

## National Institutes of Environmental Health Sciences

### Nanomaterials Health Implications Research (NHIR): Comprehensive Evaluation of Interactions between Engineered Nanomaterials and Biological System (U01)

The objectives of NHIR Consortium are to:

- Produce comprehensive biological response profiles for diverse ENMs using in vitro and in vivo models and relevant routes of exposure to gain understanding on potential molecular, biochemical and pathophysiological alterations at target and secondary organs; and
- Work collaboratively, as appropriate, to integrate efforts and capitalize from other model systems and expertise of NHIR to enrich our knowledge base on ENM-biological interactions.

Applications to this FOA should propose to investigate how physicochemical properties of ENMs dictate biological response profiles at the molecular, cellular, or organ level using physiologically relevant models and routes of exposures. The research applications are also encouraged to include independent investigations into the contributions of factors such as gender, age, physiological status, genetics, species specificity and pre-existing disease conditions in understanding their influence on biological response. Experimental systems can include, but are not limited to:

- High throughput approaches to identify acute response profiles at multiple time points; these systems should also incorporate cell and tissue variability;
- Omics approaches to identify effects on biological pathways and systems including inflammatory, oxidative stress, or fibrogenic pathways;
- Immunogenic, mutagenic, and carcinogenic potential of ENMs using sub-chronic and chronic exposures;
- Cell integrity and cell-cell communications including autocrine, paracrine and endocrine effects;
- Effects on cellular organelles including cross-talk between cellular compartments;
- Inflammasome activation;
- Perturbations in the endogenous microbiome;
- Effects on bacterial or viral infectivity; or
- Absorption, distribution, metabolism and excretion.

Note: Research projects that propose pulmonary route of exposure (using bolus dose administration methods - intratracheal and oropharyngeal aspiration) are of low programmatic priority and will not be considered responsive to this FOA.

**THIS IS A LIMITED SUBMISSION GRANT OPPORTUNITY.** Institutions are invited to submit only one application; therefore, the Office of the Vice President for Research will accept notifications of interest from investigators and select the most competitive projects to go forward. The deadlines for the external application are: Letter of Intent – October 30, 2015 and Full Proposal – November 30, 2015. **To be considered, please submit a *one page Letter of Intent and the PI's abbreviated CV* to [rifs@wayne.edu](mailto:rifs@wayne.edu) by 5PM on Monday, September 9, 2015.**

