



OFFICE OF BEHAVIORAL
AND SOCIAL SCIENCES RESEARCH
NATIONAL INSTITUTES OF HEALTH

*Wendy J. Nilsen, Ph.D.
National Academies of Science
Science of Families Planning
Workshop
February 23, 2010*



The Science of Families at the National Institutes of Health





§ Introduction

§ NIH Overview

§ OBSSR Overview

§ Examples of NIH-funded family research

§ Questions to be answered



- “NIH is the steward of medical and behavioral research for the Nation. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability.”



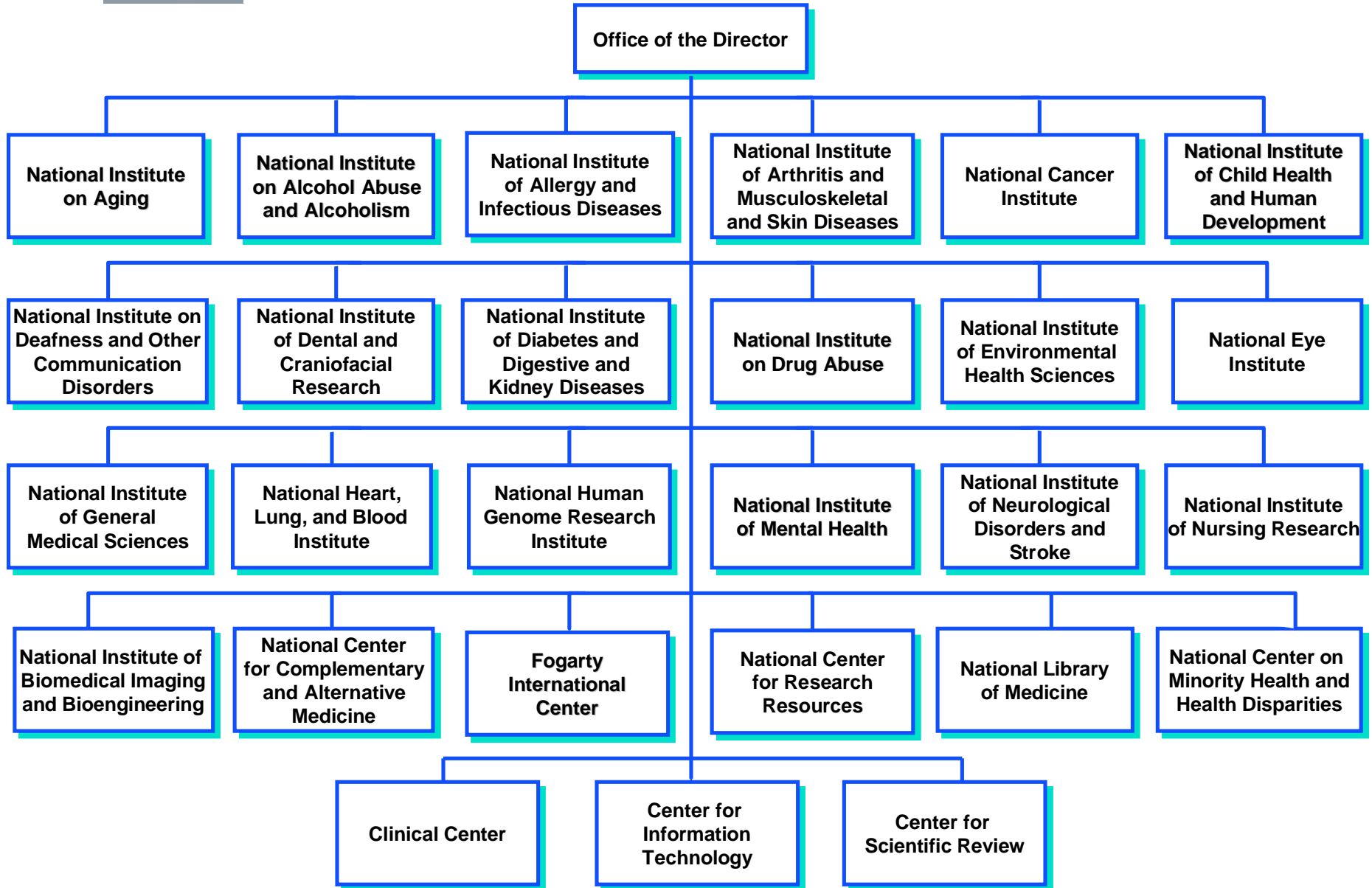


- The goals of the agency are as follows:
 - foster fundamental creative discoveries;
 - develop, maintain, and renew scientific human and physical resources;
 - expand the knowledge base in medical and associated sciences; and
 - exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.





