Ericka Boone: Good evening, everyone. Welcome to tonight's after-hours panelist conversation featuring the NIH Next Generation Research Initiative Training the Future of the Biomedical Research Workforce. My name is Ericka Boone. I'm serving as the acting Director for the NIH Division of Biomedical Research Workforce, and I will serve as tonight's moderator. So, NIH in 2017 launched the Next Generation Researchers Initiative, or NGRI, to address long-standing challenges faced by researchers trying to embark upon a sustained independent research careers. Can we go to the next slide, please? All righty, here we go. So, in today's session, we're going to engage in a conversation and Q and A with our panelists so that session participants can better understand terminology related to NGRI, what is it, why is it important, does it pertain to me? Understand the purpose and intent of the programs, identify programs that they may be eligible for, get a better understanding of some of its relevant policies. I would like to say, please note, that if you have questions, the chat feature is designed for participants to engage with each other. But if you have questions that you would like for me to ask the panelists, please put those questions within the Q and A, okay? I will not be monitoring the chatbox, but I will be monitoring the Q and A. Now, keep in mind with the number of people who are currently online we may not get to everyone's question, but we will do our very, very best to do so. And if we don't get to your question, then feel free to stop by the exhibit hall and speak with staff who will be happy to assist you. So, now let's welcome our panelists. Next slide, please. We're so very lucky to have with us Dr. Marie Bernard and Dr. Michael Lauer. Dr. Bernard serves as the Chief Officer for Scientific Workforce Diversity here at the NIH. And, Dr. Michael Lauer serves as the Deputy Director for Extramural Research, or the DDER. All right, let's go to our next slide. Now, I want to make sure that we are highlighting some very important resources that are available for our attendees today. This is not an exhaustive list of policies and programs that are relevant for early stage or are relevant for NGRI and our discussion for today, but it's just something to give you some information and some links that you could start off with. The slides from today's panel discussion will be available in VFairs within 24 hours, and I've got a few extra slides that I've tacked on to the back of this presentation that we're not going to go through and show, but they'll be extra additional information for you that you should find very, very useful and helpful. So now, let's get to the good part and engage in some good, old Q and A. So, Dr. Bernard and Dr. Lauer, can you tell us a little bit more about what in the heck is NGRI, and how does that pertain to investigators who are applying for funding here at the NIH?

Michael Lauer: Why don't I start? So, NGRI, or the Next Generation Researchers Initiative, started as you said, several years ago. And I would say that while, of course, there has been long-standing interest in nurturing the next generation of researchers, there were several proximate events that led to it. The first was a report that came out from the National Academies, I think it was called Breaking Through. This was a report that was chaired by Ron Daniels, the president of Johns Hopkins University. They worked very closely with us. There's actually a chapter in that report that contained a tremendous amount of NIH data. There were a number of recommendations that came out of that. The second was a working group of the Advisory Committee to the Director, which was established around the same time, maybe a little bit later, and this working group, which I was very privileged to be a member of, came up with a series of recommendations that formally kicked off the NGRI. And then, the third was a provision which was in the 21st Century Cures Act. The 21st Century Cures Act was passed in late 2016. There was a provision in there on Next Generation Researchers Initiative that essentially directed the NIH to, you might say, do good things to enhance the next generation of researchers and enhance the diversity of the research workforce, and that's what we've been doing. Marie?

Marie Bernard: I would simply say that it's a wonderful initiative. In my role prior to becoming the Chief Officer for Scientific Workforce Diversity, I was the Deputy Director at the National Institute on Aging, and we took to heart the goal and the initiative that is meant for the Next Generation Researchers Initiative, really trying to pay a lot of attention to those people who are early stage, who are new investigators, giving them opportunities to receive funding. That's been the spirit across the NIH. It's been supported by the Office of Extramural Research and the urging of Dr. Lauer and colleagues. And as a result, I think we're seeing that there are increasing numbers of applicants who are early career applicants. Part of what makes me very encouraged by that is in my role as the Chief Officer for Scientific Workforce Diversity, there's a lot of diversity among those applicants and that's something that's really important to us as well.

