“If we knew what it was we were doing, it would not be called research, would it?”
– Albert Einstein
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Dear High School Science Research Pathways Student,

Welcome to the High School Science Research Pathways Program (HSSRP) Guide for Finding and Working with a Research Mentor. This guide is designed to support you in your search for a research mentor who can provide expertise and guidance on the research topic or question that you have chosen to explore in your High School Science Research Pathways science research class. In addition to general advice, this guide includes samples of emails, resumes, and tools for tracking your networking and outreach to potential mentors.

Once you’ve found a research mentor, there are additional resources in this guide to assist you in developing and maintaining a positive and productive relationship with your mentor. From asking good questions to developing common expectations around communication, we’ve got tools to help you and your mentor collaborate successfully and move your project forward.

Finding a research mentor to work with on your science research project is both challenging and rewarding. While you may hit some unexpected bumps in the road, it’s equally likely that you’ll make some unexpected connections in your search for a mentor, and you may learn some interesting things about your research topic and yourself in the process!

Finally, please remember that you have resources beyond this guide to assist you in your mentor search. Your science research teacher and the HSSRP program team are here to support you in this process, so make sure to involve us if you have questions or concerns.

We look forward to working with and learning with you on your quest to find a mentor!

Yours in research,

The High School Science Research Pathways Program Team
Introduction

What is a research mentor?
A mentor can mean different things to different people, but in the case of a research mentor for the High School Science Research Pathways (HSSRP) program, we will focus on a few specific features that will make your relationship with your research mentor most valuable.

An HSSRP research mentor is someone who:

- Is experienced in and knowledgeable about your field of interest.
- You trust to give feedback and constructive criticism about your project.
- Can guide you through scientific problems you encounter.
- Will advise you on designing a well thought out investigation.

This person may have been a stranger, or someone you knew well, or somewhere in between. They may come from many different organizations, professions and be in different stages of their own career, from graduate students to retirees (which we will cover more in later sections). However, make sure you understand the difference between a mentor and a role model. A role model is someone you look up to and hope to emulate, but a mentor is someone with whom you have a relationship and who is invested in your success and future. There are many great researchers leading your field of interest, but many of those people should be your role models, not your mentor. Although your mentor can also be someone who inspires you in the way a role model would, a mentor has to be willing to make time for you and to guide you through your training as a researcher. Many of the biggest names in a research field are already stretched too thin with other responsibilities to put the time into being a good mentor, so reach out to a range of people in different roles to find someone who has the expertise, time, and interest in being a mentor.

Additionally, although you may have had mentors in different capacities before (Big Brothers/Sisters programs, older students, teachers, coaches, etc.), a research mentor is there to work closely with you in order to make measurable progress in your independent research project. Although you want to have a positive and supportive relationship with your mentor, this relationship should be focused on the advancement of your research project and not on a social/fun connection, which may have been the focus of other mentoring programs.

The most important thing about your research mentor is that they have an expertise in your field of interest, understanding about how to design and execute a long-term scientific investigation and have time to share that understanding with you.
Why should you find a mentor?
An effective research mentor is a great advantage for having a successful independent research project. Depending on the type of mentor you choose (local, remote, working in their lab, meeting to discuss ideas, talking over the phone, etc.), your mentor can provide you with many important tools for completing your project.

Additionally, for some college credit-granting programs or research competitions, students may be required to find a mentor. Check with your HSSP teacher if you are required, or simply strongly encouraged, to find a research mentor for your project.

Your mentor can provide you with many important tools for completing your project.

- Access to a lab space and materials for your research.
- Explanations of particularly challenging concepts, which may take a lot of time and energy for you to work out alone.
- Help designing or troubleshooting your experiment.
- Instruction on lab techniques and equipment.
- Knowledge of the cutting-edge information of your field, which may not yet be published or well known.
- Help interpreting results correctly, both your own and in background reading.
- Instruction on how to best present your findings.
- Access to scientific journals. Many research institutions pay for subscriptions to major journals, that you might otherwise have to pay to access. Your mentor can also help you in selecting or interpreting certain journal articles.
- A glimpse into what the career and life of a scientist are like, and immersion into their lab’s culture of research and discovery.
- Ideally, a lifelong connection where they can help you develop your career, whether in science or not.
Steps to Finding a Mentor

When it comes to finding a mentor, the sooner you start, the better. This process can take a long time, and often your initial emails or outreach may not get an answer, so start early to give yourself more time to be successful. Also in the early stages of your search for a research mentor, it is best to reach out to many different potential mentors and not put all of your time into one connection. This way, if your first choice of mentor says they are unable to mentor you, you will already have ongoing conversations with other people of interest, and won’t have to start from the beginning losing valuable time.

Use the following steps and the Mentor Outreach Tracker in the appendix on page 30 to find someone who is available to work with you.

1. Start by determining your broad area of interest (ex. biology, oncology, chemistry, astronomy, immunology, etc.).
2. Search for potential mentors in this field (see Meeting Potential Mentors: The Basics of Networking on page 7 for where to search for these people). Think really broadly and be open to people working on things you hadn’t considered.
3. Read biographies and gather their contact information. You should have a minimum of ~20-30 potential mentors at this stage.
4. Research the work of your list of potential mentors, focusing on their recent articles. This will both help you when you’re contacting them, and to determine if their research sounds interesting to you.
5. Draft a personalized email to each potential mentor. Include information about yourself, your school, the HSSRP program and what specifically interests you about their research.
   - Have your research teacher and one of your classmates proofread and edit your email.
   - Request a meeting or call to speak more about his/her research. This is not a “Will you be my mentor?” email.
   - Find more about drafting this email in Making a Good Impression on page 12.
6. Hope for the best. Response rates to these emails are often lower than 30%, and maybe 10% of those responses are positive. That means, for example, if you reach out to 10 people, maybe three will respond at all, and maybe one will be willing meet to discuss their research and the possibility of being able to mentor you. However, those numbers will vary, and reaching out to 10 people may not be enough to find a mentor, so you want to start by reaching out to closer to 30 potential mentors.

Adapted from http://www.sciencebuddies.org/science-fair-projects/top_science-fair_mentors.shtml
Your search for a mentor may look different from this and move more slowly or more quickly, but here is a sample timeline for finding a mentor:

<table>
<thead>
<tr>
<th>October-November:</th>
<th>December-February:</th>
<th>March-April:</th>
<th>May-June:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research potential mentors, read articles in your field of interest, and draft your resume.</td>
<td>Begin initial contacts with potential mentors, start to set up informational interviews, meetings and video-chats, attend networking events to find out more about the field, and meet potential mentors.</td>
<td>Ask potential mentor who you have had ongoing conversation with if they are free to be your mentor for your project. If they are unable to commit to being your mentor, you should have other potential mentors you can ask.</td>
<td>Finalize details with your chosen mentor, fill out Student and Mentor Contract, set up schedule for meetings, phone calls, or summer project work.</td>
</tr>
</tbody>
</table>

The more people you contact, the better your odds of finding a mentor in your field of interest who has the interest and time to advise you on your research. Reach out to a lot of people, be persistent, and don’t be discouraged. This process takes time and a little luck.

If you don’t hear back from someone you have contacted, wait a week or two before sending a polite follow-up email. If they don’t respond after two attempts at contacting them, you should move on.

If you receive a positive response, set up a day to meet (or speak on the phone). Treat this meeting like a job interview. This means be professional, bring your knowledge and notes about their research to reference, and be prepared with a couple thoughtful questions about their work and/or career. Find more about this meeting in Meeting with Your Potential Research Mentor on page 18.

If your meeting is going well and you are interested in their field of science, you can ask something like “Do you need any help in your lab this summer/school year?” If you haven’t already done so, this is also a great time to share information about the HSSRP program specifically, including time commitments for mentors and goals of the program. Always send a thank you note or email within 24 hours of your meeting or conversation, even if they weren’t able to be your mentor. You never know when this person could be involved in your career in the future.

This process will be different for each student, so guidelines for timelines about reaching out to a certain number of people, or setting up meetings should be established with your teacher. The ultimate goal is for you to find a research mentor by the end of the first year of your research course.

To help you keep track of your progress reaching out to potential mentors, and who you have gotten responses from, we have included the Mentor Outreach Tracker, with a sample of a completed tracker, in the appendix on page 29.

Finalize details with your chosen mentor, fill out a Student and Mentor Contract in the appendix on page 47, set up schedule to begin work on your project during the summer.
Meeting Potential Mentors
The Basics of Networking

New York City is a great place to find a mentor for your science research project. Our city is filled with research institutions, industry, universities, and colleges with STEM degree programs and hundreds of other scientifically-minded people working in a broad range of fields and industries. The best way to get to know these people, and to ultimately find someone whom you can convince to become your research mentor, is through networking. In this section, you’ll learn about what good networking is and explore ways that you can discover all that the city and your connections have to offer to help you find a potential mentor.

Making initial contact with mentors: Networking and informational interviews

Networking is used to describe a broad range of interactions and information exchanges, ultimately working to grow your number of connections and hopefully further your career.

This section cover more specific examples of networking, such as:
• Introducing yourself to a scientist after attending a talk on their research.
• Asking your grandma to introduce you to her cardiologist.
• Letting your family friends know you are looking for a research mentor to see if there is anyone they can connect you with.
• Attending a science café and chatting with the other attendees about your science interests.
• Emailing a researcher whose paper you have read with questions about their work.

Networking can sometimes feel awkward, because it often requires seeking out strangers to introduce yourself to and a lot of self-promotion. Take comfort in that everyone does it, and we all feel uncomfortable at first. If you want to learn more about networking, see the Online Resources section on page 27.

Informational Interviews: A great way to network with someone you have never met before is by suggesting an informational interview. An informational interview is a brief (15-30 minute) meeting in which you are interviewing your potential mentor to find out more about their career, field of interest, and workplace. This is reversed from something like a job interview, where they would be asking you questions. Also, the goal of an informational interview is you gain knowledge about the person you are interviewing rather than looking for a job. Imagine you are a reporter writing a story about this person’s career path. That is how you would conduct an informational interview, but the actual goal is to meet them and learn about their background so you can decide if this is a career you’re interested in, or how to better achieve your goals in your own career path. Asking a person to take part in an informational interview about their work, research, a paper they wrote, or a talk they gave, is a great way to meet them without any pressure of asking them to be your research mentor. It also gives you
Finding potential mentors at local research institutions

When it comes to networking, sometimes the easiest connections are right in front of you (or right down the street). Making connections with people who work at institutions near your house or school will be convenient if you successfully secure them as your mentor and have to regularly travel to their lab.

Where to look: Begin your search by looking at local research institution’s faculty pages for potential mentors who work in your field of interest. For example, if you live in the Bronx, nearby research institutions you can explore include: Fordham University, Albert Einstein College of Medicine, the Bronx Zoo, Montefiore Medical Center, the New York Botanical Garden, Lehman College, Hostos Community College, Bronx Community College, and SUNY Maritime College. As a starting point, identify the 4-5 colleges, universities, or other science-focused institutions that are closest to your school or your home. Be open-minded about the type of faculty member you are considering and how they are connected to your field of interest. Also, be flexible in what you’re interests include.

