Hello and welcome to the Office of Intramural Training and Education (OITE) virtual summer intern orientation. I am Dr. Sharon Milgram, the Director of the NIH OITE and a senior scientist here at NIH. The NIH OITE is a trans-NIH office dedicated to the scientific, professional and career development of students at NIH. We run workshops and activities to supplement summer intern activities in your NIH Institute or Center. Be sure to download the NIH Summer Internship Program handbook from our Web site, www.training.nih.gov to learn about the many resources available to you.

This orientation is divided into several parts:

1. Understanding the NIH
2. Settling into your research group and meeting your science goals
3. Using NIH resources to meet your career and professional goals.

If you are a new NIH summer intern, I recommend you watch this entire presentation, while returning interns may choose to watch selected parts. Simply choose a slide that interests you and feel free to skip around.

My goal is to help you get the most of your summer internship at NIH by providing you with insights about what to expect, whom to meet, and what resources are available for you. Let's start by talking briefly about the NIH – who works here, and what we do, and why we are so excited to have you here.

SLIDE (What Is the NIH?)

The NIH is the primary Federal Agency for conducting and supporting medical research and our mission is to decrease the burden of disease and disability and to improve human health worldwide. The NIH is composed of 27 different Institutes and Centers (or IC), each with its own particular focus. We share the common goal of translating scientific discoveries into treatments and cures for rare and common diseases that impact our world. The NIH is committed to eliminating health disparities and providing accurate, relevant, and important health information for people across the globe. We are also committed to supporting, and doing, outstanding research in all areas of the biomedical, social and behavioral sciences. Another NIH commitment is to research training – an example of that commitment is the NIH Summer Internship Program.

Most NIH ICs have two major divisions - extramural and intramural. The extramural division supports and funds research at colleges, universities, and research institutions. In the intramural division of NIH, scientists and students like yourselves, conduct research on NIH campuses. Scientists in the intramural research program work on basic, translational and clinical research problems and address questions in the biomedical, behavioral and social sciences – all focused on improving the health and well being of our Nation and the world. You will find many different research areas represented at NIH and many opportunities to grow and expand your science horizons.

SLIDE (Bench-to-Bedside Research at NIH)

The NIH has a strong commitment to translational, or bench-to-bedside, research. The Bethesda campus is home to the NIH Clinical Center, the largest hospital in the world totally dedicated to clinical research. The Clinical Center is where clinical trials are performed and where patients come from all over the world for insights into their rare and undiagnosed diseases. Some of you will be working on clinical research problems at the Clinical Center or collaborating with clinician-scientists during your internship. Regardless of whether you engage directly with the Clinical Center staff I encourage you to learn about the NIH Clinical Center by visiting their Web site or attending some of their seminars.

SLIDE (Researchers at the NIH)

The NIH Intramural Program is very large, with over 1000 full-time research faculty spread across all of our campuses. NIH faculty are often called “PIs” or principle investigators. Other employees, such as staff scientists, staff clinicians and research technicians will work in your group and there may also be a number of other trainees including postdoctoral fellows, graduate students, medical students or postbacs. You can read about these different positions in your summer handbook and you should feel free to ask people about their roles in your group.

SLIDE (People You May Meet in Your IC)

Each of you has found a position in a research group in one of the NIH ICs. Within your IC, the Summer Coordinator can help you with administrative matters and answer any questions you might have. The Summer Coordinator will send you information about IC summer intern orientations and other opportunities in your IC.

In addition to a Summer Coordinator, each IC has a Training Director and a training office responsible for the career development of trainees in their IC. In some ICs, the Training Director is also the Summer Coordinator. Be sure to meet your Training Director as he or she can help you with many aspects of your career development.

Researchers at NIH are organized into divisions based on the types of research they do. The Scientific Director and Deputy Scientific Director (or directors) in the IC are senior scientists who are responsible for the overall direction of the intramural research for your IC. At the next level down, Branch Chiefs and Lab Chiefs oversee the work within a specific research area, and PIs direct the work of a research team. You will be working with a research team directed by a PI within a Branch or Section of your IC. You may meet people from other research groups within your Branch and can consider these people part of your extended research network.

