

NICHD Science Vision Process

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Alan E. Guttmacher, M.D.
Acting Director, NICHD

Presentation Outline

- Purpose
- Parameters
- Process
- Draft Themes
- Cross-Cutting Topics
- Questions for Discussion

Purpose

- Over the coming year, the NICHD, in collaboration with our external communities, will identify the most promising scientific opportunities of the next decade across the breadth of the Institute's mission.
- Our aim is to develop a scientific vision that sets an ambitious agenda and inspires the Institute, the research community, and our many partners to achieve critical scientific goals and meet pressing public health needs.

Parameters

The science vision process should:

- Focus on scientific opportunities of the next ten years
- Look to the past only for information upon which to base the future
- Give external communities ample opportunities to participate, through workshops and Web-based media
- Foster cross-collaboration within the NICHD and among external communities
- Involve early-stage investigators and other new stakeholders in the conversation

Parameters, cont.

The science vision process should also:

- Give staff a feeling of ownership
- Give the new NICHD Director opportunities to interact with the Institute's fields and constituencies and to help shape the process and product
- Produce a publication(s) worthy of a major journal
- Be completed by December 2011

Vision Process Thus Far

- May 10: 50 NICHD scientific and policy staff met to develop a draft set of themes and cross-cutting topics relevant across thematic areas to serve as a foundation for the scientific vision.
- These were placed on the NICHD Intranet and all staff were invited to comment; draft refined based on these.
- May 26: Council's Subcommittee on Planning and Policy, along with Barbara Ehrlich, chair of the NICHD Board of Scientific Counselors, and Steven Wolf, the NCMRR Advisory Board's liaison to Council, met by teleconference with NICHD leadership to advise on the vision process and help further refine the themes.

Vision Process: Next Steps

- Finalize scientific vision themes with Council's guidance
 - June 2010
- Hold series of workshops and discussions based upon the themes to gather input from external partners
 - August 2010-January 2011
- Synthesize all these discussions into a draft scientific vision
 - February-April 2011

Vision Process: Next Steps

- Hold large multidisciplinary science meeting to shape the vision further
 - May 2011
- Prepare final draft of vision statement(s)
 - May-June 2011
- Council refines and vets the statement(s)
 - June 2011
- Finalize, publish, and disseminate vision statement(s)
 - July-August 2011;
publication date: by December 2011



DRAFT THEMES

I: Development

- By expanding our understanding of the normative and pathological processes in health and disease, basic research in developmental biology underlies much of the scientific progress made in disease prevention.
- Such research, starting at the molecular and cellular levels, also provides the basis for future progress in the developmental sciences, and provides a wealth of knowledge applicable to specific conditions and other research areas.

II: Plasticity

- Plasticity is a fundamental property of a developing organism and a key process in responding to injury and disease, but still is not well understood.
- Learning how to take advantage of plasticity in specific contexts could help us improve health along the developmental trajectory and enhance function in response to injury, disease, or disability.

III: Cognition

- Cognition, closely tied to neurodevelopment, is part of a lifelong process that underlies overall functioning and quality of life.
- Understanding cognition can lead researchers in promising directions toward
 - improving functioning for individuals with intellectual, developmental, and other disabilities
 - advancing lifelong learning

IV: Behavior

- Behavioral factors can increase the risk of adverse conditions or promote healthy outcomes.
- Basic and translational research is needed in the behavioral sciences to
 - develop new research measures and methods
 - determine how to promote sustainable behavioral change
 - develop interventions to improve health across different settings and populations

V: Reproduction

- Expanding our understanding of reproductive biology and behaviors, from the basic to the clinical level, will allow researchers to
 - help individuals better control or improve fertility
 - treat reproductive disorders
 - improve reproductive health and overall well-being for both men and women

VI: Pregnancy and Pregnancy Outcomes

- An increased understanding of pregnancy processes and fetal development can help researchers predict and prevent poor pregnancy outcomes for mothers and neonates worldwide.

VII: Developmental Origins of Health and Disease

- We know that exposures in early development can have long-term health impacts, but we have much to learn about the markers for these phenomena and their underlying processes.
- Key to this knowledge is discovering how genetic, environmental, and behavioral factors interact to influence health, particularly in a developing organism and through epigenetic mechanisms

VIII: Environment

- Infectious diseases, toxic exposures, poor nutrition, injury/trauma, and a wide range of social environmental exposures are among the leading causes of morbidity and mortality worldwide for mothers and children.
- Environmental exposures also contribute to adverse outcomes for persons with disabilities, and are important factors in rehabilitation.
- By learning more about how these environmental factors influence health outcomes, researchers can develop more effective interventions for these populations.

IX: Diagnostics and Therapeutics

- More powerful methods and tools are needed to help scientists translate basic discoveries into new and improved diagnostics and therapeutics that meet the needs of specific populations, such as infants, children, women, and persons with disabilities.

Cross-Cutting Topics

- Systems biology
- Training and mentoring
- Animal and computational models
- Differences/disparities across populations
- Stem cells
- Epigenetics
- Bioinformatics
- Analytical and measurement tools and methods
- Bioethics
- Biotechnologies/bioengineering, including assistive and related technologies
- Implementation science
- Nutrition
- Global health
- Prevention
- Developmental trajectory

Questions for Discussion

- Are the proposed themes of sufficient importance and broad interest to our research communities to warrant inclusion in the science visioning process?
- Is each theme coherent (i.e., could you envision a workshop or white paper based on each of the proposed themes)? And, are the themes relatively clear and self-explanatory?
- Where do you see the biggest areas of overlap between themes?
- Do you notice any key gaps (i.e., are there any large scientific areas in the NICHD's mission not included by these themes)?



**QUESTIONS,
COMMENTS?**