



The Center for Urban Responses to Environmental Stressors Announces 2020 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 focused on understanding or mitigating the deleterious effects of environmental stressors on human health. Based on input from the CAB, applications for pilot projects are especially encouraged in the following areas: (1) **air pollution**, (2) **water quality**, and (3) the **combined effects of chemical and non-chemical stressors** on health.

Time Line

May 20, 22, 2020	Informational Meetings by Zoom: Potential applicants are invited to attend one of these meetings to learn more about the CURES Pilot Project Program. Wednesday, May 20, 10:00 – 11:00 AM Friday, May 22, 12:00 – 1:00 PM
June 17, 2020	Letters of intent (LOI) due by midnight
~July 10, 2020	Notification of successful LOIs and invitation to submit proposal
August 18, 2020	Full applications due by midnight
~September 16, 2020	Announcement of awards; funding will begin as soon as possible afterward

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?

This RFA invites applications for research projects focused on understanding or mitigating the adverse effects of environmental stressors on human health. Based on input from the CURES Community Advisory Board, this RFA particularly encourages applications for pilot projects that address: (1) air pollution, (2) water quality, and (3) the combined effects of chemical and non-chemical stressors on health.

- ❖ **Air pollution and health:** Detroiters are exposed frequently to unhealthy levels of air pollution, more so in particular neighborhoods. Citizens are justly concerned about the cumulative long-term adverse impacts of both indoor and out-door air pollution on health, including asthma, cancer, and poor child development. Toxicants of concern include volatile organic compounds and air-borne particulates that can include toxic metals. Some high-risk neighborhoods of interest include Southwest Detroit and downriver communities.
- ❖ **Water quality and health:** The Flint water crisis demonstrated dramatically how a shock to an aging urban water system can lead to a public health disaster. Detroiters are concerned about toxic chemicals in their water (e.g., lead and other toxic metals, per- and polyfluoroalkyl substances [PFAS], disinfectant by-products, discharges from hazardous waste sites and processing facilities) and how these toxicants may be affecting health.
- ❖ **Combined effects of chemical and non-chemical stressors on health:** People are exposed to complex combinations of chemical pollutants as well as a host of non-chemical stressors associated with the “built environment” (e.g., factors compromising mobility, access to public transportation, recreational opportunities, housing quality, school safety), the economic and social environment (e.g., low socioeconomic status, interpersonal relationships, violence), and food availability (e.g., access to safe, nutritious food). Projects that consider combinations of chemical and non-chemical stressors are encouraged. **Projects that address the Covid-19 public health crisis may fit into this theme – e.g., projects that investigate whether co-exposure to an environmental stressor and SARS-CoV-2 increases disease severity. Note that the types of research that can be conducted on SARS-CoV-2 at Wayne State University are limited – please see <https://research.wayne.edu/oehs/bio-safety/covid-19> for guidance.**
- While this RFA encourages applications in the above areas, acceptable projects are not limited to those topics. Applicants must provide a compelling justification for the selected topic, both in terms of the importance of the environmental health problem to Detroit and the likelihood that the project will have a major impact in addressing the problem. Projects aligned with the NIEHS strategic plan (<https://www.niehs.nih.gov/about/strategicplan/index.cfm>) or for which there is a relevant NIEHS Grant Opportunity (<https://www.niehs.nih.gov/funding/grants/announcements/index.cfm>) are welcome. For example, the impact of environmental exposures during life windows of heightened susceptibility on disease development later in life is a priority area at NIEHS.
- 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. Also, environmental health disparities and environmental justice are themes of importance to the CURES mission of community engagement, and proposals that address these themes are especially welcome.
- Projects that utilize geographic information systems (GIS) approaches to study potential linkages between environmental exposures and adverse health effects are encouraged, as are projects that investigate remediation or intervention strategies (e.g., green infrastructure, policy change) to address environmental problems facing the community. Potential applicants are encouraged to contact the CURES Integrative Health Sciences Facility Core (suggested contact Jessica Worley, Phone: 313-577-1531, E-mail: jessica.worley@wayne.edu) to discuss how their project might usefully include GIS approaches.
- 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 up to 5 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, 2021.** 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, 2022. 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. This is followed by a table summarizing 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 (Phone: 313-664-2612; E-mail: carrieleach@wayne.edu) or CURES Community Engagement

Coordinator Rochelle Chapman (Phone: 313-577-5045; E-mail: rochellechapman@wayne.edu).

