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>> ANNOUNCEMENT: Recording in progress.

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Good morning, afternoon, or evening depending on which part of the world you are zooming into today.

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I am Mildred Cho, and I am delighted to welcome you to our first session in the TraineeHub Grantsmanship Series - The Writing and Uses of Specific Aims.

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I think I will learn a lot myself, so I'm anxious to hear this session.

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so For those of you who might be new to the Center for ELSI Resources and Analysis or CERA, we provide resources to support We are hosting this session and we provide resources to support research on the ethical, legal and social implications of genetics and genomics, and we serve to connect scholars, scientists, policymakers, journalists, trainees, members of the public, and others to engage ELSI issues.

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Please visit CERA's online platform ELSIhub.org for the recording and transcript of this session and related references, and to join the ELSI Scholar Directory, sign up for newsletters and other events like this one at ELSIhub.org, and get daily updates and news on LinkedIn and Twitter.

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So just as Some quick housekeeping information.

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If you wish to use Closed Captioning, please turn on (CC) at the bottom of your screen.

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We do have a professional live captioner present, but please be aware that if you do not turn on the CC button, live captions will not appear.

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Please use your Q&A button, which you will find at the bottom of your screen to write in questions for the presenters at any point during the session.

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The Chat box is available for further engagement The Q&A button will be available for the moderator so you will more likely to get your answer recognized in the Q&A.

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We will post links to resources referenced in today's discussion there as well.

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A portion of today's presentations are posted in the chat and will be available on ELSIhub following the session.

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If you have questions, please email info@elsihub.org at any time.

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Allow me to briefly introduce our moderator, Dr. Maya Sabatello.

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Dr. Sabatello is an Associate Professor of Medical Sciences at the Center for Precision Medicine and Genomics and the Division of Ethics at Columbia University, where she also co-directs the Precision Medicine: Ethics, Politics, and Culture Project.

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She's A former litigator with trans-disciplinary background, she explores the ethical, social and policy issues relating to biomedical technologies, genomic information and Big Data and the impacts thereof on social structures, marginalized communities, individual rights, and health outcomes.

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Dr. Sabatello's NIH-funded mixed-methods and community-based participatory research program focuses on the ramifications of genetic data in non-clinical settings (e.g., And also the schools) for social justice; the psychosocial impact of genomic data on adolescents and families; and issues of trust and inclusion of people with disabilities in precision Dr. Sabatello serves as a member of the ASHG's Professional Practice & Social Implications Committee and the Institutional Review Board (IRB) o

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Working Group (CEGWG).

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So I will just hand it over to you, Maya, for the rest of the session, and I will be back with you at the end. Thanks.

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>> DR. SABATELLO: Thanks so much, mill rid Mildred, and hi, everyone. It's great to see you at the session. One of the most compelling and demanding parts of being an ELSI scholar is submitting grants. Scholars, both newcomers and more senior ones. It offers a great opportunity to think deeply about the topics that need to be explored and to bring to the attention of the ELSI community issues that are important to us.

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Grant writing also makes our brains run at high (and sometimes very slow ) speed and requires clarity and succinctness; hence, it is both enthralling and challenging.

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For all these reasons, learning how to write grants is a key step for professional development, and we are excited to launch a Traineeshub series on grant writing. We start today with a discussion on the Specific Aims; and we are organizing a Mock review of real grants for later on in the Fall semester, so stay tuned!

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Why start with the Specific Aims?

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The Specific Aims is the first part of a grant; some might even say: The most important part of it. It is a document that describes the why, what, and how of each project, that is:

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Why the study is important and relevant for ELSI research (and society at large); It's the what question.

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What -- what's missing from current research, the very issue that your proposal will aim to address; And how - both regarding the methodological plan to explore the issue and the overall benefit of the project for the public good—whether it is public health, policy recommendations, or any other outcome.

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However, the devil—or challenge—is in the details! So, we are delighted to have with us two experts on this panel who had kindly agreed to share with us their extensive experience in this regards, provide the bricks and stones of the Specific Aims page and share some tips that can hopefully facilitate your next grant submission.

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With no further ado, allow me to briefly introduce our two panelists:

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The first is Dr. Rene Sterling joined NHGRI in June 2020 as a program director in the Division of Genomics and Society.

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She oversees a portfolio of ELSI research, training and career development grants and serves as an ELSI advisor to other NHGRI programs.

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Dr. Sterling has nearly 20 years of federal service with various public health programs in HHS.

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Her academic training is in sociology, healthcare administration, and health policy and management; and she completed a post-doctoral fellowship at one of NHGRI's Centers for Excellence in ELSI Research (CEER), where she focused on public opinion, direct to consumer marketing and biobanking.

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Next panelist is Dr. Amy McGuire is the Leon Jaworski Professor of Biomedical Ethics and Director of the Center for Medical Ethics and Health Policy at Baylor College of Medicine.