Ericka Boone: Thank you. You launch right in to what my next question was going to be, it's who are we targeting with these initiatives and why are we targeting these individuals? And then for my next question, we'll talk about some of the specific policies and benefits that NGRI can impart.

Michael Lauer: So, we're targeting people who are early stages of their career, so that includes trainees, grad students, postdocs, early faculty, and what we call early stage. And so one very concrete aspect of the NGRI is that NIH has established targets for how many early stage we will fund each year. We came up with a target of funding at least 1,100 early stage on their first R01 or R01 equivalents each year. That number didn't come out of a hat, that was a number that was based on trend that we were seeing and estimates that we had about what would be needed to help stabilize the workforce. To give you an idea of how bad things were back in 2013 ... 2013 was a really bad year, that was the year of the Sequestration ... We funded fewer than 600 early stage and R01s that year. Last year, in 2020, we funded 1,412 and in 2021 we funded at least that many and maybe ... We don't have the final numbers yet, but it may have been 1,450. So, we've been well above that 1,100 target. So, that's been an important one. And, as Maria alluded to, we are urging our colleagues across the NIH to fund early stage, and we do it in a very concrete way. We put out reports every couple of weeks in which we inform our staff how we're doing, and these are the early stage who have turned in outstanding applications that we hope you will look at.

Ericka Boone: Now, Dr. Bernard, I think the audience might have an understanding of why Mike is talking about the important of ... or, Dr. Lauer is talking about the importance of NGRI, but why is this important for your office specifically?

Marie Bernard: So, my office was established in 2014 because of another Advisory Committee to Director report that gave feedback to the director about persistent disadvantages that we're seeing for investigators who are applying for R01 equivalent grants by race, ethnicity. And, what we see when we look at the data is that there is a great deal of diversity among scientists early in that pathway to becoming that R01 funded investigator, and that diversity goes down progressively the further along in the career pathway people go. And, in particular, getting to that R01 equivalent grant and beyond, the numbers are just not commensurate with the general population, with what you see earlier in the pathway, so everything that we're doing to try to make sure to encourage those earlier career scientists, to give those people who are early stage an opportunity to get funded is helpful, enhancing the diversity of the workforce. And, in fact, when we look at the numbers, for instance we look at the 2013 numbers versus the 2020 numbers, and 2021 numbers are soon coming I'm told, that you see significant increases in numbers of people who are applying for R01 equivalent grants in greater success, whereas we used to have a gap in success in very small numbers in applying for K equivalent, K-type awards. That gap has gone away and the numbers have gone up there as well. So, it's encouraging, but we still have a lot of work to do to really have full representation.

Ericka Boone: Okay. Great. Thank you, all, so much for that. Can we talk more about early stage and at-risk investigators? Now, how are ... Or how do policies or programs relevant to NGRI, how they are important to these specific groups of individuals?

Michael Lauer: So, early stage ...

Ericka Boone: Dr. Lauer.

Michael Lauer: Yeah. Sorry. So, early-stage investigators we define as people who are within 10 years of receiving their terminal research degree or completing their clinical training. And, what we do, those applications that are early-stage investigators are flagged as such and we let our colleagues know that these are applications that if funded would mean that an early-stage investigator would now get their first independent ... substantial independent award, and so we hope that they will be carefully looked at. And, like I said, our goal is to fund at least 1,100 per year. Now, another group of investigators that we are also quite interested in are at what we call at-risk investigators. Now, let's think about this. You get your first R01, you're very excited, it's great, and now it's 4 years later. You may have that one R01 and you're looking at, "Well, what's going to happen next?" So, you'll submit an application and we'll take a look at your portfolio and we see that if you don't get this application funded in year 5, your fifth year, then next year you're not going to have any funding at all. So, that's what we call an at-risk investigator. An at-risk investigator is somebody who as best as we can tell, if they do not win a competing award in this particular year, will not have any NIH support the following year. And disproportionately, as one might expect, they are earlier on in their career. So, we are also, in addition to flagging early-stage investigators, we are flagging at-risk investigators who have submitted outstanding grants, and we are saying to our colleagues, please take a look at these because it's not only a matter of funding great science, but it's also a matter of potentially keeping a laboratory open.