4. Requirements:

- 1) The proposed research project **must be responsive to this RFA**. It must be a research project that addresses an environmental health problem of concern to the community.
- 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 development 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 two 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) Also, although not required, another very 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** and (2) the **Exposure Signatures Facility Core**. These two facility cores are described in detail later in this RFA. The Exposure Signatures Facility Core has some funds available to facilitate access to its services. Applicants contemplating using the facility cores should contact the 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:
 - **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 community. This paragraph should be written in plain language understandable by a general, lay audience.
 - **Hypothesis and Specific Aims:** State the project's 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.
- **Potential applicants are required to consult with leaders of the Integrative Health Sciences Facility Core (IHSFC) and Community Engagement Core (CEC)** to discuss the proposed research team, research design, 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 Integrative Health Sciences Research Assistant Jessica Worley (jessica.worley@wayne.edu) to arrange for consultation.

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

Thursday, May 28, 3:00 PM

Monday, June 1, 11:00 AM

Friday, June 12, 1:00 PM

Information will be provided about collaborating with community partners, grounding research in local circumstances, incorporating report back strategies, 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/8kiu59wsdya7vyh6>

- **Potential applicants who plan to use the Exposure Signatures Facility Core (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 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) for information about research areas currently being emphasized by NIEHS. Applications that are related to current FOAs may 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 right after the pilot project application is made.

➤ **Special note about projects involving human subjects.** NIEHS P30 policy requires any project that involves the use of human subjects to receive not only local IRB approval, but also approval from NIEHS. Therefore, PIs planning to use human subjects must begin the process of obtaining IRB approval as soon as possible. Failure to do so could result in a delay in the start of funding.

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
CURES Integrative Health Sciences Research Assistant
Integrative Biosciences Center
Phone: 313-577-1531; E-mail: jessica.worley@wayne.edu

Leaders:

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

Malcolm Cutchin, PhD
Professor, Department of Health Care Sciences
EACPHS, Room 2202
Phone: 313-577-9956; E-mail: mpc@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

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 accomplishes this objective through 4 integrated core services:

1. *Methodological Design and Biostatistics* – Consultation support for environmental health science investigations focused, but not limited to, human subjects, human samples, human populations, and general study design and data analysis plans. Advice on design and analyses is best sought early in developing a project. This is done via five mechanisms: a) Statistical consultation on pilot grant applications to and funded by CURES, b) Experimental design consultation on pilot grant applications to and funded by CURES, including but not limited to issues pertaining to IRB, IACUC, biohazards, and translational GLP, c) Biostatistics methods development in research pertaining to environmental health, d) Biostatistical education for CURES members and for the university at large, and e) a geographic information systems (GIS) approach to manage the integration, visualization, and analysis of environmentally relevant data . The IHSFC collaborates with the CURES Career Enhancement and Pilot Project Programs to facilitate research progress (from pilot projects to K awards and R21 applications, and to convert R03 and R21 awards to R/U/P01 applications).
2. *Health Models Development* – Integrating exposure assessment with human health impact. Helping research teams to select the appropriate models to capture windows of heightened susceptibility to environmental contaminant exposure, the health impact of chronic low-

level exposure to toxicants, exposure to complex mixtures of toxicants. (e.g., animal models, stem cell models, primary animal or human cell culture models, access to specialized tissue banks such as the Michigan Neonatal Biobank).

3. *Ethics and Research Integrity in Environmental Health Science* – The protection and ethical treatment of patient subjects and samples is of paramount importance. These concerns expand and are integrated into our experimental design to acknowledge and address the appropriateness of certain levels of analysis that might have immediate or future implications for the safety and rights of an individual. The requirement for discussion of the propriety of proposed clinical translation studies serves not only to ensure the integrity of CURES' research endeavors but is an opportunity for career development of CURES program researchers. This topic will also cover emerging research ethics concerns with the expansion of “big data,” EMR, human biospecimens, stem cell models, and geospatial analysis in environmental health research.
4. *Team Science Consultation* – Improving team development, integration, and implementation. Work with teams to identify the right players for their science. Help teams find ways to cohere and realize addressable issues before they become problems; and find ways to maximize collaboration and transdisciplinary insights. Suggest team processes to avoid pitfalls and deal with difficulties, such as conflict or leadership challenges. Primary goals are to enhance team effectiveness through evaluation and consultation, which may also include training or coaching.
5. *Bridging the Communication Gap* – Integrating the Effectiveness of Research and Community Partnerships. Work closely with the Community Engagement Core to identify community partners for appropriate CURES research teams. Cross-train CURES researchers and community members to communicate topic-relevant data, research goals, and likely achievements in a responsible manner. Enhance and initiate national and global initiatives to educate and advance research consistent with the mission of the NIEHS.

