Blinding Reduces Institutional Prestige Bias During Initial Review of Applications for a Young Investigator Award*

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Why did we begin blinding?

From our Founder, Dr. Arnold O. Beckman:
“\textit{I want to support young scientists, those who do not yet have the clout to receive major research grants.}”
“\textit{There is no satisfactory substitute for excellence.}”

• 2018: Concern that our awardees are from the same set of institutions each year

Strategic Questions:
\textit{Do we see reviewer bias towards “institutional prestige”? (we can minimize)}
\textit{Are we receiving applications from a diversity of institutions? (we can influence)}

• 2019: Developed methodology, conducted analysis on institutional diversity
• 2020: \textit{Distributed analysis results} to our Board, SAC, and review committees; began planning for blind reviews in our Beckman Young Investigator program
• 2021 applicants: Began \textit{blinded review} at “Letter of Intent” step

Gender: we did not see evidence of gender bias; Race: we did not collect data before 2021
Application Process

Figure 5. Schematic of the BYI Application Review Process.

LOIs Received → LOI Review Panels → Bio Panel 1, Bio Panel 2, Bio Panel N, Chem Panel 1, Chem Panel 2, Chem Panel N → ~100 Full Application Invitations → Full Applications Received → AMBF Admin Review → Full App Review Panels → AMBF Board of Directors → Interview Committee → Interview → Award

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Some Blinding Logistics

• Just the LOI stage, applicant information available in Full Applications

• Separate form in application portal (hidden from reviewers) to collect demographic info
  • Name, institution, gender, race, ethnicity, disability, existing and pending external funding

• Instructions for applicants:
  • Do not include your name, gender, or any institutional information in the technical pre-proposal.
  • Encouraged to write in third person (example: the applicant). Using "I" or "We" is allowed.
  • Do not name collaborators, mentors, postdoc advisors, lab members, etc.
  • If you include references to your own publications, do not use any formatting markings (asterisk, bolding, italics, etc.) to identify yourself within the list of authors.
  • If you have unpublished work, use this format: ¹(Applicant name withheld). Unpublished work, 2022.
  • **Failure to follow guidelines could result in disqualification.**

• Compliance considerations:
  • Application portal – triple-check that applicant names not visible or included in file name downloads!
  • Internal staff review LOIs for obvious violations
  • Reviewers can flag LOIs for intentional violations
    • Discussed at the start of review meetings
    • At least two reviewers must agree to disqualify an application
    • Must be intentional violation, not just that the reviewer “thinks they know” the applicant
What is “Institutional Prestige”?

- Depends on what you want to fund....
- Basic research spanning chemistry and life sciences, broadly defined

“Top 100 Institution” Lists from:
- National Center for Science and Engineering Statistics, 2018 and 2022
- Times Higher Education, 2018 and 2023
- Shanghai Academic Ranking, 2018 and 2023
- Leiden Biomedical, 2018-2021
- Our own historical funding, 1990-2018

“Consensus Ranking” : Averaged the ranks for Institutions that appeared on at least 5 of these lists
- 96 Institutions overall
- Top 10, 11-25, 26-50, 51-96, Other Categories
Analysis Method

**Step 1:** Assign each application received into 5 Consensus Institution Categories

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<thead>
<tr>
<th>Category</th>
<th>A1</th>
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<th>B2</th>
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**Step 2:** Calculate “Relative Advantage” for each Category, each Year

Relative Advantage = \[
\frac{\text{LOIs invited to submit Full App in a category}}{\text{Total LOIs received in a category}} \div \frac{\text{Total LOIs invited to submit Full App}}{\text{Total LOIs received}}
\]

*If there was no implicit or explicit institutional prestige bias, then the “Relative Advantage” would be the same in the unblinded and blinded reviews.*

**Step 3:** Examine the difference between review conditions (unblinded vs blinded)

Conduct chi-squared analysis for significance. Will not be presented here, but many thanks to Jenna Hicks for this analysis!
Results, Unblinded (2017-2020) vs. Blinded (2021-2024)


- Institutions at an “advantage”
- If no bias
- Institutions at a “disadvantage”
Discussion

• Some Institutions may have research faculty and support systems to produce better proposals
  • More resources, more mentorship, lower teaching loads, etc.

• Benefits to Blinding:
  • Blinded applications are much easier to review – short and just the science
  • No comments such as “this applicant trained with [Premier Scientist XYZ], so I will give them the benefit of the doubt…” or “well, Stanford hired them so they must have seen their potential…”
  • Review meeting discussions focus only on the science topics – no publication counting or debates over relative journal impact factors

• Does the impact extend to who is awarded?
  • Relative Advantage – Award:

![Bar chart showing relative advantage by award category.](image)
Future Directions

• What is happening to the “51-96” Institutions?

• What can (should) we do to address this gap? Better instructions? Mentor networks? Update review criteria?
Other Ideas Considered, but not Implemented

- Limit # of applications allowed per Institution, or by invitation only
  - Pros – more control on applicant pool
  - Cons – rely on the Institutional review processes

- Limit # of applications from “Top Institutions”, but allow unlimited applications from others
  - Pros – achieve balance within our applicant pool
  - Cons – who selects the “Top Institutions”, different communications and instructions based on Institution, potential to alienate certain Institutions

- Add “bonus” to review score for less prestigious Institutions to raise them in the overall ranking
  - Pros – could force an equitable outcome
  - Cons – discussions veer away from the scientific merit