



## **The Center for Urban Responses to Environmental Stressors Announces 2021 Request for Pilot Project Proposals**

### **What is CURES?**

The Center for Urban Responses to Environmental Stressors (CURES) is a National Institute of Environmental Health Sciences (NIEHS)-funded P30 Core Center whose mission is to provide leadership and programs that, in collaboration with the community and environmental policy makers, identify, evaluate, and mitigate environmental health concerns. CURES is an active partner in the collective goal of creating a healthier Detroit.

CURES is focused on understanding how chemical and non-chemical stressors in the urban environment affect the health and well-being of Detroiters, especially vulnerable populations. Detroit is encumbered with an overabundance of industrial and post-industrial environmental toxicants, socioeconomic strains, physical and emotional stressors, and housing decay. Identifying hazards and enhancing our understanding of how they impact our health is key to devising effective prevention and remediation efforts. CURES is strategically designed to facilitate translational transdisciplinary team research focused on: (1) exposure to chemical and non-chemical stressors that are prevalent in the urban industrialized environment, (2) the experiences of people who are particularly vulnerable to adverse effects of such exposures (e.g., children, older adults, ethnic and racial minorities, immigrants and refugees), and (3) linking such environmental exposures to public health in our Detroit community.

The overall goals of CURES are to (1) develop and strengthen partnerships between CURES and the Detroit community; (2) in collaboration with our partners, identify key environmental threats to Detroit's vulnerable populations; (3) conduct highly integrated mechanistic, epidemiological, and community-engaged research addressing the impact of urban environmental exposures on health; (4) build CURES' capacity to accomplish these goals by providing facility cores that are optimized to meet the needs of investigators and "seed funds" for pilot projects to explore the feasibility of new areas of study; and (5) enhance the impact of CURES on the field of environmental health science by mentoring new and mid-career investigators, supporting their professional goals, and preparing them for leadership in environmental health research.

### **What is the purpose of this RFA?**

The primary goal of the CURES Pilot Project Program is to develop research capacity and expertise to address research priorities that are informed by our Community Advisory Board (CAB) and that generate results that lead to extramural research funding from NIEHS.

This RFA seeks applications for research projects that address the theme "Determinants of Environmental Health Disparities." This theme is described in more detail on page 3. Please read this RFA carefully, as this year's program has some differences from previous years.

**We expect to fund 2 pilot projects this year.**

## Time Line

May 24, 25, 2021	Informational Meetings by Zoom: Potential applicants are invited to attend one of these meetings to learn more about the CURES Pilot Project Program. Monday, May 24, 10:00 – 11:00 AM Tuesday, May 25, 12:00 – 1:00 PM To join either of these meetings via Zoom: <a href="https://wayne-edu.zoom.us/j/95598079592?pwd=OWt1dDBDNDJDNY9XeVZ4dmYvdINDQT09">https://wayne-edu.zoom.us/j/95598079592?pwd=OWt1dDBDNDJDNY9XeVZ4dmYvdINDQT09</a> Meeting ID: 955 9807 9592 Passcode: 375060
June 21, 2021	Letters of intent (LOI) due by midnight
~July 9, 2021	Notification of successful LOIs and invitation to submit proposal
August 18, 2021	Full applications due by midnight
~September 15, 2021	Announcement of awards; funding will begin as soon as possible

## Submission of Information

Submit Letters of Intent (LOI) as a single PDF files as e-mail attachments to:

Marsha Moore  
Administrative Assistant III  
Institute of Environmental Health Sciences (IEHS)  
Center for Urban Response to Environmental Stressors (CURES)  
Phone: (313) 577-6590  
marshamoore@wayne.edu

## Questions

If you have questions about CURES and this RFA, please contact:

Dr. Thomas A. Kocarek  
Leader, CURES Pilot Project Program  
Phone (313) 577-6580  
t.kocarek@wayne.edu

or

Dr. Melissa Runge-Morris  
Director, Institute of Environmental Health Sciences Director, CURES  
Phone (313) 577-5598  
m.runge-morris@wayne.edu

## What is the theme of this RFA?

The theme of this year's CURES Pilot Project Program is **Determinants of Environmental Health Disparities**, and applications are requested for projects that address the following topics within this theme: (1) **Neighborhood-level susceptibility factors for environmentally-induced disease** or (2) **Individual susceptibility factors for environmentally-induced disease**.

