

What is the Role of Behavioral and Social Sciences in Translating Genetic Research Into Population Health Benefits?

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CDC National Office of Public Health Genomics



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Society

Communication and Stakeholder Engagement

Population Sciences

Genome-based Science and Technology

Humanities and Social Sciences

Last month, we explored with our two speakers the role of population sciences with a focus on epidemiology

Education and Training

Research

*What do we do with a “gene”
when we find one and
characterize associated risks in
populations?*

The Emergence of
Behavioral/Social Sciences in the
Genomics Age!

Going Back to Gene-Based Medicine in 2010?

■ Condition	Genes	RR	Lifetime
■ Prostate Ca	HPC1, 2, 3	0.5	7%
■ Alzheimer's	APOE,FAD3,XAD	0.3	10%
■ Heart disease	APOB,CETP	2.5	70%
■ Colon Cancer	FCC4,APC	4.0	23%
■ Lung Cancer	NAT2	6.0	40%

Collins FC, New Engl J Med 1999;341:28-37.

Gene-Based Medicine in 2010?

Role of Public Health Sciences

- Increased Risk for
 - Heart disease
 - Colon Cancer
 - Lung Cancer
- **Role of Public Health Sciences**
 - **Epidemiology**-Get the numbers
 - **Behavioral/Social Science research**- will information change behavior and how it can be used in context of nongenetic information
 - **Decision and policy analysis**: What's genetics value-added to population intervention or just family history?

Washington University in St. Louis

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Studies identify DNA regions linked to nicotine dependence

Understanding genetic factors could contribute to better smoking-cessation therapies

By Jim Dryden

Feb. 8, 2007 -- Americans are bombarded with antismoking messages, yet at least 65 million of us continue to light up. Genetic factors play an important role in this continuing addiction to cigarettes, suggest scientists at Washington University School of Medicine in St. Louis.

COMMENTARY

CLINICIAN'S CORNER

JAMA Nov 22, 2006

Potential for Genetics to Promote Public Health

Genetics Research on Smoking Suggests Caution About Expectations

Chris Carlsten, MD, MPH

Wylie Burke, MD, PhD

THE NUMBER OF DNA-BASED TESTS AVAILABLE FOR USE in clinical care has rapidly increased over the past

smoking campaign in New York City contributed to the recent 11% decline in smoking prevalence there.¹³

How could genetics augment these public health efforts? Researchers have investigated the genetics of both smoking behavior and lung cancer. Genotypes that modulate smok-





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SPECIAL ARTICLE

Do We Need Genomic Research for the Prevention of Common Diseases with Environmental Causes?

Muin J. Khoury, Robert Davis, Marta Gwinn, Mary Lou Lindegren, and Paula Yoon

“The public health significance of genomic research on common diseases with modifiable environmental risks is based not necessarily on finding new genetic “causes” but on improving existing approaches to identifying and modifying environmental risk factors to better prevent and treat disease”



“The Need for A Systematic Approach to Complex Pathways in Molecular Epidemiology”

- “Pathway-driven thinking is a potentially a major step forward for the field of molecular epidemiology by providing a unified framework for the investigation of multiple genes and environmental factors that act in concert. This hope will only be realized, however, by advances in study design and statistical analysis that can integrate all these factors into a single model, incorporating prior knowledge from many disciplines”
- Thomas DC. Cancer Epi Biom Prev 2005;14:557

“Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate”

- “Recent knowledge is pushing scientists to look beyond single agents of health and disease. By breaking out of their disciplinary “silos” and embracing a broader systems view, based on the understanding that health outcomes are the result of multiple determinants—social, behavioral, and genetic--that work in concert through complex interactions, the best health outcomes from research may be yet to come”
- IOM Report August 2006

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Today we will explore with Drs Colleen McBride from NHGRI and David Abrams from OBSRR the role of behavioral and social sciences

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