

# **Clemson 3MT**

# **GRAD 360 Bootcamp 2021**



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# **Preparing for a Successful 3MT Talk: Distill Your Message and Structure Your Script**



**How can I help  
you?**

# My current job



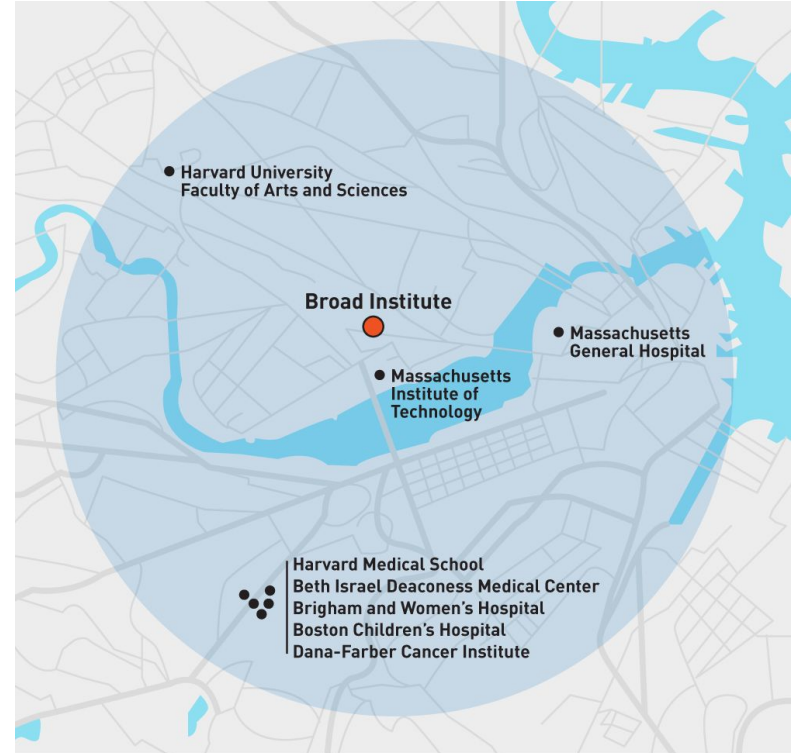
*I am a scientist who helps other scientists communicate their research to non-scientists.*

# Broad Institute of MIT and Harvard (Cambridge, MA)

The [Broad Institute of MIT and Harvard](#) is a biomedical research institute that was launched in 2004 to improve human health by using genomics\*\* to advance our understanding of the biology and treatment of human disease, and to help lay the groundwork for a new generation of therapies.

The Broad community is made up of more than 4,000 members, including physicians, biologists, chemists, computer scientists, engineers, administrative staff, and representatives of many other disciplines.

*\*\*Genomics is the study of all of a person's genes (the genome), including interactions of those genes with each other and with the person's environment. (genome.gov)*



# Program Manager for Scientific Public Engagement at Broad Institute

- Write about latest **research**
- **Interview** a diverse range of scientists
- Produce **science videos/video tours**
- Co-lead a science **museum** project
- Co-lead **equity in biomedicine** initiatives
- Co-lead **public talk** series
- Build **community engagement** partnerships
- Work with educators to develop and disseminate **educational lesson plans**
- **Speak about or represent Broad's science** at various community events