- ❖ **Neighborhood-level determinants of environmentally-induced disease:** Stated simply, your neighborhood affects your health. Each neighborhood has a unique combination of geographic (e.g., locale relative to pollution sources), historic (e.g., land use, age and condition of housing stock), and demographic (e.g., socioeconomics, race, ethnicity, age) characteristics that together create the spectrum of environmental risk and injustice that result in disparities in the development of diseases. CURES has established a new platform called the Multifactorial Integrative Design Analytics System (MIDAS). The centerpiece of MIDAS is an [Enterprise geographic information system \(GIS\)](#) that provides CURES investigators with the power to deepen their research by providing a graphical and analytic dimension, bringing together the fundamental epidemiological triad of person, time, and place. MIDAS provides researchers with the ability to synthesize data from disparate sources to characterize and understand cumulative risk. **Projects addressing this topic must incorporate the use of MIDAS in the research design.**
- ❖ **Individual determinants environmentally-induced disease:** The NIEHS 2018-2023 Strategic Plan states “Individuals can, and do, respond in different biological ways to the same environmental exposure. Environmental health science includes the study of individual susceptibility arising not only from the life stage, duration, and degree of exposure, but also from mechanisms, both genetic (alterations in the DNA sequence) and epigenetic (potentially heritable changes in gene expression that do not involve changes to the DNA sequence). Underlying health status and sex differences in response to exposures are also factors in susceptibility. Gene-environment interaction studies combine knowledge on environmental exposures and susceptibility to provide a more complete picture of a person’s risk of the effects of the environment on health.” Applications addressing the basis of individual differences in susceptibility to environmentally-induced disease are requested. Projects addressing this topic may utilize any appropriate experimental approach, including, for example, use of human specimens or laboratory animals.
- Proposed studies must be research projects with high potential to yield peer-reviewed publications in high-impact journals and high likelihood of being developed into larger, longer-term projects that are supported by NIEHS grant funding. An absolute expectation is that pilot project recipients will publish their findings (citing CURES in the publications) and submit research grant applications to NIEHS based on their projects.
- CURES is committed to performing research relevant to the community. While this RFA welcomes all types of research activity (e.g., mechanistic, population-based, clinical health studies), proposals that include partnerships with community members are always encouraged.
- Projects that involve interdisciplinary collaborations and team science are always encouraged.
- A list of previously funded CURES pilot projects can be found at the following link: <http://cures.wayne.edu/research/pilot-projects.php>

## What are the terms of this RFA?

1. **Number of awards:** CURES plans to fund 2 pilot projects.
2. **Funding time and amount:** Each pilot project will be funded for ~1.6 years at up to \$65,000 in direct costs. No funds will be allocated for administrative and facility costs (indirect costs). Successful applicants will receive up to \$30,000 as soon as they have completed all pre-award requirements (described below). This is expected to occur in September 2020. **This first installment must be expended by March 31, 2022.** On approximately April 1, 2021, upon demonstration of satisfactory progress, the projects will receive the remainder of the award. **Awarded funds must be expended by March 31, 2023. There is no possibility for no-cost extension or “carry-over.”**
3. **Eligibility:** Eligible applicants include all current CURES members as well as non-CURES members at Wayne State University and Henry Ford Health System who declare their willingness to join CURES and abide by its policies. Each pilot project must have a PI with faculty or other appointment that would enable him/her to submit an extramural research grant application as a PI. Additional participants (e.g., MPIs [multiple principal investigators], co-investigators, collaborators, consultants) who will strengthen the project are encouraged. A community member may serve as an MPI (together with another investigator who meets the above-described criteria for PI), co- investigator, or collaborator on a project. **A list of current CURES members can be found on the CURES website:** <https://cures.wayne.edu/>.
  - A table of the CURES Community Advisory Board (CAB) members with brief descriptions of their organizations is provided at the end of this RFA. The table also summarizes environmental health concerns that were expressed by CAB members in recent surveys. Researchers who would be interested in developing an application in partnership or collaboration with any of these community organizations are encouraged to contact CURES Community Engagement Program Manager Carrie Leach (E-mail: [carrieleach@wayne.edu](mailto:carrieleach@wayne.edu)) or CURES Community Engagement Coordinator Rochelle Chapman (Phone: 313-577-5045; E-mail: [rochellechapman@wayne.edu](mailto:rochellechapman@wayne.edu)).
4. **Requirements:**
  - 1) The proposed research project **must be responsive to this RFA.** It must be a research project that addresses this year’s theme, Determinants of Environmental Health Disparities.
  - 2) The proposed pilot research project **must be of outstanding merit.** There must be high likelihoods that: a) the proposed research project will have a substantial impact in addressing the problem and b) the pilot award will lead to extramural funding from NIEHS.
  - 3) While not required, another characteristic of a responsive application will be inclusion of a “new investigator” (as defined by NIH). This will facilitate the career enhancement mission of CURES. An NIH-defined “new investigator” is a researcher who has not yet been PI on a substantial NIH independent research award, such as an R01 grant. **We anticipate that at least one of the pilot projects to be funded will have a new investigator as PI or MPI.** Highest consideration for these awards will be given to “early stage investigators,” that is, new investigators who completed their terminal research degree or medical residency – whichever date is later – within the past 10 years.

- 4) Another highly desirable characteristic of an application will be the planned **use of one or both CURES facility cores**: (1) the **Integrative Health Sciences Facility Core (IHSFC)** and (2) the **Exposure Signatures Facility Core (ESFC)**. As stated above, projects addressing the “Neighborhood-level determinants of environmentally-induced disease” topic must incorporate use of the MIDAS platform, which is managed by the IHSFC. The ESFC has some funds available to facilitate access to its services. These two facility cores are described in detail later in the RFA. Applicants contemplating using the facility cores should contact the facility core leaders early in the process of developing a project.

