



PAR-17-482
Comparative Genomics
Research Program
NIH-NHGRI and USDA-NIFA
(R01-Clinical Trial Not Allowed)



National Human Genome Research Institute

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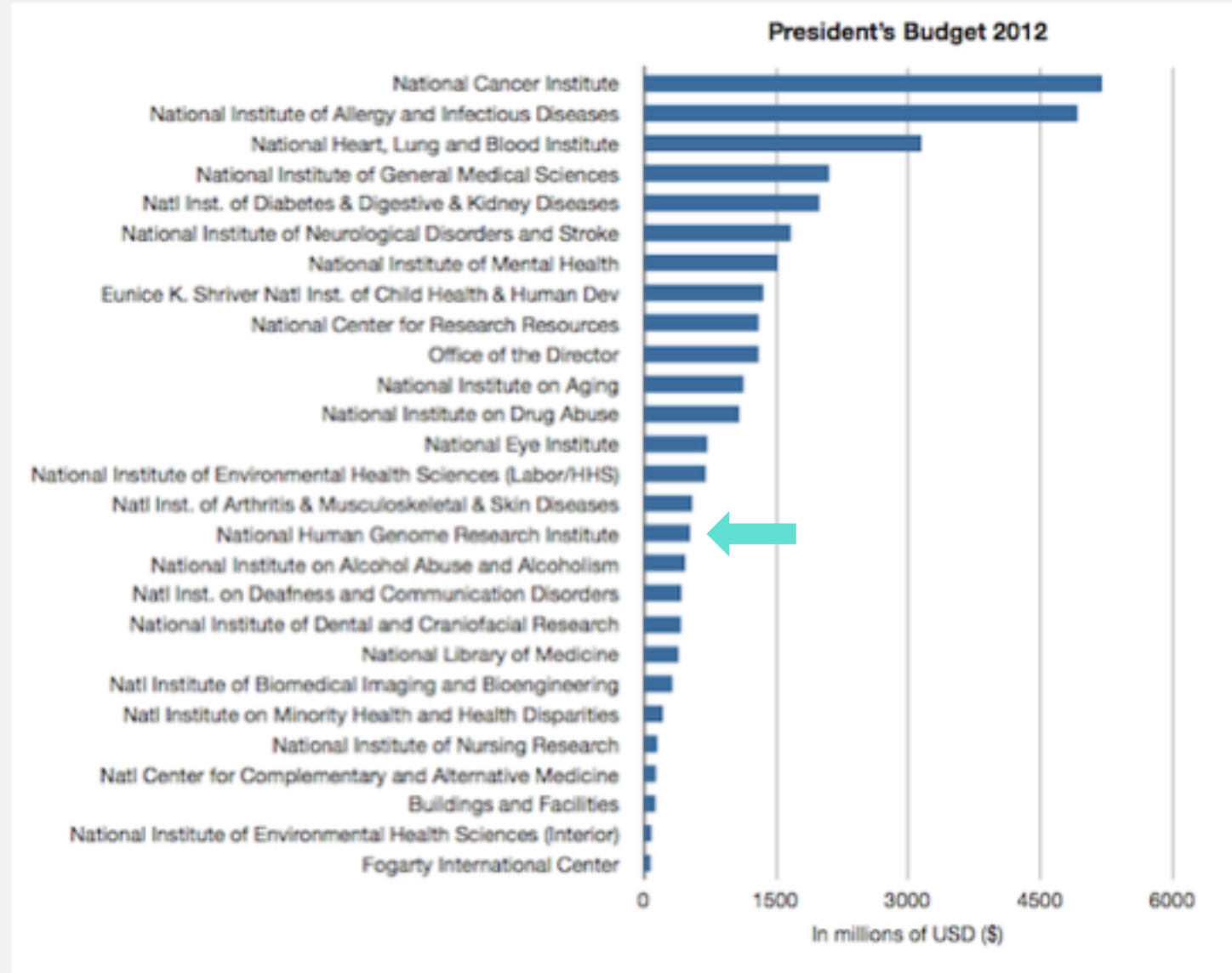
The **Forefront**
of **Genomics**

NIH's mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.