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She researches ethical and policy issues related to emerging technologies and innovative therapeutics, with a particular focus on genetics and genomics, neuropsychology, and the clinical integration of novel neurological devices.

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She has been a principal investigator of 7 ELSI R01s, mPI or co-I of 7 embedded ELSI projects (U and R grants), and primary mentor for 3 K awards.

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She has been an ad hoc reviewer for the SEIR study section and from 2011-2015 she was a member of the Advisory Council for Human Genome Research (NHGRI).

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And with that, I will turn the floor to my colleague, Dr. Rene Sterling.

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>> DR. STERLING: Sorry, can you hear me okay?

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>> DR. SABATELLO: Yes, we can

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>> DR. STERLING: Okay. And for some reason, Zoom was giving me a message that it was wanting to quit. Let me try to reinitiate my screen share. My apologies.

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This was working perfect earlier. You are not seeing anything, are you?

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>> DR. SABATELLO: No, we do see the slides

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>> DR. STERLING: You do? Okay, great

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>> DR. SABATELLO: We do

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>> DR. STERLING: Wonderful, well, thank you for the introduction and good afternoon to all. I bring greetings from the ELSI Research Program at NHGRI and want to acknowledge and thank the entire ELSI team for their support in preparing for today's session And I also want to confirm that I have no disclosures or conflicts of interest to report.

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During this presentation, I will provide a brief overview of the specific aims page and how it's used. I will also address three myths about specific aims and provide some examples from funded applications as illustration.

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So did my slide advance? Just wanting to make sure

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>> DR. SABATELLO: Yes, it did

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>> DR. STERLING: Wonderful. So when applying for NIH research, career development or fellowship grants, you will need to include a specific aims page as part of your plan. This page is often thought of as the heart of an NIH application.

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As a one-page document, it should be able to stand on its own and provide a concise statement of your research goals,-

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>> DR. SABATELLO: We missed the last sentence. You have been cutting out. Can you just say again the concise statement?

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>> DR. STERLING: My connection is not stable. Now?

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>> DR. SABATELLO: Yes, we can hear you.

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>> DR. STERLING: Okay. So I was noteg -- stand on its own and provide a concise statement of your research goals, of expected outcome and anticipated impact on field of study The aims page includes a list of specific research goals or objectives typically three, could be more.

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And Libby in an article described the specific aims page as a sucknct combination of sales pitch and science which I think is a quite fitting description given how the aims page is used.

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One of the early uses is for you as an applicant to flesh out ideas and gain clarity on your research interests and the contribution you would like to make to the field. Once the page reflects where you want to go with your research, it's sort of establishes a roadmap for your application or a guide you can use when drafting other sections of your application.

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For this reason, it's an important place to start. As you draft and redraft your aims page, you can use it to get input from other people, whether peers, advisrs or mentors.

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Even family members can sometimes be a helpful pair of fresh eyes on your draft, especially if they don't know a lot about your area of study.

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Oh, sorry. Talking with a program officer early in the application process is key. And so it's a great way to start a conversation the aims page with a program officer about your interests.

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And also once your application goes to review, the aims page is an important resource for reviewers that aren't assigned to your application as a primary reviewer. And in some cases, it may be the only part of your application that they review.

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In terms of structuring your aims page, I want to give a quick plug to a great training that was done a couple of years ago by Megan Halley at Stanford.

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It was part of an ELSIHub funding training series. We will put a link to the training in the chat. It provides some insights into how to structure your aims page and it includes five key questions that you should be sure to address.

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I want to go into the three myths and sort of unveiling these myths about aims pages.

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One of the first is that you can't share a rough draft of your aims with a program officer because, after all, you only have one chance to get feedback, right? So your aims page better be good. You don't want to send anything too drafty. That could be a problem.

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I'm here to tell you that in reality, rough drafts are great to share, especially for an initial conversation early in the application process. Your aims page does not have to be complete, polished for us to look at it. The ELSI team has reviewed all types from a short paragraph to a page that might have some intro. Aims, a rough idea for a thirdthird aim.

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If you are a K applicant or applying for a trainee or career development award, your aims page, you know, you can put some information on there about your career goal or your training plan. And this is the version that you are sending to us. An early version for conversation, whatever you can fit on a page, we are happy to look at. Do not be shy about sending us drafts for feedback.

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For the second myth, we are looking here at following what appears in a sample grant.

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There might be a grant that you found on our website or one that you've received from a colleague. So here a colleague shared an application with me.

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They got a great score. And you are thinking you will write your aims the way they did. That should work, right? Not always.

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My colleague, Nicole Lockhart who is also here in the session, notes not necessarily. Examples are certainly helpful. The ELSI team has posted examples to our website. And we will be posting several more in the coming months. However, you should not feel like you have have follow the structure of someone else's aims especially if you have a very different approach or topics.

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Aims statements can focus on knowledge gaps to be filled, methods that you plan to use, problems to be solved. What's most important is that your aims are clear, specific, and aligned with your research purpose, the skills of your research team.