Making initial contact: Once you have found the page for your local research institution’s faculty, begin to read their research summary, biography, and some of the abstracts of their publications. If their research sounds interesting to you, reach out to them and ask for an informational interview. This can be over the phone, a meeting in person, on their campus, a video-chat, etc. Use whatever method is most convenient for the two of you to talk. This is also a good opportunity to find out about people in their lab as well. Many research labs have graduate students, postdoctoral researchers, or staff scientists who work in the same lab. If the main faculty member you contact doesn’t have time to work with you, maybe one of their lab members will have time and be interested in gaining mentoring experience to put on their own resume. The person and the relationship you develop with them (including their availability to this time commitment) are more important than your mentor’s job description.

Leveraging undergraduate research: Is the institution your potential mentor works at a place you are considering applying to for college? If it is, emphasize that to your potential mentor because they may be interested in having an undergraduate research assistant, and this will make their time investment in training you even more worthwhile. Additionally, knowing that you are genuinely interested in attending their institution in the future, and not just using your experience there to boost your application to other schools, may make them more likely to consider being your mentor.

Invite potential mentors to speak to your class: If you have found a local potential mentor whose work you are interested in (whether a faculty member or someone in their lab), one way to make a connection with them is to invite them to come and speak to your research class. This can be a great opportunity to break the ice by meeting in person, and it will give you an opportunity to show your
enthusiasm and knowledge about their research. A lot of times, a potential mentor may not know how motivated, smart, and committed high school students are, and giving them a chance to meet you in a setting that also highlights your program’s structure and support can be the extra push they need to consider being your mentor. Also, everyone loves the opportunity to share their work with people who are interested in learning about it, so an invitation to speak can be very complimentary. If they are unavailable to come to your class in person, they can also speak with your class via a video-chat (Skype, Google Hangout, etc.).

**Networking with professional societies, at conferences and other in-person events**

In addition to being home to many scientists, New York City also has many events based around scientists sharing their work and networking amongst themselves. These events can be great opportunities to learn more about your field of interest, and meet potential mentors in person.

If you’re looking for these types of events, you can start by subscribing to the “New York Science Career Events” listserv (www.newyorkscienceevents.com). This listserv emails out weekly updates about events, such as science cafes, lectures, and networking events happening throughout the city that you may be able to attend and utilize to network with potential mentors.

**Professional societies:** Many fields of scientific research have professional societies that host annual or regular meetings and conferences. For instance, if you are interested in the field of neuroscience, you could search for “Neuroscience Society” and find that the Society for Neuroscience, the Cognitive Neuroscience Society, the International Behavioral Neuroscience Society and the Social and Affective Neuroscience Society all exist. Many of these organizations have local chapters within NYC that you could reach out to and see if they have regular meetings. Almost all of them also have large annual meetings, and if you’re lucky, maybe there will be a conference in your field of interest happening locally you can attend. Additionally, professional societies catering specifically to women or underrepresented groups in science can also be a great place to network if you fit their targeted demographic.

**Cultural institutions:** Local large science-based cultural institutions, such as the New York Academy of Sciences (www.nyas.org) or the American Museum of Natural History (www.amnh.org), hold events regularly, which can provide great opportunities to meet potential mentors. You can find many of these with a simple internet search of “NYC [field of interest] events” to see if there are any upcoming events in your area. Or, go to the websites of these institutions and keep your mind open to fields you may be interested in with upcoming events.

**Utilizing your personal and professional connections**

Your personal network: So far, all of the networking we have discussed involves reaching out to someone you have no previous personal connection with. In addition to being intimidating for you,
people are generally more likely to be responsive when they have some sort of personal connection to you. Often, it can be easier to network through an existing shared connection, such as a parent’s friend, neighbor’s cousin, or person who you know through a place of worship or community center. Your dad’s friend from his old neighborhood who is married to a biologist and put you in touch with his wife will be more likely to get a response than if you just cold-email her. Your grandma’s ophthalmologist might happily agree to meet you if she asked at her next appointment. Your cousin’s old professor might do a favor for an a former student. Carefully consider the connections within your existing network of peers, teachers, family and friends, and think about how you can leverage these relationships to contact potential mentors. Make sure you always reach out to these contacts with the same professionalism and respect as you would a stranger.

**HSSRP contacts:** If a previous student from your school’s research program has had a successful relationship with a mentor, consider reaching out to that mentor to reconnect with them. This can either be to ask to work in their lab, or to ask if they know of someone who works in your field of interest. Additionally, consider reaching out to the same mentor as another classmate with similar research interests. This can have many potential advantages, including you can travel together, hold each other accountable for going to lab, or cover for the other if you have an unavoidable conflict. However, this may put an additional burden on your research mentor to manage more than one student, so make sure you are aware of their comfort with the situation.

Utilize any potential resources your school has to offer in order to gain access to a larger network. Your HSSRP teacher may have connections with mentors through their prior academic or research experience, or through their role as a HSSRP teacher working with other student researchers. Many schools may have guidance counselors or offices that have established connections at local institutions. They also may have advice for the best way to contact these potential mentors.

If you do reach out to a mentor through a shared connection, make sure you include how you know about them so they understand how you got their contact information. This will also give them an incentive to write you back. It can also help to have your shared connection write an introductory email first, which you would quickly follow-up with your own email. That way they have a reason to read the first email because it is from someone they know, and will associate your email with the introductory message.

To write down and visualize your personal connections and network, see the **Personal Network Organizer** in the appendix on page 32.

**Finding a mentor through summer research programs for high school students**

Summer break is a great opportunity to work with a mentor for an extended period of time. This can be a chance for a mentor to get to know you, and your commitment to your work, before you are busy with the rest of your school year obligations. Participating in a summer
research program is a convenient way to be placed with a mentor at an institution who you can potentially continue a relationship with during the school year (and in following summers). New York City has a number of quality summer research opportunities designed for high school students, many of which can be found here: [http://www.rockefeller.edu/outreach/links](http://www.rockefeller.edu/outreach/links). You can also search for summer programs across the United States via [http://www.pathwaystoscience.org/programs](http://www.pathwaystoscience.org/programs), which allows you to search for high school programs nationwide or in selected geographic areas. Many of these programs can be very competitive to get into, so make sure you research application requirements and deadlines, and put time into writing and editing any application well in advance of its deadline.

Remote mentors, graduate students and other non-traditional experiences

Consider what you really need from your mentor in order to successfully complete your independent research project. Is it lab space? Is it hands-on training? Or is it time to talk about planning your project and any complications that arise? If you don't need a lab space to actually do your experiments in (which is often the case for projects in the areas of social science, math and/or public health), consider a different type of mentoring relationship. A remote mentor, who you speak with on the phone or video-chat, may be a great option for talking through your research project design. This person can still weigh in on areas of their expertise and give you thoughtful advice, but you don’t need them to be close by to meet them weekly. This opens up a far bigger pool of people who can potentially be your mentor as well.

Also, as mentioned before, consider people in a research lab who are not necessarily the “principal investigator” or the head researcher in the lab. Postdoctoral researchers, graduate students, staff scientists, or other members of a lab will most likely have more time to dedicate to you, and can also benefit from the opportunity to gain mentoring experience.
As the saying goes, “You never get a second chance to make a first impression.” This section focuses on things that you can do to put your best foot forward when meeting a prospective mentor or collaborator for the first time. We’ll focus on some general ideas, as well as specific strategies for making a good initial impression in person, over the phone, through email, or other written communication. We’ll include a particular focus on email, as it’s the first point of contact that most HSSRP students make with a prospective mentor, and it’s also a method of communication where you have a good degree of control in carefully editing the content, tone and grammar of your message prior to sending it.

Overall comments on conduct and professionalism
It’s likely that any prospective mentor whom you reach out to – regardless of job title or field of research – is probably a very busy person with many professional and personal obligations. Make every effort to be efficient and prompt in your communications, and to make it clear that you are aware of their limited time. To make a positive, professional first impression, keep the following in mind:

Be respectful: Be polite and professional in the way you address people; this includes potential mentors, administrative staff, their lab members—everyone. More specifically,

• Be considerate of your mentor’s time by making and keeping appointments, and not running over your time.

• Think about what you want to talk about in advance, and come prepared with specific questions.

• Stay focused on the conversation you’re having with them (don’t be checking your phone or daydreaming).

Be humble: Be willing to accept critical feedback, and be open to new ways of thinking about and doing science. Your mentor is there to be your guide. Don’t be offended if they question your ideas and suggest a different article, resource, or more feasible project design.

Be confident: Although you are a new researcher, be confident in what you know, and also what you don’t know. Don’t be ashamed to ask questions. Your mentor will never know what you don’t know (and won’t explain it) unless you tell them.

Be enthusiastic: You’ve chosen your topic because it’s something that sparks your interest and curiosity, and any mentor you contact is working in similar field of research. That immediately gives you something in common to talk about. It’s great to show them that you’re excited about a topic that they have devoted a significant portion of their career to. Most prospective mentors will be energized by your enthusiasm, and flattered by your interest in their work.

Show gratitude: Everyone likes to be thanked for their time and effort, especially when they are going out of their way to help you. This applies for meetings, as well as taking the time to read and an-
answer your emails. If you are writing them a formal thank you note, cite specific ways they have helped you or something you appreciated.

When working and meeting with your mentor, try to be aware of your verbal and your non-verbal communication. You can show that you are engaged by sitting upright in your chair and making eye contact while someone is speaking with you. It may sound silly, but this is a skill worth practicing. Many people don’t know how their non-verbal communication is being interpreted by others, so practice these skills by having mock interviews with your teacher, classmates, or a family member, which you can record on a phone or webcam. Watch them later to see how you are coming across to others and identify specific ways to improve.

Finally, it can’t be said often enough; consider what your first impression looks like on the internet. Assume that any potential mentors are going to do an internet search of your name. Make sure your social media accounts are private, and anything you don’t want being publicly viewable is hidden. It is also worthwhile to consider creating a personal website with your professional interests, or starting a LinkedIn account (www.linkedin.com) to develop a professional web presence. These are sites where you can control the information provided to people searching for you, and use them to make your best professional first impression. You can do a monthly search of your name via Google, Bing, or other commonly used search engines to confirm that there is no information about you out there that could reflect negatively on you.

To see a sample LinkedIn Profile, see the page 33.

Email etiquette

In most cases, your initial contact with a potential mentor will be through email, and this means that that first email can significantly impact the first impression you make. Additionally, much of your follow-up correspondence with any mentor or prospective mentor will be through email, which further underscores how important it is to make that every email you write and send reflects your enthusiasm and professionalism. Below are some email guidelines to make sure you are making the best impression possible.

