An Introduction for Users of the
Mentoring Guides for NRC Research Advisers

Congratulations! If you have accessed this guide you've joined the ranks of the many accomplished, successful Research Advisers who make the NRC Research Associateship Program (RAP) such a success. There are many reasons professionals choose to become NRC Advisers. Perhaps you are excited about expanding the scope and accelerating the pace of your research program, furthering your organization's mission by realizing the full potential of your research agenda, or fulfilling your commitment to your professional community by helping to develop the next generation of researchers. Perhaps you are looking forward to the rewarding, enjoyable experience of engaging with early-career researchers and the many benefits that come from being exposed to their fresh ideas, cutting-edge knowledge, and challenging questions. Regardless of your motivation, making this formal commitment to help an early-career scientist get off to a great start will also be a significant professional development step for you.

It might seem strange to frame your NRC Adviser commitment as a benefit to your own development. After all, you have probably been engaged in scientific advising and mentoring for years, as a mentor and mentee, dating back to your undergraduate research days. But the formal experience of advising postdoctoral researchers brings new challenges and responsibilities. For example, the relationship between a postdoctoral researcher and their adviser is typically much more peer-like than the relationship between an undergraduate or graduate student and their adviser. As an NRC Adviser in a federal agency, you are accountable for the work of another - your advisee - perhaps for the first time. You are also responsible for helping to successfully launch a new researcher into your professional community. As an experienced research professional and NRC Adviser you are surely up to these challenges! However, acknowledging that mentoring postdoctoral researchers is a complex role and taking deliberate steps to foster your growth as a mentor can go a long way towards helping you succeed as an Adviser. We aim to help you and your postdoctoral mentee have a great experience, which can also help attract top talent to your research group for many years to come.

The goal of these guides is to help you become an excellent Research Adviser and mentor for NRC Research Associates. The guides address basic expectations of NRC Advisers, getting the relationship off to a good start, maintaining progress, and dealing with common challenges experienced by Advisers. Each guide is self-contained and includes suggestions for additional self-study. Though the series is intended to be read in sequence, this is not strictly necessary. We hope the guides will help you prepare, gain confidence, and find useful ideas when you encounter challenges.

These self-study reference materials are meant to support NRC Advisers from any scientific or technical field, in any NRC-participating agency. As such, they are discipline- and agency-agnostic. Advisers may need to supplement their learning with discipline-specific mentoring practices and agency-specific expectations and policies.

These Guides were written specifically for Advisers of <u>postdoctoral researchers</u>. The intended audience is new NRC Advisers and as such the content focuses on fundamentals and one-on-one interactions between Advisers and Associates. It is our hope that these Guides may also serve as a skill-enhancer or helpful refresher for experienced NRC Advisers. Much of the content and the associated self-study material can help with building general mentoring skills and may prove useful to Advisers of more experienced Research Associates as well.

Throughout the entire series of Guides, the terms "postdoctoral researcher," "NRC Associate," "Research Associate," "Associate," "advisee," and "mentee" will be used interchangeably to refer to NRC Postdoctoral Research Associates, and the terms "NRC Adviser," "Adviser," and "mentor" will be used interchangeably to refer to NRC Research Advisers.

This Mentoring Guide Series supports the National Academies Fellowships Office's objective of fostering positive experiences for all NRC Research Associates by helping to develop strong mentors throughout the NRC Research Adviser community.

These guides were developed by Nora Beck Tan of Illumina Executive Coaching, with the support of Dr. Ray Gamble and Ms. Melanie Suydam of the National Academies. They were informed by several years of work with NRC Associates and NRC Advisers at the National Institutes of Standards and Technology as well as professional experience and vetted by three accomplished NRC Advisers: Dr. Michael McPhaden of the National Oceanic and Atmospheric Administration, Dr. Sangeet Khemlani of the Naval Research Laboratory, and Dr. Debra Yourick of the Walter Reed Army Institute of Research. We sincerely hope that you find them useful.

Your feedback on these Guides is very welcome, and can be sent to:
      Dr. Nora Beck Tan, nora@illuminaexecutive.com
      NRC Research Associateship Programs Office, rap@nas.edu

Best of luck to you and your NRC Research Associate mentees!

Mentoring Guide #1: Understanding Your Role as a Mentor

Nora Beck Tan, Illumina Executive Coaching[*]
Summer 2020

This first Guide in the Series provides a high-level overview of the NRC Adviser's role as a mentor of NRC Research Associates at the postdoctoral level.[1] It offers insight into the types of support Associates want and need and how you can help them achieve success.

I.   Introduction

There is no one-size-fits-all formula for excellent mentorship of postdoctoral Research Associates. Each individual Associate has their own set of strengths, motivators, challenges, and dreams. Research Advisers are unique, too, learning and growing over time as researchers and mentors. As such, each mentoring relationship you are involved in will be unique and "the right" approach to each individual that you mentor will be different. It is important to remember that above all, *flexibility and adaptability are key characteristics of successful research mentors.*[2]

Despite the unique aspects of each individual mentoring relationship, there are common elements in postdoctoral Associate-Adviser mentoring relationships. These include common markers of successful postdoctoral research experiences that you and your mentee can work towards. There are also common development needs and challenges for postdoctoral researchers that you can anticipate. By cultivating a handful of mentoring approaches, you can prepare to rise to the different types of mentoring occasions that are most likely to present themselves. In this guide, we review the markers of success and types of advising approaches, then dive more deeply into development themes and challenges, and finally explore how you might help the NRC Associates you mentor prepare for their next career stage.

II.   Successfully Mentoring Postdoctoral Researchers

The markers of a successful postdoctoral experience include:

- Research Productivity
- Professional Development
- Career Advancement

For NRC Associates, **research productivity** is generally measured by high-impact scientific publications and presentations, sometimes supplemented by other discipline-specific metrics. **Professional development**, in this context, refers to building the competence, confidence, and reputation of postdoctoral Associates to prepare them for their next professional milestone. This typically involves achieving readiness for a principal investigator role and establishing credibility and visibility within their technical community, though details will vary for each individual and career path. **Career advancement** includes preparing for and securing *suitable employment*, ideally in a permanent position. In this case, "suitable" means a position aligned not only with qualifications but also with the Associate's strengths, interests, and personal and professional

---

goals – in short, *a position that excites them*. As an NRC Adviser and mentor, you will play a pivotal role in helping each mentee achieve success in all three areas.

Because achieving success across these categories requires several types of development, effective Advisers must utilize a variety of mentoring approaches and know how to match their approach to different situations. For example, NRC Research Associates need to learn about, and comply with, their agency's policies. This is not an area for negotiation or discussion; knowledge of the policies and expectations of compliance simply need to be communicated. In this case, you would instruct your mentee. For a technical challenge, with data analysis or instrumentation issues for example, your approach might include offering advice, sharing a decision framework, or brainstorming new directions – mentoring techniques that help the Associate learn to resolve these types of issues themselves. More personal topics, such as choosing a career path, call for coaching techniques to help the individual more deeply explore their own interests; positive feedback to highlight their strengths; and Socratic questioning to help them discover how this new self-knowledge might translate into career possibilities. For a complex situation, such as resolving an authorship dispute among collaborators, you might use all of these techniques and more – such as guided observation[3] – to help your mentee learn and grow.

III.   Mentorship for Research Productivity

While the ultimate responsibility for productivity as a researcher falls to the NRC Associate, Advisers can help by *creating the conditions that enable research productivity.* There are several things you can do to help create these conditions, including:

- minimizing roadblocks and distractions
- clarifying expectations
- anticipating challenges and proactively mentoring in these areas

The tenure of an NRC Associate is generally quite short, in many cases two years or less, and it is inherently quite challenging to produce new research results in such a short period of time. One way Advisers can help Associates succeed is by working to **minimize roadblocks and distractions**. For example, there might be a special instrument or a programming technique the NRC Associates in your group need to learn before starting their research project. While it may be possible for the Associate to attend a training class on the subject a few months after they arrive, that certainly is not optimal from a research productivity perspective. Eliminating this roadblock by doing some targeted teaching of the skills yourself might be a better solution. Similarly, you might help your mentee anticipate and manage around planned facility shutdowns, routine equipment maintenance, equipment upgrade cycles, animal and human protocol requirements, and so on, all of which can pose significant challenges for researchers working under constrained timelines.

Administrative processes are another source of potential roadblocks and distractions. Experienced government employees are proficient at a variety of administrative tasks that can be confusing, frustrating, and time-consuming for new lab members. NRC Associates might need to complete some of these tasks – no one should skip safety training, for example. It might be more efficient in other cases, however, to have administrative tasks handled by a permanent employee. Weighing time invested against relevant learning will help you honor your mentee's short timeline and foster their research productivity.

Because NRC Associates are often setting their own research goals for the first time, it is important to help them paint a realistic picture of success – in essence, to help them understand what "productivity" means for postdoctoral researchers in your orgaization. In this way, Advisers help foster productivity by **clarifying expectations**. Though each project is unique, you can rely on your experience to provide a general idea of how the research program is likely to play out. You can help your mentee understand how long it usually takes to get up to speed in the lab, when they should be ready to prepare publications, when internal presentation opportunities might arise, and how many publications may result from their work. You might provide a new NRC Associate with a roadmap for their tenure, pointing out key events such as trainings, important conferences, timelines or protocols for accessing specialized facilities or equipment and how their performance will be assessed. Sharing guidelines like these with new Associates can be very reassuring to them.

One particularly important issue to clarify is expectations on secondary projects and collaborations. What percentage, if any, of the NRC Associate's time may be spent away from their primary research project? If collaborations are encouraged, at what point are these appropriate? It is also important to address upfront the level of alignment a new project idea needs with your agency's mission in order for it to be supported. Too much, too little, or misaligned effort on secondary projects can be detrimental to research productivity.

A third way Advisers can create the conditions enabling research productivity is by **anticipating common challenges and proactively mentoring in these areas**. The postdoctoral experience typically includes many "firsts" for researchers that create challenges for them. There are research-related "firsts," such as the first time developing and running a research project relatively independently, the first true taste of intellectual freedom, and the first time having to consider the mission and objectives of the larger organization when making choices about research direction. There are also work environment-related "firsts," such as the first time working outside of an academic laboratory, or not being co-located with a supportive peer group working on very similar projects. Further, there are self-leadership "firsts," such as the first time having to finish a project within a clearly defined timeframe and the first time creating professional goals rather than working towards an academically defined goal such as obtaining a PhD. Keeping these "firsts" in mind as you engage with your mentee, as well as the typical professional growth areas described in the next section, will help you recognize situations in which extra time and attention from you may be especially helpful.

IV.   Mentorship for Professional Development

At the postdoctoral stage, Research Associates are developing into confident, self-directed, independent researchers who contribute to their organizations and their broader technical community. Our recent work with experienced NRC Advisers has identified a set of professional development areas common to many postdoctoral researchers:[2,4,5]

- Expanding Technical Knowledge and Skills
- Planning Scientific Work
- Communicating Scientific Work
- Developing Professional and Collegial Work Behaviors

- Engaging Effectively in Collaborations
- Understanding the "Business of Science"

Each of these is described in a little more detail below. Giving these topics some advance consideration will help you recognize aspects of research work that could challenge your mentee and anticipate situations in which you might need to engage proactively.

Expanding technical knowledge and skills is a central focus of postdoctoral study. Associates may want to deepen their knowledge in an area related to prior work, broaden knowledge within their scientific discipline, or develop new expertise that enables them to change fields. You can help your mentees by sharing your knowledge, facilitating connections with other technical experts, and guiding them towards research opportunities with high learning potential. Facilitate deep learning by challenging thought processes constructively and by helping your mentee apply their knowledge of fundamental principles in the new research areas of interest.

Planning scientific work is a large category and one we have already partially explored in the previous section on productivity. It includes thinking through resource needs, identifying key uncertainties and potential project pivot points, anticipating problems, understanding what a "publishable unit" looks like in your specialty's journals of interest, and maintaining focus. Much of this category falls under the heading of "firsts" for postdoctoral researchers, so they will most likely need your help.

Communicating scientific work includes effectively handling different formats (writing, presenting, discussions), successful communication with different types of audiences (scientific peers, multi-disciplinary groups, non-expert groups), and tailoring communication to a specific purpose (e.g., sharing results with peers, generating excitement among collaborators, interviewing for jobs, writing fundable grant proposals, etc.). Exactly what your mentee needs help with will be unique to them. Nevertheless, this is an area where you can expect to invest a fair amount of mentoring time.

You may be surprised to see "**developing professional and collegial work behaviors**" on this list, but many Associates will come to your laboratory having never worked outside of an academic environment. These individuals may need basic guidance and direct feedback about proper workplace behavior as well as an explanation of your organization's culture and norms.

Engaging effectively in collaborations includes initiating collaborations, defining and organizing collaborative projects, and working constructively in collaborative groups. This topic is fertile ground for mentoring effective interpersonal skills, such as aligning competing interests to the satisfaction of all, working through conflicts that inevitably arise, and negotiating author credit and sequence on multi-investigator projects. Though not all agencies or NRC Advisers encourage initiation of new collaborations during the postdoctoral program, almost all projects involve working with other researchers. Allowing NRC Associates the opportunity to build new collaborations or to engage in collaborative projects beyond the primary research project is encouraged, to the extent that it is possible, as it often helps with professional growth and career advancement.

Understanding the "business of science" covers developing knowledge about an organization's research objectives and mission, how an organization supports research, and how internal and

external research funding is obtained. Understanding funding streams within an organization or community, identifying new funding sources, and learning how to work effectively with funding agencies are all key areas of professional development in the "business of science." If an Adviser typically writes grants to support their research, involving the Associate in this process can provide valuable experience. NRC Associates may also need help learning to communicate the outcomes of their research within the context of the organization's mission and research objectives. For example, technical reports are often a product unique to government agencies. The relative importance of developing knowledge and skill in each area will depend on the Associate's desired career path.

V.   Mentorship for Career Advancement

To a large extent, all of the topics covered in this guide are related to helping postdoctoral researchers advance in their careers. The last two elements we will touch on in this first mentoring guide are: i) preparing for the next stage and ii) finding suitable employment.

i) Preparing for the Next Stage

Postdoctoral researchers nearing the end of their tenure will generally have made significant progress in the areas of professional growth discussed above and are turning their thoughts to the next stage in their career. NRC Associates who are preparing to move on generally view themselves as having achieved self-leadership[4] as researchers and aspire to some level of project or team leadership in their next position.[5] When asked to define personal growth objectives for the next phase of their career,[5] Associates commonly cite several of the following:

- Building a network in the technical community
- Gaining influence in scientific group discussions
- Growing in technical breadth
- Establishing collaborations
- Learning to secure research funding
- Developing skills to lead scientific projects
- Developing skills to lead scientific community events
- Developing skills to lead people

Network building is viewed as beneficial for establishing an independent identity and gaining visibility within the scientific community, leading to new opportunities for collaboration and/or future employment.

