UC Davis Environmental Health Sciences Center (EHSC)
Annual Request for Pilot Project Applications

The NIEHS funded UC Davis EHSC invites Applications for pilot projects to be conducted during the 2020/2021 grant year. The Pilot Project Program supports short projects to provide preliminary data for new extramural grant submissions in the area of environmental health sciences (EHS) research. The review process emphasizes relevance to the focus of the Center and NIEHS, responsiveness to priority areas identified in the request for proposals, community engagement, and the potential for translation to public health policy/initiatives. Successful applications will demonstrate a strong likelihood of leading to significant NIEHS funding in the short term. Applications that are in areas of interest to our funding partners (Western Center for Agricultural Health and Safety, California National Primate Research Center, Comprehensive Cancer Center, Center for Molecular and Genomic Imaging, SVM Clinician Scientists working on EHS, the MIND Institute, and the Institute for Transportation Studies) are especially desirable.

***Eligibility*:** All UC Davis investigators who are eligible to apply as a Principal Investigator for NIH grants. Prior applicants are encouraged to submit revised applications.

Application Procedure

1) Concept Letters are required. **Concept Letters are due by November 1.** Please note that applicants who obtain core assistance in the preparation of their proposals increase the likelihood of submitting a more responsive and competitive application. The concept letters provide a place where applicants request core assistance. Please submit your Concept Letter form via **InfoReady**.
2) Full applications from invited applicants should be submitted via **InfoReady**. **The deadline for full proposals is December 1st.** Each PI may submit only one proposal. Proposals will undergo full scientific review and the most competitive proposals will make a short presentation of their research ideas in an oral format Jan 28. Please keep that date available between 11:30 and 2:30.

The EHSC encourages interdisciplinary team research and translational science, and development of resources, methods, or technology that will benefit exposure assessment or disaster response, research relevant to human health, and projects likely to inform policy or advocacy efforts for scientifically supported actions. The EHSC has a focus on California's Central Valley population and projects relevant to human health. Please see areas of need identified as research priorities by community stakeholders.

***Priority Areas for this RFP**:*

- **Wildfires and Health**- investigations of how people obtain information, what sources they respond to, and whether they modify their behaviors in response to public advisories; follow-up of wildfire survivor cohorts; investigation of potential health impacts of wildfire ash and/or captured PM from wildfire exposures; exploration of sentinel animal species exposed to wildfires to understand human exposures.
- **Air Pollution Toxicology** – expanded use of the vivarium facility and its air pollution exposure chambers; we especially encourage studies that include cardiopulmonary, cancer, and epigenetics outcomes to environmentally relevant exposures of relevance to the Central Valley.
- **Complex Exposures** – studies of cumulative exposures from complex mixtures, which may include chemicals, other pollutants or environmental factors such as heat, rainfall, water runoff from burn sites; consider routes of exposure, susceptible time periods or life stages, nutrition as a modifier, and exposomic approaches.

2020-2021 Pilot Project awards are for three types of awards:

Type 1 awards for $20,000 to $30,000 direct costs for a one-year project are for standard pilot project proposals, including some community outreach and engagement (required).

Type 2 awards for up to $30,000/year direct for two years incorporate community outreach and engagement throughout the research process including project design, data collection, interpretation of results and dissemination. At least $5,000 per year must be allocated to community partners.

Type 3 awards for up to $50,000 direct for one year will compellingly lay the foundation for significantly expanding an established research program through major new extramural funding. These awards are

targeted to mid-career or established investigators, either currently in or new to EHS, and must include a community engagement component.

RESOURCES TO HELP APPLICANTS PREPARE COMPETITIVE APPLICATIONS:

The EHSC provides applicants with the opportunity to consult with senior center investigators in the preparation of pilot project proposals. Consultation is provided through a Design Clinic and or individual consultation with core directors or members. Many applicants find this service valuable, however participation is not required for submission to the pilot projects program. To learn more about the core's expertise and services and how engaging with the core might strengthen your proposal, you can indicate in the online Concept Letter form which cores you are interested in working with. Descriptions of EHSC cores are listed below:

Career Development Core: Early stage Investigators (ESI - within 10 yrs of terminal degree) or Investigators New to EHS can request assignment of an EHS faculty to assist in preparation of a competitive proposal.