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You want to make sure it all makes sense and falls well together. I am going to show you a few examples for illustration from funded applicationn, from. These applications aren't current you will available for review.

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However we are in the process of posting them to our website.

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And we are certainly grateful for investigators who are willing to share their work.

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With the ELSI community.

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So here we see a specific aim from an RO1 application that starts with an action verb.

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Examine. But it's not focusing on how the examination will occur. So it's not really a methods-driven aim. It's written more as a topic-driven aim. We see here an emphasis or they are notng that they are going to be looking at ethical and regulatory challenges with current biorepositories.

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Now, as subaims, we do see some methodological detail. In the green a systematic search is proposed useg online tools.

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Informants for A1b, there will be interviews with key personnel. And a bit more about the topic that will be covered in these interviews, consent, privacy, data security, et cetera.

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For these aims, we have four aims listed here, and there is a lot of methodological detail.

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Less emphasis on the topic, far more methods-driven. These aims are starting with a description of what will be done, extensive quantitative analysis usng a data set created with red cap.

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Linking data to census reports.

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There's a hypothesis proposed pertaining to Spanish surnames.

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And findings are going to be incorporated into a digital archive. These are just the first phrases of each of these aims. The aims are actually a bit longer and provide even more detail on methods, very methods-focused.

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Here is a final example.

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I'm showing just one of five aims that were listed on this specific aims page. And you could think of this one as a rationale-driven aim. It emphasizes the significance of the aim. We have little to know detail on how the aim will be accomplished, but this specific statement suggests that there are protocols for certain types of research and bio ethical issues, but not all. And so this aim will consider the special challenges tied to this gap.

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We also see that another key feature of the aim is the ability for other bioethicists to replicate the work to be done which serves as a selling point for the aim. I will note that this aim is from an RO3 application which is much smallsmaller than an RO1. It's proposeg largely conceptual work.

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And it may make perhaps this style of aim more appropriate given the types of methods and the focus of the research being proposed. So that is a factor that should be taken into consideration when drafting your aims.

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So I hope some of these examples are helpful in seeing how much aims can vary in style, yet still be successful.

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For the third myth, I will quickly touch upon specific aims pages for career development grants. Here someone is contemplating whether training aims should be added to their list of specific aims. If they add a training aim, they may end up with five to six aims statements to cover everything that they are proposeg across research and training activities.

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In regard to this and whether this might work, Dave Kaufman, the third ELSI research program director, notes that applicants do take different approaches.

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One of your aims could be related to training or career development, but if you end up with too many aims, your proposal may come across as overoverly ambitious. So you can mention training goals or career goals outside of your specific aims objectives statements. But they can appear somewhere else on the page.

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And you have a whole separate section to unpack this. So you might just give a brief nod to it. But across your application, the specific aims page, your training plan, your proposed research, you want to make sure that things are aligned and that there's a logical sequence and timing for the different things that you are proposing in your career development grant.

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So two quick examples here.

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This is from an aims age of a KOs application. We see that there is a statement right before the specific aims or the objectives are listed. There's mention of the career goal.

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There's mention of past work that's relevant for the proposed research. So you are giving the reviewer or whoever is looking at your aims page a bit of a sense for who you are and how your goals fit into your Rauch.

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Research. Here is another example where there's a short statement at the end of the listed specific aims. And here this statement is sort of focusing on the overall training plan and tying the aims to various things that will occur during the training experience.

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And also there's mention of the long-term goal that would be part of the second phase of this K99R00 application. And sort of we see the training and the career goals tied to the aims in this way through a brief statement on the specific aims page.

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So in summary, I would say that there is no foolproof formula for how to write these things. There are some best practices and other things to keep in mind. And I'm sure we will have discussion about those. Looking at a variety of applications that may be available to you and getting feedback from a variety of people can be helpful for fleshing things out.

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So with that, I will turn it over to Amy. Thank you.

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>> DR. MCGUIRE: Hey, thanks, Rene. Let me try to share my screen here. I assume you guys can see that okay?

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>> DR. STERLING: Yes

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>> DR. MCGUIRE: All right, perfect. Well, thank you so much for that fantastic introduction. I actually learned a lot. And I come to this portion of this session with quite a bit of humility. I know there's a lot of people on the call who have been very successful at writing grants and writing specific aims and I hope to learn from all of you today as well.

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I think not sure if I was asked to participate in this session because of my success and skill or because of just simply the length of time that I have been doing this which will necessarily result in some successes and a lot of failures.

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So my goal today is really to share with you mostly some of the things that I've learned over the years from my own mis mistakes with regard to writing specific aims pages. And I have sorted organizeg these into four principles for writing specific aims. So I will take you through each one of them.

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The first is really to tailor your aims page to the type of grant that you are submitting.

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There are a lot of different types of grants. We've already talked about several of them including training grants. This is not sort of the formal name of different types of grants.