The Basics

• If you don’t have one already, create a professional email address. This should be a combination of your name, and if necessary, appropriate numbers. If your school assigns you an email address, and you check the account regularly (daily), you can use that.
• Send yourself an email and see what your “From” line says. Make sure it says something like “Jane Jones,” and not JANE JONES or jane-jones or Smileyhappy1212.
• Check every email for typos, capitalization, and grammar. Avoid abbreviations or acronyms, and don’t use slang or emoticons. Proofread every message and ask your research teacher and/or English teacher to read through it as well.
• Use standard black text and a basic font (ex. Arial or Times New Roman) in an appropriate (10-12 point) size.
• Make sure to send any initial outreach emails from a computer, rather than from your phone. They are too important to worry about the formatting, spelling, or other problems a phone-server can add. Once you have established rapport with a prospective mentor, it may be appro-
appropriate to use your phone for a quick check-in email (for example, confirming the time of your meeting), but all formal outreach and updates should be sent via computer.

• Make sure you have an appropriate email signature. You can usually add a permanent signature that includes your name, school, graduation year and email address to your emails in your email carrier’s settings. You may also include a website, LinkedIn profile, or phone number if you choose. In addition to looking professional, this also helps mentors to easily find your contact information if they need it.

Email Signature Example:
Jane Jones
Benjamin Franklin High School, Class of 2018
janejones1212@gmail.com
http://www.linkedin.com/jane-jones-1234567/

Email Content
Make sure you include a subject for your email. A clear, targeted subject can often be the thing that encourages someone to open and read your email. Be simple and descriptive of what you are writing about. Make sure you have no spelling errors (most email sites do not spell check the subject). Avoid all caps, all lowercase, or exclamation points, as these can send your email to spam.

Make your email subject is targeted to your recipient in some way, so that it is clear that the email you are sending is specifically for them, and is not spam or a generic email blast. Referencing their research in some way, for example an article they wrote, or a talk that they gave, helps to make it clear that you have taken time to learn about their work, and shows your enthusiasm for speaking with them.

Here are some sample email subject lines:

Informational Interview to Discuss Your Research on Coyote Population Fluctuations in Southeastern New York State

Inquiry about Figure 2 in Molecular Structure of Deoxypentose Nucleic Acids Article

It can also help to include an action item, next step, or proposed timeline in your subject, as the examples below do:

Scheduling follow-up conversation from your “Ants and Aphids: Best Friends Forever?” talk at Rockefeller University

Time for a quick coffee after your epidemiology panel at Albert Einstein next Thursday?

Greeting
Begin your email with a personalized greeting (ex. “Dear Dr.______). Titles are important in the scientific and research community, so make sure you have your potential mentor’s title correct. If they are listed somewhere as “Dr.,” or have “Ph.D.” “M.D.” “D.Phil.” “D.D.S.” “Psy.D.” “D.V.M.” “Pharm.D.” or “Sc.D.” after their name, you should address them as “Dr. [Their last name].” When in doubt, do an internet search for any letters after their name to make sure you are addressing them correctly. If they are not a “Dr.,” use “Mr.” or “Ms.”, never “MRS.” Finally, make sure you are absolutely sure that you spelled their name correctly.

Body
In the body of your email, you should briefly introduce yourself, the HSSRP
program and why you are interested in this person’s research/career.

Your first email should clearly and explicitly include:

- **This is who I am** (your name, grade, school)
- **This is what my program is** (a description of the HSSRP program, support, structure, etc.)
- **This is why I care about who you are** (I am interested in your research because…)
- **Can we find a time to meet** (in person, or to have a call/video-chat for remote mentors) to discuss this further?

If you are attaching any documents to your email, make sure you mention them in your email, and that you remember to actually attach the necessary attachments (i.e. the description of the HSSRP program). It looks bad to say “I have attached…” and you forget the attachment. Also, make sure your attachments have names that clearly indicate what they are or what content they contain (ex. “High School Science Research Pathways Program Guide” or “Jane Jones_Resume_2016”, not “doc1” or “my resume”).

Show your reader that you are someone whom they can count on and trust. Mentioning a mutual acquaintance (e.g. if you are reaching out to a scientist whom someone in your network put you in contact with) goes a long way towards establishing credibility. If you don’t have a mutual acquaintance, try mentioning something that you and this person have in common. You can reference your interest in their research as a commonality, or you can try to find something unique that your share with them regarding background or interests (e.g. if you both grew up in a similar neighborhood or borough).

Be professional, but also friendly and appreciative. Thank your email recipient for their time. Sign your email “Sincerely,” and include your first and last name on your initial email salutation. Once you have established an email rapport with a prospective mentor, you can shift to signing your emails with your first name only.

Include your HSSRP research course instructor’s name and contact information in case your potential mentor has any questions for them.

Do not start by sending a potential mentor an email that says “Will you be my research mentor?” The goal of this initial outreach email is to break the ice, show your interest and establish a relationship. You will have a much better chance of getting a positive response, or a referral to another prospective mentor, if you take the time to get to know this person and to establish a rapport prior to asking them to be your mentor.

After drafting your email, set it aside for a day. Then, review it a classmate and with your research teacher to make sure that it is clear and actionable. After adding in any edits, read the final version out loud to yourself to make sure that all terms, sentences, and grammar are clear.

Let your appreciation and gratitude come through. Go beyond thanking someone for their time—even a simple expression of gratitude “Thank you so much. I am really grateful for your time.” goes way beyond the usual “Thank you.”
Sending and receiving emails
You should draft and review your entire email carefully, and only add the recipient’s email address in the “TO” space as your final step, before sending the email. This will prevent you from accidentally sending a half-written or unedited email.

Cc: your HSSRP teacher on any outgoing introductory emails that you send. This provides evidence to prospective mentors that you are part of a formal science research program, and that you are receiving support and guidance from a teacher at school, which may make a prospective mentor feel more comfortable about responding to you.

If you do get a response from a potential mentor, respond within 24 hours (or by Monday evening, if you receive an email over the weekend). You are asking this person a favor, so be considerate of their time if they respond to you and reply in a prompt manner.

If you do not get a response after one week, send one follow-up email. After that, assume they are not interested in meeting and continue your search with other potential mentors.

See the annotated Sample Emails in the appendix on pages 34-38.

Creating a Resume
Providing a potential mentor with a resume gives them information about you as a student and how you spend time outside of the classroom, including your commitment, interests, or skills. A potential mentor will understand that you are at the very beginning of your science career, so don’t worry if you don’t have a lot of experience. You probably have more to include or highlight on a resume than you think. Ask your teachers, guidance counselor, family, and friends what they see as your strengths, and then highlight the experiences you have had which show those strengths. Your school guidance counselor may have a “brag sheet” form you can fill out to help you discover what about yourself you should include.

Resumes don’t all look alike, but there are some basic guidelines you should follow to make yours look professional.

- The document should be one side of one page, no longer.
- Your resume should look professional, which means black text in a basic font (ex. Arial or Times New Roman), in a readable size. Don’t try to squeeze everything on one page by making it size 6. No colored paper, graphics, or embellishments. You can use italics, bold, and underlining to format sections.
- Formatting is important, so be consistent and neat. Make sure you are using the same punctuation throughout to denote dates, titles, etc.
- Use action verbs to describe your experience and leadership in each activity or experience. There are dozens of example lists of “action verbs” on the internet. Just make sure the verb you are using makes sense in the sentence context. Also, match your verb tense throughout (for instance, you wouldn’t say “Managed Chess club’s finances.” in one line, and then “Co-chairing the student curriculum committee.” on the next).
Make sure you don’t have any spelling errors. Resumes are generally clear, short descriptions that do not have to be full sentences, but you should be consistent with punctuation. Again, ask people to proofread your resume for you and ask for feedback. They might suggest other experiences or skills that you can add that you didn’t think to include.

Don’t embellish your resume or lie.

Sections of your resume will vary depending on your experiences, but can include the following broad topics (change names as needed):

- **Contact information**: Name, address, email address, phone number.

- **Education**: This section should include your school name, graduation date, and can include your GPA if you want to include it. This section may also list some of the science-based courses you have taken in a subsection titled “Relevant High School Studies.” If you have taken any AP or College-level courses in science, computer science, mathematics, statistics, or applicable social sciences, these are worthwhile to highlight.

- **Work Experience**: You probably don’t have a lot of related work experience, but this section can include anything you’ve done showing you are responsible and reliable. This can include things like babysitting, summer jobs, internships, etc. Along with the job title (example: Summer Camp Counselor, Camp Lakeside), list the date range you help this position and a brief description of your responsibilities. Use action verbs to describe what you did for this position and include any specific achievements.

- **Activities or Volunteer Experience**: These activities can highlight your hard work and dedication to a cause or group. This can also be valuable because your work in a mentor’s lab will likely be unpaid, so showing an example of other volunteer work can highlight your commitment even when not being financially compensated. This section may include club membership, volunteer positions outside of school, student athlete activities, or other things that show your commitment and leadership abilities. Along with the title of your position, include the date range you participated and a brief description of your responsibilities.

- **Honors/Awards**: If you have ever been recognized for something exemplary, highlight it here. This can include membership in an honors society, being an MVP, or any other accolades. This can either be a list, or also include a brief description. Include the date, or range of dates you received the honor/award.

- **Skills**: If you have any relevant skills you would like your potential mentor to know about (i.e. you know how to pipette, you can code in Java, you have advanced Excel skills, you speak a foreign language, etc.) highlight them here. This should be a short list.

- **References available upon request**: You can put this sentence at the bottom of your resume so potential mentors know you have people they can contact who will speak about your work ethic and enthusiasm. Make sure you have a list of people who will agree to be contacted if you include this, in case they do want references.

You can find annotated sample resumes of high school students on pages 39-40 in the appendix.
Breaking the ice with a potential mentor

As we have said before, do not just jump into these conversations with “Will you be my mentor?” Researchers sometimes get hundreds of emails from students interested in working with them. Showing your interest in their research and trying to build a relationship with them first can be the easiest way to improve your likelihood of working with them. There are many other ways to break the ice with a potential mentor of interest.

Consider some of the following ways to meet your potential mentors without immediately asking them to mentor you:

☐ Set up an informational interview to meet them in person or by phone (See a sample email requesting an informational interview on p.35 of this guide).

☐ Ask them questions about their career, a specific paper, or field of research.

☐ Ask for advice. You can go to them with a research question you’re considering and ask if they think it is feasible, or if they have any suggestions about how you should do something differently. You can also ask advice from the position of a young researcher interested in getting into the field.

☐ Meet for coffee to discuss any of the above things.

☐ Have a video-chat call (Skype, Google Hangouts, etc.)

☐ Go to their office (having set up a meeting with them).

☐ Ask for a tour of their lab.

☐ Invite them to speak to your research course/club.

If you write to a potential mentor and say something like “I realize you have written many articles on [insert field]. I have read many of your abstracts, and these two full articles [list article titles]. I am very interested in [insert field] and was hoping you may have time to meet, in person or on the phone, to answer some questions I have.” they are going to be far more interested in meeting with you. Some may still not have time to meet with you, but they will certainly respect your interest, and may direct you to other people in the field who are available.