National Institutes of Health





- n 27 Institutes and Centers (ICs)
- n \$30.3 billion in FY2009
 - n Add'l \$10.4 billion ARRA funds
- n 80% of funds for grants and contracts supporting extramural research



- Francis Collins, MD, Ph.D., Director
- Outlined “areas of particular promise” for NIH investment
 - High throughput technologies
 - Ability to map complex genetic and cellular processes
 - Translational Medicine
 - Translating basic science (both biomedical and behavioral and social science) to clinical advances





– Health Care Reform

- Comparative effectiveness
- Prevention and personalized medicine
- Health disparities research
- Pharmacogenomics

– Global Health

- Working with others to promote health in the global community

– Reinvigorating and Empowering the Biomedical Research Community

- Investments in the grant process and training





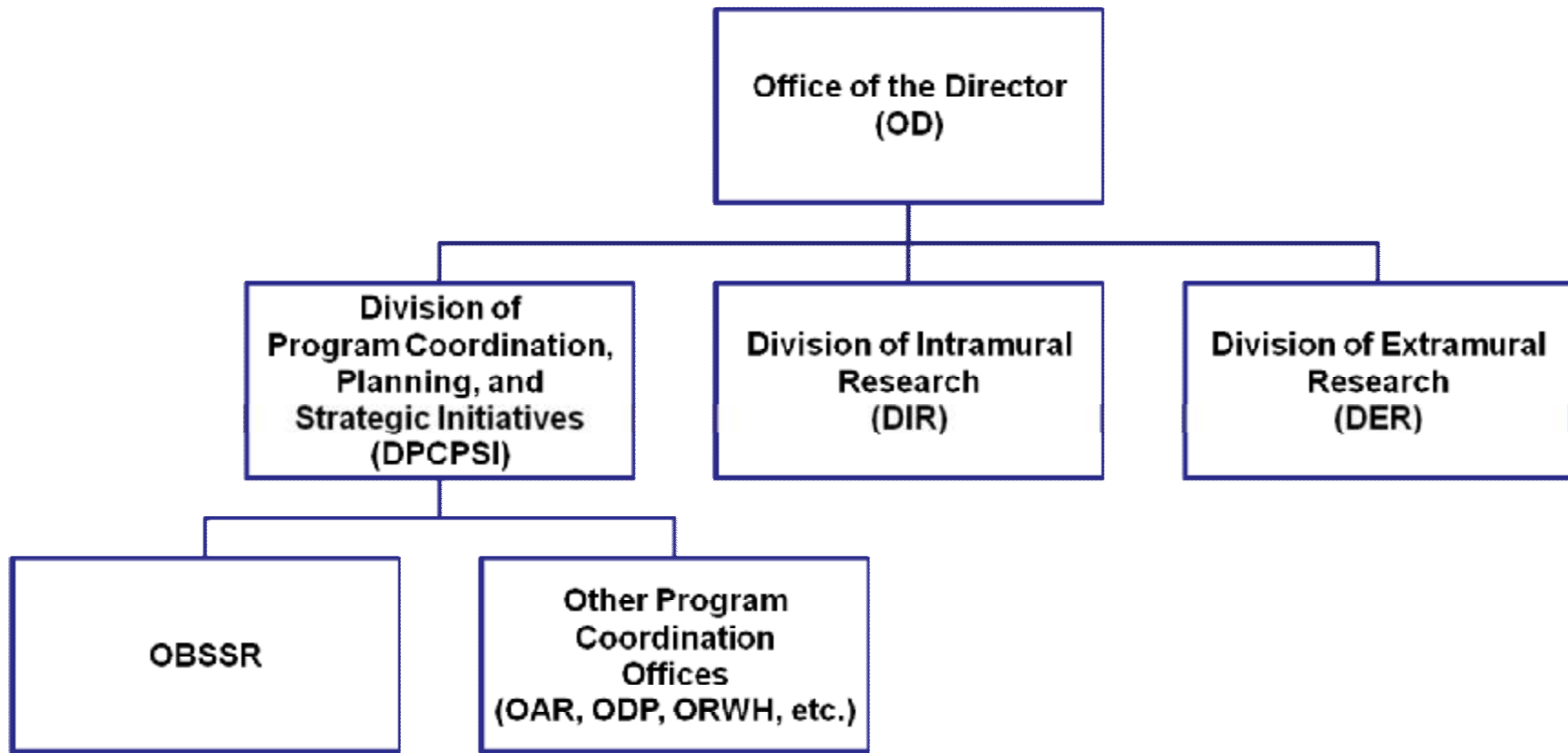
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OBSSR Mission

