

ScienceNews

EDUCATOR GUIDE



CLOCKWISE FROM TOP LEFT: ELI BURAKIAN/DARTMOUTH COLLEGE; CALTECH; BILL COTTON/COLORADO STATE UNIV.; L. BRIAN STAUFFER/UI NEWS BUREAU; STOWERS INSTITUTE FOR MEDICAL RESEARCH; STANFORD MEDICINE; TEXAS TECH UNIV.; SARAH DIEFENDORF; CALTECH; P. SHANAHAN

October 10, 2020 & October 24, 2020
The SN 10: Scientists to Watch



SOCIETY FOR SCIENCE & THE PUBLIC

October 10, 2020 & October 24, 2020

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About this Guide

In this Guide, based on the online *Science News* article “[This year’s SN 10 scientists aim to solve some of science’s biggest challenges](#),” students will learn about 10 early- and mid-career scientists, analyze the scientists’ pathways to STEM success and reflect on their own journeys.

This Guide includes:

Article-based Comprehension Q&A — Students will answer questions about a scientist featured on *Science News*’ [SN 10: Scientists to Watch list for 2020](#), which explores the work of 10 early- and mid-career researchers who are tackling some of science’s biggest questions. A version of the story, “The SN 10: Scientists to Watch,” can be found in the October 10, 2020 & October 24, 2020 issue of *Science News*. Related standards include NGSS-DCI: HS-ESS3.

Student Comprehension Worksheet — These questions are formatted so it’s easy to print them out as a worksheet.

Cross-curricular Discussion Q&A — Students will explore careers in STEM by analyzing and comparing a profile of an SN 10 scientist with that of a scientist highlighted in the *Science News for Students* “Cool Jobs” collection. Students will think about how the profiles cover the scientists’ personal histories, research and other factors that led the scientists to successful careers in STEM. Then students will reflect on their own STEM goals and possible journey. Related standards include NGSS-DCI: HS-ETS1.

Student Discussion Worksheet — These questions are formatted so it’s easy to print them out as a worksheet.

Article-based Comprehension, Q&A

Directions for teachers: Choose an SN 10 scientist whose work relates to your class. Have students read about the scientist and then ask them to answer the following questions. Sample answers for one scientist, Emily Fischer, are provided below.

1. What scientist did you read about? What type of scientist are they and where do they work?

I read about Emily Fischer. She is an atmospheric chemist at Colorado State University.

2. What does the scientist study?

Fischer studies the chemistry of air pollution. She is attempting to figure out where air pollution originates and how its chemistry changes as it moves through the air.

3. What inspired or motivated the scientist to pursue their research? Explain.

Fischer has always been interested in air pollution and describes herself as an air pollution detective. Part of her motivation to research air pollution comes from the fact that people have little to no control over whether they are exposed to air pollution, which raises the risk for certain health issues including heart disease, asthma, diabetes and obesity.

4. What research question is the scientist currently working on?

Fischer and her colleagues are trying to figure out the ingredients in wildfire smoke that could harm health. Though wildfire smoke can be a major source of air pollution, its composition is still relatively mysterious.

5. What initial findings has the scientist reported?

Fischer's team found that formaldehyde and hydrogen cyanide are abundant in wildfire smoke. Those chemicals are linked to cancer and other health problems.

6. Does the scientist's research impact people's everyday lives? Why or why not?

This year's intense fire season in the American West underscores how vulnerable people are to air pollution from wildfires, and who is most vulnerable. Fischer's research can help figure out how best to prepare and protect the people in these communities.

7. What did you learn about the scientist's passions or interests outside of their core area of research? Why do you think these details were included?

One of Fischer's goals is to bring more undergraduate women, especially women of

color, into the geosciences. To figure out the most effective way to do this, she along with a team of social scientists and geoscientists studied how various interventions, including having a female role model that looks like them, can help. This detail gives a fuller picture of Fischer as a person, what she cares about and what is important to her.

Bonus question

Note that students will have to read about an additional SN 10 scientist to answer this question. Encourage students to choose a scientist that interests them.

8. Does the scientist have something in common with another SN 10 scientist? Explain.

Fischer shares a passion for mentoring women in STEM fields with astrophysicist Tonima Tasnim Ananna. Fischer's mentorship program, PROGRESS, focuses on undergraduate women in geosciences. Ananna's program, Wi-STEM, helps female high school and college students in Bangladesh pursue science.

Student Comprehension Worksheet

Directions: Your teacher will assign you to read about one of the scientists featured in the online *Science News* article "[This year's SN 10 scientists aim to solve some of science's biggest challenges.](#)" Then, answer the following questions.