NIH At a Glance

- \$37 billion USD in 2018
- 27 Institutes and Centers
- >80% awarded through competitive grants
- >300,000 researchers in every US state and around the world
- ~10% supports scientists in NIH labs



National Human Genome Research Institute

- **Vision: to improve the health of all humans through advances in genomic research**

At NHGRI, we believe that advances in genomics research are transforming our understanding of human health and disease. Building on our leadership role in the initial sequencing of the human genome, we collaborate with the scientific and medical communities to enhance genomic technologies that accelerate breakthroughs and improve lives. At NHGRI, we are empowering and expanding the field of genomics. We are charting one of humankind's newest frontiers.

The **Forefront**
of **Genomics**[®]

Division of Genome Sciences

- supports and accelerates foundational resources, technology development, experimental approaches, data science, and analytical tools that transform genome science to facilitate research on the function of the genome in human health and disease

Division of Genomic Medicine

- leads the institute's efforts to move genomic technologies and approaches into clinical applications and care, develops and supports research to identify and advance approaches for the use of genomic data to improve diagnosis, treatment, and prevention of disease

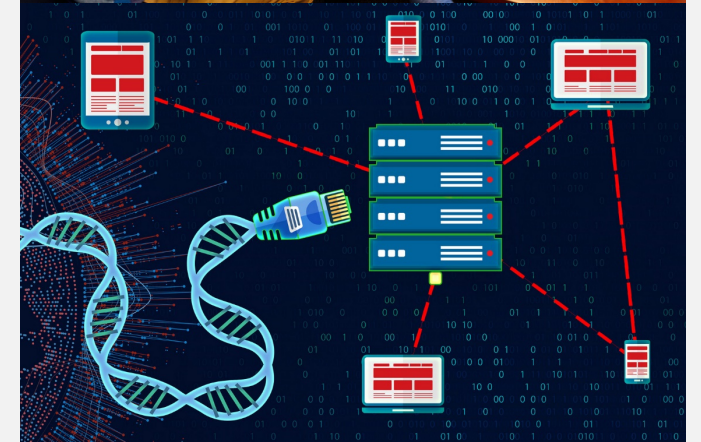
Division of Genomes & Society

- carries out research related to the many societal issues relevant to genomics research, and includes the institute's Ethical, Legal and Social Implications (ELSI) program.

Division of Genome Sciences

GOALS

- Advance understanding of genome variation and function in human health and disease
- Catalyze innovation and serve as leaders in genomics research
- Support foundational genomics resources that enable scientific discoveries