## What may funds be used for?

Funds **may** be used as follows:

- 1) To purchase supplies and reagents. Computers costing less than \$5,000 and software fees are allowed.
- 2) For technical support salaries
- 3) For incentives for community partners and community research participants

Funds **may not** be used as follows:

- 1) For salary support of faculty
- 2) To purchase equipment
- 3) For travel, except local travel (e.g., mileage for staff collecting data, environmental samples)

## How do I apply?

**FIRST STEP: Submit a letter of Intent (LOI)** – submit as single PDF file as described on p. 2 of the RFA.

- **Download and complete the cover page** (available at <https://cures.wayne.edu/research/pilot-projects>). This is a fillable PDF file that requests basic information about the project.
- Write no more than two pages that contain the following sections (a third page may be provided that only contains a list of references cited):
  - **Significance:** Briefly introduce the proposed project and clearly explain why it is significant, innovative, and likely to lead to NIEHS research grant funding.
  - **Community Relevance:** In one paragraph, clearly explain why this project addresses an environmental health science problem that is of concern to the Detroit community. This paragraph should be written in plain language understandable by a general, lay audience.
  - **Hypothesis and Specific Aims:** State the project’s overarching hypothesis and specific aims.
  - **Research Design:** Briefly explain the approaches to be used to conduct the proposed project.
  - **Timeline:** Provide an estimated timeline for the project that includes any need to obtain regulatory approvals (e.g., animal and/or human subjects) as well as

the estimated time to perform the study. This will facilitate assessment of the feasibility of performing the study within the ~1.6-year time frame).

- **Budget:** Provide an estimated total budget and expected use of the funds.

- **All potential applicants are required to consult with leaders of the IHSFC and Community Engagement Core (CEC)** to discuss the proposed research team, research design, MIDAS platform usage, and community partnership opportunities.

Consultation with the IHSFC can be achieved by e-mail, telephone, or Zoom conference at the applicant's discretion – contact CURES IHSFC Coordinator Jessica Worley ([jessica.worley@wayne.edu](mailto:jessica.worley@wayne.edu)) to arrange a consultation.

For consultation with CEC, Community Engagement Program Manager Dr. Carrie Leach will host Zoom conferences on the following dates/times:

Tuesday, May 25, 4:00-5:00 PM  
Thursday, June 3, 12:00-1:00 PM

Information will be provided about collaborating with community partners, grounding research in local circumstances, incorporating strategies for communicating research results, and other matters related to community engagement and community-engaged research. Please indicate which meeting you will attend with the following Doodle poll:

[https://doodle.com/poll/rp2tb8a6hfuq3dpr?utm\\_source=poll&utm\\_medium=linkInfo](https://doodle.com/poll/rp2tb8a6hfuq3dpr?utm_source=poll&utm_medium=linkInfo)

- **Potential applicants who plan to use the ESFC are required to consult with the leaders of this Core.** A project that requires the use of services that are made available by the ESFC should use the ESFC for those services unless a strong justification can be provided for using an alternative source outside of CURES. **All** potential applicants are encouraged to discuss their projects with the ESFC leaders to explore how a proposed project might benefit from those resources, even if potential use of ESFC is not obvious.
- LOIs will be reviewed by a committee selected from the CURES program leadership and Community Advisory Board (CAB). Please note the following:
  - **Only projects considered to have high potential to lead to NIEHS research grant funding will be selected for submission of a full application.**
  - The CAB member reviewers will be asked specifically to provide their assessment of how well the project addresses an environmental health problem of concern to the local community. **No LOI that fails to receive this endorsement from a CAB member will be selected for submission of a full application.**
  - CURES may suggest collaboration should more than one LOI propose similar goals.

**SECOND STEP: Invited investigators submit a full application.** Details for preparing full applications will be provided to successful LOI applicants when they are notified of their selection. The format will essentially be that of an NIH R03 application with some additional requirements. Briefly:

- a) Cover Page
- b) Abstract and Personnel
- c) Research Sites
- d) Biographical Sketches of Key Personnel

- e) Other Support for PI (or MPIs)
- f) Available Resources
- g) Budget and Justification
- h) Specific Aims (1 page)
- i) Research Strategy (6 pages)
  - a. Significance
  - b. Innovation
  - c. Approach (Preliminary Data should be incorporated into this section)
- j) References Cited
- k) Human, Vertebrate Animal, and Hazardous Materials Assurances of Compliance - Investigators using animals, human subjects, or biohazardous materials in their research must obtain protocol approval from the Institutional Review Board (IRB), Institutional Animal Care and Use Committee (IACUC), and/or Institutional Biosafety Committee (IBC) as applicable, **before** funds can be spent on activities that require such approval.
- l) Plans for submission of research grant applications to **NIEHS**
  - Applicants are advised to check the Funding Opportunity Announcements (FOAs) on the NIEHS website ([www.niehs.nih.gov/funding/grants/announcements/index.cfm](http://www.niehs.nih.gov/funding/grants/announcements/index.cfm)) for information about research areas currently being emphasized by NIEHS. Applications that are related to current FOAs will be rated as stronger.
- m) Letters of Commitment from all PIs and co-investigators (and any additional community partners who have roles other than MPI or co-investigator).
- n) Signatures from the departmental chairs/directors of the PI's academic units. If you are the departmental chair, your Dean or Vice President should sign.

