Yearly Planning Meetings: Individualized Development Plans Aren't Just More Paperwork

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The National Institutes of Health (NIH) encourages trainees to make Individualized Development Plans to help them prepare for academic and nonacademic careers. We describe our approach to building an Individualized Development Plan, the reasons we find them useful and empowering for both PIs and trainees, and resources to help other labs implement them constructively.

In the current research climate, there are too many trainees for very few academic positions, and ignoring this fact may lead to many missed opportunities to productively shape the training experience (Polka, 2014a, 2014b; NIH, 2012; National Academy of Science, 2014; Sauermann and Roach, 2012; Bourne, 2013). Having a career development plan in place will help trainees to prepare themselves for fulfilling careers both within and outside academia. In our lab, we have been making career development plans for all trainees, including students, postdocs, and staff, for the last 7 years; we all enjoy the process and see it as valuable. We see the new requirement from the National Institutes of Health (2014a) as an opportunity to discuss how to mentor trainees and provide leadership skills that positively influence lab culture.

The Goals

Every year, we have a one-on-one meeting between the PI and each trainee to accomplish the following:

1. Motivate people by celebrating their accomplishments
2. Set short-term and long-term research and career goals
3. Help people make rapid progress by prioritizing projects and identifying barriers
4. Clarify and solidify relationships by giving honest constructive criticism
5. Clarify expectations in both directions and address any disagreements

In the process, we generate documents that are consistent with the requirements for an individualized development plan (IDP)—a defined career goal and steps to attain it. It's worth noting that we have never called the meetings or the resulting documents an IDP; giving it an acronym makes it feel uncomfortably bureaucratic to us. We just call them yearly planning meetings.

Conducting yearly planning meetings helps the lab run smoothly. People are excited about their projects and feel supported in meeting their goals. The meetings also model a way to give constructive feedback and resolve conflicts, which has far-reaching benefits in the lab. In Figure 1 we describe our guidelines for giving constructive criticism in detail.

The Process

Our yearly planning meetings take about an hour and are organized around two very simple worksheets (blank and completed examples are available in the Supplemental Information, available online). But here's the key: the worksheets are not the point. They help to organize the conversation by allowing people to gather their thoughts beforehand, remember what to say during the meeting, and have a record of what was discussed. The point is to have a real conversation, not to check boxes to satisfy the NIH.

Before the meeting, both the PI and the trainee fill out the Goals and Planning Worksheet; this gives both parties an opportunity to think through all of the categories on their own so that together they can be complete, and identify any discrepancies. During the meeting, the PI and the trainee go through the Goals and Planning Worksheet together and then jointly fill out the Calendar. The goal is to have a rough and flexible road map for the year and to come to a reasonable estimate for how long things will take. The major benefit of filling out the calendar together is that both parties agree on the basic plan. At the end of the meeting, the PI and the trainee will have two amended copies of the Goals and Planning Worksheet and one filled-out version of the Calendar. All completed worksheets are given to the trainee at the end to copy or scan and return right away. Everything is then totally transparent, because neither has had a chance to edit a sheet privately. It also allows the trainee to leave with something tangible. Both trainee and PI keep the full set of completed worksheets.

Before the Meeting: Tips for Trainees

Before the meeting, think carefully about your future and not just your next
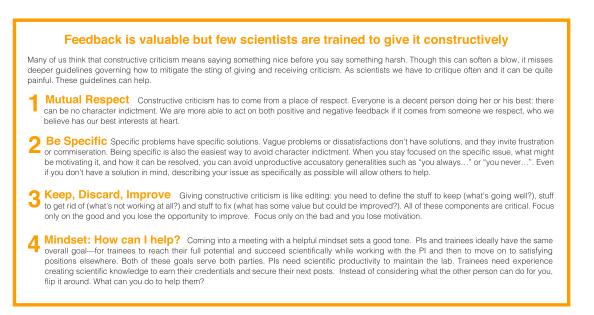
Feedback is valuable but few scientists are trained to give it constructively

Many of us think that constructive criticism means saying something nice before you say something harsh. Though this can soften a blow, it misses deeper guidelines governing how to mitigate the sting of giving and receiving criticism. As scientists we have to critique often and it can be quite painful. These guidelines can help.

