

Individual Development Plan (IDP) for Biological Sciences PhD Students at Vanderbilt University

An Individual Development Plan (IDP) is a planning tool designed to help PhD students identify annual progress, professional development needs, and career objectives. The IDP also serves as a valuable communication tool between PhD students and their research advisor.

Goals of the IDP

An annual IDP is one component of a broader professional development strategy and mentoring program. Specifically, it helps PhD students:

- Identify progress in training and document accomplishments to date
- Identify short-term needs for improving performance
- Set goals for the upcoming year, including discussing how to spend time
- Define ways to develop specific skills and experience needed to complete research training and prepare for long-term career goals

Benefits of the IDP

Identifying short-term goals will give trainees a clearer sense of expectations and help identify milestones for achieving objectives. The IDP can also jumpstart long-term career planning and provide a tool for structuring conversations between mentors and trainees.

Overview of the IDP Process

The development, implementation, and revision of the IDP require a series of steps to be conducted by a trainee, her or his research mentor, and the thesis committee. These steps are an interactive effort, *beginning with the trainee*. 1) The first IDP will be completed, signed, and submitted no later than May 31 of the first year. After joining a lab in April, the student should complete the IDP form and discuss responses with the mentor. Both the student and research mentor will sign the IDP and submit it to the Graduate Program Manager. Signature of the committee chairperson is not required. 2) Following the first year, it is the intent of the Department of Biological Sciences to incorporate the IDP into discussions of student progress, development, and goals at the annual committee meeting. In preparation, the student is expected to complete the IDP and discuss it with the research mentor before sending the completed IDP to the committee members one week prior to the scheduled meeting. For second year students, the IDP will be discussed at the Pre-meeting for the qualifying exam. In subsequent years, this discussion will occur at the annual committee meeting. The IDP must be signed by the student, mentor, and the committee chair and submitted to the Graduate Program Manager.

Process	For Trainee	For Mentor and Committee
Review expectations for training	Review general expectations and responsibilities for your stage of training (see pages at the end of this document)	Identify additional expectations you have for the trainee that aren't listed in the general expectations
Part 1: Evaluate progress and skills	Evaluate your progress this year; assess your skills as they relate to seven core competency areas for research scientists	
Part 2: Set goals	Set specific goals for your research and professional development for the next year	
Part 3: Implement IDP	Discuss your IDP with your mentor; implement IDP and periodically review your progress with your mentor.	Review the IDP with the trainee and provide feedback; follow the review schedule required by the department

Acknowledgments: This IDP is adapted from resources developed by ScienceCareers, Scripps Research Institute, and the National Postdoctoral Association

Individual Development Plan (IDP)

A. Information/Signatures

Name of predoctoral student: _____

Year in predoctoral training: _____

Predocotrual trainee signature: _____ Date: _____

PI name: _____

PI signature: _____ Date: _____

Committee Chair name: _____

Committee Chair signature: _____ Date: _____

B. Annual Progress Report

1. What were your main goals for the past year?

2. Which goals did you meet? If you did not meet a goal, why not?

3. List all major accomplishments this year in career development (e.g. presentations, publications, teaching, committees, course work, etc.). Include mentoring of graduate or undergraduate students in the laboratory.

4. Describe your level of satisfaction with your career development in the past year using a scale of 1-5 with 1 being highly satisfied. Provide a rationale for your choice.
- 1 – Highly satisfied
 - 2 – Somewhat satisfied
 - 3 – Neither satisfied nor dissatisfied
 - 4 – Somewhat dissatisfied
 - 5 – Highly dissatisfied

C. Self-Assessment of Skills

Using the table on Page 4, reflect on your level of development in seven competency areas important for success in research: 1) Scientific Knowledge; 2) Research Skills; 3) Communication; 4) Professionalism; 5) Management and Leadership Skills; 6) Responsible Conduct of Research; 7) Career Advancement.

For each competency area, put an “x” in the column that most accurately describes your current level of expertise. Mark only one column per competency.

Always consider your career stage when assessing your competencies. Avoid comparing yourself to colleagues who are significantly more junior or senior than you.

For example, as a second year student, you may have a broad based knowledge of science that is appropriate to your career stage, but seemingly inadequate compared to a student who is about to defend his or her thesis. In this case, “appropriate for career stage”, not “needs development”, is the best choice.