Meeting with your potential research mentor

So, you have emailed dozens of potential mentors, and finally, someone is interested in meeting with you. This is a great step on the path to getting a research mentor.

Your first meeting with a potential mentor is a lot like a job interview, and because of that, you should work to be professional and impressive. Although it is always important to be professional when dealing with a mentor, your first meeting can really set the stage for your relationship. This meeting is your best chance to convince your potential mentor that working with you is worth their time and energy because you are knowledgeable, driven, enthusiastic and committed. Show them you are someone they would enjoy mentoring.

You should dress appropriately (consider business casual attire), be familiar with the research topic and publications of your potential mentor, and be prepared with questions based on your potential mentor’s work and their field. Additionally,
bring a notebook and pen to take notes during your meeting and a copy of your latest resume (even if you have already emailed it to them). You can also bring copies of your background research to reference during the meeting, but make sure you have them well annotated (with notes of what you think is important) so you can quickly reference sections in those articles during your conversation.

Write down the time and place where you are scheduled to meet, and confirm that date, time, and location of your meeting with the person you’re meeting the day before you’re scheduled to meet. If you’re meeting at their lab or office, remember that college campuses, laboratory buildings, and office buildings can be confusing, so give yourself extra time to find where you are meeting, and maybe do a quick walk-by to make sure you know where the office is. Some buildings may also require that you provide ID for security purposes, so make sure to bring a school ID, NYC ID, passport, or other form of identification with you. However, while it’s good to be a bit early, do not show up at your mentor’s office more than a few minutes early, as they may be busy, and there may not be a location where you can wait for an extended period of time. If you get to their campus or building ahead of time, find somewhere to sit and wait for your meeting time, and then if applicable, knock on the door (even if it’s open). Finally, always be courteous and polite to everyone you come across during your meeting or visit. You never know who those people are, or if they work in the lab of your potential mentor, and showing courtesy and kindness to everyone can helps to show off your best side to anyone and everyone at your mentor’s lab or workplace.

If your first meeting is a phone call, rather than an in-person meeting, but be aware of your surroundings for making the call. Try to find somewhere quiet where you won’t be interrupted (maybe ask a teacher, dean, or guidance counselor if you can use their classroom or office). If possible, use a landline to remove the chance of any connection issues on your end. Set aside enough time for a proper introduction (probably 30 minutes), but also set a hard stopping time so that you won’t use too much of their time. Keep track of time during your call, and consider saying something like “I want to be considerate of your time so please let me know if you have something else you need to leave for” or “I know we only have 5 more minutes, so I have one last question.” Have a notebook with you to take any notes, and bring any materials you may want to reference, for instance, a list of questions you have established beforehand, or some of your potential mentor’s papers.

In addition to these meetings being a way for your potential mentor to get to know you, they are also a way for you to get to know your potential mentor. If you are considering working in their lab, make sure that their work culture and personality are a good fit for you, and that they will be a good working environment for you to succeed in.

Regardless of the type of meeting you have had with your potential mentor, you need to write them a thank you note or email within 24 hours. Thank them taking the time to meet with you, and reference a specific point or anecdote from your conversation to help jog their memory.
of what you discussed. Additionally, if you agreed to speak further, use your thank you note to schedule a plan for any follow-up items or future meetings, and send them any information they may have asked you for during your meeting. A thank you note is an absolute necessity, and will show your professionalism and appreciation.

**Support from your research pathways teacher and program staff**

A huge benefit of participating in the HSSRP program is the support you have from your research teacher, school, and the program staff at the Department of Education. We have heard from many previous mentors that they prefer students involved in a formal program because it shows them the student will be accountable and committed to their work. Also, if something is going poorly with your research mentor, you have a number of people who can intervene on your behalf. Make sure you share the details of the HSSRP program with potential mentors so they know you are not on your own using the [Overview of the New York City High School Science Research Pathways Program and FAQs for Prospective Research Advisors](#) in the appendix on pages 41-46. Also, share your research teacher’s contact information with prospective mentors, and encourage a prospective mentor and your research teacher to schedule a time for a phone call to discuss any questions that could be best addressed by an adult. Also, cc: your research teacher on your communications with potential mentors to show them you are supported by a strong program and a committed teacher.
What to Do If…

There are a lot of moving parts involved in your search for a research mentor. To help you organize your communications, we have included the Mentor Outreach Tracker on page 29 of the appendix. In this section, we address some of the things that can be hiccups to your mentor search, and how you can address them on your own and with the help of your HSSRP support systems. If you encounter an issue not covered in the list below, let your research teacher know what is going on, and see what they advise you to do. If they aren’t sure about how to answer your question or concern, they can contact the HSSRP program team at STEMMattersNYC@schools.nyc.gov for additional guidance.

A prospective mentor has questions or concerns
First of all, make sure your potential mentor is aware of the structure and support you have from the HSSRP program, both from your course leader and the program support staff at the Department of Education. Make sure you share the Overview of the New York City High School Science Research Pathways Program and FAQs for Prospective Research Advisors in the appendix on pages 41-46. If they have questions beyond what you can answer, you should refer them to your HSSRP teacher. If your research teacher is unable to answer their questions, then s/he should contact the HSSRP program staff at STEMMattersNYC@schools.nyc.gov to relay any challenging questions to the staff at the Department of Education.

A prospective mentor replies that s/he is unable to mentor you
If a potential mentor says they are unable to mentor you, you should respect their response and not push them to try to convince them otherwise. However, you can ask them if they know of anyone else who may have the time and interest to work with a high school research student. They may have graduate students or postdoctoral researchers in their lab who are looking for mentoring experience who they can connect you with, or know of other faculty members who are interested in working with high school students or have in the past. Also, ask if there are other research articles or information this person can share with you or direct you to that will help you better understand their field. In addition to providing you with more information on your field of interest, this can further impress on the researcher your passion for learning about their field of research.

You are not receiving responses to your emails
Unfortunately, many researchers are overwhelmed with the number of requests they get from high school students asking about mentors, and simply do not reply. As discussed in Steps to Finding a Mentor on page 5, the rate of reply to these messages is very low (maybe 1-2% are positive if you’re lucky), so be persistent and contact as many people as possible. Do not get discouraged if most of your emails do not re-
ceive replies. Make sure you send one (and only one) follow-up email to each potential mentor who has not replied to you after about a week, but then move on from them. Continue to reach out to potential mentors, but also expand your field of interest to related fields if you are running out of people of interest in a particular field. Additionally, consider non-traditional mentors if possible based on your project, such as a remote mentor (which will dramatically increase the pool of people you can contact), or a research mentor who does not have a lab space.

**You are having scheduling issues**

If you and your potential mentor have communicated and are trying to schedule a time to meet, make every effort to be proactive and flexible. Remember, despite the busy schedule you probably have, you are asking for a generous time commitment from an already over-scheduled research professional, and it’s important to work around their schedule as much as possible. Make sure you are making every effort you can (and rearranging your schedule if necessary) to find the time to meet with them when they are available. If you cannot make changes to your schedule for some reason, and are having a hard time finding a good time to meet, suggest having a phone call or video-chat instead. You may also be able to find time during a free or lunch period, or during your research pathways class to schedule a call. Also consider that if your mentor is having a hard time the time for a call when you are available, this might be a sign they will be unavailable to take the time to mentor you in the future as well.
Congratulations! You have a research mentor for your independent research project. This is a major accomplishment that you should be very proud of. However, your work isn't done - now that the hard part of finding a mentor is over, your focus should shift to maintaining a positive relationship with your mentor over the next few months or years.

Some strategies to help you support a positive relationship with your mentor moving forward include:

- **Mutual understanding of expectations**: Starting from the beginning of your work together on your project, making sure you and your mentor are on the same page about project timelines, communications and lab policies can help you work together most productively and peacefully.

- **Managing time and schedules**: You and your mentor are most likely both very busy, which can make keeping your project a priority for both of you difficult. Having a plan in place for how you will continue to work together through busy periods makes a big difference.

- **Regular and proactive communication**: Since you and your mentor don’t attend school or work in the same building, regular and prompt communication (in person or via email, phone, or video-chat) is critical to a successful relationship with your mentor. It is also important to keep your research teacher updated about how your work with your mentor is progressing, and to let him/her know as soon as possible if you see any problems beginning to develop with your mentor.

To set expectations with your mentor, see the **Sample Student and Mentor Contract** in the appendix on pages 47-51.

**Developing and maintaining a relationship**

Making the most of meetings: In most cases, you and your mentor began developing a relationship through your meetings prior to you asking them to become your mentor, but this will still be an ongoing process throughout your work together. The HSSRP program is designed with the idea that you and your mentor will meet, email, or otherwise converse on average for 30 minutes per week. This time can vary depending on the specific project, and the stage of your project you’re in. Discuss with your mentor ahead of time if they would find it valuable for you to create an agenda prior to your meetings, if they would like you to discuss all aspects of your project or focus on specific topics, or any other guidelines they want to set to give these meetings structure. If you are working with a mentor who runs a lab, maybe speak to some of their other lab members to see how they structure their meetings with your mentor for advice.

**Planning out a research project**: Work with your mentor to establish long- and short-term objectives with a series of deadlines for completing each step. Make sure that in doing so, you have discussed and are in agreement about specific tasks you will complete and things you will create for each milestone of your investigation. This will help both of you
be on the same page about where you are in your research, and will help you to stay on track with the pace of your work. When doing this planning, you and your mentor should use a calendar so that you can identify dates or periods of time during which one of you might have a conflict (for example, your mentor has to go to a conference or you have Regents exams) or when one of you is on vacation. Finally, planning together will help you to map out a reasonable timeline for accomplishments, and will allow for you to build in extra time for unexpected delays. Remember, science moves slowly. Sometimes it moves frustratingly slowly, so discuss what reasonable timelines are with your mentor, keeping in mind your own skills and a learning curve.

Building your independence: Although your mentor is there to be your scientific guide, you should aim to build your independence as a researcher as much as possible. Eventually, this independence will take form as you being able to plan and run experiments on your own, present to the lab and manage your project with the feedback from your mentor. Beginning this process can be complicated when you’re working in someone else’s lab, and it may take time to get the lay of the land regarding where things are kept and which machines to use, etc. Make sure you are taking your mentor’s advice for project design, experimental parameters and techniques. Guiding you through those aspects of research is part of the reason having a mentor is so worthwhile. Once you have established a work plan with your mentor and they have agreed on the research design of your project, you should try to work independently on manageable increments.

Some ways you can develop your independence are:

- Understanding why you’re doing what you’re doing, what your next steps are and what you need to do to accomplish those next steps. Eventually, you hopefully can get to the point where you arrive at your mentor’s lab and get started on your work. This is more independent than having to ask your mentor “What are we doing today?”

- Being aware of where materials for your research project are – e.g. chemicals, equipment, or electronic files - are and how to use each of these items appropriately and safely.