1. What scientist did you read about? What type of scientist are they and where do they work?
2. What does the scientist study?
3. What inspired or motivated the scientist to pursue their research? Explain.
4. What research question is the scientist currently working on?
5. What initial findings has the scientist reported?
6. Does the scientist's research impact people's everyday lives? Why or why not?
7. What did you learn about the scientist's passions or interests outside of their core area of research? Why do you think these details were included?

Bonus question

To answer this question, read about an additional SN 10 scientist that interests you.

8. Does the scientist have something in common with another SN 10 scientist? Explain.

Cross-curricular Discussion, Q&A

Directions for teachers:

Use the first two questions to start a class discussion about profiles, defining what a profile is, why a profile might be written and what information it commonly includes.

Next, ask students to reflect for a few minutes and write down a STEM topic or field that interests them. Emphasize that this is an exploratory exercise and that students' choices can be based on classes they enjoyed, hobbies they have or topics they find interesting. Keeping this topic or field in mind, ask students to choose and read one scientist profile from *Science News*' list of [SN 10: Scientists to Watch for 2020](#), and one profile from the *Science News for Students* "[Cool Jobs](#)" collection in their area of interest.

If your class has already done this guide's Comprehension exercise, students should use the SN 10 profile that they have already read. Be sure to encourage students to browse through multiple "[Cool Jobs](#)" profiles before choosing one, as there are nearly 100 articles!

After reading both profiles, students should answer questions No. 3–7, which ask them to compare the scientists' pathways to success. Finally, students will reflect on their own goals and discuss with a partner their own STEM journey. As an optional extension, students can construct a visual summary of one of the scientists' paths and share the summary with the class.

Want to make it a virtual lesson? Post the online version of "[The SN 10: Scientists to Watch](#)," the link to the "[Cool Jobs](#)" collection and the student worksheet to your virtual classroom. Ask students to do the exercise individually and then discuss the last two questions with a partner via a video-conferencing platform or talking by phone. If you choose to do the extension, students can share their summaries to your class's online discussion board. Think about framing the project as a virtual STEM career fair.

Introduction

1. A profile is an article about a specific person. Why might a person have a profile written about them?

A person might be profiled because they have made a noteworthy accomplishment in their career field, taken a trip, organized or participated in a big event, or otherwise have an interesting personal history that people may want to learn about or be entertained by.

2. What key facts are commonly included in profiles? What information would you want to know about a person being profiled?

Profiles can include information about a person such as their childhood or family, education and work history, professional accomplishments, day-to-day experiences, hobbies and goals. Students could mention that they would want to know about challenges a person faced and how that person overcame the challenges.

Comparing paths to success

3. What is the name of the scientist in the “Cool Jobs” profile you read, and what is their career? What about the SN 10 scientist?

Student answers will vary.

4. How did the scientists get to where they are today? For each profile, make a list of events and key information that tell a story about how the scientist reached their current position. Keep the following points in mind when constructing your lists:

Does the scientist mention a moment of inspiration for their research/STEM journey?

Do they name a mentor or important person that helped them?

What education degrees and work experience do they have?

Have they collaborated with other scientists?

What highlights and challenges did they face and how did those help them reach where they are now?

What are their aspirations for the future?

What accomplishments do they mention?

Student answers will vary.

5. Compare the two lists. What similarities do the scientists’ pathways share, and how are the pathways different?

Student answers will vary but could mention that some similarities might include sources of inspiration (such as from childhood experiences), encouragement by mentors and collaboration with other scientists. Differences may include educational and professional background, challenges faced on their respective pathways and goals for the future.

Finding your own path

6. Think about where you are on your own STEM journey. If you were to pursue the career of a scientist you read about in one of the profiles, what is the next step you might take?

Student answers will vary.

7. Did this exercise give you new ideas about possible STEM pathways? Explain.

Student answers will vary.

Optional: Construct a timeline or another visual representation of the STEM career pathway taken by one of the scientists you read about. Make sure to emphasize major events, experiences, challenges and other information that you noted in your previous answers.

Student Discussion Worksheet

Directions: After discussing the first two questions with your class, take a few minutes to brainstorm a STEM topic or field that interests you. Is there a class you took in STEM that you enjoyed? What personal hobbies do you have that might relate to STEM topics? Is there a STEM topic that has always interested you? Based on your interests, choose one scientist profile from *Science News*' list of [SN 10: Scientists to Watch for 2020](#), and one profile from the *Science News for Students* "[Cool Jobs](#)" collection to read. Then, answer questions No. 3–7 on your own. Make sure to discuss your answers to the last two questions with a partner.

Introduction

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