# My 3MT/Science Communication journey

**2014:** Participated in Clemson's first ever 3MT;  
Co-winner of the contest

**2015:** Chaired Clemson's second 3MT

**2016:** Graduated from my PhD program; Started  
working for JoVE in SciComm

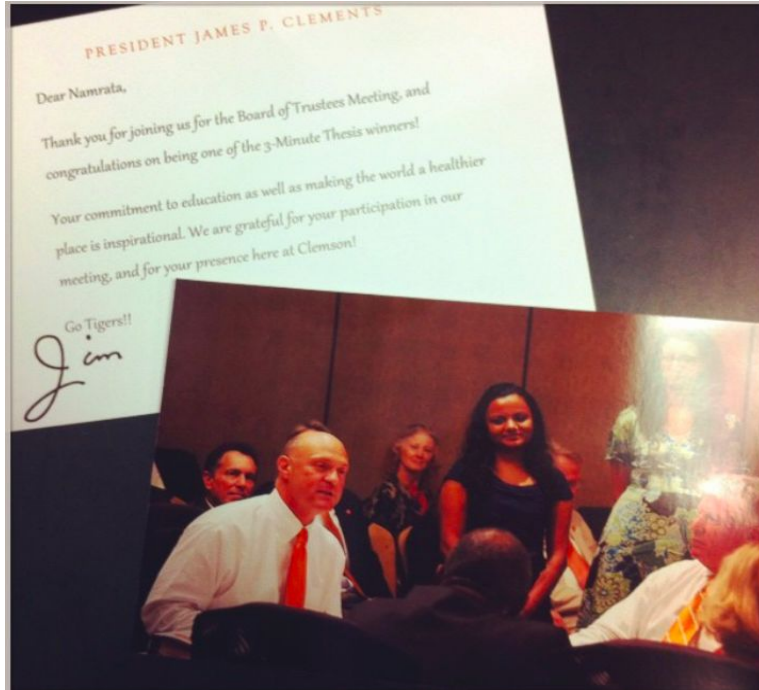
**since 2017:** Speaking at grad student/postdoc  
seminars about SciComm & STEM career  
pathways

**2018-2021:** Working at the Broad Institute; Guest  
speaker for Clemson 3MT bootcamps



Clemson University 3-Minute Thesis Winner (tie), 2014, Namrata Sengupta (Env. Toxicology)

# 3MT and beyond





# How YouTube and my own cheerleading team got me to the 3MT Finals



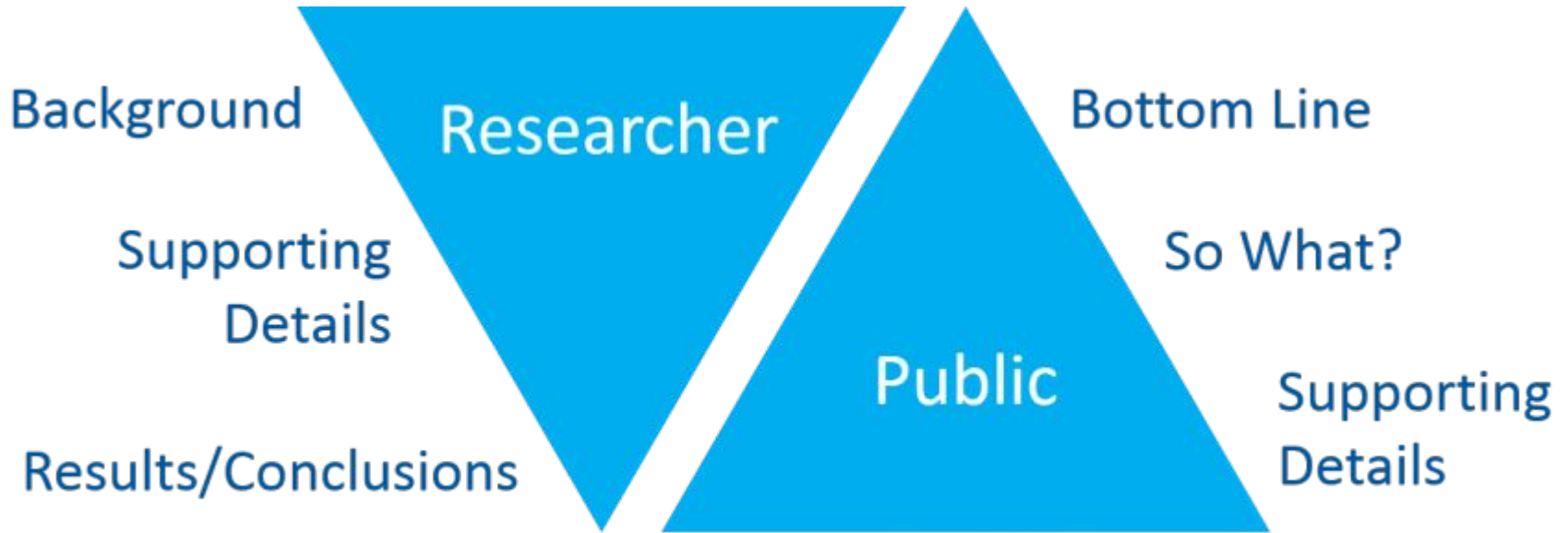
greenvilleonline

**Now let's figure  
out how to win  
this 3MT**

# Leading up to the Finals: Script, Practice, Present

1. Audience and goal
2. Distill your message & write a script
3. Jargons, drop them
4. Structure (example of my 3MT talk)
5. Final Prep