1 **Mutual Respect**   Constructive criticism has to come from a place of respect. Everyone is a decent person doing her or his best: there can be no character indictment. We are more able to act on both positive and negative feedback if it comes from someone we respect, who we believe has our best interests at heart.

2 **Be Specific** Specific problems have specific solutions. Vague problems or dissatisfactions don't have solutions, and they invite frustration or commiseration. Being specific is also the easiest way to avoid character indictment. When you stay focused on the specific issue, what might be motivating it, and how it can be resolved, you can avoid unproductive accusatory generalities such as "you always…" or "you never…". Even if you don't have a solution in mind, describing your issue as specifically as possible will allow others to help.

3 **Keep, Discard, Improve**   Giving constructive criticism is like editing: you need to define the stuff to keep (what's going well?), stuff to get rid of (what's not working at all?) and stuff to fix (what has some value but could be improved?). All of these components are critical. Focus only on the good and you lose the opportunity to improve. Focus only on the bad and you lose motivation.

4 **Mindset: How can I help?**   Coming into a meeting with a helpful mindset sets a good tone. PIs and trainees ideally have the same overall goal—for trainees to reach their full potential and succeed scientifically while working with the PI and then to move on to satisfying positions elsewhere. Both of these goals serve both parties. PIs need scientific productivity to maintain the lab. Trainees need experience creating scientific knowledge to earn their credentials and secure their next posts. Instead of considering what the other person can do for you, flip it around. What can you do to help them?

Figure 1. Guidelines for Delivering and Receiving Critical Feedback

experiment. These meetings are an opportunity to articulate your long-term goals and then make a plan to attain them, in terms of both your research and developing necessary skills. It can be helpful to seek feedback from other people in the lab about your strengths and areas that you could improve upon, and to brainstorm about specific steps to take to realize your goals. The more specific your plan before the meeting, the more productive the meeting will be. Trainees may not have yet decided on their long-term career goals; in this case the goal of the meeting can be to explore different options in a concrete way. Using online tools for exploring careers (NIH, 2014b), identifying a mentor in your field of interest, attending career seminars, or engaging a career coach (Kamens, 2015) can all be good places to start.

Before the Meeting: Tips for PIs

Before the meeting, think about your own goals for your trainee, as well as their goals for themselves. Think about the personal and professional circumstances of your trainee and how you can help their progress and motivation to reach their goals. For example, is someone in the midst of a technically challenging set of experiments? Do they need additional expertise? Can you help them

find a collaborator or other resources to fill the gap? Do they need encouragement to persist or permission to move on? Or, if someone is considering a job in industry or teaching, do they have all the information they need to decide if this career direction is a good fit? Are they concerned about your opinion? For example, might they fear that if they admit they're not aiming for an academic career you will reduce your support for them? This is also an opportunity to address whether the trainee's goals are realistic. Do they have the qualifications that they need to succeed in their chosen career? Is their plan to achieve those qualifications realistic, or is it time to adjust their goals? Having a meeting every year allows both the PI and trainee to discuss both goals and the paths to attain them over time; this provides multiple opportunities to develop and execute a plan to attain a satisfying career. Remember that everyone needs different things at different times; tailoring your advice and help to their particular circumstances is useful and appreciated.

Filling Out the Goals and Planning Worksheet

Here are explanations of what should go in each category of the Goals and Plan-

ning Worksheet. Be brief. This is a bullet point list to guide your conversation and serve as a reminder later.

