

YALE UNIVERSITY ■ INTERNAL COMPETITION  
**GORDON AND BETTY MOORE FOUNDATION**  
**Moore Inventor Fellows 2019**

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## DEADLINES

**Expressions of Interest** (PI, Project Title) due **November 6, 2018** (*required*)

**Internal Deadline: November 27, 2018 at 5:00pm**

Anticipated sponsor deadline: March 4, 2019

## SPONSOR'S WEBSITE

Program Overview: <https://www.moore.org/initiative-strategy-detail?initiativeld=moore-inventor-fellows>

2018 Guidelines: [https://www.moore.org/docs/default-source/moore-inventor-fellows/moore-inventor-fellows-2018-guidelines-final.pdf?sfvrsn=422c6d0c\\_4](https://www.moore.org/docs/default-source/moore-inventor-fellows/moore-inventor-fellows-2018-guidelines-final.pdf?sfvrsn=422c6d0c_4)

FAQs: [https://www.moore.org/docs/default-source/moore-inventor-fellows/moore-inventor-fellows-faq-2018-final.pdf?sfvrsn=562c6d0c\\_8](https://www.moore.org/docs/default-source/moore-inventor-fellows/moore-inventor-fellows-faq-2018-final.pdf?sfvrsn=562c6d0c_8)

## FUNDING

Each fellow will receive direct costs of \$200,000/year for 3 years, plus \$25,000/year for indirect costs from the Foundation. (Total: \$675,000)

Yale will be required to contribute \$50,000/year in direct support of the inventor's work during the fellowship award period. This can be "in kind" as released time or access to special facilities for which there is normally a charge, and other needs that will enable fellows to focus on their inventions.

## NOMINATION LIMITATION

Yale may nominate two (2) inventors.

## PURPOSE

The Foundation will fund outstanding early-stage inventors who create new tools, technologies, processes, or approaches with a high potential to accelerate progress in the Foundation's three main areas of interest: ● to enhance the conduct of scientific research ● to strengthen environmental conservation ● to improve the experience and outcomes of patient care (*only* as described on the Foundation's website). Support will provide freedom for the most promising inventors with the most compelling ideas to pursue creative work.

***An invention is new, useful, and non-obvious (not a logical next step to what already exists).***

*(see grant abstracts of the 2016 and 2017 Inventor Fellows' recipients on pages 3 and 4 of this announcement)*

The Foundation seeks a combination of demonstrated promise of the individual and a compelling idea in which marked progress toward a defined goal can be measured during the three years of support.

***The Foundation will support inventions at an early stage that could lead to proof-of-concept or advance an existing prototype that tackles an important problem in its three areas of interest.***

The Foundation is not interested in supporting projects that are already at a stage where significant venture funding is available. A clear path toward commercialization is not a requirement; however, potential impact on scientific research, environmental conservation, or patient care and experience is essential.

## ELIGIBILITY

- Eligible candidates include tenure-track faculty, teaching faculty, research scientists, postdocs, and other full-time staff of the University.
- For the 2019 awards, candidates must have received the advanced terminal degree in their field (PhD or MD) not earlier than calendar year 2009.
- Candidates must be a single individual. Teams cannot be nominated. (One individual must be the lead.)
- Candidates must devote at least 25% effort to development of the proposed invention.
- Candidates with Postdoctoral appointments or appointments as Associate Research Scientist must provide written documentation from their department chair committing to salary support for the 3-year duration of the award should it be received.

*internal competition procedures are outlined on page 2*

# GORDON AND BETTY MOORE FOUNDATION

## Moore Inventor Fellows 2019

(continued from page 1)

### INTERNAL COMPETITION PROCEDURES

1. Email expressions of interest (PI name and Project Title) to [melanie.smith@yale.edu](mailto:melanie.smith@yale.edu) by Nov. 6, 2018.
2. For this internal competition, please follow the instructions below. These instructions largely mirror those outlined by the Foundation, plus a "[facepage](#)."