Ask your research mentor to review your answers with you.

Pay close attention to the skills for which you and/or your mentor answered, “No basis to evaluate” or “Needs development.” Are these skills you need to hone for your anticipated career path? Similarly, review skills that you identify as “strengths.” You may wish to consider career paths that capitalize on these skills.

Core Competencies	No basis to evaluate	Needs development	Appropriate to career stage	Strength
Scientific Knowledge				
Broad based knowledge of science				
Deep knowledge of specific research area				
Critical evaluation of scientific literature				
Research Skills				
Technical skills related to research area				
Experimental design				
Statistical analysis				
Interpretation of data				
Creativity/innovative thinking				
Navigating the peer review process				
Communication				
Basic writing and editing				
Writing scientific publications				
Writing grant proposals				
Writing for nonscientists				
Speaking clearly and effectively				
Formulating and asking sound questions				
Presenting research to scientists				
Presenting to nonscientists				
Teaching in a classroom setting				
Training and mentoring individuals				
Seeking advice from advisors and mentors				
Negotiating difficult conversations				
Professionalism				
Demonstrating workplace etiquette				
Complying with rules and regulations				
Upholding commitments and meeting deadlines				
Maintaining positive relationships with colleagues				
Contributing to discipline (e.g. professional society member)				
Contributing to institution (e.g. committee participation)				
Management and Leadership Skills				
Providing instruction and guidance				
Providing constructive feedback				
Dealing with conflict				
Planning and organizing projects				
Time management				
Managing research resources responsibly				
Leading and motivating others				
Creating vision and goals				
Serving as a role model				
Responsible Conduct of Research				
Careful recordkeeping practices				
Understanding of data ownership/sharing issues				
Demonstrating responsible authorship/publication practices				
Demonstrating responsible conduct in human/animal research				
Able to identify and address research misconduct				
Able to identify and manage conflict of interest				
Career Advancement				
Creating and maintaining a professional network				
Identifying career options				
Tracking professional development and accomplishments (e.g. writing and maintaining a CV or résumé)				
Interviewing				

Adapted from ScienceCareers MyIDP, which is based on the National Postdoctoral Association's Core Competencies for Postdoctoral Scholars

D. Goals for the Upcoming Year

1. In the upcoming year, what:

- a.** Publications do you plan to submit?

- b.** Meetings, conferences, and workshops do you plan to attend?

- c.** Fellowships or other funding applications do you plan to submit?

- d.** Collaborations do you plan to establish?

- e.** Other professional training or activities do you plan to participate in (e.g. teaching, university service, courses, internships, etc.)?

2. Career goals

- a.** Approximately when do you hope to finish your predoctoral training?

- b.** If you plan to finish within 12-18 months, estimate when you will begin a job or postdoctoral search.

- c.** What is your “Next Step” career goal (e.g. postdoctoral training, research job, science policy)?

- d.** What is your long-term career goal? (*ScienceCareers* MyIDP can help you evaluate your options in light of your interests and skills.)

- e.** What further training is required before it is appropriate to start a career search?

3. How can your PI help you achieve your goals for the upcoming year? What do you need from your PI?

4. [Question for Mentor to discuss with Student] How can I, as Mentor, assist the student to develop and achieve his or her specific career development goals for the upcoming year?

Long-Term Goal Setting (Optional)

This section of the IDP is optional. It will be useful for trainees who seek additional structure and strategies for long-term career planning. We encourage trainees to discuss these goals with their research mentor; the BRET Office of Career Development is also available for confidential career advising appointments.

For each of the competencies evaluated in Part D (Self-Assessment), put an asterisk next to those items marked “needs development” or “no basis to evaluate” which are also critical for your long-term career development (i.e. beyond your graduate and/or postdoctoral training). Then, use the table below to set S.M.A.R.T. goals to develop your skills in these areas. S.M.A.R.T. stands for:

S = Specific M = Measurable A = Action-oriented R = Realistic T = Time-bound

Some examples are provided in italics. Add as many rows as needed to address the items with an asterisk. Remember, though, that it may not be realistic to work on every goal at once! Prioritize the most important goals work on them first. Adjust the timelines to avoid burnout.

