



NATIONAL  
MATH + SCIENCE  
INITIATIVE

# NMSI x The IF/THEN AAAS Ambassadors Collection

## Highlighting Diverse Women in STEM

Curriculum Assets for Middle School, High School and AP® Educators



LYDA HILL  
PHILANTHROPIES



Texas  
Women's  
Foundation

## Welcome to the NMSI x The IF/THEN AAAS Ambassadors Collection!

Inside this document, you'll find numerous resources for your 6th – 12th grade students and classrooms.

The National Math and Science Initiative has always been committed to equity. As partners with the Texas Women's Foundation and Lyda Hill Philanthropies, we've explored the links between your day-to-day classroom curriculum and the resources at the IF/THEN AAAS Collection. Throughout the document, you'll see examples of bios and posters – all of which are free – to use widely in your STEM classrooms. In addition, you'll have links direct to the units and standards you're teaching as well as the code for downloading those assets directly from the collection.

Additional Resources connected to the IF/THEN AAAS collection and its Ambassadors that inspire gender equity in STEM fields:

- The main website for the project: <https://www.ifthenshecan.org/>
- The mission around the ambassadors: <https://www.aaas.org/page/ifthen-ambassadors>
- The ambassador database: <https://www.ifthencollection.org/>
- Research Based Practices for Engaging Girls in STEM: <http://www.scigirlsconnect.org/scigirls-strategies-engage-girls-stem/>
- A key national convener of content and organizations for girls in STEM: <https://ngcproject.org/>
- The largest database of STEM organizations and opportunities in the nation: [www.theconnectory.org](http://www.theconnectory.org)
- Mission Unstoppable YouTube page, a TV series created for the project: Mission Unstoppable <https://www.youtube.com/channel/UCtgUyLVqgkbkVgVZTHMkECQ>
- Curiosity Camp <https://goldieblox.com/pages/curiosity-camp-map> Curiosity Camp, an online site and series created for the project

A special thanks to the NMSI teams who helped create this curriculum and the assistance of SciGirls and the National Girls Collaborative Project who provided our gender equity trainings.

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## AP<sup>®</sup> Computer Science Principles and Computer Science A



# ALLIE K MILLER

US HEAD OF AI BD, STARTUPS AND VENTURE CAPITAL  
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## PERSONAL STATEMENT



In STEM, we are always on the hunt for root causes—why do we laugh, why is this code not working, why does an apple fall. Whether it is neuroscience, computer science, physics, or any other STEM field, we always seek the “why”.

My “why” is two-fold: my career and my purpose. My training in cognitive science and artificial intelligence help me solve the daily “why” of how algorithms can create large-scale business shifts. But it also drives me to

uncover, and fix, the larger “why”—why are so few women in AI, and STEM in general?

I have the best job in the world: I am the Head of Machine Learning Growth for Startups and Venture Capital at Amazon (AWS). This gives me the opportunity not only to improve how our customers run their businesses, but also to impact people all over the world. My STEM background doesn’t just end with me; I have the opportunity to share it with millions.

I’m nearing my way to 1,000,000 followers, and every day, I receive messages from both men and women asking how to get into AI. Though I cannot speak one-on-one to every person who contacts me (a techie can dream!), I still work to help them and others, directly and indirectly, through my outreach and advocacy.

I have consulted in AI for the nation’s top VC firms, addressed the European Commission, helped draft national AI strategies, and spoken at technology companies and conferences around the world. Before Amazon, I served as Lead Product Manager at IBM Watson, building AI products for conversation, computer vision, and data and regulation.

I work tirelessly to drive impact through scalable learning for my colleagues, followers, and mentees. I have personally built a “How to Learn AI” guide, “How to Build AI Products” guidebook, “How to Talk About Self-Driving Cars” guide, and other resources that have been viewed millions of times to level the STEM playing field by making information more accessible.

My life’s mission is to make the world of AI as diverse, equitable, inclusive, and accessible as possible. With diversity comes innovation; with inclusion comes promise. I truly believe that the more open the world of technology is, the better off humanity is.

Parity—of information, opportunity, and promotion—is the answer. In the words of Megan Rapinoe, we need to be better, and I want to play a role in taking us there.

I want to inspire young girls because Lawrence Summers said that women were weaker in math.

I want to inspire young girls because my first C-suite boss told me “the women should always take notes.”

I want to inspire young girls because a man told me I would never get a job in AI because he did not know of any women in AI.

I want to inspire young girls because of the daily battles women fight in tech.

Because every woman in tech has at one point in their lives been told *no*.

And as an AAAS IF/THEN Ambassador, I want to give more yes.

More light at the end of the tunnel. More promise. More knowledge on how to get there.

More hope that the future is hers. Is yours. Is ours.

Despite this being about STEM, this is not rocket science. To have more women in STEM, more women need to stay in STEM, more women need to try STEM in the first place, and more women need to consider STEM, without having to face so much *no* as they do so.

I am happy to stand in front of thousands and share my many, many failures. But also proclaim where I persevered. When I heard a “no” and decided they were wrong. When I proved them wrong. When I stood up against the negative voices of those around me (and at times, the voices inside my head), and just said, “Not today.”

Artificial intelligence is set to change the world. And to change it in the right way, with the right people, fighting for the right things, we need more young women to say: “I’m in.”