Office of Behavioral and Social Sciences Research (OBSSR)

... to stimulate behavioral and social science research throughout NIH and to integrate these areas of research more fully into others of the NIH health research enterprise, thereby improving our understanding, treatment, and prevention of disease.







- § Increase scope of and support for Behavioral and Social Sciences Research (BSSR).
- § Inform NIH leadership and community about BSSR.
- § Represent NIH to BSSR community.
- § Disseminate BSSR information to NIH and the public.



*As impressive as the strides in biomedicine are,
the NIH mission can't be fulfilled without it:*

- n 40-50% of deaths trace to behavioral causes
- n Low rates of adherence to medical treatment
- n Poor dissemination/implementation of biomedical advances
- n The fundamental causes of health disparities are social





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OppNet

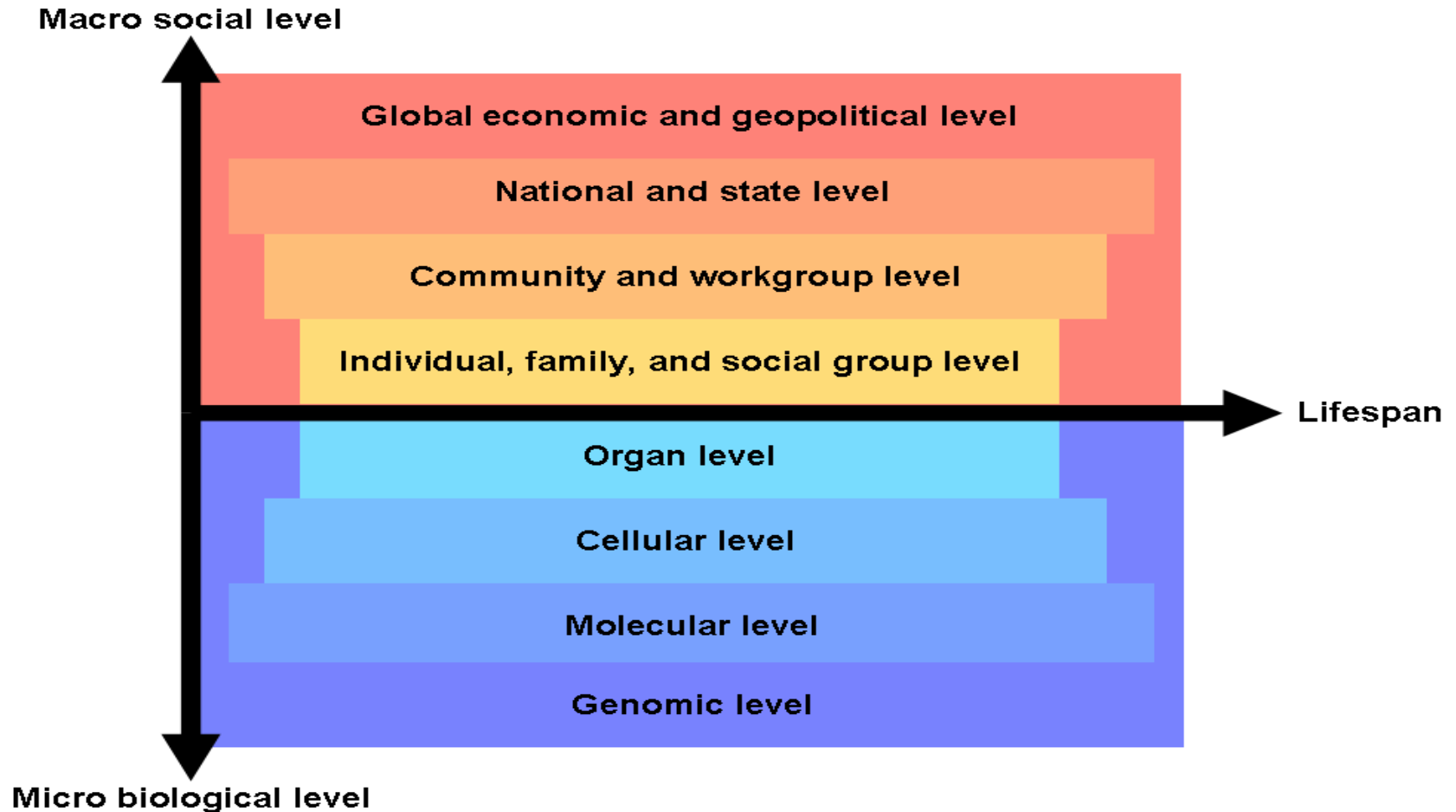
NIH's Basic Behavioral and Social Science
Oppportunity Network