Finally, one last important person you will meet is your Administrative Officer known as your AO. Your AO can help you with your appointment paperwork, ID badge, access to the building, etc. I am pretty certain most of you have already communicated with your AO, but if not, go and introduce yourself on your first day.

SLIDE (First Define Your Goals)

To make your summer a success it is important to have realistic and achievable goals and to keep these goals in mind as you plan your time at NIH. Summer interns tell us that they are always surprised by how quickly the summer starts and then ends. Therefore, it is important to know what you want to get out of the summer and to plan your time well.

SLIDE (Focus on Three Areas)

Think about setting goals in the three areas: Science, Career, and Personal. For many of you, this will be your first time in a research group, so just understanding the big-picture research goals and seeing how your work fits into this big picture is an important first goal. Other goals may be to learn about a new research area, improve your skills in a particular technical area, or learn how to read and critique scientific papers.

Career-wise you may want to learn about the graduate school admission process, you may wish to talk with clinician-scientists about their careers, or you may hope to broadly explore science careers to learn what you can

do in the future. There are a lot of workshops you can attend and people you can talk to help you gain a broader appreciation of science careers and where you might go and how you might get there.

We sometimes forget to set personal goals as we get wrapped up in learning new things in research. But remember this is a great time to work on meeting colleagues and mentors, improving your communication skills and figuring out how to manage your time. As I watch other trainees at NIH, I see that for many developing these skills holds the key to success in school and beyond. I encourage you to look carefully at your strengths and at areas where you wish to improve.

SLIDE: (Important Research Relationships)

A key to achieving your goals is to develop good relationships with the people in your research group. Some of you will be supervised daily by your PI and some of you will be supervised by someone else in your group, for example a staff scientist, postdoc or graduate student. It is very important to know who your daily supervisor is, who you can go to with to with questions, and how to find help when you need it.

When it comes to research training, there are actually two types of relationships to consider – supervisory relationships and mentoring relationships. A supervisor is someone who directs the work of another and is responsible for ensuring that individuals do their jobs. A mentor is someone who passes on skills, knowledge, and wisdom to another person and works to help develop that person's career by providing honest feedback, encouragement and guidance. Sometimes, one person is both a supervisor and a mentor, but you may also have supervisors who are not your mentors, and mentors who are not your supervisor. All successful scientists agree that understanding the dynamics of research teams and developing good supervisory and mentoring relationships is key to becoming a happy and productive scientist.

SLIDE (There Is No Typical Research Experience)

That said, every research group is different, and there is no typical summer internship experience. Lab and research groups differ in many ways. For example, some are very casual and others have a more formal feel. In some groups the PI is around and interacting with members of the research team all the time, while others are away at meetings, traveling and dealing with administrative matters.

Another area where research environments differ is the level of independence that students have. As a summer intern, you should expect that you will have very regular supervision, but you may also find you are expected to learn things on your own, and the balance between directed and independent learning will differ depending on the research group and your specific supervisor.

In some research groups there will be clearly defined rules about attendance, time off to go to workshops, and vacation days, so be sure you understand the expectations in your group. There are also different styles of providing feedback – or even whether you receive feedback about your work without asking for it.

Overall, my message to you is be sure you understand YOUR research group – evaluate the situation and behave accordingly. For many of you, this will be your first full-time internship, or you may find yourself in an environment you have never experienced before. Remember, there are places to go to talk about all of this – more about that in the following slides.

SLIDE: (Expectations Your Supervisors and Mentors Have of You)

It is very important to know what expectations your supervisors and mentors have so that together you can make your time here a success. Since you cannot read their minds, and every research environment is different, it is important that you ask them. On your first day – or even before by e-mail – ask your daily supervisor to tell what they expect from a summer intern, ask how often they would like to meet with you, who you should call if you cannot come in one day, and what your minimum work schedule should be. Notice I said minimum work schedule, as many research groups work in the evenings and on weekends to keep the projects going. You may be asked to be flexible in this regard, so be sure to understand the expectations. Beyond these details, ask how you can contribute, what you should be reading, and what training courses you need to take.