**Career Exploration: Movement Science  
Computer Science: Sensors**

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: Helping Athletes Recover from Injuries (4:58)</a>	Kirsten explains how she uses wearable sensors to study the motion of the human body.	MIUN_9314_TULCHIN-FRANCIS_FULL_SOCIAL.mp4

**Counternarrative: Science and Engineering as “Helping” Professions**

Collection Asset	Description	To Download
<a href="#">Long Profile 2: Kirsten Tulchin-Francis (2:55)</a>	Kirsten discusses how she became interested in biomedical engineering as a child when she tore her ACL. She explains how her interest in sports and science combine to aid her in helping people move better.	MIUN_20200318_TULCHIN-FRANCIS_PROFILE.mp4

**Career Exploration: Information Science**

Collection Asset	Description	To Download
<a href="#">Long Profile: Siobahn Day Grady (3:00)</a>	Siobhan describes her role as a professor in Information Science.	IfThenSummit_Siobahn Day_Video #1_TK_v2.mp4

**Career Exploration: Artificial Intelligence**

Collection Asset	Description	To Download
<a href="#">Long Profile: Allie Miller (3:14)</a>	Allie details her journey into the tech field, namely artificial intelligence, mathematics, and cognitive science.	EPK_Ad Council_Allie Miller_Video #1_TK_v2.mp4

[www.ifthencollection.org](http://www.ifthencollection.org)

Thanks to the investment of the Texas Women's Foundation and Lyda Hill Philanthropies for their investment in gender equity, NMSI and a more diverse STEM workforce.



AP<sup>®</sup> Chemistry



# HELEN TRAN

UNIVERSITY OF TORONTO, ASSISTANT PROFESSOR  
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## PERSONAL STATEMENT

Hi, I'm Helen Tran. I am a chemist, but I always thought I would be an artist growing up.

I love design, photography, and pottery. I am really interested in making things and figuring out the best way to put things together. When I went to college, I took a chemistry class and was amazed by all the intricate ways of putting molecules together. It reminded me of how architects use simple materials to construct beautiful buildings. This was the turning point for me.

Now I can design a brand-new molecule and go into lab to make it. Sometimes, it doesn't work out perfectly, but when it does, it is the most amazing feeling in the world. You realize that you created a molecule just the way you designed it. Also, I am showing how we design molecules is really important for creating new materials to address our society's challenges in health and sustainability.

Now I consider myself a molecular architect. I guess that's a type of artist.

## BIOGRAPHY

Helen Tran has spent over a decade curious about the role of design and architecture in chemistry. Like putting together Lego pieces, Helen connects molecules together to build a larger polymer. How and which of these Lego pieces are connected makes a big impact on the properties of the polymer.

Helen will be a Professor of Chemistry, cross-appointed in Chemical Engineering and Applied Chemistry, at the University of Toronto starting January 2021. Before, she was a scientist at Stanford University and worked on making electronics stretchable and recyclable. She has presented her research all over the world, from San Diego (USA) to the United Kingdom to Korea to Austria. Interacting with scientists and building friendships around the world is one of the most exciting part of her job. Helen holds a Doctor of Philosophy in Chemistry from Columbia University and a Bachelor of Science in Chemistry with a Chemical Engineering minor from UC Berkeley. She has over 30 species of plants in her apartment in San Francisco and enjoys biking, interactive art projections, and snow camping.

### Unit 3: Intermolecular Forces and Properties Solutions: Electrolytes

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: How Can Martial Arts Teach Us About Chemistry? (4:33)</a>	In this Mission Unstoppable episode, Dr. Janis Louie uses exercise to show how science solutions play an important role in our bodies. She explains how solutions are made and how to test if a solution is electrolytic.	MIUN_9327_LOUIE_FULL_SOCIAL_GENERIC_ENDCARD.mp4

### Career Exploration: Food Chemist

Collection Asset	Description	To Download
<a href="#">Long Profile: Robyn Sue Fisher (3:10)</a>	Robyn engineered a fast way to make ice cream using liquid nitrogen.	Robyn Fisher (3 Minute Profile).mp4

### Career Exploration: Polymer Scientist

Collection Asset	Description	To Download
<a href="#">Long Profile: Helen Tran (2:42)</a>	Helen describes how she's working on making stretchable electronics. Her focus is on making electronics biodegradable or recyclable.	MIUN_20200414_TRAN_PROFILE_v1.mp4

### Career Exploration: Analytical Chemist/Forensics

Collection Asset	Description	To Download
<a href="#">Long Profile: Raychelle Burks (3:00)</a>	Raychelle describes how analytical chemistry is used to detect and stop chemical and biological weapons.	19_BURKS_PROFILE.mp4

### Career Exploration: Polymer Scientist #2

Collection Asset	Description	To Download
<a href="#">On-the-Job 1: Roselin Rosario-Meléndez (0:59)</a>	Roselin explains how her knowledge of polymers allows her to develop new cosmetics.	IfThen_Roselin_60_Science_1920x1080.mp4



### Career Exploration: Vaccine Development

Collection Asset	Description	To Download
<a href="#">Long Profile: Chanté Summers (2:36)</a>	Chanté describes her work with vaccines and other therapeutics.	EPK_IfThenSummit_CHANTE SUMMERS_Video #1_jw_V2.mp4

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# THIS IS WHAT A SCIENTIST LOOKS LIKE™



**DR. MONICA RHO**

**SPORTS MEDICINE DOCTOR AND MEDICAL EDUCATOR**

Head Team Physician for the US Women's National Soccer Team

IfThenCollection.org

Unit 1 and Unit 3 are not currently available in this collection.

