

Individual Development and Training Plan
for Trainees in the National Science Foundation funded NRT program on
Computing and Data Science Training for Materials Innovation, Discovery,
Analytics (MIDAS)

This Individual Development and Training Plans (IDTPs) helps address three needs.

First, the IDTP helps identify your (trainee's) training needs and competencies, establish goals and evaluate your year-by-year progress during your graduate studies.

Second, there are many career options for our NRT trainees. The IDTP helps you plan and prepare for your post-PhD future while you are in graduate school.

Third, this IDTP can also be a valuable tool to facilitate communication between you (trainees) and your two advisors. A Sigma Xi survey showed that trainees with a structured plan are more satisfied, more productive and have fewer conflicts with their PIs. Such a plan has also been viewed favorably by trainees in other training programs and traineeships.

We strongly encourage you to discuss your IDTP (during and post preparation) with both your faculty advisors.

IDTP Preparation Timeline

- **This IDTP document and your CV (see format at the end) must be submitted to the NRT program (electronic information to be collected) every year in January.**
- **Each year till graduation** there should be a meeting of the student and advisors with this IDTP (during its preparation).
- In the second and fourth years, this IDTP submission should be followed by a meeting with the NRT director.

This document is based on the UCSF IDP as well as the Kellogg School of Science and Technology at the Scripps Research Institute IDP and the AAAS IDP and acknowledges the contributions of:

- Bill Lindstaedt, Director, UCSF Office of Career and Professional Development
- Phillip Clifford, PhD, Professor, Associate Dean for Postdoctoral Affairs, Medical College of Wisconsin
- Melanie Sinche, Director of Postdoctoral Services, Harvard University
- Cynthia Fuhrmann, PhD, Assistant Dean, Academic Career Development, UMass Medical School
- The Federation of American Societies of Experimental Biology (FASEB), Office of Public Affairs
- Ryan Wheeler, Manager, Career & Postdoctoral Services Office, The Scripps Research Institute
- Janet Alder, PhD, Director of Academic and Student Affairs, GSBS Rutgers University

Individual Development and Training Plan (IDTP):

Name:

Year in Graduate School:

Today's Date: _____

Primary advisor:

Secondary advisor:

Thesis topic:

Thesis committee members (if identified):

Part 1: State your career goals

What is your "Long Term Career Goal" (academic, industry, teaching, business, marketing, patent law, public policy, science writing etc.)? Why have you made that decision and what skills do you have that you think will allow you to succeed in that career?

What is your "Next Step Career Goal" (postdoctoral training, job, internships, etc.)? Why have you chosen this as your next step and how will it help you achieve your long-term goal?

If your career goals have changed in the past year, state why:

Part 2: Evaluate your research progress during the past year.

What year are you in graduate school?

For students in their 4th - 5th years only, what month and year do you hope to finish your graduate degree?

Provide a brief overview of your research project and major accomplishments in the past year:

What were your main research goals for the past year?

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

New areas of research or technical expertise acquired in the past year:

Manuscripts (in prep, submitted and accepted) in the past year; detail the role you played in each work:

Fellowships applied for/awarded in the past year:

Other support applied for/awarded in the past year:

Part 3: Evaluate your professional skills progress during the past year.

Local and national meetings attended in the past year (indicate meeting title, oral or poster presentation):

Oral presentations in the past year (indicate date and venue):

Teaching activities in the past year:

Other professional activities, including those that have helped you explore different career options in the past year:

Community/service activities, including participation on graduate student committees, volunteer work and science outreach programs in the community in the past year:

Part 4: Self- Assessment

SELF Evaluation: Assess your strengths, weaknesses, and technical and professional skills

Evaluate your skills and abilities in the following areas where:

