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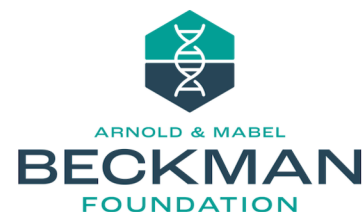
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"Blinding Reduces Institutional Prestige Bias During Initial Review of Applications for a Young Investigator Award"
<https://doi.org/10.7554/eLife.92339>
Anne E. Hultgren, Nicole M.F. Patras, Jenna Hicks

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PRESS RELEASE

Beckman Foundation Announces Publication of Results from Multi-year Study on Impact of Blinded Application Reviews on Institutional Prestige Bias in *eLife*

Beckman Young Investigator Award Applicants Gain Improved Equity and Inclusion through Introduction of Blinded Technical Proposal Requirement

- 2,291 applications were reviewed over an eight-year period, with the blinding requirement introduced at the midpoint in 2020.
- Distribution of applicants invited to the full application phase shifted from “prestigious institutions” to other institutions outside the group with the new policy.
- Trending shift carried through to final program awards.
- Pre-blinding, 75 percent of BYI awards went to applicants from Top 25 institutions.
- After blinding, 45 percent of BYI awards went to applicants from Top 25 institutions.
- Reviewers reported blinding facilitated streamlined reviews and discussions, reduced workload, and decreased potential for burnout.

The Arnold and Mabel Beckman Foundation announced today that *eLife* published results from a multi-year study of the Beckman Young Investigator program which demonstrates the positive impact of blinded application reviews on mitigating institutional prestige bias. In the eight-year study of 2,291 program applicants, the instruction to blind the technical proposal in the initial Letter of Intent (name, gender, gender-identifying pronouns, and institutional information omitted) resulted in a 30 percent reduction in awards issued to applicants from Top 25 institutions. With respect to gender, no evidence of bias in applicant distribution of invites to submit full applications nor eventual award distribution was found.

“I feel strongly that Dr. and Mrs. Beckman would be extremely proud of this work by the Foundation. The mission they set us out to fulfill is an important one – we are tasked with supporting the most innovative and ambitious young scientists in the chemical and life sciences,” stated Dr. L. Andrew Lyon, Chair of the Board of Directors at the Arnold and Mabel Beckman Foundation and former Beckman Young Investigator Awardee ('00). “Clearly, a biased review process would be a major hindrance in our work and these studies have shown a path forward to creating more equitable, inclusive, and effective proposal review methods.”

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The notable study, conducted to assess the fairness and inclusiveness of the BYI awardee selection process with respect to gender and institutional affiliation, challenges the mixed results of prior studies regarding the effectiveness of blinding or masking information for reducing reviewer bias toward certain population groups. In it, four program award cycles between 2017 and 2020 whose applicants supplied unblinded technical proposals during the letter of intent stage were compared with four program cycles between 2021 and 2024 where applicants submitted blinded technical proposals during the same stage. Other eligibility criteria for the applicants and the LOI review process itself remained essentially unchanged during the study's evaluation period. The Foundation hypothesized that if the proposal review process was free from institutional prestige and gender biases, then there would be no difference in the distribution of LOIs which advanced to the full proposal invite stage, and the resulting final program awards, between the unblinded and blinded groups. The data yielded no evidence of bias either pre- or post-blinding with respect to gender distribution, however there were notable differences after blinding with respect to the institutional affiliation of the applicants.

One of the early steps was to define "institutional prestige" for the purposes of evaluating systemic bias within the review process. To accomplish this, the study's authors developed institutional ranking schema divided into categories based on the Foundation's historical funding trends as well as published institutional rankings from four independent organizations. The authors then calculated the "Relative Advantage – Full Application" by category as the ratio of each category's percentage of submitted LOIs that went on to receive a full application invite to the percentage of total LOIs offered a full application invite.

A striking variance was exhibited between the relative advantage of the "Top 1-10 institutions" group and the "other institutions" group. Under the unblinded process, the relative advantage for the "Top 1-10" group was approximately 2.3 times that of the "other" group (Average for "Top 1-10" group = 1.6, Average for "other" group = 0.7). With blinding, the disparity in the relative advantage between these two groups was reduced, with the relative advantage for the "Top 1-10" group approximately 1.4 times that of the "other" group (Average for "Top 1-10" group = 1.2, Average for "other" group = 0.85).

