

The American Heart Association Institute for Precision Cardiovascular Medicine

Data Grant Portfolio: Data Mining Grants

This is a request for applications for Data Mining Grants (four to be selected for funding). These grants are aimed at uncovering patterns and knowledge from existing data sets that will inform standards and ontology for current and future cardiovascular disease-based data. This category of *Data Mining Grants* will also focus on data harmonization steps necessary for data mining.

Introduction

Driven by advanced methods of aggregating, integrating and analyzing patient data, precision cardiovascular medicine has the potential to improve, preserve and prolong health, as well as to ultimately reduce healthcare costs.

Through the AHA Data Grant Portfolio, the American Heart Association (AHA) and Amazon Web Services (AWS) seek to enable the scientific, mathematics and technology community to discover solutions to overcome the current obstacles in accessing and utilizing data.

For more information about the AHA's Institute for Precision Cardiovascular Medicine, please visit <http://institute.heart.org>.

Award Objectives and Characteristics: The Data Mining Grants focus on two topic areas:

- Two, **two year grants** focused in the area of **establishing practical standards for future connections, integration and interoperability with electronic healthcare record systems.**
- Two, **two year grants** focused in the area of development of new methods for **data curation/harmonization.** A successful grant would provide new methodology to harmonize different types of data across cohorts. The goal is to critically test hypotheses with larger and larger datasets. To do this, we need to be sure that all data is harmonized across cohorts. Thus, the methodology and record keeping for harmonizing of data is exceedingly important. Examples of successful data curation/harmonization grants will include detailed information around which data will be curated/harmonized and from which studies/cohorts. Information detailing how this data will be accessed will also be included. Examples might be, "Metabolic phenotyping data including LDL, HDL and blood glucose from large cohort studies

Duration: Award duration is two years.

Award Amount: The Program will have a total budget of \$200,000. The AWS service credit will be viewed by the awardee as an "in-kind" donation to support the efforts of the principal investigator.

- The practical standards and interoperability topic of Data Mining Grants is funded at \$100,000/year for a total cash amount of \$200,000 with an additional AWS service credit for computational storage, user interface and analysis up to \$15,000/year, for a total value of \$230,000.
- The data curation and harmonization topic area of Data Mining Grants is funded at \$100,000/year for a total cash amount of \$200,000 with an additional AWS service credit for computational storage and analysis up to \$150,000/year, for a total value of \$500,000.

Prizes

- A \$10,000 cash prize will be awarded to the investigator or team of investigators who received a two year Data Mining award with the most significant and impactful progress and accomplishments each year.

Number of Awards: Four total grants will be awarded, (two in each topic area will).

Appropriate Budget Items: Salary and fringe benefits of the Principal Investigator, collaborating investigator(s), and other participants with faculty appointments. Project-related expenses, such as salaries of technical personnel essential to the conduct of the project, supplies, equipment, travel, and publication costs are unrestricted in accordance with institutional and AHA policies. 10% institutional indirect costs are only allowed to be claimed by one institution.

AWS service credit allocation can be applied towards the use of products listed at <https://aws.amazon.com/products>. The service credits include access to AWS owned products and freeware. Licensing fees that may be incurred by premium solutions on the AWS Marketplace (and not covered by the AWS service credits) may be included as a budget item (above). For more information about the AWS Cloud please visit <https://aws.amazon.com/products/> and see section below (*AWS Service Credits*)

The Awardee will be responsible for overseeing the total budget for his/her grant. If awarded, the principal investigator and the institution assume an obligation to expend grant funds for the research purposes set forth in the application and in accordance with all regulations and policies governing the grant programs of the American Heart Association.

Interim Assessment: Awardees must report progress on a quarterly basis. Progress reporting may take the form of written reports, phone calls and/or face to face visits. Reporting will be focused on achievement of stated milestones as indicated in the project timeline.

Final Assessment: Upon completion of the one-year period, awardees will be evaluated on the extent to which their project has addressed the selected question as part of the yearly scientific report. A prize will be given to the awardee designated as “best in class” by review panel.

Science Criteria

The proposal should include the following items:

- Identify plan of action, statement of area or field of work and expected outcomes.
- Outline and projected timeline of milestones and goals;
- Adherence to the AHA’s Open Science and Open Data policy.

Eligibility

These grants are open to all scientists. Knowledge of biology and/or computer science may be helpful. Collaboration with other scientists (in any field) is optional. Applicants are to provide proposals that adhere to the above broad objectives while specifically addressing the outlined goals.