Marie Bernard: [Indistinct]

Ericka Boone: Keeping the laboratory ... I'm sorry. Go ahead, Dr. Bernard.

Marie Bernard: I was just going to add to that, that I love that policy because there are data that suggests that women in particular and some underrepresented groups tend to have that one R01 and when they don't get refunded, don't necessarily come back in to the fold. So, that opportunity to keep that going so that they can continue to generate new applications and get additional funding is really beneficial. I don't know whether we've actually looked at the impact since we started this at-risk policy or whether there is any difference by demographic characteristics, but prior research would suggest that those are groups that are particularly at risk.

Ericka Boone: So, we're starting to get some questions within the chat, and one of our viewers asked, "A lot of researchers have problems to obtain the second R01. Is NIH developing any kind of programs for that purpose?" Now, those folks are not early-stage investigators anymore.

Michael Lauer: So, the second R01 is an interesting question. I have to admit that when I was starting my research career, I got an R01. I was very excited. That project was moving along fine. We were accomplishing our goals and the way I was thinking about it was we're going to wrap this project up and now we're going to try something else. And so, we submitted another R01 on something really quite different, and that one, we got funded, but it took a long time. We had to put it through a couple of revisions and it took a long time to get that funded. Now, retrospect, we know that people who turned in a competing renewal for the same ... You'll have a certain project that's ongoing, and now what you want to do is renew the project, if the project is going well. The likelihood of success is substantially higher, so if, let's say, the likelihood of success on a first-time R01 is maybe 17 to 18 percent, the likelihood of success on the second time, on a competing renewal, could be 35 percent or maybe a bit higher. So, of course, if depends upon the kind of science you're doing, whether or not that's relevant. But as a general rule of thumb, if what you're doing is a competing renewal, and you've got a good, you have a good show and you can demonstrate that you've made some substantial progress, that's probably a better way to go then to rely entirely on a brand new De Novo project. Now, the second piece of advice I would give is that you don't want to wait until the fifth year to think about what you want to do because it takes a while to get a grant funded. So, you probably want to start thinking about this early on in that fourth year, about what your strategy might be.

Ericka Boone: [Indistinct]

Marie Bernard: I'd just add ... I'm sorry.

Ericka Boone: I'm so sorry. Go ahead.

Marie Bernard: I'm sorry. I would just add to that that it does get to be a bit of a struggle for people who are focusing on a specific clinical problem because when you're focusing on that clinical problem and doing that clinical trial, it's either answering that problem or not. So, you have to be very strategic as you're developing that protocol and thinking about the questions that you're going to ask, what are the other iterations of that that you might want to pursue that would allow you to be prepared to develop an additional application or competing renewal or whatever.

Ericka Boone: Right. So, I'm going to ask some more questions about ESI, but both of you highlighted something very important. Understanding what you should be highlighting within your applications. What's the best way for an investigator to understand how they might want to target their application?

Michael Lauer: Marie, do you want to take that one?

Marie Bernard: I'll start off by saying that the Center for Scientific Review has a program that allows early-stage investigators to become reviewers and I highly recommend it. Getting a chance to see what other people submitted, how they put it together, how it got reviewed is ever so instructional and helpful to you in thinking about things that you would want to highlight in your own application. I would also say take advantage of all of the resources available to you in terms of mentors and advisees within your own institution and get people who aren't at your institution to review and get feedback on what it is that you're preparing to submit to help you in figuring out how to place your emphases.

Michael Lauer: Yeah, and I would say that some institutions, they run a ... You might call them mock study sections, I was very lucky at my institution. We did that. So, here you've got the advantage of people who are experienced in the world of getting scientific grants and what we have to go through was we would listen to our proposals get torn apart by our colleagues. In one respect it was extremely painful, but on the other hand what it did was it made clear to us, "Ah, so these are the points that we need to be making, and this is where the communication is not working out quite right, and this is how we should be targeting or framing our scientific thinking." So, if your institution does do that kind of thing, I would strongly encourage you to take advantage of that, like I said. If it's done right, it is a distinctly unpleasant experience, but it is the kind of thing that you do want to do because it makes it more likely that you're going to turn in a high quality application.