# Inverted Pyramid: Research publication vs Public-facing communication



# Know your Audience

1. **Who are they?** Age, Professions, Specializations, Education levels, Geographic location, etc.
2. **What do they care about?** Why are they at your presentation? What do they want to get out of it?
3. What **prior knowledge** do they bring to the presentation? What are they experiencing now? What are their problems, challenges and/or desires?
4. Would **they agree or disagree** with the content of your presentation?
5. Do they have experiences that would be relevant to your talk? How might these experiences shape the way they listen to you?



**Once you have a sense of your audience, next pause to think what do you want them to do?**

**Your talk should start with a great goal**



**RAISE THE STAKES OF YOUR GOAL AND STRONGER CHOICES WILL FOLLOW**

# Distill Your Message

What are your audience's interests and values?

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What is this message about?

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Why is it important to this audience?

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Use one or more examples or metaphors to explain this message, including a solution (if relevant):

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You've identified your audience. Now it is essential to have a clear, simple message to reiterate.

**What is the one thing you want your audience to take away from this interaction?**

These questions will help you distill your message for any audience.

**Take-Home Message:** In 1-2 sentences, describe the take-home message for this audience.

Remember to keep coming back to this message when you are practicing for the talk -- did the message get conveyed.

# Writing down a script

**Write down a script for your final talk. Here are some prompts that can help:**

1. What question could you ask a non-specialist audience to start a dialogue about your research and its impact?
2. Can you give a specific, compelling number or example to illustrate your work's impact on society/people?
3. Are there numbers/values related to your examples that you can make more vivid with social math?
4. What are three benefits of your area of research to your community or society at large?
5. Do you have a request to make of your audience—something you hope they'll do or think about?



# Some best practices to make that message stick....

BEST PRACTICES	WHAT NOT TO DO	WHAT TO DO
Avoid lecturing.	“Today I will discuss my research on tornadoes and how this affects...”	“I want to start by asking you how tornadoes have affected you and this community.”
Don't use vague generalizations.	“Global warming is projected to have many negative effects on the whole world—and this region.”	“Global warming is projected to change the whole character of our state. For example: In 50 years our summers are likely to feel more like summer in the Southern Hemisphere.”
When using numbers or measurements, use social math to provide scale.	“There are 50,000 gallons of diesel fuel at the abandoned base camp.”	“There is enough diesel fuel at the base camp for a car to circle the globe 80 times.”
Provide context.	“I study the Pine Island Glacier.”	“I study the Pine Island Glacier, the fastest melting glacier in Antarctica, responsible for about a quarter of Antarctica's ice loss thus far.”
End on a positive note, with how your research can be part of a solution.	“This is a serious issue, and we have to act now to avert catastrophe.”	“My research give us an opportunity to overcome these challenges and develop innovative solutions that can improve our quality of life [e.g. better water or land use, building designs, health and safety measures, emergency planning, etc.]”

# Watch your Words

What are **some words/phrases** you use regularly in your work that might be inaccessible or misinterpreted by those outside your field? Think about your 3MT prelims talk/script -- did you use any?

- What are some alternatives you could use?
- If you really need to use it, what's a clear and memorable way to explain or define it?

**Avoid jargon or words that have different meanings for the public than for scientists.**

Three examples:

## **AVOID**

“driver...”

“computer models...”

“...this creates a positive feedback effect.”

## **INSTEAD SAY**

“powerful influence...”

“computer simulations...”

“...this creates a vicious circle.”