**Pre-award responsibilities.** Successful applicants will be required to attend a pre-award meeting with the Pilot Project Program Leader and the OVPR Budget Manager, at which awardees will be advised about account establishment and monitoring, the need to expend awarded funds within the specified time periods, and the requirement to acknowledge support received from CURES in any publications or presentations generated under the pilot project award. Necessary IRB, IACUC, and/or IBC approvals must be obtained as soon as practical. It is highly recommended that applications for regulatory approvals be submitted immediately after the pilot project application is made.

### **Award-time responsibilities**

- ❖ PIs must cite the CURES Center Grant (P30 ES020957) on all publications that result from the pilot project award.
- ❖ PIs agree to meet periodically with CURES program leaders to provide updates on their projects, as requested.
- ❖ PIs agree that they and their project team members will complete periodic surveys from the Integrative Health Sciences Facility Core that are designed to measure several dimensions of the team's attributes and processes in order to assess effective functioning and identify potential obstacles to success.
- ❖ PIs must provide written updates on their research progress for annual progress reports and meetings with CURES Advisory Boards.
- ❖ PIs must present their research findings at one of the CURES Center-wide research meetings.

- ❖ Pilot project recipients will also be required to present their results at a CURES Community Engagement Core-sponsored event – either a Community Advisory Board meeting or an Environmental Health Forum.

**Post-award responsibilities.** Upon completion of a project, PIs will be required to submit a report that contains the following information:

- ❖ A list of any publications (i.e., research articles, review articles, abstracts; submitted, in press, or published) or patents that resulted entirely or in part from the pilot project award.
- ❖ A list of any grant applications submitted (funded, pending, or non-funded) that resulted from the pilot project award in which the applicant was listed either as PI (or MPI), co-investigator, or other key personnel.
- ❖ A description of collaborations that developed as a result of the pilot project award.
- ❖ Because of CURES' need to track success of the Pilot Project Program as determined by conversion of pilot projects into extramurally funded projects, recipients will be contacted for updated information about publications and grant applications for several years beyond completion of their award.

**Pilot project recipients will be expected to submit applications for NIEHS funding to continue their projects as soon as is practical. The Career Enhancement and IHSFC program leaders will provide support for these applications.**

**Please adhere to the following formatting requirements when preparing LOIs:**

- Font: Use an Arial, Helvetica, Palatino Linotype, or Georgia typeface, a black font color, and a font size of 11 points or larger. (A Symbol font may be used to insert Greek letters or special characters; the font size requirement still applies.)
- Type density, including characters and spaces, must be no more than 15 characters per inch. Type may be no more than six lines per inch.
- Use standard paper size (8 ½" x 11).
- Use at least one-half inch margins (top, bottom, left, and right) for all pages.



# **CURES Facility Cores and Community Engagement Core**

## **1. Integrative Health Sciences Facility Core (IHSFC)**

<http://cures.wayne.edu/ihsfc.php>

### **Recommended Contact:**

Jessica Worley, MPH  
CURES IHSFC Coordinator  
Integrative Biosciences Center  
Phone: 313-577-1531; E-mail: [jessicaworley@wayne.edu](mailto:jessicaworley@wayne.edu)

### **Leaders:**

Graham Parker, PhD  
Assistant Professor, Pediatrics  
IBio Building, 6135 Woodward Avenue  
Phone: 313-577-2707; E-mail: [gparker@med.wayne.edu](mailto:gparker@med.wayne.edu)

Samiran Ghosh, PhD  
Associate Professor, Family Medicine and Public Health Sciences and Center for Molecular  
Medicine and Genetics  
IBio Building, 6135 Woodward Avenue  
Phone: 313-577-0732; E-mail: [sghos@med.wayne.edu](mailto:sghos@med.wayne.edu)

Richard Pilsner, PhD, MPH  
Endowed Professor, Obstetrics and Gynecology and Institute of Environmental Health Sciences  
CS Mott Center, 275 E Hancock  
Phone: 313-577-1478; E-mail: [rpilsner@wayne.edu](mailto:rpilsner@wayne.edu)

The purpose of the IHSFC is to facilitate the design, development and ethical achievement and dissemination of the translational research goals of the CURES program. The IHSFC aims to support the multidisciplinary collaborative research interest groups in their pursuit of understanding the complex role of chemical and non-chemical stressors as modifiers of human health in the urban environment. The IHSFC is developing tools to allow our researchers and community in partnership to better characterize the nature and distribution of those stressors, through the ability to create spatial frameworks of the differing impacts on the populations exposed to chemical and social stressors. The centerpiece of the core is the CURES Multifactorial Integrative Design Analytic System (MIDAS), an entity providing: Geographic Information System (GIS) & data analytics; Access to public data sets and shared CURES data repositories; and Report Back capabilities including [dashboarding](#) and publicly facing website and [StoryMaps](#) support. These capabilities are customized to our uses to support our researchers' ability to identify, characterize, and improve the environmental insults that adversely affect the health of Detroit. MIDAS is the platform where our data, processes, and people are integrated to make a positive impact on the environmental health of Detroit.

