

Science Communication:

Practice Makes Progress

Phase I
February 16, 2022

Agenda

- Welcome and Introductions
- Key Principles for Effective Science Communication
- Improving Delivery
- Providing Constructive Feedback
- Preparing for Phase II
- Sample of 180 Seconds of Science
- Wrap Up and Reminders

Session objectives

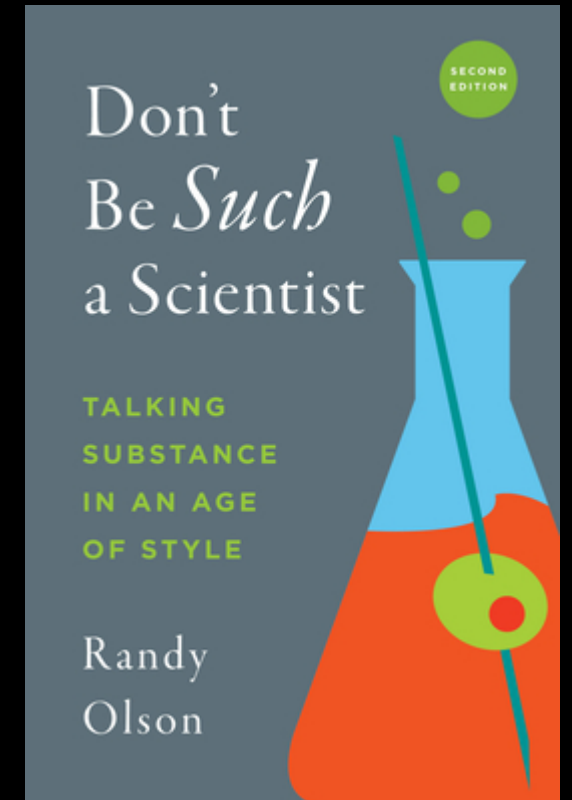
During Phase I, participants will learn skills to:

- Articulate key principles for effective science communication
- Identify best practices for public speaking
- Identify best practices for providing useful constructive feedback to speakers

During the optional Phase II (March 9), participants will have an opportunity to practice these skills.

About the speakers

- Lauren Priddy – Assistant Professor, Biomedical Engineering, Agricultural and Biological Engineering
- Holli Seitz – Assistant Professor, Communication
- Amy Fountain – Instructor, Communication
- Cheryl Chambers – Instructor, Communication
- Barb Kaplan – Associate Professor, Comparative Biomedical Sciences



Key Principles for Effective Science Communication

Holli Seitz

Assistant Professor, Department of Communication

Director of The Message Laboratory, Social Science Research Center

What is science communication?

“the exchange of information and viewpoints about science to achieve a goal or objective”

ENERGY CONSERVATION

Real-time feedback reduces energy consumption among the broader public without financial incentives

Verena Tiefenbeck, Anselma Wörner, Samuel Schöb, Elgar Fleisch & Thorsten Staake

Nature Energy 4, 831–832 (2019) | Cite this article

80 Accesses | 2 Altmetric | Metrics

...uests changed their resource-use behaviour when they received feedback on their energy consumption in real time, even though they did not know that they were receiving feedback. This finding has no financial incentives. Behavioural interventions provided through smart meters are a scalable and cost-effective policy instrument for for



National Institute on Alcohol Abuse and Alcoholism

Home NIAAA.NIH.GOV NIAAA Spectrum

As Male and Female Drinking Patterns Become More Similar, Adverse Alcohol-Related Risks for Women Become More Apparent

