



# NIH Genes and Environment Initiative Exposure Biology Program

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## Improved Measures of Diet and Physical Activity for the Genes and Environment Initiative

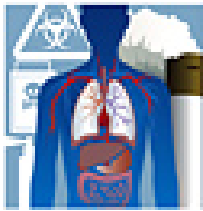
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**NHLBI**



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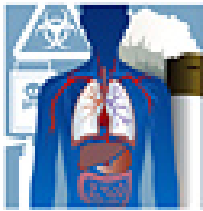
- **Improved Measures of Diet and Physical Activity for the Genes and Environment Initiative (GEI) (U01) -- RFA-CA-07-032**
- **Website:**  
**<http://www.gei.nih.gov/exposurebiology>**



# NIH Genes and Environment Initiative Exposure Biology Program

- **Background**

- **Diet and physical activity (PA) critical in health and disease risk**
- **Historically, both measured via self-report**
- **Prone to measurement error**
  - ... **Bias**
  - ... **Memory**
  - ... **Cognitively difficult**
  - ... **Respondent burden**
  - ... **Databases**



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- **Dietary methods and their limitations**
  - Records: burden, reactivity, lacks detail, multiple days required, literacy
  - 24-hour recalls: memory, expense, multiple days required
  - Food frequency questionnaire: memory, cognitively difficult, lacks detail, literacy
- **All methods subject to bias**
- **Biomarkers: only a few considered “reference” for intake**



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- **PA methods and their limitations**
  - **Records: burden, reactivity, quality**
  - **Motion monitors: generally locomotion only, miss upper body and load carrying**
  - **Heart rate monitors: affected by many factors at low activity levels (e.g., stress, caffeine), require individual calibration for precise expenditure measure**



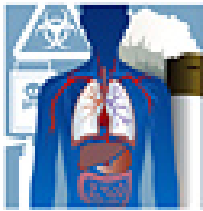
# NIH Genes and Environment Initiative Exposure Biology Program

- **Available funding:**
  - \$16 million (total cost) for 4 years
  - 6-8 new grants
- **Key Dates:**
  - Letters of Intent: December 11, 2006
  - Application Receipt Date: January 11, 2007
  - Earliest Anticipated Start Date: July 2007



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- **Intent of diet and physical activity RFA**
  - **Development of new or refining of existing technologies to measure dietary intake or physical activity or both**
  - **Small scale validation expected**
  - **Encourage multidisciplinary research**



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- **Responsive: Physical Activity**
  - Motion or physiologic sensors/monitors or combinations
  - Imaging methods
  - Cellular telephone and wireless technologies
  - Bioinformatics tools/database solutions
  - Ecological momentary assessment
  - Multidisciplinary research





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- **Responsive: Diet**

- **Technologies**

- ...sensors, scanning, and/or other measurement devices

- ...imaging techniques

- ...wireless technologies

- ...software and database applications

- ...refining existing computer, web-based, or PDA technologies

- **Biomarkers**

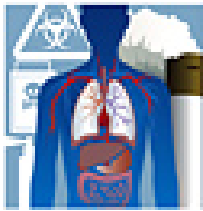
- ...array of objective recovery biomarkers

- **Multidisciplinary research**



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- **Not responsive:**
  - Stand-alone validation projects
  - Devices not ready for application in large-scale population studies by end of funding
  - Slight adaptations of existing questionnaires or technologies
  - Food frequency questionnaires
  - Determinants of behavior



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- **Milestones:**
  - Yearly: well-described, quantitative, and scientifically justified milestones
  - NOT simply a restatement of specific aims
  - Specific quantitative benchmark parameters, timeline for development
  - Adjusted annually to incorporate scientific accomplishments/progress and recommendations of the Steering and Advisory Committees
- **Applicability**
  - Likelihood that project will produce field-deployable tools by end of funding period
  - Feasibility for population studies



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- **Application details:**
  - Paper application (PHS 398) *not* SF 424
  - Copies: to CSR with 2 additional copies to NCI
  - Appendix material: pdf format (send disk with paper copies to NCI)
  - Must include Data Sharing Plan
  - Human Subjects: address requirements of PHS 398
  - Detailed Budget (not modular): dates and amounts on face page must agree with info on application budget pages