The IHSFC aims to:

1. *Coordinate Access to Technologies and Resources:* The IHSFC serves to facilitate CURES investigator access to the biostatistical support, researchers, techniques, equipment, and data sets needed to develop productive research. We advise on the conceptualization, design, and curated resources focused on urban health through the expertise of our leadership and a host of partnerships within and beyond CURES. We provide access and support for use of the MIDAS platform.

2. *Facilitate Team Response*: The IHSFC facilitates CURES Team Science by helping build partnerships, aid in communication of team goals, and working to improve environmental health intelligence through Team Science principles. We help identify and coordinate CURES responses to NIEHS funding opportunities as well as support the CEC in identifying and characterizing environmental issues to ensure we are advancing our goals in a manner that understands and acknowledges the goals of our community partners.
3. *Achieve Functional Translational Integrations*: The IHSFC provides avenues for CURES researchers to translate their existing research activities to further explore and achieve application, implementation and impact of CURES environmental health science. We will use MIDAS to facilitate the building of narratives, incorporation of translational opportunities and achievement of translational integrations. Data-driven developed exploration, interpretation, novel hypothesis generation, and communication of results will evolve the program from basic science to population studies and community accountability and service.

## **2. Exposure Signatures Facility Core (ESFC)**

<http://cures.wayne.edu/esfc.php>

### **Leaders:**

Douglas Ruden, PhD  
 Professor, Obstetrics and Gynecology and Institute of Environmental Health Sciences  
 Director of Epigenomics  
 CS Mott Center, 275 E Hancock  
 Phone: 313-577-6688; E-mail: douglas.ruden@gmail.com, douglasr@wayne.edu

Paul Stemmer, PhD  
 Associate Professor, Institute of Environmental Health Sciences  
 Director of Proteomics  
 Proteomics Laboratory, Scott Hall, Rm 2105  
 Phone: 313-577-6536; E-mail: pmstemmer@wayne.edu

“**Exposure Signatures**” include direct measurement of toxicants as well as the quantifiable responses of a biological system to an environmental stressor. The ESFC partners with established Core Facilities to provide essential analytical services for Center Investigators. These partners are: (1) The Genome Science Core, (2) The Proteomics Core, (3) The Lumigen Instrument Center, (4) The Microscopy, Imaging & Cytometry Resources (*MICR*) Flow Cytometry Lab, (5) Cytokine Analysis, and (6) The Michigan State University Molecular Metabolism and Disease Mass Spectrometry Core (MMDMSC). Support is available to develop novel analytical procedures and to utilize Core Services by Center investigators.

1. *Genomic Services* – A full range of genome, transcriptome and epigenome analysis services are available to CURES Investigators through the Genome Science Core at WSU (<https://genomesciencescore.wayne.edu/>) 10X Genomics and Fluidigm instruments for single cell RNA sequencing (scRNA-seq) and single-cell Assay for Transposase Accessible Chromatin with high-throughput sequencing (scATAC-seq) have been purchased and are being used for CURES projects. The purchases were in response to a CURES facility core usage survey that polled Center members’ current and anticipated research needs. These instruments take exposure science technology to the single cell level. They use alternatives to traditional flow cytometry, utilizing microfluidics to separate single cells from test specimens in order to prepare libraries for RNA-seq or other types of genomic analyses. For example, using either System, mixed populations of neurons and astrocytes

can be analyzed at the single cell level with high resolution. This enables the detection of dramatic variations in gene expression that occur because of toxicant exposure. In 2019, we purchased and installed a NovaSeq6000 DNA sequencing instrument that can sequence over 5 trillion bases (~10 human genomes at 100X coverage) per run. The purchase state-of-the-art instrument, which is needed based on anticipated demands for human genome sequencing and single-cell sequencing, makes the Genomic Core capabilities one of best in the country.