Community Engagement Core: Community engagement plans are required and are scored for every application. The Community Stakeholders Advisory Committee (CSTAC) has a list of priority environmental health concerns and would like to engage UCD scientists who have relevant research interests/expertise (see below for the list of priorities and stakeholder contacts). Please visit the CEC page on the EHSC website for more information. For questions about the CEC's services, please contact CEC Program Manager, Aubrey Thompson (abthompson@ucdavis.edu).

Exposure Core: If you are planning to measure any exposures in the environment, are planning on exposing any animals, or need more information regarding selection of chemicals, the exposure core may be able to help you.

Integrated Health Sciences and Facilities Core (IHSFC): If you need help with statistics or are new to animal or human subject research, or you want to access novel animal models or archived biospecimens, our IHSFC core may be able to help you.

Additional Information: If selected for funding, grantees must acknowledge the Center grant in work resulting from Center support, provide progress reports and updates. If human or animal subjects are included, no award will be issued until IRB or IACUC approval has been received and the NIEHS has authorized allocation of funds. Please review the application instructions carefully to ensure your human or animal research is described according to NIH requirements. Awards are dependent on timely awarding of NIEHS EHS funding.

Applications will be internally triaged for responsiveness and compliance with the above requirements. Final funding recommendations are made by the Center's Funding Council.

After reading the applicant instructions and stakeholder research priorities on the following pages, **SUBMIT APPLICATION PACKETS ONLINE AT https://ucdavis.infoready4.com/**

Questions? Contact Melissa Rose mbrose@ucdavis.edu or Laura Van Winkle lsvanwinkle@ucdavis.edu (530-754-7547)

Full Application Instructions

Full applications may be submitted by investigators who submitted a Concept Letter that was approved by the Program Directors. **The deadline for Concept Letters is November 1, 2019 and for full applications December 1, 2019**. Concept Letters should be submitted via InfoReady **https://ucdavis.infoready4.com/**

I. Components and submission of the application packet:

   a. Application packets are submitting using InfoReady **https://ucdavis.infoready4.com/**

   b. Select the EHSC Pilot Projects Program competition in the InfoReady system and enter the information requested. In addition to the information you enter in the available fields in InfoReady, you will be required to upload the following documents:

      i. Specific Aims

      ii. Research Plan

      iii. Biosketches

      iv. Budget

II. Formatting Requirements:

   a. Use Arial 11 point font.

   b. Biosketches for the PI and any co-investigators should be submitted using the current NIH biosketch form and instructions. Submit all biosketches as a single PDF

   c. Specific Aims are on a separate page from the Research Plan. The Research Plan is 3 pages. An additional half page is allowed for resubmissions. References, human subjects and vertebrate animals sections are not counted in the 3-page limit. The Specific Aims and Research Plan should be combined and uploaded as a single PDF.

   d. Budgets must be prepared using the budget template provided.

III. Human Subjects – For any project involving human subjects, please refer to the NIH instructions attached as an appendix to this RFA and follow the format outlined in Section 3 – Protection and Monitoring Plans. If you have any questions, please contact EHSC Program Manager, Melissa Rose (mbrose@ucdavis.edu)

IV. Vertebrate Animals - If live vertebrate animals are to be used, applicants must address the following criteria:

1. Description of Procedures (Vertebrate Animals Section) Provide a concise description of the proposed procedures to be used that involve live vertebrate animals. Identify the species, strains, ages, sex, and total number of animals by species to be used. If dogs or cats are proposed, provide the source of the animals.

2. Justifications (Vertebrate Animals Section) Provide justification that the species are appropriate for the proposed research. Explain why the research goals cannot be accomplished using an alternative model (e.g., computational, human, invertebrate, in vitro).

3. Minimization of Pain and Distress (Vertebrate Animals Section) Describe the interventions to minimize discomfort, distress, pain, and injury. These include analgesia, anesthesia, sedation, palliative care, and humane endpoints.

4. Method of Euthanasia: Provide a justification for methods of euthanasia that are not consistent with the American Veterinary Medical Association (AVMA) Guidelines for the Euthanasia of Animals.

Research Priorities of the Community Stakeholder Advisory Committee

This list of priorities was generated by members of the EHSC's Community Stakeholder Advisory Committee as questions they are interested in seeing researchers investigate.

