

## Supplemental Digital Appendix 1

### **Interview Questions in a Study of the Factors that Facilitate Junior Investigators' Transition to Independent Funding**

1. How did you come to be a researcher?
2. What motivated you to apply for a KL2/K12 award?
3. What is your motivation for research now?
4. What factors do you think have been instrumental to your career so far?
5. What are your career goals?
6. In what ways has your institution provided you support towards your career goals?
7. Who has been the most help in your career path?
8. What factors do you think have hindered your career progress so far?
9. How do you balance your various roles?
10. In what ways do you think your career progression has been recognized or rewarded?
11. What has given you the most satisfaction in the past year?
12. About what are you passionate?
13. How do you define success for you, personally?
14. What core values underscore your approach to your career?
15. Do you consider yourself to be a leader? Why?
16. How do you see your career progressing now?
17. What keeps you awake at night? [i.e., about what are you worried?]
18. Have you ever thought about what you would do if you weren't an investigator?
19. What would you do differently if you had to go back and start your research career again?
20. Is there anything else you would like to tell me about your [attempt to] transition from a K award to an R?

## Supplemental Digital Table 1

### Additional Representative Quotations Regarding the Personal and Organizational Factors that Facilitate Junior Investigators' Transition to Independent Funding

Factor	Representative quotations
Autonomy	[Success to me means] getting to do what I feel called to do. The fact that I have freedom to be able to do this work is pretty incredible. (William, IF)
	It's quite nice to be given carte blanche. You know, and [my mentor] has been a mentor to many people but she is really hands off. My former mentor had been so hands-on, it was frightening. And the difference to me was absolutely liberating because I am a pretty responsible person and so if you just let me do my thing I'll be fine. But if you hover over me, I become a little bit paranoid and resentful. (Belinda, IF)
	I'm pretty vocal about what I will and will not do, so I try to be a good team player but I also try not to be the only team player. (Caroline, IF)
Networks	The collaborative network is really the art of diplomacy. You want to bring people together across fields, across geography to ask a question, often a very complex question. But that activity to me is exhilarating. I mean, just to develop a collaborative network and to see it hum is phenomenal to me. And so in research I do that. (Belinda, IF)
Persistence and resilience	Resilience was a hard thing to develop. Thick skin was a hard thing to develop. But as you get critiqued more and more, you get thicker and thicker skin. Well, you go away or you get thicker and thicker skin. And I've never been interested in giving up or going away. (Tom, IF)
	We have to adjust and evolve and use the feedback in a way that is helpful, not a hindrance. (Diana, IF)
Initiative	You have to have that drive that you want to do it. Just find that right person to take you under their wing and teach you how to think critically, teach you the things you need to do. You personally have to have that drive. (Isobel, IF)
	I check in with my project officers once a year, when I do my annual report. I have to say this is how I have spent their money and have I spent it wisely, have I been productive enough? No one but me will impose those deadlines. It is my job to say, "We are going to write six papers this year; this is what they will be on and this is how we keep things moving." (Quinn, IF)
Protected time for research	Protected time allowed me to develop in this area of grant writing. That is the piece that you don't learn until you actually have to do it...It's an art form, and so I think those 4-5 years on the K allowed me to develop in this direction, and it was critical. (Charles, IF)
Institutional resources and support: Strong local community of researchers	The [field] group here is incredibly productive and successful and very, very collaborative. It's a great [field] environment that has been created here. I credit the institution for creating that environment and the group of people that they have collected here. (Charles, IF)