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 (COEC)

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

Recommended Contacts:

Carrie Leach, PhD

CURES Community Engagement Program Manager

Phone: 313-664-2612; E-mail: carrieleach@wayne.edu

Rochelle Chapman

CURES Community Engagement Coordinator

Phone: 313-577-5045; E-mail: 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

Christopher Trentacosta, PhD

Associate Professor, Department of Psychology

5057 Woodward Avenue, Room 8304

Phone: 313-577-9413; E-mail: chris.trentacosta@wayne.edu

CURES Community Advisory Board (CAB) Members and Their Organizations

Organization and CAB Member	Description
<p>American Indian Health & Family Services Nikole Fox, MA, CPC, Director of Community Wellness</p>	<p>AIHFS is a nonprofit health center serving the Native American community of Southeastern Michigan. Their mission is to empower and enhance the physical, spiritual, emotional, and mental wellbeing of American Indian families and other underserved populations in Southeastern Michigan through culturally grounded health and family services.</p>
<p>Asthma & Allergy Foundation of America, MI Chapter Kathleen Slonager, RN, AE-C, CCH; Executive Director</p>	<p>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.</p>
<p>City of Detroit Office of Sustainability Whitney Smith, Project Manager</p>	<p>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</p>
<p>CLEARCorps/Detroit Diane McCloskey, Executive Director</p> <p>Chris Ross, Manager of Communications and Program Development</p>	<p>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.</p>
<p>Detroit Food Policy Council Winona Bynum, RDN, PMP; Executive Director</p>	<p>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.</p>
<p>Detroit Health Department Joneigh S. Khaldun, MD, MPH, FACEP; Executive Director and Health Officer</p> <p>Yolanda R. Hill-Ashford, LLMSW; Director, Health Promotion</p>	<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>
<p>Detroiters Working for Environmental Justice Guy O. Williams, President and CEO; CAB Co-Chair</p>	<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>

<p>Ecology Center Melissa Cooper Sargent: Green Living Resource Director; CAB Co- Chair</p> <p>Rebecca Meuninck, Deputy Director</p> <p>Jeff Gearhart, Research Director</p>	<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>
<p>Great Lakes Environmental Law Center Nicholas Leonard, JD; Executive Director</p>	<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>
<p>Green Door Initiative Donele Wilkins, President and CEO</p>	<p>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.</p>
<p>Henry Ford Health System Harvey "Chip" Amoe III, JD, MPA; Director of Sustainability</p>	<p>HFHS is a network of hospitals, medical centers and one of the nation's largest group practices. The Henry Ford Medical Group includes 1200+ physicians practicing in 40+ specialties.</p>
<p>Matrix Human Services Salina Ali, Quality Associate</p>	<p>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.</p>
<p>Michigan Environmental Council Tina Reynolds, JD; Health Policy Director</p> <p>Sandra Turner-Handy, Community Outreach Director</p>	<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>
<p>Neighborhood Service Organization Shawndia North, Director, Training and Compliance</p>	<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>Office of State Senator Stephanie Chang Janlynn Miller, Director of Constituent Relations</p>	<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>Office of US Senator Debbie Stabenow Terry Campbell</p>	<p>Debbie Stabenow (D) is US Senator representing the State of Michigan.</p>
<p>Physicians for Social Responsibility, WSU Chapter Ashton Lewandowski</p>	<p>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.</p>
<p>Samaritas Lena Wilson, VP Child and Family Services</p>	<p>Samaritas is a social ministry of the Evangelical Lutheran Church in America and has more than 70 programs in 40 cities in the Lower Peninsula. Their larger programs are centered towards children and families, seniors, the disabled, and refugees.</p>
<p>Southwest Detroit Environmental Vision Raquel Garcia, Executive Director</p> <p>Maggie Striz Calnin, Program Manager, Air Quality Specialist</p>	<p>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.</p>
<p>The Greening of Detroit Lionel Bradford, President</p>	<p>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.</p>
<p>Village of Oakman Manor Deborah Beard, Administrator Dell Stubblefield, Resident</p>	<p>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.</p>
<p>Wayne Children's Healthcare Access Program Teresa Holtrop</p>	<p>WCHAP 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.</p>
<p>Lyn Jones, Resident of Detroit and Registered Health Information Technician</p>	

Community Advisory Board Environmental Health Concerns

Some environmental health concerns that have been expressed by some of 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 (Phone: 313-664-2612; E-mail: carrieleach@wayne.edu) or CURES Community Engagement Coordinator Rochelle Chapman (Phone: 313-577-5045; E-mail: rochellechapman@wayne.edu).