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"I have long suspected that young investigators at top ranked universities have a better chance of obtaining grants from foundations than their counterparts at lower ranked institutions," shared Dr. Harry B. Gray, Arnold O. Beckman Professor of Chemistry and Founding Director of the Beckman Institute at the California Institute of Technology (Caltech). "This well documented study by Hultgren, Patras, and Hicks shows that this sort of bias likely is widespread in the science funding space. In my view, the study will be of great value to foundation directors and other officers who have or soon will have programs to support exceptional young scientists."

In addition, reviewers for the Beckman Young Investigator program applications reported that anonymizing author and institutional identity facilitated streamlined reviews and corresponding discussions, reduced overall workload, and decreased potential for burnout during that time.

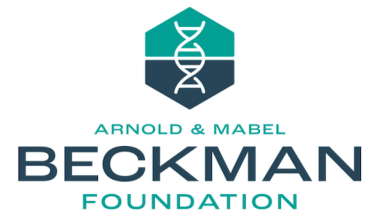
"This study originated from an internal review and assessment of our program effectiveness, especially with regards to ensuring that we are advancing the most creative and novel scientific ideas for funding consideration, without introducing any bias or artificial constraints through our own internal practices," shared Dr. Anne Hultgren, Executive Director of the Arnold and Mabel Beckman Foundation. "As stewards of funding for the most creative research ideas, it is essential that we are ourselves willing to take risks and challenge ourselves to innovate and address issues related to equity in our processes. We are proud of all of the awardees that have been selected in the Beckman Young Investigator program and the impact that they are having through their research. In sharing these results and details of our review process, we hope this information will be informative for others moving forward with evaluation of their application review processes with the goal of instituting more equitable practices, especially for those organizations with missions and funding programs similar to our own."

eLife is a peer-reviewed research journal that publishes high-quality content related to the life sciences. "Blinding Reduces Institutional Prestige Bias During Initial Review of Applications for a Young Investigator Award" was authored by Anne E. Hultgren and Nicole M.F. Patras of the Arnold and Mabel Beckman Foundation in collaboration with Jenna Hicks of the Health Research Alliance; available under the persistent Crossref digital object identifier (DOI) 10.7554/eLife.92339.

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Beckman Foundation Announces Publication of Results from Multi-year Impact Study of Blinded Application Reviews on Institutional Prestige Bias in eLife

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About the Arnold and Mabel Beckman Foundation

Located in Irvine, California, the Arnold and Mabel Beckman Foundation supports researchers and nonprofit research institutions in making the next generation of breakthroughs in chemistry and the life sciences. Founded in 1977 by 20th century scientific instrumentation pioneer Dr. Arnold O. Beckman, the Foundation supports United States institutions and young scientists whose creative, high-risk, and interdisciplinary research will lead to innovations and new tools and methods for scientific discovery. For more information, visit beckman-foundation.org.

About Anne Hultgren, PhD

Dr. Hultgren joined the Arnold and Mabel Beckman Foundation as Executive Director and CEO in 2015. Previously, she was at the Department of Homeland Security, Science and Technology Directorate, working in chemical and biological defense technologies. She received her PhD in Physics and Astronomy from the Johns Hopkins University, and BA in Physics and Mathematics from Franklin and Marshall College.

About Nicole Patras

Mrs. Patras joined the Arnold and Mabel Beckman Foundation in 2014 and serves as the Senior Program Officer for the Beckman Young Investigator Program. She also leads the Foundation's JEDI (Justice, Equity, Diversity, and Inclusion) Committee and oversees event planning for the Foundation's annual Beckman Symposium. She holds a BA from the University of California, Santa Cruz and is a Certified Nonprofit Professional through Nonprofit Leadership Alliance.