When we talk to NIH PIs and the many staff scientists, grad students and postdocs who work with summer interns about their expectations, we hear many things. After hearing them you may say these are all common sense, but many summer interns have made mistakes in these areas, and our goal

is to be sure you make a great impression. So let's go through them one-by-one.

1) ***Engagement in planning your research.*** We want our summer interns to be actively participating in the research, asking questions, and talking about the experiments. Right at the outset sit down with your mentor to gain perspective of how he/she envisions the project going. Take notes, and ask questions. Don't be afraid to admit if there are areas that you do not understand, and expect to do reading in the evenings so you can master the material and have productive research days. Ask for textbooks, review articles or Web resources that may help and be sure to use them.

2) ***Honest communication regarding research progress.*** We want to hear from you about what is happening and we want you to seek out help when you need it. When your supervisor comes up to you, and asks what's going with your project, you want to be able to provide clear information. This may include explaining the challenges you are facing in getting an experiment to work or it may be admitting that you don't know how to do something, that you forgot the instructions, or that you need additional resources. Some of this communication will be in person, but some may be by e-mail, so be good about checking your e-mail and responding promptly. If you want some insight into writing professional e-mail see our "tip sheet" on the OITE Web site under "Online Resources".)

3) ***Careful thought and regard for all elements of scientific ethics.*** Scientists must treat animals, human subjects and each other with great respect. These are the foundations of our work and being an ethical scientist must be in the forefront of our minds at all times. We must be honest about our data and can't ignore results we don't like. Scientists who come after us may build on our findings and they will need dependable data. If you want to learn more about research ethics you can take a look at the *Ethics and Scientific Research Study Guide* developed by investigators at NCI-Frederick. You can find a link to the study guide in the Summer Handbook**.**

4) ***Energy and focus on your lab notebook.*** It is very important that your lab notebook be clear and concise so that others can replicate your experiments. This means writing down the exact steps you took and measurements you made in the process. There is an excellent Webinar on keeping a lab notebook on the OITE Web site, filed under "Online Resources".

5) ***Active participation in group activities and attention to fostering collegial relationships in your research group.*** These days, science and medicine are about teams and teamwork, so developing the ability to be an effective team player now, will help you in the future. Attend and actively participate in Branch and research group meetings; engage the people around you; treat people from other countries and cultures with respect; and appreciate that everyone brings value to the group. Beyond being respectful, offer to help others, go along for lunch or coffee if everyone gets together as a group, and talk with everyone about their research, their career path and what they like and don't like about their jobs. This is a great chance for you to learn teamwork skills while expanding your professional network.

6) ***Good work ethic; balancing work and outside activity effectively.*** Having a strong work ethic goes far. If you are waiting for results from an experiment go up to a colleague and offer to help with his/her experiment. Search for an article that is related to the work that you're doing. Don't spend too much time surfing the Web, talking on your cell phone, or texting your friends. Arrive on time, and if necessary stay late. If you are sick or are going to be late let your supervisor know. Time management is key and learning how to make the most your time will serve you well in the future.

One area where summer students often feel uncomfortable is taking time to attend the many workshops, seminars and activities that your IC and the OITE have planned for you. Talk to your supervisors and mentors about what you would like to attend and how you can still keep your research moving forward. Some of our workshops have been videotaped and there are many online resources you can use in the evenings. Don't wait for the last minute to talk to your mentor, and don't leave without making sure that your supervisor knows where you are. Be clear about the activities that are most important to you and compromise when needed. And again, there is help if you find this is a tough area to navigate with your supervisor.

SLIDE: (Expectations You Should Have of Your Supervisors and Mentors)

We expect a lot from you, but you should also expect a lot from us – and by us I mean your research supervisors. For example, we should provide:

1) ***Intellectual support and guidance.*** Someone in your group should show you around, so that you know where things are, and introduce you to

others. Someone should take the time to explain the overall goals of your research group and the specific nature of your project. You should have a chance to ask questions and you should feel comfortable asking for help. Your group should encourage you to contribute as much as you can to its progress.