What to Include: Accomplishments
Most scientists are terrible perfectionists and never give themselves enough credit for the things they've achieved. Remember to be broad and generous in what you consider an accomplishment. Don't just include things that would go on a CV, such as publishing papers or giving talks at a conferences. Include progress toward goals (e.g., drafting or submitting a paper, getting a tough experiment to work), important exams (e.g., qualifying exams, GREs), applications (e.g., for jobs, fellowships, or graduate school), development of transferrable skills (e.g., learning a new technique, organizing a workshop, reviewing a paper or grant), and milestones (e.g., choosing a postdoc lab, having a thesis committee meeting, organizing an industry internship). Remember that science happens in the context of someone's whole life—you can acknowledge things outside the lab that impact work (e.g., family commitments, moving from a foreign country and getting settled, choosing a thesis lab).

What to Include: Research Goals
Focus on major milestones for getting projects accomplished, rather than nitty gritty weekly or daily goals. Goals on the

1–3 month timescale are about right, but the precise timing isn't so important, since we all know how unpredictable research can be. The point is to prioritize research goals and make an initial estimate for how long they will take so that obstacles can be clearly identified through the year. For this to work, your estimates have to be realistic, both in terms of how long things take and how many things you can accomplish during the year. If there too many goals or the estimates are unrealistic, the plan will become a recipe for disappointment. Also, consider the goals from the year before and whether they've been accomplished. If yes, fantastic! They should be listed in the accomplishments section. If not, why not? Should those goals be restated for the upcoming year, or should the project change direction or be jettisoned?

What to Include: Professional/ Personal Goals

First, this section is for first articulating your long-term career goal. Second, it is for articulating which professional skills you'd like to develop to attain that goal. Examples include getting more teaching experience, networking with people outside academia, or improving communication skills. If your career goal is still unclear, you can use this section to think about how to build on current strengths and improve on weaknesses.

What to Include: Feedback

This section is for constructive criticism about how goals are being met, both at the level of the individual and at the level of the lab. Articulate appreciation for things that are going well and specific issues that could be improved. For trainees, think about how the lab and your interactions with your PI are working for you. For example, are you meeting too little or too much with your PI? Are you worried about the trajectory of your project or someone else's in the lab or in the field? Do you have the balance of projects and free time that you're looking for? If there are general issues in the lab, even if they don't pertain to you in particular, it can be helpful to let the PI know. Remember, you're not tattling, you're pointing out conflicts so that they can be resolved. For PIs, articulate the trainee's strengths and areas where they could improve. Ideally these should be related to their long-term

goals; it is most useful for them to build on relevant strengths and improve on relevant skills. Make sure you say thank you to your trainees for specific things (e.g., getting slides ready for your big talk at the last minute, bringing a new technique to the lab, mentoring a rotation student) (Riordan, 2013). It would be a disaster if you only put negative things in this section.

Tips on Conducting the Meeting

It Is Critical for the Trainee to Lead the Conversation

This simply means that the trainee shares their content first. The PI can pipe in, but must be careful not to interrupt. The conversation proceeds section by section. When the trainee is finished, the PI may add any additional comments, or summarize the discussion. If the PI shares their content first, the whole meeting will have a tone of the trainee being assessed. Allowing the trainee to lead the meeting gives them a sense of ownership over their goals.

Work from Printed Copies of the Worksheet during the Meeting

Having an iPad or laptop screen between you will keep you from making eye contact, and for this meeting to succeed, having a good interaction is more important than taking tidy notes! Electronic copies are also less transparent, because you can alter them during the meeting. Printed copies can and should be annotated by both people during the meeting and will show everything that the PI and trainee recorded individually.

Starting with Accomplishments Helps to Set a Positive Tone

Pausing to reflect on accomplishments from the previous year together helps people feel appreciated and competent and motivates everyone to accomplish in the next year.

The PI's Responsibility Is to Make Sure that Everything Has Actionable Outcomes

Trainees may bring up issues that they need help solving. PIs can offer lots of different types of help. For example, they can connect trainees to people with needed expertise, either inside or outside of the lab. They can offer funding for conferences, workshops, or courses. They can offer more or less oversight, or

an extra set of hands for a tough experiment. Finally, PIs have the authority and responsibility to resolve interpersonal conflicts.