Faculty/ staff members conducting independent research at time of application. At application, principal investigator must hold an M.D., Ph.D., D.O. or equivalent terminal doctoral degree and must meet institutional requirements for grant submission. There are no field of study restrictions so long as the applicant demonstrates ability to complete the project proposal with the allotted time and money made available by the grant.

Other than the requirement that the Principal Investigator be independent, eligibility for the AHA Institute for Precision Cardiovascular Medicine Data Grants are in no way restricted upon experience level or seniority. While no minimum percent effort is specified, the principal investigator must demonstrate that adequate time will be devoted to ensure successful completion of the proposed project. If the principal investigator is going to name collaborating investigators, their respective percentage effort must be documented.

The Institute for Precision Cardiovascular Medicine research awards are limited to non-profit or public institutions, such as: medical, osteopathic and dental schools, veterinary schools, schools of public health, pharmacy schools, nursing schools, universities and colleges, public and voluntary hospitals and other non-profit institutions that can demonstrate the ability to conduct the proposed research. For Institute awards only, applications will be accepted from federal employees and Veterans Administration employees.

At the time of application, the principal investigator must have one of the following designations:

- U.S. citizen
- Permanent resident
- Pending permanent resident. Applicants must have applied for permanent residency and have filed form I-485 with the U.S. Citizenship and Immigration Services and have received authorization to legally remain in the United States (having filed an Application for Employment Form I-765).
- E-3 Visa - specialty occupation worker
- H1-B Visa - temporary worker in a specialty occupation
- J-1 Visa - exchange visitor
- O-1 Visa - temporary worker with extraordinary abilities in the sciences
- TN Visa - NAFTA Professional
- G-4 Visa - family member of employee of international organizations and NATO
- Hold a faculty position at a foreign University which meets foreign equivalency determinants for a non-profit in the United States.

Awardee must meet American Heart Association citizenship criteria and research status if at a foreign university throughout the duration of the award. Applicants are not required to reside in the U.S. for any period of time before applying for American Heart Association funding.

Relevant Policies

Applicants must gain approvals from the appropriate governing body of the dataset owner. There are no restrictions on datasets that can be used other than being related to cardiovascular health. If the applicant intends to apply using **NHLBI funded data**, they may do so in accordance with NIH and NHLBI data access and data sharing policies.

1. Request controlled access to data through dbGaP/BioLINCC with approval from the study's Executive Committee or the study's described vetting process.
2. Store and access the approved specified dataset within a secure cloud framework - using AWS – following [NIH Guidance](#)
3. Develop the tools, algorithms and other work products outlined within the Data Grant type for which the applicant is applying.
4. Access to any BioLINCC or dbGaP - derived data must follow the respective BioLINCC or dbGaP data use agreements, including the outlined prohibition that states that the data cannot be deposited in another resource or transferred to unapproved third parties.
5. Controlled access and data use policies of the NHLBI are different from the open data policy below. Upon conclusion of the project, the data will not remain on the secure cloud framework. According

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to the NHLBI-funded studies' data access and data sharing policies as well as terms of the NHLBI-funded studies' data use agreement, the source data will either be destroyed or returned to its source.

6. AHA, AWS and grant awardees will not retain any rights to the source data.
7. Any new data, such as harmonized data, resulting during these awards from developing or applying the tools and algorithms may not be deposited in open access repositories; rather, NIH, NHLBI and NHLBI-funded studies policies must be followed.

Any further access to data used from these NHLBI-funded studies would need to be continuously regulated through BioLINCC and dbGaP. Controlled access and Data Use policies and practices must be adhered to and maintained throughout the duration of the project, including the standard provisions of data destruction and disposition terms consistent with those policies.

Awards are not intended to supplement or duplicate currently funded work. Rather, it is expected that submitted applications will describe projects that are clearly distinct from ongoing research activities in the applicant's laboratory. Minor variations from existing research projects are not sufficient to constitute independent and distinct projects.

Awards are transferable to other institutions. The grantees will maintain fiscal responsibility for the entire award. The appropriate Institutional Officer should sign off on the proposal in AHA's online grants management system, Grants@Heart.

Peer Review Criteria

The following major factors will be considered by the peer review committee in the evaluation of each Data Mining Grant. These factors are intended to assist applicants in determining the appropriateness of candidacy.