### Unit 2: Cell Structure and Function

Collection Asset	Description	To Download
<a href="#">Beata Mierzwa: Curiosity Camp Microscopy Marbling</a>	In this activity, we'll use a marbling technique with oil, water, and food coloring to recreate what you might see when you peek at cells under a microscope.	Curiosity_Camp_Ep_7_Downloadable.pdf

### Unit 4: Cell Communication and Cell Cycle

Collection Asset	Description	To Download
<a href="#">Ahna Skop: Cell Division</a>	Ahna studies cell division and how it affects us. She also looks at neurodegeneration and how it causes diseases like Parkinson's and Alzheimer's.	18_SKOP_STEM_IN_JOB.mp4
<a href="#">Beata Mierzwa: Cell Division</a>	Beata showcases her artwork and how it directly ties into the science she studies.	IfThenSummit_Beata Mierzwa_Video #4 Social Cutdown_TK_v2.mp4

### Unit 5: Heredity

Collection Asset	Description	To Download
<a href="#">Chanté Summers</a>	Chanté Summers fell in love with science during high school. Motivated by her family's own long-term challenge with genetic disease, she sought to ease the pain and find cures for those in similar situations. That passion pushed her to complete a Master of Science in Chemistry in which her graduate work focused on the synthesis of potential biologically active compounds. As a research scientist in therapeutics, Chanté works diligently in a variety of projects including vaccine development, targeted cancer therapy, and regulatory filing. She is energized most by finding solutions to challenges, having meaningful conversations, and exploring the world around her.	EPK_IfThenSummit_CHANTE SUMMERS_Video #1_jw_V2.mp4

### Unit 6: Gene Expression and Regulation

Collection Asset	Description	To Download
<a href="#">Amanda Masino</a>	Amanda shares her career as a geneticist and her passion for helping those who are disadvantaged.	EPK_IFTHEN_Amanda Masino_Video#1_jw_V2.mp4

### Unit 7: Natural Selection

Collection Asset	Description	To Download
<a href="#">Myria Perez</a>	Myria's work includes aspects like puzzle solving, power tools, and so much more. Fossils help us know our Earth's future.	14_PEREZ_STEM_IN_JOB_v2.mp4

### Unit 8: Ecology

Collection Asset	Description	To Download
<a href="#">Jo Varner</a>	Biologist Johanna “Pika Jo” Varner studies mountain mammals called pikas, a potato-sized rabbit relative that lives in alpine rockslides. These adorable animals were the inspiration for the Pokémon character Pikachu, but their habitat may be threatened by climate change. Johanna studies how some pikas are able to persist in unusual places — research she hopes will inform their conservation.	MIUN_9328_VARNER_FULL_SOCIAL_16x9_GENERIC_ENDCARD.mp4
<a href="#">Tamar Goulet</a>	Tamar went diving in college and found octocorals and has been studying them ever since. She wants to know about the reefs so that we can solve problems within their ecosystem.	15_GOULET_PROFILE.mp4
<a href="#">Rae Wynn-Grant</a>	Rae gets to work in nature to help endangered species. She became interested in ecology in college and now gets to work both in the field and back at the office.	16_WYNN_GRANT_PROFILE_v2.mp4

<a href="#">Lindsey Rustad</a>	<p>As a Forest Ecologist at Hubbard Brook, Lindsey Rustad works with scientists from across the world to develop and implement large scale experiments like that of the ice storm, studying how forests react to drought, changing nutrient levels, and more. The forests protect our water quality, give us oxygen to breath, and harbor critical biodiversity. With their work, they can help both our forests and our communities adapt to a changing world.</p>	<p>IfThenSummit_Lindsey Rustad_Video #5 Social Cutdown_TK_v2.mp4</p>
<a href="#">Kellyn LaCour-Conant</a>	<p>Wetlands are unique habitats. Ecologist Kellyn LaCour-Conant is working to help restore these vital ecosystems.</p>	<p>MIUN_9325_LACOUR_FULL_SOCIAL_1.mp4</p>

### Possible Additional Assets

Collection Asset	Description	To Download
<p>Laurie Barge and Erika Flores: Astrobiologists at Jet Propulsion Lab</p>	<p>Laurie and Erika study the origins of life on Earth by simulating the conditions in Earth's oceans billions of years ago.</p>	<p>N/A</p>

### Career Exploration: Astrobiology

Collection Asset	Description	To Download
<p><a href="#">Mission Unstoppable: The Origin of Life on Earth (4:45)</a></p>	<p>Laurie shows how to simulate the formation of thermal vents in the lab. Erika shows how they investigate mechanisms for early structures to form in the early oceans. Scientists also use what Laurie and Erika are learning about the origins of life on Earth to investigate the possibilities for life forming on other bodies in the solar system.</p>	<p>MIUN_9303_BARGE_FLORES_FULL_SOCIAL_v1.mp4</p>

### Career Exploration: Astrobiology and Project Management

Collection Asset	Description	To Download
<a href="#">Long Profile: Laurie Barge and Erika Flores (3:17)</a>	<p>Laurie and Erika discuss the different routes that led them to working as astrobiologists (engineering, geology, astronomy, physics, chemistry ...)</p> <p>Erika began her studies at a community college.</p>	<p>Flores_Barge (3 Minute Profile).mp4</p>

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AP<sup>®</sup> Physics 1, 2, C, and LTF Physics

**THIS IS WHAT A SCIENTIST LOOKS LIKE™**



**DANA BOLLES**

**SPACEFLIGHT ENGINEER**

Wears many hats at a space agency, from engineering to communicating about the search for life beyond Earth

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**Career Exploration: Astronomer and Telescope Systems Specialist  
Counternarrative: Science is Creative and Social**

Collection Asset	Description	To Download
<a href="#">Long Profile 1: Miriam Fuchs (3:11)</a>	Mimi describes her path from being interested in the planets as a child to now working as an astronomer. She emphasizes how creativity is essential in astronomy and computer science as well as the fact that there are roles in science that need social and outgoing people!	EPK_IfThenSummit_MIRIAM FUCHS_Video #1_rh_V2.mp4

**Waves: Electromagnetic Radiation**

Collection Asset	Description	To Download
<a href="#">Long Profile 2: Miriam Fuchs (2:59)</a>	Mimi explains sub-millimeter astronomy and how it reveals details about star formation and black holes.	34_FUCHS_PROFILE_Produced.mp4

**Career Exploration: Astrophysicist**

Collection Asset	Description	To Download
<a href="#">Long Profile: Burçin Mutlu-Pakdil (3:22)</a>	Burcin explains that astrophysicists don't spend most of their time on the top of mountains with telescopes, but instead spend time using computers to analyze data. She explains how her career developed from a childhood interest in Einstein and blackholes.	IfThenSummit_Burcin Mutlu-Pakdil_Video #1_TK_v2.mp4