2. *Proteomics including Protein Adducts* – Proteomic analyses are available through the Proteomics Core at WSU (<https://research.wayne.edu/proteomics>). A full range of mass spectrometry-based standard proteomic services are supported. In addition, the ESFC uses advanced proteomics technologies to identify and quantify protein adducts that occur as a consequence of environmental toxicant exposure. CURES researchers have detected adducts on serum albumin and hemoglobin; the two most abundant proteins in blood that act as buffers for reactive chemical intermediates. Analysis of adducts on albumin and hemoglobin can provide information on environmental exposures occurring as long as 60 to 90 days prior to sample collection.
3. *Metals, Trace Element and Small Molecule Analysis* – The ESFC partners with the WSU Lumigen Instrument Center (<https://research.wayne.edu/cores-facilities/lumigen>) for elemental and small molecule analysis. New instrumentation includes state-of-the-art GC-MS/MS and LC-MS/MS systems for small molecule analysis that were added in 2016. The new system is being used to develop analytical methods for phenolic chemicals such as bisphenol A, octyl- and nonylphenols that are widespread environmental toxicants. These analytical platforms are being used by CURES members to develop reproducible analytical methods for environmental exposure analysis. Volatile organic chemicals (VOCs) can also be analyzed and are among a wide range of environmental small molecules, including solvents, fuel components and chemical intermediates of interest to Center investigators. Dr. Westrick of the ESFC was recently awarded an Erb Foundation grant to design and evaluate a real-time VOC source-water early-warning system for drinking water treatment plants.
4. *Immunophenotyping Services and Instrumentation* – Technologies and services available to CURES investigators through partnership with the MICR Core (<https://micr.med.wayne.edu/>) include imaging cytometry (Amnis ImageStreamX Mark II), analytical flow cytometry (BD LSRII SORP, BD FACS Canto II), and cell sorting (Sony SY3200, two Sony SH800s). The newest technology that was added in 2016 is an imaging flow system that provides subcellular localization of fluorescently tagged cellular components using a flow cytometry system.
5. *Cytokine Analysis* – The complex interactions of toxicants and other stressors have become an important consideration in our studies. CURES' research capacity for radio-immuno assays, plate-conjugated, enzyme-linked immunosorbent assays (ELISA), and a bead-based ELISA platform from Perkin Elmer called AlphaLISA has been expanded. AlphaLISA provides sensitivity that is less than radio-immuno assays but greater than ELISA. Analytes will be added to the set of validated assays as CURES investigators identify key mediators of stress or potential exposure signatures among the signaling molecules.
6. *Untargeted Lipidomic Analysis* – The Molecular Metabolism and Disease Mass Spectrometry Core at Michigan State University (MMDMSC) led by Dr. Todd Lydic has been recruited by the CURES ESFC to provide lipidomic analysis. CURES investigators

now have access to untargeted shotgun MS/MS approaches to quantify several hundred to a few thousand lipids as potential novel exposure signatures. This is an extremely innovative and powerful approach to exposome analysis that will be increasingly important as environmental health research incorporates nonchemical stressors into models of toxicity and health effects of chemical exposures. Also, by utilizing Orbitrap MS systems and MSn capability in the same analytical run for in-depth structural elucidation, the ESFC can significantly reduce the required sample size and analytical time for deep lipidomic profiling. The use of high-resolution/accurate-mass MS for lipid and metabolite feature detection enables virtually endless mining of acquired MS datasets by accurate mass-based searches of multiple databases as new compounds of interest are identified.

### **3. Community Engagement Core (CEC)**

<http://cures.wayne.edu/community-engagement.php>

#### **Recommended Contacts:**

Carrie Leach, PhD  
Assistant Professor, Institute of Gerontology  
CURES Community Engagement Program Manager  
E-mail: [carrieleach@wayne.edu](mailto:carrieleach@wayne.edu)

Rochelle Chapman  
CURES Community Engagement Coordinator  
Phone: 313-577-5045; E-mail: [rochellechapman@wayne.edu](mailto:rochellechapman@wayne.edu)

#### **Leaders:**

Nick Schroeck, JD  
Director of Clinical Programs & Associate Professor of Law  
University of Detroit Mercy School of Law  
Phone: 313-596-9817; E-mail: [schroenj@udmercy.edu](mailto:schroenj@udmercy.edu)

Christopher Trentacosta, PhD  
Associate Professor, Department of Psychology  
5057 Woodward Avenue, Room 8304  
Phone: 313-577-9413; E-mail: [chris.trentacosta@wayne.edu](mailto:chris.trentacosta@wayne.edu)

## CURES Community Advisory Board Organizations, Research Priorities, and Environmental Concerns

The environmental health concerns that have been expressed by our Community Advisory Board members are provided below. Researchers who would be interested in developing an application addressing any of these concerns in coordination with a Community Advisory Board member are encouraged to contact CURES Community Engagement Program Manager Carrie Leach ([carrieleach@wayne.edu](mailto:carrieleach@wayne.edu)) or CURES Community Engagement Coordinator Rochelle Chapman ([rochellechapman@wayne.edu](mailto:rochellechapman@wayne.edu)).

Organization	Description	Health & Environmental Issues and Concerns
Asthma & Allergy Foundation of America, MI Chapter	The AAFA is a nonprofit and the leading patient organization for people with asthma and allergies. The Michigan Chapter serves all Michigan residents of all ages affected by asthma and allergies. They provide resources for healthcare professionals, caregivers and childcare providers, and communities to make them better for those with allergies and asthma.	<ul style="list-style-type: none"> <li>• Pervasive feeling of helplessness among people who live in areas where the environment is toxic and causing or exacerbating chronic diseases like asthma</li> <li>• Lack of attention to health first when policy is drafted and passed</li> <li>• How our government sets regulations and how well they are enforced</li> </ul>
City of Detroit Office of Sustainability	The Office of Sustainability’s mission is to create healthy, green, vibrant, accessible neighborhoods where all Detroiters can contribute and benefit through (1) collaboration between City departments and agencies; (2) engagement and partnership among the City, citizens, and relevant organizations; (3) and process and policy improvement	<ul style="list-style-type: none"> <li>• I would like someone to undertake a feasibility study of shutting down the incinerator. What is the waste diversion stream; what are the financial costs; what are the alternative power sources when waste to energy ends; what are the policy wins that need to set the stage?</li> <li>• I would also like to see a study/project about weatherization/home “greening” and the impacts on health.</li> </ul>
CLEARCorps Detroit	CLEARCorps/Detroit works to prevent lead poisoning and create healthy homes for children and families through programs, education and outreach, and policy work. Their four main programs are centered around asthma triggers, lead hazards in homes, outdated refrigerator replacement, and furnace tuning/repair/replacement.	<ul style="list-style-type: none"> <li>• Lead poisoning prevention and asthma mitigation. Both of these areas have devastating impact on the health and well-being of Detroit and Detroit-area children.</li> <li>• Lead poisoning</li> <li>• Indoor/outdoor asthma triggers</li> <li>• Environmentally sustainable building codes</li> </ul>
Detroit Food Policy Council	The DFPC is an education, advocacy and policy organization led by Detroiters committed to creating a sustainable, local food system that promotes food security, food justice and food sovereignty in the city of Detroit.	<ul style="list-style-type: none"> <li>• Health &amp; Food System Equity</li> <li>• Food Waste</li> <li>• Water Issues</li> </ul>