Competency	Specific plan for improvement that is action-oriented and realistic	How will you measure success?	Timeline (could be a self-imposed deadline, or an event like an upcoming conference)
<i>Seeking advice from advisors & mentors</i>	<i>Ask my PI and collaborator to meet monthly to discuss project progress; schedule meeting times and locations for next 6 months</i>	<i>We meet at least 5 times and develop a concrete plan to publish our project results</i>	<i>Schedule meeting times by the end of next week; develop publication plan by end of semester</i>
<i>Identifying career options</i>	<i>Attend monthly PhD Career Connections seminars this academic year</i>	<i>Attend 80% of seminars; Network with speakers; for those whose career interests me, ask them for contact info and follow up</i>	<i>By the end of the academic year</i>

Graduate Training Year 1: Trainee Expectations & Responsibilities

The first year of graduate school is designed to help students develop a solid foundation in biomedical science, learn to glean information from the primary research literature, and become acquainted with the Vanderbilt research environment. As your scientific interests crystallize you will choose a PhD-granting program and a laboratory in which to conduct thesis research.

General

- Do I know how to evaluate prospective research mentors and PhD programs?
- Am I working hard enough to impress prospective research mentors as a dedicated student who will be committed to their thesis research project?

Scientific Knowledge, Research Skills, and Responsible Conduct of Research

- Am I spending enough time and effort on my coursework to become literate in graduate level biomedical sciences?
- Am I spending enough time and effort in my lab rotations to make an informed decision about choosing a research area and a research mentor?
- Do I understand how my rotation project fits into the “big picture” of what my rotation lab is studying?
- Can I design an experiment that would generate a conclusive answer from the results?
- Can I execute an experiment and record the results in a form that could be published?
- Can I effectively read a primary research paper to understand the authors’ goals, results, and interpretations?
- How do I know when to trust what I read in the literature or hear in a seminar?
- Have I identified areas of research that interest me most?

Communication

- Can I communicate my research goals and results effectively in an oral presentation to my colleagues?
- Have I had an open discussion with prospective research mentors about their expectations of PhD students?
- Do I view email to professors and answers to homework and test questions as professional writing samples, always using appropriate grammar and correct spelling?

Professionalism and Management and Leadership Skills

- Do I understand the standards of professional scientific conduct and am I committed to upholding them?
- Am I forming appropriate support relationships with mentors, peers, and administrative staff?
- Do I understand how research is funded and expectations for sharing the results of grant-funded research?
- Do I understand how research training is funded and expectations of students funded by institutional training grants?
- Do I follow through on tasks I commit to completing?
- Do I attend required courses and complete assignments on time?
- Do I balance my coursework and lab rotations adequately?
- Am I a good lab citizen, aware of how my actions impact others (e.g. taking steps to replenish reagents and supplies so they are available for others)?

Career Advancement

- Do I understand the format of a CV and biosketch?
- Have I created my CV so it can be updated continuously?
- Have I identified the career and professional development resources available to me at Vanderbilt?

Graduate Training Year 2: Trainee Expectations & Responsibilities

The second year of graduate school is critical for mastering the discipline, knowledge and skills needed for success as a research scientist and for acquiring the kind of insight into yourself and the scientific universe that will allow you to make the most of your talents and interests.

General

- Have I established a clear set of goals that I wish to accomplish this year and next?
- Have I discussed these goals with my mentor?
- Have I established a dissertation committee suitable to advise me in my thesis research?

Scientific Knowledge, Research Skills, and Responsible Conduct of Research

- What courses do I need as a foundation for my thesis research? Am I spending enough effort on my coursework?
- What primary literature should I be reading? Which reviews?
- Am I attending seminars within and outside my area to deepen and broaden my scientific knowledge base?
- What is my thesis project?
- Who will be on my dissertation committee?
- When will I take my qualifying exam? What is the format? On what criteria will I be evaluated?
- Am I spending enough time and effort in the lab to accomplish my research goals?
- Can I design an experiment that would generate a conclusive answer from the results?
- What technical skills do I need to execute my dissertation research?
- Can I execute an experiment and record the results in a form that could be published?
- Am I beginning to interpret my results and assimilate new knowledge to ask good scientific questions?
- Have I discussed expectations for publication and authorship with my research mentor and collaborators?

Communication

- Can I organize, interpret and present my research results using appropriate graphics and text?
- Can I communicate my research results effectively in an oral and visual presentation to my colleagues?
- Am I practicing talking about my research to a general audience (e.g. friends and family)?
- Will I apply for fellowships, and if so, which ones? What are the application requirements and deadlines?
- Who are key people, in addition to my PI, for helping me think through ideas?