# Is it a jargon? Play the game to find out

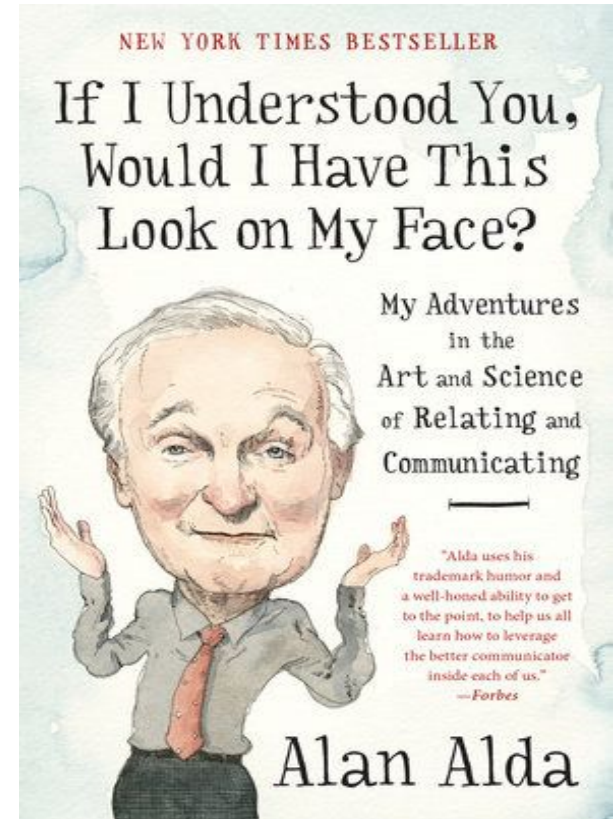
Write down the script of your talk, use a highlighter to mark the words you are not 100% sure if they are jargons or not. Then answer these questions:

- Do you only use it when talking about your science?
- Does it have a different meaning in day-to-day conversation?
- Are friends/neighbors/relatives in a different profession unable to explain or define it?
- When you defend using it, do you say things like “Everyone SHOULD know what it means”?
- Is it serving as a barrier to communication instead of a bridge?

**If you checked a box for any of these questions, it’s probably jargon!**

# Jettison the jargon!

- Jargon is **field-specific**. If your next-door neighbor, your friend from high school, or anyone else without an advanced technical background can't understand what you're talking about, rephrase your message.
- To peers, **acronyms** can be a helpful time saver. But they can quickly **alienate an outside audience**. Think about how those with non-technical backgrounds will hear your message, and when in doubt, spell it out.
- **Long, complicated words** in science and research are often necessary, but when talking to outside audiences they can be **intimidating**. Replace them with brief explanations of the concept, process or field of study.
- Use **Upgoer 5, a fun tool that limits you to 1,000 most-used words**, to practice simplifying your message. At the end of the day, you want people to understand you. Don't think of it as “dumbing down” your research but as “expanding your audience.”



**Let's break down  
my 3MT talk  
from 2014**

# The first 1 min is key...

Are any of you feeling stressed right now? Honestly, I am. The reason for me feeling stressed are all the other finalists of the Three Minute Thesis Contest, and of course the cameras which are pointing at me. **[Trying to find common ground with my audience -- “relate” and “emotional engagement”]**

Did you ever imagine what animals go through when they're stressed, and what kind of stress they could be exposed to? Think about all the animals living in the oceans, in the rivers. They could be exposed to different kind of stressors. There could be temperature variants, there could be food scarcity, there could be a chemical spill. **[Setting background for my research; using the “audience connection” I just made]**

My research tries to focus on an environmental problem like this. I'm trying to understand the effects of multiple stressors on a freshwater organism called *Daphnia*. **[What was I exactly studying -- “research goal”]**

The multiple stressors, or specifically the two stressors which I'm trying to study in one part of my research are these two environmentally relevant contaminants called atrazine and triclosan. Atrazine is a much-debated pesticide, many of us are aware of it. And, what is triclosan? It is found in our toothpaste. **[Specific details, using some “narrative style”]**

## ...as you approach the middle of the talk

What I initially did was, I tried to expose my animals, the test animals to these chemicals individually in order to understand at what concentration these chemicals are toxic to these animals. Then, I exposed my animals to a mixture of these chemicals.