Ericka Boone: Let's just dig in to this just a little bit more, the value of the ECR program and the value of the tapping in to your networks, who include the individuals at your institution, as well as those program officers here at NIH. Dr. Bernard, you said something so very important about the ability to be able to be in the room where it happens, right, for those "Hamilton" fans out there. Understanding how ... what the conversations are that take place in the room, how reviewers approach the review of an application, what things stand out, what things do not. It's got to be so invaluable because not only are you watching this process take place, you're also participating in this process. It can only help you to be a better writer of your own grants and reviewer of other grants, so that you can help other people as well. But also, understanding your own work and how to ... I don't want to say it that way. Advertise, market, and sell your own research ideas in the future. The first time I ever heard somebody mention it in those terms, I think I was a postdoc. And Michael Meaney, who was at ... I think he was at McLean, this was many, many years ago, was such a great writer because even if you weren't in his area of study, you could clearly understand his grants and what was important. He was the best writer that I had seen up to that point, so I tried to mimic his style. Of course, I had to adjust it because my style wasn't exactly his, but he said it in that way. "You're marketing your research and you're selling" ... You're not selling, but you're marketing your ideas to other people who are in and outside of your research area. So, being able to clearly and succinctly not only speak Greek to the Greek, but also to be able to explain your research ideas in a more broad way so that other people understand the broad implications, significance, innovation, importance, and all of those kinds of things is severely important. And one of the ways that you get to do that is by participating in that process. But also, networking, peer networking as well. You talked about that a little bit, Dr. Lauer. And, having your peers around you and also the folks who are serving as your mentors to kind of help you to dig deeper, and sometimes it could hurt, but it's so beneficial when you're able to stand back and look objectively at your work. And, you said you took part in that process, what did that look like? Did you organize these? Or did your organization ...

Michael Lauer: No, no. I didn't organize these at all. I'll take no credit for that. But, what ... The way they did it was that, it was very interesting the way they did it. They had us sit in a corner of the room and literally face the wall, like in the old days, the way they discipline kids. So, we would sit in the corner ...

Ericka Boone: You can't nowadays.

Michael Lauer: ... and stare at the walls, and this way there was no eye contact or facial contact between us and the reviewers, and then we would listen to that reviewers comment on our applications. And the reviewers were told this is a study section, don't worry about the fact that he's in the room, just say exactly what you're thinking. Have the conversation exactly as you think. So, then I would hear then talk about the application and I would hear then say things like, "Well, he doesn't really address X, Y, and Z." What's going through my head is, "Yeah, I sure did." But, that kind of thing did help me realize that ... well, I sort of did, but I didn't do it very well. I would say once you get that application funded, your first application funded, it probably won't be long before you're invited to serve on peer review, and the answer should be yes. And, now it's a lot of work, it is a tremendous amount of work. I want to echo Marie's comments about the ECR program being incredibly valuable. But yeah, I'll say that when I was ... I did do some study section work, and I remember I would read some applications and when I was done say, "Wow. This is so interesting. They told a great story, I feel like I've learned something. I actually enjoyed reading this," and needless to say those applications would get outstanding scores.

Marie Bernard: Yeah. And I would just build upon that and say that I think everyone should have the opportunity to be in a session, a mock review session, where your application is reviewed. Yes, it is very painful, and yes, didn't they read the application, didn't they see it on such and such a page. And, when that's not clear, that means you have not written clearly. I have been really ... I have been on a lot of study sessions, and really impressed. I like to look at the bios of the principal investigators and look at the applications, and those people who are English majors write the best applications. So, if you weren't an English major, get your friend who was an English major to take a look at it, get your aunt to read it. If your aunt can read it and understand it, that was something I was told early on in my career, then you have a good clear application. Yeah.