Influencing scientific group discussions, either within the organization or at the community level, is related to establishing an independent identity and enhancing visibility. It is attractive to postdoctoral researchers hoping to build credibility and win support for their own research ideas. Gaining confidence is at the heart of this, and you can help with coaching, gentle encouragement, and positive feedback.

Growing in technical breadth is of interest primarily for two reasons. First, broadening the technical base is desired for enhancing marketability. Second, many postdoctoral researchers are interested in a variety of topics, excited about learning new things, and wish to pursue career paths that offer exposure to many types of systems, problems, or projects.

Establishing collaborations often arises in the context of growing technical breadth or network, though it is also related to developing leadership skills and establishing an independent research program.

Securing research funding, a subset of "business of science," is an important professional development goal for postdoctoral researchers wishing to establish their own research program. In some cases, it can also help mentees obtain permanent employment.

Developing leadership skills can take various forms. Next-stage leadership aspirations of postdoctoral researchers tend to focus on leading multi-investigator projects or organizing events within the scientific community (such as symposia) or leading people. In the latter case, formal mentoring of junior researchers is generally seen as a tangible and attractive first step.

With good intent, generosity, and a bit of creativity, you can find many opportunities to help your postdoctoral mentees grow in the aforementioned areas and launch their professional career. Here are few suggestions:

- Include them in important meetings
- Introduce them to colleagues across your organization and at conferences
- Request they be added to the schedule when you have important visitors
- Offer them the opportunity to observe you in action as you tackle a challenging issue, then debrief and answer questions afterwards
- Have them lead an important project meeting while you stand by as backup, having coached them in advance
- Carve out part of a larger project for them to lead
- Offer them a session chair spot in a conference you are organizing

ii) Finding Suitable Employment

By definition, an NRC Associateship is a temporary assignment and *"what comes next?"* is always a concern. Even if you are not in a position to offer the NRC Associate permanent employment, there are many ways you can help your mentees find a next step that is right for them.

While some researchers come to their postdoctoral positions with a clear plan for what is next, many do not. Creating opportunities for your mentee to talk with colleagues who have chosen a variety of career paths (industry, entrepreneurship, federal laboratories, academia, administrative positions) can help. You can also share your own experiences, lend your network, and encourage NRC Associates to engage in career conversations. Your mentee may also appreciate coaching on how to approach these conversations respectfully and professionally.

Key to choosing the right career path is understanding (and articulating) personal strengths and interests, a struggle for many people. By carefully observing your mentee, you may be able deduce and point out which types of projects or activities excite them most, whether they enjoy working alone or in groups, what modes of communication seem to suit them best, and which elements of their jobs seem to come naturally to them.

One particularly impactful way to help your postdoctoral mentee find suitable post-NRC employment is to work with them on adapting their research plan to their desired career path. For example, since the timelines for academic applications are well-established, you might help someone interested in a faculty position plan their research to increase the probability that a

tangible contribution from their postdoctoral research will be ready for their interview seminar. You might suggest planning for a lighter lab schedule during the time when applications must be finalized and submitted. You can also make introductions to colleagues who have been successful in securing academic positions and program managers from funding agencies or help your mentee identify opportunities to increase visibility in the broader technical community.

Similarly, though you may not be able to guarantee a permanent position at your agency, you can help an interested Associate increase their chances of securing one. You know how to build a CV that would be attractive to hiring committees in your organization; you can also ensure your mentee is introduced to influential individuals, help plan research so that a solid presentation should be ready when a position becomes available, or lobby to get them a slot in the agency's most prestigious seminar series.

For Associates interested in industrial research, you can help them tie their basic research to practical applications, develop and showcase their breadth, or suggest involvement in industrial partnership projects or industry-supporting activities that your agency may sponsor. Aspiring entrepreneurs may appreciate being connected to your agency's technology transfer team, SBIR office, or other new venture programs.

Regardless of the specific path your mentee chooses to follow, your sponsorship and advocacy are critical. Help your mentee build their CV by being generous in assigning authorship credit and acknowledging their many contributions. You can also create small leadership experiences they can reference, help them find opportunities to contribute to their scientific community, nominate them for awards, and introduce your mentee to colleagues and at conferences with complimentary comments about their work.

When it is time for the actual job search, be encouraging and supportive. Perhaps offer your assistance or make suggestions for where to find help with resume writing, interview preparation, position negotiation and more if you are able. In addition, be prepared to invest your time and effort in writing appropriate letters of recommendation.

VI.   Summary

In this first mentoring guide, we covered the basics of what it takes to be a great NRC Research Adviser. Much of the content may be familiar to you from your own experiences as a mentor or mentee. We highlighted three important markers of successful postdoctoral experiences – research productivity, professional growth, and career advancement – as well the Adviser's role in helping Associates achieve success in these areas. We have touched on creating a productive research environment, explored common professional development needs of postdoctoral researchers, and discussed ways to help NRC Associates prepare for their next career step and find a position they are excited about. Mentoring postdoctoral researchers is complex, multi-faceted work that benefits your agency and scientific community as well as your mentees. Your role as an NRC Adviser may also be one of the most personally and professionally rewarding of your career, creating exciting research results, lasting relationships, and many possibilities for fruitful continuing collaboration into the future.

For those who want a deeper dive into mentoring core skills, techniques or perspectives, please see the companion document "NRC Mentoring Guides: Resources for Self-Study."

Comments and feedback are welcome and may be sent to Nora Beck Tan (nora@illuminaexecutive.com).

REFERENCES & NOTES

1. Note: Throughout this document, the terms "postdoctoral researcher," "NRC Associate," "Research Associate," "Advisee," and "Mentee" will be used interchangeably to refer to the NRC Postdoctoral Research Associates. The terms "NRC Adviser," "Adviser," and "Mentor" will be used interchangeably to refer to advisers of NRC Postdoctoral Research Associates, who are also expected to be mentors to these individuals.
2. Nora Beck Tan – unpublished research, perspectives of experienced NRC Postdoctoral Advisers.
3. Leonard and Swap, "Deep Smarts," Harvard Business Review, September 2004, Reprint R0409F.
4. Note: NRC Associates were asked to self-evaluate based on Figure 1 in Younger & Sandholtz, "Helping R&D Professionals Build Successful Careers," Research Technology Management, Nov/Dec 1997, 40, 6, p. 23.
5. Nora Beck Tan – unpublished work, compilation of themes from career coaching of NRC Research Associates, 2018-2020.

ACKNOWELDGEMENTS

Mentoring Guide #2: Building the Foundation for a Successful Advising Relationship

Nora Beck Tan, Illumina Executive Coaching[1]

This second Guide in the Series highlights practices that help NRC Advisers[1] create healthy advising relationships. It includes insights into adopting constructive advising perspectives, practical advice on preparing for a new NRC Associate's arrival, details on important topics to address early in the relationship, and recommendations that will help get your advising partnership off to a great start.

I.   Introduction

Like other mentoring relationships,[2] NRC Adviser-Associate relationships tend to develop in a predictable pattern. In the beginning stages of the relationship you get to know each other, establish practices for working together, and build trust. As you gain familiarity with one another, the working relationship falls into a comfortable pattern and you make progress towards goals and objectives, working effectively together to address challenges. Finally, as your active advising relationship comes to a close, you and your mentee have the opportunity to celebrate your success and envision the different relationship you will have in the future. This Guide focuses on the early stages, diving deep into what you can do to help establish an effective advising relationship that is productive and constructive for both of you.

II.   Getting Grounded

Preparing for success in an NRC advising relationship starts with cultivating a healthy mindset. As discussed in Mentoring Guide #1,[3] successful mentors adapt their approach to each individual, provide guidance rather than detailed direction and supervision, keep both research and learning objectives in focus, and support Associate success. It is best to view your relationship as an equitable mutually beneficial, partnership in which even though the parties are not necessarily "equals," they both respect the value the other brings and the benefits of interdependence.[4] Another healthy approach is "win-win" thinking. This means striving for mutually beneficial agreements, believing that a "win" for all is ultimately a better solution in any conflict than for one person to prevail.[5] A commitment to these perspectives will help you develop a respectful mindset, which will pave the way for a productive and collegial advising relationship to develop.

III.   Getting Ready

> *Section III Companion Resources: Appendix A – Adviser Pre-arrival Preparations Checklist*
> *Table 1 – Example NRC Onboarding Plan*

A big part of getting off to a great start relies on things you do <u>before</u> the new NRC Associate arrives. There is no better confidence-builder for a new Associate than to know they are

---

supported and empowered to start making research progress right away. Pre-arrival preparations, which are part of the Adviser's role, typically fall into these categories:

- Self-preparation
- Physical Workspaces and Technical Resources
- Facilitating Onboarding

It is good to start with **self-preparation**, especially since a fair amount of time may elapse between the time you are notified of the NRC award and the date the Associate first reports to work at your laboratory. Give yourself ample time before the Associate's arrival date to re-familiarize yourself with your agency's policies and practices relevant to postdoctoral Associates, agency-specific NRC-program policies and requirements, and the NRC's general policies for the Research Associateship Programs (RAP). Check with your agency's Laboratory Program Representative (LPR) for information on expectations of NRC Advisers, relevant postdoctoral policies at your agency, and any other available resources. The National Academies' NRC Research Associateship Programs Policies, Practices, and Procedures Handbook[6] is an excellent resource for understanding the NRC RAP expectations and policies.

Take the time to re-familiarize yourself with the Associate's research proposal and brush up on your mentoring skills by reading the Mentoring Guides for NRC Advisers. You might also consider exploring selections from the companion list of Resources for Self-Study. If you have not previously mentored NRC Associates, you might recruit a more experienced Adviser as a coach and mentor for yourself or take a workshop on STEM advising or mentoring.

Organize your schedule to minimize travel and maximize availability during the new Associate's first couple of weeks if you are able. If this is not possible, be sure to identify someone who will provide any assistance the new Associate may need in your absence.

With respect to **physical workspaces and technical resources**, aim to have as much as possible in place before the Associate arrives. Make sure they have a suitable personal workspace: an ergonomically designed desk, chair, and computer station with appropriate lighting; telephone; and sufficient office supplies. Work with your IT department to secure any needed computing resources (e.g., computer, secure-access cards, peripherals, specialty software, and network access). If applicable, arrange for an electronic laboratory notebook and/or access to high-performance computing.

If the new Associate will be working in a laboratory, it's equally important to meet physical workspace and resource needs in that environment, including laboratory access, safety training requirements, and personal protective equipment. Check on instruments that the Associate plans to use and ensure they are available, in good working order, and that their calibration is up to date. Identify suitable workbench and storage space. Finally, consider ordering supplies needed to begin the research project, especially any items with long-lead times (e.g., specialty chemicals) so that the Associate can start working soon after their arrival.

By proactively **facilitating onboarding**, you can help an NRC Associate transition smoothly to their new location and workplace. This includes helping with pre-arrival issues and developing a well-thought-out onboarding plan.

Keep pre-arrival communication channels open. Associates often have questions about relocation and logistics. Providing appropriate information about temporary lodging, desirable and convenient places to live, housing options, and public transportation can be very helpful. New Associates may also be interested in making connections to the local community. This can be especially important to those coming from abroad. Suggestions and resources tailored to their interests in cultural, recreational, and social opportunities outside the laboratory may be very much appreciated.

If your facility operates under strict security protocols, security paperwork and pre-screening activities generally start well in advance of the Associate's arrival. The NRC experience will be the first time working at a federal facility for most Associates, so your guidance in navigating pre-arrival security processes may be very important.

Developing an onboarding plan helps to provide structure for the new Associate (and you) during the early weeks of their tenure. New Associates need to understand what is expected of them in your organization and what specific actions they can take to get off to a good start. While details of the plan will vary, it is a good idea to include activities and tasks that can be accomplished within the first 1-3 months and to break those down into what is expected on the first day, in the first week, in the first month, and in the first quarter. You might find it useful to start with a standard employee onboarding template[7] and modify it to address your specific situation. The table below gives some examples of typical activities that could be included in a postdoctoral researcher's onboarding plan:

First Day	First Week	First Month
• Security and campus access • New employee orientation with HR • Time to settle into new workspace • Lunch with Adviser and other lab members • Review onboarding plan with Adviser • Tours – labs, office area • Computer setup with IT • Introductions to group members	• Lab safety orientation • Tours – user facilities, campus • 1-on-1 meetings with immediate teammates • Daily check-ins with Adviser • Research planning meeting with Adviser • Further onboarding discussions • Lab instrument training • IT training	• Safety training • Employee orientation class • Additional required training • Weekly meetings with Adviser • 1-on-1 meetings with collaborators • Meet other NRC Associates • Group seminar • Branch/Division meetings

Be sure to note specific dates for activities and events where appropriate, such as team meetings, seminars, and training classes. Allow ample time on the Associate's schedule and yours for

onboarding activities and discussion of research topics – or whatever else they may need your help with, while settling into their new environment and getting started on their project.

If there are recurring meetings that professionals in your organization are required or encouraged to attend, be sure to provide a list. If possible, request the new Associate be added to calendar invites in advance.

Cultivating a healthy mindset, opening your schedule, preparing yourself, the physical workspace and resources and developing an onboarding plan all help you to lay the groundwork for a good start. Next, it's time to welcome the new Associate.

IV.   Getting Started

> *Section IV Companion Resources:*
> > *Appendix B – Expectations and Working Guidelines Topics, with recommended exercise and practice*
> > *Appendix C – Contracting Discussion Template for Successful Advising Relationships, with recommended exercise.*
> > *Appendix D – Developing a Roadmap for the Postdoctoral Program, with example and recommended practice.*

The first few weeks or months that you and the new Associate spend together build the foundation for a collegial and productive relationship during the NRC Associate's tenure – and beyond. Though you may prefer a casual and informal advising relationship, in the early stages it's important to provide some structure. NRC Associates, no matter how talented and independent they are, will need help understanding and adapting to their new workplace environment. Plus, working through a series of specific tasks together early on creates opportunity to develop rapport, become familiar with each other's work styles, and begin to build trust – all of which are part of any healthy relationship. It is typical to spend a lot of time with the new NRC Associate at the outset and then taper off as you work through initial topics, and as they become familiar with the work environment and build confidence. Topics to prioritize during these initial stages of the NRC advising relationship include: i) *Expectations and Working Guidelines,* ii) *Research Start-up*, and iii) *Developing a Realistic Picture of Success*.

Expectations and Working Guidelines

We touched briefly on setting expectations and clarifying working guidelines in the first Mentoring Guide.[3] Since this is particularly important at the outset of your advising relationship, we will go into more depth here. The expectation and guideline-setting topics that are important to address with your new mentee early fall into the following categories:

- General Expectations of NRC Associates
- Administrative Policies and Practices of Special Relevance to Postdoctoral Associates
- Working Together Effectively
- Research Program "Guardrails"
- Career Advancement

Because there is no single right way or right time to approach these, we will simply describe the categories here. *Appendix B: Expectations and Working Guidelines Topics* has recommendations on developing and using a topics list in your own advising practice. You may want to incorporate conversations on some of these topics into your onboarding plan as well.

