Final Report October 3, 2019

CSR Advisory Council Early Career Reviewer Working Group

Final Recommendations from the CSR Advisory Council

Criteria for the ECR program:

- Have at least 2 years of experience as a full-time faculty member or researcher in a similar role. Post-doctoral fellows are not eligible. (No change)
- Show evidence of an active, independent research program. Examples include publications, presentations, institutional research support, patents, acting as a supervisor of student projects. (No change)
- Have at least 1 senior-authored research publication in a peer-reviewed journal in the last 2 years; in press publications are considered. Have at least 1 additional senior-authored research publication since receiving a Ph.D. or M.D. We consider "senior-author" position to be as single author, corresponding author, or first or last author. (Relaxed from 2 research publications in the last 2 years.)
- Have not served on an NIH study section in a role other than mail reviewer. (Adds service at NIH Institutes/Centers, other than CSR, as a disqualifier.)
- Have submitted a grant proposal to the NIH and received a summary statement. All NIH grant mechanisms meet this requirement except F30, F31, and F32. (New requirement)
- Must be a New Investigator, a PD/PI who has not previously competed successfully as a PD/PI for a substantial independent research award. (The list of grants that one may hold and still be considered a New Investigator is the same as the list of grants one may hold and be considered an Early Stage Investigator.) PI's who have an R01 or R01-equivalent grant are eligible to serve as a reviewer, outside of the ECR program. (Adds R01-equivalent grants as a disqualifier.)

Increasing opportunities for ECRs:

- Two ECRs are to be recruited for each standing study section and for special emphasis panels that review primarily R01s at CSR. Assignment load is to be limited to 2 proposals as tertiary reviewer. (Change from 1 ECR to 2 ECRs per panel.)

All other recommendations suggested by the working group, related to broadening training opportunities for early career scientists through outreach, efforts to publicize the criteria, strategies to deal with the backlog of ECRs, and additional training for SROs, were recommended for adoption.

Introduction/Background

The mission of the Center for Scientific Review is to provide fair, independent, expert, and timely reviews – free from inappropriate influences – so the NIH can fund the most promising research. Within this context, the Early Career Reviewer (ECR) Program was begun at CSR in late 2011 with two goals. CSR aimed to provide review experience to early career investigators with the ultimate goal of increasing their knowledge of the review process and thus their success rate in pursuing NIH R01

funding. Second, CSR aimed to broaden its pool of well-trained reviewers and increase diversity among reviewers, in terms of career stage, race/ethnic group, gender, and institution size.

Criteria for the program have not changed since its inception. The current criteria are:

- Have at least 2 years of experience as a full-time faculty member or researcher in a similar role. Post-doctoral fellows are not eligible.
- Show evidence of an active, independent research program. Examples include publications, presentations, institutional research support, patents, acting as a supervisor of student projects.
- Have at least 2 recent senior-authored research publications in peer-reviewed journals in the last 2 years. In press publications are considered and author position can be as single author, corresponding author, or first or last author.
- Have not served on a CSR study section in a role other than mail reviewer. (Mail reviews do not include participation in the meeting.) Review service at other agencies or at other NIH institutes/centers are not disqualifiers.
- Recipients of R01s are over-qualified for the program.

Applicants to the ECR program can apply through an online portal. After submitting their application, they are vetted by individual Scientific Review Officers (SRO), instead of by a single person or office. During the application process, applicants are asked to identify a potential study section. Their application is then typically routed to the SRO of the identified study section. SROs use an online vetting process in which they ask a series of questions, verifying the first four points above. Once approved, the ECR is added to a database from which SROs may recruit reviewers. In some cases, SROs do not recruit ECRs from the database but instead identify ECRs through other means (e.g. familiarity with the ECR through submitted applications, recommendations from other scientists or program officers, direct contact from the ECR to the SRO about interest in serving).