Professionalism and Management and Leadership Skills

- Am I actively participating in departmental or program activities such as seminars, retreats, works-in-progress presentations, and journal clubs?
- When I attend seminars, do I formulate questions about the results that are presented?
- Have I formed appropriate support relationships with mentors, peers, and administrative staff?
- Am I managing my time effectively in the lab and spending enough time to prepare for qualifying exams?

Career Advancement

- Am I exploring career options to understand how to position myself for success?
- Am I reflecting on what motivates me professionally and personally?
- Have I begun to develop and practice my 'elevator speech' to describe my professional identity and goals?
- Have I established a contact database and begun to build my network of professional contacts? (LinkedIn and Microsoft Outlook have built-in tools for this.)

Graduate Training Year 3: Trainee Expectations & Responsibilities

The third year of graduate school is the first year entirely dedicated to research in the laboratory. This year, you will build multi-tasking skills, further your academic knowledge, expand your network through collaboration and technical interactions, and define and advance your research project. The third year is the pivotal point to grasp the entirety of what a good scientist must consider and do to be successful. Your sense of belonging to the scientific community should develop. Your longer term goals should emerge in order to make appropriate decisions with respect to scientific projects and your career. If you are on track to finish your PhD training within a year and you plan to do a postdoctoral fellowship, you should start contacting potential postdoctoral advisors.

General

- Have I defined my specific interests and objectives for my PhD studies?
- Have I evaluated my strengths and weaknesses and made adjustments to improve or accommodate them?
- Have I developed a focused set of goals that will lead to publication of a paper and development of my thesis within the next year?
- Have I discussed these goals with my mentor and dissertation committee members?

Scientific Knowledge, Research Skills, and Responsible Conduct of Research

- What reading must I be doing to become an expert in my field?
- What knowledge will broaden the scope of my work? How do I stay abreast of new discoveries?
- Am I attending enough, or too many, seminars? Am I critical enough of the literature or of what I hear in a seminar?
- What scientific conferences should I attend? Have I investigated sources of funding to attend conferences and present my research, such as travel awards from the Vanderbilt Graduate School?
- How do I refine my research project and become more focused?
- Am I spending enough time and effort inside and outside the lab to accomplish my objectives?
- Am I thinking creatively, troubleshooting my own experiments, and developing my independence?
- How do I efficiently translate results into publication quality data?

Communication

- How good am I at presenting my research results?
- How can I improve my presentation skills? Whom should I get feedback from?
- Have I presented my work at and/or attended a scientific meeting? Have I written an abstract or paper? If not, how far am I from my first publication?
- How can I improve my writing?
- Can I effectively explain how my research advances my field and scientific understanding more generally?

Professionalism and Management and Leadership Skills

- Do I assume responsibility for understanding the expectations of my dissertation committee at the conclusion of a committee meeting?
- Do I understand the overall philosophy of research/the scientific method?
- How effectively do I negotiate differences of opinion with mentors, peers, and other scientists?
- How could I improve my multi-tasking skills?

Career Advancement

- Am I continuing to explore career options and build my professional network?
- Am I taking advantage of opportunities to network with seminar speakers and at professional conferences?
- Have I considered what careers may be a good match for my skills, interests, and values? (*ScienceCareers* MyIDP is an excellent tool for this.)
- Are there gaps in my knowledge or experience that I should aim to fill to prepare for my career? Have I set goals for filling these gaps? (See *ScienceCareers* MyIDP for a goal-setting tool.)

Graduate Training Year 4: Trainee Expectations & Responsibilities

As a fourth year graduate student you should be focused on your research, writing papers and communicating your findings. By now, you should have acquired considerable expertise in your chosen field and you should be exhibiting this expertise through more effective planning and implementation of experiments, through mentoring newer lab members and through discussions with others in your scientific community. By the end of the fourth year, your thesis project should be nearing completion, or at the very least, a detailed set of objectives for completion should have emerged. You should be able to read the literature critically, identify important new problems, develop hypotheses and design experiments to test them. These skills will be demonstrated by preparing and defending an original research proposal. Finally, you should begin planning for your postdoctoral fellowship or job search.