Ericka Boone: Dr. Bernard, you tapped in to something for me, like two things. I went to a historical Black college in Alabama for undergrad, so it was liberal arts, and the one thing that my professors always said that you can write your way in to and out of anything. So they focused a lot on writing and in this job as a scientific administrator, I'm using that and relying on that so much, even today. But the other thing is that my best friend has probably three masters in all kinds of literature and she's finishing up her doctorate finally. She is the person that I got to read everything that I wrote. She read my dissertation more times than I did. She read my publications, she read my grant applications because for the exact same thing that you said, if she can understand what I was trying to get across and if she would also find things that I wouldn't find because I read this thing 50 times, so my eyes just skip right over the mistakes. The first word of my first grant application was misspelled. I did not notice. It was experience. Who misspells that? She caught it, and I was just flabbergasted because I had this thing 5,000 times and I just didn't see it anymore. So, the things that you all are sharing are so very important and I'm really hoping that our audience is really getting something from out of this because it's not very often that you get to have the two of you specifically in a room and sharing these kinds of experiences that you have had. Not only personally within your career, but also your experience as being a grant reviewer, your experience here at NIH. So I think this is really valuable. We're going to switch tracks for a second and go back to some of the questions in the chat. So, Mike, this one's yours. "Will ESI be flagged even for small grant programs like R03s?"

Mike Lauer: Okay. So, the idea ... That's a great question. The idea of the ESI program is to help people get funded on what we call substantial grants. This one reminds me of a quick story, when I was first thinking about applying for a grant I was thinking about what kind of grant should I apply for, and I said to my mentor at the time, "I'm thinking about applying for a R01." And he said, "Oh, an R01? That's a lot of money. You should definitely go for that because they're hard to get, but if you get that then you're going to be able to do a lot." So, what we were aiming for, what the ESI program is targeted to is R01 equivalents. My advice is to go for a real grant, so by that I mean a grant that's going to give a number of years of funding, 4 or 5 years of funding, and a substantial amount because then you'll be able to spend some time concentrating on your science and not worrying about where the next source of funding is going to come from.

Marie Bernard: And, Michael, are the differential success rates for R01s versus R03s and R21s, particularly for the ESI?

Michael Lauer: Yeah. That's a great question. So, our ... There's a myth that R21s have higher success rates than R01s. That may have been true at one point, maybe 15 or 20 years ago, but it's not true now. The success rates for R21s is comparable to that for R01. So, R21 gives you a small amount of money for 2 years and R01 gives you a more substantial amount of money for 4 years or 5 years, I'd say go for the R01.

Ericka Boone: I think that we might have mentioned this one, this question before, but I think I want to ask it again because a couple people have asked this again in the chat. "How about a new investigator who's already past their 10 years of their final degree, their terminal level degree, but they haven't gotten an R01 yet? Does NGRI support this kind of investigator?"

Michael Lauer: So, yes, but not to quite the same degree. So, we do ... And the reports that we give to our colleagues, we identify early-stage investigators and we have specific targets. We also identify what we call new investigators, meaning somebody who's new to the NIH system, but is not an early-stage investigate. There are some differences, for example in review, the applications of new investigators, are reviewed separately, and so that helps to call attention to the fact that this is someone who's new to the system. And then, some of our new investigators are actually applying to RFAs, where the agency is specifically looking for people who are new to our system. We're looking for certain types of disciplines that are not traditional in biomedical research, and so there we're actually going out of our way to bring you new investigators because we want to enhance our portfolio.

Marie Bernard: And from the perspective of institutes and centers, at least from the center ... IC, as we call it, that I came from. There was a lot of attention paid to new investigators because in many cases there are people who just have their ESI status, but they're still relatively early in their career, and that is recognized and considered, in any case where there might be some discretion, and the opportunity to support someone who is early in their career, fostering that career.

Ericka Boone: Now, we have a lot of questions in the chat that are more so individual questions with regards to understanding the person's eligibility or the ESS status, and I would like to suggest that individuals who have specific questions for their own personal interests that you visit the training booth and you talk to a Program Officer about that one so that they can kind of get in to the nitty-gritty of what your own personal situation circumstance is. So, the next question is for one or the both of you to kind of address those individuals who fall in the gap between ESI and at-risk. They've already applied for a K, so how would you approach that R01 funding? How do you get started with that? Dr. Bernard?

Michael Lauer: Yeah. Thank you.