The current CSR policy is that one ECR is to be recruited for every meeting of a standing panel (a chartered study section/review group) or recurring special emphasis panel that handles primarily R01 proposals. ECRs are prohibited from recurring special emphasis panels that review fellowship proposals. ECRs are to be assigned two to four proposals, as tertiary reviewer. The program has changed minimally since its inception. When the program was first begun, SROs were encouraged to recruit one ECR to each meeting of a standing panel. In 2017, recruitment of ECRs was somewhat expanded by allowing SROs to recruit ECRs to special emphasis panels reviewing research grants, if the SRO deems the panel appropriate and likely to provide a good educational experience to the ECR. Beginning in 2017, ECRs could also be recruited to Video Assisted Meetings.

Initially, only CSR SROs had access to the database but in 2017 the database was opened to review staff at all NIH Institutes and Centers, but not widely promoted. Because other institutes do not flag a reviewer from CSR's database with an "ECR" code on the meeting roster, recruitment of ECRs to review service at other NIH Institutes and Centers cannot currently be tracked.

Since its inception, 8,362 people have been approved as ECRs and added to the database. In September 2019, there were 3,153 people in the database who are eligible for review service but have not been recruited to serve on a review panel. More than 3,819 ECRs have served on review panels since the inception of the program. (Because of changes in how the data have been tracked since the inception of the ECR program, 3,819 ECRs is certainly less than the true number who have served.) The pool of willing

ECRs is significantly larger than the availability of opportunities to serve as a reviewer. Through social media, responses to blog posts, surveys, and emails to CSR, we know that there is frustration in the scientific community that more ECRs are not recruited and given the opportunity to learn about the review process first hand. Other feedback that CSR has received include concerns that the criteria are unclear and unreasonably preclude participation by qualified candidates. There are anecdotal reports that some SROs apply stricter criteria than two publications in the last 2 years, primarily by adding the criterion that the publications must be from work done *in their current position*. Responses to a survey done by the NewPISlack group, indicate that some would-be ECR applicants do not apply because they also interpret the posted criteria of two publications in 2 years to mean two publications from work done in their current position.

We assembled a working group to explore ways in which CSR might reduce the large backlog in the ECR database and to re-evaluate the criteria for the program. The working group was comprised of two members of the CSR Advisory Council (Drs. Mark Peifer and Elizabeth Villa), two CSR SROs (Drs. Kristin Kramer and Antonello Pileggi), and four scientists who recently served as ECRs on CSR review panels (Dr. Vinay Aakalu, University of Illinois at Chicago; Dr. Stephanie Cook, New York University; Dr. Lisa Jones, University of Maryland; Dr. Manuel Llano, University of Texas at El Paso).

Meeting and Recommendations

The panel was charged with these primary questions:

1) Should we change the criteria for the ECR program in any way?
2) What should we do about the >3100 willing ECRs currently in the database who have not yet served on a panel?
3) No matter what action we take, we will not be able to meet demand for the ECR program. Is there something else we can provide to those who are not recruited as a reviewer?

Much discussion occurred via email over several weeks, among the entire group, prior to a 2-hr Skype meeting held on July 24. All members of the working group were present. Discussion topics were as follows:

The demand for participation in the ECR program could partly be met by increasing the number of ECRs per panel. Limitations for increasing the number of ECRs include a general concern that the number of participants in a review meeting is somewhat constrained by the need to keep group size small enough to encourage good discussion. Suggestions discussed included increasing the number of ECRs to:

- 2 ECRs per panel when there are more than 50 applications in the panel
- 1 ECR per 20 applications
- 1 ECR per 25 applications, with a limit of 3 ECRs per panel

Criteria for the program are not clearly communicated to either prospective ECRs or to SROs who vet applicants. Based on email, surveys, and conversations on social media platforms, it appears that criteria are not sufficiently clear to either the scientific community or to CSR staff. Survey responses suggest that some early career scientists do not apply because they interpret the criteria to be more stringent than intended. Specifically, the criterion related to publication history is often misinterpreted. The criterion is: “Have at least 2 recent senior-authored research publications in peer-reviewed journals in the last 2

years. In press publications are considered and author position can be as single author, corresponding author, or first or last author." What is written is what is meant, however, ECR candidates and some SROs interpret this criterion to mean that the ECR must have two publications in the last 2 years from *work done at their current institution*, meaning that publications from postdoctoral work that were published in the last two years would not count towards the two publications.