General

- Am I developing my original research project?
- Do I understand the expectations for successful completion of my thesis research?
- Do I have a clear plan for completing my PhD thesis research?
- Have I thought about my next career stage in light of my strengths, weaknesses, and passions?
- Have I discussed a timetable for completion and career plans with my mentor(s) and committee?

Scientific Knowledge, Research Skills, and Responsible Conduct of Research

- Am I establishing and demonstrating expertise in my chosen area of study?
- Am I staying up with the current literature in my field and becoming an expert in my area of research?
- Can I read the literature critically and identify assumptions, implications and/or alternate interpretations?
- Am I interpreting my own data, questioning my assumptions, and identifying implications of my findings?
- Am I asking important questions and independently designing experiments to generate answers?
- Am I developing good scientific judgment?
- Am I willing to learn new techniques and to take risks?
- Am I working with sufficient focus and intensity to drive discovery and complete my research objectives?

Communication

- Have I published a paper, or am I preparing manuscripts for publication?
- Can I write an original and competitive research proposal?
- What have I discovered? Why is it important? Can I articulate this? Can I deliver an effective seminar?
- Am I seeking out and taking advantage of opportunities to present my research?
- Am I at presenting my research results authoritatively?
- Am I attending local and national meetings and presenting my results?

Professionalism and Management and Leadership Skills

- Am I developing confidence as a member of the scientific community?
- Do I ask questions and enter into discussions in seminars, conferences and journal clubs?
- Am I managing my time for experiments, reading, and writing?
- Am I serving as a role model to junior students in the lab?

Career Advancement

- (*12 months in advance of thesis defense*) If I am planning to do a postdoctoral fellowship, have I started to identify and contact potential postdoctoral advisors? Have I explored postdoctoral fellowship funding options to determine if I need to apply for funding within the first year of my postdoctoral training?
- Have I started to narrow down my career interests and focus my networking efforts to build contacts and seek advice from professionals in specific career fields?
- Are there gaps in my knowledge or experience that I should aim to fill to prepare for my career?
- Is my CV or résumé up-to-date? Does it specifically highlight my skills and accomplishments that relate to my career area of interest?

Graduate Training Year 5+: Trainee Expectations & Responsibilities

In the fifth year you should be focused on completing your experimental work, writing research papers and your thesis, and making plans for a post-graduate postdoctoral fellowship or job. You should have an outline of your thesis approved by your faculty advisor. You are expected to be an expert in your specific field of research and have command of the literature, and you should be able to articulate how your research advances your field. By the end of the fifth year you should have defended your thesis or have a clear timeline for finishing. If you are planning a postdoctoral fellowship, you should have interviewed with potential postdoctoral advisors and investigated postdoctoral fellowship funding options.

General

- Have I set my thesis defense date?
- Have I made plans for the next stage in my career? If not, what must I do to complete these goals?

Scientific Knowledge, Research Skills, and Responsible Conduct of Research

- Can I demonstrate that I am an expert in my field?
- Can I present and defend my work in an authoritative manner?
- Can I articulate how my work contributes to the knowledge in my field?
- Can I demonstrate that I have a breadth of knowledge in areas related to my area of research expertise?
- Am I able to balance bench work with writing papers and finalizing my thesis?
- Have I reached a high level of proficiency in the laboratory?
- Do I have a clear path and timetable for completion and publication of my thesis research?
- Do I think creatively about the implications of my research to other work in the field?

Communication

- Have I presented my research in national or international meetings?
- Have I prepared and practiced my thesis defense?
- (*if applicable*) For postdoctoral interviews, have I prepared and practiced a research presentation that can be understood by a diverse scientific audience?
- Have I demonstrated writing skills through publication of my research or writing chapters of my thesis?

Professionalism and Management and Leadership Skills

- Can I confidently discuss the current literature in my area of expertise?
- Do I ask questions and enter into discussions in seminars, conferences and journal clubs?
- Have I maintained good communications with mentors, peers and administrative staff?
- Have I effectively communicated with my committee about finalizing and defending my thesis research?
- Am I a role model in the laboratory to junior students?

Career Advancement

- Can I clearly articulate my career goals?
- Is my CV or résumé up-to-date?
- Is my CV or résumé tailored to my career area of interest? Does my CV or résumé specifically highlight my skills and accomplishments that relate to that career path and omit irrelevant information?
- Have I reviewed and polished my online presence?
- Have I prepared for interviews?