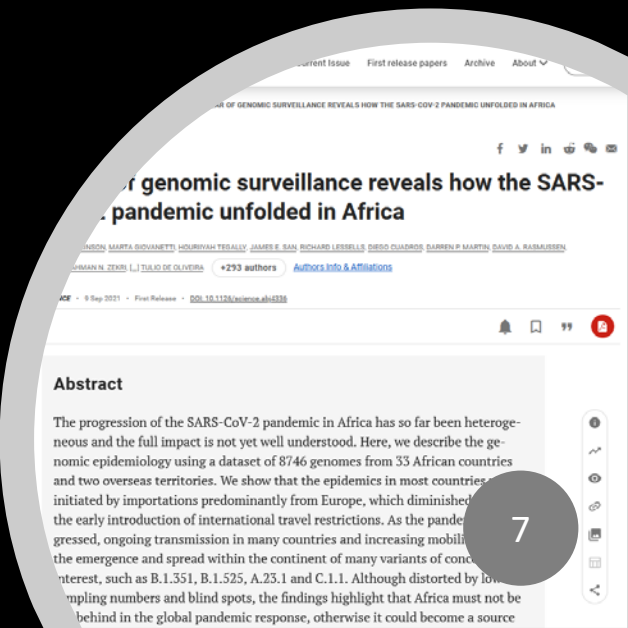
September 9, 2021 by NIAAA



The steady near-equalization in past alcohol use and misuse between women and men over the last decade has raised women's greater risks for alcohol-related consequences. A 2015 National Institute on Alcohol Abuse and Alcoholism (NIAAA) led analysis of annual data from the National Survey on Drug Use and Health found that differences in measures such as current drinking, number of drinks per month, reaching the criteria for

alcohol use disorder (AUD), and driving under the influence of alcohol in the past narrowed for U.S. females and males between 2002 and 2012. An analysis of six national surveys between 2000 and 2016 suggests that the number of women older who drink each year increased by 6 percent but the number of men who year decreased by 0.2 percent, and the number of women who binge drink increased by 1.5 percent but the number of men doing so increased by only 0.5 percent.

The many forms of science communication...



Identify your goal

Why do we communicate science?

1. To “share the findings and excitement of science”
2. To “increase appreciation for science as a useful way of understanding and navigating the modern world”
3. To “increase knowledge and understanding of the science related to a specific issue”
4. To “influence people’s opinions, behavior, and policy preferences”
5. To “engage with diverse groups so that their perspectives about science related to important social issues can be considered in seeking solutions to societal problems that affect everyone”

Consider your audience



Who are our potential “audiences”?

Who are they?