Second, scientists on the working group expressed concern that requiring two publications in the last two years might be too rigid and unnecessarily filters out high quality early career scientists. Points made include concerns that some post-doctoral mentors do not allow their mentees to publish from their post-doctoral research once they obtain an independent research position; the research stays with the post-doctoral laboratory instead of with the researcher. Additionally, some journals require an inordinate amount of time to review manuscripts and, with collaboration among large groups growing, it often takes longer to publish a research article than it did when the ECR program was conceived.

Solutions discussed by the group include:

- Ensure that criteria are clearly written and widely publicize all changes in eligibility criteria.
- In order to reduce frustration in the scientific community and reduce the perception that the recruitment process is fundamentally unfair, CSR should clarify the additional constraints on SROs in recruiting reviewers so that ECRs understand these limitations. Limitations include:
    - The requirement that reviewers from the same institution (dyads) be avoided to comply with regulations covering Federal Advisory Committees
    - Review panels are closed and confidential and only those with "a need to know" may attend (NOT-OD-14-073). Allowing ECRs to observe a review, without being assigned applications, is not permissible.
- CSR should more widely publicize the suggestion that ECRs contact SROs to increase their chances of being selected and make clear this option is open to all. Some ECRs saw this suggestion as evidence that a network of contacts is the determinant in selection.
- CSR should stress that providing a detailed CV makes it easier for SROs to identify ECRs that suit the review panel well. The CV should clearly demonstrate an independent research program.

Proposed replacements of the 2-publication in 2 years criterion were:

- Minimum of 1 research publication since earning a Ph.D. and 1 research publication since beginning the faculty position.
- Author role should be expanded from first/last/corresponding to also include a "leading role" on a paper, recognizing that highly collaborative work is more common, resulting in many-author papers, on which it is clearly less likely to be first or last author.

Additional changes to the requirements were also considered. First, the group was generally in favor of requiring the submission of a grant application to the NIH prior to admission to the ECR program. Downsides to limiting this to an R-series application is that it could disadvantage clinician-scientists who are unlikely to have submitted an R-series application in their first two years of a faculty appointment. K-series applications should also be considered as tracks are different in different fields. The working group also considered changing the requirement from 2 years in an independent research position to 1

year but the majority thought that 2 years in an independent position is a reasonable requirement and that in the first year, many candidates are likely too burdened with other commitments.

The current database has a large backlog of eligible ECRs. The backlog includes ECRs who applied years ago and who might not still be in research positions. The group considered clearing the database entirely and starting anew and contacting those eligible ECRs via email and welcoming them to reapply (or to update their information). Annual queries should be sent to the eligible ECRs in the database to determine whether they are still interested in serving on a review panel and if they are still in a research position. If the email address is not valid, the ECR should be removed from the database. Application information should include instructions to update their email address in Commons whenever they move institutions and make clear that ECRs with invalid email addresses will be removed from the database.

Other means to reduce the number of ECRs were proposed. Changing eligibility requirements to disqualify recipients of R21s, R15s, and R35s were discussed. Current criteria for New Investigator Status do not disqualify R15 and R21 recipients.

In what other ways CSR could increase the knowledge of early career scientists about review process and thus improve their grant success rate, in absence of review service? The primary benefits to ECRs of serving on a review panel are seeing a wide range of grant applications and differences in how they are constructed; seeing how people behave and score applications; the opportunity to network with other scientists. There are few substitutes for this, however, the group discussed other resources that could be made available. Mock study section videos, covering different scientific areas, would be helpful to early career scientists as would additional outreach at scientific meetings, including those focused on junior faculty.