2) ***Assistance in developing a project.*** Your work is part of the broader research goals of your group, so you will not likely have your own, fully independent research project. However, you should have a particular question or part of a project that you can work on for the summer. If you do not know what you project is, ask during the first week; if you want to learn something that is not a part of your project, bring it up with your supervisor and maybe the two of you can come up with a way for you to spend time in that subject area as well.

3) ***Availability when needed.*** Your mentors and supervisors should be available to help you plan your day, learn new approaches, and solve research problems. They should also be available to talk with you about your next career steps and about ways the NIH can help you achieve your career goals. However, understand that this does not mean they will always be available immediately. Make sure you know how to schedule a meeting with your supervisor. Does he/she prefer an open-door casual approach to interacting or more formal meetings? Also, appreciate that many PIs are very busy and that you may need to schedule meetings far in advance

4) ***Honest but supportive feedback.*** It is important that you get constructive feedback about your performance so you know what you are doing well, but also what you can improve, and how you can improve it. You may need to ask for feedback – for example, at the end of your first week you might ask "Is there anything else I can do to be sure I have a productive summer?" Scientists can be very direct and critical people – this is a skill that helps us do careful science. However, many students tell us that they are surprised by just how critical researchers can be. Remember, we all make mistakes – hopefully your mentors will remember that as well. If you have a rough day where you get a lot of critical feedback, go home, think about how you can do better tomorrow and try again.

5) ***Support for professional development activities outside.*** There are many talks, and workshops that will benefit you during your time at the NIH. Discussing the activities in advance will help with scheduling your time and will also help you make realistic choices on what is a good use of your time.

You may find that there are some workshops/lectures/events that you had not put on your list but that your PI thinks would be good for you to attend. For example, your PI may know of someone coming to speak who is an expert in her or his area of research. Listen to his or her advice. As I said this is a stressful area for some summer interns, so be clear in your early meetings about what activities interest you and ask for guidance in scheduling your time so you can be productive in your research while taking advantage of the many opportunities offered here at NIH.

6) ***Honest feedback regarding letters of recommendation.*** Many of you will want a letter of recommendation from your PI or from another individual in your group describing your accomplishments for the summer. You should consider asking whether he or she is willing to write you a strong letter of recommendation before you leave at the end of the summer and then be sure to stay in touch. Letters of recommendation are critical for applications to college, graduate school and professional school and knowing who to ask, when to ask, and how to ask is something we all need to learn.

SLIDE: (Mentoring Relationships Are Key to Your Success)

Successful scientists often share that they have many mentors and all point out that they have benefited greatly from being mentored and from being a mentor. Mentoring is a two-way relationship, meaning you have to go to meetings with your mentors well prepared and with specific topics that you would like to discuss. You need to be on-time and respect professional boundaries, since mentors are different than friends. Remember you cannot have too many mentors and you can find mentors in all sorts of environments. For example you can have an NIH research mentor, a mentor from a collaborating research group, a school mentor, and a mentor in your community. It is important to pay attention to your mentoring relationships and to keep communication flowing.

Often in science when we think about our mentor, we think first about the people we work with day-to-day in our research groups. We are confident your PI and/or other scientists in the group will become your mentors, and that you will be able to talk openly about your goals and receive constructive feedback about your strengths and areas of growth. However, I appreciate that sometimes students find themselves in research groups where mentoring does not seem to be happening or where the environment does not feel supportive. There are many people you can go to for advice as you work to clearly define your needs and resolve issues. These include

your Summer Coordinator and IC Training Directors, people in your branch, others in your research group, us in the OITE – as well as two useful offices at NIH – the Office of the Ombudsman, Center for Cooperative Resolution and the NIH Employee Assistance Program (EAP). You can learn more about these offices in the summer handbook and by visiting their websites.