Feedback Comes Last in the Meeting, and the PI Receives Feedback from the Trainee First

The PI is in the power position; modeling how to productively seek and receive feedback helps the trainee to give and receive feedback themselves. Remember that it's hard to tell people negative things! It's a real emotional risk—it would be much easier to just say everything is fine. Try to see critical feedback as an opportunity to improve. You don't have to incorporate all suggestions immediately. Have some phrases ready in case you're faced with a critique you don't know how to respond to (e.g., "Thanks for letting me know. I'll definitely think about that more.").

Advantages for PIs

Motivated Individuals Make a Productive Lab

When you engage in this process with your trainees, they will be motivated and empowered to pursue their work. Moreover, the benefits extend to the lab as a whole. You've taken time to connect people with relevant expertise and resolve potential conflicts. Think of it like yearly preventative maintenance.

A Way to Check In on Progress through the Year

Discrepancies between the calendar and actual progress should trigger one-on-one meetings. This happens all the time. Things get delayed for all kinds of reasons. The calendar helps to frame these conversations and make them specific. For example, "We thought that by April you'd be on to part X of your project, but that hasn't happened yet. Let's chat about why—maybe we underestimated, or another priority has come up. But if there's an obstacle, let's figure out what it is."

Paying it Forward

Every scientist owes something to a fantastic mentor. Spending time with your trainees, focused on how you can help them reach their goals, can be immensely rewarding and is a way to repay your own mentors (Murray, 2011).

Advantages for Trainees

Strengths and Accomplishments Are Formally Acknowledged

This happens fairly rarely in the critical culture of science, particularly for trainees, and can be a huge confidence booster.

Concrete Goals Are Motivating

Reaffirming research priorities can relieve pressure and provide clear ways forward when you're juggling many projects.

Personal Goals Are Formally Discussed

This is important in the current climate, in which academic positions are scarce and trainees are often looking for opportunities in other sectors. An honest conversation with your PI can help dispel anxiety and formulate a tractable training plan to help you secure your next post.

Personal/Interpersonal Issues Can Be Discussed and Ironed Out

This meeting provides the opportunity to give feedback to your PI, as well as to discuss any tensions that may make life in the lab less than optimal. Remember, your PI may not be aware of issues with the lab atmosphere, but finding solutions to problems is possible and can make a huge difference to everyone's happiness and productivity.

Research Expectations and Priorities Are Clarified

This enables both parties to be on the same page in terms of priorities and timelines for the coming year.

Conclusion

We hope that this new requirement for IDPs inspires real conversations between trainees and PIs. It undoubtedly will look different in every lab. We hope these guidelines are a useful starting point to develop a concrete, rewarding process for you.

SUPPLEMENTAL INFORMATION

Supplemental Information includes blank and completed examples of the Goals and Planning Worksheet and can be found with this article online at http://dx.doi.org/10.1016/j.molcel.2015.04.025.

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GOALS and PLANNING

Accomplishments (from previous timeframe)

Research Goals (for upcoming timeframe)

Professional & Personal Goals (for upcoming timeframe)

Feedback

GOALS and PLANNING

January

February

March

April

May

June

July

August

September

October

November

December

GOALS and PLANNING
FROM JANE

Accomplishments (from previous timeframe)

Published paper
Drafted main paper including new experiments
Genome editing experiment in progress
Wrote NSF research plan; funded!
Followup transgenics in progress
Tried CRISPRi - need to troubleshoot
CSH poster
Fly meeting abstract submitted

Supervised George - expt in evolution paper
Supervised Ringo - sufficiency experiment
Supervised Paul - cofactor screen + follow up
Talks at recruitment and retreat
Organized group meeting and journal club
Scheduled DAC #3

From Angela - expts on defining regulators

Research Goals (for upcoming timeframe)

Continue rescue experiment w/ genome editing
Measure followup constructs
cis/trans experiments for bidirectionality project
} high priority

Continue to support CRISPRi
Followup on cofactor screen
} low priority

From Angela -

· Think about kinetic synergy angle for second project

· Incorporate some followup in cell culture/bioinformatics

Professional & Personal Goals (for upcoming timeframe)

Apply for communication award
Submit main paper (think about where)
DAC #3
Present at a national meeting
Outline cofactor screen project
Start thinking about postdoc labs
Department talk?
Graduate late 2016

From Angela -

· If undergraduate-focused teaching + research is goal, think about system cost in postdoc lab

· Contact info for colleagues who have focused on undergraduate education.