Detroit Health Department	<p>The Detroit Health Department's mission is to improve the health and quality of life of Detroiters through innovative public health policy, programs and partnerships. They provide a variety of programs and services, to include WIC, immunizations, food safety and restaurant inspection, public health initiatives, and Detroit Animal Care and Control.</p>	<ul style="list-style-type: none"> <li>• Healthy food access</li> <li>• Food policy challenges/opportunities; nutrition</li> <li>• Asthma</li> <li>• SOx/NOx/PM emissions</li> <li>• Lead and water</li> <li>• Mobility (walkability, bikeability, reliable public transportation)</li> <li>• Green workforce development</li> <li>• Environmental stressors and violence prevention/mental health</li> <li>• Improving recreational opportunities to improve chronic disease</li> </ul>
Detroiters Working for Environmental Justice	<p>DWEJ is a nonprofit organization whose mission is to create clean, healthy and thriving communities in Michigan by tackling environmental problems close to home. Their programs are centered around policy, education and workforce development.</p>	<ul style="list-style-type: none"> <li>• Research analyzing whether the cumulative exposure to 2 or more criteria air pollutants increase health risks in the general population, and in vulnerable subpopulations.</li> <li>• Analyze the relationship between asthma attacks and criteria air pollutant concentrations measures in Detroit.</li> </ul>
Ecology Center	<p>The Ecology Center was organized to develop innovative solutions for healthy people and a healthy planet. They educate consumers and families, push corporations to use clean energy make safe products and provide healthy food, and work with policymakers to establish laws that protect communities and the environment.</p>	<ul style="list-style-type: none"> <li>• Measuring air quality and pollutants in area around the incinerator.</li> <li>• Health effects of the incinerator</li> <li>• Environmental contamination in water due to US Ecology [hazardous waste processing facility]</li> <li>• Soil remediation for kitchen/vegetable gardens</li> <li>• Air pollution in Southwest Detroit and downriver</li> <li>• Rising rates of elevated blood lead levels in various zip codes in Detroit/Wayne County. Research needed on what is contributing: Demolition? Further deterioration of housing stock? and/or what is the impact of additional testing.</li> </ul>
Great Lakes Environmental Law Center	<p>The Great Lakes Environmental Law Center is a Detroit-based nonprofit that offers community education, policy support, and various legal services to address environmental, resource, and energy issues affecting communities in and around Detroit, all over Michigan, and throughout the Great Lakes region.</p>	<ul style="list-style-type: none"> <li>• Currently, health-based standards for criteria air pollutants are set on a pollutant-by-pollutant basis even though they often cause similar health effects. I'd be interested in research analyzing whether the cumulative exposure to 2 or more criteria air pollutants increase health risks in the general population, and in vulnerable subpopulations.</li> <li>• Analyze the relationship between asthma attacks and criteria air pollutant concentrations measures in Detroit.</li> </ul>

Green Door Initiative	GDI works to ensure that every person is environmental literate, and capable of practicing and promoting sustainability as a life style. Their programs include workforce development, environmental education and awareness, and land use development.	<ul style="list-style-type: none"> <li>• Citizen Science – building community capacity</li> <li>• Documenting variety of environmental exposure points that are connected to community health outcomes in Detroit</li> </ul>
Greening of Detroit	The Greening of Detroit's focus is to enhance the quality of life for Detroiters by repurposing the land to create beautiful and productive green spaces. They involve Detroiters in the process through community engagement, education and jobs.	Climate change: because of a legacy of past industrial uses, current pollution releases and lead contamination, water, air, and soil qualities in Detroit are poor. Climate change models suggest the problems will likely grow. I would love to see more research around native tree species and other green infrastructure that are most resilient to climate change.
Matrix Human Services	Matrix advocates for and serves the most vulnerable in the metropolitan Detroit community and empowers individuals and families to enhance the quality of their lives and achieve self-sufficiency. Their larger programs include their network of head start facilities and comprehensive community center on the east side of Detroit.	<ul style="list-style-type: none"> <li>• Asthma – biggest growing issue among our Early and Head Start children; old/young people, long-term effects</li> <li>• Lead effects on old/young people, long-term effects</li> <li>• Recreation – lack of green space for children to exercise and play in city areas</li> </ul>
Michigan Children's Healthcare Access Program	MCHAP is a nonprofit organization that works with physicians, Medicaid Health Plans, parents and other community agencies committed to improving the healthcare outcome of Wayne County and Detroit's children. They provide health education to families, help doctors improve the quality of their care, and act as a voice for issues affecting children's health.	<ul style="list-style-type: none"> <li>• The biggest concern that we come across amongst the families referred to us at MCHAP is poor housing, which in turn cause lead poisoning, asthma (via mold, roaches, dust), emotional distress secondary to rats and mice, and obesity secondary to unsafe neighborhoods.</li> </ul>