Slide (To Achieve Your Science Goals)

To help you be successful, we in the OITE have compiled a list of things to remember.

1) ***Appreciate that first impressions are key.*** Communicate with your mentor in advance about the date and time of your arrival. Make sure you know where you should plan on meeting them and dress appropriately.

2) ***Meet with your supervisors - EARLY & OFTEN.*** Most students find it best to have a regular time every few days to touch base and to talk about research goals for the week. You do not want to wait to speak to your supervisor until a problem occurs. Instead, keep them involved in your work and seek their feedback on a regular basis.

3) ***Read papers in your field*** and ask for help in locating those that will be most useful**.** If you are not comfortable reading papers, you are not alone. This is a common problem for new scientists. We have developed a workshop on "Reading a Scientific Paper" and an excellent journal club program to help you with this. You can learn about these activities on our Web site; remember to discuss them with your supervisor before committing.

4) ***Focus on the "big picture" AND the details of your work.*** By this I mean be sure to understand WHAT you are doing but also WHY you are doing it. This can be a challenge in such a short internship, but the more you ask questions, the more you listen, and the more you read, the more you will learn.

5) ***Use "down-time" wisely.*** Offer others help while you are waiting for your data or read papers related to your work. Don't make the mistake of using your down time for texting, surfing and chatting – this is a common and unfortunate mistake many summer interns make

6) ***Actively participate in research meetings.*** It is likely that some of the information presented will be too technical for you, but try to understand the

big picture and to participate. Also, volunteer to give a short presentation about your work at the end of the summer. This is a great way to develop communication skills and to get feedback on your work; some interns comment that this very scary activity is actually the highlight of their summer.

7) ***Attend seminars, in and outside of your field.*** Your IC and the OITE have worked hard to plan outstanding science seminars for you. Expand your science horizons by attending some seminars outside your field, but also be sure to check with your supervisor about seminars that are important to your research group. Although many students tell us it is challenging to attend seminars when you are not an expert in the field, the OITE science seminars are designed specifically for summer interns, and will provide you with a great overview of a "hot topic" in research.

8) ***Present your work at Summer Poster Day in the beginning of August.*** This is a must-do activity; a chance to discuss your work with NIH scientists and colleagues. You will learn a lot putting the poster together and in the many discussions you will have at your poster.

SLIDE (First Time Doing Research?)

We know that some of you are new to research in addition to being new to the NIH. This year, for the first time, we are offering a day-long Boot Camp to introduce you to the NIH and help you develop the skills you will need to be successful in science. You can look over the agenda for the day and register for one of the three sessions (two on the Bethesda campus and one in Frederick) on the Science Skills Boot Camp Web page.

SLIDE (To Achieve Your Career Goals)

In addition to focusing on learning about and doing biomedical, behavioral, and social science research, we hope you will spend time this summer considering your next educational steps and your longer term career goals. There are many outstanding career opportunities for students in the sciences, and we invite you to broadly explore them. To wisely use your summer internship to explore future career opportunities:

1) Attend all orientation activities offered by your IC. This is a good way to meet your Training Director and the training office staff.

2) Make sure you know about activities in your IC and familiarize yourself with the Summer Handbook, online at the OITE Web site,

https://www.training.nih.gov. Also look under Upcoming Events on the OITE Web site for information in trans-NIH workshops for summer interns. When OITE activities are offered at a site other than the Bethesda campus, the title of the activity is preceded in the Upcoming Events listing by the campus name in all caps. This makes searching for OITE events on your campus easy. You should also be certain to search your IC postings for activities of interest.

3) Work with your supervisor/mentor to select a series of workshops and informational sessions that will help you achieve your career goals. Consider some of the events designed specifically for summer interns, like the Science Skills Boot Camp and the summer journal clubs.

4) If you are a college student and are considering graduate or professional school in the future, be sure to participate in the Graduate & Professional School Fair from 9:00 am to 3:30 pm on July 22nd. More than 130 institutions will be represented, and they will be recruiting for their PhD programs, Medical and Dental Schools, and Schools of Public Health. We will provide transportation from some NIH campuses, and apologize to those of you too far away to take advantage of this activity.