General expectations of NRC Associates is the most basic category. It encompasses things like work hours, what to do in an emergency, how to learn about closures, and standard codes of employee conduct. It's also important that the new Associate understands expectations and policies regarding civility, respect, harassment, and bullying, and what to do if they experience inappropriate behavior. If the NRC Associate attends your agency's new employee orientation program, many of these topics may be covered there. It is still good practice to review them with the new Associate, answering any questions and pointing out the local nuances in workplace practices and norms. While NRC Associates are not employees and therefore do not have leave, *per se*, it is important to discuss expectations regarding time away from the laboratory for vacation, medical appointments, family emergencies, etc. Be sure to address any discrepancies – real or perceived – between your agency's policies and NRC RAP policies.[6]

Though it is generally a good idea to minimize the administrative burden on NRC Associates,[3] there will be some **administrative policies and practices of special relevance to postdoctoral Associates.** These are the policies and practices directly related to executing the research program, and you should review them with your new mentee. They concern laboratory safety, laboratory and instrument access, study approval protocols, publication and external presentation review processes (if any), intellectual property policies and practices and so forth. You may also wish to discuss any policies and practices for purchasing supplies and equipment and for travel.

In addition to these agency-specific, non-negotiable topics, it is important to discuss expectations and guidelines that relate directly to your advising relationship. A great place to start is to talk about how you will **work together effectively.** This important conversation – equal   parts discussion and negotiation – is about establishing the mechanics of your mentoring partnership. Though you may have envisioned the working relationship developing organically, an explicit early conversation about how you will work together is highly recommended.[8-10] It is a great way to surface unspoken assumptions and calibrate mutual expectations. Good topics to discuss and agree on include: contact information and preferred methods of contact, preferred work hours and meeting times, rules on "interruptions" (signaling when they are okay vs. not okay), communication preferences, documentation practices, expectations of confidentiality for mentoring conversations, how each of you prefers to receive feedback, how often you will check in about the health of your mentoring relationship, and any other ground rules you may wish to establish. You might also discuss how you will handle specific types of interactions. For example, you might agree that for quick questions, the Associate should just drop by your office, while in-depth discussions on research results or career goals should be scheduled in advance. Refer to *Appendix C: Contracting Discussion Template for Successful Advising Relationships* for a conversation guide that will help you create your ground rules for working effectively together.

A discussion on **research program "guardrails"** will help foster mentee independence. The new NRC Associate needs to understand where the boundaries of their freedom are in order to proceed with confidence. You also need to feel confident that the research program will stay within parameters that are acceptable to you, your group, and your agency. Guardrails related to the execution of the primary research project is a good place to start. Are there any anticipated research activities that will need approval? Has the research been funded under a grant that limits deviations in scope or direction? If so, it's best to clarify the boundaries up front. You might also discuss your policy on adding side projects or new collaborations to the research portfolio; is this acceptable? If so, at what point during the NRC tenure may new projects be initiated? What percentage of time is reasonable to spend on these endeavors? How do you, as an Adviser, wish to be involved in the initiation or monitoring of such projects, if at all? It helps the Associate to be clear on which decisions they can make on their own, which they need to inform you of or consult with you on, and which may require the involvement of others.

An essential part of fostering independence is to help postdoctoral Associates develop a contextual understanding of their research program – and yours. Spend some time talking about your agency's vision, mission, and structure. Explain how your group, and the broader organizational unit of which it is a part, fit into this mission. Be explicit about how their research ties into the bigger picture. This understanding will help when changes need to be made in research direction, and it provides context for future conversations about choosing new directions and/or additional projects.

Getting an early start on **career advancement** discussions and continuing these throughout the course of your advising relationship is also a recommended practice. As discussed in Mentoring Guide #1,[3] there are many ways Advisers can help NRC Associates prepare for their next career step. Clarify how you can (and can't) help as early as possible, so the NRC Associate will know what to expect. Learn what the Associate is and is not yet certain about regarding their career path. If their preferences are already clear, you might want to discuss options for adapting the research program to fit career interests. If not, you might talk about possible directions and how career exploration fits into their time as an NRC Associate. Share examples of how you may assist them, such as by making introductions or advocating for their participation in high-visibility events. Be sure to be direct and realistic about the potential for permanent employment at your agency upon conclusion of the postdoctoral program. Help the Associate understand from the outset what you can and cannot do, including how the two of you might work together to increase their chances of securing a position at your agency – assuming that's feasible, and of interest to your mentee.

Research Start-up

Research start-up discussions will likely be eagerly anticipated by both you and the new NRC Associate. They are also a great opportunity to begin the process of helping your new mentee develop their skills in planning scientific research.[3] This is the time to get into the details of the NRC Research Proposal and go over the specifics of the Associate's first quarter's work. If significant changes have occurred since the original proposal was written, you might discuss updated laboratory, facility, and computing resource needs, as well as any associated training and how that will be addressed. In addition, you might encourage the Associate to develop an

inventory of any supplies, samples, software, or other resources they anticipate needing for their first round of experiments, and/or identify upcoming research-related deadlines (e.g., abstract submission dates, equipment access windows). It's also a great time to discuss research documentation protocols, including mutual preferences and any relevant agency policies.

As the two of you discuss research start-up, remember to maintain a mentoring mindset. Be flexible and keep your objectives of fostering the Associate's learning and independence in mind. Strive to provide guidance for the Associate's decision-making, rather than setting the direction yourself.

Developing a Realistic Picture of Success

Helping a new NRC Associate develop a realistic picture of success is an important part of getting off to a great start. As discussed in Mentoring Guide #1,[3] it is directly related to creating the conditions that enable research productivity. It is a great way to tie together elements of onboarding, working guidelines, and research start-up activities, and it also helps set expectations.

To put this topic in context, remember that a new postdoctoral Associate's only significant previous research experience was very likely in graduate school. They may need help understanding what is possible to achieve in just 1-2 years. They may also need help grasping the practical aspects of delivering those achievements in a way that will appeal to potential future employers. Spell out what's typical in terms of research output for postdoctoral Associates in your field (e.g., quantity of papers and presentations). You might also identify events or opportunities that could be especially impactful for their visibility and network building.

One way to help illustrate how a successful program unfolds is to help the Associate develop a roadmap for their tenure. An example of a simple roadmap for a postdoctoral program illustrated in Figure 1, depicts, quarterly, a two-year timeline for a generic NRC program in a federal laboratory in which the NRC Associate starts in October and conducts experimental laboratory research both internally and externally. If you choose to use such a roadmap, try starting with a sparsely populated template that you have developed yourself, then work collaboratively with the Associate to fill in the elements that are specific to their research and career interests. Refer to *Appendix D: Developing a Roadmap for the Postdoctoral Program* for recommendations on developing a general roadmap that works for your laboratory.

V.   A Note on Building Trust and Rapport

Although most of what has been covered in the previous sections is largely practical, tactical, and easily turned into checklists, your overarching objective is to build a healthy relationship between you and your mentee. A big part of that is building trust and rapport.

Building rapport can be done through simple shared activities. Make time for informal conversations, either over coffee or while walking to a meeting or seminar.[11] Don't be afraid to share something personal, such as hobbies or stories from your own research experience. Try to give your mentee your undivided attention while you're together; avoid taking phone calls,

checking texts or emails, or allowing interruptions. Signal both respect and a partnership mindset through your actions. For example, sitting side-by-side or at a table during your mentoring meetings will feel much more collaborative than having meetings "across the desk," where you are seated in a way that conveys authority.

Building trust can take more time and patience, especially if your mentee has not had positive advising experiences in the past. Extending trust and demonstrating trustworthy behavior yourself will help cultivate trust in the relationship. One specific thing you can do is to be clear and transparent in your communication, sharing information openly.[4] Additional behaviors that are integral to trustworthiness are being honest and forthright, meeting your own commitments, holding yourself accountable to promises you have made to others, and being clear and open about expectations.[4,12] Being consistent yourself – in both word and deed – will also signal trustworthiness.[12] Above all, be respectful, kind, patient, and always give the NRC Associate the benefit of the doubt. With time and commitment, you can develop the trust that is foundational to a successful advising relationship.

VI.   Summary

In this second Mentoring Guide, we focused on the early stages of an NRC Advising relationship. We touched on cultivating a healthy advising mindset by adopting mentorship, partnership, and win-win perspectives. We covered three types of preparations to make prior to an NRC Associate's arrival in your laboratory: preparing yourself, preparing the physical workspace and technical resources, and facilitating onboarding. Building on practices first highlighted in Mentoring Guide #1, we detailed how to clarify expectations and set working guidelines. Several important categories of topics related to expectations and working guidelines were described, as well as the Adviser's role in working through these with a new NRC Associate. Also offered were recommended Adviser practices you might adopt. We revisited the professional development topic of planning scientific work in the context of research start-up discussions. We also touched on how you might collaborate with an NRC Associate to develop a roadmap for their postdoctoral program, clarifying expectations, and supporting skill-building in planning scientific work. The goal is to provide enough structure and clarity in the early stages of an NRC Associate's tenure to foster their independence and help both of you build confidence in your partnership. The effort you put into building this relationship early on and the trustworthy behavior you model while doing so will help build trust and a strong foundation for a successful advising partnership.

For a deeper dive into mentoring core skills, techniques, or perspectives, please see the companion document "NRC Mentoring Guides: Resources for Self-Study."

Comments and feedback are welcome and may be sent to Nora Beck Tan (nora@illuminaexecutive.com).

REFERENCES AND NOTES

1.   Note: Throughout this document, the terms "postdoctoral researcher," "NRC Associate," "Research Associate," "Advisee," and "Mentee" will be used interchangeably to refer to the NRC Postdoctoral

Research Associates. The terms "NRC Adviser," "Adviser," and "Mentor" will be used interchangeably to refer to advisers of NRC Postdoctoral Research Associates, who are also expected to be mentors to these individuals.

2. Adapted from Diaspora IdEA. (2015, January 22). *Intro to MicroMentor for Mentors [Video]*. YouTube. https://www.youtube.com/watch?v=azDMOJqyv3g

3. Mentoring Guides for NRC Advisers - Mentoring Guide #1: Understanding your role as an adviser. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365027.pdf

4. PEP: Promoting Effective Partnering. (2020). *Trust, Power and Relationships.* http://www.effectivepartnering.org/factor/collaboration-communication/trust-power-relationships/

5. Wikipedia. (2020, 30 September). *The Seven Habits of Highly Effective People* & references contained therein. https://en.wikipedia.org/wiki/The_7_Habits_of_Highly_Effective_People#cite_note-10

6. The National Academies of Sciences, Engineering, and Medicine. (2020). *Research Associateship Programs: Policies, Practices and Procedures.* https://sites.nationalacademies.org/PGA/RAP/PGA_049128

7. Check with your agency's HR department to explore what resources may be available or try a quick Google Images search of "onboarding plan" or "onboarding template."

8. Blanchard, K. & Diaz-Ortiz, C. (2017). *One minute mentoring: How to find and work with a mentor – and why you'll benefit from being one.* William Morrow.

9. Zachary, L. J. & Fischler, L. A. (2014) *Starting strong [A mentoring fable]: Strategies for success in the first 90 days*. Jossey-Bass.

10. Zachary, L. J. & Fischler, L. A. (2009) *The mentee's guide: Making mentoring work for you.* Jossey-Bass.

11. (1997) *Adviser, teacher, role model, friend: On being a mentor to students in science and engineering.* National Academy Press, p. 8.

12. Covey, S. M. R. & Merrill, R. R. (2006) *The speed of trust: The one thing that changes everything*. Free Press.

ACKNOWELDGEMENTS

APPENDICES

Appendix A: Adviser Pre-arrival Preparations Checklist
Appendix B: Expectations and Working Guidelines Topics
Appendix C: Contracting Discussion Template for Successful Advising Relationships
Appendix D: Developing a Roadmap for the Postdoctoral Program

FIGURES

Figure 1. Generalized example of a two-year roadmap for a postdoctoral program.

APPENDIX A: Adviser Pre-arrival Preparations Checklist

<u>*Recommended Practice:*</u> *Use this checklist as a guide to help you prepare for a new NRC Associate's arrival, beginning at least 3 months in advance of their start-date.*

- **Self-Preparation**
  - ☐ Check with Laboratory Program Representative on NRC Adviser expectations and resources available to Advisers and Associates
  - ☐ Review agency policies and practices for NRC and postdoctoral programs
  - ☐ Review NRC's policies and requirements for Research Associateship Programs
  - ☐ Re-read the Associate's research proposal
  - ☐ Brush up on mentoring skills (guides, classes, advice from experienced mentors)
  - ☐ Organize schedule to maximize availability around Associate's first few weeks on the job

- **Prepare physical workspaces and technical resources**
  - ☐ Personal workspace: desk, chair, computer station, lighting, phone, office supplies.
  - ☐ IT resources: computer, system and network access, user accounts, peripherals, software
  - ☐ Laboratory notebook (digital or physical)
  - ☐ Laboratory: access, safety training, PPE, workbench space, storage space
  - ☐ Laboratory instruments: available, operational, calibrated
  - ☐ Starting supplies: available or ordered

- **Facilitate Onboarding**
  - ☐ Relocation information: housing options, convenient communities, public transportation, temporary lodging
  - ☐ Information on local cultural, recreational, or social opportunities of interest
  - ☐ Security processes
  - ☐ Onboarding plan

APPENDIX B: Expectations and Working Guidelines Topics

<u>*Recommended Exercise:*</u> *Revise the following list of topics to fit your needs, considering these questions:*
> *What should you add to this list to customize it for your Agency and group?*
> *What do you need to clarify for yourself to prepare for the arrival of a new NRC Associate?*
> *How and when will you address these topics?*

<u>*Recommended Practice:*</u> *Use your modified document as either a self-check list or to guide your discussion with a new NRC Associate.*

General Expectations of NRC Associates
- Standard working hours, time away from the office/lab, closures
- Employee Code of Conduct
- Workplace norms
- Agency policies and compliance
- Other: _____

Administrative Policies and Processes of Special Relevance to Postdocs (Agency and NRC)
- Laboratory: Safety, access rules, PPE, instrument usage, chem/bio handling and waste, etc.
- External publication and presentation review processes
- Intellectual property policies
- Policies and processes for purchasing equipment and supplies
- Policies and processes concerning conferences, professional training, and travel
- Performance reviews
- Eligibility and timing of pay increases for NRC Associates
- Roles of the Adviser and supervisor
- Other: _____

Working Together Effectively *(SEE ALSO APPENDIX C)*
- Preferred work hours
- Contact information and contact method preferences
- Meeting and communication practices for different types of interactions
- What do you need from each other for your partnership to succeed?
- Other: _____

Research Program Guardrails
- Boundaries or constraints on research scope
- Approvals: What is/is not required and recommended?
- How we will handle changes in research direction?
- Collaborations, side-projects, and pivots: What is/is not acceptable, what is typical?
- Our Agency's vision, mission, and structure: Where do we fit in? How does our research fit in?
- Other: _____

Career Advancement
- Career path(s) of interest
- Constraints or concerns, if any
- Post-NRC positions at our Agency - probability, typical path, when and how decisions are made
- Options for adapting the research program to the career path(s) of interest
- What Advisers can/cannot do
- Other: _____

APPENDIX C:

Contracting Discussion Template for Successful Advising Relationships

Recommended Practice: Use this template to guide a conversation with your new NRC Associate advisee as part of the onboarding process.