	[Institution] is a remarkably collaborative place. It is very easy to form partnerships with people in other departments and other schools. And occasionally there are minor administrative barriers, but they are relatively easy to overcome. So I think the environment is very conducive to collaboration. (Quinn, IF)
Institutional resources and support: Good research facilities and support	<p>My current limitation right now to do the research that I want to do is...a lack of statistical expertise. So at [previous institution], I had existing grants and money to pay statisticians to help me with my projects. But I don't have them here...So that is probably the biggest hindrance because I have a lot of ambitious ideas, but I am going to have to have that additional help to flesh them out. (Edward, NIF)</p> <p>General internal medicine doesn't necessarily have a culture of research across the country. It can be a very clinically oriented division. But [chief] has a real vision for research and I think that culture has been critical. And so I have the support here that even some of my colleagues across the university don't have to do some of the grant stuff. When you're submitting a grant there is a lot that has to go into it. (Louisa, IF)</p> <p>[Institution] has been quite helpful in the whole process of being able to navigate research and being able to conduct it efficiently...There are experienced people who have helped me to be able to actually navigate the system. They are familiar with how to submit NIH grants. They are familiar with how to do this process. I don't feel like I'm out there alone. [Here], there are a lot of people who are applying for funding and applying for grants. Being surrounded by other investigators who are equally skilled and who have navigated such processes is something that I have found really has helped me in terms of being able to continue along this road on my own. (Olivia, IF)</p>
Institutional resources and support: Ample relevant patient populations	I have a clinic that [is for my] patient population predominantly, so that has given me actually my own specialty and a way to recruit patients who have that disease. And so that also allows me to apply for my own grants, now I have sort of this expertise in this patient population to choose from. So it's kind of been exciting in that way. (Polly, NIF)

## Supplemental Digital Table 2

### Additional Representative Quotations Regarding the Ways That Mentors Can Support Junior Investigators' Transition to Independent Funding

Factor	Representative quotations
Good mentorship	I had a great mentor...He was supportive, in general...He removed obstacles; I was running with my own thing and he was just making sure I was not interrupted or pinned down. (Adam, IF)
	[My mentor] really is the perfect example of someone who both leads and drives. She is very encouraging and is a role model that has her hands in many different types of research projects...She really understands the limitations of what a fellow or junior researcher can do, and takes that and builds it as much as possible. And at the same time, she drives too. She is the kind of person who will say, you know, "I want the manuscript by this time." And in the nicest way possible, really wants you to make that deadline. So I think that if someone has a passion, she is the perfect person to help foster it into achievement. (Edward, NIF)
	[One mentor] has been very affirming and almost like a mother figure. [The other] has given me a lot of substantive knowledge that has been very valuable in my career. He was very instrumental in helping me get my first R01. He and I are very different. He is a [mentor's discipline] and didn't really know much about [my discipline]...He was able to think of an idea that was the perfect marriage of our interests and backgrounds, and we really worked very collaboratively together to get two grants funded, one where he was the PI and one where I was the PI. I always felt like he was really supportive in helping me make that transition from K to R, and I felt like he really believed in me and wanted me to be a success. He gave me opportunities to take leadership roles in professional societies. He helped me get a couple of manuscripts published, giving me very concrete advice on where to send them and how to pitch them. Lots of different things. (Quinn, IF)
Time	My mentors have been so essential. Not just to have mentors who give you opportunities, but they are also willing to step back. People who are willing to give you scientific advice but not expect credit. People who understand your life circumstances and value your contributions but don't expect crazy amounts of extra stuff. (Ursula, IF)
	She was an extremely busy person who was easily accessible on a weekly basis and usually accessible on a daily basis, if only for a short time. On a weekly basis she could always carve out an hour for a fellow unless she was away at a conference. She was the kind of person who would read your manuscript and get you comments while she was at a conference; she'd read it on the plane. She was the kind of person who, when you had a grant due, would call you at your house on a Sunday when it was due Monday, just to do last minute changes. She was that kind of person. (Edward, NIF)
Advice	[My mentors] spent a lot of time with me trying to help me sort out not only research ideas, but career paths. That's not easy...It's a lot of time and work. And I think that in itself was very useful. (Felix, NIF)
	My mentor [has been the most help in my career path]. He started out as my mentor ten years ago but he is still my mentor today. I still ask him advice. I don't ask him for something every day, but we've become colleagues and collaborators as

well. So he is my mentor, but I've also been working with him on other projects; we enjoy working with each other and that's part of the fun of the job. (Olivia, IF)