About Jenna Hicks, PhD

Dr. Hicks joined the Health Research Alliance in 2023 as Project Lead of the Inclusive Grantmaking Initiative and was promoted to Assistant Director later that year. She came to HRA with a background in research (both biomedical and education research), program development, and evaluation. Prior to joining HRA, Dr. Hicks worked in graduate education administration at the University of Minnesota, where she developed, implemented, and evaluated professional development programming for biomedical graduate students and postdocs. Dr. Hicks received her PhD in biomedical sciences from the University of California, San Diego, and completed postdoctoral training in biology education research at the University of Minnesota.

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Book an Interview to Round Out Your Story



Available for Interview

Anne Hultgren, PhD

Executive Director, Arnold and Mabel Beckman Foundation

First Author, "Blinding Reduces Institutional Prestige Bias During Initial Review of Applications for a Young Investigator Award"

Dr. Hultgren joined the Arnold and Mabel Beckman Foundation in 2015 as Executive Director and CEO. Previously, she was at the Department of Homeland Security, Science and Technology Directorate, working in chemical and biological defense technologies. She received her PhD in Physics and Astronomy from the Johns Hopkins University, and BA in Physics and Mathematics from Franklin and Marshall College.



Available for Interview

L. Andrew Lyon, PhD

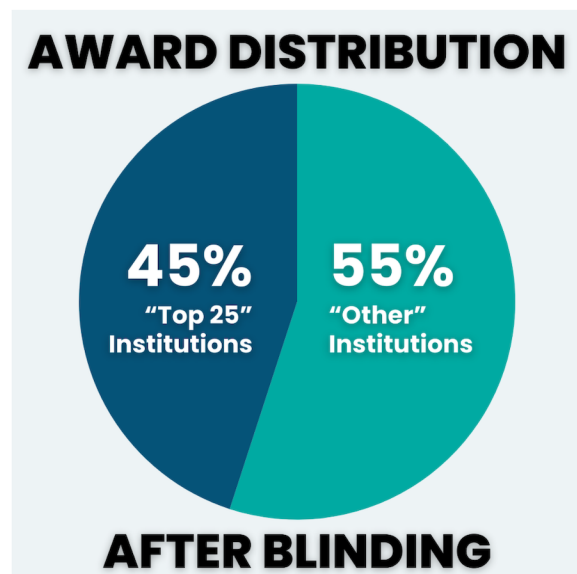
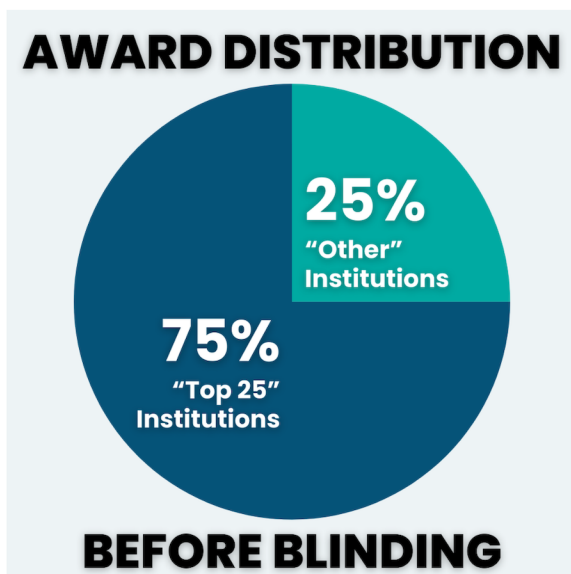
Chair of the Board of Directors, Arnold and Mabel Beckman Foundation

Former Beckman Young Investigator ('00)

Dr. Lyon joined the Board of Directors for the Arnold and Mabel Beckman Foundation in 2015, first as Chair of the Science Committee and Nominating Committee, then as Chair of the Board in 2022. He was named a Beckman Young Investigator Awardee in 2000. Dr. Lyon received his PhD in Chemistry from Northwestern University, and BA in Chemistry from Rutgers University.

Download Graphics, Photos, and Logos to Complete Your Story

We've assembled a [Dropbox folder](#) of visual resources to accompany your story, including pie chart graphics illustrating changes in award distribution before and after blinding of the letter of intent, photos of our interview candidates, and Foundation logos in stacked (vertical) and horizontal orientations. Don't see what you need? Contact us to request additional resources for your story.