Contact Information
- What is the preferred method of contact for each of us?
- What are the best back-up contact methods?
- Our contact information is…
- What will we hold ourselves to as a reasonable turnaround time for communications?
- How will we handle last-minute emergencies or disruptions?

Working Hours, Preferences, and Availability
- What are our standard work hours and locations?
- What are our preferred meeting times during the workday and during the week?
- How will we signal each other about times when we don't want to be interrupted?
- How will we keep track of each other's schedule/availability?
- Are there timeframes coming up when either of us will be unavailable for more than a week?

Meetings and Common Interactions
- How do we prefer to handle the following common types of advising interactions?
  - Quick questions
  - Research project updates and discussions
  - Career mentoring conversations
  - General professional mentorship and advising conversations
  - Discussions about technical publications, presentations, and reports
  - Other: _____
- What types of regular meetings will we have?
  For each type of meeting:
  - Which topics will we focus on?
  - How frequently will we meet and for how long? Where will we meet?
  - Who will initiate/set up the meetings?
- How will we handle meeting re-schedules?

Confidentiality
Confidentiality is one of the most critical elements of a mentoring relationship.
- What types of topics or conversations might we want to keep confidential? What does "keeping the conversation confidential" mean to us?
- Are there exceptions to the confidentiality rule – topics that we agree are not very sensitive or circumstances in which we give each other permission to share information with others?
- How will we signal to each other when something particularly sensitive comes up? When something that is okay to share comes up?
- Are there limits or boundaries to our confidentiality rules?
- Are there topics that are off-limits for our conversations?

Topics for our Conversations
- What is the scope of our mentoring conversations? What topics will we include?
  For example, research, goal-setting, career options, professional network-building, professional reputation-building, integrating work and personal life, etc.

Advice for Each Other
- General: What advice can we give each other on "how to work best with me"?
  For example: How do I like to learn? What do I need to be reminded about? Is there anything I think I will need extra help with? Is there anything that makes me uncomfortable or that I would like you to approach carefully? Do I have any hot buttons or pet peeves? Is there anything going on in my world, professionally or personally, that might affect our relationship?
- Feedback: What advice can we give each other about feedback?
  For example: What types of feedback would I most appreciate from you? How comfortable am I with giving and receiving feedback? How would I prefer to receive feedback? What has worked well for me in the past? What has not worked well?

Mutual Expectations and Relationship Health
- What are our overall expectations for this advising partnership?
- What do we expect of each other?
- What promises can we make to each other?
- To what will we hold ourselves and each other accountable?
- When will we check in on progress and effectiveness of our relationship? How will we do this? Where will we do this?
- How often will we revisit and update this contract?

Additions
- What else would we like to capture about how we will work together?
- Other than what we discussed above, are there rules of engagement that we would like to apply to our partnership?

APPENDIX D: Developing a Roadmap for the Postdoctoral Program

Recommended Exercise: _Create a general roadmap for a postdoctoral program in your group. Refer to Figure 1 for an example._

A. Lay out the two-year program on a quarterly (or monthly) timeline. Map typical activities and areas of focus by the quarter (or month), including:

- Onboarding meetings
- Getting up to speed, technically
- Wrapping up grad school business
- Getting settled in the new location
- Experimental work
- Literature review

- Preparing presentations
- Preparing publications
- Adding secondary projects
- Updating the CV/resume
- Job search and interviews
- Preparing academic applications
- Program reviews

B. Add relevant milestones and events. Overlay important dates and cycles on your timeline such as:
- Required training
- Administrative and fiscal cycles
- Performance reviews and pay increases
- Important meetings within your group, division, and laboratory
- Opportunities to present work internally
- Important scientific meetings and related abstract deadlines
- Application due dates for awards or nominations
- Application due dates for extensions
- Academic application submission windows (if applicable)
- Agency/cross-agency symposia
- Visits to/from collaborators, program managers, upper management, funding agency representatives, or other VIPs
- Deadlines related to accessing resources such as proposal due dates, equipment/facility access request timelines, scheduled access windows or downtime, protocol review board meetings, etc.

Recommended Practice: _Using your general roadmap as a starting point, sit down with the new NRC Associate within the first few weeks of their arrival to explain the roadmap and work together on customizing it to their program and interests. Use the initial conversation as an opportunity to answer any questions the new Associate has about the program. Encourage use of the roadmap as a planning tool, to be updated and revised as the Associate's program progresses._

Figure 1. Generalized example of a two-year roadmap for a postdoctoral program. In this example, the Associate starts in October and conducts an experimental research program leveraging internal and external facilities.

Read from the central dark line downward for typical activities and areas of focus (Appendix D, sub-bullet A) and from the central dark line upward for milestones and events (Appendix D, sub-bullet B).

Networking, Visibility & Resume-building Opportunities		Local visits near Spring Professional Society Location	Meet National Lab Collaborators - give seminar on PhD work	Meet visitors: government, university & industry collaborator	Local visits near Fall Professional Society Location	Present/meet agency managers at Internal Program Reviews	Meet National Lab Collaborators - give seminar on NRC work	Meet visitors: government, university & industry collaborator
				Summer Interns > > > > > |				Summer Interns > > > > > |
Conferences		Spring Professional Society Conference	Fall Conference Abstracts Due	Agency Symposia / Spring Conference Abstracts Due	Fall Professional Society Conference	Spring Professional Society Conference		Agency Symposia
External Experimental Work			National Lab User Facility Experiments		National Lab User Facility Proposals Due	National Lab User Facility Experiments		
Agency Calendar	Fiscal year start – Oct 1	Internal Program Reviews		Internal Program Reviews	Fiscal year start - Oct 1	Internal Program Reviews		Internal Program Reviews
Pay & Performance		COLA – January	Performance Reviews – Mid-year (March)	Performance Review - Annual (September)		COLA – January	Performance Reviews – Mid-year (March)	Annual Performance – Sept
< < < < Pre-arrival Planning	**Oct - Dec**	**Jan-Mar**	**Apr-Jun**	**Jul-Sept**	**Oct-Dec**	**Jan-Mar**	**Apr-Jun**	**Jul-Sept**
Internal Experimental Work	Experimental Work on NRC Project ->	-> Prep National Lab experiments	- - - - - >	(Scheduled Instrument Maintence July)	Consider adding 2nd Project - - - - - >	- - - - - >	Teach Others Your Lab Techniques - - - - - >	Lab & Work Area Clean-up
Documentation				Working on Publications & Government Reports				Finish up Pubs/Reports
Preparing for Future Employment				Tech Seminar - Internal	Conference Presenation		Job Search & Interviews | Give Internal & External Talks	
Required Training	Safety Training		Environmental Training		Security Refresher Training		Environmental Training	Security Exit Interviews
	Security Training				Safety Refresher Training			Equipment Transfer
Adviser Meetings	Weekly Check-ins ->	Bi-weekly Check-ins ->	Monthly Check-ins ->	->	Monthly Check-ins ->	->	->	->
Agency Meetings	Monthly Team Seminars - >				Monthly Group Seminars - >			
	Monthly Branch Meetings - >				Monthly Branch Meetings - >			
	Quarterly Division Meetings - >				Quarterly Division Meetings - >			
		Bi-annual Agency Town Halls		Bi-annual Agency Town Halls		Bi-annual Agency Town Halls		Bi-annual Agency Town Halls
General Onboarding	Items on Onboarding Plan							
	Onboarding Meetings							
	Wrap-up from Grad School							
	Settle into your new home							
Tech Onboarding	Instrument Training	Prepare for National Lab Visit	National Lab Safety Training		Prepare for National Lab Visit			
	Computing Facilities Training		National Lab System Training					
	Specialized Software Training							

Mentoring Guide #3: Maintaining Progress – Goals, Mentoring Conversations & Feedback

Nora Beck Tan, Illumina Executive Coaching[*]

This third Guide in the Series focuses on ways that Advisers can help NRC Associates[1] maintain forward momentum throughout their tenure. The emphasis is on the how-to of mentoring, including core skills like the mentor's role in goal setting, enabling purposeful conversations, and fostering development with feedback.
Much of the content in this Guide concerns core skills that are very important in mentoring. A number of recommended resources and exercises are included for those wishing to build their skills.

I.   Introduction

In Mentoring Guide #2,[2] we noted that NRC Adviser-Associate mentoring relationships develop like other types of relationships.[3] There is a natural pattern that starts with establishing your working relationship, continues to the phase where you work closely together as an Adviser-Advisee pair, then wraps up as the Associate's tenure nears its end, offering you a chance to celebrate and build a new type of relationship for the future.

This Guide focuses on the middle stage of the advising partnership. During this stage, you and your mentee interact frequently. You discuss research productivity, professional development and career advancement,[4] work through issues as they arise, and collaborate in professional endeavors. Whether you and your mentee have chosen to set weekly, bi-weekly or monthly check-ins, or to connect in a less scheduled way, there will be many mentoring interactions.[2] In this Guide, we dive deep into how you can interact productively and constructively to help the Associate you are advising create actionable goals, work through challenges, and sustain progress.

II.   Goals & Goal Setting

Encouraging mentees to develop and stay focused on their goals is a very important aspect of mentoring.[5] It is also a great way to help an Associate sustain and monitor progress. As an Adviser, you can help Associates to develop impactful goals by engaging in conversations that help them clarify, reflect on, and think critically about what they want to accomplish. You can also help by creating accountability – checking in on progress and celebrating together when goals are reached. Setting goals is recommended for all aspects of the Associate's experience – research, professional development, and career advancement.[6,7]

It is a good practice to begin conversations about goals early, as part of onboarding or shortly thereafter, but goal setting is not a "one and done" conversation. As early goals are reached, new

---

[*] Nora@illuminaexecutive.com, 443-707-5613, www.illuminaexecutive.com

goals will replace them. Goals may also need to be revised to account for discoveries, new information, or unanticipated obstacles.

In general, your role as a mentor is to help your mentee *refine* their goals: making them more specific, breaking larger aspirations into manageable steps, and helping to clarify criteria for success. One thing you can do to prepare for this role is to educate yourself about goal formats, such as SMART goals.[8,9] SMART stands for Specific, Measurable, Actionable, Relevant, and Timely – a set of criteria that can help focus and clarify nearly any goal.

For example, imagine you are advising an Associate who will conduct measurements for their NRC project using a highly sophisticated technique. This technique is a specialty of your group but is brand new to the Associate. For the sake of this exercise, let's choose small angle neutron scattering (SANS). A new Associate might propose a technical learning goal like:

> *Learn to use small angle neutron scattering (SANS) methods*

Though targeted to the area of interest, this starting goal is very broad, and the success criteria are not clear. As a novice, the Associate may be at a loss regarding how to shape this into a more specific goal or break it into manageable steps. You can offer suggestions based on your experience, perhaps helping the Associate reshape their goal into something like one of these:

> *By March, I will have learned to calibrate the SANS instrument properly, according to established standards and protocols.*

> *By December, I will have designed, completed, and documented a SANS research project of publishable quality.*

A mentor's role in goal refinement is not limited to their specific area of expertise. For example, you might help an Associate refine this general career goal:

> *Learn about careers in industrial research*

Into something like this:

> *In order to learn about careers in industrial research, I will interview four scientists from at least three different companies who have successful careers in industrial R&D. I will develop and ask specific questions during these interviews about success factors for these jobs, what the scientists enjoy most about their job, what they see as the biggest challenges, and what advice they would offer me. I will complete these interviews within 6 months.*

One benefit of goal refinement conversations is that they naturally lead to a conversation about what the Associate needs in order to achieve their goal, creating the opportunity to discuss how you might support them. For example, you might offer to train the Associate on SANS calibration or make introductions to colleagues who have had successful careers in industrial research.

Use your best judgment to determine a goal refinement approach that is appropriate for your mentee and the situation. Smaller steps and more specific, attainable goals can help the Associate build confidence quickly. Larger steps will do more to foster independence. The best goals will be

appropriately matched to an Associate's skill level and natural inclinations. Given the uncertainty inherent in most research, it may make sense to craft some goals around proving or disproving hypotheses or completing critical sets of experiments, rather than around anticipated outcomes.

When mentoring on criteria for success, avoid the temptation to associate quantitative metrics with all goals. The criteria should be appropriately matched to the objective, which will sometimes be better served by qualitative measures. As long as the goal is crafted to make its successful completion clear, the criteria should be sufficient.

Once a set of goals is established, it provides a basis for productive conversations on progress and changes in direction; for recognizing, acknowledging, and adapting to growth; and for celebrating success.

III.   Core Skills for Effective Mentoring Conversations

The types of conversations you have with your mentees will evolve over the course of your relationship. During the onboarding period, you can expect basic questions and tactical discussions as the new Associate adjusts to the work environment in your laboratory.[2] As things progress, there will be more in-depth conversations about the Associate's technical work, professional development, and career aspirations. Your role is to help the Associate clarify their own thinking, identify the issues important to them within any topic, and create a clear path forward. Goal setting is, in fact, one topic to cover. Processing feedback is another. By building skills in several key areas – **listening, questioning, and structuring conversations** – you can increase the effectiveness of your mentoring conversations, yielding better results for both of you.

Listening

Good listening is about understanding the perspective of another first before seeking to be understood. To build **listening skills**, start first with intent. Consider the distinctions of listening to "win," "fix," or "learn."[10] When we listen to "win," we are primarily gathering information that may be used to reinforce our own position or opinion and convince others of its merit. When we listen to "fix," we are listening for the purposes of providing a solution. Our focus is on diagnosing a problem, making connections to related situations or information, and formulating a solution. When we listen to "learn," our focus is on understanding the issue at hand fully, *from the other person's perspective*. For many of us with scientific training, listening to fix comes very naturally. It is highly recommended that mentors develop a habit of listening to learn *first*, to gain a full understanding of the situation including its nuances and emotional components before moving into solution mode if appropriate.

In most mentoring conversations, you should avoid listening to win. However, there may be situations where you are confident it is in the best interest of the Associate to convince them of your position, for example, if you observe an Associate engaging in unsafe work practices. Or perhaps when faced with a talented, competent, and well-prepared Associate who lacks the confidence to pursue a great opportunity. Under these circumstances, it might be appropriate to listen to win.