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It's the way in which I have cat categorized them and tend to think about them. But there are lots of grants that are large infrastructure grants. This CERA program is one of those grants. It's a U24. The SEER program, centers of excellence, those are P50 grants. Practice and thinking about an aims page for a large infrastructure type grant is going to be quite different than it is or for other types of projects.

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The ones that most people are familiar with and potentially most interested in are the independent investigator-driven grants or awards. And these can come in two varieties. One is that they can be investigator initiated which basically means that there's a general interest in the area of ethics or whatever your particular focus is and you're coming up with an idea that you want to get funded.

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And the other is that one of the institutes or centers at NIH can issue a request for applications on a particular topic that they are interested in and they may have a competeg group of proposals that come in related to that topic. And again if there's an RFA that's been issued, your framing of your aims page is going to, you are going to want it to be responsve to what the RFA is looking for.

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That might slightly change how we are thinking about the aims page. The grants that you can submit as Rene suggested can be RO1s which are large investigator grants. They can be RO3s relatively small and R21R21s which are medium sized and sometimes used depending on the institute or center to generate some preliminary data for an RO1.

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There's also training grants and different types of training grants. And the specific instructions for the training grants will differ depending on what you should include in your aims page and what they are interesting in. The reviewers are going to be more interested in you as a person and what your potential career trajectory is going to look like, as well as the project that you are proposing for the training grants.

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And then there's also sort of all of these types of grants that can be done independently.

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They can be done in parallel to other large scientific initiatives at NIH. So let me give you an example here. When the NIH Common Fund decided to fund the human microbiome project many years ago, they decided to also put out an RFA for RO1s and other type grants for ethical, legal, and social issues related to the human microbio only project. That was done in parallel to what was happening scientifically.

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The brain initiative also many of those newer ethics grants are being done in parallel to the science that's being developed through the brain initiative.

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And oftentimes when you have those sort of parallel types of grants, you might want to be thinking about how you can engage with the science that is happening at the same time and the issues that are coming up for the scientists and those who are involved in the scientific research.

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And then there's also embedded ELSI or bioethics research. And here you might have large scientific programs or projects that are being funded and they are calling for an ELSI or ethics component. And that may be one specific aim within the larger grant or it could be, you know, incorporating a bio ethics or ELSI-related component throughout the project.

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And that's going to also change sort of how you think about how you frame those aims in relation to the larger project. So those are just some ideas. But whatever it is you are going to want to tailor your aims page to the type of grant and the type of collaborations that you have within those grants.

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The second sort of piece of advice that are lesson that I learned is to take your time.

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And I can't stress this enough.

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You really, really need to plan ahead in order to write a successful grant. And in order to write a successful aims page.

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So I will emphasize that grants take months to write, not days.

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And that you really need to take your time to get the aims page right. The first Roosevelt O1 RO1 grant I ever got, it took me four to six months to write my aims page, nothing else. Just to write my aims page, get feedback on it, figure out exactly what I wanted to do, plan the study that I was planning. And make sure that it looked good.

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Once I finished the aims page and got feedback on it and got it to almost the final version of it, the rest of the grant was actually pretty easy to write.

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It took about two months to write the rest of the grant.

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And that's because the rest of the grant kind of flows from your aims page and since your aim page serves as an outline for the rest of what's going to go into the rest of your grant.

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It's the skeleton of the entire project. When youou get feedback which you should, I would get it from as many people in multiple disciplines as possible, because you don't know who is going to be reviewing your grant and you want to make sure it makes sense to a lot of different people.

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And once you get that feedback, this is actually really important advice that's hard sometimes to hear. Listen to it. So I think our inclination sometimes is to be oh, yeah, yeah, that's your opinion, but you don't really know this kind of work.

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If somebody doesn't know this kind of work ask they are giving you feedback that seems off, you can assume that one of your reviewers may have the same feedback because they don't get it either. So listen to what they say and respond to it.

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Third, I think this is really important that you want your aims page to tell a story.

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Oftentimes, reviewers all the time reviewers are very, very busy. And you are going to need to hook them from the start.

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And one of the first things they are going to read is your aims page. It might actually be the only thing they read if it's not one of your primary reviewers.

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So you really need for them to get a sense of what it is that you are proposng and why it's important for that one pagepage I have some skids who are in college of my own And one who is in the process of applying to college.

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And I was reading recently his draft college essay and it occurred to me it's not that dissimilar to writing a college essay. So when you are writing a college essay for admittance, all the college counselors tell you look these college admissions people are reading three hundred essays a day.

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They want something that's easy to understand, makes sense, stands out. They remember it.

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It's kind of the same thing with your aims page.

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You want them to not have to think too hard about it. The aims pang it should be clear and concise, but it should also leave the reviewers thinking yes, this is a great project.

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This needs to be done and then it's yours to use in the details of the approach which is fine because you can address concerns about the approach. If somebody doesn't think you are proposng something important or significant or they don't think it has, you know, sufficient innovation, then and they are not excited about it, that's much harder to address on a resubmission than if they don't like a particular aspect of your methods or the approach that you are usng to approach that problem.

