Arnold O. Beckman Postdoctoral Fellowship Program Guidance Document

Congratulations on being invited to submit a **full proposal** to the Arnold O. Beckman (AOB) Postdoctoral Fellowship Program! At this stage of the application process, you will be converting your Letter of Intent (LOI) into a full proposal that will be evaluated as part of a comprehensive application review, which includes all your biographical information. As such, this is your opportunity to reveal to the reviewers any specific details about your institution or background that you might have held back during the blinded LOI stage. This refers especially to those details that might convince the reviewers that the work is feasible, based on where it will be conducted or your prior experience as a graduate student.

General Guidance

- At this point, you are expanding on the research that you proposed during the LOI application stage. Be sure to propose interesting science that is not already being done in your mentor's lab, but don't stop there! Make sure that you also place that science **within a broader context**. What is the **need** for what you are proposing and why is what you are proposing useful and exciting? What will be achieved technically if this work is successful? Will it have a societal impact? What will change if this project is successful? These are good questions to guide your thought process and answering some of them clearly will help the reviewers to understand the potential impact of the work that you are proposing.

- The best scientific creativity comes from **boundaryless thinking**. Try not to worry about what others are doing or proposing. Rather focus on presenting a good idea to approach a problem of scientific import that excites you. And remember, a proposal that is written in your own **personal voice** will always be most compelling. Using your own voice to explain the proposed work and why it is an exciting approach to important science will help the reviewers to get excited about your work, too!

- While a few **example full proposals** are provided, they are only there to help you imagine what a proposal might look like. Feel free to use them to guide the way you structure your proposal, but do not let them constrain you. Your proposal does not need to fit into or conform to these examples. It should, however, follow the outline set out in the applicant instructions (e.g., specific aims, background, significance, proposed strategy and approach, and instrument dissemination and sustainability plan).

- Think about **potential issues and contingency plans** (e.g., why might my initial really cool idea not work, and if it doesn't, how might I get around this issue and still accomplish the goals of the proposal?). This is especially important if your second or third aim relies heavily on the successful completion of an earlier part of the proposal. Focus your attention on what aspects of your proposed science MUST be accomplished for the remainder of the work to be possible. For these critical outcomes, are there things that might cause the science, as proposed, not to work? If so, can you come up with another approach that could realistically be used to circumvent the issue?

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The Fine Print: A Few Tips About the Details

Can I change which program I applied to? At this stage of the process, you must submit your full proposal to the same program (chemical sciences or chemical instrumentation) as your LOI. Your full proposal should be an extension of what you proposed previously; no significant changes can be made to the focus of your proposed work at this point.

Requirements. Every fellowship program differs in who is eligible to apply. You will want to keep in mind that you must meet the following requirements to be considered for an AOB Postdoctoral Fellowship:

- Must complete your PhD by no later than May 1 of the program year
- Must not have completed more than 18 months of post-doctoral work by the LOI application deadline
- If you received your PhD more than 3 years ago, you are only eligible to apply if you experienced a leave of absence/stop the clock disruption (e.g. military service, child rearing, or similar)
- Must be a US citizen, permanent resident, or hold Deferred Action for Childhood Arrivals (DACA) recipient status
- Research must be conducted at a university or research institute; research at national labs and the like are not eligible
- The proposed research and innovation must be chemistry-focused, although the project can have applications in other fields such as biology or physics.
- Mentors must be identified prior to application submission, hold a PhD or MD/PhD, and be a full-time tenure track or tenured professor with at least a 25% appointment in chemistry, chemical physics, chemical engineering, or material science. Mentors many only support one applicant per review cycle.

Using AI Tools. The Arnold and Mabel Beckman Foundation supports the use of AI tools as supplementary resources. However, while their use in your application is at your discretion, we expect that you will use these AI tools in an ethical and responsible manner. As the applicant, you are expected to comply with best practices in research and publishing ethics, take full responsibility for any errors made by an AI tool, and to cooperate by responding to any questions that may arise relating to the accuracy or integrity of any part of your work, including data analyses and representation. *If AI tools are used in producing any parts of your application or in assisting with the writing process, a brief statement describing this use must be included with the references.*

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In order to protect your information from AI algorithms during the review process, the Foundation's reviewers are NOT allowed to use or upload your materials into an AI tool. In addition, the Foundation does not use AI tools for screening or evaluating applications.

Reviewers. The reviewers for your full proposal will likely be the same active researchers in the chemical sciences or related fields who reviewed your LOI; however, similar to the LOI review, it is unlikely that the whole committee will be experts in your specific field or sub-specialty. Therefore, make sure to use the additional space to expand on the most challenging aspects of your proposed research, while keeping it accessible to a general scientific audience. Too much technical detail or jargon can be off-putting and tiring for reviewers who are reading multiple applications. That doesn't mean that the specifics of a particular experiment shouldn't be included; for key experiments, including the details and why that experiment is so important, might be critical. Regardless, avoid a proposal that is all about the fine details of your experiments, which can produce a dense proposal that is hard to read, and which will often review less favorably.

Plan Ahead to Secure Mentor and Institutional Support. It is a good idea to start the writing and planning process early, as you will need significant input from your mentor (beyond just a CV and a signature) and an institutional signature.