To gain a more in-depth understanding of listening to win, fix, and learn, watch the video cited in reference 10 and practice listening to learn.

While it may be easy to intend to listen to learn, actually doing it can be more challenging. Developing these six skills of active listening can help:[11,12]

1. <u>Pay attention</u>: Focus on the moment; allow time and opportunity for your mentee to speak, think, and respond to your questions; convey interest and respect through your body language; and observe your mentee carefully to pick up verbal and nonverbal cues during the conversation.

2. <u>Withhold judgment</u>: Keep an open mind, remembering that your intent is to understand the issue from your mentee's perspective – whether you agree with that perspective or not. Hold back criticism. Avoid arguing or pushing your perspective from the start.

3. <u>Reflect</u>: Do not assume you understand what your mentee intends to communicate, periodically recap your mentee's key points to confirm what you are hearing, and reflect back what you are hearing about your mentee's thoughts and feelings as well as the information they are sharing.

4. <u>Clarify</u>: Ask questions to help you understand any issues that seem unclear or ambiguous (see below for questioning tips).

5. <u>Summarize</u>: As the conversation proceeds, summarize key points to ensure you understand or agree – or ask your mentee to do so.

6. <u>Share</u>: Once you've gained a full understanding of your mentee's feelings and perspective, begin to introduce your own ideas, feelings, and suggestions; address concerns or share relevant experience.

The short videos cited in reference 12 offer a practical, if comical, demonstration of many of these skills. See how many of the six key active listening skills you can identify in each of the videos. Further self-study using the resources cited in reference 11 is highly recommended and will help you learn more about active listening, assess and address your own listening challenges, and build listening skills.

Questioning

Effective **questioning skills** are another core competency of great mentors. Understanding different types of mentoring questions and matching your question to the situation are at the heart of this. Good questioning skills are also linked to active listening. They often play a big part in diagnosing problems when listening to fix.

Four important types of mentoring questions[13,12] are: open questions, clarifying questions, filtering questions, and probing questions.

1. <u>Open questions</u> are used to encourage people to share and expand on their ideas or perspective, inviting the maximum response.

    For example: "What do you find appealing about an academic career?"

2. <u>Clarifying questions</u> are used to ensure understanding.

    For example: "What do you mean by 'intellectual freedom'?"

3. <u>Probing questions</u> are used to invite reflection, introduce new ideas, or link information from different parts of the conversation together to create new insights. They are usually in the form of an open question and may incorporate an element of challenge.

> For example: "If R&D funding trends imposed practical constraints on the research areas you could realistically hope to pursue, would you feel that your intellectual freedom was compromised?"

4. <u>Filtering questions</u> are used to sort through or prioritize issues or options. They can be used to help focus a conversation or begin to identify next steps.

> For example: "If you had to choose, would you say working closely with students or having intellectual freedom was your most important criteria for selecting a career path?"

In the course of a mentoring conversation on any topic, you are likely to use several types of questions. In general, it is good practice to start with open and clarifying questions to ensure you understand the situation before moving on to probing and filtering questions. You may go through several cycles of diverging with open questions and converging with filtering questions before any given issue is resolved.

Formulating great coaching questions is an important skill for mentors. You might find it helpful to practice, using some of the great questions compiled by the Coaches Training Institute.[14] Many of these are suitable for almost any mentoring situation. Note how short and simple they are. Another great resource is the book *The Art of Asking Essential Questions,*[15] which includes targeted questions for some situations commonly encountered in research endeavors.

Developing great questioning technique involves more than just asking questions. A very critical element of the skill is getting comfortable with *silence*. The pause after you've asked a question, to allow your mentee time to consider the question and think before responding, is just as important as asking a good question. Sit quietly and attentively after you've asked a question and resist the temptation to rush in and fill the silence with further clarification or additional information, even if your mentee does not respond right away.

Good questioning technique also involves asking questions one at a time. If you ask several without allowing time for a response in between, you may create confusion, accidentally divert attention to a lesser issue, or inadvertently narrow the conversation prematurely. For example, your mentee's response is likely to be different if you say:

> "What do you find appealing about an academic career? Is it the interaction with students or the security of tenure? Or perhaps you enjoy living in a university town*?" [pause]*

versus:

> "What do you find appealing about an academic career?" *[pause]*

In the first case, your mentee is likely to respond to the second or third question, rather than sharing their broader perspective.

As you develop your questioning techniques, there are a few behaviors to avoid (or use sparingly). When your aim is to help a mentee develop skills, avoid asking questions that lend themselves to "yes or no" answers. For example, if you are trying to help a mentee learn about the relative merits of publishing in various journals in your field, "What are your thoughts on target journals for publishing this work?" is far more likely to shed light on your mentee's perspectives and provide mentoring openings than, "Do you want to publish this work in the *Journal of Applied Physics?*" The second question will either get a quick affirmative or start a very narrow discussion on the suitability of the work for the *Journal of Applied Physics.*

Leading questions should also be avoided. This is really a statement disguised as a question, rather than a genuine question borne of curiosity and a desire to learn. For example, "You agree that the *Journal of Applied Physics* is the best journal for publishing this work, right?*"* is a leading question because embedded within it is a suggestion. Not every Associate faced with this question from their Adviser would feel comfortable saying "no" if they disagreed. Instead, you could say: "I think the *Journal of Applied Physics* could be a good choice for publishing this work. What other options could we consider?" Or simply revert back to an open question like "What journals could we consider for publishing this work?"

One small change that will have a big and positive impact on your mentoring performance is to avoid questions that start with "Why." This may seem counter-intuitive, given your scientific training. Consider, however, the following pairs of questions:

"Why do you want to go to the American Chemical Society Meeting?"
versus
"What do you hope to gain by attending the American Chemical Society Meeting?"

Or:

"Why is our department's administrative assistant angry with you?"
versus
"What happened when you approached our administrative assistant?"

While you could use either question in each pair to open a conversation, the choices that start with "Why" are much more likely to put your mentee on the defensive and/or to narrowly focus the conversation. Asking a more open question wil help you gain insight into your mentee's perspective, paving the way for a constructive discussion.

Structuring Conversations

Adding a bit of structure to your mentoring conversations can help to ensure they are purposeful as well as interesting. A few modifications to your approach – especially at the beginning and end of a conversation – can increase impact and generate forward momentum.

By default, a typical 1-hour mentoring meeting is likely to start with less than 5 minutes of check-in and finding a meeting topic, followed by 50+ minutes of conversation and a few minutes of wrap-up. As a best practice, we recommend restructuring your time to look something like this:*

First, an agenda should be set. Under most circumstances, it should be a mentee-driven agenda. As the conversation starts, ask your mentee to share the topics they would like to discuss. If this conversation is one step in an on-going discussion or occurs at a recurring mentoring meeting, be sure to ask about progress since your last conversation. Knowing that you will ask helps your mentee stay accountable to the actions they chose during your last discussion.

Next, prioritize. If your mentee has proposed several topics, ask which is the most important and be sure to discuss this first. Then, spend some time listening to learn as you clarify the priority topic(s). It is critically important to understand what your mentee would like to get from the conversation before you forge ahead. Most of us have experienced a conversation with someone that was well-intended, yet unhelpful, because they launched into offering advice and suggestions without first understanding what we were asking. You want to avoid this time-wasting mistake.

Aim to fully understand both the discussion topic and what your mentee wants from the discussion. Use open and clarifying questions. If your mentee has encountered an obstacle, are they looking to brainstorm on a new direction – or have they already decided on a new direction and instead want help refining their approach? Does the mentee want to know what you would do, or do they want your help identifying important factors to consider? Does your mentee want to learn about government careers by hearing about your experience, or do they want your help finding a few recently hired, early-career scientists to learn from? Take care not to assume that you already know what your mentee needs from you when their topic is first shared. Use your active listening skills to get a full picture and to pick up cues on how your mentee feels about the situation before you decide how you can help. For a description of several advising approaches, see the table entitled "What Advisers Can Do" in the article "The Art of Giving and Receiving Advice."[16]

---

*This general time allocation is patterned after practices taught by the Coaches Training Institute. You can scale the time allocation to match your preferred meeting time.

Only after you have prioritized, gained a good understanding of the topic, and have a clear picture of how you can help your mentee is it appropriate to move on to processing. This part of the conversation will likely feel more natural and less structured, but be mindful of your approach. If your mentee has asked for help choosing a career direction – an answer that must come from within – use a lot of open and probing questions. You might also summarize themes you hear in their responses to your questions and reflect back their own feelings about various options. If your mentee wants to brainstorm ideas for resolving a technical problem, you might ask a lot of clarifying questions to help you understand the problem and a lot of filtering questions once a number of possibilities emerge. You might also offer your own ideas and suggestions, after making sure that's what your mentee would like from you. You might say something like *"Would it be helpful if I shared a few ideas?"* as a prelude.

No matter what you discuss, strive to stay focused on your mentee's priorities and desired outcomes for the conversation. Check in periodically during the processing phase to make sure your mentee feels the conversation is serving their needs, especially if it has moved off on a tangent – or if you notice you are doing most of the talking.

The final stages of a structured, purposeful mentoring conversation are about working with what has been learned so far to keep things moving forward – even if you have not had time to finish processing. Discuss next steps or actions that could be taken before your next conversation. Be sure to focus not only on identifying actions, but also on the approach and what resources might be needed. For example, if you have discussed choosing a career direction, next steps might include researching top employers in a targeted geographic location or interviewing successful individuals who have chosen a particular path. You and your mentee might even discuss potential sources of employer information or specific individuals to interview. In either case, ask clarifying and filtering questions coupled with careful active listening. Remember that it is ultimately up to your mentee, not to you, to decide what they can realistically accomplish before you meet again. Encourage your mentee to capture their commitments in writing. This helps further clarify the actions and reminds you of what to check in on at the start of your next discussion.

Always close your conversation by asking your mentee to reflect on what was most helpful. This serves two purposes. It is a quick way to help your mentee crystallize what they learned from the discussion so that they are more likely to remember it. It is also important feedback for you. Hearing what resonated with your mentee will help you learn how to better mentor this individual.

Structuring conversations will add impact by guiding you in how to manage time, use your listening and questioning skills effectively, and create accountability. You may find it helpful to refer to the summary in Appendix A.

IV.   Feedback

Delivering helpful developmental feedback is one of the most important mentoring skills for Advisers to master. In a recent postdoctoral Associate focus group conducted by the author, it was called out

as one of the most critical skills to include in Adviser training.[17] Associates know they need feedback to develop professionally, both to help them understand what they are doing well and to help them correct mistakes and improve performance. Weaving this feedback into your advising interactions, *effectively and appropriately*, is a gift that you can offer.

Integrating Feedback into Mentoring Relationships

Sharing feedback should be a natural part of your mentoring relationship. It is important to consider not only delivering the message, but also creating the conditions for it to be received well. The trust that you have earned in the early stages of the relationship – by being trustworthy, transparent, honest, forthright, and accountable[2] – is the foundation. Other ways to cultivate conditions in which your feedback will be welcomed and received include: offering developmental feedback, taking care to share at least as much positive feedback as corrective feedback, delivering feedback with context and discernment, and being sensitive to each Associate's individual predispositions to receiving feedback.

In mentoring, it is offering *developmental* feedback that is so critical. The intention behind developmental feedback *is to help another person grow.* Other messages aimed at changing behavior are also part of working relationships; it is important for mentors to be able to distinguish between these. For example, the statement: *"*When you start your workday at 9:00 am it is difficult for me to fit our progress meetings into my schedule" is not developmental feedback (though it could be a good way to open a negotiation on mutually convenient scheduling.) Under different circumstances, the statement: "When you arrive at 9:15 am for our 9:00 am meeting it gives me the the impression that you are disrespectful of my time" could be part of a developmental feedback message about professional behavior. Being mindful of your role in supporting a mentee's growth and clear on the potential for learning when framing a message will help you offer feedback with developmental benefits.

For many people, the word "feedback" immediately conjures up negative associations, but feedback should include positive and encouraging messages, too. These help build confidence and capability by highlighting strengths and good behaviors. There is much to be gained in mentoring partnerships by being generous with positive feedback. It is an effective way to gain trust with a new mentee, setting the expectation that frequent feedback will be part of your interactions. It is also easier to master the basic "how-to's" of crafting and delivering developmental feedback by practicing with positive messages. When feedback aimed at correcting or improving performance is needed, a mentee accustomed to receiving positive and encouraging feedback from you will be more receptive, knowing that you have their best interests at heart.

When delivering developmental feedback, especially on a complex task*, setting context and being discerning* can help the receiver absorb your message. To illustrate these points, let's take two examples from advising mentees on communicating scientific work.

In the first example, imagine that you have just attended a mentee's presentation. The presentation was well organized, logically sound and had high technical merit. However, there were typos and

grammatical errors on many of the slides, and some of the type was too small to read. You plan to offer developmental feedback on this. In this scenario, set context for your feedback by sharing your overall impression first, noting that the substance of the presenation was very good and the feedback you have to offer is stylistic and grammatical. Then offer your comments on improvements. By setting context first, you help your mentee put the feedback into perspective. You also avoid a situation in which a mentee who has actually done quite well might be inadvertently left feeling demoralized because your conversation focused exclusively on mistakes.

In the second instance, imagine that you have just reviewed the first draft of a paper your mentee is preparing for publication. The paper has a fair number of grammatical errors, the figures lack error bars, and some references are not formatted properly – all essentially cosmetic or stylistic errors. In addition, your mentee has drawn some conclusions that are not supported by their data and has failed to consider the implications of a highly relevant body of prior work – issues related to the technical substance of the paper. You may be tempted to offer your feedback all at once, or to go through the draft sequentially, pointing out your concerns as they arise. However, in this scenario, using discernment will likely serve you better. Your mentee can only absorb so much feedback at a time, and the technical substance of the work is the higher concern. In setting context, you can share that you noted issues related to both technical content and style. In using discernment, you could note that you feel the issues of technical content are more important and will focus your feedback there.

Regardless of the nature of the message, remember that each Associate is an individual – and will respond to feedback in their own way. Some people are naturally very uncomfortable giving and receiving feedback. Others may have had prior bad experiences. As mentioned in Mentoring Guide #2, it is a best practice to talk with your mentee about giving and receiving feedback during the onboarding process.[2] This creates the opportunity to learn about any sensitivities *well before* it is time to deliver feedback. It also helps if you frequently invite (and take) feedback about your own performance as an Adviser or the effectiveness of your advising relationship. You might ask: "What am I doing well? What helps you the most?" and/or "What could I be doing more of, less of, or better?" Modeling the behavior helps make requesting, offering, and receiving feedback feel like a normal part of mentoring conversations and may help your mentee gain comfort with the process. You are likely to receive some feedback that will help you develop as an Adviser, too!