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So you want to leave them thinking wow, this is a really important project. Oh, my gosh, what? I can't believe nobody's been able to adequately address this. Of course what they are proposng is exactly what needs to be doesn't and done. And geez, if they are successful, this is going to have a huge impact.

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Finally, well, actually, before I get to the last point, I think the best advice given to me ever in writing both aims pages and papers and grants and everything else is just say what you mean. Oftentimes we try to be really sort of sophisticated in our writing. And we try to use really sophisticated terminology and complex concepts. Perhaps and and oftentimes when I'm reviewing other people's aims pages, I sit down with them, what are you trying to say here?

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And explain it to me verbally.

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Just say that. You don't need to be too complicate in what you are thinking and what you are saying. The key here is you don't want to make reviewers think too hard. My experience being a reviewer is if I read somebody's aims page and I don't understand what they are proposing and I have to read it three or four times, I just give up. This is not good.

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So you don't want them to have to think too hard. You want them to get it right away and to really understand what you are trying to say.

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And then finally, the realistic.

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So this has been one of my biggest problems as a grant writer. Is I try to sorts of do one of a couple of things. One is I have had several experiences where I just tried to oversell what I can accomplish. So there was a period of time where, you know, for several grants that I was involved with, there would be a third aim that would always say and then we are going to develop policy recommendations that's going to solve this problem forever.

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And the reviewers are, like, yeah, right. This is a big problem. How are you, the small research group going to be able to develop policy recommendations that, A, people are going to listen to, and that B, are going to be authoritative, and C, are really going to be the definitive voice? So it's important to sort of keep in mind what can you accomplish?

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What's realistic? Maybe you are going to develop some guidance or points to consider that can be part of a larger conversation, but don't try to oversell what your role is going to be in terms of its impact.

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Don't take on too much. This has been a huge problem for me where I feel like oh, my gosh, I'm applying for a grant. They are going to give me a lot of money and I need to do all of the things. Right. And so I actually had an experience where I wrote an RO1 grant. This was related to the human microbiome project. And we proposed these three really extensive aims and one was an entire historical analysis that could have ended up in a book.

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And a second was a huge empirical study and think a third was a huge policy component. The reviewer was, like, this is crazy. You are never going to get this done in three years. And they were totally right. It would have been a problem if it was funded because I don't know how we could have gotten it done. I resubmitted it focusing on just one of those aims and it got funded And that one aim was plenty to keep me and my team busy for years. Don't bite of more than you can chew. Ma

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There's there's so much stress on reducing budget and keeping things lean. Make sure your scope of work aligns with your proposed budget. This is true if you are doing an embedded project. In a larger project and the other collaborators are saying we've got to reduce the budge.

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Can you cut your budget? And I always respond with that's fine, but let's look at what are going to be the corresponding cuts in the scope of work because we can't do the same amount of work within a smaller -- that size of a budget.

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So you just need to be really, really realistic about what you can accomplish both in the time line and with the budget. And then finally for first grant, I don't know if anybody needs to hear this, I needed to hear this when I was writing my first grants. But for first-time grant writers, you do serve the amount of money to do the work you are proposing.

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It might seem like a lot of money over a period of time, but it takes that time and it takes those resources to do the work that you are doing. And so don't have sort of that imposter I guess mentality of, like, oh, I shouldn't be proposng that.

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It's too much It's, I'm not going to have that big of an impact, those sorts of thoughts.

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Get all of those sort of ideas out of your head and realize that the work that you are doing is important it does deserve the funding that you will receive for it. So I will end there because I know we want to open it up to a lot of different questions. Let me stop sharing my screen and I will turnit back over to Maya

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>> DR. SABATELLO: Thank you so much. That was really fantastic. I learned a lot. It was really great. I wanted to start off with a couple of questions just to kind of have a conversation. But I encourage everyone in the audience, please post your questions as well.

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There's a Q&A button so you can put them up as well. So one big question for both of you is, do you have any tips about what not to do in a specific aims?

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>> DR. STERLING: I can start, Amy, if you like

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>> DR. MCGUIRE: Sure. Go ahead.

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>> DR. STERLING: Yeah. One of the things that I often see in drafts that I get information that's provided, sometimes includes very interesting, information. You have such limited space on the specific aims page. You really want that background introduction section first third or several paragraphs of the page to hone in your research and to set the stage for why the aims that you are presenting are important.

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If you put something in there that's only tangentially related or is an interesting side note, people will look for more information about that later.

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As Amy said, the aims page serves as an outline. And so people will expect you to unpack that thing. So you mentioned that something is very important and then reviewers see nothing about it later. That could end up becoming a detracting weakness.

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I would say keep your focus.

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Be very specific. And have your page really support the aims that you are proposeng. That's one tip I would say to start.

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>> DR. MCGUIRE: Yeah, so I will say two things. One is don't use overly technical language and make assumptions about what the reviewers know regarding your topic. Assume they know nothing. I think Rene suggested up you have family members reading your aims page which is great.

