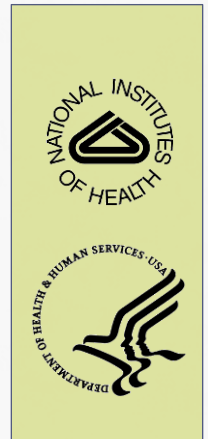


GENOMIC SEQUENCING AND NEWBORN SCREENING DISORDERS

TIINA K. URV, PH.D. NICHD/NIH

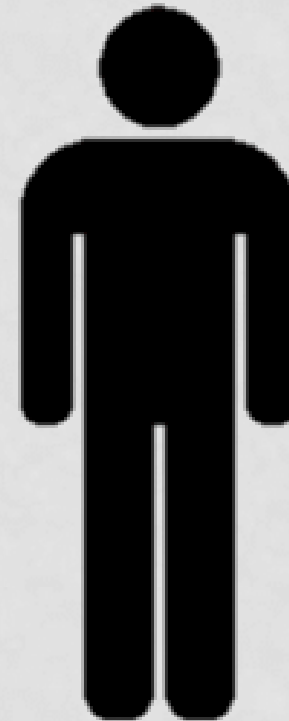


A LITTLE BACKGROUND

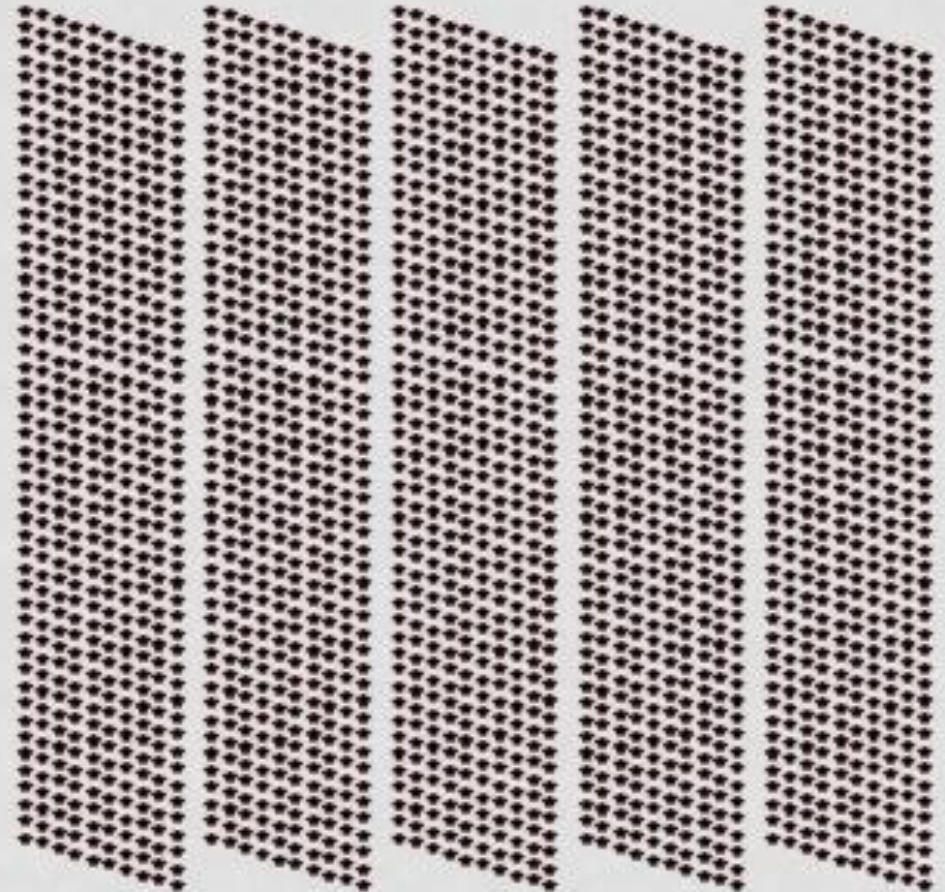


This initiative started as an idea that was stimulated by a discussion of genomics at the Secretary's Advisory Committee on Heritable Disorders in Newborns and Children in early 2010

GENOMICS THEN...



GENOMICS NOW





To prepare for these changes and the impact that it might have on newborn screening and child health Alan Guttmacher and Eric Green brought together staff members with the intention of organizing a workshop to discuss these concerns...

