

## **Request for Proposals: Genetics and Human Agency**

Letters of Intent Due March 1, 2016

The Department of Psychology at the University of Virginia is pleased to announce a \$3.5 million research initiative, Genetics and Human Agency, supported with funding from the John Templeton Foundation. The program is led by Eric Turkheimer, Hugh Scott Hamilton Professor of Psychology. The center is now accepting letters of intent proposing research in areas relevant to the application of modern genomics to complex human behavior related to values and character development. \$1.08 million will be distributed annually during the three-year funding period, with funding beginning September 1, 2016. Participation in the program will include attendance at three annual two-day investigator meetings in Charlottesville, Virginia.

### **Overview**

We live in an extraordinary yet troubling era of scientific and philosophical knowledge about genetics. The human genome has been sequenced and scientific knowledge of the operation of genetics at a biological level is advancing at breathtaking speed. Yet many of the anticipated benefits of the genetic revolution are yet to materialize. Genetically individualized medicine remains in its infancy; the huge advances that were anticipated in cancer and infectious disease have not yet arrived.

For human behavior, as opposed to biology and disease, the conceptual difficulties are even more acute. For a generation preceding the sequencing of the genome, scientists had used relationships among genetically related individuals to demonstrate that genetic background plays a role in the determination of differences in the behavior of people. These findings were, at the time, a source of bitter and antagonistic controversy. If it is the case that some differences in human cognitive ability are related to genes, for example, does that mean that there is no point to efforts to improve the human condition, or to smooth out inequities in opportunity? If self-reported differences in human happiness or sexual orientation are similarly related to genetic differences, does it follow that people do not “have a choice” about their individual behavior?

The field of inquiry known as behavior genetics shows many signs that it is at a crucial phase in which intense interaction between philosophers and scientists can have maximum benefit. On an almost daily basis, empirical scientists report findings that strain our ability to understand them, either at a scientific or an individual psychological level. The original finding of the quantitative geneticists—that behavioral differences among people are associated with differences in their genetic relatedness—has now been demonstrated ever more clearly using actual DNA variants. Nevertheless, the genomic mechanisms that might underlie these associations continue to elude us.

We are particularly interested in philosophical, theoretical and possibly empirical work involving the genetics of very complex human behavior and the interaction of genetics with human agency and self-improvement. We describe the intended areas of inquiry in greater detail below.

## Big Question

*How can we promote the development and maintenance of highly complex behavior and virtuous character in the context of a realistic understanding of human behavioral genetics?*

In classical treatments of human genetics, the word *complex* refers to human characteristics that are related to genotype but do not conform to simple mechanisms of Mendelian inheritance. Type 1 diabetes, for example, is heritable, but the genetic mechanisms that underlie it are extremely complex, and interact in even more complex ways with environmental exposures.

It has been clear for some time, however, that even more complex aspects of human physical and psychological health and personal conduct are also related to genotype in ways that have strained our scientific methodologies and philosophical frameworks. These characteristics include those that we recognize as products of human self-determination, personal character and individual free will. Social relations with others, cognitive capacity, creativity, productivity at work, satisfaction in intimate relationships—ultimately the pursuit of happiness itself—are all related to genotype in the classical sense of quantitative genetics.

This realization need not be at odds with intuitions about human agency or the importance of familial or cultural environments. Consider, as a simple example, maintenance of a healthy body weight. Who has not struggled at one time or another with the desire to control weight as it interacts with biological predispositions for body size or appetite? In this way, behavioral genetics is at the crux of an interesting and unexplored big question that all human beings face: how can people recognize, come to terms with, and improve upon their biological and physical natures?

Specific research programs that could fall under this Big Question include:

- To what extent do scientific findings about the heritability of behavior explain virtuous character, or difference in virtuous character?
- What kinds of new research designs will be required to extend behavior genetic findings about disease and disability to positive development and virtuous character?
- What are the implications of behavior genetics for child-rearing practices that promote positive development?
- Are there new genomic research methods that will facilitate the application of genomics to complex, positive human traits?
- Is there a psychology of heritability? Are highly heritable traits experienced differently by individuals, or are they harder to modify than less heritable traits?
- What implications does the fact that a person has inherited a propensity for a certain kind of behavior or character trait have for judgments about that person's character or capacity for free will? How should the heritability of complex behavior affect judgments of moral culpability?

