

## COLLABORATIONS FOR HEALTH

### Health and Environment Research Day

June 1, 2006

Ancaster Old Mill

Meeting Notes

Dr. Susan Denburg, Director, Collaborations for Health, welcomed participants and provided an overview of the Collaborations for Health (CfH) initiative:

Dr. Stephen Collins, Associate Dean, Research (FHS) highlighted the significance of health researchers as collaborators working within multi-disciplinary teams, integrated within clinical settings and drawing upon cross-campus collaborations. Challenges were identified in linking basic and clinical research and psycho-social, and bio-informatics.

Dr. Lesbia Smith delivered the keynote presentation. Dr. Smith drew attention to the broad interface between health and the environment, an interface which encompasses issues such as allergies, immunological responses and the effects of indoor environmental air contaminants to pandemic infections and transboundary pollution impacts.

Current environmental research focuses on the four matrices of water, soil, air and food and has taken us far in understanding issues around food safety; controlling access to, and the quality of, water; and land remediation through biological and thermal treatments and use management. Research on air is more difficult to address due to the large geographic effects of air sheds, transboundary air movements and global transports.

**In deciding where to focus research energies, Dr. Smith suggested considering:**

information technology and the ability to process large data sets (Stats Can, GIS applications);

-innovations in laboratory technology that allows the detection of minute concentrations of chemical compounds and the development of automated mass methods of analysis; genetic research and the human genome project which provides potential links between environmental contaminants and human susceptibility;

-the use of biomarker research and biomonitoring in environmental epidemiological studies (Canadian Health Measures Survey);

-statistical modeling, particularly useful for air quality issues; social impact of globalization on culture and values and their impacts on environment and health. The health and environment research field is a natural draw for interdisciplinary approaches and the time is ripe for movement forward in joint effort on a research agenda in environment and health.

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Drs. Bruce Newbold and Warren Foster provided an overview of theme progress to date and set out the objectives of the day:

- identify research talents (strengths, weaknesses, and gaps in environment and health research on campus) and new research ideas, questions, and directions that build upon campus strengths.

Factors driving developments in research funding are:

- Increased recognition of environmental health post-SARS and Walkerton;
- Growing support for environmental health research within the area of public health; and
- Growing demand for specialized science-based environmental health capacity within public health.

Funding agencies such as the National Institute of Environmental Health Sciences (NIEHS) emphasize interdisciplinary research teams focused on complex human disease and which involve a spectrum of disease factors including environmental agents, genetics, age, diet, and activity levels.

NIEHS strategy goals include:

- expanded role of clinical research in environmental health sciences;
- use of environmental toxicants to understand basic mechanisms in human biology;
- integrated health research programs to address cross-cutting health challenges; improve/expand community-linked research; ? develop markers of environmental exposure; and
- recruitment and training of next generation researchers.

In Canada, the key trends in environmental health research are:

- integrative, trans-disciplinary research agendas;
- new technologies as aids (e.g.: gene mapping, imaging); and
- new data.

### Researcher Presentations

Participants were invited to speak briefly (5 minutes) on their current research interests. They were asked to produce a presentation of the main focus of their research program and highlight future directions with an emphasis on what is needed to significantly advance the field. A number of these presentations are available on the Collaborations for Health website: ([www.mcmaster.ca/cfh](http://www.mcmaster.ca/cfh))

### Environment = “Everything not me”

After lunch, participants reconvened to discuss opportunities and options. A significant challenge was identified in defining “environment,” which can include both the built and biological aspects of existence. It was suggested we think about the environment in the same vein as Albert Einstein: everything not me. Participants also recognized that the primary focus needs to be defined as either “environment” or “health.”

There are a number of existing networks currently represented within the theme: Allergen, Canadian Obesity Network, Pandemic Institute. The question was raised: are there other groups, themes, topics that could be created or pulled into this initiative?

### Brainstorming session: Emerging issues in health Science

is progressing at a furious pace whereas the social, cultural, economical and ethical implications of scientific discovery lag well behind. The resulting vacuum leaves little direction for the scientists, clinicians, government regulatory bodies and society itself on how best to proceed in the public interest. For example, stem cell research is managed very differently in different countries, with no restrictions in some to stifling restrictions in others. The following issues drew discussion from participants:

**Stem cells** represent an exciting new area of medical research and offer opportunities for clinical care, however many questions remain unanswered:

- o What are the economic implications of collecting and storing stem cells (private vs public expense);
- o What innovative production technologies can be used to increase stem cell yield to offer this technology to the adult population;
- o What are the effects of stem cell culture conditions on human health, e.g.: will culture conditions influence stem cell development; how long can stem cells be maintained in culture or storage without damage?
- o What is the role of bioreactors in removing differentiated cells from the stem cell population.

**Environmental toxicants** are thought by many to play a role in adverse health outcomes such as allergy, asthma, and cancer. However, the risk to human health is generally poorly understood and communicated.

This is evident in the:

- o presence of prescription medications in the water supply, and
- o cosmetic use of pesticides

### Further research is needed to determine:

- o What are the risks to human health of environmental contaminants?
- o How can governments take appropriate action to protect the health of Canadians?
- o Are policies such as community-wide bans warranted and do they have a measurable impact on health?
- o When a health risk is identified, what are the best strategies for remediation of the environment?
- o Can changes in health trends be used to identify communities at risk?

**Vaccination/Immunization is an important strategy in preventing the spread of infectious disease, yet significant questions concerning this strategy remain unresolved:**

- o Who should be vaccinated and under what circumstances?
- o How are attitudes influenced to maintain vaccination vigilance in the face of waning disease frequency?

Other topics that came up in discussion include: cancer (male abnormalities of the genital tract, encompassing molecular biology to social science); bioinformatics; communications and knowledge exchange; environmental therapeutics; “downstream effects” of biological and transgenerational conditions (movement disorder in aging as a function of lifetime contaminant exposure) and built environments.

It was suggested that the projects submitted to the original call for ideas be reviewed for further development

Absent from the discussion: economics, policy, ethics, intervention.

Participants challenged CfH to provide a framework to which questions can be brought and expanded as expertise and interest warrant.

#### Resources needed:

- Seed money to fund project development.
- Partnership facilitator to assist in identifying and linking people, particularly across campus.

#### Next steps:

- A monthly seminar series beginning in Fall 2006 will highlight people/research relevant to this theme. Further information will be forthcoming in the fall (CfH and McMaster Institute of Environment and Health websites, direct e-mailing to participants).
- Recognition of existing “flagship” programs and networks within the theme;
- Use of incentives to encourage new and emerging team networks;
- Build links to the educational programs that already exist on campus and develop a MA in Environmental Health under the CfH umbrella.
- Continue to identify and refine research foci within the broadly defined area of health and environment.

#### Progress can move forward on two levels:

- 2 or 3 small independent collaborations that can build on existing programs or,
- Larger flagship ideas that we can push forward over the long term.

**Drs. Newbold and Foster** will be responsible for moving the agenda forward according to the Next Steps. Participants are encouraged to continue the discussions begun at the retreat and share the Collaborations for Health vision with their colleagues. Suggestions for the seminar series where the participation of presenters and discussants model interdisciplinary collaboration are welcome.