5) Seek out and talk with people working in fields that interest you. Two useful approaches are informational interviews and shadowing. If you are unfamiliar with informational interviews, you can check out the video of a prior OITE event on "Exploring Careers".

6) Make an appointment with one of the career counselors in the OITE Career Services Center and take a look at the books in our Career Libraries. (Career Libraries have been established in Frederick, Baltimore, and North Carolina as well as in Bethesda.) Career counselors travel to other campuses and we can also talk with you by phone if you are unable to see a career counselor face-to-face.

7) Create an account for yourself on the OITE Web site. This will allow you to make Career Services appointments, register for OITE events with just a click of your mouse, and search the Alumni Database for former trainees who would be willing to talk with you about schools or careers you are considering.

SLIDE: (Take Care of Your Whole Self)

We all do our best work when we are feeling well and are comfortable with the way our lives are going. An important part of having a great summer at the NIH is taking care of yourself. Here are some things to consider:

For starters, think about physical fitness and your life away from the NIH. If you have always exercised, make certain that you continue. Eat well! If you have family and/or friends in the area, save some time for them.

Meeting other summer interns and making friends is another important part of the summer experience. Some of these people are going to be your future scientific colleagues. You can meet other interns in your research group and IC or at career development activities.

Whatever you do, be certain to make the time to explore your surroundings. NIH campuses are located in a variety of interesting environments and each has something to offer you.

SLIDE (Final Thoughts)

Your NIH IC and the OITE are here to help make your summer at the NIH the best it can be. But ultimately YOU are the person responsible for your NIH experience. We have assembled resources to enrich your time here and planned activities specifically for you, but those resources and activities are only useful if you take advantage of them. So, ALL summer interns should…

- Use the Summer Handbook, the OITE Web site, and your IC Training Office publications to plan your summer experience.
- Make certain that your name is on the official summer intern listserv, OITE-SIP, and read the announcements we post. If you are not receiving e-mails from OITE-SIP with weekly updates for summer interns, follow the instructions in the Summer Handbook to join the listserv.
- Take advantage of appropriate career and professional development activities, both those sponsored by your IC and those presented by the OITE.
- We have posted many career and personal development resources online on the OITE Web site. Take advantage of them! You can find videocasts of prior workshops as well as Webinars and guides that

address topics like keeping a lab note book or writing professional e-mail. All of these resources can be accessed from the Resources link on the OITE home page, https://www.training.nih.gov.

- Plan to participate in Summer Poster Day on August 4!
- And remember that the OITE is here to help. E-mail me at milgrams@od.nih.gov if you have any questions. I look forward to hearing from you!

Every NIH campus will have planned events for its summer interns. If you will be spending the summer on or near Bethesda, I have one more slide describing events and opportunities on the main campus.

Regardless of what campus you will call home, have a great summer, do great science and thanks for joining us in the intramural program!

SLIDE (If You Are in or near the Bethesda Area)

Every Friday the OITE will hold an Open Office in Building 2 on the NIH Bethesda campus. Come by when you first start your summer to ask questions about the summer, meet the OITE staff and other NIH summer interns. We look forward to talking with you about your summer experience and hope to see you then.

Bethesda facilities to help you with physical fitness are provided by the Recreation & Welfare Association. R&W has fitness centers in Bethesda and at Rockledge. It also offers discounted tickets for sporting events, movies, and other local activities.

If you are working at an NIH facility in or near Bethesda, you should also consider joining the social listserv for NIH summer interns on the main campus. It's called "ClubPCRmini" and you can find directions for joining in the Summer Handbook just after the table of contents.

Be certain to explore the Washington, D.C. area! The Summer Handbook includes a comprehensive list of museums, parks, and monuments, and most of them are free. D.C. (and Bethesda) restaurants aren't free, but many of them are terrific.

Again, make certain you get what you need to make your summer terrific. We in the OITE are looking forward to working with each and every one of you.