Feedback   TO ANGELA

New system has really helped with communication with you and others in lab
As always, you provide excellent support both scientifically and personally and
    help us develop as well-rounded scientists! ☺
Writing the NSF grant was a great experience! 3-person team writing is a
    good template for the future.
We've gotten better at setting appropriate expectations for rotation students.
Lack of clear timetables on paper drafts have been a source of frustration
    for a couple lab members
I've mentored 7 people in 3 years and often feel like the only person with
    rotation projects in place.

GOALS and PLANNING

FROM ANGELA

Jane Smith 2015

Accomplishments (from previous timeframe)

✓ Helped to plan and write NSF grant.
✓ Published paper!
  Mentored George, Ringo and Paul
✓ Organized and executed Genetics bootcamp course
✓ Executed all CRISPRi cloning, got back transgenic flies
✓ Finished data collection for all synthetic enhancers, have found the narrative for the paper
✓ Half-way done with identifying all the regulators for 2nd enhancer project

Poster @ CSHL
Poster @ Fly Meeting

Grad program recruitment & retreat
DAC Meetings
Took over organizing journal club.

Research Goals (for upcoming timeframe)

✓ For synthetic enhancer paper, need final piece of data on transgenic rescue
✓ For second enhancer project, finish identifying all regulators, consider their functional role
  Transcription factor bifunctionality project, complete cis and trans experiments outlined in the grant
  [Revisit the cell culture and biochemistry experiments suggested by your committee]

→ Not super interested in this, haven't taken any practical steps yet.

longer term, think about coordinating this project with John.

Professional & Personal Goals (for upcoming timeframe)

✓ Work from paper drafts for two manuscripts above
✓ Begin thinking of next steps at end of 2015
✓ Presentation at conference?

iBio presentation
DAC #3
Departmental talk
Graduate 2016 - interviews for postdocs late 2015/early 2016.

☐ Aiming for research & teaching at undergrad institution

submit #1 (eLife, PLoS Bio, MSB, or PLoS Genetics)

Feedback

STRENGTHS - Science is coming along at a good pace - you may wrap up 3 separate papers before graduating. Such excellent communication skills (with me and everyone else in lab). Really appreciate how you keep things running and take the initiative to get things done (while I was on maternity leave, and since getting back). Writing the grant and the paper was fun for me, largely because it's fun to work together. Spectacular mentoring and teaching skills. Will be looking to you and John to help with the transition to a new set of people after the big turnover this year because of graduation and new jobs for multiple people.

AREAS FOR MORE FOCUS - You may need to triage some experimental directions if your goal is to graduate in 2016. It would be helpful to diversify your experiments (you're doing a lot of molecular biology and imaging). It's also time to start preparing for next steps (what can I do to help?).

FEEDBACK FOR ANGELA (from Jane)

- Writing the grant was a good experience
  - helped with writing skills
  - good opportunity to think about future directions

- I've gotten better at setting expectations for rotation students.

- There's a lack of clear time tables when writing papers. It's frustrating when the PI is the bottleneck. Maybe let people know what order they are in line if lots of people are in the queue for PI attention?

- Jane's done too much rotation student mentoring recently — she really needs a break.

GOALS and PLANNING

Jane Smith 2015

Name & date

January — GRANT CONSTRUCT CLONING —

February — REDO COMPUTATIONAL ANALYSIS

March FLY MEETING — — poster, look @ postdoc labs
DAC

April SUBMIT PAPER #1 ?

May

June SEND IN REVISION OF RO1

July DATA COLLECTION ON TF CONSTRUCTS

August

September

DAC ?

October SUBMIT PAPER REVISION
DECIDE WHERE TO APPLY FOR POSTDOCS
OUTLINE THESIS.

November

December