Marie Bernard: So, the question is they've applied for a K, they want to apply for a R01, when should they do that? How do they [Indistinct]

Ericka Boone: Yeah. And, how should they approach that? So what's the first step if they've already had a K? So, now they're trying to decide on applying for their R01. What would you suggest, how do they conceptualize this next step? So, if you're still in your K, presumably you're working with your mentor and you are timing things out, so by the third year or so you are getting ready for that R01 application. If you've already had your K and you're beyond that period, I think my best recommendation is that you get together with your mentoring committee because there is no one mentor that can necessarily meet all of one's needs, and talk through where you are, what the data are that you have, and whether you are ready to apply for that R01, or if you need to gather more pilot data to appropriately position yourself. This is the area where the consideration of diversity supplements, if you happen to be from an underrepresented group, can be really helpful because you can be added to and already funded an NIH grant, take a perspective of that, gather your own pilot data, and then move on from there. I can tell you in the more than a decade that I was deputy at the National Institute on Aging, we evaluated a couple of times the impact of diversity supplements and were really impressed. People who started off with diversity supplements went on to get one, two, three R01 grants or became chancellor at institutions, or the head of the [Indistinct] health service. It's really a great ... Maybe it's a pre-selection, the people who have the persistence to go forward with the work of the diversity supplement, or people who are highly motivated, but it's really associated with quite a bit of success from what we've seen.

Ericka Boone: Thank you. We have another question in the chat about individuals who are at institutions that don't have a substantial track record of receiving NIH funding, so how should they be approaching the funding process?

Michael Lauer: So this is a very important question. There are some programs around NIH in which we try to bring together people who work at less well resourced institutions with more well resourced institutions, and so if you're able to take advantage of that, that's something I would strongly consider. But, I also think that, more generically, that this is a situation where networking is really important. Networking doesn't only happen within your own institution, but also happens across institutions. So one of the best pieces of advice I ever got during an early stage of my career was that one of my mentors told me that I needed to serve on a committee for professionals society, and he said you should do this for two reasons. One reason is that they need your help and the work may be interesting. But the second reason, which is far more important, is you'll meet people, and what happens then is ... I did. I met some very interesting people, and invariably they discovered that you can do work and you can help contribute to the cause, and then you get more opportunities and you meet with more people. Now the first committee that I worked on, I won't say what it was, but the work was just unbelievably boring. But, the result was is that I eventually got on to various other groups and I met lots of people, and that invariably helped with developing research efforts, developing research collaborations, and eventually putting together proposals.

Ericka Boone: I think they're asking more so about the kinds of mechanisms that might be eligible to apply for.

Michael Lauer: So, there are a number of programs at NIH that do link people who are less well resourced institutions than others. And I'm sorry, I can't name them right off the top of my head, but that kind of information should be available through the seminar.

Ericka Boone: Yes. It's available through the seminar. They also might want to check out the R15, specifically. I believe the R16 ...

Michael Lauer: There's some R25 programs, I think, also.

Ericka Boone: R25 programs.

Michael Lauer: Yeah.

Ericka Boone: Yes. Absolutely. So there are a plethora of funding opportunities that are available for institutions that don't have a substantial track record of funding within or at NIH. "Will the flag of an ESI effect the scores from the reviewers, or is it just a flag?"

Michael Lauer: I think it's just a flag, and if we look at distribution of scores what we see is, as you might expect, is that early-stage investigator's scores are not as good as established investigators. Now in part, that's because early-stage investigators, by definition, are submitting De Novo grants. They're not submitting competing renewals. Competing renewals, as a general rule of thumb, do get better scores because, essentially, you're selecting on science that the agency has already chosen to fund. But that's part of the reason why we are specifically targeting early-stage investigators to be funded because their scores don't tend to be quite as good for totally understandable reasons. But that's the way I would look at it, that it's primarily a flag and the reviews happen the way they do.

Ericka Boone: We have the age old question about publications and the number of publications that a person should have in order to have a successful renewal application. Dr. Bernard, can you talk about that one?