Your *mentor* (and any co-mentors, if applicable) will be required to provide a letter of recommendation on your behalf as well as writing a Mentoring and Career Development Plan. While the first may be familiar to everyone, developing a Mentoring and Career Development Plan will likely take more effort on the part of your mentor(s).

A good ***Mentoring and Career Development Plan*** will be unique to you and your interests, while still helping the reviewers to understand the research environment in your mentor's laboratory and their mentoring philosophy. If you have a co-mentor, it should be clear in the plan how the two mentors will work together to create a dynamic and positive training environment for you. Mentoring statements that appear to be generic or that could be applied to any post-doctoral researcher in the mentor's group are likely to disadvantage your application during the review process.

Institutional Support: In order to officially submit a full application to the AOB Postdoctoral Fellowship program, you will need to request your official/unofficial graduate school transcripts, showing the date your PhD was conferred, or a letter on institutional letterhead, signed by your PhD mentor or another institutional signatory, stating the date that your PhD is expected to be conferred. In addition, you will need to obtain the signatures of an institutional representative and your mentor on the Award Terms and Conditions document before you sign this document yourself and upload it to the portal. Your sponsored research office may also have internal requirements and deadlines. Contacting these institutional offices and representatives early will ensure that you know what they need, and by when, in order to complete the application process on time.

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Letters of recommendation. At the full proposal stage, you must request two letters of recommendation to be submitted on your behalf through the portal. These letters must come from your proposed AOB Postdoctoral Fellowship mentor and your PhD advisor (if not also your AOB Postdoctoral Fellowship mentor). If your proposed AOB Postdoctoral Fellowship mentor and your PhD advisor are the same person, your second letter will need to come from an additional collaborator, co-advisor, or expert in your sub-discipline. Emails with links to submit these letters will be generated as soon as you enter your recommender's information into the portal. You will want to *reach out early* to your letter writers to ensure that this aspect of your application is received on time. Further, you should be aware that associates of the Beckman Foundation (e.g., members of the Board of Directors, Scientific Advisory Council, Executive Committees, Beckman Institute Directors, and/or employees of the Foundation) may not submit a letter on your behalf. If this poses an issue for your application, please reach out to the Foundation for additional guidance.

Required short (and not so short) applicant responses. The full application requires you to submit several responses, beyond your proposal, on a variety of topics. Be sure to look at these prompts early and leave yourself plenty of time to craft thoughtful answers.

An 'elevator pitch': Provide a 3-5 sentence description of your proposed work that is accessible to a nonscientific audience. Reviewers look carefully at this 'elevator pitch' to determine if you are able to convey the importance and novelty of your work broadly. It is wise to ask several friends or family members, who are either not scientists or whose fields do not overlap with yours, to read this section and give you feedback, prior to submission.

Inclusion statement: How have you worked to create a welcoming and respectful environment during the pursuit of your degree/research? How have the efforts of your current and previous mentors created a safe space that allowed you to thrive? In what ways have you encouraged diverse scientific collaborations? How do you intend to continue these efforts into the future?

Graphics. Using schemes and graphics to help explain your proposal is critical but using too many or not enough can make your proposal feel out of balance. On average, consider using one well thought out scheme per page or section of your proposal. Given the proposal page limitations, utilizing high impact graphics will help you to guide the reviewers through your science without using more space than is absolutely required.

Be sure that your graphics are large enough to be read easily. Making a graphic smaller so that there is more room for either another graphic or more text might seem like a good idea, but if a reviewer has to strain to see the details or to decipher the labels, it is likely to reduce their enthusiasm for your work.

Space Utilization. A competitive proposal will do a good job of balancing the background, project significance, and the details of the research plan. In order to accomplish all of these tasks, it is common to use all of the space that has been allotted for your proposal within the program guidelines. Proposals that are shorter than the guidelines are generally missing a key element and need to be

expanded. Proposals that are submitted that are longer than the page limitations will be administratively rejected; this applies to all documents in the full application submission. Please be sure to edit your proposal so that it conforms to the page limitations.

Proofreading. Be sure to carefully proofread and edit your proposal before submission. Errors in spelling, grammar, and numbering can annoy a reviewer, decreasing their excitement for the work that you are presenting.

Tip 1: If possible, ask a colleague or prior awardee to review your pre-proposal before submission.

Tip 2: It can be helpful to have someone non-technical or very far from your field review your draft. In a good proposal, these non-specialists should be able to understand the potential big picture impacts of your work, even if they don't understand the technical details. They can also give you good feedback on the overall flow and style of the writing.

Tip 3: Read your proposal a sentence at a time backwards. After writing and rereading something over and over, your brain begins to auto-correct errors that may be present. Reading the proposal sentence by sentence backwards will help you to catch these errors.

Use the Beckman Network. Feel free to reach out to former awardees for help and guidance as you prepare your full application. A full list of alumni can be found on the Beckman Foundation website at https://www.beckman-foundation.org/awarded-scientists/

Connecting to the Legacy. Given the importance of Arnold O. Beckman's career and the initiatives of the Foundation, you might want to read up on his life and accomplishments to see how his legacy might intersect with the goals of your proposal. Making these connections clear in your full proposal, while optional, can increase enthusiasm for your application.