

# A Way Forward

New Vision Research and the Charleston Conference on Alzheimer’s Disease work toward a brighter future for medical research by supporting risk taking, innovation and collaboration. We believe diversity in ideas leads to better medical research, and to achieve this, it is important to identify and address individual, community and institutional challenges scientists face that hold us back as a community. *A Way Forward* is a four-part series dedicated to sharing these challenges with the CCAD community, along with ways to help address them and contribute to their resolution. **If you would like to contribute an idea or an article to *A Way Forward*, please visit [www.charlestonconferences.org/contact-us](http://www.charlestonconferences.org/contact-us) and indicate your interest.**

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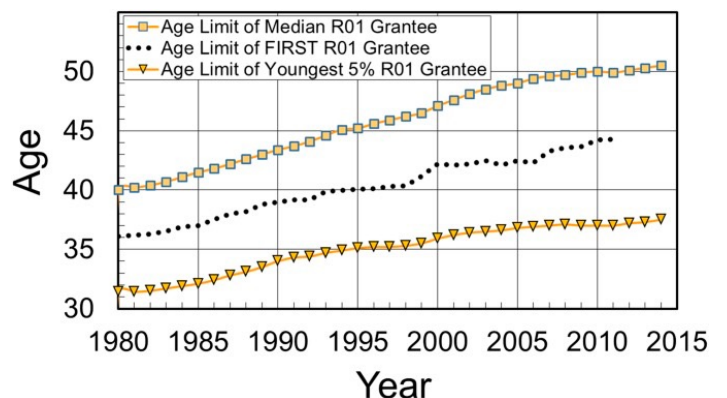
## Ageism in Scientific Research

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Due to increased scarcity in jobs and grant funding, as well as policy changes and systemic biases, both early and late-career scientists experience ageism. The effects of this form of discrimination or prejudice based on age are detrimental to individual researchers and the scientific community in general. It can be argued that ageism against younger researchers stifles innovation, while ageism against older researchers devalues their experience and harms all researchers by reducing opportunities to collaborate, mentor or diversify ideas [1].

Younger scientists may experience ageism as being crowded out of jobs due to the overall aging of the baby boomer generation, and the 1994 decision to lift the mandatory retirement age of 70 for universities. According to the National Science Foundation’s Survey of Doctorate Recipients, the average age of a researcher in industry and academia increased from 45.1 to 46.8 between 1993 and 2010 and is expected to continue increasing [2].

Ageism may also be experienced by early-career scientists when seeking grant funding. Data from the National Institutes of Health (NIH) demonstrates that between 1980 and 2016, the average age at which PhD scientists receive their first R01 grant increased from 35.7 to 43, and 45 for MD investigators [3]. Also during this time, “The PI success ratio (fraction of basic-science PIs who are R01 grantees) dropped for younger PIs (below 46) and increased for older PIs (above 55)” [4].



The figure on page 4 shows age variation of R01 grantees. The median age grows from 40 to 50, whereas that of the 5% youngest grows from 32 to 37. The average age of [first independent research] R01 grantees is 6 years more than that of the 5% youngest, and halfway to the median age [5]. Age changes for youngest, oldest, and median basic clinical-science PIs are shown in Fig. S1 of this article [4]. [To note], since 1980, US life expectancy has increased by 5 years [6].

Reasons for these changes and their implications include criticism of the grant review process as biased against more novel ideas and younger researchers. After analyzing highly sighted papers and study section rosters in 2012, Joshua M. Nicholson and John P. A. Ioannidis concluded:

The grants of study-section members were more similar to other currently funded NIH grants than were non-members' grants (median score 421.9 versus 387.6,  $p = 0.039$ ). This could suggest that study-section members fund work that is more similar to their own, or that they are chosen to serve as study-section members because of similarities between their own and funded grants... Exceptional creative ideas may have difficulty surviving in such a networked system [7].

Further criticism asserts that the current funding system favors experienced researchers because they are more likely to have preliminary data and are simply more familiar with the grant process [8, ]. One study found that papers built on ideas that are at least seven years old are more likely to be funded by NIH than papers built on more recent ideas [10]. Scarcity of funding exacerbates these issues as lower-risk research and proposals more likely to deliver positive results are consciously or unconsciously favored.

Starting in 2007, efforts have been made to increase the equality of grant awards between early and late-career researchers, however the disparity between ages remains in subsequent years as grant renewals for first-time recipients remain lower than renewals for experienced investigators [11].