Marie Bernard: Well, I can certainly say that if you've previously been funded and you're looking to renew, the expectation of the peer review panel is that there will be some products that have come from that, and that really depends on the type of research that's being done. There is some research for which you can generate lots of publications throughout the project. There are other sorts of projects, particularly clinical projects again, where there's an end point to the intervention, and so you don't have anything until you get to the end point. Well, you'll have less in the way of publications, but the expectation is that something will come from that that you can point to that's tangible so that the committee can be assured that there has been something that's come from this and it would be worthwhile investing again, you might say, in another iteration of that. There's also the importance of having a complete project report so that it can be clear what was accomplished. Sometimes project reports will provide a lot more in the way of details than what might be in the published article, and all of that information should be on file in and available when the peer review panel takes in to consideration that renewal application.

Ericka Boone: Mike?

Michael Lauer: Yeah. I would also point out that for several years now NIH has allowed, in fact, I would say encouraged, the scientists who include preprints amongst their research projects. So, a preprint is a fully completed manuscript which is submitted to a site like bioRxiv or MetaArchive. It has not gone through peer review, it's not a formal publication, but nonetheless it is a product. It's a product of your research which is out there, it's out in the public domain, and it is a way of stating that you can get work done. So we are strongly encouraging people to post preprints, and we do allow ... In fact, I would say encourage you to include preprints for example in your biosketch. You could do that and that's a way of also marking your productivity even if it isn't quite at the same level as articles that have gone through the full peer review process.

Ericka Boone: Yeah. I think that at the heart of that question, perhaps, because I hear this often, is that investigators just kind of want to know, what's the secret formula? Give me the secret formula so that I can follow that. If it's for publications, okay, we're going to get to that. Or if it's to publications, okay, great. But, really, it's not just the number of publications, right? So it's really kind of that sweet spot with regards to your researchings and how it fits in to the priorities for the institutes and centers here at NIH, your environment, the innovation and significance of your work. It really is a combination of those things and not just one versus the other.

Michael Lauer: Yeah. And that's absolutely right, and I think there's also a highly field specific. So, I actually had the opportunity of working on the custom, it was two different fields. So, one was clinical cardiology. So clinical cardiology, the volume of publication is quite high. And the other was statistics, and there it's a completely different mindset. So, there one might work on one paper for a very long period of time, and so the actual number of papers will be a lot lower, but ...

Ericka Boone: Yes.

Michael Lauer: ... each paper will be longer and have a lot more in it. So it's also field specific.

Ericka Boone: Yeah. I'm a developmental neuroscience by training. Yeah. It takes a little bit. So, we have a question about the early career reviewer program, and then I'm going to switch tracks, because we're actually going to run out of time for our session. I hear that there's a really long waiting list for the early reviewer career program. Now, let's see, and also could you talk a little bit more about the steps that NIH has taken to increase diversity in our the reviewer pool? That's a great question, Dr. Bernard.

Marie Bernard: I can talk about the diversity of the the reviewer pool. I don't know about the wait list for the early career researcher program, but I would certainly encourage you to take advantage of whatever opportunities there are to be reviewed or to participate in mock reviews. In terms of the diversity of the reviewers, I've been very impressed with what the Center for Scientific Review has been doing. They have been systematically standing back and looking at their full environment, and recognizing that a few years back they didn't have the diversity among their reviewers that would be optimal given the representation in the biomedical workforce. They now, in terms of underrepresented minority ... Racial and ethnic minorities have representation among the standing committees that's comparable to the biomedical workforce, and in some cases beyond what's found in the biomedical workforce, and they're working on that with regards to the other ad hoc reviewers. They're similarly been looking at the demographics of their own scientific review officers, they've been doing things to train scientific review officers, and review panels on implicit bias. They're looking at anonymizing grants and the impact that that might have on the review process, and whether it's possible to review the science separate from the environment and the person's biosketch because of the Matthew Effect as it's called, where there's ... When there's a review that comes from this highly [Indistinct] institution, they get extra consideration that perhaps is not merited based on what's put forward in terms of the scientific proposal. So they've been very much in the lead of trying a lot of different things to try and enhance diversity of the people involved in the review, the diverse perspectives of the people involved with the review, and it's really gratifying to see.

Ericka Boone: All right. As our time is winding down here, I want to ask you about your own early-stage career. What were the things that you were concerned about with regards to starting your research careers? Probably very similar to what some of the things that our listeners, our participants are still interested and a little bit worried about, and how did you address one or two of those issues? Dr. Lauer?