Committee Recommendations

Increase training opportunities for ECRs by:

- Increasing the number of ECRs from one per panel to one ECR per 25 proposals with a cap of three ECRs per panel
- Create new mock study section video
- Increase outreach at scientific meetings, perhaps offering a live mock panel
- Publicize the ECR program at other NIH Institutes and Centers

Criteria changes:

- Instead of two publications in the last 2 years as first/senior/corresponding, the recommended requirement is two publications since earning a Ph.D. as first/senior/corresponding with at least one of those having been published while in a faculty position.
- Receipt of a MIRA (R35) is a disqualifier for the program
- ECRs must have submitted a grant proposal to the NIH; any grant mechanism other than F30, F31, F32 qualifies
- Other existing criteria remain

Publicize criteria and constraints in recruitment well so that ECRs are fully informed and so that SROs apply the criteria consistently. Specific items to publicize/clarify:

- Requirement for two publications since completing a Ph.D. At least one of the two must have a publication date since starting the faculty position; no requirement that the work in either paper was conducted at the institution at which the person holds a faculty position
- Rules governing dyads (two people from same department are not allowed to serve on a panel and only rarely are two people from same institution allowed)
- Rules that prevent ECRs from sitting on a panel as an observer
- Provide advice on how to get noticed or chosen as a reviewer - e.g. contacting an SRO (may be particularly effective if your area of science is not well represented in our database); not meant for "those in the know" but instead intended to indicate that we genuinely welcome emails/calls from the scientific community – you don't need to have already made our acquaintance to call!
- A detailed CV (including a short statement about the nature of their independent research program) is useful as it makes it easier for SROs to identify ECRs with appropriate expertise for the panel
- Email address must be current in eRA Commons as a bounced email on annual survey will result in removal from database
- If an ECR no longer qualifies as ECR (i.e., R01 award) before serving, they could be selected for peer-review service nonetheless. ECR service is not a pre-requisite to regular peer review service and CSR is expanding its recruitment of Assistant and Associate Professors with funding for service on review panels.
- Explain how temporary reviewers are selected and encourage people to contact the SRO; there is no queue.

The large backlog of eligible ECRs should be dealt with by:

- Send an email to all eligible ECRs and invite them to update their information. Remove from the database anyone who does not respond.
- Institute annual queries to ECRs in the database and ask if they are still in a research position and are still aiming for NIH funding. If email bounces or if the reply is 'no', they will be removed.

Additional recommendations stemming from email conversations prior to the June 24 meeting:

Formal Best Practices should be developed for SROs in training ECRs that include:

- ECR critiques must be read in advance of the meeting and feedback given
- A brief meeting with the ECR the night before the meeting, if it reasonably fits in the SRO's schedule is desirable. Alternatively, the SRO can facilitate a pre-meeting 'hello' between the panel Chair and ECR the morning of the meeting.
- SROs should ask the ECRs who they prefer to be seated next to (someone in their field they'd like to meet? an experienced and friendly reviewer who they can nudge during the meeting?)

- ECRs should be explicitly encouraged to come prepared to contribute to discussions of applications beyond their assignments
- Chairs should be trained to circle back to ECRs during the meeting for comments, to make it clear their input is valued
- ECRs should receive post-meeting feedback on their performance

CSR Advisory Council Input – convened September 23, 2019

The entire CSR Advisory Council considered the above report from the working group and the council met September 23, 2019 to discuss the recommendations. Most discussion centered around the recommended change to publication requirements for participation and the recommended increase in number of ECRs per study section.

Concerns were expressed that reducing the publication requirement from two publications in the last 2 years to one publication since earning a Ph.D. and one publication in the last 2 years would result in recruiting ECRs without adequate expertise to review. However, it was acknowledged that publication rates differ greatly between fields and that the current publication criterion likely excludes accomplished early career scientists in some fields. Additionally, the criterion that an ECR have an active, independent research program remains and Scientific Review Officers can and do appropriately vet candidates.

The Advisory Council recommended a more moderate increase in ECR recruitment to review panels to two ECRs per study section, with an assignment load of two proposals. This level would allow CSR to involve more ECRs while ensuring that SROs have adequate time to invest in substantial training of these reviewers and addresses concerns about the influence of inexperienced reviewers on review outcomes. The Advisory Council also expressed the desire to emphasize recruitment of minorities and women, when possible, to support the goal of increasing the diversity in our pool of reviewers.