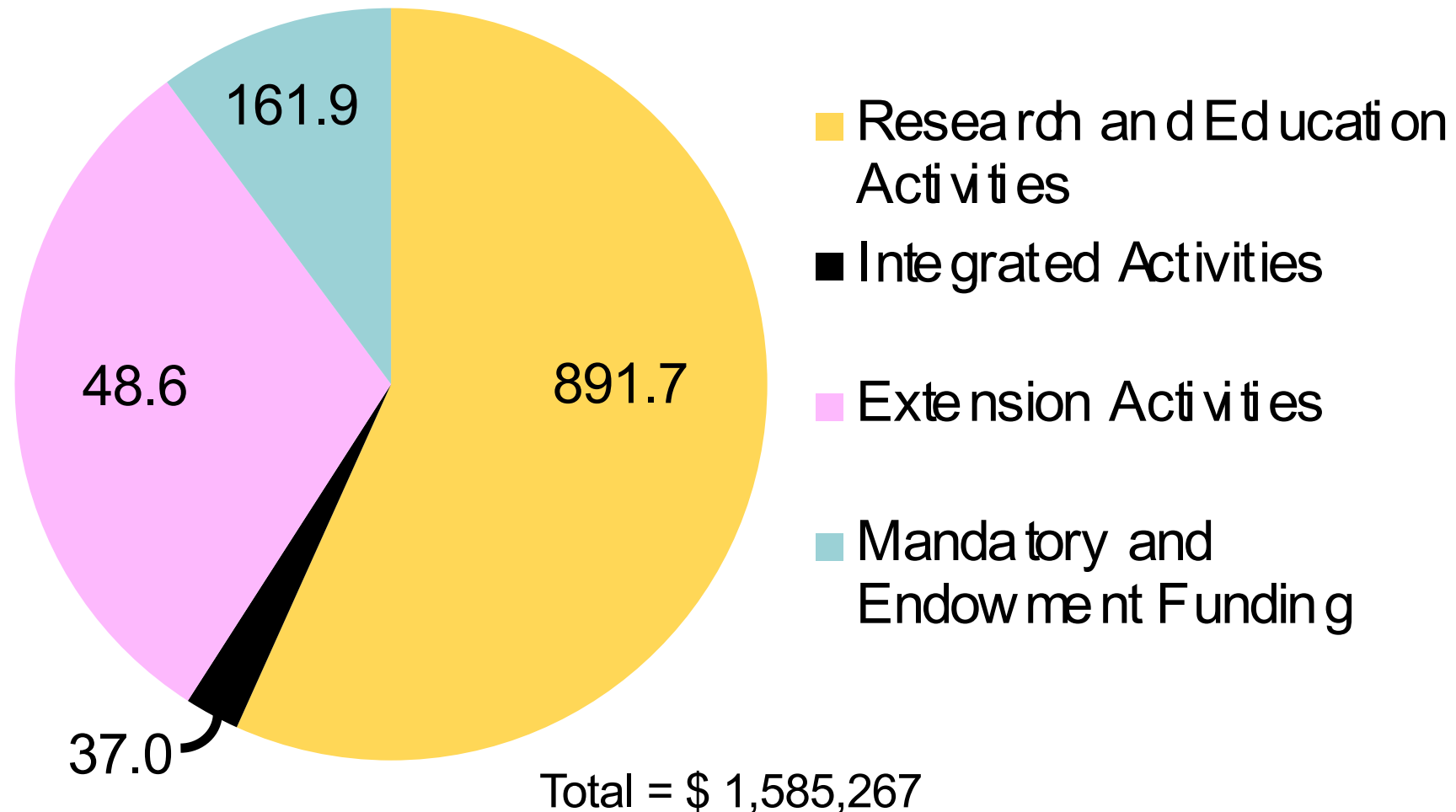
USDA National Institute of Food and Agriculture

Who we are and what we do:

- provide leadership and funding for programs that advance agriculture-related sciences
 - ◆ Advance competitiveness of U.S. agriculture
 - ◆ Enhance safety of nation's food supply