Delivering Feedback Messages Effectively

These four steps will help you to skillfully deliver feedback:[18,19]
1. Ask permission
2. Describe the <u>specific</u> behavior you observed and the <u>specific</u> situation in which it took place
3. Convey the impact of the behavior
4. Close with a question to invite discussion

As an example, imagine you want to offer feedback to an Associate on a presentation they have recently given to your division. You might use the steps above to share something like this:

"Do you have a few minutes? I'd like to offer a few thoughts on your division seminar.(1)

[assuming affirmative, go on or schedule time for follow-up later]

Yesterday, during your presentation, your delivery of the material was superb. The cadence with which you delivered it was just right, not too fast and not too slow. The pauses you built in were helpful in bringing out questions at appropriate times and triggering discussion on the impact of your findings. (2)

I was really impressed. Even though I'm familiar with the work, I gained a deeper appreciation for its importance as a result of the clear and succinct way you shared the material. I also learned a lot from the discussion. (3)

"How did you feel about it? [and/or] Would it be helpful to discuss some things that you did in preparation that contributed to your success?" (4)

The importance of being specific in describing the behavior cannot be emphasized enough. Consider, for example, if you had simply said, "Great job on your presentation!" While this comment is certainly encouraging, it does nothing to clarify what your mentee did well and will want to be sure to do again.

The formula applies for constructive feedback too. Consider the following:

"Do you have a few minutes? I'd like to offer a few thoughts on your division seminar. (1)

Yesterday, during your presentation, your delivery of the material felt very rushed. You moved very quickly from one section to the next without pausing or summarizing, which made it difficult to ask questions. (2)

I had a hard time absorbing the material you were presenting because of the pace. I was also concerned for you, because you seemed nervous and uncomfortable, and I know that you put a lot of time and work into preparing your slides. (3)

How did you feel about it? [and/or] Would it be helpful to discuss some techniques for pacing presentations?" (4)

Notice that in step 3, the impact that is described is the impact *on you.* This is a best practice; generalizations such as "the whole audience was having difficulty following" are easier to reject and also may be completely unfair (you could not possibly know what everyone in the audience was thinking).

Another important feature of an effective feedback message is that any judgments embedded are made on the *behavior*, not on the *person.* For example, choose "your delivery of the material felt rushed," instead of "you speak too quickly." A focus on behavior, which can be changed, is consistent with the intent to offer feedback for the sole purpose of helping your mentee develop.

The goal of step 4, ending with a question, is to provide an opening for a mentoring conversation and to remind your mentee that you are there to help and support them. Depending on the person and the situation, your mentee might be ready to have this conversation immediately after receiving your feedback—or might need some time to reflect and process first.

For those wishing to learn more about giving feedback effectively, including crafting messages and delivery techniques, the booklet *Feedback That Works*[20] is an excellent resource.

Planning Feedback Conversations

One final and important note about delivering effective feedback: do not forget to consider the *when, where and how* of your approach. Feedback is best delivered in a timely manner, while the details of the situation and behavior are still fresh. For example, in the scenario posed above, the discussion is likely to be richer and more useful if you share your thoughts within a day or so of the presentation. It is also important to deliver feedback only when you will not be rushed. Remember, a lot of the benefit comes from the follow-up conversation, so plan to share your feedback when you have enough time for a discussion. It is unfair and unkind to deliver a difficult message and then rush off to attend to other business. If you suspect your message may be very upsetting your mentee, try to find a time when your mentee is not likely to have another meeting shortly thereafter.

The venue for feedback conversations is another important consideration, particularly if you plan to deliver a difficult message. Deliver your feedback in person if you can, ideally in a collaborative setting such as sitting side-by-side at a table. If you are delivering feedback remotely, opt for video conferencing. Ensure that your workstation is set up to allow you to look directly at the camera with lighting that allows your mentee to see your face clearly. Whether speaking in-person or remotely, choose a location that affords privacy and limits distractions. It is important to eliminate concerns about others overhearing the conversation and to give your mentee your undivided attention.

Above all, do not lose sight of humanity when delivering constructive feedback. Practice empathy, remembering that we all make mistakes as we learn and that sometimes growth can be painful. Demonstrate respect for your mentee by being willing to offer your feedback directly, even when it may be difficult for you. By holding yourself accountable to delivering all feedback messages in a way that is supportive, respectful, and kind, you offer your mentee the opportunity to learn from successes and failures and to further develop into the impressive, successful professionals that all NRC Associates have the potential to become.

For those interested in learning more about empathy, the videos featuring Brene Brown and Simon Sinek are highly recommended.[21]

V.   Summary

In this third Mentoring Guide, we focused on the middle stage of an NRC Advising relationship, which typically represents the majority of your time together. We touched on practices that mentors can use to help their mentees stay focused, sustain progress, and grow as professionals. In addition, we pointed to core skills that help mentors develop competence in the "how" of these practices. For goal setting, we highlighted how mentors can help Associates refine and clarify their goals, noting also that regularly checking in on goals can create a sense of accountability. We also covered practices that create purposeful, momentum-sustaining, mentoring conversations; adding structure,

and using both active listening and effective questioning techniques. Finally, we discussed feedback: why it is so important, how it can be integrated, techniques for skillful delivery, and how to plan for a conversation.

The content of this Guide emphasizes specific mentoring skills. Important techniques were described, with examples, to demonstrate their relevance. Mastering these skills, however, can be accomplished only through practice. Opportunities for self-study are highlighted within the Guide along with associated supplemental references for those who wish to work on their skills independently.

For a deeper dive into mentoring core skills, techniques, or perspectives, please see the companion document NRC Mentoring Guides: Resources for Self-Study.

Comments and feedback are welcome and may be sent to Nora Beck Tan (nora@illuminaexecutive.com).

ACKNOWELDGEMENTS

APPENDIX A. Summary – Structured Mentoring Conversations, with intent listening & questioning techniques

REFERENCES AND NOTES

[1] Note: Throughout this document, the terms "postdoctoral researcher," "NRC Associate," "Research Associate," "Advisee," and "Mentee" will be used interchangeably to refer to the NRC Postdoctoral Research Associates. The terms "NRC Adviser," "Adviser," and "Mentor" will be used interchangeably to refer to advisers of NRC Postdoctoral Research Associates, who are also expected to be mentors to these individuals.

[2] Mentoring Guides for NRC Advisers - Mentoring Guide #2: Building the Foundation of a Successful Advising Relationship. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365028.pdf

[3] Adapted from Diaspora IdEA. (2015, January 22). *Intro to micromentor for mentors [Video]*. YouTube. https://www.youtube.com/watch?v=azDMOJqyv3g

[4] Mentoring Guides for NRC Advisers - Mentoring Guide #1: Understanding your Role as a Mentor. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365027.pdf

[5] Bryars-Wilson and Lung Dahlberg (Eds.) (2019). *The science of effective mentorship in STEMM* (pp. 33-50). The National Academies Press.

[6] Note: Refer to Mentoring Guide #1 for a description of the facets of each of these areas and the associated roles of mentors. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365027.pdf

[7] Feibleman, P. J. (2011). *A PhD is not enough*. Basic Books.

[8] DecisionSkills. (2014, May 22). *SMART goals – quick overview*. YouTube [Video]. https://www.youtube.com/watch?v=1-SvuFIQjK8

[9] MindTools. (2020). *SMART goals: How to make your goals achievable.* https://www.mindtools.com/pages/article/smart-goals.htm

[10] Cultivating Leadership. (2017, July 24). *Listening to learn.* YouTube [Video]. https://www.youtube.com/watch?v=Zrg_3KlAE6o

[11] Hoppe, M. (2014). *Active listening: Improve your ability to listen and lead*. Center for Creative Leadership. Center for Creative Leadership. (2019, August 21). *Use active listening to coach others*. https://www.ccl.org/articles/leading-effectively-articles/coaching-others-use-active-listening-skills/ Center for Creative Leadership. (2020, February 4). *How to have a coaching conversation.* https://www.ccl.org/articles/leading-effectively-articles/how-to-have-a-coaching-conversation/

[12] Parent Effectiveness. (2013, February 21). *Everybody loves Raymond uses active listening* [Video]. YouTube. www.youtube.com/watch?v=4VOubVB4CTU E-Region Project. (2015, January 13). *Big bang active listening* [Video]. YouTube. www.youtube.com/watch?v=lqGAHCAxKD0

[13] Fadem, T.J. (2009). *The art of asking: Ask better questions, get better answers.* FT Press.

[14] Co-Active Training Institute. (2019). *Co-Active coaching toolkit: Powerful questions.* learn.coactive.com/hubfs/2019 Toolkit/Co-Active-Coaching-Toolkit-POWERFUL QUESTIONS.pdf

[15] Elder, L. and Paul, R. (2019). *The art of asking essential questions*. Rowman & Littlefield.

[16] Garvin, D. A. & Margolis, J. D. (2015 January-February) The art of giving and receiving advice. *Harvard Business Review*, Reprint R1510D.

[17] Nora Beck Tan- unpublished research, NRC Associates focus group discussion on mentoring skill competencies of NRC Advisers.

[18] TED. (2020, February 10). *The secret to giving great feedback | TED, The Way We Work Series.* [Video]. YouTube. https://www.youtube.com/watch?v=wtl5UrrgU8c

[19] The Anne E. Casey Foundation. (2016, July 26). *Give Feedback with Situation-Behavior-Impact (SBI)* [Video]. YouTube. www.youtube.com/watch?v=-oRKr5xA9N0.

---

[20] Weitzel, S. R. (2000). *Feedback that works: How to build and deliver your message*. Center for Creative Leadership.

[21] The RSA. (2013, December 10). *Brené Brown on Empathy* [Video]. YouTube. www.youtube.com/watch?v=1Evwgu369Jw
Simon Sinek. (2020, August 11). *What empathy looks like | Simon Sinek* [Video]. YouTube. https://www.youtube.com/watch?v=tfWC9IsoGyQ&list=PLF5suFpzgMF3bd4csAw1wTD8XgqVbr86g&index=4&t=17s

Mentoring Guide #4: Navigating Common Challenges

Nora Beck Tan, Illumina Executive Coaching[*]

This fourth and final Guide in the series focuses on a few challenges commonly faced by Advisers.[1]
The emphasis is on helping new Advisers anticipate and successfully navigate these challenges.

I.   Introduction

The previous Guides in this series are sequential, moving from understanding your role as a mentor to preparing the foundation for a successful mentoring relationship to building skills for effective mentoring interactions. In this final guide, we focus on specific challenges that have emerged consistently in interviews with both new and seasoned Advisers of postdoctoral Associates.[2] They may arise at any point in the relationship. Navigating these challenges is no simple matter. There is no single "right way" to address any of them, they manifest differently in different relationships, and each has aspects that will challenge you both as an individual and as a mentor.

We highlight four areas:
- Accepting your responsibilities as a leader
- Managing yourself while leading others
- Finding the balance for each mentee
- Working through postdoctoral career transitions

By raising your awareness of these areas and sharing a few suggestions on each, we aim to help you avoid common pitfalls and anticipate aspects of advising that may require extra attention.

II.   Accepting Your Responsibilities as a Leader

One of the simplest ways to define a leader is as a person who has followers. To become an Adviser, someone must have elected to work with you and learn from you – to follow you. Accepting your leadership role and understanding its implications on your behavior is an important and sometimes challenging part of becoming an Adviser.

Leaders set direction. As an Adviser, you set the overarching direction and boundaries for your group's research program. Doing this well requires an understanding of the context within which the research will be done, including how it furthers the objectives, mission, and vision of the broader organization and agency. You will need to help Associates put their research in context, learn to shape their ideas appropriately within this context, understand where the boundaries lie and why, and ensure that their work is appropriately integrated with and complimentary to the work of other groups within your organization. Staying informed on the work that is done more broadly in your

---

[*] Nora@illuminaexecutive.com, 443-707-5613, www.illuminaexecutive.com

agency and sharing the insight and perspective you develop as a result is an important part of this aspect of leadership.

Leaders are also influential. As an Adviser, your words and actions will carry disproportionate weight. It is important not to lose sight of this. You are a role model for the Associates you are advising. They will look to you to understand what is—and is not—appropriate, and they will often emulate your behavior. Leaders must strive to be balanced, fair, and professional when commenting on agency policies, peers, colleagues, and the actions of your management.

Similarly, what you say to colleagues and scientific peers will strongly influence their opinion of your mentee. Complimentary comments from you on the talent, productivity, and work ethic of an Associate can help them build a good reputation and create opportunities for them. Conversely, less-than-positive comments made in a moment of frustration can do lasting damage to the reputation of an early-career researcher. When you find yourself frustrated or in need of advice, be mindful of your leadership responsibilities in choosing whom to speak with and what you say, especially when speaking with those who might influence your mentee's future opportunities.

It is not only a leader's words that influence others. If you arrive for a meeting feeling frustrated, rushed, or agitated, you will set a negative tone for the interaction. Your mentee may even assume your negative feelings are directed at them, or a result of something they have done. Leaders should make every effort to bring a positive mindset to every interaction with their followers. When those inevitable bad days arise, be transparent about the causes of your emotional state. If you share that you are agitated due a daycare issue, for example, your mentee is not likely to blame themselves and may even be empathetic.

Don't forget to consider diversity and inclusion as you develop your leadership skills. It's important to foster a work environment within your group that is welcoming and inclusive. Associates will come to your laboratory with different cultural backgrounds, native languages, and religious practices. Learning to pronounce unfamiliar names correctly and making every effort to accommodate cultural or religious practices, including holidays, can help foster a welcoming environment. Associates will also come to your laboratory with various family responsibilities and these can change during the course of their tenure. Your understanding and flexibility can help create an environment in which your mentees are empowered to balance personal and professional obligations in a healthy way. Be aware of the potential for Associates from underrepresented groups to feel isolated. Supporting an Associate's engagement in employee resource groups or offering to foster connections to others with similar backgrounds are examples of ways you might help an Associate feel welcome.

There are many, many excellent resources available that can help you better understand what a leader's role requires, and a few are cited in the References and Notes[3] section. Many new leaders and mentors find that increasing self-awareness—reflecting on their own preferences, strengths, and weaknesses—is a useful first step. It may be even more fruitful to ask people who know you well to share their honest perceptions of you and/or to supplement your reflections with self-assessment tools.[4] With respect to diversity and inclusion, you might start by learning about unconscious bias,[5] including the ways it can impact the advocacy practices so important to mentoring.[6] Formal training

and the support of a trusted mentor or leadership coach can also be very beneficial in helping you develop your leadership skills.

III.   Managing Your Workload While Advising Others

One challenge commonly cited by new Advisers[2] is sustaining their own productivity while mentoring others. As an Adviser, you are responsible not only for the work you do personally but also for supporting the work of your mentees. You may also have to manage a larger program that integrates the work you do personally with the work done by your group.