- How should knowledge of heritable characteristics affect practical reasoning about individual action?
- Do parents' beliefs about their offspring's genetic heritage affect parental aspirations for their offspring, and if so, how?
- What role does complex human genetics have in the development of virtues and other features of psychological health throughout the lifespan, and does this interplay change depending on developmental stage?
- What is the best way to operationalize and measure various virtues such as wisdom, creativity, self-control, purposiveness, honesty, and other related virtues, so that they can be amenable to study by the genomic science?
- Why does oversimplified genetic determinism still have such a firm grip on popular understandings of the relationship between genes and human behavior? What are the consequences of such widespread genetic determinism in the thinking of laypeople? How can scientists and philosophers help the lay public understand the implications of complex heritability?
- What do we know or need to know from modern genomics in order to evaluate the assumptions made about virtue and character in contemporary virtue ethics?
- What is the nature of causal explanation in complex genomics? How might philosophical theories of causation and explanation illuminate or expose complications in causal explanations? How does causation work in highly polygenic systems with emergent dynamics?
- In what ways, short of genetic manipulations, can individuals influence the expression of their own genotypes so as to improve the quality of their own lives?
- What personal features allow individuals to overcome histories of substantial adversity to develop full and creative lives, devoid of psychopathology?

## **Application Instructions**

### Letter of Intent (LOI) Stage

The form for the LOI can be found on our website ([www.geneticshumanagency.org](http://www.geneticshumanagency.org)). In the form you will need to include (1) a title for the proposed project, (2) the names of the principal investigator and any collaborators, along with their proposed roles and a brief biographical summary including current professional titles, affiliations, and educational backgrounds, (3) a budget summary, and (4) a description of the research including the project's relevance to the RFP and a proposed timeline. Instructions and character limits will be stated on the form. The LOIs will be reviewed and evaluated by an interdisciplinary Selection Committee that will select the most promising and appropriate of the proposed projects.

### Full Proposal Stage

Principal investigators invited to submit full proposals will be notified. Full proposals must follow the format and guidelines below in order to be considered. Further

details on the proposal submission process will be communicated to PIs who advance to that stage.

All proposals must be submitted in English, single-spaced, and typed with one-inch margins. Font size may be no smaller than 11-point and no larger than 12-point, and font type must be Times New Roman. Proposals that do not follow these font and margin specifications will not be accepted. Emphasis should also be placed on completeness and clarity of content. The full proposal must include all of the information below.

The following is a description of documents that will be required for all full proposal submissions. Additional information on each of these will be provided when full proposals are invited.

1. Cover Sheet (downloadable from website)
2. Table of Contents
3. Project Summary (One page)
4. Project Description (Five Pages)
5. Training plan for junior investigators (One Page)
6. Project Timeline
7. Curriculum Vitae
8. Detailed Budget
9. Budget Narrative

### Eligibility

The PI must have a doctoral degree (or equivalent) and be affiliated with an accredited college or university (or be affiliated with another major research institution, such as a hospital). Applicants can only be principal investigator on one proposal for this competition. Proposed projects are encouraged but not limited to scholars in the disciplines of psychology, philosophy, psychiatry, genetics, sociology, anthropology, political science, family and developmental studies, medicine, law, education, religious studies, affective neuroscience, and evolutionary biology. Proposals are expected to include a significant theoretical, philosophical or quantitative component; proposals including only funding for empirical investigators will not be considered. The project must be accomplished within a three-year time span. Investigators must be available to attend annual investigator meetings during that period.

### Evaluation of Proposals

The proposals will be evaluated based on the following criteria:

- 1) Fit with the intent of the RFP.** Does the proposal address a significant big question relevant to the intersection of genetics and complex human behavior and self-determination, as described in this document? Does it contain a significant philosophical, theoretical or quantitative component?

- 2) **Likelihood that the project will contribute answers to the big question identified in the RFP.** Are the methods and procedures described sufficient to establish a high likelihood that the project will lead to significant progress on the big questions that have been identified?
- 3) **Innovativeness of the theoretical and empirical plans in the proposal.** Does the project employ cutting-edge and innovative ideas and methods?
- 4) **Effectiveness of the collaboration plan.** Are the plans for collaboration between investigators in different areas clearly specified, and likely to produce real ongoing intellectual interaction? Is the publication plan reasonable?
- 5) **Plausibility and specificity of the research plans.** Are the plans for theoretical or empirical work described clearly and specifically? Is there a good case that significant progress can be made within a three-year period?
- 6) **Inclusion of students and junior investigators.** Does the proposal lay the groundwork for future contributions by young investigators?

### Application Timeline

Letters of Intent: Due 3/1/16

Invitations for Full Proposals: Issued 4/1/16

Full Proposals: Due 6/1/16

Notice of Award: Issued 8/1/16

Funding: Estimated 9/1/16

Project Completion: 9/1/19

### Contact Information

For more information about proposal procedures, topics of interest, eligibility, deadlines, available resources, and contact information, please see the project website ([www.geneticshumanagency.org](http://www.geneticshumanagency.org)), or you may reach us at:

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