

# *Longevity Consortium*

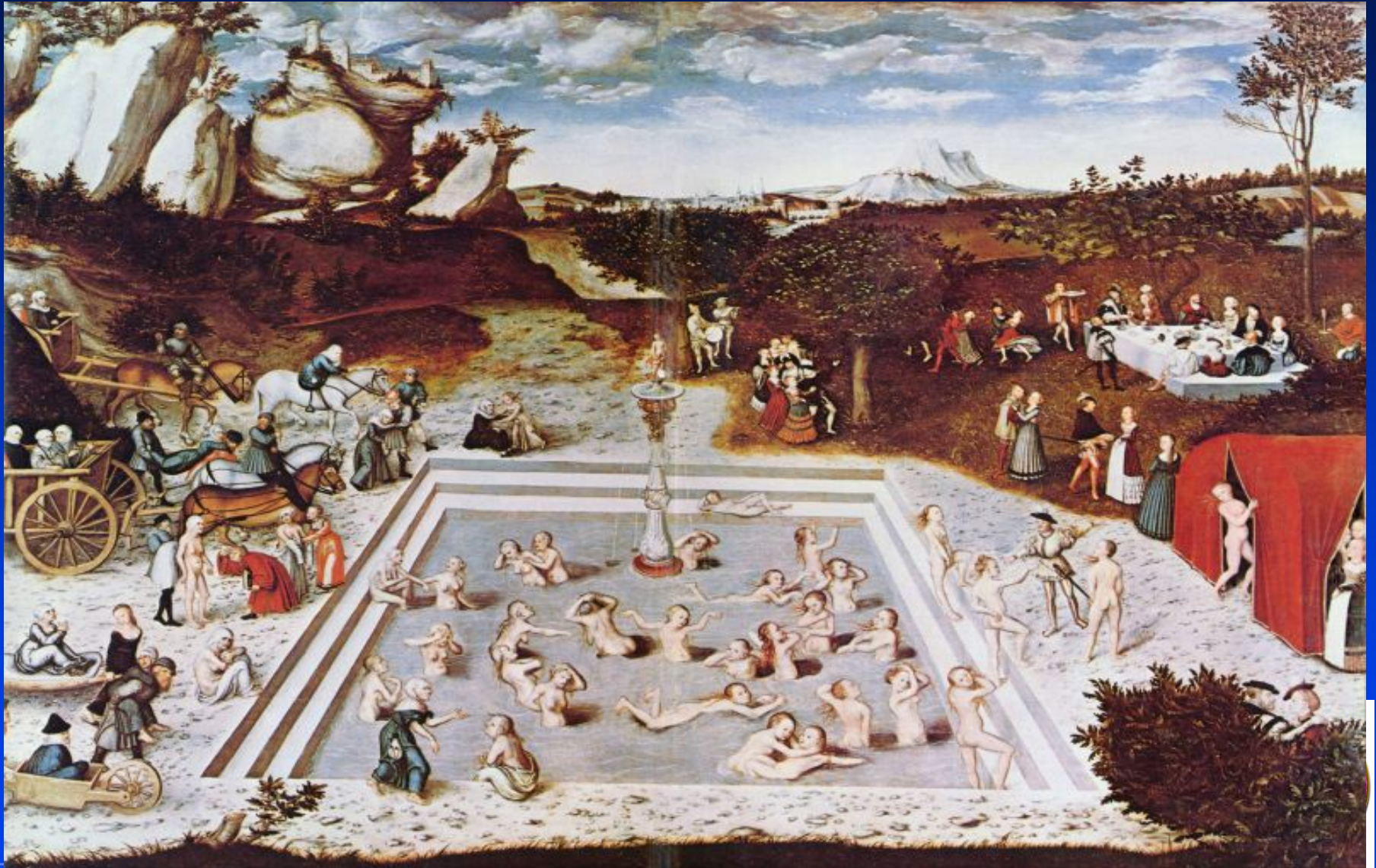


# Assumption

Exceptional human longevity is heritable



# Goal



# Goal

Identify genetic (and epigenetic) determinants of exceptional human longevity



# Assumption discoveries translate across species

- Genes influencing longevity are fundamental, ancient and conserved across species
- Genetic pathways that control lifespan in invertebrates and mice are likely to influence lifespan in humans



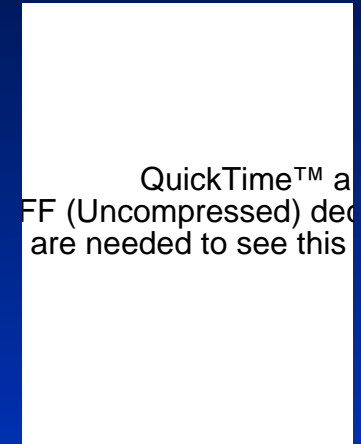
# Research strategy

- Search for genetic variants in pathways that control life span in model systems
  - Examples: insulin signaling, stress response, sirtuins



# Substrate of the Consortium

- Longevity laboratories
  - *C. elegans*, fruit flies, mice
- Human population studies
  - Cohorts of elders with DNA



# The pathway strategy

- Pathways will translate more robustly than specific snps
  - Candidate gene strategy has produced inconsistent results
- Sequencing was feasible and affordable



# Other sources of discovery

- Genome-wide scans
  - DeCode (defaulted)
  - Centenarians and large cohorts
- Epidemiologic studies
  - Inflammation
- Positive candidate gene studies



# Sharing ideas and results

- Symposia ~ twice yearly (Arnold Kahn)
- All members
- Foci
  - Genetic and biological pathways controlling longevity and aging
  - Research methods
  - Results



# Funds to speed discovery, translation, and confirmation

- Scientific Opportunity Funds
  - Small amounts
  - Rapid funding
  - Rigorous review



# Principles

- Participation is voluntary
- Held together by mutual interest and benefits
- Leadership: no stake in I.P. or publishing 1st



# History

- Initial NIA funding for a Consortium (2001)
  - Formation of a group of basic scientists, epidemiologists and statisticians
  - Meetings to cross fertilize
  - Identify promising pathways and studies
  - Designed, critiqued and selected studies for phase II



# U01 (NIA) Core Research Projects

- Insulin signaling in mice (Barthke)
- Insulin signaling in humans (Ziv)
- Stress response (Miller)
- Inflammation (Reiner)
- Telomeres (Cawthon)



# U01 Infrastructure Cores

- Genotyping (Kwok)
- Biostatistics (Schork)
- Administrative (Cummings & Browner)



# U01

## Consortium members

- Cohorts (CHS, SOF, Framingham, Rotterdam, WHI, Honolulu Heart, Beaver Dam, Rancho Bernardo...)
- Centenarians (New England, LonGenity, Okinawa...)
- Twins (UK)
- Laboratories (Buck Institute, many others)
- Statisticians
- Others



# U01 Oversight

- NIA Staff
  - Winnie Rossi
  - Evan Hadley
- Observational Study Monitoring Board



# Today

- Reports
  - ↗ Projects
  - ↗ Cores
  - ↗ S.O.F. studies
- GWAS



# Special Thanks

- Alicia Whittington
- Greg Tranah
- Winnie Rossi