Combine the following documents as a single PDF:

- [Face page](#)
- A summary CV (maximum 2 pages) that includes:
  - (1) educational and professional background;
  - (2) Key accomplishments, honors, and demonstrated areas of expert knowledge; and
  - (3) other background information relevant to the stated invention.
- A two-page summary of the proposed invention, describing the invention, importance, stage of invention, current funding, feasibility (technical description), potential impact in the areas of science, environmental conservation, or patient care and experience, and approach for measuring progress during the grant term. (Single-spaced, 12-point font, 1-inch margins; figures, charts, and citations can be included within this page limit.)
- A one-page budget narrative that outlines how grant funds will be used
- The names of three potential writers of letters of reference who can speak to promise of the applicant and the idea. At least one referee must come from outside of Yale.

For each referee, please include:

- a brief biography of the referee and indicate your relationship to the referee
- list employment history and awards/ honors received (member of National Academy, etc.)
- A two-page overview from the chair (or section/division chief) describing why the candidate is the best person to advance their proposed invention. This statement should include the present status of funding for the idea and a specific description of how awarding a Moore Inventor Fellowship will advance this idea.

**It should also articulate clearly the University's commitment to the nominee if the grant is awarded, and the plan to assure that the nominee has at least 25% of their professional time to devote to their invention.**

Internal applications will be evaluated based on the Foundation's stated criteria:

#### **Inventor:**

- Demonstrated creative and technical potential
- Strong relevant technical ability for the proposed line of work

#### **Invention:**

- Importance of the invention in areas of interest to the Moore Foundation - science, environmental conservation, or patient care
- Invention at an early stage that requires this funding for rapid progress
- Plausibility of this invention to achieve the stated impact
- Ability of dedicated funding and time to propel this innovation to the next stage of development; commercialization is not a requirement
- Strength of university's stated commitment to applicant's invention activities

***An invention is new, useful, and non-obvious (not a logical next step to what already exists).***

**Email the internal competition application as a single PDF by Tuesday, November 27 at 5:00pm (no exceptions)**  
to: [melanie.smith@yale.edu](mailto:melanie.smith@yale.edu) (cc: [OSP@yale.edu](mailto:OSP@yale.edu))

#### **FOR FURTHER INFORMATION, CONTACT:**

[Melanie.Smith@Yale.edu](mailto:Melanie.Smith@Yale.edu) ▪ Funding Resource Center ▪ Office of Sponsored Projects ▪ Yale University ▪ 203-785-4978

Last update: October 24, 2018

The 2017 Moore Inventor Fellows are:

**Jennifer Dionne, Ph.D., associate professor, materials science and engineering, Stanford University**

Jennifer Dionne's research develops new optical materials to visualize and control nanoscale processes. Her invention is a light-driven scheme for separation of different forms of the same molecules, which she hopes to use to increase the efficacy and safety of pharmaceutical drugs as well as reduce the toxicity and environmental impact of chemicals used in agriculture.

**Viviana Gradinaru, Ph.D., assistant professor, biology and biological engineering, Caltech**

Viviana Gradinaru's invention is a safe delivery vehicle capable of carrying large genomes to precise tissue targets – a long sought after and transformative tool for both basic research and therapeutic applications. Her goal is to understand and influence whole-animal physiology and behavior for both the development and degeneration of the brain.

**Daniel Ludois, Ph.D., assistant professor, electrical and computer engineering, University of Wisconsin-Madison**

Daniel Ludois' invention is an electric motor based on electrostatic forces rather than magnetic fields, eliminating the use of rare earth elements and copper. His goal is to create light-weight electric motors that result in sustainable higher performance and lower cost.

**Matthew Sheldon, Ph.D., assistant professor, chemistry and materials science and engineering, Texas A&M University**

Matthew Sheldon's invention uses new classes of nanomaterials to provide precise control over how light energy moves through optical devices. His goal is to use his invention to greatly improve the conversion efficiency of solar cells, helping to make cheap and sustainable solar energy available to everyone worldwide.