- How to carry out any experimental procedures and data collection independently. This will likely take some practice under the guidance of your mentor before you feel comfortable doing these things on your own.

Don’t be afraid to ask questions. While you will build your independence, you will still need your mentor’s guidance on major decisions or milestones in your project, and you should continue to confer with your mentor regularly even if some of your day-to-day work is done without direct oversight at all times.

Asking for clarification or help when you need it: As a new mentee, you will be working with a mentor who may be less accustomed to discussing their work with a high school student new to their field. In particular, you may find that they use very technical language when explaining things. It’s OK, and normal, to encounter lots of unfamiliar vocabulary and terms when discussing their project with a mentor. Many mentors are used to working with older students (under-
graduate or graduate students) who have more in-field experience, so you’ll need to let them know if you’re having difficulty following what they’re saying. You should feel comfortable telling your mentor if there’s a topic you’re not familiar with, or if you don’t understand a term they’re using. This will help them to better understand what you do and do not know, and to be more successful at explaining things to you.

As long as you are trying to understand the field and the jargon, don’t ever feel embarrassed to ask for clarification. If you just sit there and nod along because you are nervous to ask for a more clear explanation, your mentor will assume you understand what they’re saying and continue on. Your mentor should be understanding of your limited prior knowledge and help you through your discussion, and will likely appreciate any questions that you have to help them explain things to you in an understandable way.

Let your gratitude and appreciation show: Throughout your relationship with your mentor, continue to be grateful for the time they are giving you during this program. This is not an opportunity that every student gets, and you should appreciate your mentor and their effort. Make sure to show your enthusiasm, thank them for their help and advice and be considerate of their time and their many other obligations.

Setting expectations with your mentor
An important step in maintaining a positive relationship with your mentor is setting expectations that you both agree on. We have included a Sample Student

and Mentor Contract on pages 47-51 of the appendix, which you should use to help you determine and agree on aspects of your partnership, such as frequency of meetings, how you will communicate with each other (email, phone, etc.), reasonable response time for your communications and how to cancel meetings if necessary. If you set up these expectations ahead of time, you, your mentor, your research teacher and your family can be sure of what is expected of each of you, and if the relationship isn’t being well maintained you can ask your HSSRP research course leader to intervene on your behalf. Some situations that should raise red flags include:

- You haven’t talked to your mentor in more than three weeks (and that isn’t during a discussed vacation/break time),
- Your mentor has stopped returning your emails,
- Your mentor asked or told you to not come to lab and/or contact them for a long period of time.

Although these situations may be due to factors beyond your control, such as a mentor being overextended or an emergency, they still may be problematic if they prevent you from learning and making progress in your research. If you have established mutual mentor-mentee collaboration expectations in your contract, you can bring this to your teacher and they can help you work through the problem with your mentor.

You and your mentor should also discuss what you should do if you show up early, or before they’re ready to work with you, because you may need to wait somewhere nearby until they’re ready.
Once you are a little more established in the lab and have learned basic procedures and techniques, you will probably feel more comfortable coming in and get right to work without having to check in first. Continue to discuss your progress with your mentor so that you can identify together when they are comfortable with you having that level of independence. Arriving on time is very important, and you should make every effort to do so, however, things do happen. If you are running late because of unforeseen circumstances, make sure you have established how your mentor would like you to let them know, whether that’s a quick email, phone call, etc. Likewise, make sure that you and your mentor agree on the best way for them to contact you if something comes up on their end and they are running late or need to cancel a meeting.

**Professionalism and accountability**

While professionalism when reaching out to potential mentors is important, it is even more crucial when working regularly with someone who has agreed to be your mentor. Although you want to have a friendly relationship with your mentor, keep in mind that this person is your supervisor and someone who can be a positive reference or provide letter of recommendation for you in the future. Because of this, you should always be cordial and professional, even as you get to know each other better. This applies to both in-person and written communications. For example, when writing emails to your mentor, you should still be using formal openings “Dear Dr. XYZ” and signatures “Best, Jane”. Remember, these emails are not text messages to your friends, they are a communication with a professional.

Depending on the culture of their lab or institution and their personality, some mentors may prefer to be more or less formal in communication with you. If you find that everyone on your lab is introducing themselves to you with their first name, it may feel more natural to address them in that way; likewise, if you and your mentor are texting back and forth to finalize a meeting time, it may look weird to end every text with a formal signature. In those cases, look for cues in how your mentor communicates with you, and try to mirror that in your communication to them. If you’re unsure about how formal to be with a mentor, ask them how they’d prefer to be addressed or to communicate.

Show up on time for any meetings or regularly scheduled lab time. If you need to cancel for any reason, give your mentor as much notice as possible. A problem we hear from mentors is that their students are often very committed at the beginning of the project, but begin to lose momentum as they get busy with school and other activities, and begin to show up less and less often. Try to avoid letting your academic and personal obligations cut into your time with your mentor. Realize this project is a large time commitment, and your mentor is offering a lot of their time to help you be successful, so you should be making your project a priority.

Finally, if something goes wrong, or if you mess up an experiment, own it. If you address a problem or mistake openly and honestly, it will be a lot easier to work through with your mentor than if you try to hide it and they find out in another way. Every scientist, from the beginning of their career to the end, makes missteps and uses them as a valuable learning experience. An honest relationship based on trust is going to show your mentor you are mature enough to be given responsibilities and independence in the lab or your research project, which will help you become a successful researcher in the long term.
Online Resources

Networking
Learn to Love Networking
https://hbr.org/2016/05/learn-to-love-networking

New York Science Career Events
http://newyorkscienceevents.com/

Finding a mentor
How to Find a Mentor

Matching Students with Experts
http://www.intel.com/education/isef/profiles/experts.htm

A teacher’s guide to mentoring in STEM
https://www.sciencenewsforstudents.org/article/teacher%E2%80%99s-guide-mentoring-stem

Writing your Resume
Sample Resume for High School Students (and list of action verbs)
http://www.mass.edu/gearup/documents/WritingaResume.pdf

High School Student Resume Sample & Template
http://www.monster.ca/career-advice/article/high-school-student

High School Resume Template
https://www.thebalance.com/high-school-resume-template-2063264

First Resume Example with No Work Experience
https://www.thebalance.com/first-resume-example-with-no-work-experience-2063278

High School Summer Research Programs
Science Enrichment Opportunities
http://www.rockefeller.edu/outreach/links
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Sample Student and Mentor Contract ............................................. 47-51
## MENTOR OUTREACH TRACKER

**Name:** Jane Jones  
**Grade:** 10.00  
**School:** Science Researcher Preparatory Academy, Bronx NY  
**Research Pathways Teacher:** Mr. Biotech

**Topic I'm Interested in Researching:** Disorders of the Immune System  
**Why I am Interested in this Topic:** I want to research disorders of the immune system. I read an article about this kid was a "bubble boy" because he didn't have a working immune system. It sounded like such a sad way to live. That made me curious about the immune system and what happens when it doesn't work correctly. I'm also curious about this topic because my little brother has a serious allergy to nuts and he has to carry an EpiPen and avoid kids who eat peanut and other nut-based foods. It makes me sad that he has to live this way and I want to know what's happening in research in the immune system because my mom told me that his allergy is caused by an immune disorder and it would be great to help him and other kids.

<table>
<thead>
<tr>
<th>Name of Potential Mentor</th>
<th>Institution or Affiliation</th>
<th>Email Address</th>
<th>Phone Number</th>
<th>How I learned about this mentor</th>
<th>Sent introduction email (date)</th>
<th>Sent follow-up email if no response (date)</th>
<th>Got response to introduction email (date)</th>
<th>Scheduled a meeting or call (date)</th>
<th>If negative response and should stop contacting</th>
<th>Notes (links to papers, notes about research interests, how you heard about this person, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Cheryl Biome</td>
<td>Rockefeller University</td>
<td><a href="mailto:Cheryl.Biome@Rockefeller.edu">Cheryl.Biome@Rockefeller.edu</a></td>
<td>(646)731-2335</td>
<td>Mr. Jones (research teacher)</td>
<td>10/15/16</td>
<td>10/21/16</td>
<td>NA</td>
<td>10/31/16</td>
<td></td>
<td>Studies microbial transfer between species - specifically human/mouse interactions. Heard about her from Mr. Jones, who met her at a conference. Someone told me she likes having high school students in her lab.</td>
</tr>
<tr>
<td>Dr. James Rodent</td>
<td>American Museum of Natural History</td>
<td><a href="mailto:Direct@AMNH.org">Direct@AMNH.org</a></td>
<td>(646)852-4702</td>
<td>AMNH website</td>
<td>10/15/16</td>
<td>10/21/16</td>
<td></td>
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<td></td>
<td>The AMNH website says that he studies the evolution of animal immune responses. He uses a lot of computer modeling to do his research studies, so I think I would enjoy this because I took computer programming last year and really enjoyed it! Waiting to confirm meeting date.</td>
</tr>
<tr>
<td>Dr. Freida Rosenblum</td>
<td>Albert Einstein College of Medicine</td>
<td><a href="mailto:Freiden@AECOM.edu">Freiden@AECOM.edu</a></td>
<td>(303)225-6487</td>
<td>Albert Einstein website</td>
<td>10/23/16</td>
<td>10/27/16</td>
<td></td>
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<td></td>
<td>The website says that she works on hedgehog immune response to pollen (I guess that's similar to when we humans have pollen allergies in the spring?). Allergy lab. Has written a number of papers in The Journal Of Immunology (links). I already read two and skimmed three for class. &quot;Got back to me - didn't have time to meet, but suggested I reach out to her graduate student Anita Doctorate.&quot;</td>
</tr>
<tr>
<td>Ms. Anita Doctorate</td>
<td>Merck and Co.</td>
<td><a href="mailto:Adoc@AECOM.edu">Adoc@AECOM.edu</a></td>
<td>(484)742-9983</td>
<td>Dr. Rosenblum</td>
<td>10/24/16</td>
<td>11/2/16</td>
<td></td>
<td>11/15/16</td>
<td></td>
<td>She is a graduate student in the lab of Dr. Frieda Rosenblum. Studies antibody response to pollen in hedgehogs. Is a 3rd year graduate student. Interested in having her own lab someday and wants mentoring experience. Also recommended I contact Dr. Ann Choo at City College (CUNY), who was her undergrad advisor there.</td>
</tr>
<tr>
<td>Mr. Phil Scripts</td>
<td>Hostos</td>
<td><a href="mailto:Scripts@Merck.com">Scripts@Merck.com</a></td>
<td>(610)282-0842</td>
<td>My cousin (Stephanie)</td>
<td>10/27/16</td>
<td>11/6/16</td>
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<td></td>
<td>Works for a pharmaceutical company designing drug trials for allergies (I think that means that he tests the drugs to see if they work and to make sure that they are safe - will check this with my teacher). Has had high school interns before, one of which is my cousin, so I think he could help me. My cousin introduced us, and I am hoping he can be my remote mentor because NJ is too far to commute. Heard back-he doesn't have any time.</td>
</tr>
<tr>
<td>Dr. Dayle Hugs</td>
<td>CUNY</td>
<td><a href="mailto:dhugs@hostos.com">dhugs@hostos.com</a></td>
<td>(484)545-9831</td>
<td>Elvis (12th-grader in my research class) worked at another lab on the same floor at Columbia last summer and suggested I reach out to this guy</td>
<td>11/6/16</td>
<td>11/14/16</td>
<td></td>
<td>11/13/16</td>
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<td>Works on cancer and antibodies. I have a lot of questions about his work because I haven't read anything like this before. I think his immunotherapy for cancer? Waiting to confirm meeting date. Need to research more before a meeting.</td>
</tr>
</tbody>
</table>
## MENTOR OUTREACH TRACKER

<table>
<thead>
<tr>
<th>Name of Potential Mentor</th>
<th>Institution or Affiliation</th>
<th>Email address</th>
<th>Phone Number</th>
<th>How I learned about this person</th>
<th>Sent introduction email (date)</th>
<th>Sent follow-up email if no response (date)</th>
<th>Got response to introduction email (date)</th>
<th>Scheduled a meeting or call (date)</th>
<th># of negative response and should stop contacting</th>
<th>Notes (links to papers, notes about research interests, how you heard about this person, etc.)</th>
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</table>
Name: Jane Jones
Fields of Interest: Infectious disease (ID) and the immune system

Her colleagues at Rockefeller University

Former students of hers who are still working in ID (remote mentors?)