OppNet goal

- To advance basic behavioral and social science research (b-BSSR) through activities and initiatives that build a body of knowledge about the nature of behavior and social systems.
- OppNet prioritizes activities and initiatives that focus on basic mechanisms of behavior and social processes, that are relevant to multiple NIH missions and public health challenges, and that build upon existing NIH investments without replicating them.





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An Integrative Causal Model

The Biomedical Model:
Causes of disease lie
in genes, molecules,
proteins

The Ecological Model:
Causes of disease are
behavioral and social
factors



INTEGRATION OF BIOMEDICAL **CAUSES** &
SOCIO-ECOLOGICAL **“CAUSES OF CAUSES”**





- Family research can be found throughout NIH Institutes:
 - Eunice Kennedy Shriver National Institute of Child Health and Human Development
 - National Institute on Drug Abuse
 - National Institute of Aging
 - National Institute of Diabetes and Digestive and Kidney Diseases
 - National Institute of Dental and Cranofacial Research
 - And many others





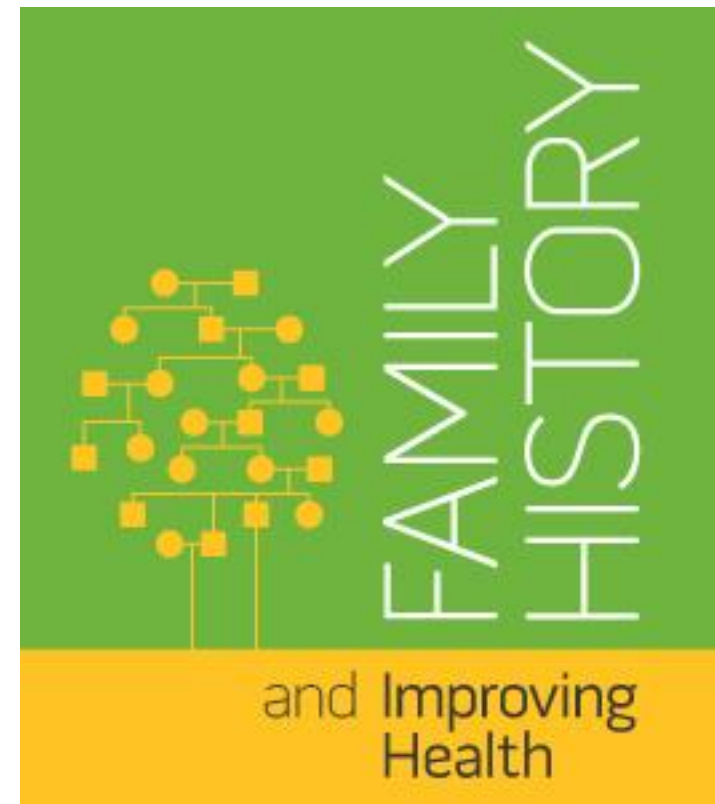
- **National Human Genome Research Institute**
- **My Family History (2004)**
 - Americans know that family history is important to health. A recent survey found that 96 percent of Americans believe that knowing their family history is important. Yet, the same survey found that only one-third of Americans have ever tried to gather and write down their family's health history.
 - Because family health history is such a powerful screening tool, the Surgeon General has created a computerized tool to help make it fun and easy for anyone to create a sophisticated portrait of their family's health.
 - [Access the My Family Health Portrait Web tool](https://familyhistory.hhs.gov/) at <https://familyhistory.hhs.gov/>.





