Proposed institution
Institution: Johns Hopkins University
Participation type: Postdoc

Research:
In vitro and acellular assays can play an important role in determining the biocompatibility of biomedical products such as dental materials. These assays used in conjunction with a decision framework such as Adverse Outcome Pathways (AOPs) can provide biologically relevant information for predicting biocompatibility effects in physiological systems. To ensure these assays perform as expected and provide high-quality test results, evaluation of the precision and robustness of these assay measurements is required. This postdoctoral opportunity will feature comprehensive examination of in vitro or other assays relevant to the biocompatibility of dental materials to improve the repeatability, comparability and interlaboratory agreement of the assay results. This could entail comparison of assay technologies, using cause-and-effect analysis to understand sources of variability in the assay, designing new assay plate layouts that include key process control measurements, identification and selection of reference materials and utilizing appropriate statistical analyses to understand the assay results and their uncertainties. This program will allow the selected candidate to lead assay development activities with a focus on improving the comparability and reproducibility of biocompatibility assay results within and between laboratories.

Required qualifications:
PhD. in engineering, biology, chemistry, physics, or related field
US citizenship
Experience in cell and tissue culture, cell-assay development and execution, using other biological laboratory assays
Experience with a wide range of biological techniques used to assess biochemical pathway activity
Ability to quickly adopt and apply new methods and technologies to biological measurements
Interest in studying biological and cellular interactions with biomaterials (dental materials)
Demonstrated independent problem-solving skills and the ability to identify, manage, and overcome technical hurdles
Good communications, laboratory, and organizational skills; the ability to work independently and with a multi-disciplinary research team

Desired qualifications:
Hands-on experience in the development and evaluation of in vitro or acellular assay methods
Experience in biocompatibility testing of biomaterials and dental materials.
Experience in optical microscopy and flow cytometry techniques. Includes the use of image analysis software and flow cytometry analysis software.
Experience in programming and statistical languages (i.e. python, R, excel)

Research project title: Comprehensive analysis of biocompatibility assays for dental materials
Salary/stipend off: $72K/Year
Primary location: NIST Gaithersburg

Period of performance
Anticipated end date: October 2023
Total hours per week: 40h/week

Application procedures:
The review process will commence immediately and continue until the position is filled. Interested applicants are requested to send an updated CV and contact information for three references to **Dr. Elijah Petersen** (elijah.petersen@nist.gov).

NIST sponsor
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