Her husband works for a hospital I think?

Their colleagues either here or remotely who are interested in working with students

Their students/lab members

Anyone he contacted and got a positive response from?

Connections at local colleges that have research programs

Ask teammates if their parents work in ID or science at all

Connections at her job at Merck before teaching

Colleagues from her job at Merck before teaching

Ms. Tompkins (Biology Teacher)

Mr. Goodwill (Guidance Counselor)

Former students of hers who are still working in ID (remote mentors?)

Jason (former HSSRP studying ID)

 YMCA Basketball League

Summer job at library

Family member

Aunt Stacy (Nurse)

Grandpa Kyle

David (former coworker, now goes to SUNY)

Is he taking any science classes? Professors/Classmates in labs

I think he said his army buddy’s son works at Mt. Sinai?

If they don’t study ID maybe someone they know at Mt. Sinai does?

People she works with

Someone she knows from nursing school

Her friends from college who studied biology with her

His doctors

If they don’t study ID maybe someone they know at Mt. Sinai does?
Sample LinkedIn Profile

Jane Jones
Student at Science Researcher Preparatory Academy
Bronx, NY | Science Research

Highly-motivated student seeking authentic science research experience, ideally with focus on infectious disease, immunology, allergies, microbiology, or related field.

High school student with experience in basic research skills, scientific research literature review, and an interest in pursuing research in infectious disease, immunology, and allergies. Previous work on a maternity ward of Montefiore Medical Center, babysitting, and waitressing, Relevant coursework knowledge in AP biology, AP statistics, AP computer science principals, and more. Member of the National Honor Society, student athlete, member of the debate club and student council.

Experience

- **Maternity Ward Volunteer**
  Montefiore Medical Center

- **Babysitter**
  Bronx, NY
Sample Student Emails

Sample Request for an Informational Interview

To: frosen@AECOM.edu
From: janejones@gmail.com
Cc: MBioTeach@SRPA.edu
Subject: Informational Interview Re: Work in Hedgehog Immune Response

Dear Dr. Rodent,

To introduce myself, I am currently a sophomore at Science Researcher Prep Academy in the Bronx, NY. I am part of a science research club at my school run through a Department of Education program called High School Science Research Pathways (HSSRP). I have cc’ed my Research Teacher, Mr. Michael Bioteach, if you have any questions for him about the program I am involved in.

This semester in our club we have been reading research papers in a field we are interested in, and I recently read your paper titled “Hedgehog Sneezes: Why they matter for humans” in the Journal of Immunology. I really enjoyed the topic of your paper and am particularly interested in the computational methods you used to analyze your data.

If you have time, can we briefly meet to discuss some questions I had in person? I would love the opportunity to learn more about your research and the field of immunology.

Thank you for your time, and I look forward to hearing from you.

Sincerely,
Jane Jones

Jane Jones
Science Researcher Preparatory Academy, Class of 2018
janejones@gmail.com
http://www.linkedin.com/jane-jones-1234567/
Sample Student Emails, Con’t.

Sample of a Follow-Up Email if No Response was Received from an Initial Email

To: frosen@AECOM.edu
From: janejones@gmail.com
Cc: MBioTeach@SRPA.edu
Subject: Follow-up about Informational Interview Re: Work in Hedgehog Immune Response

Dear Dr. Rodent,

I wanted to follow-up on my previous email regarding an interview about your paper “Hedgehog Sneezes: Why they matter for humans” from the Journal of Immunology. I recently read your paper for my High School Science Research Pathways (HSSRP) science research, and was hoping you had time to briefly meet to discuss some questions I had. If you are unavailable to meet in person, I would be happy to schedule a video-chat on Skype or Google Hangout, or a phone call. Please let me know if you may be available to meet, and we can schedule a time. After school (later than 3pm) on weekdays is best for me, but I would be happy to work around your schedule.

Thank you again for your time, and I look forward to hearing from you and discussing your research.

Sincerely,
Jane Jones

P.S. I have cc’ed my Research Teacher, Mr. Michael Bioteach, if you have any questions for him about the HSSRP program I am involved in.

Jane Jones
Science Researcher Preparatory Academy, Class of 2018
janejones@gmail.com
http://www.linkedin.com/jane-jones-1234567/

Sample Follow-Up to Meeting at an In-Person Event

To: AAantsci@Rock.edu
From: SamuelSmith@BkHS.edu
Cc: RFriedman@staff.bkhs.edu
Subject: Scheduling follow-up conversation from your “Ants and Aphids: Best Friends Forever?” talk at Rockefeller University
Attachments: “HSSRP Program Overview.doc”

Dear Dr. Antsci,

It was a pleasure meeting you at Rockefeller University after your talk “Ants and Aphids: Best Friends Forever?” I was glad to have the opportunity to ask you about my own research interests in arthropod defense mechanisms. To re-introduce myself, I am currently a junior at Brooklyn Senior High School working in the High School Science Research Pathways program (HSSRP). If you are interested in learning more about the HSSRP program, I have attached the program description and overview.

I was hoping we could schedule 15-30 minutes to meet, either in person or through a Skype or Google Hangout video-chat, to further discuss the work you do in your lab and what I can do as a high schooler to get started on your career path. Please let me know if you are available, and we can schedule a time.

Thank you again for taking the time to speak with me last Friday, and I look forward to hearing from you about scheduling a time to continue our conversation.

Sincerely,
Samuel Smith
Brooklyn Senior High School, Class of 2019
SamuelSmith@BkHS.edu

P.S. I have cc’ed my Research Teacher, Ms. Rachel Friedman, if you have any questions for her about the program I am involved in.
Sample Email Exchange between a Student and a Potential Mentor

*(starting with a second degree connection)*

Initial email:
To: scripts@merck.com
From: SamuelSmith@BkHS.edu
Cc: RFriedman@staff.bkhs.edu
Subject: Informational interview regarding your work at Merck in allergies
Attachments: “HSSRP Program Overview.doc”

Dear Dr. Scripts,

To introduce myself, I am currently a junior at Brooklyn Senior High School. My cousin, Stephanie Brown, spoke to you about my interest in the immune system and allergies and I was hoping we may be able to schedule some time for an informational interview so I can learn more about your work and the field of allergy research.

I am part of a science research club at my school run through a New York City Department of Education program called High School Science Research Pathways (HSSRP). I have cc’ed my Research Teacher, Ms. Rachel Friedman, and attached an overview of the HSSRP program if you have any questions for him about it.

I was hoping we could schedule 15-30 minutes to meet, either in person or through a Skype or Google Hangout video-chat, to further discuss the work you do in your lab and what I can do as a high schooler to get started on your career path. Please let me know if you are available, and we can schedule a time.

Thank you for your time, and I look forward to hearing from you.

Sincerely,
Samuel Smith
Brooklyn Senior High School, Class of 2019
SamuelSmith@BkHS.edu

Dr. Scripts’ reply:

To: SamuelSmith@BkHS.edu
From: scripts@merck.com
Cc: RFriedman@staff.bkhs.edu
Subject: Re: Informational interview regarding your work at Merck in allergies

Hi Samuel,

It is nice to hear from you. Your cousin had great things to say about your passion for science. I would be happy to schedule time for a call. Are you free next Wednesday (10/4) at 12pm?

Best,
Phil
Sample Student Emails, Con’t.

**Samuel’s response:**
To: scripts@merck.com
From: SamuelSmith@BkHS.edu
Cc: RFriedman@staff.bkhs.edu
Subject: Re: re: Informational interview regarding your work at Merck in allergies

Dear Dr. Scripts,

Thank you so much for getting back to me. I am unfortunately unavailable at 12pm on Wednesday because I have a math test during that time. It is easiest for me to schedule a call after 3pm on weekdays (after school). Are you available at all next week during that time (10/2-10/6)?

Thank you again for your time, and I look forward to speaking with you further.

Sincerely,
Samuel Smith
Brooklyn Senior High School, Class of 2019
SamuelSmith@BkHS.edu

**Dr. Scripts’ reply:**
To: SamuelSmith@BkHS.edu
From: scripts@merck.com
Cc: RFriedman@staff.bkhs.edu
Subject: Re: re: re: Informational interview regarding your work at Merck in allergies

Hi Samuel,  

Sure. Let’s do Tuesday, 10/3 at 3pm. You can call my office number (333) 999-5454. Talk to you then.

Best,
Phil

**Samuel’s reminder email:**
To: scripts@merck.com
From: SamuelSmith@BkHS.edu
Cc: RFriedman@staff.bkhs.edu
Subject: Call for our informational interview tomorrow (10/3) at 3pm

Dear Dr. Scripts,

I hope you are having a great week. I just wanted to check back in and make sure you were still available to speak tomorrow (10/3) at 3pm. I will call your office line (333) 999-5454. Please let me know if anything has changed or if you need to reschedule.

Thank you again. Looking forward to our conversation tomorrow.

Sincerely,
Samuel Smith
Brooklyn Senior High School, Class of 2019
SamuelSmith@BkHS.edu

**Dr. Scripts’ reply:**
To: SamuelSmith@BkHS.edu
From: scripts@merck.com
Cc: RFriedman@staff.bkhs.edu
Subject: Re: Call for our informational interview tomorrow (10/3) at 3pm

Yes. 3pm is good. Talk then.