5 = Highly proficient

1 = Needs improvement

Overall Core Scientific Knowledge		1	2	3	4	5
	Knowledge of literature in the field	1	2	3	4	5
	Knowledge of literature related to project	1	2	3	4	5
	Knowledge area:	1	2	3	4	5
	Knowledge area:	1	2	3	4	5
Technical Skills (e.g., synthesis, characterization, modeling, machine learning, high performance computing, device preparation, etc.):						
	Skill set (specify):	1	2	3	4	5
	Skill set (specify):	1	2	3	4	5
	Skill set (specify):	1	2	3	4	5
	Efficiency and speed	1	2	3	4	5
	Other:	1	2	3	4	5
General Research Skills						
	Developing research questions	1	2	3	4	5
	Model/Algorithm development/Experiment design	1	2	3	4	5
	Problem solving/troubleshooting	1	2	3	4	5
	Creativity	1	2	3	4	5
	Independence	1	2	3	4	5
	Other:	1	2	3	4	5
Professional Skills: Communication related						
	Oral presentation skills	1	2	3	4	5
	Written presentation skills	1	2	3	4	5
	Communication across disciplines	1	2	3	4	5
	Teaching skills	1	2	3	4	5
	Mentoring others	1	2	3	4	5
	Public speaking	1	2	3	4	5
	Other:	1	2	3	4	5
Professional Skills: Leadership & Management						
	Team management skills	1	2	3	4	5
	Task Delegation skills	1	2	3	4	5
	Budgeting time/resources	1	2	3	4	5
	Managing multiple projects and time	1	2	3	4	5
	Organizational skills	1	2	3	4	5
	Leadership in teams	1	2	3	4	5
Professional Skills: Interpersonal social skills						
	Getting along with others	1	2	3	4	5
	Communicating clearly in electronic messages	1	2	3	4	5
	Communicating clearly in social conversations	1	2	3	4	5
	Conflict resolution	1	2	3	4	5
	Networking/meeting new colleagues	1	2	3	4	5
	Empathy towards others' hardships	1	2	3	4	5
	Other:	1	2	3	4	5

Part 5: Primary and/or Secondary Advisor Evaluation of You:

Ask either or both of your advisors to assess your strengths, weaknesses, and skills, and then return the list to you for discussion. Evaluation from last year can be provided to assess progress.

Please evaluate the skills and abilities of _____ in the following areas,
 where: 5 = Highly proficient
 1 = Needs improvement

Overall Core Scientific Knowledge						
	Knowledge of literature in the field	1	2	3	4	5
	Knowledge of literature related to project	1	2	3	4	5
	Knowledge area:	1	2	3	4	5
	Knowledge area:	1	2	3	4	5
Technical Skills (e.g., synthesis, characterization, modeling, machine learning, high performance computing, device preparation, etc.):						
	Skill set (specify):	1	2	3	4	5
	Skill set (specify):	1	2	3	4	5
	Skill set (specify):	1	2	3	4	5
	Efficiency and speed	1	2	3	4	5
	Other:	1	2	3	4	5
General Research Skills						
	Developing research questions	1	2	3	4	5
	Model/Algorithm development/Experiment design	1	2	3	4	5
	Problem solving/troubleshooting	1	2	3	4	5
	Creativity	1	2	3	4	5
	Independence	1	2	3	4	5
	Other:	1	2	3	4	5
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	Written presentation skills	1	2	3	4	5
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	Conflict resolution	1	2	3	4	5
	Networking/meeting new colleagues	1	2	3	4	5
	Empathy towards others' hardships	1	2	3	4	5
	Other:	1	2	3	4	5

Part 6: Set goals and learning objectives for the next year.

In the "Setting Goals" sections, you will set goals for developing your skills and accomplishing your projects during the coming year and achieving scientific independence.

Setting Goals: Research Projects

Scientific question: What are the **scientific questions** that you will be working towards answering in the next year? These may be individual papers (or figures within a single paper) that you aim to publish. Remember to present this in terms of language that someone in your field will appreciate and someone outside of your discipline will also understand.

(For domain-focused students) Getting comfortable with computational/data science approach: What are the computational/data science approaches that you are currently pursuing? Are you able to apply these methods yourself or are you working closely with another team to apply these methods? Based on your learning in this NRT are there additional more promising computational methods that you/your collaborator should be doing?

OR

(For computation/data focused students) Application of computational/data science to the soft material/polymer domain: What specific problem within soft materials/polymers domain science are you tackling with your computational/data science skills? Are you able to see parallels with other domain sciences where a similar application would be useful?