For assistance in discussing potential project ideas or in making contacts with the community partners, please contact the Community Engagement Core: Aubrey Thompson abthompson@ucdavis.edu.

Water Contamination
1) How do incidences of cancer and other diseases of concern (e.g. SIDS) in communities with chronic drinking water violations compare to communities without a history of drinking water violations (e.g. nitrates and arsenic)?
3) How can local groundwater recharge and overdraft be managed close to public drinking water supplies to safeguard public health? Are there increased risks of groundwater contamination due to recharge and overdraft? Are current groundwater recharge policies in line with available science on the health effects of water access?
5) What are the possible health effects of co-exposures to nitrate and other soil contaminants (e.g. uranium)? Does the presence of nitrate in soil and water exacerbate health impacts of these contaminants when they co-occur?
7) California is the first state in the nation to legislatively recognize the human right to water (per AB 685, 2012). However, there are still many disadvantaged communities that do not have access to clean drinking water. What are the health and economic impacts and long-term health implications of a lack of safe drinking water? What policy, regulatory, and other solutions are needed to address this problem?"
Air Quality
9) What are the cumulative health impacts of air emissions from dairies on nearby communities? What are contaminants of concern coming from dairy/manure digesters?
11) What is the best way to monitor area-wide air quality issues emissions, particularly ozone (as opposed to localized measurements of point source pollution)? While community air monitoring can capture local point sources, it is unable to capture accurate measurements of regional air pollution. What technology do we use to measure, where do we place them, how can we build on existing monitoring?
13) What are the human health effects of drought, including the transport of hazardous compounds in dust, and fungal spores such as those that cause Valley Fever?
15) Develop the dose-response science regarding the impacts of wildfires/wildfire smoke on respiratory health, cardiovascular health, mental health, immune development, neurodevelopment, and/or birth outcomes.
17) Is indoor air quality impacted by outdoor air pollution, if yes than is that leakage more related to building code variation across time or some other factor, and is there a related human exposure?
19) What are locations of oil & gas production storage tanks and pipes in the San Joaquin Valley compared to disadvantaged communities?

21) How adequate is the oversight and mapping of oil and gas infrastructure by state regulators? How are pipeline leaks being identified and mitigated?
23) What are the health impacts of set- back/ buffer zones around oil and gas facilities? Are current policies sufficiently health protective?
25) What are the long-term health effects from the storage of oil and gas production by-products close to schools and residences?
27) What are health impacts of home energy efficiency upgrades in California's low income homes from Low Income Weatherization Program funded by cap and trade? This includes indoor air quality, safety, mold, lead, protection from climate change impacts such as extreme heat, cost savings, etc.
29) The toxics contained in Wildfire smokes are not well understood. The composition could be changed dramatically depends on what were burned (fuels), such as chemicals, plastics, housing materials. Must look at the health impact on firefighters on site, the victims who escaped from the fire, and the residents in remotely located, smoke impacted, in towns downwind directions.
Pesticides
31) Pilot glyphosate body burden study for rural residents living near farm fields.
33) Are pesticide regulations adequate to protect children's health and the links between pesticide application and exposure? There is an interest in projects that use community-based bio-monitoring to measure pesticide exposure in children.
Climate Change
35) How does climate change and related mitigation/adaptation efforts affect the range and prevalence of disease-carrying vectors?
37) What are the health impacts associated with California Climate Investments-funded projects (i.e., using cap-and-trade/Greenhouse Gas Reduction Fund), particularly in improving living conditions and health outcomes for disadvantaged and EJ communities? [Evaluating the health benefits/impacts of different CCI grant programs and grant-funded projects, with focus on impacts in DACs/EJ/vulnerable communities]
Other
39) How effective are air conditioning systems in Central Valley communities (particularly swamp coolers, which are dependent on water pressure / water availability, and are apparently commonly used in CV communities) during drought conditions, when water quantity maybe significantly reduced? And what are best practices or solutions to ensure communities are protected from extreme heat / heat waves in these communities, under these conditions?
41) Verifying and bolstering citizen ("civic") science efforts by replicating findings and developing comprehensive review of existing community accessible monitoring tools to collect data on local sources of soil, air and water pollution.