

Report 3: Moving beyond the conventional notion of “bad” substances causing disease while “safe” substances do not. Exploring how benign substances can turn specific genes on or off and looking at how these substances may have a different impact on males and females.

Convener: Virginia Ladd

Brief History: An expanding body of science is showing that the environment has many diverse effects on triggering the onset of disease in humans. Impacts on health go far beyond the conventional notion of ‘bad’ substances causing disease while “safe” substances do not cause disease. The field of epigenetics is demonstrating that even benign (unstudied) substances can turn on specific genes on or off. Therefore, DNA is no longer the sole determinate of disease. Other factors include epigenetics and the microbiome play a role. Nano technology is capable of delivering supposed “safe” substances directly into the cell structure.

Discussion Highlights:

Factors that may influence individual differences to an environmental trigger other than the traditional chemicals in both mice and humans are:

- Hormonal status
- Genes
- Diet – vitamin D
- Stress states
- Infection
- Aging
- Housing
- Lack of parasites- the too clean theory

Recommendations: Increased research into:

- Study of epigenetics,
- Study of untested “safe “ products including substance deliver methods such as nano particles in cosmetics,
- Study of difference in male/female responses to environmental triggers,
- role of infection and stress as an environmental triggering factor in disease,

- study of the full range of potential interactions between diseases (cancer and autoimmune) and the wider range of environmental triggers we currently study, including the study of synergistic interactions among environmental factors and disease,
- study of the environmental factors in the significant increase in autoimmune diseases in the developed world.

Discussion Participants: Virginia Ladd, Gina Goulding, Richard Woychik