Potential impact of the project on cardiovascular disease research including –omic research; strengths of applicant investigators (qualifications, expertise and productivity); potential for collaboration or synergy of projects; scientific content; background; preliminary studies; detailed specific aims; approach detail; analytical plan including sample size; data management; significance; innovation and overall scientific merit. Projects will be rated on the following areas:

- **Approach:** Are the conceptual framework, design, methods, and analyses adequately developed, well integrated, well-reasoned and feasible (as determined by preliminary data) and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics?
- **Innovation:** Is the project original and innovative? For example: Does the project challenge existing paradigms and address an innovative hypothesis or critical barrier to progress in the field? Does the project develop or employ novel concepts, approaches, methodologies, tools or technologies for this area?
- **Investigator:** Is the investigator appropriately trained and well suited to carry out this work? Is the work proposed appropriate to the experience level of the principal investigator and other researchers? Does the investigative team bring complementary and integrated expertise to the project (if applicable)?
- **Significance:** Does this study address an important problem broadly related to cardiovascular disease or stroke? If the aims of the application are achieved, how will scientific knowledge or clinical practice be advanced? What will be the effect of these studies on the concepts, methods and technologies that drive this field?
- **Environment:** Does the scientific environment in which the work will be done contribute to the probability of success? Do the proposed studies benefit from unique features of the scientific - environment, or subject populations, or employ useful collaborative arrangements? Is there evidence of institutional support?

- **Impact:** How does this project relate to and support the mission of the American Heart Association Institute for Precision Cardiovascular Medicine to **building healthier lives, free of cardiovascular disease and stroke.**

Program Evaluation

Preliminary measures of the success of the initiative have been identified. Each awardee will be required to provide an annual interim report, as well as a final written scientific report of progress. Progress made and plans for the coming year shall be addressed in these annual reports. Funded investigators will be asked to report on the following measures:

- Productivity of awardee - track publications and citations; document outcomes of research projects; document other funding resulting from the current initiative
- Transfer of intellectual property to the marketplace
- Other metrics as defined by the AHA.

AWS Service Credits

AWS service credits are applied to an individual AWS account and cover the usage of most AWS services. An AWS account may be obtained by signing up at the AWS website, <http://aws.amazon.com>. Any use of AWS services and credits is governed by the AWS Customer Agreement at <http://aws.amazon.com/agreement> and the AWS Cloud Credits for Research Terms and Conditions at <http://aws.amazon.com/research-credit/terms/>. AWS credits may be used only for fees and charges incurred on or after the date the applicable credit code is applied to the account and only for the specific Services designated by AWS. A list of covered services can be found at <http://aws.amazon.com/research-credits/faq/>.

Other Relevant Policies

Open Science Policy:

Public Access: The AHA requires that all journal articles resulting from AHA funding be made freely available in PubMed Central within 12 months of publication. It will be the responsibility of the author to ensure this occurs.

Open Data: Any research data that is needed for independent verification of research results must be made freely and publicly available in an AHA approved repository within 12 months of the end of the funding period (and any no-cost extension). The programs that are currently exempt include Undergraduate Fellowships, Medical Student Research Fellowships, Pre-doctoral Fellowships, Postdoctoral Fellowships, Mentor/AHA Mentee Awards and Mentored Clinical and Population Research Awards. Please see AHA's Open Science Policy: http://professional.heart.org/professional/ResearchPrograms/AwardsPolicies/UCM_461225_Open-Science-Policy-Statements-for-AHA-Funded-Research.jsp

The projects described can have no scientific or budgetary overlap with other funded work. Any inventions, intellectual property, and patents resulting from this funding are governed by the AHA Patent, Intellectual Property and Technology Transfer Policy. The applicant/awardee and institution are responsible for compliance with all American Heart Association research award policies and guidelines for the duration of any awards they may receive. Go to Policies Governing All Research Awards to review AHA policies at http://professional.heart.org/professional/ResearchPrograms/AwardsPolicies/UCM_320256_Policies-Governing-All-Research-Awards.jsp

Application Format Requirements and Submission

- The research project description should be no more than 5 pages in length, including figures, but excluding references;
- The application must include a plan, timeline, and list of milestones in the project description;
- The application must include applicant's BioSketch;
- Applications must be submitted using the AHA's online submission portal available at Grants@Heart.

Key Dates

RFA Posted and Application Opened in Grants@Heart:	July 7, 2016
Application Deadline:	January 31, 2017
Notification of Awards:	March 1, 2017
Award Start Date:	April 1, 2017

Award Selection and Other Policies

Final funding recommendations will be approved by the AHA Executive Committee.
For all other relevant policies and Frequently Asked Questions, please see the [Application Information website](#).