**Xiaobo Yin, Ph.D., assistant professor, mechanical engineering, University of Colorado, Boulder**

Xiaobo Yin's invention involves a tailored optical metamaterial that can convert incident sunlight into longer wavelengths, which will dramatically increase the rate of photosynthesis and provide high-yield crop production. The aim of this invention is to develop engineering solutions for real-world environmental challenges.

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The 2016 Moore Inventor Fellows are:

**Deji Akinwande – University of Texas, Austin**

A recipient of the 2016 Presidential Early Career Award for Scientists and Engineers, Deji Akinwande is an associate professor of electrical and computer engineering. He is creating an atomically thin 2D-silicon structure known as silicene, which could provide a tenfold increase in energy efficiency for integrated circuits such as computer chips. Deji's goal is to make the world's thinnest silicon transistor, which would extend the reach of Moore's Law and scale silicon technology to even smaller dimensions.

**Shane Ardo – University of California, Irvine**

Shane Ardo is an assistant professor of chemistry at UCI. Shane's materials invention uses sunlight to drive a novel ion-pumping mechanism that could be used to boost the power output and efficiency of electrochemical technologies. His new materials will also enable sustainable, affordable and efficient polymeric devices to desalinate water for human consumption and agriculture with the potential to help solve the severe worldwide issue of clean water scarcity.

### **Xingjie Ni – Pennsylvania State University**

Xingjie Ni is an assistant professor of electrical engineering at Penn State. Xingjie's invention is a brighter quantum light source that could ultimately increase the speed, scale, and security of information transmission in quantum communication and computing. While 'invisibility cloaks' may sound like fiction, one of the tangible applications of Xingjie's invention is optical camouflage, which has real-world applications across aviation and health care.

### **Joanna Slusky – University of Kansas**

Joanna Slusky is an assistant professor of molecular biosciences and computational biology at the University of Kansas. Joanna's invention is a protein that will re-sensitize bacteria to common antibiotics, thereby overcoming drug-resistant superbugs. Joanna's invention could have a global impact on antibiotic resistance and re-establish the efficacy of antibiotics.

### **Mona Jarrahi – University of California, Los Angeles**

Mona Jarrahi is an associate professor of electrical engineering at UCLA. She is a recipient of the 2013 Presidential Early Career Award for Scientists and Engineers. Jarrahi's invention is an imaging tool to help researchers understand how fundamental biological molecules behave in their natural environment. This tool will help answer fundamental physical questions that are not possible through existing technologies.

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## Moore Inventor Fellows -- Notes from Yale's January 5, 2018 Info Session

The problem to be solved should be articulated up front. While having some proof that the "invention" might work, the grant supports inventions at their beginning stages – for example, developing a prototype. There should be enough research completed to justify that you can do what you propose. Make the centerpiece of your proposal this new project that is 90 degrees off from what you have been doing. Projects that would be incremental in nature, i.e. the next logical step, do not fit this model.

At the info session, an example was discussed with respect to patient care and diagnostic interventions. The advice given was that applicants should think in terms of platforms – a platform that could be used broadly and have broad reach. It should be an idea that is not yet of interest to industry.

Projects should be transformative across a big swath of people and needs; it should not have a narrow, very specific focus unless that focus can be applied to solving a problem for a very broad population. Think in terms of projects that are revolutionary, that **reviewers will have the "wow!" response**. Ideally, projects will bring together technologies from different fields in a way that no one has thought to do so before, and that has not been anticipated. Think big! Think transformations! The project should be intentionally useful – applied.

For those considering applications in the patient care area:

The Foundation's program for patient care has a current emphasis on improving the experience and outcomes of patients. Within this realm, they are interested in solutions in the areas of (1) diagnostic excellence, (2) medication safety in the community, and (3) community-based serious illness care. *No therapeutics.*