

## Attachment 1 – DAGSI Research Topic Template

1. **Research Title:** Personal Bioaerosol Capture and Characterization to Support Health Risk Assessments
2. **Individual Sponsor:**

Dr. Christin Grabinski, AFRL/FHOF  
AFRL/FHOF Bldg 840  
2510 Fifth St  
WPAFB, OH 45433  
[christin.grabinski.2@us.af.mil](mailto:christin.grabinski.2@us.af.mil)

3. **Academic Area/Field and Education Level**  
Chemical or Biomedical Engineering (BA/BS, MS or PhD level)
4. **Objectives:** The overall objective is to identify and test best available technologies for personal bioaerosol capture and characterization for health risk assessments. First, evaluate the capabilities and limitations of established aerosol sampling techniques in a controlled laboratory environment and modify as appropriate for personal bioaerosol capture. Second, test the most promising technology in the field to evaluate bioaerosol exposure to aircraft maintainers. Finally, identify requirements for characterizing captured bioaerosols in a manner that can be translated into a health risk assessment that is meaningful to the maintainer.
5. **Description:** Biological contamination of aircraft occurs naturally in locations where moisture is trapped. In the event of natural growth of microorganisms (mainly fungi), the visible presence of biological contamination is concerning for aircraft maintainers and aircrew, which can lead to a decrease in productivity and aircraft availability. Traditional swab sampling provides a snapshot of the contamination present on aircraft components, but does not allow for extrapolation to personal breathing exposure. As the concentration of bioaerosol that reaches the breathing zone is of utmost importance for a health risk assessment, a personal-sized sampler is required. Depending on the biological agent type and concentration, biological contamination may or may not pose a respiratory risk. Characterization of biological aerosol concentration, size distribution and type in the breathing zone will inform the level of health risk. There are several approaches to this, and the most appropriate to inform health risk assessment while minimizing resources must be scrutinized. Therefore, the proposed research is required in order to support a vetted strategy for biological aerosol capture and characterization to support meaningful health risk assessments to drive decisions regarding the suitability of an aircraft for maintenance or operation.
6. **Research Classification/Restrictions:** none

7. **Eligible Research Institutions:** Wright State University, AFIT, Ohio State University, University of Dayton, University of Cincinnati

**NOTE: Topics submitted to DAGSI must be approved for public release. Need PA Approval #**