abandoned property (left) in Cumberland and Lincoln, RI before clean up. Following rehabilitation, the CCL Custom Manufacturing company (right) is now located on this site.
Interdisciplinary Training in Applications and Implications of Nanotechnology

Department of Education GAANN Training Grant, 2009-2012

*Director: Robert Hurt, Ph.D.*  
*Co-Director: Agnes B. Kane, M.D., Ph.D.*

1. Supports 6-8 predoctoral students who will pursue interdisciplinary research and teaching in the applications and implications of nanotechnology.

2. GAANN fellows will be supervised by co-mentors who are actively engaged in externally-funded research on the nano-bio interface, nanoscale imaging, nanoscale tissue engineering, and the environmental and human health impacts of nanotechnology.
GAANN Nanotechnology Fellows

Don Ho

Mentor: Shouheng Sun
Chemistry

Nanomaterials for Biomedical Applications

Jennifer Mitchell

Mentor: Diane Hoffman- Kim
Biomedical Engineering

Nanofibers as Guides for Nerve Regeneration

Danielle Rand

Mentor: Christoph Rose-Petruck
Chemistry

Gold Nanoparticles for Tumor Imaging

Megan Creighton

Mentors: Robert Hurt, Agnes Kane
Engineering
Pathology and Laboratory Medicine

Characterization and Toxicity of 2D Graphene

Pam Davies

Mentor: Anubav Tripathi
Engineering

Microfluidics for Biomedical Diagnosis
The Next Generation of Environmental Scientists and Engineers

- In-depth training in a major discipline in biological sciences, physical sciences, social sciences, or engineering.
- Interdisciplinary education and research experiences.
- Mentored teaching experience at Brown and in the community (Community Environmental College).
- Participation in public health policy, community outreach, internships in politics or industry.
- Balance future benefits and potential risks of emerging technologies.
For more information, please contact:

1. **NIEHS T32 Training Grant in Environmental Pathology**
   Pathobiology Graduate Program Coordinator: Tami-Marie Mildner
   Tami-Marie_Mildner@Brown.edu
   Director: Dr. Agnes Kane
   Agnes_Kane@Brown.edu

2. **Superfund P42 Research Program Grant**
   Director: Kim Boekelheide
   Kim_Boekelheide@Brown.edu

3. **Mellon Postdoctoral Fellowship**
   Director: Dr. Phil Brown
   Phil_Brown@Brown.edu

4. **GAANN Grant: Interdisciplinary Training in Applications and Implications of Nanotechnology**
   Director: Dr. Robert Hurt
   Robert_Hurt@Brown.edu