NEWBORN SCREENING IN THE GENOMIC ERA: SETTING A RESEARCH AGENDA



5635 Fishers Lane, Rockville, MD
December 13–14, 2010

SPONSORED BY:

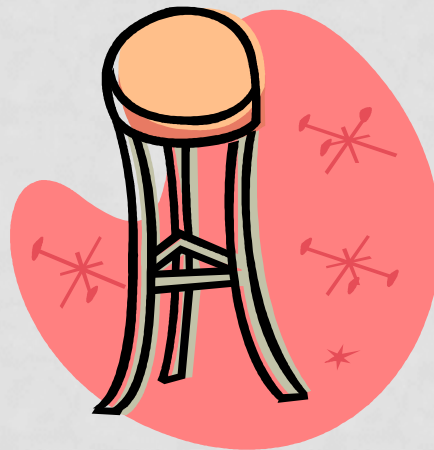
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
National Human Genome Research Institute (NHGRI)
NIH Office of Rare Diseases Research (ORDR)



- The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), the National Human Genome Research Institute (NHGRI), and the NIH Office of Rare Diseases Research (ORDR) sponsored a workshop, *Newborn Screening in the Genomic Era: Setting a Research Agenda*.
- The purpose of the meeting was to identify elements of a trans-NIH research agenda that would lead to the application of new genomics concepts and technologies to newborn screening and child health.
- The meeting was attended by experts from academia, industry, and federal agencies in the fields of newborn screening (NBS) and genomics
- Chaired by Drs. David Valle (Johns Hopkins, University) and Piero Rinaldo (Mayo Clinic).

PRIMARY OUTCOMES OF THE PROCEEDINGS

- Important to evaluate genomic data in newborns using newborn screening as a framework
- Important to prioritize clinical validity and clinical utility; not just analytical validity
- Important to address ethical, legal and social concerns




Department of Health and Human Services

Part 1. Overview Information

Participating Organization(s)	National Institutes of Health (NIH)
Components of Participating Organizations	<i>Eunice Kennedy Shriver</i> National Institute of Child Health and Human Development (NICHD) National Human Genome Research Institute (NHGRI)
Funding Opportunity Title	Genomic Sequencing and Newborn Screening Disorders (U19)
Activity Code	U19 Research Program – Cooperative Agreements
Announcement Type	New
Related Notices	<ul style="list-style-type: none">• August 15, 2012 - Informational/Technical Assistance Pre-application Meeting for RFA-HD-13-010. See Notice NOT-HD-12-027.
Funding Opportunity Announcement (FOA) Number	RFA-HD-13-010

MUST ADDRESS ONE OR MORE OF THE FOLLOWING QUESTIONS

- 
- For disorders currently screened for in newborns, how can genomic sequencing replicate or augment known newborn screening results?
 - What knowledge about conditions not currently screened for in newborns could genomic sequencing of newborns provide?
 - What additional clinical information could be learned from genomic sequencing relevant to the clinical care of newborns?

COMPULSORY COMPONENT PROJECTS

Administrative Core

Genomic
Datasets

Clinical
Research

Ethical,
Legal &
Social
Implications
Research

COMPONENT PROJECT 1

- Acquisition and analysis of genomic datasets that expand considerably the scale of data available for analysis in the newborn period.
- This component of the initiative requires:
 - the collection and analysis, for each participant, of a “large genomic dataset”
 - in this context means a collection of high-quality nucleic acid data from all or a large portion of the genome of each of the study participants. **At a minimum** the scale of data that is required is whole genome or whole exome.