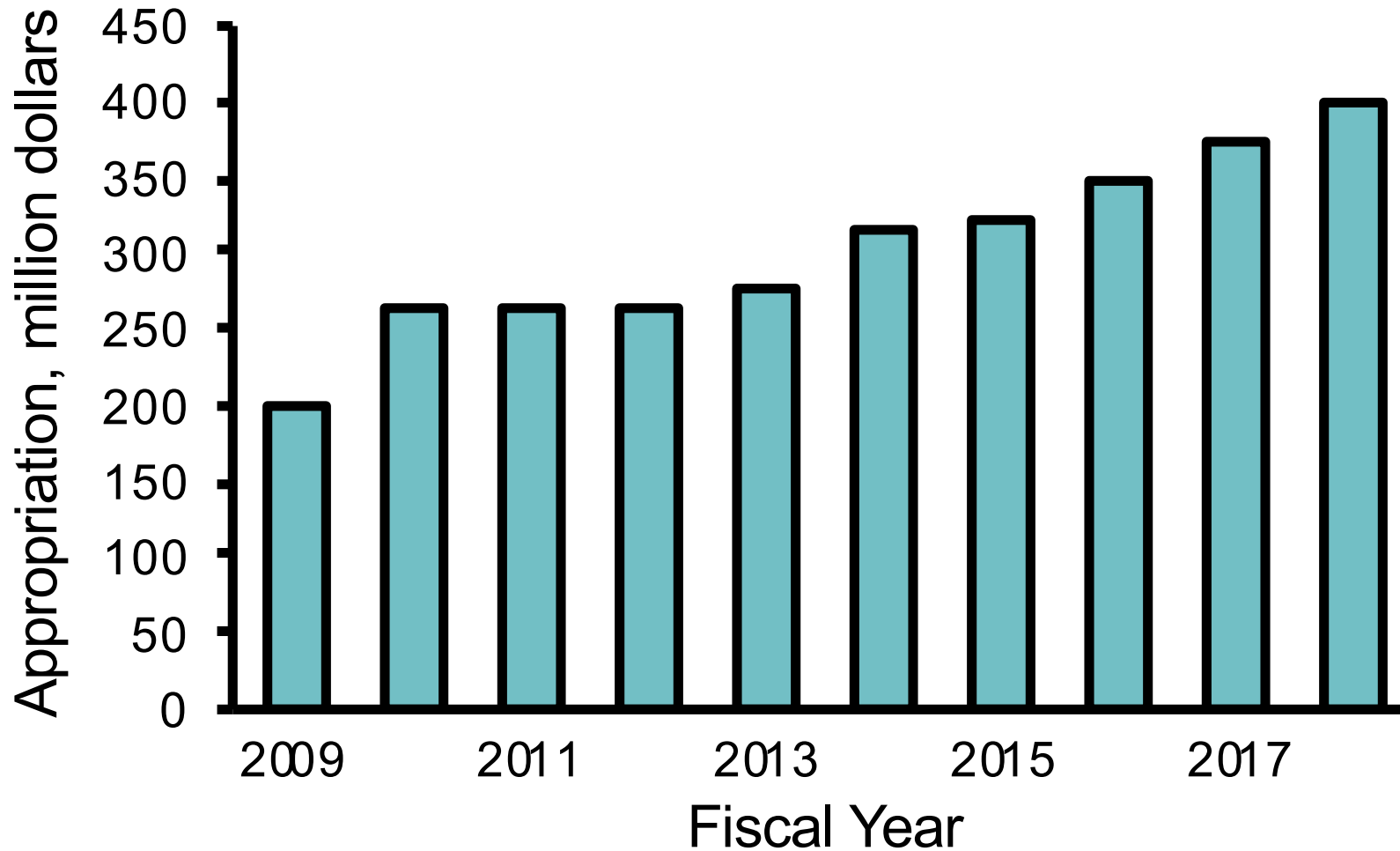


NIFA's FY 2018 Budget (million \$)





AFRI Funding History





AFRI Farm Bill Priorities

- Plant health and production, plant products
- Animal health and production, animal products
- Food safety, nutrition, and health
- Bioenergy, natural resources, environment
- Agriculture systems and technology
- Agriculture economics and rural communities

PAR-17-482 – Comparative Genomics: Purpose

- **develop comparative approaches**
 - genome structure and function
 - the relationship between genomic features and phenotypes
- **enable the use of a diverse array of species**
 - advance our ability to understand basic biological processes related to human health and disease
- **develop novel analytical tools and resources**

PAR-17-482 – Comparative Genomics: Research objectives

Development of new comparative genomics research approaches using genomic data types to understand biological systems, networks, and pathways.

- innovative and promising approaches
- genome-wide and multi-species comparisons
 - DNA, RNA, regulatory element, pathway, or similar genomic levels

PAR-17-482 – Comparative Genomics: Research objectives, continued

Development of new comparative genomics research approaches that:

- enable answering novel questions
- significantly improve the state-of-the-art
- integrate genomics and other data types across a diversity of species
- develop new computational methods, tools, and algorithms
- fully leverage multiple data types and functional information available from diverse species
- provide comprehensive comparative genomics resources and tools for the community

PAR-17-482 – Comparative Genomics: Research strategy

Applicants should describe:

- The **generalizability and broader relevance** of the proposed research beyond the specific species targeted in the study
- How results will contribute to our understanding of biological processes **and improve our understanding of the relationship of genome function and human health**
- The **novelty** of the research; how is it distinct from existing research efforts?
- **Rationale for species selection**
- **Use of existing data or a strong rationale** for new data generation