Demographics

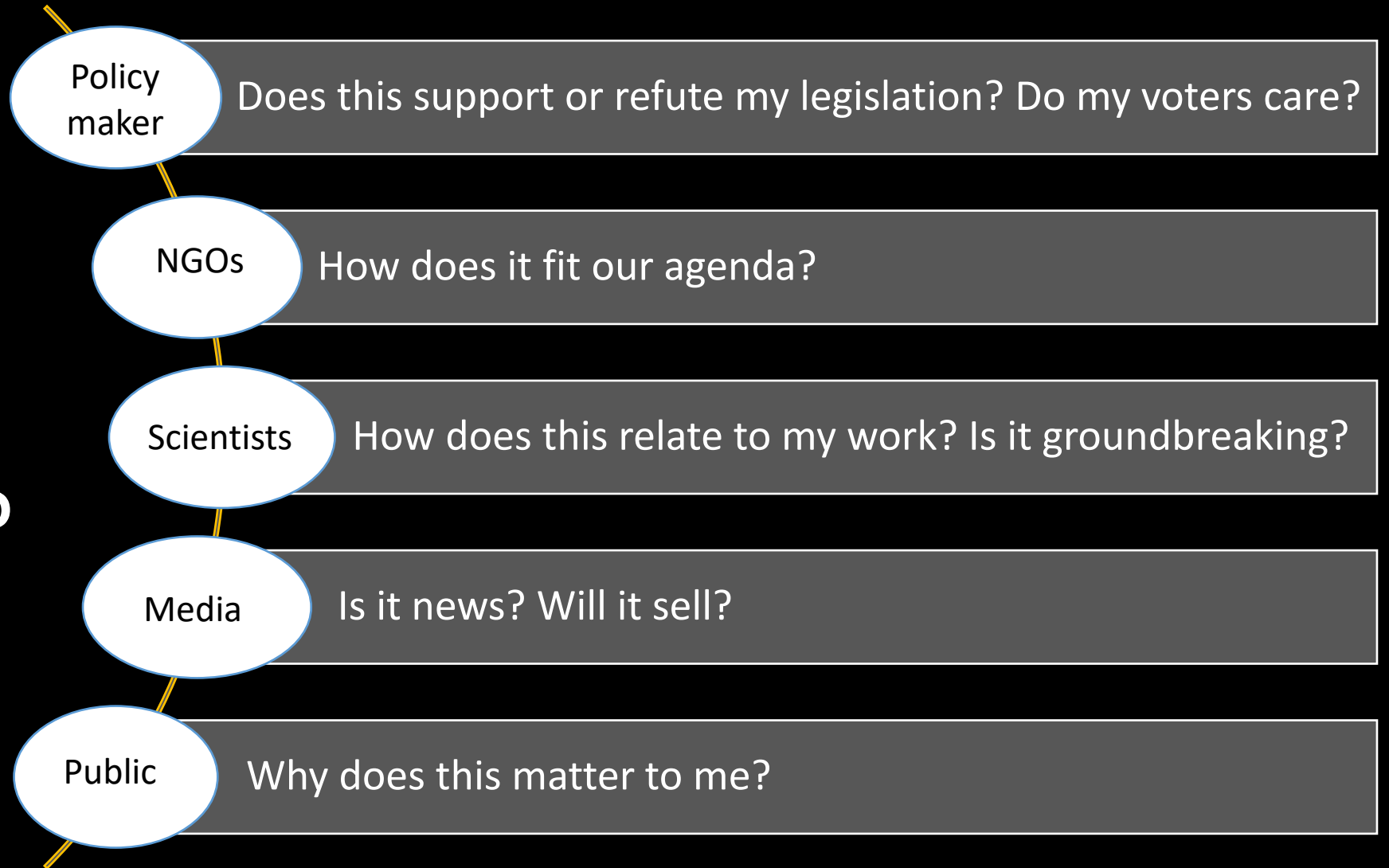


Culture and
geography



Knowledge and
beliefs

What do they need?



From *Escape From the Ivory Tower: A Guide to Making Your Science Matter*, Baron (2010), p. 106

Craft your message

What message will you share to
achieve your goal and meet your
audience's needs?

Principles of message design

1. Choose just 1 or 2 main points.

Principles of message design

1. Choose just 1 or 2 main points.
2. Can you craft a vivid image or metaphor?

“Chemotherapy is like a wildfire, destroying everything in its path...Targeted cancer therapies are more precise, like a controlled burn.”

Principles of message design

1. Choose just 1 or 2 main points.
2. Can you craft a vivid image or metaphor?
3. Can you tell a story?

Principles of message design

1. Choose just 1 or 2 main points.
2. Can you craft a vivid image or metaphor?
3. Can you tell a story?
4. Check for jargon.

Jargon

“Technical vocabulary of a certain occupation or profession”

Communication Matters, Floyd, 2014, p. 95

Hidden jargon

Words that are used in a specific way within a certain field but have different meanings for nontechnical audiences