**Career Exploration: Astrophysicist/Telescope Builder**  
**Counternarrative: You Can Fail and Still Succeed as a Scientist**

Collection Asset	Description	To Download
<a href="#">Long Profile: Erika Hamden (3:06)</a>	<p>Erika explains how she became interested in space as a child, but did not have any idea that "telescope builder" was a profession!</p> <p>Erika dropped out of MIT in the middle of her first year of college, but took the opportunity to figure out what she really wanted to do for herself, and not for others.</p>	IfThenSummit_Erika Hamden_Video #1_TK_v2.mp4

**Counternarrative: Science is Creative**

Collection Asset	Description	To Download
<a href="#">Long Profile: Kelly Korreck (2:31)</a>	<p>Kelly explains how she needs to use creativity: to solve problems in science, but also when she is "selling" her ideas when applying for grant funding.</p>	EPK_IfThenSummit_Kelly Korreck_Video #1_jw_V2.mp4

**Career Exploration: Science Museum Exhibit Developer**  
**Counternarrative: Scientists Can Also Be Artistic and Creative**

Collection Asset	Description	To Download
<a href="#">Long Profile: Olivia Castellini (3:06)</a>	<p>Olivia explains how she loved theater, music and science as a child. She attended a performing arts school, but also studied math and science, going on to major in music and physics in college. She explains how she works with a wide variety of people in her role as an exhibit developer: architects, graphic designers, educators, engineers and community partners. She emphasizes how they work as a team to develop engaging science exhibits that tell a story.</p>	LH_CASTELLINI_PROFI LE_3MIN_v1.mp4

**Career Exploration: Medical Physicist**

Collection Asset	Description	To Download
<a href="#">On-the-Job: Jessica Fagerstrom (0:55)</a>	Jessica explains that linear accelerators are used to generate radiation. The accelerators then focus and direct the radiation at tumor cells.	Jess Fagerstrom_EPK Seattle_Video 2_TK_v1.mp4

**Career Exploration: Nikki Followed a Circuitous Path!  
Counternarrative: Women Are Also Aircraft Maintenance Technicians**

Collection Asset	Description	To Download
<a href="#">Long Profile: Nikki Sereika (2:42)</a>	Nikki describes moving from nursing to communications to aircraft maintenance.	EPK_Ad Council_Nikki Sereika_Video #1_TK_v2.mp4

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AP® Environmental Science

# THIS IS WHAT A SCIENTIST LOOKS LIKE™



Photo by Tseloni Lassiter

**DR. RAE WYNN-GRANT**  
**LARGE CARNIVORE ECOLOGIST**

Uses statistical modeling to investigate how anthropogenic factors can influence the spatial patterns of carnivore behavior and ecology

IfThenCollection.org

### Unit 1: The Living World – Ecosystems

Course	Collection Asset	Description	To Download
<a href="#">Terrestrial Biomes</a>	Rae Wynn-Grant	Rae gets to work in nature to help endangered species. She became interested in ecology in college and now gets to work in the field and in the office.	16_WYNN_GRANT_PROFILE_v2.mp4
<a href="#">Aquatic biomes-connected to conducting experiments</a>	Tamar Goulet	Tamar went diving in college and found octocorals and has been studying them ever since. She wants to know about the reefs so that we can solve problems with their ecosystems.	15_GOULET_PROFILE.mp4
<a href="#">Terrestrial/aquatic biomes</a>	Sam Wynns	Sam shares how she uses STEM on the job as a conservation biologist, from handling snakes to watching falcons.	EPK_IfThenSummit_SAM WYNNs_Video #2_rh_V2.mp4
<a href="#">Hydrologic Cycle</a>	Adriana Bailey	Atmospheric scientist Adriana Bailey helps us understand how precipitation works	MIUN_9319_BAILEY_FULL_SOCIAL.mp4

### Unit 2: The Living World – Biodiversity

Course	Collection Asset	Description	To Download
<a href="#">Adaptations</a>	Amber Sparks	Amber works to protect reefs by looking at data. She loves new discoveries in the ocean. She wants more women to work in STEM.	12_20200217_SPARKS_PROFILEv2.mp4
<a href="#">Natural Disruptions to Ecosystems/Ecosystem Services</a>	Lindsey Rustad	"As a Forest Ecologist at Hubbard Brook, Lindsey Rustad works with scientists from across the world to develop and implement large scale experiments like that of the ice storm, studying how forests react to drought, changing nutrient levels, and more. The forests protect our water quality, give us oxygen to	IfThenSummit_Lindsey Rustad_Video #5 Social Cutdown_TK_v2.mp4

		breathe, and harbor critical biodiversity. With their work, they can help both our forests and our communities adapt to a changing world."	
<a href="#">Ecosystem services/ Ecological tolerance</a>	Kris Inman	Kris is currently working in Montana with beavers. Learning from beavers natural engineering skills can help humans be more resilient to climate change. Beavers are nature's wetland engineers. Kris is currently studying them to help with Climate Change.	11_INMAN_PROFILE .mp4

### Unit 3: Populations

Course	Collection Asset	Description	To Download
<a href="#">Population Growth and Resource Availability</a>	Earyn McGee	Earyn shares her experience as a PhD student researching lizards at University of Arizona. Her Twitter game of #findthatlizard might be appealing to HS students. Earyn describes the effects that drought cause within a lizard's environment.	EPK_Ad Council_Earyn McGee_Video #5_Social Cutdown_TK_v2.mp4
<a href="#">K-selected vs. r-selected or generalists vs. specialists. What do you get when you cross a potato, a rabbit, and an alpinist? A pika!</a>	Jo Varner	Biologist Johanna “Pika Jo” Varner studies mountain mammals called pikas, a potato-sized rabbit relative that lives in alpine rockslides. These adorable animals were the inspiration for the Pokémon character Pikachu, but their habitat may be threatened by climate change. Johanna studies how some pikas are able to persist in unusual places — research she hopes will inform their conservation.	13_VARNER_PROFI LEv2.mp4 MIUN_9328_VARNE R_FULL_SOCIAL_16 x9_GENERIC_ENDC ARD.mp4

