Children’s Environmental Health Sciences Core Center

University of Wisconsin-Milwaukee and
Children’s Research Institute
Children’s Hospital and Health System

David Petering, Director
Ronald Hines, Deputy Director
Gail McCarver, Clinical Director

Center Evolution

Marine and Freshwater Biomedical Sciences Center
MFBS Center
Spring, 2005

Basic scientists; School of Public Health; related infrastructure

Children’s Research Institute (Medical College of Wisconsin)
CRI
Fall, 2005

Medical School; Clinical and community health investigators; Related infrastructure National Children’s Study

2006

Children’s EHSC Center

2009

Translational Research
Basic clinical/community

Children’s EHSC Center
Research Portfolio

Water: global issue

Great Lakes
Neurobehavioral
Cardiovascular
Research portfolio
Gene-environment Interactions
Signal Transduction, Oxidative/electrophilic/metal Stress
Developing opportunities

• Clinical/public health perspective on disease and environment
• Nanotoxicology

Administrative Core

UWM CRI/MCW

Inter-institutional Integration - Center Administrative Structure

Business Manager/ Administrative Coordinator
Randall Schmidt

Grant writer/web master/ Publicity D Weber

Administrative Core
Director - D Petering
Deputy Director - R Hines
Clinical Director - G McCarver

Internal Advisory Committee
Pilot Project Program
Career Development

Aquatic Animal Models Facility Core
H Tomaszewicz, Director
Aquatic Animal Facility-K Kosteretz
Behavioral Toxicology Facility-D Weber
Molecular Techniques Facility-H Tomaszewicz

Integrative Health Sciences Facility Core
Gail McCarver, Director
Clinical Unit, G McCarver
Community Unit, C Cronk
Biostatistics, R Hoffmann

Imaging and Histology Facility Core
P North, Director
H Tomaszewicz, Associate Director

Community Outreach and Education
J Hewitt, Director
Earnestine Willis, Associate Director

Research Interest Groups
Aquatic Animal Models Facility
Dr. Henry G. Tomasiewicz, Director

- Capacity of 10-20,000 zebrafish
  - Flow through and recirculating rack systems
  - Routinely produce ~300 eggs/female/spawning
  - 85+% Embryo survive to 20 days post fertilization
- Fathead minnows, Trout & Perch
  - Obtained from external source
  - Flow through system
  - Facility is equipped to house these species
- Toxicology Facility

Neurobehavioral Toxicology Facility
Dr. Daniel N. Weber, Manager

- Life-stage specific designs
- Visual startle responses
- Auditory startle response
- Learning and memory
- Social behavior
  - Aggression
  - Reproduction

Inter-center collaboration: Tanguay-Weber
Basic-clinical collaboration: Heffelfinger-Weber
Molecular Techniques Laboratory
Dr. Henry Tomasiewicz, Manager

Technological Advances
“Sheer” zebrafish

Vector based RNAi
- RNA pol III promoter driven
- 1/3 of embryos injected exhibit phenotype: no tail
- Synthesis of small interfering RNA
- Loss of target gene

Basic-clinical collaboration: Liu-Tomasiewicz

IMAGING AND HISTOPATHOLOGY FACILITY CORE
Dr. Paula North, Director
Dr. Henry Tomasiewicz, Associate Director

- Widefield, confocal, and multi-photon laser scanning microscopes.
- Fluorescence and brightfield-equipped laser capture microdissection
- Human tissue and blood specimen storage (biobanking)
- Histology services and pathology expertise.

CRI: Children’s Research Institute.
IHC: Imaging and Histopathology Core
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Integrative Health Sciences Facility Core
Dr. Gail McCarver, MD, Director

1. Clinical Study Design and Analysis
2. Career Development
3. Defining Disease Phenotypes and Clinical Data Collection
4. Community Study Design and Analysis
Focus: Prenatal and Perinatal Exposures and Childhood Disease

- High impact
  Largest childhood mortality & morbidity in 1st year of life
  Increased recognition of intrauterine exposures leading to offspring, adult & 2nd generation disease
- Clear data gaps
  Maternal environmental exposures not well evaluated as risk factors
- Feasible
  Availability of normal OB patients & Fetal Concerns patients
- Sufficiently broad: diversity of investigative fields, opportunities for investigator collaboration
- Unique: Integration with National Children’s Study
Community Outreach & Education Core

Jeanne B. Hewitt, PhD, RN, Director
Earnestine Willis, MD, MPH, Associate Director

COEC - an integral Center core

• Program initiatives focus on
  - building environmental health competency of educators and health professionals in relation to children’s environmental health.
  - ethnic communities that in order to stimulate environmental health literacy related to children.
  - collaborating with the IHSFC-Community Unit to support community health research and career development.

• Programmatic emphasis on
  - peer review
    - academically vigorous initiatives and extramural sources to fund them
    - increasingly sophisticated evaluation methods
    - regular communication with peers at national meetings and in scientific journals.

SEPA grant renewal, NIEHS and NCRR
Center Highlight

UW-Milwaukee School of Public Health (SPH)

2004- Proposal for School of Public Health and transformation into University
2005 System Regents approval to investigate feasibility of SPH (Director)
2006 Public health planning committee formed and report submitted to Regents with the Center recognized by external reviewers as key asset (Director)
2007 SPH Planning Committee established to write the authorization document and plan program (Director, COEC Director)
2008-09 Regents and Legislature approval of SPH with emphases in children’s environmental health and water and environmental health
2008 Regents approval of doctoral program in environmental and occupational health (Director, co-chair, Center members on committee)
-Children’s environmental health niche
-Faculty: CEHSC Center membership
-First class, Fall, 2009
2009 Entitlement to Plan doctoral degree in epidemiology (COEC Director, co-chair, Center members on committee)
-emphasis areas include: maternal-child and environmental epidemiology.
2009 3 positions in children’s environmental health and 1 in public health informatics (Director)