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You want to assume they know nothing about your topic. You need to simplify it in a way it's not hard for them to understand what you are talking about even if what you are proposng is very complex. So that would be the first thing.

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And this the second which hasn't been mentioned yet although I do know it's in Megan's training video which is don't make your aims interdependent. So you don't want to have your first aim framed so that if your first aim fails, you can't do aims 2 or 3.

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You want to make sure they relate to each other, but that they are independent from each other. So that's something I would be careful about as well.

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>> DR. SABATELLO: Thank you very much. So I am going to pick your brain a little bit further. How do you launch that writing process? You said it took you the first specific aims six months.

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So I'm sure there have been hundreds of drafts. But how do you start the process? How do you get it going? Do you come from the idea that you have in mind? Walk us through the steps that you take as a researcher.

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>> DR. MCGUIRE: Yeah. So firstly say that everybody's different, right. So you have to figure out your process. And figure out what works for you.

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Some people like to get distracted and they come back and have ideas and things like that.

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But for me what has worked best is to really have a -- to sit down and try to do a really clear outline. And actually sometimes I will do it in a PowerPoint presentation because sometimes when we present PowerPoint presentations, I feel like sometimes our clarity of thinking is a little better because we go into education mode as opposed to proposal mode.

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So I will put it into a PowerPoint presentation as if I'm presenting it to somebody and see if it makes sense. But I basically, I have an outline.

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Again, Rene mentioned Megan's training video, and I think she goes through these different questions that you should ask.

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But I always start with sort of the same question. I say what is the problem that I'm trying to address? I always start with that. And if leak, my team is talking about a project and we are talking about methods first, step back for a second.

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We can do interviews and surveys, but what are we trying to address? What's the problem?

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That should drive everything else. How we are going to answer that problem and what methods we are going to use should be based on what the problem is.

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And then relatedly, I try to write out what is the problem and why is it worth addressing?

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Like, why is this an important problem? Then I kind of go and I say, okay, what do we know about it? And this might require me digging into the literature a little bit. What else has been done this this space? What other studies do we know? What's known about this problem and where are the gaps?

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That's a really important step because your proposal is going to want to address a gap. You don't want to do something that's already been done. So in identifying where those gaps are are really important.

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The next question I ask is given the gaps that I have identified, what research questions need to be answered for us to address those gaps to move the field forward? What are those research questions?

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And again, those research questions for me I think should always drive your methods. So depending on what the research questions are, you may need to do empirical methods to answer those questions. They may be more normative or legal questions.

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You have to figure out what is the nature of the question in order to address them. And then knowing how to address them will shape what your aims are. And so then I write out sort of what the aims are and then at the very end and sometimes I leave this for later on in the process, is you kind of want to write a payoff paragraph at the end.

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Okay, if we successfully accomplish all this, what are we going to get out of it? That's your sales pitch. You know, what are you as a community going to get from us doing this project? So I have that outline. I have it, like, in a document. And I sit with that outline and I fill it out for when I try to write an aims page.

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>> DR. SABATELLO: Thank you.

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That was really great description of the process.

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Rene, I know that NHGRI has been leading efforts to increase diversity among the research participants and there's been some changes in how being framed some of the requirements that might change in the grants. Can you speak a little bit about some of the more recent changes, perhaps, if they apply to the specific aims or also how they might connect to the broader grant proposal?

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>> DR. STERLING: Yeah, great question, Maya. There are a wide range of efforts underway at NIH addressing diversity, promoteg diversity, thinking through the importance of having a diverse work force, the importance of having diversity among research participants and the like.

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As one example, Nicole is going to help me out and put into the chat a notice that was released a couple of years ago pertaining to NIH's interest in diversity. And when you read this statement, you will see a relatively broad definition of GERS at this which includes mention of racial and ethnic groups, people with disabilities, people from disadvantaged backgrounds, women from those other groups.

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And you will find that different institutions and different programs at NIH are sort of unpacking and building on this interest in different ways. So you maze notice may see notices of funding opportunity where diversity is emphasized in the individual applicant eligibility criteria, something that's specific to promotng a diverse work force.

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So an example of this is NHGRI's relatively new predoctoral to postdoctoral transition award for a diverse genomes work force. Other opportunities may emphasize the institution and their eligibility and the diversity that they would like to see among the institutions that are applying for funding.

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An example of this is the diversity centers for genome research. This is a U54 funding opportunity. So that's a very sort of different angle there.

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There are programs requiring applicants to submit a plan for enhancing diverse perspectives.

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And this is an attachment that you have to include with the application. If it's not there, your application is deemed ineligible and withdrawn. So it's really important to carefully read each and every notice that you are thinking of applying to for its specific requirements.

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It's really hard to say that it will look one way or another.

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Two similar notices may take very different approaches even if the way they define diversity. So you really have to read each section of the notice and contact program officers if you have questions.