One important aspect of navigating this challenge involves time management, though with a twist. It's not just about managing your own time[7] but about doing so in a way that takes the needs of others into account. Part of this is simply recognizing that helping others is now part of "your" work. It requires a significant investment of your time and energy, which will typically reduce the amount of independent work you can produce. It is also involves planning ahead, a lot of proactive communication, and managing expectations.

Planning ahead is important because others are depending on you to get their work done. There will inevitably be some "crunch times" in your schedule, for example, when an important deadline looms, or you are about to leave for a vacation or a business trip. As an independent contributor, you may have chosen to put other projects on hold or perhaps work long hours for a few weeks in advance of a deadline. When others are depending on you, this approach is no longer realistic. Putting an Associate "on hold" for an extended period of time is not fair to them. You'll need to plan ahead instead, spreading out your own work more evenly and/or warning your mentee when your time and availability may be limited.

Sometimes you may need to depend on an advisee to meet your own deliverables. For example, you might need a summary of their recent results for a program review. Asking an Associate respectfully and well in advance when you need something from them empowers them to manage their own time effectively and will help them help you. It will also help you to avoid crisis situations or unpleasant surprises.

Frequent and proactive communication is crucial to navigating the ongoing challenge of managing your own workload once you become an Adviser. Be clear and honest about when you can deliver on requests others make of you. If an advisee knows that you will need two weeks to review and approve a study protocol, for example, they can plan accordingly. Keep your calendar up to date, too, and share it with your mentees so they can see when you have blocked off time for independent work as well as any upcoming meetings or vacations. Encourage your advisees to do the same, indicating times when they will be unavailable—and when they might need additional support. For example, a mentee may want extra time with you right before a conference paper submission deadline or an important presentation.

IV.   Finding the Balance for Each Individual

One of the most common challenges for new Advisers is to figure out the right level of support for each mentee. The amount of support wanted and needed will differ by individual, and even one person's requirements will vary by topic and over the course of your relationship. There is no "one right answer" to the question of how to best support a mentee. All you can do is try to learn what works best for each individual—and then accept that this will likely change as your mentee matures.

The challenges Advisers face in finding the balance often involve finding the right level of engagement with a particular mentee and/or finding the right level of guidance on research direction to provide. First, let's consider the level of engagement with your mentee.

Level of Engagement: From Micromanagement-through-Abandonment

What's the widest possible "level of engagement spectrum?" At one end would be micromanagement: engaging with your advisee too frequently, too prescriptively, and too tactically, which will inhibit the Associate's ability to learn and grow. At the other extreme is abandonment, when you engage with an advisee only infrequently and superficially. You leave them to struggle with obstacles on their own and deny them the opportunity to benefit from your wisdom and guidance. Somewhere in between the two extremes is an appropriate level of engagement for any individual.

In general, it's better to start off by engaging too frequently and then adjust the interval accordingly as the Associate progresses. For example, you might connect daily or a few times a week for the first month, then weekly or even twice a month for the next six months. Ask each mentee how often they prefer to meet; some may be comfortable moving to monthly meetings right away, while others may want to maintain regular weekly interactions indefinitely. Trust your own instincts as well. If you feel disconnected or suspect that an Associate is spending too much time "spinning their wheels" or chasing unproductive tangents, suggest connecting more frequently. Conversely, if your meetings begin to feel redundant or you spend most of your time simply congratulating your mentee on yet another well-reasoned plan, you can suggest less frequent interactions. Thoughtful questioning strategies[8] can help you understand how well things are going, too. For example, you might ask "What is clear, and what shall we spend more time on?" rather than "Is everything clear?" Or "How often should we be meeting?" rather than "Meeting once a month feels right, doesn't it?" In general, use open questions that encourage the Associate to express their needs more fully.

Associates will come to your group with different levels of confidence and competence in different areas. One Associate might be very confident and competent when designing experiments, moderately competent when communicating scientific work, and completely lacking in confidence when working through administrative processes within your organization. Resist the temptation to use a single approach when mentoring your advisees as they learn different skills in different areas.

If you are struggling to find the right balance in your interactions, you may find the principles of Situational Leadership to be useful.[9] When people learn any given skill, they move through several stages as they build the competence and commitment needed to become independent practitioners. As a mentor, you can adjust your style of engagement as your mentee learns, altering the balance of direction and encouragement you offer. As competence builds, the direction you offer can become

less tactical and prescriptive and more collaborative or challenge-oriented. To help your mentee persist in mastering a difficult skill, offer support and encouragement in areas where their confidence is low or shaky—again becoming less engaged as self-assurance grows.

Next, let's look at another important aspect of finding the right balance for each individual.

Directional Guidance: Balancing Exploration and Productivity

As a research mentor, you want to encourage exploration—but also foster productivity, which generally requires focus. Like levels of engagement, this can be thought of as a spectrum. We mentioned in Mentoring Guide #1[10] that the postdoctoral experience is often the first time an Associate gets a true taste of intellectual freedom. Identifying and exploring unexpected connections, new phenomena, and tangential research directions (whether independently or collaboratively) are all important parts of creative scientific endeavor, often the genesis of novel research ideas, and can greatly benefit an Associate's professional development. Research productivity is also critical to career success[8]—and inherently a challenge, given the Associate's brief tenure. Since exploration and focus are both so important, part of your role as an Adviser is to help your mentees find a balance between these two extremes. It may be tempting to try to maximize productivity, but that should not be the only goal.

As with most aspects of mentoring, there is no simple formula to be applied here. Encouraging exploration while simultaneously holding advisees accountable for their progress can be thought of as a tension to sustain, rather than as a problem to solve. Some experienced Advisers have developed their own guidelines to help new Associates maintain a sufficient level of focus.[11] One advises Associates to sustain at least 80% of their effort on their primary project continuously, while another suggests focusing exclusively on the primary project for at least six months. A third encourages mentees to add a single secondary project and then coaches them in choosing one that's worth pursuing. Of course, all of these guidelines must be applied within the context of good judgment. If an Associate you are advising struggles with focus, encouraging a second project may not be in their best interest. Conversely, an Associate with strong self-discipline may be able to manage the balance perfectly well on their own. The uncertainty inherent in all research endeavors is also a factor. If a hypothesis underpinning a mentee's primary research project is disproven early on, or critical resources become unexpectedly unavailable, exploration may become a mentee's primary focus temporarily.

No matter the circumstances, it is always important to monitor and sustain progress. We covered some of the best practices in earlier Guides: helping Associates develop a realistic picture of success at the outset of their research program,[12] setting goals and staying focused on them,[13] and keeping career advancement and interview timelines in sight.[8,10] This brings us to our final topic.

V.   Working Through the Career Transition

Helping Associates launch their career is a very important part of your role as an Adviser.[10] Navigating the transition as an Associate moves on from your group may be very challenging for both of you, in

particular because much of what happens is impossible to schedule and beyond your control. It can be difficult from a planning, time management, and self-management perspective.

As discussed in Mentoring Guide #1,[8] there are many ways Advisers can help their mentees as they search for their next position. You can help an Associate identify personal strengths and interests, raise their awareness of potential career paths, expand their professional network, and target their research program to a preferred career path. Helping an advisee actually find and transition to a suitable position is the final step.

Encourage your advisees to start seeking employment well ahead of the expected end of their tenure. Exactly how far ahead varies by academic discipline and the status of the job market, but 6-12 months ahead is frequently cited by experienced Advisers.[11] It's also important to communicate your understanding that finding their next position will take some time away from their research. That will help alleviate any concerns your mentee might have about prioritizing their job search and simultaneously make things a bit more difficult for you. If a great opportunity for your mentee comes along earlier than expected, the total output of your work together will very likely be reduced. Likewise, you may be personally disappointed if a particularly interesting or enjoyable collaboration is cut short. It can also be painful to see a mentee turn down a position that you believe to be a great opportunity for them (or accept one that you think is not). Accepting these conditions is part of being an Adviser and managing any anxiety it triggers for you may require extra attention to self-management.

There are a few practical things you can do to prepare yourself for an Associate's transition. One is recognizing the time you will need to invest in formal recommendations. Typically, this means writing letters of reference; it may also involve direct consultation and/or filling out custom questionnaires. It takes time to draft the core of a thoughtful, fair,[6] complimentary, and articulate letter that points out the strengths, accomplishments, praise-worthy traits, and successes of your mentee. It takes additional time to understand each individual position your mentee is applying for, then customize your letter to emphasize especially relevant accomplishments or traits. You can also add your thoughts on why your mentee is a good fit for this specific position and why they have the potential to succeed. You may need to write many such letters, especially if the targeted job market is particularly competitive (e.g., faculty positions) or if your mentee has a restricted search window (e.g., a limited geographic area). Doing this conscientiously is part of an Adviser's role.

Another practical approach to navigating this challenge is to engage proactively with your advisee to develop a transition strategy. This can help make the transition as smooth, amicable, and mutually beneficial as possible. If your mentee decides to leave early for a great opportunity, work together to prioritize the work to be completed before they go. If the Associate is agreeable, you might even discuss options to help with wrap up, such as slightly delaying their start date or asking for permission to spend some time on loose ends at the new job (e.g., finishing a paper). Receptivity to some wrap-up time is not uncommon, particularly if the Associate is leaving early to accommodate the new employer's wishes and the amount of wrap-up time requested is time-bound and reasonable.

If your mentee is leaving for another research position, you may also wish to discuss the possibility of future collaboration. When considering this, be mindful of the need for your mentee to make an independent name for themselves. Be careful not to inadvertently foster an unhealthy level of dependence or interfere with your mentee's pursuit of new directions.

It's also helpful for Advisers to understand the options that are available for an advisee facing a gap in employment after their NRC program. Assuming the Associate is productive and engaged in relevant, funded research, extending their appointment through the NRC or other agency programs may be a possibility.[14] They may also be eligible for short-term positions at affiliated institutions or within a collaborator's group. Since these opportunities are usually agency- and discipline-specific, other experienced Advisers within your organization or scientific community may be the best source of information, ideas, and advice.

VI.   A Note on Navigating Extraordinary Challenges

No matter how qualified and experienced you become as an Adviser, you may eventually run into a situation that mentoring cannot resolve. Harassment and incivility sometimes occur in even the best of workplaces. Stress, burnout, and mental health issues are of concern in graduate student and postdoctoral researcher populations [15] One Associate may arrive at your laboratory after a challenging graduate school experience; another might feel very isolated after moving alone to a new location and losing their local support system. Either may need help that you are not able to provide personally. Navigating these situations as an Adviser requires accepting that they are beyond your capabilities and often reaching out for help. Many agencies have internal groups to assist employees who are being treated unfairly, experiencing mental health challenges, or require other types of assistance. If you find yourself in circumstances where the support needed by an Associate goes beyond what you can offer, you might consult confidentially with a trusted supervisor, administrator, or human resources professional. If appropriate, you may seek out resources available within your agency and help your mentee access them.

VII.   Summary

In this Mentoring Guide, we focused on understanding and navigating challenges that are commonly encountered by Advisers. We discussed the Adviser's role as a leader, the associated responsibilities of setting direction with context and exercising your influence carefully, and mindfully and cited a few resources that will help you further develop your leadership skills. The challenge in managing your own time and productivity once you become an Adviser was also highlighted, and we shared tips like recalibrating your expectations, planning ahead, communicating proactively, and setting boundaries.

We also explored the common challenge of finding the right balance of support for each individual. We discussed striking a balance between a focus on productivity and a mentee's freedom to explore, suggesting techniques that help create accountability and approaches borrowed from experienced NRC Advisers. We then touched on adapting your level of engagement to meet a mentee's needs and adjusting it to account for growth.

Finally, we addressed navigating the career transition of an Associate. We revisited the Adviser's role in helping an Associate prepare for their next step and discussed specific transition issues. Tips shared included: anticipating the time spent on formal recommendations, accepting inherent uncertainty, understanding what options may exist to cover an employment gap, and partnering with your mentee to create a mutually beneficial transition strategy.

For a deeper dive into mentoring core skills, techniques, or perspectives, please see the companion document NRC Mentoring Guides: Resources for Self-Study.

Comments and feedback are welcome and may be sent to Nora Beck Tan via email at _nora@illuminaexecutive.com_.

ACKNOWLEDGMENTS

The author would like to thank Dr. Ray Gamble and Ms. Melanie Suydam of the National Academies for sponsoring these Mentoring Guides and Dr. Jeanita Pritchett of the National Institute of Standards and Technology (NIST) for sponsoring related work on mentoring. In addition, she would like to recognize the input and editorial efforts of the Review Board for this series of guides, Dr. Debra Yourick of the Walter Reed Army Institute of Research, Dr. Michael McPhaden of the NOAA Pacific Marine Environmental Laboratory, and Dr. Sangeet Khemlani of the Naval Research Laboratory.

REFERENCES AND NOTES

[1] Note: Throughout this document, the terms "postdoctoral researcher," "NRC Associate," "Research Associate," "Advisee," and "Mentee" will be used interchangeably to refer to the NRC Postdoctoral Research Associates. The terms "NRC Adviser," "Adviser," and "Mentor" will be used interchangeably to refer to advisers of NRC Postdoctoral Research Associates, who are also expected to be mentors to these individuals.

[2] Nora Beck Tan - unpublished research, perspectives of NRC Postdoctoral Advisers

[3] There are many, many excellent resources on developing leadership skills. In addition to exploring some of the materials cited here, you may want to search on your own, ask your mentors for suggestions, and check with the Learning & Development organization in your agency for opportunities and advice.

- Baldwin, D. & Grayson, C. (2011). *Influence: Gaining commitment, getting results.* John Wiley & Sons.
- Covey, S. R. (1989). *The seven habits of highly effective people: Restoring the character ethic*. Simon and Schuster.
- David, S. & Congleton, C. (2013, November). Emotional agility. *Harvard Business Review*, Reprint R1311L.
- Drucker, P. (2005, January). Managing oneself. *Harvard Business Review*. Reprint R0501K.
- Hill, L. A. & Lineback, K. (2011). *Being the boss: The 3 imperatives for becoming a great leader*. Harvard Business Review Press.

- Re:Work. (n.d.). *Guides: Practices, research and tools from Google to improve your people processes.* https://rework.withgoogle.com/guides/
  NOTE: Start with the Guide entitled *Identify what makes a great manager.*
- Stark, C. & Flores, L. (Hosts). (2017 - present) *Hacking your leadership* [Audio podcast] https://www.hackingyourleadership.com/podcast
- TEDGlobal. (2009, August 23). *Dan Pink: The puzzle of motivation | TED Talk*. [Video]. Ted.com. https://www.ted.com/talks/dan_pink_the_puzzle_of_motivation
-

[4] You may want to check with your agency's Learning & Development office to see if these or similar self-assessment tools are available at no cost to employees.