Setting Goals: Scientific Knowledge

Knowledge area: In what areas do you want to acquire more **scientific knowledge**?

Method for knowledge development: Do you plan to do more *reading* in this area? *Discuss* with specialists? Attend *conferences*?

Setting Goals: Technical Skills

Skills Area: What further **technical skills** do you need to acquire to be successful in this step of your career and in the next step? (See the Skills Assessment Worksheet in Part 2.)

Method for skill development: How will you gain exposure to those skills?

Setting Goals: Professional Skills: Communication

Presentation Projects: What conference/meeting/workshop talks and posters do you plan to present in the next year?

Presentation Skills: Are there specific presentation skills you would like to work on in the coming year?

Method for skill development: What will you do to develop these skills? (Attend professional development workshops, volunteer to give more presentations, attain feedback from mentors and peers)

Writing Projects: Are there any writing projects that you will be continuing or initiating this year? (Fellowships, manuscripts, grants)

Writing Skills: Are there specific writing skills you would like to work on in the coming year?

Method for skill development: What will you do to develop these skills? (Writing workshops, practice writing projects, seek editing assistance)

Setting Goals: Professional Skills: Leadership, Management, Interpersonal Skills

Leadership, management, and interpersonal skills area: What specific skills do you need to acquire or improve? What specific skills will you work on in the coming year?

Method for skill development: How will you work to develop these skills? (Examples: attend workshops/seminars, seek advice of mentors/colleagues or advisors/counselors, ask to lead meetings, and seek feedback, seek leadership positions on your campus or in a professional society.)

Setting Goals: Career Development Projects

Career Development Projects: List activities that you will complete during the next year to learn more about and move closer to your major career goal (attend workshops, advice from counselors, conduct informational interviews with people in your desired career path, read/research potential career paths, take classes that enhance your skill set in areas related to your long-term career goals).

Time management:

How much of your time do you plan to spend on each of these goals and activities? What will your effort distribution be?

Part 7: Implement Your IDTP

Writing your IDTP is just the beginning of the career development process and serves as the road map.

Put your plan into action: Revisit this document regularly to check your progress.

Revise and modify the plan as necessary: The plan is not cast in concrete; it will need to be modified as circumstances and goals change and as you go through this traineeship. The challenge of implementation is to remain flexible and open to change.

FORMAT for CV

NAME

EMAIL:

PHONE:

MAILING ADDRESS
Street Address
Town, State, Zip Code

EDUCATION

UNDERGRADUATE

University name and location

Degree, Major, Month and Year of Graduation

If you attended other institutions, list in reverse chronological order and use either dates of attendance or graduation date.

GRADUATE

University name and location

Degree, Program, Month and Year of Graduation or Expected date

If you attended other institutions, list in reverse chronological order and use either dates of attendance or graduation date.

RESEARCH EXPERIENCE

Graduate: Title of thesis, advisor, dates

Undergraduate or technician experience: Topic of research, mentor, dates

Internships: Organization, topic of research, dates

EMPLOYMENT

Employment not listed under research experience

PROFESSIONAL ORGANIZATIONS

Membership in scientific societies, dates

HONORS AND AWARDS

Name of award and description if not clear, date

TEACHING EXPERIENCE

School, course title, role, dates

FELLOWSHIPS AND GRANTS

Granting agency, title of project, amount of award, dates

PUBLICATIONS (list in reverse chronological order)

REFEREED

Include papers published, in press, submitted, or in preparation

CONFERENCE PROCEEDINGS

REVIEWS OR CHAPTERS IN BOOKS

ABSTRACTS

PATENTS

PRESENTATIONS

Title of talk or poster at meetings or symposia, all authors, meeting name, date, location

ACTIVITIES AND SERVICE

Membership and leadership within organizations: Title (Treasurer, Special Events Committee Chair, etc.), name of the organization, dates.

NOTE: Only if applying for job to industry include **OBJECTIVE** at top, and **SKILLS** and **LIST OF REFERENCES** at end.