Scientists who are more senior in their career may experience ageism as well. Ageist sentiments were clearly demonstrated in 2015 when comments were solicited by NIH on a public blog about the proposed NIH Emeritus Grant Initiative – a grant mechanism for senior researchers that would facilitate transitioning their laboratories to junior researchers. It could be argued that the proposal itself represents ageist views within NIH by incentivizing experienced researchers to retire [1].

Of the 184 comments received, the overwhelming sentiment was disapproval of the initiative as an undeserved benefit for older scientists, and negative views of older scientists in general. An analysis of the comments notes, “Older academics were described by some of their younger counterparts as outdated and lacking in energy, creativity, drive and competence needed for innovation,” [1]. The prejudice of these views is not supported by current literature, and ultimately past performance is a better indicator of productivity than age [12, 13].

Ageism against older professionals – especially those entering a new field – has been documented in most sectors [14]. This prejudice possibly hinders scientific progress as individuals who changed career tracks later in life are kept from contributing their unique expertise and diverse viewpoints to their chosen fields.

Lastly, other forms of discrimination intersect with ageism and extend beyond the research community. Some critics identify current and proposed funding programs for experienced researchers as undermining diversity and supporting “old white men,” or established norms [1]. It has been demonstrated that the current funding system can be biased against women and minorities [15, 16]. Ageism intersects in ways that can make things worse for these and other already disadvantaged populations.

## Moving Forward

While NIH has worked to make funding opportunities available to researchers with a broader range of experience (e.g. the Next Generation Researchers Initiative), the ebb and flow of the institution’s funding as tied to political change can thwart sustainable progress and foster fears of scarcity [3, 17-19]. One solution may be to reassess the allocation of funds to NIH based on politicized decisions.

Another possible solution is increased reliance on age-neutral merit-based funding. This entails the review and award of funding based solely on the scientific merit of a proposal, as opposed to the proposing scientists’ age, gender, institution, degrees, etc. However, opinions regarding this change are mixed, as are ideas about its possible intended and unintended outcomes [1].

The constant progression of technology and social media has birthed crowdfunding for multiple endeavors including scientific research. While New Vision Research launched Donor’s Cure, which proved to be before it’s time, other institutions and platforms continue testing crowdfunding for scientific research. A 2019 study of crowdfunding for scientific research found that students and junior investigators compared to senior investigators, and women compared to men are more likely to be

successful. Multiple factors likely contribute to this, including an audience of mostly students and junior investigators, smaller research project proposals, and donors’ use of different criteria and justification for contributing to a fund. Solutions like crowdfunding reflect the changing landscape of technology and communication, as well as the relationship of scientists to the broader public [20, 21].

Solutions that encourage collaboration and mutually beneficial relationships between investigators at different stages of their careers are essential. In this way, the Charleston Conference on Alzheimer’s Disease (CCAD) offers a new way forward. Starting before the conference, early-career researchers must network with established researchers to be nominated for CCAD. Then researchers are encouraged to collaborate with their cohort, which represents a range of ages within the designation of early-career investigator, and with other alumni representing investigators in different stages of their careers. Finally, at the conference, established researchers serve as vital mentors to attendees, and individuals who initially attended the conference have returned after establishing their career to mentor other attendees.

## In Conclusion

While other sources of discrimination (e.g. gender identity or race) rarely or never change, scientists face generational challenges based on the stage of an individual’s career in relation to others within the scientific community.

The constant progression of technology and methods of communication may be ancillary to scientific research itself, but significantly impacts access to funding and the funding processes. This includes for example, the proliferation of social media and development of crowdfunding platforms, the use of blockchain technology for



encrypted patient data or digital credentialing, and newly proposed research examining the effects of smartphones on cognitive health [22-24]. These constant changes are challenging to keep up with and create divides between each new class of researchers and their predecessors.

To best address these challenges, we must balance considerations of scarcity and job market fluctuations with providing opportunities to create and support sustainable open relationships between early and late-career researchers. By doing this, researchers from all stages of their career can benefit from each other's differences and work towards a more equitable and collaborative research environment.

## About The Author

Jacqueline Helpem is a freelance writer and editor with a background in public health and finance. She has helped facilitate up to \$1 million in grants for local to international nonprofit organizations, organized thousands of professionals completing volunteer projects annually across the Northeast United States, and audited hundreds of political campaigns for the New York City government. She enjoys using her skills and background to help organizations solve problems, become more accessible and equitable, and effectively communicate with their audience.

Jacqueline loves to travel and volunteer. She has helped develop health programs in Cambodia, Bolivia, and the United States. Most recently she volunteered analyzing data for a diversity, equity, and inclusion initiative with Doctor's Without Borders.

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