

Hosting Organization

Great Lakes Science Center, Cleveland Ohio

Multiple Principal Investigators

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Key Personnel

Shirley M. Moore, RN, PhD (Smm8@case.edu)

The Edward J. and Louise Mellen Professor of Nursing;
Associate Dean for Research
Case Western Reserve University Frances Payne Bolton
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Science Content Topics

Diabetes, Obesity, Cardiovascular Disease (DOC)
Biomedical Research and Careers in STEM

Target Audience

- Primary audience: High school students
- Secondary audiences: Other students, science center visitors, teachers and community members

Deliverables

- Biomedical research, clinical observation and scientific communication internships, for Cleveland Metropolitan School District (CMSD) high school students
- Speaker series and hands-on interactive programs for students, science center visitors and the community
- Distance learning programs for students & the community
- Exhibits and mobile explorer carts at GLSC
- Teacher professional development programs

The BMT: STEM Internship Program

Participants:

- 70 internship students since 2012
- Mentors from CTSC institutions, GLSC and WVIZ

Curriculum:

- Duration of internship = 120 hours over 6-8 weeks
- Aligned with CMSD curriculum, state and national standards
- NIH Protecting Human Subject Research Participants training or Collaborative Institutional Training Initiative (CITI)
- Activities include observing and assisting research and scientific communication mentors, career shadowing, evaluation activities and self-reflection
- Final presentations on internship experience to peers and the community

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Project Description

The goal of this project is to address the obesity epidemic and the rapid increase in diabetes, a deadly combination that multiplies the risk of cardiovascular disease. With high school student biomedical research and scientific communication internships at the center of the project, students assist Great Lakes Science Center (GLSC) in designing exhibits and educational programs that introduce the public to the broad spectrum of research that is needed on the linkages between diabetes, obesity and cardiovascular (DOC) disease including laboratory, clinical, population and community research. Working with extensive community networks of GLSC and the Cleveland Clinical and Translational Science Collaborative (CTSC), the SEPA-CTSC model partnership will engage the community in planning and evaluating educational activities. The project builds on the ongoing partnership developed between GLSC and CTSC at Case Western Reserve University and collaboration with the Cleveland Metropolitan School District, which have been critical to GLSC first SEPA-funded project, BioMedTech: Mapping the Future of BioEngineering and Technology.

Program Goal

To introduce students and the public to the broad spectrum of research that is needed to understand the linkages between diabetes, obesity and cardiovascular (DOC) disease

Specific Aims

- Develop science research, education and communication skills amongst CMSD high school interns on diabetes, obesity and cardiovascular (DOC) disease, who will translate biomedical research experiences (conducted by CTSC/CWRU) to educational resources and facilitate related educational activities at GLSC and in the community
- To improve public understanding of the broad spectrum of research necessary to understand the linkages between DOC diseases
- To develop a model of SEPA-CTSC partnership that engages the community in all phases of project planning and evaluation

Project Contract Staff

- BMT: STEM Project Manager** - Tracey Meilander (broaderimpacts@yahoo.com), MEd, PhD, Broader Impacts LLC
- CTSC Project Manager** - Antoinette Hillian (Antoinette.Hillian@UHHospitals.org), PhD, University Hospitals Case Medical Center
- Internship Specialist** - Jay Simon (jsimon@youthopportunities.org), Youth Opportunities Unlimited
- Professional Learning Coordinator, Educational Technology** - Eric Siler (Eric.Siler@ideastream.org), WVIZ ideastream



CTSC biomedical scientists simulate laboratory methods used in DOC research at National Lab Day.



CTSC biomedical engineers demonstrate EMG-controlled technology to move a robot.



Cohort 6 BMT: STEM interns selected from Cleveland Metropolitan School District high schools explore biomedical research and scientific communication with professional mentors.

School Programs

- I <3 (Heart) Medicine! Day - Exploration of cardiovascular health and research with medical professionals through narrated heart surgery footage, pig heart dissection, and fieldtrip to the Global Center for Health Innovation
- Health Careers Exploration Day - Introduction to diverse careers in the health professions with a career panel and meetings with college, university, and professional organization representatives
- Speaker Series - Interactions with biomedical researchers at the science center to learn health topics, research findings and career information
- Distance Learning - From the Bench to the Bedside - Conversations between students and biomedical researchers through interactive video distance learning

Model of SEPA-CTSC Partnership

The Clinical and Translational Science Collaborative of Cleveland coordinates resources relevant to clinical research at Case Western Reserve University and its hospital affiliates, Cleveland Clinic, MetroHealth Medical Center, University Hospitals Case Medical Center, and the Louis Stokes Cleveland Veterans Medical Center, including three Clinical Research Unit (CRU) facilities, a successful multidisciplinary institutional KL2 program, substantial technological and statistical core facilities, and a MD-PhD program in clinical research. The infrastructure support provided impacts everyone who conducts clinical research in the partner institutions and community.

Representative Clinical Internships

Kim Hopkins, RN and Melanie Ramos, RN, Research Nurses, Clinical Research Unit, Cleveland Clinic - Regular mentors who facilitated shadowing and observational research experience with three students.

Sarah MacLeish, DO, Director, Diabetes Technology Clinic, University Hospitals Rainbow Babies and Children's Hospital, and **Sumana Narasimhan, MD**, Co-Director, Healthy Kids and Healthy Weight Program, UHRB&C - Frequent mentors who provided observational experiences with professionals providing care and training to pediatric patients with Type I and Type II diabetes and engaged students in reading and reporting on current issues in healthcare with eleven students.

Shirley Moore, RN, PhD, Professor of Nursing, Associate Dean for Research; Frances Payne Bolton School of Nursing, Case Western Reserve University and **Julie Hewitt, Project Manager** - Frequent mentors incorporating seven interns into assisting (attendance at community events, preparation of teaching materials, data collection, etc.) with the IMPACT research study which evaluates the effects of clinical interventions on the health of overweight urban youth.

Noreen Roman, MT(ASCP), MBA, Clinical Research Unit Operations Manager, MetroHealth Medical Center - Regular mentor facilitating shadowing opportunities of physicians, nurses, biomedical researchers, pharmacists, nutritionists, and research administrators with two students.

Public Programs

CTSC biomedical research professionals shared their discoveries, health and career information through interactive, hands-on activities at the following events:

- Diabetes Awareness Day - November
- Clinical Trials Information Day - February
- National DNA Day - April
- National Lab Day - May