<a href="#">k-selected vs. r-selected or generalists vs. specialists.</a>	Kristen Lear	Conservationist Kristen Lear is the real life Batwoman! She's dedicated her life to raising awareness for a misunderstood species: bats.	MIUN_9309_LEAR_FULL_SOCIAL.mp4
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#### Unit 4: Earth Systems and Resources

Course	Collection Asset	Description	To Download
<a href="#">Earthquakes</a>	Wendy Bohon	Wendy works out in the field talking to people about understanding earthquakes to help them feel safe.	03_BOHON_STEM_IN_JOB 013020.mp4
<a href="#">Soil Formation</a>	Yamina Pressler	Yamina goes into the details of soil science and why she loves her job and her field of work.	04_PRESSLER_CLIP_1.mp4
<a href="#">Atmosphere</a>	Adriana Bailey	Adriana describes her journey from struggling student to atmospheric scientist. She shares what her day-to-day looks like and the challenges she faces.	MIUN_20200326_BAILEY_PROFILE_v1.mp4

#### Unit 5: Land and Water Use

Course	Collection Asset	Description	To Download
<a href="#">Sustainable Forestry</a>	Jenny Briggs	Jenny explains how she works with forest managers to ensure safety by understanding the science of fire.	IfThenSummit_Jenny_Briggs_Video #2_TK_v2.mp4
<a href="#">Agricultural practices</a>	Magan Lewis	Magan describes how plant breeding impacts the world and how she uses drones and robots to help with farming.	MIUN_20200310_LEWIS_STEM_IN_JOB_v3.mp4
<a href="#">Agricultural practices Connected to healthy soils</a>	Jessie Rack	Jessie Rack's favorite place to be is outside. She is as an ecologist, environmental educator, and naturalist. Her PhD research on salamanders means that slimy and secretive critters hold a special place in her heart. Her experiences	Jessie Rack.pdf Scroll to Additional Links..."Who pooped in the Garden?"

		interning at the NPR Science Desk and teaching freshman writing at Princeton have taught her the value of a compelling story. Today, Jessie coordinates an environmental education outreach program at the University of Arizona.	
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**Unit 6 and Unit 7 are not currently available in this collection.**

Unit 8: Aquatic and Terrestrial Pollution			
Course	Collection Asset	Description	To Download
<a href="#">Water pollutants and desalinization</a>	Mercedes Taylor	Mercedes Taylor is a chemist who designs and creates new materials to purify water, store energy, and conduct electricity in her lab at the University of Maryland. She has previously worked at Sandia National Laboratories, at the National Institutes of Health, and at the University of California, Berkeley, where she got her PhD in chemistry.	IfThenSummit_Mercedes Taylor_Video #1_TK_v3.mp4
<a href="#">Human Impact on wetlands and mangroves</a>	Kellyn LaCour-Conant	Wetlands are unique habitats. Ecologist Kellyn LaCour-Conant is working to help restore these vital ecosystems.	MIUN_9325_LACOUR_FULL_SOCIAL_1.mp4

Unit 9: Global Change			
Course	Collection Asset	Description	To Download
<a href="#">Global climate change #1</a>	Victoria Herrmann	Victoria Herrmann is the managing director of The Arctic Institute, a nonprofit dedicated to Arctic security research. She has testified before Congress, contributes to The Guardian and Scientific American on climate policy, and was named one of the most 100 influential people in climate policy worldwide by <i>Apolitical</i> . As a <i>National Geographic</i> Explorer, she traveled across America interviewing 350 local leaders to identify what’s needed to safeguard coastal communities against unavoidable climate impacts.	EPK_IfThenSummit_VICTORIA_HERRMANN_Video#1_rh_V2.mp4
<a href="#">Global climate change #2</a>	Shyla Raghav	Shyla Raghav is Conservation International’s leading expert on climate change, and drives the organization’s climate change strategy to secure and maximize nature’s potential solutions. Shyla is one of the youngest and one of the few minority women at the forefront of the movement in the U.S. She led the development of a carbon calculator as a way of giving consumers the power to fight climate change in their personal lives. Shyla also played an integral role in the negotiations on the Paris Agreement, signed by 195 countries, and has been instrumental in influencing international climate policy for over a decade.	IfThenSummit_ShylaRaghav_Video#1_TK_v2.mp4
<a href="#">Global climate change #3</a>	Kimberley Rain Miner	Curious to why climate change is so important and how it affects you? Climate Change Scientist Kimberley	WTS1-01_Kimberly_TR_v7.mp4



		<p>           Miner answers all YOUR questions about what she is studying, how permafrost is affecting the world and more! She even explains how changes in the Arctic can affect someone living in Texas. Whoa! Learn all about bacteria that come with climate change, how climate change is affecting the world and how Kimberely is working on making sure we know all about it before it happens!         </p>	
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Middle School Science

# THIS IS WHAT A SCIENTIST LOOKS LIKE™



**MYRIA PEREZ**

**PALEONTOLOGIST, FOSSIL PREPARATOR**

Worked with paleontologist Louis Jacobs to unearth never-before-seen fossils from Angola

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**Physical Science: Waves**

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable DIY: Make a Speaker</a>	Miranda shows how to use an empty chip can to make a speaker for your smart phone. She explains how the can keeps the sound waves from dissipating.	How to Make a DIY Speaker Mission Unstoppable.mp4