**NIH State-of-the-Science Conference:
Family History and Improving Health**
August 24-26, 2009
Bethesda, Maryland

Conference explored what is known about:
The accuracy of family histories
The effects of collecting a family history
Science of family history collection





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Research on Families





§ Nurturing and methylation in rats

- § Observation that lactating mother rats differed markedly in licking/grooming & archback nursing of neonatal rat pups
- § These maternal differences associated with offspring differences in behavior, neuroendocrine response to stress, and neurotransmitters
- § Cross-fostering design to determine if offspring differences are a function of nature or nurture
- § Determination of whether nursing differences effects associated with specific DNA methylation effects
- § Test of whether the rearing-mediated epigenetic marking could be chemically reversed



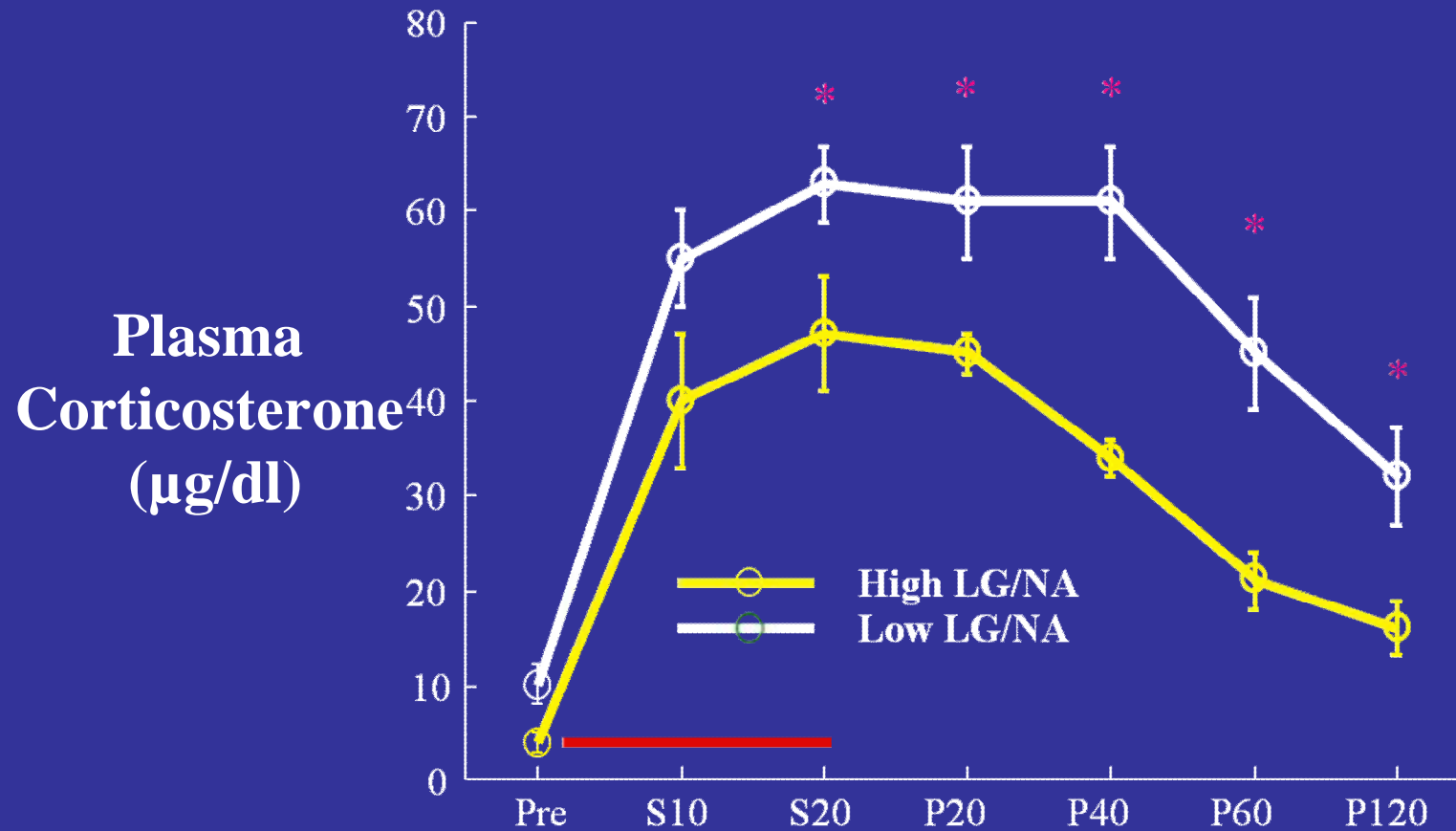


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Maternal Behavior: Where Nurture Meets Nature

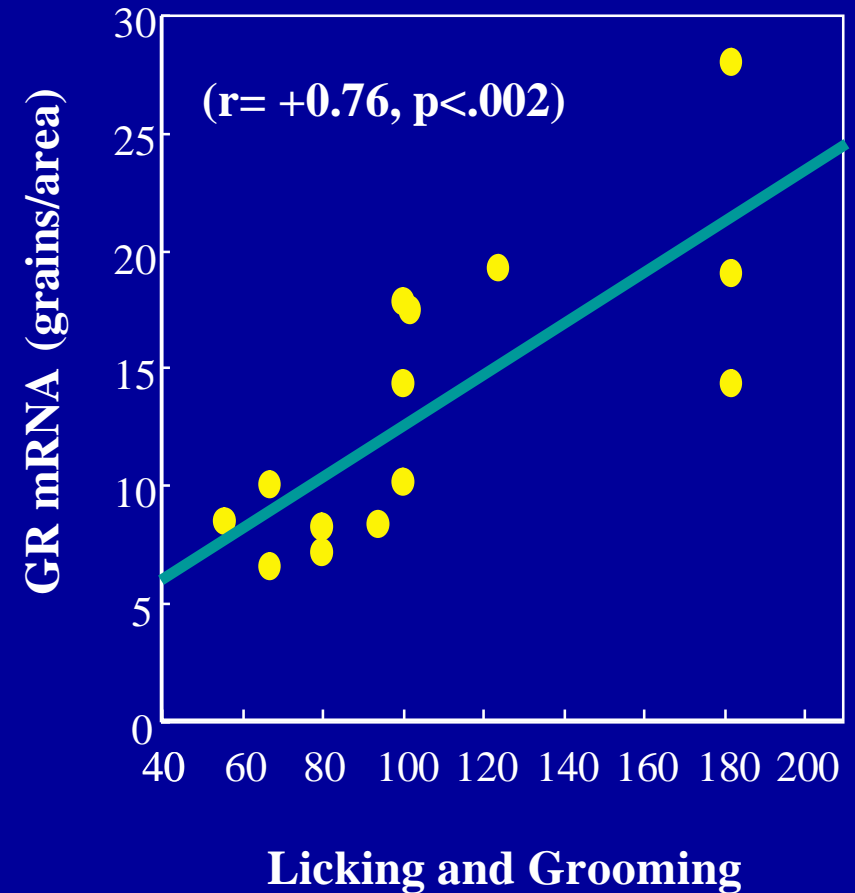
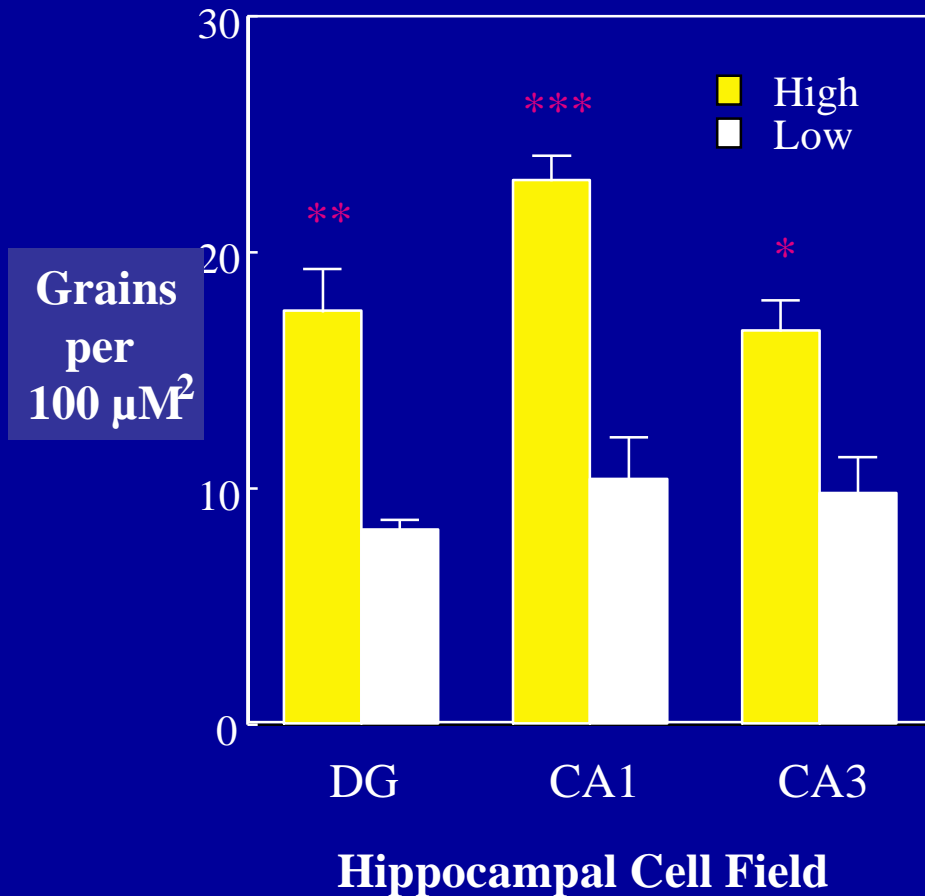