**[Very, very brief glance at methods]**

We noticed something interesting when we did that experiment. We saw that the animals started surviving better when they're exposed to these two contaminants together. Now, what is the reason? As a biologist I was curious and I performed further experiments and investigations into this. **[“Peak” of the story; something unexpected]**

We found that atrazine, which is the pesticide is inducing some antioxidant enzymes, which is protective, which are acting as protection to these animals from the toxicity of the other chemical, which is a contaminant, which is triclosan, which was interesting. **[Explain the findings]**

# ...Leaving your audience with the main takeaway

Now, you must be asking me the question, why is this research important? **[What is the significance of this work?]**

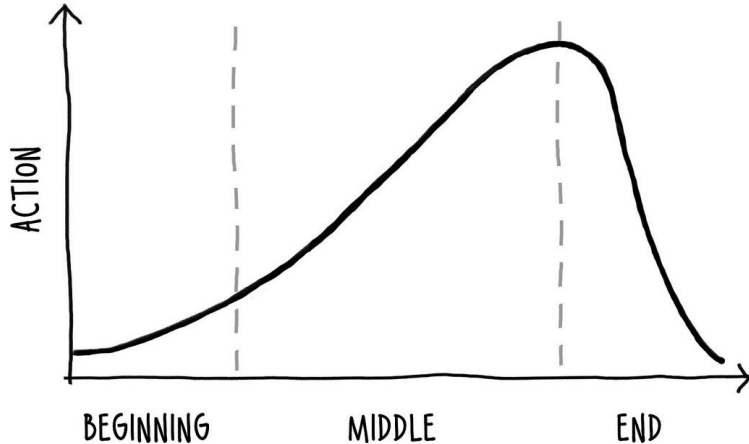
The truth is, a lot of research has already been done in order to understand the effect on individual chemicals, pollutants or stressors in the environment, but not a lot has been yet understood about the effect of these stressors as a mixture, or together. That is exactly what I'm trying to understand.

Who could use any kind of research results like this is the next question? **[What is the application of this work?]**

**You want your audience to walk away with something** Environmental organizations, industries, regulatory agencies, all these kind of people could use research results of this nature in order to understand or solve environmental risk assessment problems. I have a strong belief that my research could have a deep impact on solving larger global environmental problems. Thank you.



# Communicating your research with a “story arc”



## BEGINNING

1. Trying to find common ground with my audience -- “relate” and “emotional engagement” **(Connect)**
2. Setting background for my research; using the “audience connection” I just made **(Intro to story)**
3. What was I exactly studying -- “research goal” **(Intro to story)**

## MIDDLE

1. Specific details, using some “narrative style” **(middle of the story)**
2. Very, very brief glance at methods **(middle of the story)**
3. “Peak” of the story; something unexpected **(peak of the story)**

## END

1. Explain the findings **(approaching end)**
2. What is the significance of this work? **(end of story)**
3. What is the application of this work? **(end of story)**

**The difference  
between you  
and the winner  
can be as low as  
1.5 points.**

# Here is what I intended to do with my 3MT talk

- ❑ Wanted to tell a **story**
- ❑ Didn't refer to data/graphs and didn't use jargons
- ❑ Made it sound **conversational**; asked questions and answered
- ❑ Focussed on the **audience**; Wanted them to care about my research and walk them through my talk
- ❑ First **“wrote”** my talk and then practiced it multiple times
- ❑ Practiced my talk with four of my **friends**
  1. *a labmate (who was working on a different project)*
  2. *a department friend (who was a biologist but not in my program)*
  3. *a friend in engineering (never took a biology or chemistry class after high school)*
  4. *a friend who is a travel manager and loves movies (who didn't typically care about nerd-talk)*

# Final few tips

- ❑ Don't overload your audience with too much information. Tell a story and convey the **“core idea.”**
- ❑ You need to convey your passion for your work too, but be aware of the possibility of **'topic fatigue'** in the audience.
- ❑ Develop strategies to **make facts stick** - use evocative language, repetition, association, use visuals, surprise, humor, common ground etc.
- ❑ **Build a bridge** between what the audience knows and what you know.
- ❑ Emotional engagement is key; but how to **evoke emotion**? Think in these lines from an audience's perspective
  - "What's in it for me?"*
  - "Oh, how sad"*
  - "Interesting!"*
  - "That's mysterious..."*

**It all comes down  
to “delivery”**

**(tip: practice,  
practice, practice)**

# Day of the talk

- Practice
- Power-pose/Meditate/jam to your favorite song (whatever works for you)
- Be early, be present
- Bring your cheerleading team
- Read the room (audience OR audience + camera)
- Breathe
- Give your best shot



# Final advice

People don't remember everything you said, but they always remember how you made them feel.



# Thank You! Stay in touch.



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**Linked In Pro-Tip:**

*Always customize/"add a note" with your Linked In invite to a new connection.*



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