

Priority Topic 6: The Effects of the Environment on the Immune System

Convener: Darryl Zeldin and Paige Lawrence

Discussion Participants: Janice Allen, John Cidlowski, Mike Fessler, Tom Gasiewicz, Dori Germolec, Michael Holsapple, Virginia Ladd, Paige Lawrence, Pat Mastin, Jerry Phelps, Michael Pino, Ellen Silbergeld, Darryl Zeldin

Subtopic Report Numbers from Days One and Two:

22 Research translation/communication

31 Healthy buildings and communities

34 Commensal organisms (microbiome) and health

35 Moving from 'cure' model to the three 'P'—predicting, preventing, personalized treatment of autoimmune diseases and cancer

36 Role of environment in neurodegenerative diseases and healthy aging

53 (main) Effects of the environment on the immune system

76 Healthy environments for children

Recommended Strategic Goal:

To make investigation of the interactions between the environment and the immune system, and its relationship to human development, health and disease, a major research priority for NIEHS

Potential Beneficiaries of this Strategic Goal:

- 1) This research agenda will have a major impact on the global health community because the development, function and regulatory balance of the immune system underlies numerous prominent diseases (e.g. infectious, immune-mediated, cardiovascular, cancer, orphan).

NIEHS Capabilities and Partnerships Needed to Achieve this Goal:

- 1) This research has far reaching implications that span the mission of NIEHS and other federal agencies, universities, advocacy groups and global health organizations and provides opportunities to support efforts to improve human health.
- 2) Through its intramural (NTP, DIR) and extramural programs, NIEHS possesses a deep knowledge of how the environment impacts human health and diseases.
- 3) NIEHS has established epidemiologic expertise in the implementation of large cohort studies.

- 4) The NIEHS has an internationally recognized and highly respected testing program within the NTP that examines the effects of environmental chemicals on the developing and adult immune system. Highly cited publications from these efforts have positively impacted regulatory guidance on a global scale.
- 5) NIEHS and its interdisciplinary network of scientists has an opportunity to take a leadership role in understanding the etiology of diseases of enormous public health importance by providing knowledge and expertise on environmental exposures, a crucial, yet underappreciated contributor to human health and well being.
- 6) This area of research will enhance partnerships to bridge research from the bench to clinical—translational to public health by cultivating multi-institutional interactions within and outside of the NIEHS.
- 7) NIEHS has expertise in multidisciplinary research and the integration of cross-cutting information that directly impacts human health.
- 8) NIEHS has an exciting opportunity to create a network of collaborating institutions and lead research efforts to understand how the environment impacts immune system development, function and disease