

Antigen Profiling of Field Metalworking Fluids

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Machine workers repeatedly exposed to the in-use contaminated metal working fluid (MWF) aerosols are at increased risk of developing occupational respiratory conditions including hypersensitivity pneumonitis (HP), asthma, or other respiratory symptoms over a period of time. Machinists' HP is a cell-mediated immune disease associated with repeated exposure to the mycobacterial species *Mycobacterium immunogenum* frequently isolated from these industrial fluids. However, the specific T-cell antigens/epitopes responsible for causing the MWF exposure-associated HP in the exposed machinists are not yet defined. In this study, we hypothesize that the prevailing field conditions in MWF can lead to induction and release of specific antigens from mycobacteria that are critical for HP etiology. Overall aim is to identify mycobacterium-specific critical HP-inciting antigens directly from the mycobacteria-contaminated in-use MWF samples from the automotive industries. We propose to accomplish this using cutting edge immuno-proteomics approach coupled with immunoinformatic tools. The in-silico identified candidate antigenic peptides will be validated for functional T-cell response in an in-vitro T cell assay. These identified antigens could provide a key to understanding the etiological aspects of the disease development and facilitate development of immunodiagnosis and intervention strategies for HP patients.

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Main Menu:

- ◆ **Pilot Research Project Overview**
- ◆ **Welcome and Opening Remarks**
- ◆ **Keynote Address**
- ◆ **Podium Presentations**
- ◆ **Poster Presentations**
- ◆ **Participating Universities**
- ◆ **Steering Committee Members**
- ◆ **Acknowledgements**
- ◆ **Problems Viewing the Videos**

- ◆ **PRP Website**

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