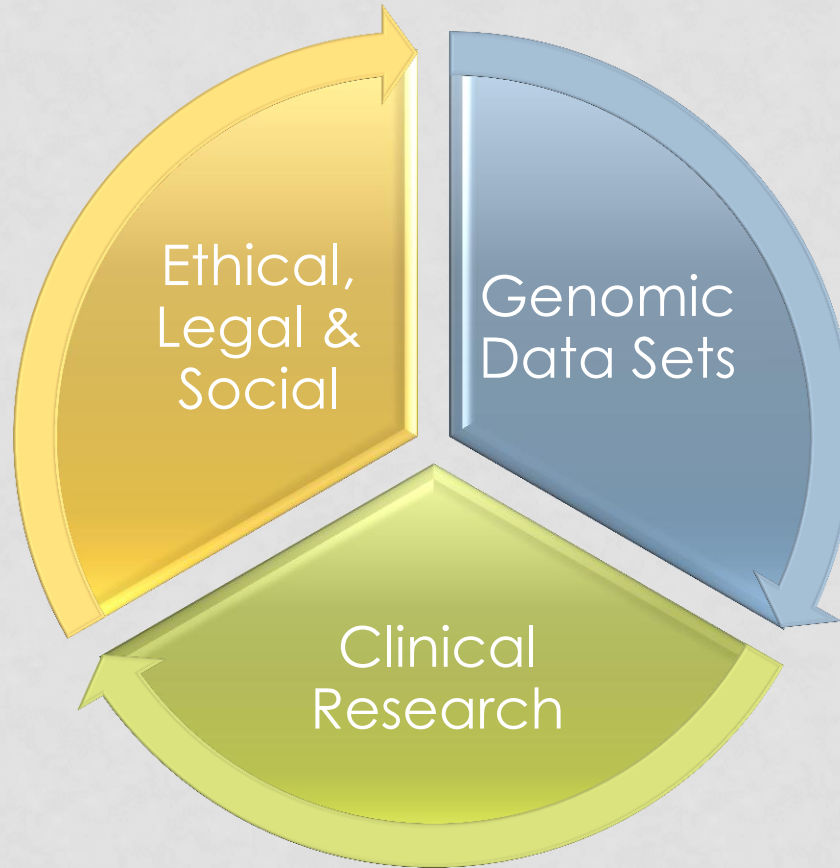
COMPONENT PROJECT 2

- Clinical research that will advance understanding of specific disorders identifiable via newborn screening through promising new DNA-based analysis.
 - This component of the initiative focuses on disorders that are currently identified by NBS or that could potentially benefit from early identification by newborn screening.
 - Possible research topics may include but are not limited to:
 - Correlating genetic, genomic, and/or pharmacogenomic information with phenotypic data to determine prognostic factors in disease presentation, progression, and response to therapy for disorders identified through newborn screening;
 - Identifying the relevance of genetic variants;
 - Developing an analysis pipeline that improves quality and interpretation of newborn genomic data as a function of the availability of one or both parents' genomic information.

COMPONENT PROJECT 3

- Research related to the ethical, legal and social implications (ELSI) of the possible implementation of genomic sequencing of newborns
 - This component of the initiative involve studies related to the social (including ethical, psychosocial, legal, and economic) issues that may arise from the possible implementation of genomic sequencing of newborns.

EMPHASIS & QUALITY OF PROJECTS MUST BE EQUAL



U-19 MECHANISM

A COOPERATIVE AGREEMENT

- **To support a research program of multiple projects directed toward a specific major objective, basic theme or program goal, requiring a broadly based, multidisciplinary and often long-term approach.**
- A cooperative agreement research program generally involves organized efforts of large groups:
 - Research projects designed to target various aspects of a specific objective.
 - Substantial Federal programmatic staff involvement is intended to assist investigators during performance of the research activities.
 - The investigators have primary authorities and responsibilities to define research objectives and approaches, and to plan, conduct, analyze, and publish results, interpretations and conclusions of their studies.
 - Each research project is usually under the leadership of an established investigator in an area representing his/her special interest and competencies.
 - Each project supported through this mechanism should contribute to or be directly related to the common theme of the total research effort.

BUDGET

Funds Available and Anticipated Number of Awards	NICHD and NHGRI intend to commit an estimated total of \$25 million
Award Budget	Application budgets should not exceed total costs of \$1.25 million dollars per year, and must reflect actual needs of proposed research project.
Award Project Period	The scope of the proposed project should determine the project period. The maximum period is 5 years.

IMPORTANT DATES

Posted Date	August 9, 2012
Letter of Intent Due Date	October 19, 2012
Application Due Date(s)	November 19, 2012
Scientific Merit Review	April 2013
Advisory Council Review	May/June 2013
Earliest Start Date(s)	July 1, 2013

NEWBORN SCREENING/GENOME TEAM

- NICHD

- Alan Guttmacher
- Tiina Urv
- Melissa Parisi

- NHGRI

- Eric Green
- Anastasia Wise
- Jeff Schloss
- Joy Boyer
- Lucia Hindorff
- Lu Wang
- Teri Manolio