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Once you are clear on the notice's expectations and the research that you want to conduct, then you can consider whether and how you might mention something about you as an applicant or about the community of interest that is maybe perhaps the most impacted by the research that you are conducting.

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It may be relevant to include a sentence or two of how your proposed research or how you as an applicant are bringing diversity to the table inthe context of the notice that you are responding to. Does that help?

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>> DR. SABATELLO: Yeah, that was great. Very comprehensive.

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What do you think, both of you, and I think you might come from a slightly different perspective, thinking about the one page that we have and it has to incorporate three key areas, the context, the importance of the question, the stipulation of the specific page and the methodology I think Rene we heard from your examples there are different ways of doing it. But do you feel like there's a new good balance between the three?

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Or could you have literally one sentence on top of this is what's important, this is why and then just -- or do you feel it has to be organized -- I'm just trying to think about the balances between these three components and how it might be best to convey them as well.

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>> DR. MCGUIRE: You want me to jump in

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>> DR. SABATELLO: Go ahead

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>> DR. MCGUIRE: I would say in my opinion they should be pretty well balanced because you need to be able to convince the reviewers that you have to give them enough context for them to understand why this is an important issue and why it needs to be addressed.

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That's really sort of how you hook them in those first two paragraphs. I think thehe biggest challenge I always have is not too much putting too much in that background section and I end of deleting it and moving to the significant section of the grant. S Because the inclination is to kind of explain it, overexplain sort of why you need to be doing this work.

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But I think that's very important. The aims and the methodology which should be succinct but it should give them enough information to say, yeah, I understand what they are trying to do here and I understand how they are going to get there. And now when I want more information I can go to that section of the proposal.

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And then the payoff is sort of, like, in the pay off paragraph, I think you really want to give them the language that they need for their reviews, right. So this is significant because of this.

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This is innovatee because of this. This is going to have an impact because of this. And then they can just cut and paste and put it into their reviews.

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That's the best review you get, when somebody just cuts and pastes from your own proposal to make the point you want them to get. So give them the language to do that and make it easy for them. Reviewers love that, too, because it reduces their workload.

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As I said before, the aims page is really an outline. If you use it as an outline, you want to think about each section of your grant is going to have about equal weight in terms of your background, significance, approach and sort of payoff. So you want to give it equal weight in your aims page. So that's my viewpoint, but Rene, you have seen a lot of different models, so make maybe you have a different perspective

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>> DR. STERLING: Yeah, I would echo a lot of what you said, Amy. I do feel there tends to be a half of the page, maybe as much as two thirds of the page.

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But really more toward half on intro and background. There's a sliver in there about the impact. What's about anticipated. Sometimes that comes right before the aims or right after. And then the three specific aims, whatever on average as Nicole said, it's two to four in ELSI applications.

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Those get unpacked to varying degrees. I think if you're proposeg methods that may be very novel or somewhat unique to a specific discipline or field, maybe you want to spend a little more time putting some of those methods into your aims statements and explaining it.

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That was sort of the brothers example where he had kind of a topic sentence for the main aim and then some subaims that elaborated a little bit on what he was going to do.

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The other example we saw where there was lots of explication on aims, I can tell you that the rest of that aims page, it was maybe the first third was a paragraph introducing the topic very succinctly. And nearly the bottom two thirds was a detailed explanation of these aims.

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And perhaps because that was where they felt the significance of the work was, you know, really needed unpacking to help reviewers understand what was going to be done in this very large historical review of eugenics activity around the country.

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So it was important there to sort of, to explicate that. So I think it can vary. But in general, I think I would encourage again people to watch Megan hilly's webinar. She really does a nice job of talking about funnels where you have the topic sentence and you are narrowing it and then you have your aims and then you have your impact and sort of you can imagine the page going that way.

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I would say also, the formatting of the page is not to be underestimated. It is really helpful to use bold and to use indentation and to have some light space between things. So yes, you have a page, and you also want to think about the ways things are laid out. And formatting can really suggest for people points that you don't want to lose sight of, that you think are particularly significant.

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And can help them see how things are phased in your approach.

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>> DR. SABATELLO: Thank you.

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So that actually brings me to another question which Amy, maybe you can reflect on because you brought it up a little bit before which is the aims, the specific aims really has to then be shown in all of the sections.

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How do you make those connections in explicit ways?

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Or do you just put specific aims and do you highlight certain things that the reviewers can then look at in the main text in the other sections? Or do you suggest that once it's clear in the specific aims, it will already flow in the rest of the grant?

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>> DR. MCGUIRE: So again, I wasn't lying when I said that for me, my aims page is the outline of migrant. Of so I think somebody asked in the question how do you get everything I said in my outline on one page?

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Every word and in every sentence matter. If it doesn't add something, don't use it.

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You just have to -- and then honestly what I usually end up doing is the first two paragraphs of introduction, each sentence in the first two paragraphs of introduction ends up being the first sentence in a paragraph in my background and suggestion section.