**Physical Science: Force, Motion, Work, Power, and Energy  
Earth Science: Space**

Collection Asset	Description	To Download
<a href="#">Can a Satellite Drop From the Sky Into Your Backyard?!   Curiosity Camp (4:22)</a>	In a Q&A format, Sydney Hamilton explains what Aerospace Engineers do, including what got her interested in space and engineering. She explains the basics of satellites, including the risks of them crashing to the Earth. Sydney shows how to make a balloon rocket.	QQ_Sydney_V07.mp4

**Physical Science: Solutions**

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: How Can Martial Arts Teach Us About Chemistry? (4:33)</a>	In this Mission Unstoppable episode, Janis Louie uses exercise to show how science solutions play an important role in our bodies. She explains how solutions are made and how to test if a solution is electrolytic.	MIUN_9327_LOUIE_FULL_SOCIAL_GENERIC_ENDCARD.mp4

**Life Science: Biochemistry – DNA**

Collection Asset	Description	To Download
<a href="#">Sarah McAnulty</a>	A cuttlefish video inspired Sarah to become a squid biologist. Now she studies how squid and bacteria communicate.	LH_MCANULTY_PROFILER_1MIN_v1.mp4

### Life Science: Cells and Cell Cycle

Collection Asset	Description	To Download
<a href="#">Beata Mierzwa: Cell Division</a>	Beata showcases her artwork and how it directly ties into the science she studies.	IfThenSummit_Beata Mierzwa_Video #4 Social Cutdown_TK_v2.mp4

### Life Science: Ecology and Populations – Fields of Beans

Collection Asset	Description	To Download
<a href="#">Meet Yamina Pressler, a Soil Ecologist</a>	Yamina Pressler is a soil scientist, writer, educator, speaker, and artist on a mission to make soil a household name. Learn all about Yamina and soil with these activities.	NextGenSTEM_-Soil-Science.pdf

### Life Science: Evolution

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: Meet the Cutest Animal Ever - Pikas! (5:23)</a>	Get ready to meet your new favorite animal: the pika! These small, furry mammals are helping scientists, like Jo Varner, study climate change!	MIUN_9328_VARNER_FULL_SOCIAL_16x9_GENERIC_ENDCARD.mp4

### Life Science: Genetics – Yellow Mice

Collection Asset	Description	To Download
<a href="#">Lauren Esposito</a>	Lauren shares what led her to science and describes her work in arachnology.	Dr. Lauren Esposito (3 Minute Profile).mp4

### Life Science: Scientific Process – The Scientific Method, Exploring Experimental Design

Collection Asset	Description	To Download
<a href="#">Meet Arlyne Simon, a Biomedical Engineer</a>	Arlyne Simon is a Biomedical Engineer, Inventor, Author and Entrepreneur. Learn all about Arlyne and more about inventions with these activities.	NextGenSTEM_-Inventors-Biomedical-Engineering.pdf

### Life Science: Structure and Function of Organisms

Collection Asset	Description	To Download
<a href="#">Camp GoldieBlox Activity Sheet: Salt Crystal Tree</a>	In this activity, perform an experiment on a cardboard tree with water, salt, and liquid bluing. Once you see the salt crystals blooming on the tree - which once started in the liquid at the tree's "roots" - you'll witness capillary action in, well, action!	Curiosity_Camp_Ep_10.pdf

### Earth Science: Environmental Science – Emission Possible

Collection Asset	Description	To Download
<a href="#">Save Animals from Pollution with USDA Ecologist, Lindsey Rustad (2:12)</a>	USDA Ecologist, Lindsey Rustad has been fighting to save animals' environments since she was a little girl. From helping clean up litter to finding ways to get rid of the pollution in the beaches, Lindsey's mission has always been to help animals. Now as a USDA Ecologist, Lindsey conducts climate change experiments in the forest to help all the plants/trees and animals. Learn more about Lindsey's journey in a new episode of Draw Her Life!	DHL_Lindsey_TR_v6.1.mp4

### Earth Science: Geology – Mapping Epicenters

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: Are There Quakes in Space? (4:32)</a>	We're shaking things up with Geologist Wendy Bohon as she explains the science behind quakes on Earth... and beyond.	MIUN_9305_BOHON_FULL_SOCIAL_v1.mp4

### Earth Science: Hydrology – Sonar Seas

Collection Asset	Description	To Download
<a href="#">Have you ever seen a glowing purple snail before?! Watch to learn more about them!   Curiosity Camp (3:31)</a>	<p>Meet expedition leader Allison Fundis in our newest episode of What's the Scoop? Allison works for the Ocean Exploration Trust and as an expedition leader. She studies the ocean wildlife and looks for undiscovered species. You'll learn all that over a third of the species in the ocean have yet to be discovered, and how Allison's team uses robotic vehicles to find things like shipwrecks and more!</p>	<p>WTS_YT_Allison_Final.mp4</p>

### Earth Science: Scientific Process – A Picture is Worth a Thousand Words

Collection Asset	Description	To Download
<a href="#">Next Gen STEM Workbook meet Jessica Fagerstrom, a medical Physicist</a>	<p>Medical Physicists use radiation therapy to help cancer patients. In this activity you will explore an important concept in radiation science: radioactive decay. You can follow along with Jessica as she models radioactive decay by visiting <a href="http://eugenesciencecenter.org/nextgenstem">eugenesciencecenter.org/nextgenstem</a>.</p>	<p>Full Next Gen STEM Workbook.pdf</p>

### Earth Science: Space – Moon Watch

Collection Asset	Description	To Download
<a href="#">Camp GoldieBlox Activity Sheet: Phases of the Moon</a>	<p>This activity sheet shows all the phases of the moon.</p>	<p>curiosity-camp-phases-of-the-moon.pdf</p>

### Earth Science: Geology #1

Collection Asset	Description	To Download
<a href="#">Digging Up Fossils Science Experiment with Paleontologist Myria Perez   GoldieBlox's Curiosity Camp (4:30)</a>	This episode features our guide and talented paleontologist, Myria Perez. Myria dives into her job as a paleontologist which includes prepping and exposing fossil bones out of rocks. Myria also shows us the cool tools she uses while on the job and explains why it's important to secure these fossils.	Ep1-CoolTool_Myria_V11.mp4