Michael Lauer: I was very lucky, but I do remember when I was a cardiology fellow, it was actually a difficult time for NIH and NIH funding was kind of tight then, and I saw some of the outstanding faculty struggling to maintain their funding. And what was going through my head was is that if these people can't get funding, why would anyone in their right mind fund me? And I was lucky I had a wonderful mentor, actually I should say mentors, but one mentor in particular, and one of the messages that they gave me was, "Don't worry your day will come, and just keep plugging along, do the best work you possibly can, and it will eventually happen," and it did. But there were times it was extremely discouraging. None of my papers were getting accepted anywhere. My first NIH grant application didn't make it to discussion. It was a difficult time. And I think this is a universal message about the importance of mentorship, and my mentors just kept pushing me along and it all worked out.

Ericka Boone: I think this is a very important conversation for people to be listening to because they always assume you have your possibility models and they're like Superman with their costumes that are bulletproof, right? And I always tell people, I conduct these workshops on a imposter phenomenon, imposter fears from time-to-time, from the perspective of it being a career related impediment, and really you're looking at these possibility models as nothing ever bothered them. They've never dealt with issues or struggles within their research career or within their personal life, even so. But I think that hearing you all talk about this in your own career is really important for them to also hear as well because it really does impact that sense of agency that you have, because that's the thing that carries you through to the next thing, to the next publication, to making those revisions within you grant application, within the publications, with ... And keeping going from one day to the next, even when those days are disappointing, you're going to have those days where you have those successes. Dr. Bernard, would you like to talk?

Marie Bernard: Yeah. I would say that early in my career kind of basically dittoed everything that Michael said, but in addition I'm a woman and there were the expectations, the traditional expectations of me as a woman, and as a mother, and the desire to be Superwoman, and finally a reckoning on my part that you can't be Superwoman and do everything else unless you want to die at a young age, and coming to terms with accepting other help with various things to help achieve that work/life balance that's really necessary for you to be fully creative and fully productive in your professional life. So I would say that all of the things that Mike said and, in addition, recognizing the need to take advantage of your personal networks, purchasing help if you have to so that you can do what you need to do with family, as well as with career.

Ericka Boone: Also, I think that something that's important in both of your messages is the idea of being flexible. And I'm looking for that word, I'm searching for that word but the understanding that sometimes things change, situations change, processes change. Sometimes career trajectories also change, and being able to look back at those things and not look at them as failures, because that's ... Pivoting, that's the word that I was thinking about, is that often time we have to pivot and a lot of times we associate that pivot with a failure as opposed to us thinking reflexively and kind of making lemonade out of those lemons that we might have been handed at the moment. So looking at our career and building, as ourselves, building upon the next step, and you build a research career over time, you don't just accomplish it out of the blue. And even though you might have those times where you might be a little down on yourself and you might have encouraged a marrier or some sort of struggle, you both have said this so perfectly, you keep going because around the corner there's that success. In 30 seconds, do each of you have any advice to give our audience before you leave?

Michael Lauer: Science is fabulous. I can't imagine anything more exciting, but it's also, perseverance is also incredibly important, just keep plugging along.

Ericka Boone: Dr. Bernard?

Marie Bernard: And as you said, Dr. Boone, the road is not going to be straight, take advantage of opportunities as they arise and enjoy the ride.

Ericka Boone: Enjoy the ride.

Michael Lauer: I like that.

Ericka Boone: Both are awesome words to leave this session on. Thank you, all, for your participation today. We did not get an opportunity to answer all of your questions and I'm really glad, I'm really happy with the direction that the panel discussion took. Not only did we talk about specifics with relationship to NGRI, the programs and policies that are in place, but also personalizing it a little bit because we were all at that earlier stage in our career at one point, and kind of understanding those underlying things that helped you to keep going, and to persevere, and to pivot in your careers is such an important lesson learned that we need to share more often because I think that with people looking at us as being a part of NIH or even being a different levels of your career, they kind of don't understand, "Hey, they've been there, they understand, and they actually care too." So on that note, I'm going to sign off. Thank you, all, for your participation. Have a wonderful day. Thank you for joining us.

Michael Lauer: Thank you.