Offspring of high licking-grooming mothers - response to stress is reduced



Meaney, Ann Rev. Neurosci. 2001

Offspring of high licking-grooming mothers - increased glucocorticoid receptors in the hippocampus



Meaney, Ann Rev Neurosci. 2001

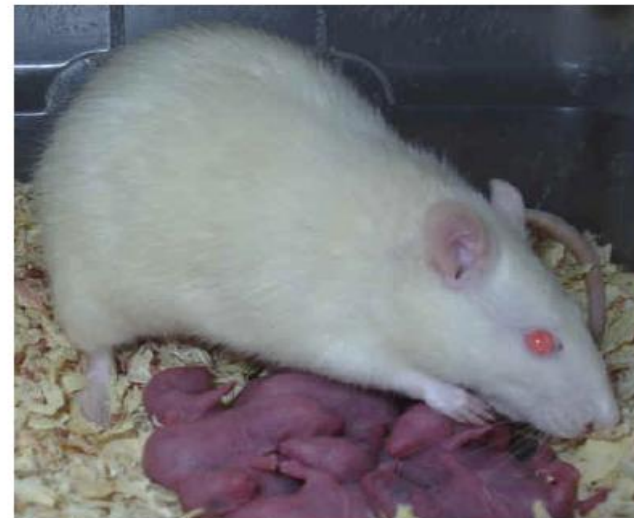


Basic behavioral mechanisms underlying genetically-mediated alterations in the development of stress responsivity



Meaney, Szyf et al.

- Low maternal rat pup licking & arched back nursing during 1st wk
- Leads to permanently reduced glucocorticoid receptor gene expression in the hippocampus of pups.
- Increased & prolonged reactivity of the HPA axis.



- Mediated by \uparrow DNA methylation, preventing NGFI-A binding to the promoter for the glucocorticoid receptor gene – inhibiting transcription and \downarrow Gc expression



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Family Research and Treatment Response

Differential responses to psychotherapy versus pharmacotherapy in patients with chronic forms of major depression and childhood trauma

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Family Science: Having an Impact

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"My question is: Are we making an impact?"





- Who should be included in the “family” construct
- Variation in the “family” construct by culture and age
- Reconciling discrepancies in family member reports
- Reconciling discrepancies in assessment modalities
- Shared vs non-shared vs synergistic parenting effects
- Experimental research on families
 - Translating animal models to humans (& vice versa)
 - Natural experiments
- Heuristic models that would help reduce the silos within family research
- Areas of research that require additional investment





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