Phil
**Sample Student Emails, Con’t.**

**Samuel’s thank you email:**

To: scripts@merck.com  
From: SamuelSmith@BkHS.edu  
Cc: RFriedman@staff.bkhs.edu  
Subject: Thank you so much for your time yesterday  

Dear Phil,

Thank you so much again for taking the time to speak with me yesterday about your work at Merck and the field of allergy research. I especially appreciated your paper recommendations, and have already begun “Fn14 deficiency protects lupus-prone mice from histological lupus erythematosus-like skin inflammation induced by ultraviolet light” by Doerner et al. If you don’t mind, I would really enjoy the opportunity to follow-up with some questions about the suggested literature.

I hope you have a great rest of your week, and have beautiful weather for your sailing trip this weekend.

Thank you again, and I hope we can speak again soon.

Sincerely,
Samuel Smith  
Brooklyn Senior High School, Class of 2019  
SamuelSmith@BkHS.edu

---

**Sample Thank You Email for an Informational Interview**

To: frosen@AECOM.edu  
From: janejones@gmail.com  
Cc: MBioTeach@SRPA.edu  
Subject: Thank you for taking the time to speak with me yesterday  

Dear Dr. Rodent,

Thank you again so much for taking the time to meet with me yesterday for an informational interview. It was absolutely wonderful to tour your lab, and especially to see the hedgehogs. I understand you are too busy this semester for a mentee, but I was wondering if you could suggest other researchers in your field, or maybe junior members of your lab who may be interested in gaining mentoring experience.

Thank you again so much for your time, and please let me know if you have any suggestions for other potential mentors I should contact.

Have a wonderful weekend.

Sincerely,
Jane Jones  
Science Researcher Preparatory Academy, Class of 2018  
janejones@gmail.com  
http://www.linkedin.com/jane-jones-1234567/
Jane J. Jones

(555) 800-3000  
Janejones989@gmail.com  
1925 Eastchester Rd.  
Bronx, NY 10461

Education:
Science Researcher Preparatory Academy, Bronx, NY.  
GPA: 3.9  
Relevant coursework: AP Biology, AP Statistics, AP Computer Science Principles

Work and Volunteer Experience:
Montefiore Medical Center, Bronx, NY.  
Maternity Ward Volunteer  
April 2016 - Present
• Assisted parents of newborns in leaving the hospital. Familiarized them with exit protocols and led parents to parking area.
• Organized closet of decorations and implemented labeling system for storage.

Babysitter  
Bronx, NY.  
January 2016 – Present
• Designed creative games and activities to keep children engaged.
• Maintained safe and healthy environment for children at all times.

Waitress  
Taqueria TaxiCali, Bronx, NY.  
• Provided efficient customer service through utilization of time management and multitasking.
• Trained two new employees on restaurant practices.

Activities:
• National Honor Society  
• Varsity Tennis  
• Debate Club  
• Student Council

September 2016 - Present  
September 2016 – Present  
September 2015 - Present  
January 2015 – August 2016

Awards:
• Honor Roll, 3 Semesters  
• Tennis Most Valuable Player, 2016

References:  
Available upon request.
Samuel Smith
200 Court St., Apt 309
Brooklyn, NY 11201
(610) 791-9741
SamuelSmith@BkHS.edu

Education:
Brooklyn Senior High School, Class of 2017
• Relevant Coursework: Living Environment, High School Science Research Pathways Course

Work Experience:
Camp Yomi (Summer 2016)
• Oversaw 30 elementary-age camp attendees during their daily activities.
• Created a science club where elementary and middle school campers could do experiments, such as building volcano models and testing paper airplane design.

Brooklyn Public Library (May 2015 – May 2016)
• Organized children’s book section by subject and author name.
• Coordinated Story Time volunteer schedule.

Activities and Volunteer Experience:
Habitat for Humanity (January 2015 – August 2015)
• Recruited donors from local hardware stores, and contributed to building of a house.
• Volunteered for 50 hours as organized through my school’s National Honor Society

Youth Soccer Coach (Spring 2015, Spring 2016)
• Trained a U-7 team during two seasons, including organizing practice, scheduling games, coordinating parent participation, and encouraging team members.

Honors/Awards:
• National Honor Society (2015 – Present)
• Debate Challenge Winner, AP English (May 2016)

Skills:
Conversational Spanish, introductory knowledge of Java and Perl coding, pipetting experience, proficient in Microsoft Office.

References: Available upon request.
Overview: The New York City High School Science Research Pathways Program and FAQs for Prospective Research Advisors

Congratulations on being contacted as a prospective High School Science Research Pathways mentor or research advisor. We are thrilled that you are considering working with one of our students who is participating in the New York City Department of Education’s High School Science Research Pathways program (HSSRP). This program gives participating students the chance to plan and carry out an independent science research project under the guidance of an experienced research teacher and an outside research mentor.

This document, prepared by HSSRP program staff, includes responses to questions that prospective advisors may have. We hope that it can help you to make an informed decision about mentoring an HSSRP student, but if you have additional questions, please reach out to our HSSRP program team at STEM Matters NYC@schools.nyc.gov.

1. What is the structure of the HSSRP program, and what role do mentors/research advisors play in the program?

The STEM Matters NYC High School Science Research Pathways (HSSRP) program supports selected teachers and students in New York City public high schools in the planning and carrying out of a long-term independent research project. Beginning in 10th grade, participating students are enrolled in a multi-year science research elective course that meets daily and that is led by a teacher who has received advanced training to successfully guide students through basic research processes, including the identification of a research topic and question, research and interpretation of scientific literature, development and implementation of a long-term research project, communication of results, and project management and networking skills. Students participating in the HSSRP program take an elective science research course in 10th, 11th, and 12th grade, and ideally develop and work on a research project during both the school year and during the summers prior to their 11th grade and 12th grade years.

Students participating in the High School Science Research Pathways program are strongly encouraged to identify and collaborate with an outside research mentor who can provide expertise and advising to a student as s/he plans and undertakes an independent research project. Our program is inclusive to a range of different types of student-mentor relationships, including:

- In-person collaboration (e.g. a student working in a mentor’s lab)
- Remote collaboration with a mentor (e.g. emailing once a week)
- Working with a mentor through a summer research program for high school students
- Having a pair of students (as opposed to a single student) work on related research projects under the guidance of a single mentor
Students are expected to begin seeking a research mentor in the fall of their first year of the science research course (for most students, 10th grade). HSSRP teachers are asked to work closely with students to identify and scope research interests, strategically research and identify potential mentors, develop written materials (email correspondence, student CVs, etc.) that help students to positively represent themselves and their research interests, and track outreach to and follow up correspondence with prospective mentors.

While the HSSRP program is open to a range of different mentoring models, to ensure a positive experience for both students and mentors, we have developed the following contract to articulate basic expectations of students and mentors, and to support each student and mentor in developing common expectations and supports for one another.

2. What requirements must students meet through their work with a research mentor?

The HSSRP program is open to a variety of mentoring models; however, regardless of how a student collaborates with a mentor, it is expected that each student-mentor team will communicate on a weekly basis to discuss the students’ research project and to discuss progress, questions, and challenges that the mentor, with his/her expertise, can offer helpful advice on. Students are expected to maintain a detailed log of day-to-day progress, and to be proactive in sharing updates on progress with their mentor in advance of any meetings or calls.

Some HSSRP schools participate in SUNY Albany’s University in the High School program, which offers college credit to students who successfully complete 11th and 12th grade research courses; participating students may receive up to 12 college credits for coursework and independent research. Eight of these credits are obtained from students’ successful completion of science research courses in 11th and 12th grade; the remaining four credits may be obtained by meeting research requirements in a mentor’s laboratory or research facility.

Students who are seeking to obtain SUNY Albany credit are held to a more stringent set of expectations, details of which can be found on SUNY Albany’s Science Research website (http://www.albany.edu/scienceresearch/). Students aiming to obtain college credit should maintain a detailed lab notebook or daily log that tracks their hours spent working and the tasks accomplished each day, and must confer with their science research teacher throughout the school year, and if applicable, summer to discuss progress made. Students are also expected to complete 240 hours of research during the school year; this includes class time, assessment meetings, and out of class time spent on research. As students are enrolled in a research course that meets daily during the school year, most of their research is done in school, and they will only need to check in with their advisor periodically during this time.
3. What are the expectations of the research advisor/student advisee relationship for HSSRP?

While the advisor-advisee relationship varies based on project type and mentor’s availability, there are a few basic expectations of each successful advisor-student partnership:

Advisors and students will work together to map out a student’s research project and will check in regularly via phone, email, or in person. Advisors will serve as a sounding board and advisor to students, providing regular feedback and guidance on various aspects of research, and responding to student questions in a timely fashion. Students will demonstrate professionalism and maturity in all aspects of the program, including communication, timeliness, quality and integrity of research work, and respect of their advisor’s time limitations. Students and advisors will communicate with HSSRP teachers and the program team as needed to keep teachers and staff informed of research progress. Students and advisors will track students’ summer research time using the student’s recorded activities in his/her lab notebook that includes a record of start and end times for each day. Advisors are strongly encouraged to initial or sign off on students’ time on a daily or weekly basis.

4. What is the time commitment as a research advisor or mentor?

Most advisors should anticipate spending on average 30 minutes/week advising the student on his/her research project over the course of the calendar year. Advisors and students will likely spend more time per week working together if the student is doing summer research on-site, particularly if the student is at a point in the project where he/she needs additional guidance (e.g. learning a new technical skill, deciding whether or not to shift focus of research in a different direction), and less time per week when school is in session. For students who elect to do them, summer research projects are usually 2-3 weeks long for rising juniors, and 4-6 weeks for rising seniors. Students are expected to be thoughtful about how they use the time they spend with their mentor to make the most of time spent with their advisor and to be respectful of an advisor’s many commitments. That being said, we also expect that advisors will be accessible to students throughout the course of the project.

5. What are the students participating in the program like?

HSSRP students are intellectually curious 10th and 11th graders who have a demonstrated interest in science research. HSSRP is a selective program, and participating students are required to have a record of success in prior science classes and activities. Most HSSRP have already had some initial experience in science research through participation in an after-school club, and have enjoyed the experience enough to want to sign up for a 2+ year commitment to the full HSSRP program. Students and parents are aware of, and have agreed to, the significant commitment that long-term science research requires.
6. What supports are available to HSSRP research advisors?

Student-advisor teams have significant support from the student’s HSSRP teacher and from the HSSRP program team. We can help to clarify expectations, offer advice and support, and troubleshoot as needed. All participating advisors will be provided with contact information for their student’s HSSRP teacher(s) and HSSRP program staff. We recognize that working with a high school student may be a new experience for many advisors, and want to make sure that any issues or questions advisors have are addressed in a timely fashion.

7. I’ve never worked with a high school student before… what should I be aware of when considering whether to agree to advise a student who is still in high school?

The student who has reached out to you has demonstrated the intellectual curiosity, maturity, and responsibility required to participate in the HSSRP program, and has a genuine interest in and enthusiasm for the research that you are doing. If doing research on-site, he/she can provide support with both project work, as well as basic lab maintenance (remember, even washing glassware will be a new experience). However, as working in a research/professional setting is new to many high school students, you’ll want to clearly articulate your/your institution’s expectations of professionalism, conduct, and safety precautions to your student. As most HSSRP students are minors, they may be restricted from certain laboratory activities or may require consent from a parent/guardian to do so. A student’s HSSRP teacher(s) and the HSSRP program team can address any questions you may have about working with a specific student or part of a research project.