Contacts

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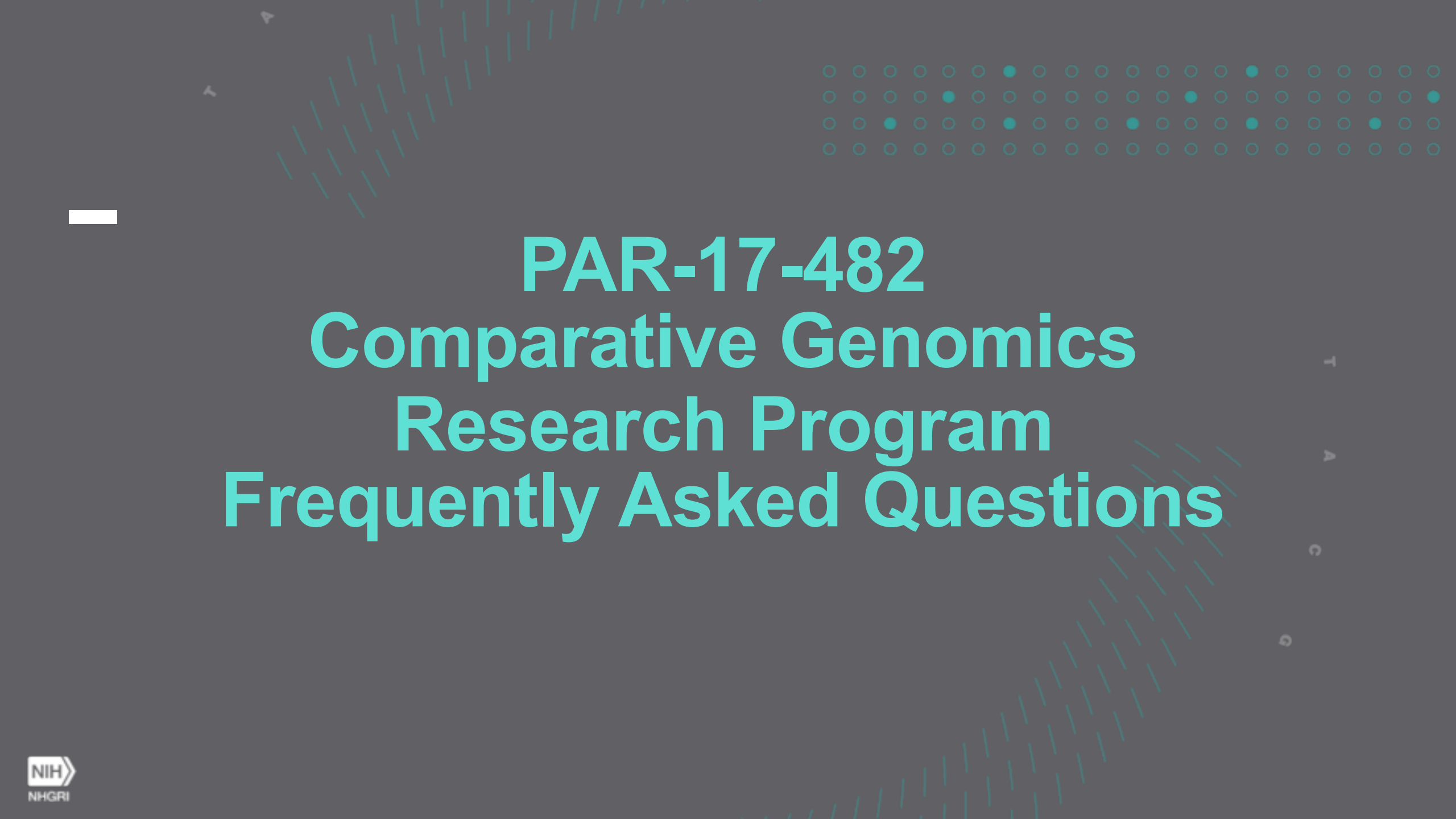
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NIFA's priorities for Comparative Genomics Research



Developing comparative approaches that can be used to

- Understand genome structure and function and the relationship between genomic features and agriculturally important phenotypes.
- Use of a diverse array of species to advance our ability to improve genome annotations that complements Functional Annotation of Animal Genomes (FAANG) efforts
- Understand basic biological processes related to health and disease of agriculturally important animals (Livestock, Poultry, Aquaculture)
- Develop novel analytical tools and resources for the comparative genomics research community.



PAR-17-482
Comparative Genomics
Research Program
Frequently Asked Questions

How much funding is available for this program from NIH?

NHGRI does not have set aside funds for this program. Funding will be determined by score, available funds, and the fit with NHGRI programmatic priorities.

How much funding is available for this program from USDA?

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USDA is planning on investing up to \$3M for this program and would like to make 2 awards from this program.