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So it's almost like an outline of what I'm trying to flesh out in my background and significance section. And then the actual aims, the overall goal and the aims, you usually do -- I don't usually frame my aims as methods. I frame them as action items and then I have explain my methods to achieve that aim. In a short paragraph underneath each aim.

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And then the approach section is fleshing that out. It's taking word for word the aim and then it's taking that short paragraph and really fleshing out what that's going to look like. So, yeah, I mean, that's how I do it. And I really use it as, like, a verbatim outline for what comes after that.

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>> DR. SABATELLO: Thank you.

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And how about the conclusion paragraph? How long or significant should it be? I mean, we said it has to be innovative, but not overoverpromising. It has to be tailored to some good public good in some ways, but again, not --

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>> DR. MCGUIRE: Yeah. So it's an important paragraph. But it usually ends up not being very long because you are running out of space by that point. So again, useg important words like this project is significant because it brings innovation because and bolding those words so they know what you are trying to say At the conclusion of this project, such and such will be changed or whatever it is.

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So don't overpromise in that paragraph, but you want to kind of summarize what is, and again, I think thehe word payoff is the perfect, perfect term here.

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What's the payoff? What's the investment going to allow us to do? And it doesn't have to be, like, it's going to change the world. Right. It can be this is going to answer this really important question, or it's going to at least generate enough information for us to be able to ask the next question or whatever it is.

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But I think you do need to lay it out. It's usually just a couple of sentences, but it's an important couple of sentences.

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>> DR. STERLING: Yeah, I would agree with Amy. It's an important few sentences. And also just emphasize I think Amy, you mentioned this earlier, it's s not overstateg what can be accomplished and really thinking through what is a reasonable and notable, noteworthy contribution of your study.

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>> DR. MCGUIRE: And you might include in that paragraph also what your next steps might be.

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So especially if it's an R21 or RO3 or something that you are useg as, like, you know, if we can do this little bit of stuff, then we will, you know, set us up to be able to do that, you can kind of give a nod to that in that last paragraph while being clear that that's not what you are propoing in this proposal

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>> DR. SABATELLO: Thank you.

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One last question and then we will turn back to Mildred. What do you think, both of you, about the use of diagram of some sort in the specific aims? Or later in the grant? I mean, how should you connect to one another? But also in the specific aims itself.

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>> DR. STERLING: I personally, and again, only have, you know, three years, four years, going on four now. Yet to see a diagram on an aims page. I think it takes up a lot of space. I do think diagrams are useful in the research plan, particularly if you have a conceptual framework or a methodological approach that's phased and involved many different steps.

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(Technical difficulties).

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>> DR. STERLING: You may have -- who is part of your community engaged research project will relate to the key investigators or partner institutions. Those are great places for diagrams. Time lines, especially especially for career development or training-related grants, having a time line that's showing the sequenceg of your training versus your research and when everything is beginning and ending.

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Conceptual models sometimes are helpful for, you know, having some visuals. But I would probably not advise including it on aims page.

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>> DR. MCGUIRE: I have never had a need space for a diagram on an aims page. I always struggle over whether I should include references on the aims page and I have done it both ways where I include references aims page and I haven't. But then include the references when I talk about that in the background and significance section.

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I do think throughout your grant, having diagrams is really important. Some people are visual, very visual and they understand things visually. So it can help kind of pull out your main points. It also breaks up the page in a way that is not just, like, block text the entire time. So I think diagramms, tables, are really, really critical to include and pretty ones, right, and make sure that they are big enough that people can read them on screen, that they print well.

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You want to make sure they can be seen. Those are critical throughout your grant application. I always include a time line even if it's not required. And part of that is pictures first of all so I have a good sense that we can get done what we say we are going to get done in the time we say we are going to do it, but also hold myself accountable I will frequently take that time line if the grant gets funded and make sure we stay on time for what we said we were going to do.

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So I think that's helpful as well to include at the end

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>> DR. SABATELLO: Thank you so much, both of you. That was really a fabulous panel. And a lot of good advice. A lot of tips for the audience. It's just not -- to actually write one. Good luck. I will wrap it up and give Mildred the opportunity to give some closing remarkks. Thank you again so much. Thank you. I learned a lot as well. I just want to remind people this has been recorded and the recording will be available on ELSIHub.org.

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Also Our next TraineeHub session will focus on publishing in ELSI and scientific journals hosted on September 7 from 12-1pm ET US with speakers Kyle Brothers, Claudia Gonzaga-Jauregui and myself.

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Who are all on editorial boards of genomes related journals.

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So the registration is in the chat. And we also hope to see you on September 8 8 for our first ELSI Friday Forum of the new academic year:

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Fair Access and Equity of Individualized Interventions for Ultrarare Genetic Conditions.

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The registration link is in the chat.

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Please visit ELSIhub.org and subscribe to our newsletter for more details.

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Also, you will receive a post event survey.

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I encourage you to complete To give us your recommendations on other topics you might be interested in. Please fill that out. And with that, I will just wish you a wonderful week.

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Thank you.