

## Supplemental Digital Appendix 1: National Longitudinal Study of Young Life Scientists Interview Guides<sup>a</sup>

### Interview Guide: Early 1st Year of the PhD

#### Background

1. Were there any particularly important events or people you encountered before college that influenced your thinking or plans as you started college? How did they influence you?
2. When you started college, what were your academic and career goals?
3. As best as you can recall, how did your interests and plans evolve during college? What events, classes or people were most influential in changes to your thinking and plans, and how did they influence you?
4. *As an undergraduate, did you participate in any programs or special activities for science students? If so, what were they, what did they provide, and how did they affect your thinking?*<sup>b</sup>
5. At what point did you decide to do a PhD? Was it an easy or difficult decision? Why?
6. Why have you decided to do a PhD? What do you hope to get out of it?

#### Career Thinking

7. Knowing you may change your mind in the future, as of today, what do you want to do when you finish your PhD? What attracts you to this particular option after graduation?
8. *How confident are you that you will be able to do what you want to do after graduation? What are the biggest challenges or obstacles you see to accomplishment of your goal?*
9. If something happens and you aren't able to follow your preferred plan, do you have an alternative, a Plan B? What is it?
10. Or... If you have not decided yet what you want to do, what options are you deciding among and what do you find most and least attractive about the different options?
11. Now let's talk about your longer term future plans. When you are done with all of your training, what type of job or career would you MOST like to have? Why?
12. *Right now, what factors are most important to you in deciding among career options?*
13. Does a desire to help others play into what you decide to do in the future?
14. How important is it to you to have a clear idea of where you are headed, specifically where you will "be" or what your life will be like in 10–20 years?
15. *Do you see any major or difficult barriers, personal or professional, you will have to overcome to achieve the career you find most attractive? How do you plan to overcome or work around these barriers?*
16. How much time and energy are you willing to put in to reach your goals?
17. *Has anyone particularly influenced your thinking about career options?*

#### Self Reflection

18. *When you step back and look at yourself, do you see yourself following the paths of others or choosing your own paths?*
19. Tell me about a situation when you came up with a new idea or a unique way to solve a problem. How did you come up with the idea? What happened when you shared the idea with someone else?
20. Do you see yourself as creative?
21. What do you see as your strengths and weaknesses? How do they compare to your peers?

22. *Do you feel like you have a good balance in your life? Do you see keeping a balance as getting harder or easier in the future? Why?*

#### Research Experiences

23. *Tell me briefly about the different research experiences you had in college or since graduating from college. Did you find the topics(s) of your research interesting?*
24. *What do you like about doing research? What attracts you to research?*
25. Do you have any particularly satisfying or memorable moments from your research?
26. What don't you like about research?
27. Based on your experiences with research, can you see yourself being successful doing research in the future? Why or why not?
28. Have you experienced any differences in the ways you approach learning in the laboratory vs. learning in the science classroom?

#### Academic Careers

29. *When you started college, what was your thinking about the possibility of a career as a professor? How has your thinking changed or not changed over time and why?*
30. What is your current image of the career of a professor? Can you see yourself as a professor?
31. Overall, what do you see as the biggest attractions to an academic career? Are any of these the most important, something you would really like to have as part of your future work life?
32. What are the least desirable elements of an academic career to you? Are any of these the most important reason why you would not pursue this career?
33. *How confident are you that you could succeed in an academic career if you want to?*
34. What do you hear faculty say about their careers? What do they seem to enjoy and not enjoy? Do they seem satisfied or dissatisfied?
35. How do other graduate students and postdocs talk about where they are headed in their careers? What do you hear from them about their perceptions of academic careers?

#### Experiences with Role Models, Mentors and Others

36. *Tell me about the role models you have had in the past or currently have. How important is it to you to have role models? Is it important that your role model has had similar life experiences to you?*
37. Tell me about your relationship with mentors, either research mentors or others who have been mentors for you.
38. *In what ways, if any, do you think your gender and/or ethnicity have affected your education and experiences in the past, particularly related to your career choices and plans? Do you think your experiences have been different from others of a different gender or different ethnicity?*
39. *Have you had teachers or mentors with your same ethnicity and/or gender? Is having teachers from backgrounds similar to yours important to you? Did you find yourself relating to them differently than other teachers? In what ways?*

## **Interview Guide: Early 2nd Year of the PhD**

### **First Year Experiences**

1. Could you start by sharing highlights or significant experiences you had during your first year of graduate school? What surprised you the most this year?
2. How do you feel about your choice to attend graduate school and your choice of this school and program? Were these good choices? Why or why not?
3. Thinking back to your undergraduate or other pre-graduate school experiences, how well prepared were you for your first year? What provided the best preparation? Are there any areas in which you wished you had better preparation?
4. How do you feel your preparation for graduate school compares with your other first year peers? Were there ways you felt more or less prepared than others?
5. What new skills and abilities have you developed?
6. Were there challenging or stressful times? If so, tell me about them and how you handled them.
7. What did you do to maintain balance in your life this year?
8. Were there any times this year when you felt isolated or alone?
9. *During your first year, did you feel your gender, race, or ethnicity influenced how you were treated or how others viewed or responded to you? Did you notice if other students were treated differently due to their race, gender, or ethnicity?*
10. Has being in graduate school affected your personal relationships (friends, committed partners, family, and/or children) this year? Have these relationships influenced any decisions you made or experiences you had in graduate school?