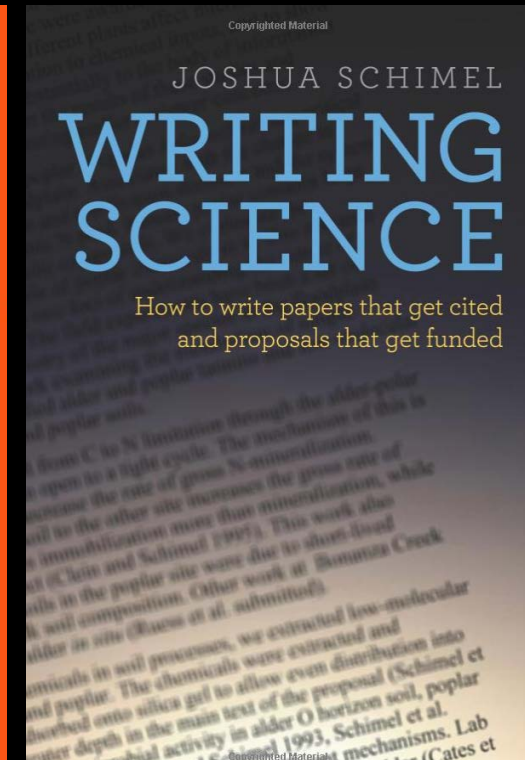
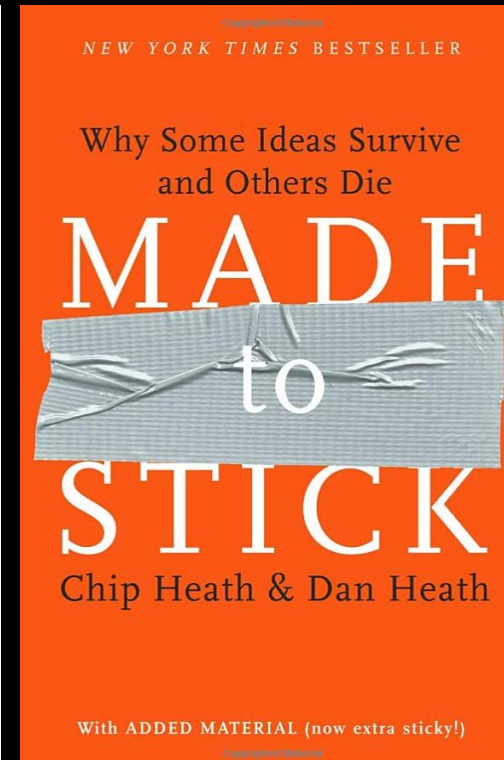
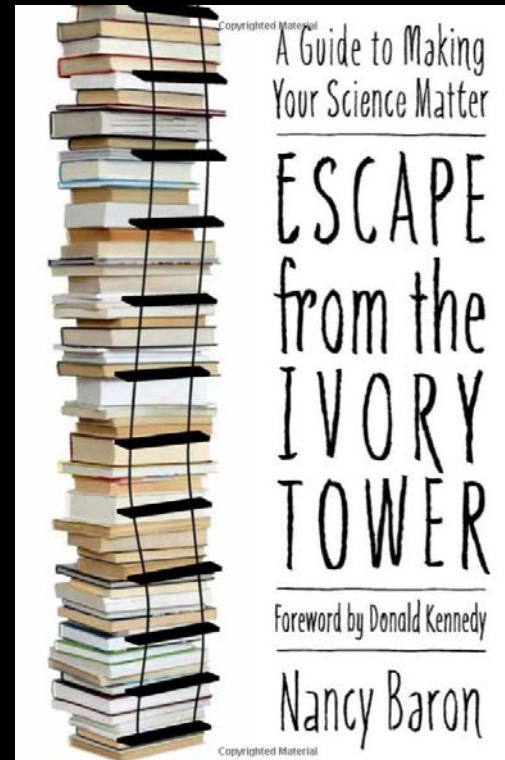
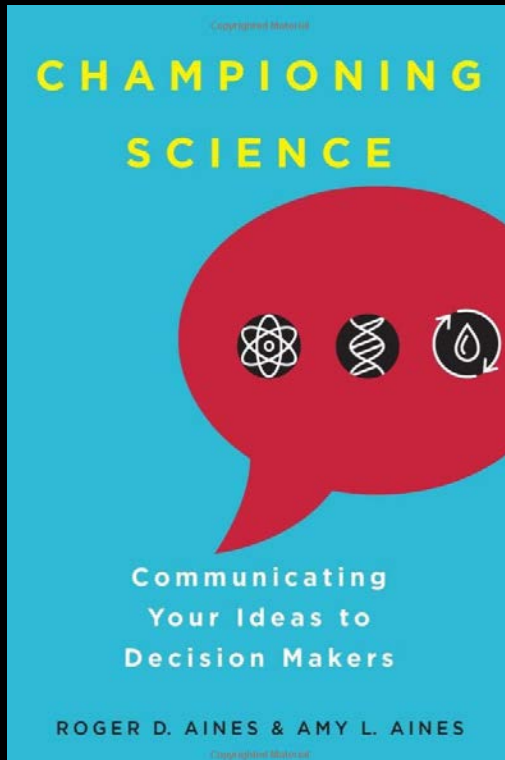
Examples:

- Significant
- Positive
- Spontaneous
- Unremarkable
- Normal
- Random

Principles of message design

1. Choose just 1 or 2 main points.
2. Can you craft a vivid image or metaphor?
3. Can you tell a story?
4. Check for jargon.
5. Test it with your audience and revise.