- 16 Personalities. (n.d.). *It's so incredible to be understood.* https://www.16personalities.com
- Gallup. (2021). *Find the CliftonStrengths assessment that's right for you.* https://www.gallup.com/cliftonstrengths/en/253868/popular-cliftonstrengths-assessment-products.aspx NOTE: There is a fee for the CliftonStrengths assessment.

[5] There are many, many excellent resources on implicit/unconscious bias. In addition to exploring some of the brief materials cited here, you may want to search on your own, ask your colleagues for suggestions, or look within in your agency for more.

- Berghoef, Kacie. (2019, June 21). *Implicit bias: What it means and how it affects behavior.* https://www.thoughtco.com/understanding-implicit-bias-4165634#

- Bernstein, A., Gallo, A. & Caufield, E. (Hosts). (2018-present). *Women at Work* [Audio podcast]. Harvard Business Review. https://hbr.org/2018/01/podcast-women-at-work
- Carver, K. A. & Livers, A. B. (2002, November). "Dear white boss…" *Harvard Business Review*. Reprint R0211E.
- Facilitate2motivate. *"Can you hear us now?" Black women in the workplace – Part 1: Racial inequities in the workplace.* [Video] https://facilitate2motivate.com
- Re:Work. (n.d.). *Guides: Raise awareness about unconscious bias.* https://rework.withgoogle.com/guides/unbiasing-raise-awareness/steps/introduction/
- Tannen, D. (1995, September-October). The power of talk: Who gets heard and why. *Harvard Business Review*. Reprint 95510.
- TEDx. (2016, August 30). *Are you biased? I am| Kristen Pressner | TEDxBasel*. [Video] YouTube. https://www.youtube.com/watch/Bq_xYSOZrgU
- TEDx. (2017, July 6). *White men: Time to discover your cultural blindspots | Michael Welp | TEDxBend*. [Video] YouTube. https://www.youtube.com/watch?v=rR5zDIjUrfk
- TEDx. (2017, September 18). *We all have implicit biases. So what can we do about it? | Dushaw Hockett | TEDx MidAtlanticSalon*. [Video] YouTube. https://www.youtube.com/watch?v=kKHSJHkPeLY

[6] The following articles address the topic of avoiding bias when recommending or advocating for a mentee.
- Behre, A. A. & Kim, S. (n.d.). *Here's how unconscious racial bias can creep into recommendation letters – and how you can avoid it*. The Muse. https://www.themuse.com/advice/avoid-racial-bias-reference-letters
- Commission on the Status of Women (n.d.). *Avoiding gender bias in reference writing*. The University of Arizona. https://csw.arizona.edu/sites/default/files/avoiding_gender_bias_in_letter_of_reference_writing.pdf

– Mayer, D. M. (2017, July 26). How not to advocate for a woman at work. *Harvard Business Review.* https://hbr.org/2017/07/how-not-to-advocate-for-a-woman-at-work

[7] These references may be of interest if you are challenged in managing your own personal time beyond any particular issues related to advising:

– Builder, M. (2018, October 17). *The ten best books on productivity, according to people who get things done.* New York Magazine. https://nymag.com/strategist/article/best-productivity-books.html

– Dierdorff, E. C. (2020, January 29). *Time management is about more than life hacks*. Harvard Business Review. https://hbr.org/2020/01/time-management-is-about-more-than-life-hacks

–

[8] Mentoring Guides for NRC Advisers – Mentoring Guide #3: Maintaining Progress – Goals, Mentoring Conversations & Feedback. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365029.pdf

[9] Blanchard, K., Zigarmi, P. & Zigarmi, D. (1985). *Leadership and the one-minute manager: Increasing leadership effectiveness through Situational Leadership®*. William Morrow.

[10] Mentoring Guides for NRC Advisers – Mentoring Guide #1: Understanding your Role as a Mentor. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365027.pdf

[11] Private communications with experienced NRC Advisers.

[12] Mentoring Guides for NRC Advisers – Mentoring Guide #2: Building the Foundation for a Successful Advising Relationship. See in particular: Section IV, Appendix B, Appendix D, and Figure 10. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365028.pdf

[13] Mentoring Guides for NRC Advisers – Mentoring Guide #3: Maintaining Progress – Goals, Mentoring Conversations & Feedback, Section II. https://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_365029.pdf

[14] Your agency's NRC Laboratory Program Representative may be able to help you understand your agency's policies and explore options.

[15] The following resources all concern stress and burnout in the context of postdoctoral research positions.

– Arnold, C. (2014, July 28). The stressed-out postdoc. *Science.* https://www.sciencemag.org/careers/2014/07/stressed-out-postdoc

– University of California Office of Student Affairs. (2016). *Promoting Student Mental Health Chapter 06: Supporting Graduate/Professional Students and Postdoctoral Scholars.* University of California. https://www.ucop.edu/student-mental-health-resources/_files/pdf/PSMH-guide.pdf

– Woolston, C. (2020, November 23). Postdocs under pressure: 'Can I even do this anymore?' *Nature.* https://www.nature.com/articles/d41586-020-03235-y

NRC Mentoring Guides: Resources for Self-Study

Selected companion resources to the Mentoring Guide Series for NRC Advisors.
Curated by Nora Beck Tan, Illumina Executive Coaching

Mentoring Core Skills

Listening

- Booklet: Hoppe, M. (2014). *Active listening: Improve your ability to listen and lead*. Center for Creative Leadership.

- Digital Article: Center for Creative Leadership. (2019, August 21). *Use active listening to coach others*. https://www.ccl.org/articles/leading-effectively-articles/coaching-others-use-active-listening-skills/

- Video: Cultivating Leadership. (2017, July 24). *Listening to learn* [Video]. YouTube. www.youtube.com/watch?v=Zrg_3KlAE6o

- Video: Parent Effectiveness. (2013, February 21). *Everybody loves Raymond uses active listening* [Video]. YouTube. www.youtube.com/watch?v=4VOubVB4CTU

- Video: E-Region Project. (2015, January 13). *Big bang active listening* [Video]. YouTube. www.youtube.com/watch?v=lqGAHCAxKD0

Questioning Techniques

- Book: Fadem, T.J. (2009). *The art of asking: Ask better questions, get better answers.* FT Press.

- Book: Paul, R. and Elder, L. (2016). *The thinker's guide to Socratic questioning: Based on critical thinking concepts and tools.* Rowman & Littlefield.

- Book: Elder, L. and Paul, R. (2019). *The art of asking essential questions*. Rowman & Littlefield.

- Downloadable Resource: Co-Active Training Institute. (2019). *Co-Active coaching toolkit: Powerful Questions.* learn.coactive.com/hubfs/2019 Toolkit/Co-Active-Coaching-Toolkit-POWERFUL QUESTIONS.pdf

Goals

- Digital Article: MindTools. (2020). *SMART goals: How to make your goals achievable.* https://www.mindtools.com/pages/article/smart-goals.htm

- Video: DecisionSkills. (2014, May 22). *SMART goals – quick overview*. YouTube [Video]. https://www.youtube.com/watch?v=1-SvuFIQjK8

Feedback

- Booklet: Weitzel, S. R. (2000). *Feedback that works: How to build and deliver your message*. Center for Creative Leadership.

- Video: The Anne E. Casey Foundation. (2016, July 26). *Give Feedback with Situation-Behavior-Impact (SBI)* [Video]. YouTube. www.youtube.com/watch?v=-oRKr5xA9N0.

- Video: TED. (2020, February 10). *The secret to giving great feedback | TED, The Way We Work Series.* [Video]. YouTube. https://www.youtube.com/watch?v=wtl5UrrgU8c

- Podcast: Stark, S. & Flores, L. (2019, August 1). *Thoughtful Thursdays: You have to earn the right to give critical feedback* [Audio]. Hacking your leadership. www.hackingyourleadership.com/podcast/episode/1bc4a32c/thoughtful-thursdays-you-have-to-earn-the-right-to-give-critical-feedback

Empathy

- Book (2017). *Empathy: HBR Emotional intelligence series*. Harvard Business Review.
- Video: The RSA. (2013, December 10). *Brené Brown on Empathy* [Video]. YouTube. www.youtube.com/watch?v=1Evwgu369Jw
- Video: ESPN. (2018, September 6). *Remembering Maurice Cheeks' incredible anthem gesture before issue was so polarized |OTL | ESPN* [Video]. YouTube. www.youtube.com/watch?v=MhB351Cp54g

Mentoring Techniques

- Book: Stanier, M.B. (2016). *The coaching habit: Say less, ask more & change the way you lead forever*. Box of Crayons Press.
- Book: Landsberg, M. (2002). *The tao of coaching.* Profile Press.
- Book: Blanchard, K., ZIgarmi, P. & Zigarmi, D. (1985,2013) *Leadership and the one-minute manager: Increasing effectiveness through situational leadership II.* HarperCollins Publishers.
- Book: Blanchard, K. & Diaz-Ortiz, C. (2017). *One minute mentoring: How to find and work with a mentor – and why you'll benefit from being one.* William Morrow.
- Book: Zachary, L. J. & Fischler, L. A. (2014) *Starting strong [A mentoring fable]: Strategies for success in the first 90 days*. Jossey-Bass.
- Book: (1997) *Adviser, teacher, role model, friend: On being a mentor to students in science and engineering.* National Academy Press.
- Article: Garvin, D. A. & Margolis, J. D. (2015 January-February) The art of giving and receiving advice. *Harvard Business Review*, Reprint R1510D.
- Article: Leonard, L. & Swap, W. (2004, September). Deep smarts. *Harvard Business Review*, Reprint R0409F.
- Article: Lee, A., Dennis, C. & Campbell, P. (2017) Nature's guide for mentors. *Nature,* **447,** 791–797. https://doi.org/10.1038/447791a
- Digital Article: Pain, E. (2012, February 3). Mentoring advice. *Science.* https://www.sciencemag.org/careers/2012/02/mentoring-advice
- Digital Article: Center for Creative Leadership. (2020, February 4). *How to have a coaching conversation.*https://www.ccl.org/articles/leading-effectively-articles/how-to-have-a-coaching-conversation/

Perspectives on Careers & Professional Development in R&D

- Book: Feibleman, P. J. (2011). *A PhD is not enough*. Basic Books.
- Book: Sinche, M. V. (2016). *Next gen PhD: A guide to careers in science*. Harvard University Press.
- Article: Younger, J. & Sanholtz, K. (1997, November/December). Helping R&D professionals build successful careers. *Research Technology Management*, 40(6), 23-28.
- Digital Article: Woolston, C. (2020, November 23). Postdocs under pressure: 'Can I even do this anymore?' *Nature.* https://www.nature.com/articles/d41586-020-03235-y

Leadership Skills for Mentors, including Personal Leadership

- Book: Hill, L. A. & Lineback, K. (2011). *Being the boss: The 3 imperatives for becoming a great leader*. Harvard Business Review Press.

- Book: Covey, S. R. (1989). *The seven habits of highly effective people: Restoring the character ethic*. Simon and Schuster.

- Booklet: Baldwin, D. & Grayson, C. (2011). *Influence: Gaining commitment, getting results.* John Wiley & Sons.

- Article: David, S. & Congleton, C. (2013, November). Emotional agility. *Harvard Business Review*, Reprint R1311L.

- Article: Drucker, P. (2005, January). Managing oneself. *Harvard Business Review*. Reprint R0501K.

- Digital Article: Re:Work. (n.d.). *Guides: Practices, research and tools from Google to improve your people processes.* https://rework.withgoogle.com/guides/

- Digital Article with Quiz: 16 Personalities. (n.d.). *It's so incredible to be understood.* https://www.16personalities.com

- Digital Article: Builder, M. (2018, October 17). *The ten best books on productivity, according to people who get things done.* New York Magazine. https://nymag.com/strategist/article/best-productivity-books.html

- Digital Article: Dierdorff, E. C. (2020, January 29). *Time management is about more than life hacks*. Harvard Business Review. https://hbr.org/2020/01/time-management-is-about-more-than-life-hacks

- Video: TEDGlobal. (2009, August 23). *Dan Pink: The puzzle of motivation | TED Talk*. [Video]. Ted.com. https://www.ted.com/talks/dan_pink_the_puzzle_of_motivation

- Podcast: Stark, C. & Flores, L. (Hosts). (2017 - present) *Hacking your leadership* [Audio podcast] https://www.hackingyourleadership.com/podcast

Diversity & Inclusion (Introductory)

- Article: Carver, K. A. & Livers, A. B. (2002, November). "Dear white boss…" *Harvard Business Review*. Reprint R0211E.

- Article: Tannen, D. (1995, September-October). The power of talk: Who gets heard and why. *Harvard Business Review*. Reprint 95510.

- Article: Mayer, D. M. (2017, July 26). How not to advocate for a woman at work. *Harvard Business Review.* https://hbr.org/2017/07/how-not-to-advocate-for-a-woman-at-work

- Digital Article: Berghoef, Kacie. (2019, June 21). *Implicit bias: What it means and how it affects behavior.* https://www.thoughtco.com/understanding-implicit-bias-4165634#

- Digital Article: Re:Work. (n.d.). *Guides: Raise awareness about unconscious bias.* https://rework.withgoogle.com/guides/unbiasing-raise-awareness/steps/introduction/

- Digital Article: Behre, A. A. & Kim, S. (n.d.). *Here's how unconscious racial bias can creep into recommendation letters – and how you can avoid it*. The Muse. https://www.themuse.com/advice/avoid-racial-bias-reference-letters

- Downloadable Resource: Commission on the Status of Women (n.d.). *Avoiding gender bias in reference writing*. The University of Arizona.

https://csw.arizona.edu/sites/default/files/avoiding_gender_bias_in_letter_of_reference_writing.pdf

- Video: TEDx. (2016, August 30). *Are you biased? I am| Kristen Pressner | TEDxBasel*. [Video] YouTube. https://www.youtube.com/watch/Bq_xYSOZrgU

- Video: TEDx. (2017, July 6). *White men: Time to discover your cultural blindspots | Michael Welp | TEDxBend*. [Video] YouTube. https://www.youtube.com/watch?v=rR5zDIjUrfk

- Video: TEDx. (2017, September 18). *We all have implicit biases. So what can we do about it? | Dushaw Hockett | TEDx MidAtlanticSalon*. [Video] YouTube. https://www.youtube.com/watch?v=kKHSJHkPeLY

- Video: Facilitate2motivate. *"Can you hear us now?" Black women in the workplace – Part 1: Racial inequities in the workplace.* [Video] https://facilitate2motivate.com

- Podcast: Bernstein, A., Gallo, A. & Caufield, E. (Hosts). (2018-present). *Women at Work* [Audio podcast]. Harvard Business Review. https://hbr.org/2018/01/podcast-women-at-work

National Resource Council Program Resources

- Digital Handbook: The National Academies of Sciences, Engineering, and Medicine. (2020). *Research Associateship Programs: Policies, Practices and Procedures.*