	[My mentor has provided] practical career development advice. What organizations I should join, when I should present, how broad or how narrow I should build my research program...the practical navigation of how to build a career. I had pretty good training in clinical work, clinical research and very good training in basic science. We had very little training on the practical aspects: how to recruit people, how to run a lab, how to put together the pieces that you need to be prepared for appointment and promotion. For things like that, mentorship is key because there are relatively little formal didactics. At least I had little formal didactics and I'm not sure those things could be taught through formal didactics as effectively as they can be through apprenticeship and mentorship. (Jack, IF)
Resources	The fact that I've had mentors who have looked out for me and helped me get funding from other sources, since I don't have my own yet, [has been instrumental to my career]. (Rebecca, NIF)
Networks	One of the reasons I even started being on study sections was because [one of my mentors] told the SRO, "Think of [Louisa] to be on your study section."...Yeah, I have no time, but of course I want to be on a study section. (Louisa, IF)
	My first national meeting after the KL2 program started, one of my primary mentors took me around and introduced me to other people within the field at the poster session...I still value that experience, and I do that with some of my trainees today. So I think knowing people in that field and introducing me and building that network is something that I didn't necessarily appreciate as a mentor skill, but now I definitely appreciate that that is something I wouldn't have gotten otherwise. (Mark, NIF)
Role model	Sitting in on [mentors'] research meetings and watching their organization of research and balancing that with clinical duties, just watching how they were able to move an idea forward in an organized fashion with a large group of people, while also managing the people. Just that observation and seeing that happen was pretty useful to watch. (Felix, NIF)

### Supplemental Digital Table 3

#### Additional Representative Quotations Regarding Alternative Definitions of Career Success for Clinical and Translational Science Investigators

Definition of success	Representative quotations
Research improves patient outcomes and public health	<p>[Success for me means] people are better off as a result of the work that I do, or that there has been some impact that makes their day-to-day life clinically better, or that makes the patient have a better connection with their clinician. (Georgia, IF)</p> <p>I define success by whether at the end of the day I feel that I have done something good and meaningful. (Olivia, IF)</p> <p>If I do good science and if that science is able to improve the lives of others, to me that is successful. I'm trying to be better about thinking about success in some of the other professional ways in which other entities recognize you. It's having my work have a great impact for the people that I'd like for it to. (Tabitha, NIF)</p>
Being happy	<p>I am really trying not to take the view that I need to be "successful." I am taking the view that I go to work every day. I love what I do and I am very good at it. I pay attention to the details. I am going to enjoy every day and that's how I'm going to define success for myself. (Helen, IF)</p> <p>I think success for me would be...being excited to come into work and understand the next challenge and try to take on the next challenge, and be successful with that. And whether that's an education project, whether that's a research project, or whether that's taking care of my patients, it still would be the excitement of being successful in that endeavor. (Mark, IF)</p> <p>Most important to me for success is to be happy and have my family be happy. (Lawrence, IF)</p>
Seeing mentees succeed	<p>To a certain extent, [success] will be more and more defined by the degree that a person is sought out to assist with the training, mentorship, and collaborative research with other individuals. How much you are a beacon to assist others in fulfilling their career pursuits. (Greg, IF)</p> <p>[Success for me includes] feeling satisfied that you have contributed in some small way to the scientific community, and I think that that can come in multiple forms, both in terms of scientific discovery but also in seeing your trainees succeed. (Simon, IF)</p> <p>The growth of my mentees has been the accomplishment I am happiest with over the past year. (Xander, NIF)</p>
Family life and balance	<p>I define [success] by [my external] pursuits—looking at where my children are and where they're going. They will be smarter, better, happier than I could ever be, and that is my definition of happiness. They got there because some of the other things I did; my research enables me to do the things for them that get them there, and the job I have enables me to get them there...I define [success] really by those intangible aspects of life, of love, longing to be with your family, seeing the success of my children and my wife, as being my success. How I actually ensure that: it doesn't have to be this job and career. (Greg, IF)</p>

	<p>[Success] is an ability for me to provide for the family, for [which I need] a good job. To have a good job, I need to be successful at it. But also it's a combination of being able to make a living for my family while I am contributing to making our society a better place to live. And it goes back to how balanced my life is. (Joe, NIF)</p> <hr/> <p>Success for me is really finding that perfect balance between work and home, or other, life, and feeling like I'm very present in both of those places. (Julia, NIF)</p> <hr/>
External validation	<p>I have been given more and more responsibility, so I have been recognized for what I do. So for instance, chairing a number of committees and a number of societies. (Adam, IF)</p> <hr/> <p>I was approached by people to be a collaborator on their projects. That suggested to me that they respected my work and thought that I would make valuable contributions to the field in the areas in which they were working. (Kristen, NIF)</p> <hr/> <p>It's really the subtle acknowledgements of individuals wanting to be with you in a research or academic standpoint that I find to be sort of one of the biggest rewards. (Greg, IF)</p> <hr/>