### Earth Science: Geology #2

Collection Asset	Description	To Download
<a href="#">Social Media Cutdown: Becca Peixotto (0:55)</a>	Becca shares her favorite parts of archaeology, such as making new discoveries and the necessity of teamwork.	10_becca PEIXOTTO_CLIP1.mp4

### Earth Science: Geology #3

Collection Asset	Description	To Download
<a href="#">Long Profile: Kyla Edison (2:57)</a>	Kyla details her path to becoming a geologist and how her background in art helps her career.	Edison (3 Minute Profile).mp4

### Earth Science: Environmental Science, Weather, and Climate #1

Collection Asset	Description	To Download
<a href="#">Save Animals from Pollution with USDA Ecologist, Lindsey Rustad (2:12)</a>	USDA Ecologist, Lindsey Rustad has been fighting to save animals' environments since she was a little girl. From helping clean up litter to finding ways to get rid of the pollution in the beaches, Lindsey's mission has always been to help animals. Now as a USDA Ecologist, Lindsey conducts climate change experiments in the forest to help plants, trees, and animals. Learn more about Lindsey's journey in our new episode of Draw Her Life!	DHL_Lindsey_TR_v6.1.mp4

### Earth Science: Environmental Science, Weather, and Climate #2

Collection Asset	Description	To Download
<a href="#">On-the-Job: Kellyn LaCour-Conant (1:00)</a>	Kellyn describes how merging science, technology, and community make her job rewarding and help to combat climate change.	31_LACOUR_STEM_IN_JOBv2.mp4

### Earth Science: Environmental Science, Weather, and Climate #3

Collection Asset	Description	To Download
<a href="#">I'm a Kid...Does Climate Change Affect Me? Kimberley Miner Answers Your Questions!   Curiosity Camp (4:43)</a>	Curious to why climate change is so important and how it affects you? Climate Change Scientist Kimberley Miner answers all YOUR questions about what she is studying, how permafrost affects the world and more! She even explains how changes in the Arctic can affect someone living in Texas. Whoa! Learn all about bacteria that come with climate change and how Kimberley is working on making sure we know all about it before it happens!	WTS1-01_Kimberly_TR_v7.mp4

### Earth Science: Environmental Science

Collection Asset	Description	To Download
<a href="#">Long Profile: Lindsey Rustad (3:18)</a>	Lindsey shares her childhood love of science and how it blossomed into a career as a forest ecologist.	IfThenSummit_Lindsey Rustad_Video #1_TK_v2.mp4



Earth Science: Weather and Climate		
Collection Asset	Description	To Download
<a href="#">Curiosity Camp Activity Sheet: All About Clouds</a>	This lesson explains how clouds are made and includes a DIY: Rainclouds in a jar.	CC_Clouds.pdf

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High School Biology

**THIS IS WHAT A SCIENTIST LOOKS LIKE™**



**ANAMITA GUHA**

**QUANTUM COMPUTING PRODUCT LEADER**

Bridging the gap between artificial intelligence and quantum computing

IfThenCollection.org

### Plants: The Double Life of Plants

Collection Asset	Description	To Download
<a href="#">Kate Logan</a>	Kate is a horticulturist and ambassador of experience and advancement at a Hawaii Tropical Botanical Garden. Her career was inspired by helping her father create Strawberry Fields in NYC. Kate shares how she works to impact the world and mitigate climate change.	MIUN_9321_LOGAN_FULL_SOCIAL.mp4

### Human Systems: Specific Immune Response

Collection Asset	Description	To Download
<a href="#">Danielle Twum</a>	Danielle describes what led her to a career in immunology and what she loves most about her work. She also discusses misconceptions she's run in to during career and the challenges she's faced as a person and a scientist.	MIUN_20200421_TWUM_PROFILE_v1

### Humans Systems: Making Sense of it All

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: How the Brain Communicates</a>	Did you know that your brain talks to itself? Neuroscientist Lataisia Jones studies how the two sides of the brain communicate to help people with seizures and other cognitive defects.	MIUN_9310_JONES_FULL_SOCIAL.mp4

### Genetics: The Amazing Maize

Collection Asset	Description	To Download
<a href="#">Magan Lewis</a>	Magan describes how plant breeding impacts the world and how she uses drones and robots to help with farming.	MIUN_20200310_LEWIS_STEM_IN_JOB_v3.mp4

### Evolution: The Bodies in Skeleton Lake

Collection Asset	Description	To Download
<a href="#">Briana Pobiner</a>	Briana studies human evolution and prehistoric diets as a paleoanthropologist.	MIUN_9304_POBINER_FULL_SOCIAL_v1.mp4

### Ecology: Biodiversity in Wetlands

Collection Asset	Description	To Download
<a href="#">Jaimi Butler</a>	Jaimi is a wildlife biologist who studies American White Pelicans in the Great Salt Lake in Utah.	LH_BUTLER_PROFILE_3MIN_v1.mp4

### Cell Cycle: Mitosis Mardi Gras Style

Collection Asset	Description	To Download
<a href="#">Human Cell Images Turned into Fashion Pieces with Molecular Biologist Beata Mierzwa   Curiosity Camp (3:43)</a>	Molecular Biologist, Beata Mierzwa tells about her amazing job and how science and fashion in fact can be combined for some DIY fun! Along with researching cells to help cure cancer, Beata is also a very talented fashion designer. Her love for science matched with her DIY skills result in some really cool projects. The video shows how Beata uses human cell images to create beautiful, fashionable pieces.	CoolToll_Beata-V06.mp4