Additional Praise for “Blinding Reduces Institutional Prestige Bias During Initial Review of Applications for a Young Investigator Award”

...this study enables us

“For funders in the nonprofit sector, the results of this study conducted by the Arnold and Mabel Beckman Foundation are particularly exciting because they not only demonstrate the value of blinding in effectively reducing institutional prestige bias during the review process, but also underscore the importance of grantmaking organizations remaining steadfast in their dedication to constant program re-evaluation and process improvement. Many HRA members share Dr. Beckman’s aim of supporting young scientists “who do not yet have the clout to receive major research grants” but who demonstrate excellence, and this study enables us to advance that goal, proactively, and in a more unbiased way.”

Maryrose Franko, PhD

Executive Director, Health Research Alliance

...can level the playing field

“This study highlights how anonymizing author and institutional identity can level the playing field when it comes to institutional bias – under the blinded review process, the relative advantage that the highest-ranked institutions had over the lowest-ranked institutions was almost cut in half.”

Jenna Hicks, PhD

Assistant Director, Health Research Alliance

Frequently Asked Questions

Q: How did the blinding impact any conflict-of-interest processes normally used by Beckman Foundation?

A: During administrative review, we collected university information for each applicant internally, then made sure to not assign reviewers to applications where they would have a conflict of interest.

Q: For institutions or hospitals that are part of the same, larger system, how were those handled during data collection for the study?

A: Any hospital and/or research center associated with a university was counted together. Here are two examples: 1) "Harvard" included the University's associated medical schools, and 2) "University of Wisconsin, Madison" included Morgridge Research Institute.

Q: Were the [Beckman Young Investigator] awards' relative advantage calculations indexed to letters of intent (LOIs) or to invited full applications?

A: In this study, the relative advantage calculations were indexed to letters of intent.

Q: What did the relative advantage look like over time?

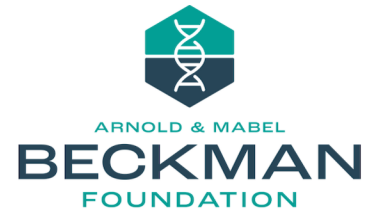
A: There is a lot of data in the study that addresses this question. Trying to sum that up is complicated but this may help: If you look at the clusters by year of pre- and post-blinding, especially for the Top and Bottom categories, the clusters do not overlap, indicating that there wasn't a natural trend over time to the reduced bias outcomes we saw after blinding.

Q: Was the "Top 51-96 Institutions" group blinded/unblinded difference statistically significant?

A: Chi-square tests were done to examine the relationships between the institution category (there were five categories) and whether or not the letter of intent (LOI) was invited to submit a full application, or whether the applicant ultimately received an award. The "51-96" result was not specifically tested to determine if there was a statistically significant difference from the other institution groups.

Q: If an applicant submitted a letter of intent (LOI) and inadvertently missed blinding something that was part of the requirement, were they given the option to fix the error or was the application disqualified?

A: That opportunity was not provided to applicants due to the organization's internal bandwidth limitations. However, it is an option that another organization could explore if more bandwidth existed for accommodating updated submissions.



Beckman Foundation Overview

The Arnold and Mabel Beckman Foundation was established in September 1977 by Dr. Arnold O. Beckman and Mrs. Mabel Beckman to give back to the scientific community. At that time, the Beckmans intended to disburse the full amount of the endowment within their lifetimes. Their passion for supporting science began with five mega-gifts during 1978–1989 to establish and construct the Beckman Research Institutes and Centers at University of Illinois, Urbana-Champaign; City of Hope; California Institute of Technology; Stanford University; and University of California, Irvine.

The Beckmans also provided a major grant to the National Academy of Sciences to construct and operate the Beckman Center at the National Academies as a West Coast facility to host meetings and events focused on scientific topics and advancements in medicine.

Following the establishment of these Research Institutes, it became clear to the Beckmans that despite their careful philanthropic efforts, the value of the Foundation was continuing to grow and could provide support to the scientific community long after their lifetimes. In 1990, Dr. Beckman made the decision to change the Foundation to be in perpetuity, and the mission was updated by Dr. Beckman to reflect his wishes to support young researchers with funding for innovative and high-risk research projects, in the fields of chemistry and life sciences, broadly interpreted, and particularly to foster the invention of methods, instruments, and materials that open up new avenues of research and application in these sciences and related disciplines.