Keep honing



<https://www.compasscicomm.org/wp-content/uploads/2020/05/The-Message-Box-Workbook.pdf>

Improving Delivery

Amy Fountain

Instructor, Department of Communication

How can I get from this...to...this?

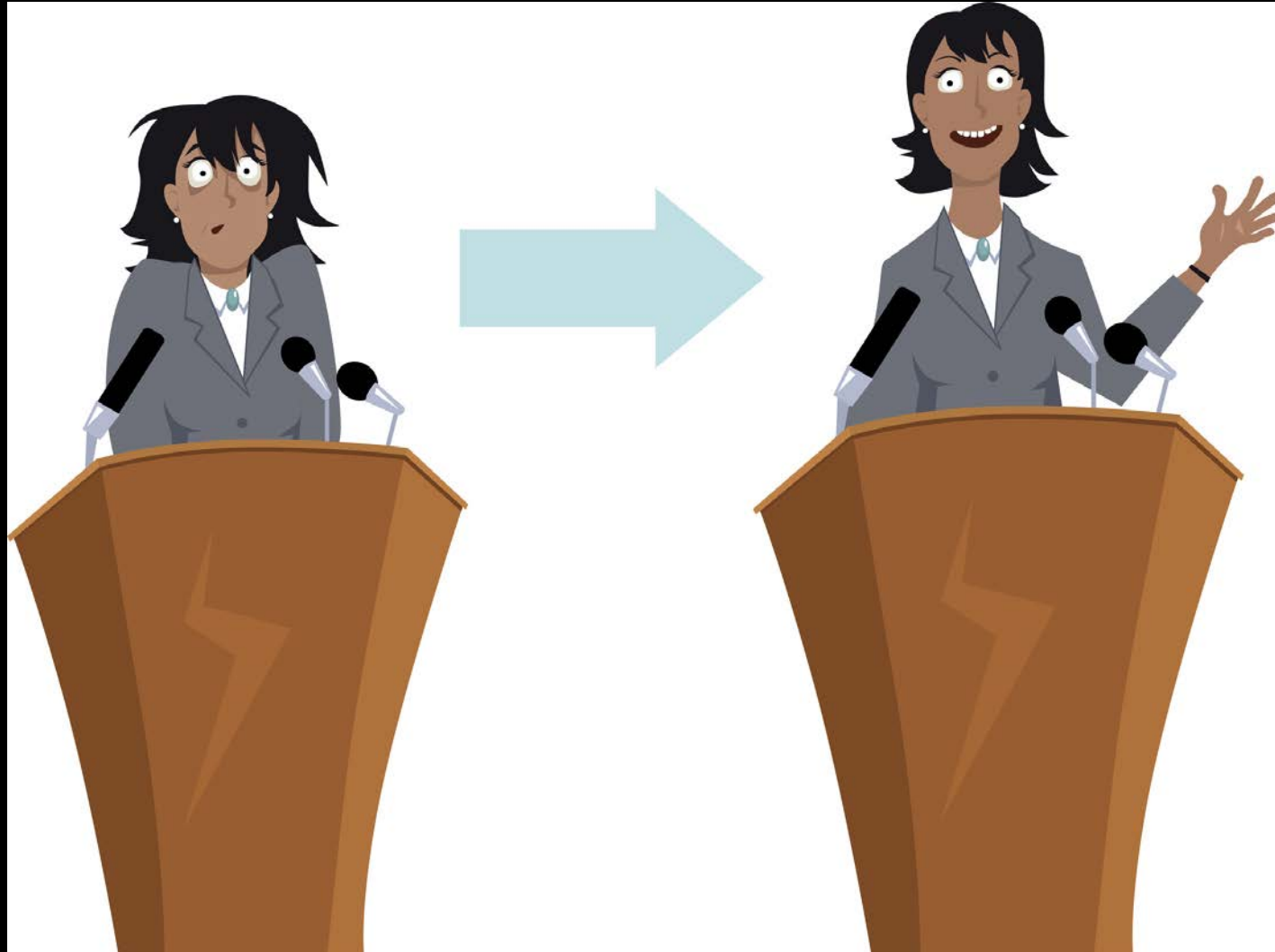


Image from: <http://executivesecretary.com/>

What is the goal?