Does NIH and USDA co-fund the successful grant proposals?

Highly ranked projects will be selected for funding either by NIH or NIFA based on the alignment of the project proposal to the goals of the agency. We are not planning on cofunding grant proposals

What are the submission deadlines?

This PAR has three receipt dates: October 5; February 5; and June 5 through 2018-2020.

This opportunity expires on January 8, 2021.

Proposal resubmission deadlines are as follows: November 5; March 5; and July 5 through 2018-2020.

NIFA is participating for 1 year for 3 grant cycles. USDA will not fund revised or renewal proposals in this program.

USDA has a companion funding opportunity; how does this work?

NIFA at the USDA has signed on to this funding opportunity and may choose to fund projects in their area of interest. Applications will be reviewed at NIH. Post-review, highly ranked projects may be selected for funding either by NHGRI or NIFA based on the alignment of the project proposal to the goals of the specific agency. Awards that are selected for funding by NIFA will be transferred and administered at USDA according to their rules and regulations. There is no plan for joint funding of individual proposals.

Which agency will receive / review grant proposals?

NIH is the lead agency for this program. Hence, all proposals have to be submitted to NIH call for the PAR at grants.gov. NIH will also conduct the review of the proposals. NIH and NIFA may jointly put together a panel for reviewing the proposals based on the expertise needed to review the proposals received.

How will these applications be reviewed?

Applications will be reviewed at NIH by the Genetic Variation and Evolution (GVE) standing study section with ad hoc reviewers with special expertise brought in as necessary to review submitted applications. Some applications may go to other standing study sections such as GCAT or BDMA, as appropriate. Applications submitted to this PAR will be reviewed as a group using standard review criterion for NIH R01 awards.

Does this program support sequencing and/or data generation?

This program supports novel comparative approaches, methods, tools, and resources that will have broad utility. If specific data generation is required to validate the approach or method, test the tools, or complete a resource, then some data generation may be supported. We expect that, as much as possible, applicants will use existing data.

What species/organisms are allowed under this funding opportunity? How many species is enough?

Any eukaryotic organisms are allowed if they will provide insight into how genomes function and how changes in human genomic sequence and/or organization may translate into phenotypic changes. Species selection, both in terms of number of species and the evolutionary breadth of species included, should be relevant to the question being asked and should include sufficient representation to ensure broad applicability of methods, approaches, tools, and biologically relevant findings. NHGRI is interested in projects with relevance for human health and disease; NIFA is interested in projects involving agricultural animal species that may provide insight into outcomes relevant to agriculture.

Does this program also seeks proposals addressing the comparative genomics of the pathogens such as bacteria and fungi?

In this program we are more interested in comparative genomics of the host. With regards to host-pathogen interactions projects focused on comparative immunology where understanding the interplay of microbial and host genetics would better fit the program priorities for this RFA.

Does the proposal need to benefit both animal agriculture and biomedicine?

The dual purpose dual benefit program requires that the projects submitted to the program need to benefit both biomedicine and animal agriculture. <https://grants.nih.gov/grants/guide/pa-files/PAR-16-366.html>

For the comparative genomics program, there is no requirement for the project to benefit both animal agriculture and biomedicine. Highly ranked projects aligned with biomedical research goals will be considered for funding by NIH, whereas highly ranked agricultural animal genomics projects will be considered for funding by USDA-NIFA. If you are interested in understanding the genetic basis of specific trait(s) of interest to animal agriculture that could be identified through the use of Comparative genomics approach, then this joint funding opportunity is appropriate.



Establishing a “2020 Vision for Genomics”

The next round of NHGRI strategic planning

The 2020 NHGRI Strategic Plan will Aim to...

- Be driving force for genomics
- Provide a clear (i.e., 2020) vision for using genomics to advance human health
- Guide NHGRI's scientific priorities and shape our research portfolio
- Foster partnerships with research, healthcare, education, policy, and various general-public communities
- Help to define NHGRI's position at *The Forefront of Genomics* – as it pertains to human health and disease

Seeking Your Ideas



Website: genome.gov/genomics2020

Email: genomics2020@mail.nih.gov

Hashtag: [#genomics2020](https://twitter.com/genomics2020)



The **Forefront**
of **Genomics**