Today, the Foundation continues according to the vision laid out by Dr. and Mrs. Beckman:

- **Supporting Young Scientists:** Through annual grant programs focused on the most promising young scientists
- **Community Support Activities:** By promoting science education and excellence in the local community
- **Streamlined Operations:** Ensuring that we don't "spend money to give money away"

Beckman Young Investigator Program Overview

The Beckman Young Investigator (BYI) Program provides research support to the most promising young faculty members in the early stages* of their academic careers in the chemical and life sciences, particularly to foster the invention of methods, instruments and materials that will open up new avenues of research in science.

Projects proposed for the BYI program are innovative, high-risk, and show promise for contributing to significant advances in chemistry and the life sciences. They represent a departure from current research directions rather than an extension or expansion of existing programs. Proposed research that cuts across traditional boundaries of scientific disciplines is encouraged. Proposals that open new avenues of research in chemistry and life sciences by fostering the invention of methods, instruments and materials are given additional consideration.

- The BYI program funds promising young scientists early in their careers who have not yet received a major award from another organization. Proposals that already have substantial funding are not considered for the BYI award (see eligibility for more information).
- Projects are normally funded for a period of four years. Grants are in the range of \$600,000 (\$150,000 annually) over the term of the project, contingent upon demonstrated progress after year two of the award.
- The Foundation does not provide for overhead or for indirect costs.

**The BYI program is open to those within the first four years of a tenure-track position, or an equivalent independent research appointment, at a United States academic or non-profit institution that conducts research in chemical and life sciences. Additional guidelines regarding eligibility can be found on the program info webpage.*

Notable Awardee: 1996 BYI Jennifer A. Doudna, PhD

Born: 19 February 1964, Washington, D.C., USA

Affiliation at the time of the award: UC Berkeley, CA, USA

Prize motivation: "for the development of a method for genome editing"

Prize share: 1/2



Jennifer A. Doudna, PhD, was awarded the Nobel Prize in Chemistry in 2020.

Photo Credit:
Christopher Michel

The life processes of organisms are controlled by genes made up of sections of DNA. In 2012, Jennifer Doudna and Emmanuelle Charpentier developed a method for high-precision genome editing. They used the immune system of a bacterium, which disables viruses by cutting their DNA up with a type of genetic scissors. By extracting and simplifying the genetic scissors' molecular components, they made it generally applicable. The CRISPR/Cas9 genetic scissors can lead to new scientific discoveries, better crops and new weapons in the fight against cancer and genetic diseases.

Jennifer A. Doudna – Facts – 2020. NobelPrize.org. Nobel Prize Outreach AB 2023. Sat. 18 Nov 2023. <https://www.nobelprize.org/prizes/chemistry/2020/doudna/facts/>

Notable Awardee: 1998 BYI Carolyn R. Bertozzi, PhD

Born: 10 October 1966, Boston, MA, USA

Affiliation at the time of the award: Stanford University, Stanford, CA, USA; Howard Hughes Medical Institute, USA

Prize motivation: "for the development of click chemistry and bioorthogonal chemistry"

Prize share: 1/3

Chemists strive to build increasingly complicated molecules. For a long time, this has been very time consuming and expensive. Click chemistry means that molecular building blocks snap together quickly and efficiently. Around 2000, Carolyn Bertozzi started utilising click chemistry in living organisms. She developed bioorthogonal reactions which take place inside living organisms without disrupting the normal chemistry of the cell. These reactions are now used to explore cells, track biological processes, and improve the targeting of cancer pharmaceuticals.

Carolyn Bertozzi – Facts – 2022. NobelPrize.org. Nobel Prize Outreach AB 2023. Sat. 18 Nov 2023. <https://www.nobelprize.org/prizes/chemistry/2022/bertozzi/facts/>



Carolyn R. Bertozzi, PhD, was awarded the Nobel Prize in Chemistry in 2022.

Photo Credit:
Stefan Bladh