Perfect Communication:

120-150 wpm, at 70 decibels, with 4 moderately sized gestures per thought, while holding eye contact for 3-5 seconds

What is the goal?

Perfect Communication:

120-150 wpm, at least 4-5 gestures per
thought, while holding a pen for 2 seconds

Goal of Effective Delivery

- Use a conversational style
- Convey credibility
- Increase audience engagement
 - Reciprocity

What can we control ahead of time?

- Plan, prepare, practice
 - Have a strong opening (story, quote, example)
 - Identify clear main points and engaging support for each point
 - Create visual aids
 - Consider dress/appearance
 - Use strategies for reducing nervousness & building confidence
 - PRACTICE

Increasing Credibility & Audience Engagement

- Body Language
 - **Make eye contact:** Connect with listeners
 - **Use the space:** Close the gaps
 - **Facial expressions:** Smile!
 - **Posture, stance:** Convey confidence
 - **Gestures:** Natural movement is good

Voice – Variety is Key

- Variety in expression
- Volume/vocal strength
 - Breathe!
- Rate
- Articulation
- Fluency & pauses

Providing Constructive Feedback

Cheryl Chambers

Instructor, Department of Communication

Be Specific

- Avoid vagueness
 - “It was great”
 - “It needs work”
- Take notes
 - Divide notes into content & delivery
 - List strengths and weaknesses in each

Evidence Based

- Provide specific examples
 - Comment on content choices
 - Evaluate specific delivery behavior
- Focus the changeable
 - “You need to slow down”
 - “Your examples need to be more compelling”

Constructive Feedback

- Focus on reasonable change
 - Consider time limits
 - Consider individual limits
- Focus on positive
 - More positive than negative
 - Compliment sandwich

I-Statements

- Use "I" language
 - Feedback is always subjective
- Avoid "You" language
 - Can foster insecurity and defensiveness

Emotional Impact

- Describe any emotional impact
 - When you were interested, intrigued, and amused
 - When you were bored, annoyed, complacent
 - When you were shocked, sad, mad

Prioritize Needs

- Focus on:
 - What needs to be changed
 - What can be changed
 - How to avoid the weakest parts
 - How to bolster the strongest parts

Other Tips

- Delay feedback
- Ask for self evaluation
- Align with goals

Receiving Feedback

- Feedback is impersonal
- Listen (don't interrupt)
- Get feedback from superiors, subordinates, and peers
- Plan to make changes
- Follow up

Preparing for Phase II

Barb Kaplan

Associate Professor, Department of Comparative Biomedical
Sciences, Center for Environmental Health Sciences

Preparing for Phase II

- “Science Communication: Practice Makes Progress Phase II”
- March 9, 1:00-4:00 PM, Colvard Student Union Ballroom
- Open to MSU faculty, staff, and graduate students
- Three possible roles for attendees:
 - **Speakers:** Deliver a brief (< 3 minute) science communication presentation
 - **Evaluators:** Provide constructive feedback to speakers
 - **Observers:** Identify practices for effective science communication and feedback
- Be sure to pre-register!

Phase II: Requirements for presentation content

- Content should describe a single project from your research program
- Include background/significance, research strategy/design/methods, key results/findings, and conclusions/outcomes/impact
- 3-minute time limit
- Create it for a non-specialist audience
- 1 PowerPoint slide without animation (include title and content)
- No laser pointer

Phase II: Setting yourself up for success

- Don't get too detailed
- Deliver content conversationally
- Use expression (pauses, rises, falls and stresses)
- Consider including the following to make the content memorable:
 - A story, metaphor or emotional element
 - Concrete examples
 - Something unexpected
- Emphasize thesis statement
- PRACTICE