### Bacteria and Virus: We're Going Viral

Collection Asset	Description	To Download
<a href="#">Dorothy Tovar</a>	Dorothy describes her work as a PhD student, her interest in biology as a child, and encourages girls in STEM.	EPK_IfThenSummit_DorothyTova_Video#1_jw_V2.mp4

**\*Resource for Biomathematics to be Used When Discussing Calculations**

Collection Asset	Description	To Download
<a href="#">Math Can Help Keep People Alive Longer - Learn How from Biomathematician Neha Murad   Curiosity Camp</a>	Did you know that applied mathematics can be used to figure out how to keep people alive longer? In this episode of 'Draw Her Life,' Biomathematician Neha Murad shares about her job researching numbers and data that help her learn why people age and what can be done to help them live longer and healthier lives. Learn about applied mathematics (application of mathematical methods by different fields such as physics, engineering & more) and Neha's journey growing up in Kolkata, India.	CC_s02e04.mp4

**\*Infectious Disease Diagnosis**

Collection Asset	Description	To Download
<a href="#">Harshini Mukundan</a>	Doctors can't always tell what disease or illness you have. Harshini wants to make sure all places have a way to diagnose any infectious diseases quickly. She grew up in India and loves dancing.	21_MUKANDAN_PROFILE_v2.mp4

**\*Disease and Cell Division**

Collection Asset	Description	To Download
<a href="#">Ahna Skop</a>	Ahna explains her work, explaining cell division. She loves mixing art and science together.	18_SKOP_PROFILE.mp4

*Local Biodiversity		
Collection Asset	Description	To Download
<a href="#">Camp GoldieBlox Activity Sheet: Nature Journal</a>	<p>A nature journal is a great way to record the local wildlife in your hometown and learn more about it. Nature journals are more scientific than a traditional diary. Journals include sketches of landscapes and wildlife as well as other scientific observations like today's temperature, detailed sketches of a leaf, and notes.</p>	<p>Nature_Journal.pdf</p>

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## High School Chemistry



# JASMINE L. SADLER

THE STEAM COLLABORATIVE, CEO AND VISIONARY  
SAN DIEGO, CA

[IfThenCollection.org/Jasmine](http://IfThenCollection.org/Jasmine)



## PERSONAL STATEMENT

Hello, my name is Jasmine Sadler. In middle school is when I realized I was gifted in math and helping others. I began to tutor my Algebra classmates and still remember Ms. Vasquez commenting on how respectfully I corrected her error in a way that was constructive for the entire class to learn. My computer specialist parents and computer engineer brother encouraged me to pursue engineering. Just before submitting college applications, the Space Shuttle Columbia disaster inspired me to pursue Aerospace Engineering as my way to save the lives of astronauts doing the coolest job in and out of this world!

Being an African-American woman in engineering energizes me because I provide a diverse perspective, which leads the team to more innovative solutions. I am most curious if there will there ever be a sustainable change in diversity and inclusion in technical fields? My attempt at this is to share my knowledge with my "little sisters" in engineering. Similar to the reason that I first selected engineering, I strive to help others by paying it forward as women enter the engineering workforce.

[Video Statement](#)

## BIOGRAPHY

Trained as a rocket scientist and ballerina, Ms. Jasmine L. Sadler, MBA lives her life on purpose through her company, The STEAM Collaborative, which focuses on STEM from an artistic perspective. Jasmine's aerospace engineering career was spent turning air into energy where she worked as a software design engineer, test engineer, and quality engineer. Jasmine is the winner of the Moxie Theatre Awards, PLNU MBA Student of the Year, University of Michigan Making A Difference Award, Global Social Innovation Challenge and the Hera Hub STEAM Trailblazer Award due to her impact in several African-American, Engineering, and Arts organizations. Her mission is to exponentially increase equity in education.

Additionally, Jasmine delivers her inspirational testimony internationally in camps, workshops, panels and speaking engagements. Recently, she launched Jas:Maven, which focuses on connecting the right people for inclusive and diverse experiences. For more info or inquiries on collaborating, please follow Jasmine @theSTEAMcollab.

**Solutions and Electrolytes**

Collection Asset	Description	To Download
<a href="#">Mission Unstoppable: How Can Martial Arts Teach Us About Chemistry? (4:33)</a>	In this Mission Unstoppable episode, Janis Louie uses exercise to show how science solutions play an important role in our bodies. She explains how solutions are made and how to test if a solution is electrolytic.	MIUN_9327_LOUIE_FULL_SOCIAL_GENERIC_ENDCARD.mp4

**Career Exploration: Food Chemistry**

Collection Asset	Description	To Download
<a href="#">Long Profile: Robyn Sue Fisher (3:10)</a>	Robyn engineered a fast way to make ice cream using liquid nitrogen.	Robyn Fisher (3 Minute Profile).mp4

**Career Exploration: Polymer Scientist #1**

Collection Asset	Description	To Download
<a href="#">Long Profile: Helen Tran (2:42)</a>	Helen describes how she's working on making stretchable electronics. Her focus is on making electronics biodegradable or recyclable.	MIUN_20200414_TRAN_PROFILE_v1.mp4

**Career Exploration: Analytical Chemist/Forensics**

Collection Asset	Description	To Download
<a href="#">Long Profile: Raychelle Burks (3:00)</a>	Raychelle describes how analytical chemistry is used to detect and stop chemical and biological weapons.	N/A

**Career Exploration: Polymer Scientist #2**

Collection Asset	Description	To Download
<a href="#">On-the-Job 1: Roselin Rosario-Meléndez (0:59)</a>	Roselin explains how her knowledge of polymers allows her to develop new cosmetics.	IfThen_Roselin_60_Science_1920x1080.mp4



### Career Exploration: Vaccine Development

Collection Asset	Description	To Download
<a href="#">Long Profile: Chanté Summers (2:36)</a>	Chanté describes her work with vaccines and other therapeutics.	EPK_IfThenSummit_CHANTE SUMMERS_Video #1_jw_V2.mp4

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