### **Classroom and Research Experiences**

11. Tell me about the process of rotating in labs. How did you choose your rotations? Did you notice any similarities and differences among them?
12. Which lab did you choose for your dissertation and why? Which of the following influenced your decision: the research topics, mentor, people, sense of fit, personal circumstances or something else?
13. *How would you describe the interactions of the people in your lab? At this time, how connected or disconnected do you feel with these people?*
14. How have your scientific interests changed or developed during this year? How close are you to defining a research direction for your dissertation project?
15. Is your dissertation topic likely to be an already-planned or logical next step to the current work in your lab? Or are you going to come up with a new idea or a new approach to something going on in the lab?
16. Do you see yourself as a scientist? How have you changed as a scientist this year?
17. *Do you think your gender has played a role in how you are viewed? How about how you are viewed as a scientist?*
18. *Do you think your skin color has played a role in how you are viewed? How about how you are viewed as a scientist?*
19. How confident are you that you will succeed with your research in graduate school? Is there anything in particular that contributes to this level of confidence?

20. How were the classes this year? Were there any highlights or challenges with the coursework? How many more do you need to take?
21. Other than rotations, research and classes, did you participate in other activities your first year?

#### Thinking about the Future

22. *As of today, what do you want to do when you finish your PhD? What attracts you to the particular option or options you are considering?*
23. *What are the reasons for why you may or may not be considering a career as a professor?*
24. *Right now, what are your priorities as you decide among career options?*
25. *How do you envision balancing a science career with other things in your life? Do you see any barriers or obstacles to reaching your career or educational goals?*

#### Experiences with Role Models, Mentors, and Others

26. *Do you have any new role models since we spoke?*
27. *Were there any faculty, research mentors, or others you met this year who have been particularly important?*
28. What do family and friends think and say about your work in science or your intentions to pursue a career in science?
29. What are your plans and goals for the upcoming year?

## **Interview Guide: Early 3rd Year of the PhD**

### Second Year Experiences

1. Could you start by sharing highlights or significant experiences you had during your second year of graduate school? Were there any surprises? What has been easiest? What has been most difficult?
2. Have you taken your qualifying exam yet? If so, what did it consist of? How did it go for you? What do you think of the qualifying exam process?
3. How is your research going? How close are you to a publication?
4. Tell me about your dissertation topic: what did you choose and how did you go about choosing your topic? Was it an idea that you developed on your own or in conjunction with your PI?
5. Were there challenging or stressful times during the second year? If so, tell me about them and how you handled them.

### Lab Dynamics: Experiences Working in the Lab

6. How do you feel about the lab you chose for your research? Was this a good choice for you? Given an opportunity to start over again, would you choose the same lab or a different one? Why or why not?
7. Are there projects in your lab that are considered “high profile”? If so, were they generated by the PI or by someone else? How are projects assigned in your lab?
8. What is the makeup of the people in your lab?
9. *What’s it been like working in your lab? Have there been problems or conflicts in your lab? At this time, how connected or disconnected do you feel with the people in your lab?*
10. Are there superstars in your lab? Tell me about them.
11. Are there people who seem to be less integrated in your lab? Tell me about them.
12. *What is your relationship with the PI in your lab?*
13. Who provides direction for you in your lab work?
14. What type of feedback have you received this year? Who is providing feedback to you?
15. *During your second year, did you feel your gender, race or ethnicity influenced how you were treated or how others viewed or responded to you?*
16. *Did you notice if other students were treated differently due to their race, gender, or ethnicity?*

### Professional Development

17. Does your program or school provide workshops or programs to help you think about your career path?

### Life Outside of the Lab

18. What has life been like outside of your PhD experience? Have you been involved in any organizations or activities?
19. What did you do to maintain balance in your life this year?
20. Were there any times this year when you felt isolated or alone?
21. How has being in graduate school affected your personal relationships this year? What do family and friends think and say about your work in science or your intentions to pursue a career in science?

### Thinking about the Future

22. *As of today, what do you want to do when you finish your PhD? What attracts you to the particular option or options you are considering?*
23. What are the reasons for why you may or may not be considering a career as a professor?
24. *Right now, what priorities are most important to you in deciding among career options?*
25. *How do you envision balancing a science career with other things in your life? Do you see any barriers or obstacles to reaching your career, educational, or personal goals?*
26. What are your plans and goals for the upcoming year?

<sup>a</sup> The National Longitudinal Study of Young Life Scientists (NLSYLS) is a National Institutes of Health-funded research study housed at Northwestern University, ongoing since 2008, to follow a racially and ethnically diverse group of biomedical students through their PhD and early in their careers. It is the parent study from which a purposeful sample was derived for the present study.

<sup>b</sup> For the present study, full transcripts were analyzed to examine data from 22 women in the NLSYLS interviewed near the start of their PhD, in the 2nd year of their PhD, and in the 3rd year of their PhD. However, questions in italics were most pertinent to our two research questions: (1) How do women who intend to pursue biomedical faculty careers describe and interpret gender experiences in their research training, and (2) how do women react to these experiences?