

Genetic Analysis Information Network (GAIN): Description and Mission

- GAIN is a *public-private partnership* of the Foundation for NIH, Inc., which will include NIH, corporations, private foundations, advocacy groups and concerned individuals.
- Mission: Through a series of whole genome association studies, using samples from *existing studies*, the project will contribute to identifying the genetic pathways that cause or make us susceptible to these diseases. The resulting data will be *made available for free access* by the scientific community.

Summary of GAIN Design

- Investigators in existing studies invited to submit samples and data on 800-1,000 persons with disease and an appropriate number of disease-free controls for WGA genotyping
- Projects will be selected for genotyping based on:
 - strength of evidence for a genetic component
 - public health significance and complexity of trait
 - estimated power to detect a genetic effect
 - quality of DNA and phenotypic/exposure data
 - appropriateness of design and population

Summary of GAIN Design (continued)

- DNA from selected projects will be sent to a central laboratory for genotyping.
- Phenotype and environmental data will be submitted to a central database.
- Genotype data will be submitted to database for linking with phenotype data, and will be made available to all users at the same time.
- Access to phenotype data linked to genotype data will be provided through a restricted mechanism under specific constraints.

GAIN Timeline

11/28/05

**Executive
Committee
Established**

3/10/06

**Release of
Application &
Final Policies**

**Sept 06
Final
Selection**

**Nov 06
Analysis
Workshop**

2/8/06

**Public
Launch**

5/9/06

**Application
Deadline**

Oct 06

**DNA sent to
Genotypers**

Jan 07

**First
Dataset
Available**

Genes and Environment Initiative (GEI)

- Proposed in President's budget for FY07
- Aims to accelerate understanding of genetic and environmental contributions to health and disease
- Led by NIH-wide Coordinating Committee
- Two components:
 - Genotyping of case-control studies of common disease (\$26M per year for four years)
 - Development of innovative technologies to measure environmental exposures, diet, and physical activity (\$14M per year for four years)
- Planning currently underway

GEI Genetics Component

- Propose utilization of GAIN database, NIH-wide policies for data sharing under development
- Recognize need for more than just first-pass WGA studies
- Anticipate multiple components:

WGA genotyping

T Manolio, NHGRI

Data analysis

T Lehner, NIMH

Replication/fine mapping

R Hoover, NCI

Sequencing

M Guyer, NHGRI

Functional studies

J Rutter, NIDA

Clinical translation

M Fenton, NIAID

Bioinformatics

J Ostell, NCBI

GEI WGA Solicitations: RFA (Cooperative Agreements)

Three components:

- Genotyping Facilities (~ 3)
- Data Coordinating Center
- Investigators submitting samples and data (12-15 studies)

Proposed Tasks of Study Investigators

- Provide DNA from an adequate number of samples in sufficient quantity and quality for WGA or replication genotyping
- Provide detailed phenotypic and environmental data, collected according to widely-accepted and validated protocols, to the study's DCC
- Provide high-quality documentation, including study protocols, manuals, coding, and other information sufficient for outside users to use the data with minimal assistance

Proposed Tasks of Study Investigators (continued)

- Participate in study-wide WGA Steering Committee to share design and analysis techniques and promote comparability across genotyped studies wherever possible
- Analyze and publish WGA findings
- Pursue replication or other follow-up studies as needed (but under separate support)