8. Will I have to communicate with students’ parents or teachers? What do I do if there is a problem with my student?

The HSSRP program does expect that you will be available to communicate with your student’s teacher(s) as needed; it is highly unlikely that parents will contact you directly, and your student’s teacher or our program team can help to address any questions you have about communication with parents or other stakeholders. As we know your time is limited, we want you to be able to use it to advise your student on the science/research components of the project, and to let us handle any administrative issues. In the unlikely event that a problem arises with your student, please let your student’s teacher know ASAP so that he/she (and our program team, if necessary) can address the concern.
9. What are some of the qualities of a great HSSRP mentor?

Some qualities of a great HSSRP mentor are listed below.

- Accessible—(relatively) open door and attitude
- Empathic—able to provide personal insight
- Open minded—respect for individuality
- Consistent—acting on stated principles on a regular basis
- Honest—ability to communicate hard truths when necessary
- Patient—able to recognize that people make mistakes
- Savvy—attention to the pragmatic aspects of career development
- Motivational—aspirational; someone that you admire
- Confidential—can offer counsel and be trustworthy
- Excited—eager to share their passion for their research

10. Why did this student reach out to me as a prospective mentor?

You were contacted by this student because he/she is interested in your area of research. He/she may have seen your name listed in journal articles that he/she has reviewed, or may have found you when perusing information about local research institutions. The HSSRP program encourages students to contact prospective mentors with whom they already share a research interest. If you’re worried about how you might be able to relate to the student in question, remember that both of you already have a research interest in common.

11. What are the benefits of this program for mentors and/or research advisors?

Volunteering to advise an HSSRP student can be an incredibly rewarding experience, as it provides you with an opportunity to share your passion for, and skills in, your area of research with a young scientist who has similar research interests. Additionally, you get an opportunity to hone your leadership skills, which is particularly valuable to scientists who may be looking to augment their teaching or managerial experience. Finally, mentoring gives you the opportunity to step back and reflect on your research as you facilitate your students’ introduction to the field, and may provide you with an able and excited contributor to your research lab or team.
12. I’d like to be involved, but I really don’t have the time to be a mentor, or don’t think my research or lab would be the best fit for this student. Is there any other way that I can support the program?

Yes! The most helpful thing that you can do is to connect the student with another potential research advisor. If you know of a colleague in your lab, institution, or field of research who might be interested/have the time to advise this student, please reach out to them to see if you can facilitate an introduction. For example, a principal investigator who is interested but doesn’t have the capacity to mentor could pass a student’s request onto a postdoctoral fellow in his/her lab who has more capacity and who could be a great fit for the program.

13. What is the rationale for the HSSRP program?

HSSRP is designed to give New York City public high school students the opportunity to engage in long-term science research. This multi-year program is designed to introduce students to the fundamentals of science research—searching for and interpreting scientific literature to investigate a topic of interest, developing and scoping a research topic, and presenting research findings—early in their high school careers, and to subsequently offer structured opportunities for students to conduct independent, original scientific research that can potentially be submitted to competitions such as the New York City Science and Engineering Fair (NYCSEF), a citywide science fair that leads to the Intel International Science and Engineering Fair (Intel ISEF).

HSSRP aims to expand the number of schools across New York City that offer structured science research programs for students. In recent years, there has been a decline in the number of New York City public schools offering such programs, and our program is working to reverse this trend. To that end, participation in the High School Science Research Pathways program is limited to schools that have demographically higher-needs student populations (as defined by the number of students eligible for free or reduced lunch) and that do not currently have a comprehensive science research program in place.

14. I have another question that isn’t addressed here. Whom can I contact to get an answer to my question?

If you have questions about a specific student or project, it’s likely that the student and his/her research teacher can best address your question. If you have questions about the HSSRP program, please email the HSSRP program team at STEMMattersNYC@schools.nyc.gov.
Sample Student and Mentor Contract

Overview of the High School Science Research Pathways Program

The STEM Matters NYC High School Science Research Pathways (HSSRP) program supports selected teachers and students in New York City public high schools in the planning and carrying out of a long-term independent research project. Beginning in 10th grade, participating students are enrolled in a science research elective course that meets daily and that is led by a teacher who has received advanced training to successfully guide students through basic research processes, including the identification of a research topic and question, research and interpretation of scientific literature, development and implementation of a long-term research project, communication of results, and project management and networking skills.

Students participating in the High School Science Research Pathways program are strongly encouraged to identify and collaborate with an outside research mentor who can provide expertise and advising to a student as s/he plans and undertakes an independent research project. While the HSSRP program is open to a range of different mentoring models, to ensure a positive experience for both students and mentors, we have developed the following contract to articulate basic expectations of students and mentors, and to support each student and mentor in developing common expectations and supports for one another. More information about the HSSRP program can be found in the Overview of the New York City High School Science Research Pathways Program and FAQs for Prospective Research Advisors at http://spep.libguides.com/HSSRP/studentresources.

Directions

Each student and his/her mentor should review this student/mentor contract together, either in person or via phone or video chat (Skype, FaceTime, etc.). Students and mentors should confirm with one another that they both understand the basic expectations for students, mentors, HSSRP teachers, and students’ parents or guardians, and should fill in all blank sections of the student/mentor collaboration plan together to ensure common understanding of preferred communication and collaboration methods moving forward.
Basic Expectations

**HSSRP Mentors will:**
1. Be willing and able to share their expertise in their area of research with their mentee. This may include advising mentees on relevant literature or information sources, providing guidance on the design and undertaking of an independent research investigation, or helping a mentee to interpret technical literature or raw data.
2. Collaborate regularly with their mentee to discuss how the mentee's research is progressing; on average, a mentor should expect to spend 30 minutes/week speaking, emailing, or meeting in-person with their mentee.
3. Communicate in a regular and timely fashion with their mentee, and notify their mentee in advance if a conflict comes up that requires them to cancel a meeting or call.
4. Communicate via phone or email with the student’s HSSRP teacher at least once a semester to touch base on the student’s research progress, and to discuss how the student’s research course can support the student’s continued progress.
5. If hosting a student in their laboratory or research facility, ensure that the student participates in all required laboratory safety training, and complies with all laboratory safety requirements with all expectations for laboratory conduct.

**HSSRP Students (Mentees) will:**
1. Be thoughtful and proactive about the questions and inquiries that they share with their mentor, to make sure that they use their limited meeting time with their mentor wisely.
2. Collaborate regularly with their mentor to discuss how their research is progressing; on average, a mentee should expect to spend 30 minutes/week speaking, emailing, or meeting in-person with their mentor, and should spend another 30 minutes a week preparing an agenda of questions and updates to share with their mentor in advance of any conversation they have with him/her.
3. Communicate in a regular and timely fashion with their mentor, and notify their mentor in advance if a conflict comes up that requires them to cancel a meeting or call.
4. Communicate at least biweekly with their HSSRP teacher about how their work with their mentor is progressing, and to discuss how they can use their time during their science research class to support their continued research progress.
5. Maintain a detailed lab notebook or daily log of their research project that can be shared with mentors and HSSRP teachers.
6. If doing research in a mentor’s laboratory or research facility, participate in all required laboratory safety training, and comply with all laboratory safety requirements and with all expectations for laboratory conduct.
HSSRP Teachers will:
1. Through the curriculum developed and implemented in his/her science research course, provide expertise and guidance to HSSRP students on content-agnostic aspects processes and milestones of scientific research projects (e.g. project management, navigating databases of scientific journals, maintenance of academic integrity)
2. Meet at least weekly with each HSSRP student to ensure that his/her research is continuing to progress, and to ensure that the student is regularly collaborating with his/her mentor
3. Serve as a first point of contact and clarification for students and mentors, and as an initial mediator if any issues between a student and mentor arise.
4. Communicate via phone or email with each student’s mentor at least once a semester to touch base on the student’s research progress, and to discuss how the student’s research course can support the student’s continued progress.

HSSRP Students’ Parents/Guardians will:
1. Check in at least weekly (in-person or via email or text) with their student about how the student’s research is progressing.
2. Be willing and able (either in-person, or via an interpreter) to communicate with the student’s research teacher and mentor if needed
3. To the best of their ability, provide space, time, and support for their student’s research project.
Student/Mentor Collaboration Plan

I, <<INSERT MENTOR NAME>>, and I, <<INSERT STUDENT NAME>>, agree to collaborate in a mentor-mentee relationship for the High School Science Research Pathways Program in the <<INSERT SCHOOL YEAR>> school year.

We agree to meet <<FREQUENCY OF MEETING>> via <<MODE OF COMMUNICATION or IN PERSON>> starting on <<INSERT DATE>> to discuss <<STUDENT NAME>>’s research project and his/her progress and questions.

For all other communication, we agree to communicate via <<INSERT MODE OF COMMUNICATION>>.

We agree that we will make every effort to respond to emails or other written correspondence within <<INSERT HOURS OR DAYS>> to make sure that we continue to communicate and collaborate effectively with one another.

We agree that if either of us is late or cannot attend a weekly meeting, then that person will contact the other person via <<MODE OF COMMUNICATION>> as far in advance as possible.

<<OPTIONAL SPACE TO INSERT ANY OTHER AGREEMENTS STUDENT AND MENTOR WOULD LIKE TO ADD>>

### Student, Mentor, HSSRP Teacher, and Parent Contact Information

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<td>Mentor Email Address:</td>
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<td>Other Mentor Contact Information (e.g. Skype ID):</td>
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<td>HSSRP Teacher Email Address:</td>
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STUDENT DECLARATION

I have carefully reviewed this contract, and have developed and reviewed the student/mentor collaboration plan with my mentor. I have also made sure that my HSSRP teacher and my parent/guardian have reviewed and approved all aspects of this contract and collaboration plan. I understand these rules as stated and will comply with all aspects of this contract completely.

___________________________________________________________________________
Student Name and Signature Date

MENTOR DECLARATION

I have carefully reviewed this contract, and have developed and reviewed the student/mentor collaboration plan with the student, who has confirmed that this plan has been reviewed and approved by his/her HSSRP teacher and parent/guardian. I understand these rules as stated and will comply with all aspects of this contract completely.

___________________________________________________________________________
Mentor Name and Signature Date

HSSRP TEACHER DECLARATION

I have carefully reviewed this contract, and have approved the student/mentor collaboration plan that my student and his/her mentor have developed. I understand these rules as stated and will support my student in complying with all aspects of this contract completely.

___________________________________________________________________________
Mentor Name and Signature Date

PARENT/GUARDIAN DECLARATION

I have read this contract. I understand these rules as stated and will support my student in complying with them completely.

___________________________________________________________________________
Parent/Guardian Name and Signature Date