Michigan Environmental Council	<p>The MI Environmental Council is a coalition of more than 70 organizations created to lead Michigan’s environmental movement in achieving positive change. through the political process. MEC combines deep environmental policy expertise with close connections to key state and federal decision makers. They promote public policies to ensure Michigan families will enjoy clear waters, clean beaches, beautiful landscapes and healthy communities for years to come.</p>	<ul style="list-style-type: none"> <li>• Lead’s impact on older adults</li> <li>• Drinking water. Is our water safe? What are we exposed to in our drinking water including by-products of disinfectants and what are the risks? Do filters help or do they expose us to increased chance of bacteria?</li> <li>• Rental Housing and its impact on health</li> <li>• Lead in water risk as compared to paint/soil exposure</li> <li>• Safe school siting and impact on health and learning outcomes</li> <li>• PFAs testing and risks</li> <li>• Impacts of lead exposure early in life to adult health later on</li> <li>• Should we leave lead pies in place if not leeching?</li> <li>• How to evaluate environmental justice and cumulative impacts in environmental permitting – e.g., how could DEQ have added in other area emission sources when OK’ing steel plant’s permit to increase emissions instead of approval in isolation?</li> <li>• Does healthy food access improve outcomes in lead impacted kids? By what mechanism?</li> </ul>
Neighborhood Service Organization	<p>Neighborhood Service Organization delivers holistic care and wrap around/safety net services to address social determinants impacting health, education, and economic stability. NSO’s empowering programs and services provide assistance for: older adults with mental illness; children, youth, and adults with developmental disabilities; year-round youth workforce development for youth; homeless recovery services; housing development; community outreach for psychiatric emergencies; call hotline for emergency shelter and housing resources in Detroit; and volunteer opportunities for individuals, groups, and organizations.</p>	<p>Lead levels in water and free resources for residents/businesses to determine current lead levels and regular communications from the city/state regarding regular lead checks. Climate change due to pollution in the inner-city and resources for residents regarding prevention and current statistics. Blight an issue with abandoned buildings; are there ordinances that can be proposed for business and land-owners?</p>
Office of State Senator Stephanie Chang	<p>Stephanie Chang (D) serves Michigan Senate District 1, representing parts of Detroit, Ecorse, Gibraltar, Grosse Ile Township, River Rouge, Riverview, Trenton, Woodhaven, Wyandotte, and Brownstown Township.</p>	<p>Local stressors and conditions</p>
Office of US Senator Debbie Stabenow	<p>Debbie Stabenow (D) is US Senator representing the State of Michigan.</p>	<p>Statewide</p>



Physicians for Social Responsibility, WSU Chapter	PSR has been working for 50+ years to create a healthy, just and peaceful world for present and future generations. They advocate on issues and addressing dangers that threaten communities. The campus chapter is comprised of current WSU MD students.	Cumulative, long-term impacts of air pollution on health
Southwest Detroit Environmental Vision	SDEV is a nonprofit organization dedicated to improving the environment and strengthening the economy of Southwest Detroit. They work with residents, community organizations, government agencies, schools, businesses and industry to combat environmental issues, including indoor/outdoor air quality, blight, illegal dumping, and incompatible land use.	<ul style="list-style-type: none"> <li>• Air quality/cumulative impacts in SW Detroit</li> <li>• Environmental justice</li> <li>• How can we best, quickly get physicians and other health care professionals to share the latest research on environmental stressors to public health with patients/include same in-patient treatment plans? Should be visiting them like pharma reps do?</li> </ul>
Urban Development Corp	The mission of UDC is to improve the quality of life and bring about positive life-style changing experiences of low-to-moderate income families who live in urban communities. In carrying out our mission, UDC serves as a catalyst in the revitalization of communities through the development of activities and programs which promote safe, drug-free, healthy, clean, beautiful, and enjoyable environments.	<ul style="list-style-type: none"> <li>• Use of vacant lots by Detroit residents for urban farming which may unknowingly be contaminated with heavy metals and VOC's</li> <li>• Potential health effects associated with the use of recreational marijuana.</li> <li>• Environmental justice</li> <li>• Health effects associated with urban blight</li> <li>• Industrial air pollution and its link to respiratory diseases</li> </ul>
Village of Oakman Manor	The Village of Oakman Manor is a senior living community in north- central Detroit. They are a part of the Presbyterian Villages of Michigan network.	<ul style="list-style-type: none"> <li>• Environmental influence on violence</li> <li>• Neighborhood and built environment</li> <li>• Social and community context; economic stability</li> </ul>