Organization and CAB Member	Environmental Health Concerns
American Indian Health & Family Services Nikole Fox, MA, CPC, Director of Community Wellness	<ul style="list-style-type: none"> • Environmental issues including housing, soil contamination, and access to healthy food and scarcity • Social stressors • Cancer in native communities
Asthma & Allergy Foundation of America, MI Chapter Kathleen Slonager, RN, AE-C, CCH, Executive Director	<ul style="list-style-type: none"> • Pervasive feeling of helplessness among people who live in areas where the environment is toxic and causing or exacerbating chronic diseases like asthma • Lack of attention to health first when policy is drafted and passed • How our government sets regulations and how well they are enforced
City of Detroit Office of Sustainability Whitney Smith, Project Manager	<ul style="list-style-type: none"> • 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? • I would also like to see a study/project about weatherization/home “greening” and the impacts on health.
CLEARCorps/Detroit Diane McCloskey, Executive Director Chris Ross, Manager of Communications and Program Development	<ul style="list-style-type: none"> • 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. • Lead poisoning • Indoor/outdoor asthma triggers • Environmentally sustainable building codes
Detroit Food Policy Council Winona Bynum, RDN, PMP; Executive Director	<ul style="list-style-type: none"> • Health & Food System Equity • Food Waste • Water Issues

<p>Detroit Health Department Joneigh S. Khaldun, MD, MPH, FACEP; Executive Director and Health Officer</p>	<ul style="list-style-type: none"> • Healthy food access • Food policy challenges/opportunities; nutrition • Asthma • SOx/NOx/PM emissions • Lead and water • Mobility (walkability, bikeability, reliable public transportation) • Green workforce development • Environmental stressors and violence prevention/mental health • Improving recreational opportunities to improve chronic disease
<p>Detroiters Working for Environmental Justice Guy O. Williams, President and CEO; CAB Co-Chair</p>	<ul style="list-style-type: none"> • Research analyzing whether the cumulative exposure to 2 or more criteria air pollutants increase health risks in the general population, and in vulnerable subpopulations. • Analyze the relationship between asthma attacks and criteria air pollutant concentrations measures in Detroit.
<p>Ecology Center Melissa Cooper Sargent: Green Living Resource Director, CAB Co-Chair; Rebecca Meuninck, Deputy Director; Jeff Gearhart, Research Director</p>	<ul style="list-style-type: none"> • Measuring air quality and pollutants in area around the incinerator. • Health effects of the incinerator • Environmental contamination in water due to US Ecology [hazardous waste processing facility] • Soil remediation for kitchen/vegetable gardens • Air pollution in Southwest Detroit and downriver • 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.
<p>Great Lakes Environmental Law Center Nicholas Leonard, JD, Executive Director</p>	<ul style="list-style-type: none"> • 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. • Analyze the relationship between asthma attacks and criteria air pollutant concentrations measures in Detroit.
<p>Green Door Initiative Donele Wilkins, President and CEO</p>	<ul style="list-style-type: none"> • Citizen Science – building community capacity • Documenting variety of environmental exposure points that are connected to community health outcomes in Detroit
<p>Matrix Human Services Salina Ali, Quality Associate</p>	<ul style="list-style-type: none"> • Asthma – biggest growing issue among our Early and Head Start children; old/young people, long-term effects • Lead effects on old/young people, long-term effects • Recreation – lack of green space for children to exercise and play in city areas

<p>Michigan Environmental Council Tina Reynolds, JD, Health Policy Director; Sandra Turner-Handy, Community Outreach Director</p>	<ul style="list-style-type: none"> • Lead's impact on older adults • 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? • Rental Housing and its impact on health • Lead in water risk as compared to paint/soil exposure • Safe school siting and impact on health and learning outcomes • PFAs testing and risks • Impacts of lead exposure early in life to adult health later on • Should we leave lead pipes in place if not leeching? • 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? • Does healthy food access improve outcomes in lead impacted kids? By what mechanism?
<p>Neighborhood Service Organization Shawndia North, Director, Training and Compliance</p>	<ul style="list-style-type: none"> • 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>Physicians for Social Responsibility, WSU Chapter Ashton Lewandowski</p>	<ul style="list-style-type: none"> • Cumulative, long-term impacts of air pollution on health
<p>Southwest Detroit Environmental Vision Raquel Garcia, Executive Director; Maggie Striz Calnin, Program Manager, Air Quality Specialist</p>	<ul style="list-style-type: none"> • Air quality/cumulative impacts in Southwest Detroit • Environmental justice • 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?
<p>The Greening of Detroit Lionel Bradford, President</p>	<ul style="list-style-type: none"> • My biggest area or concern is 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.
<p>Village of Oakman Manor Deborah Beard, Administrator Dell Stubblefield, Resident</p>	<ul style="list-style-type: none"> • Environmental influence on violence • Neighborhood and built environment • Social and community context; economic stability

**Wayne Children's Healthcare
Access Program**
Teresa Holtrop

- The biggest concern that we come across amongst the families referred to us at WCHAP 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.
-