Phase II: Pitfalls to avoid

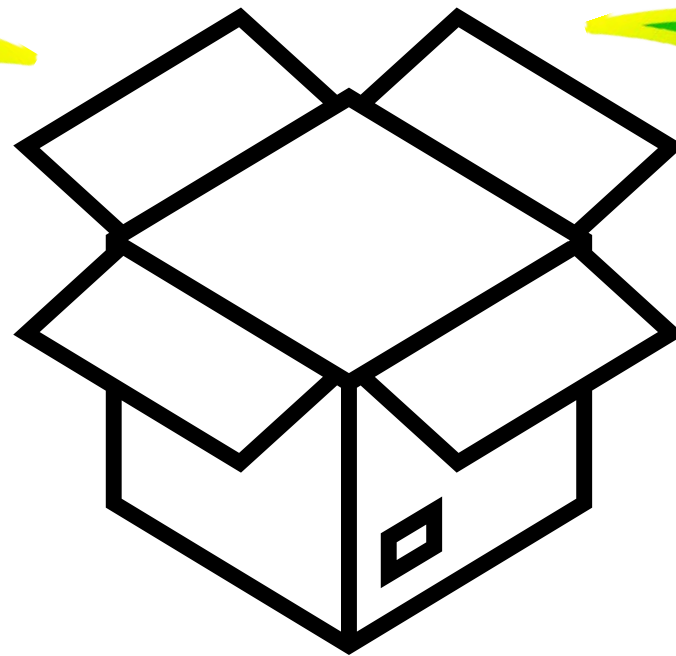
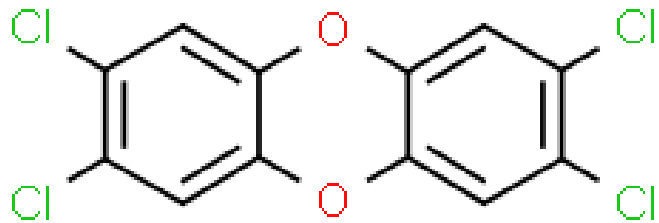
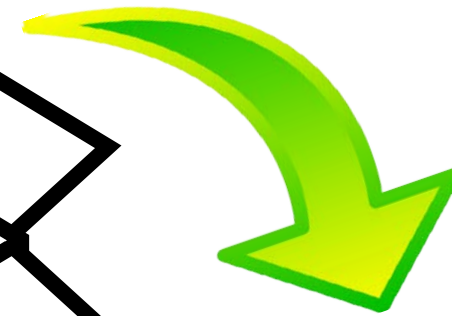
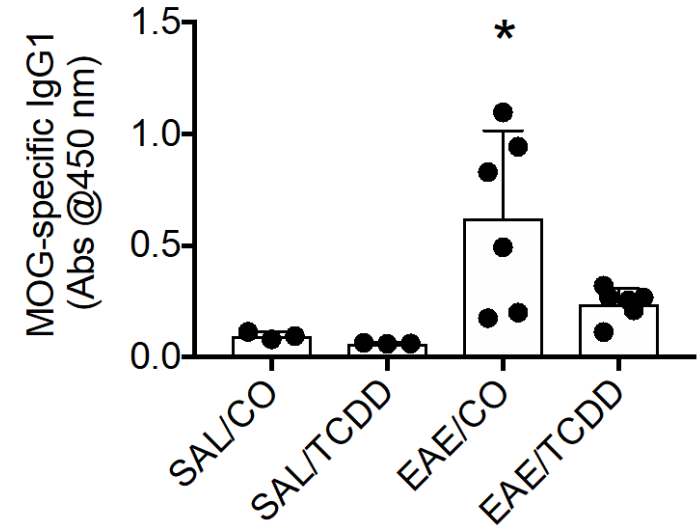
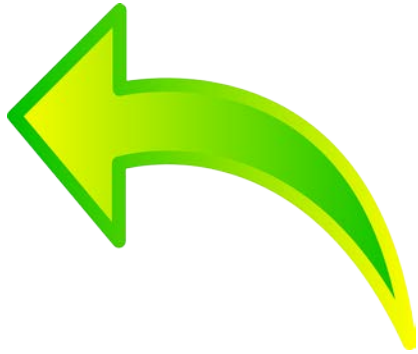
- Too technical
- Too simple
- Too much on the slide
- Reading from notes
- Unclear speech
- Nervous speaker
- Weird body language
- Small font / wacky fonts / color combinations
- Busy backgrounds

Sample 3-Minute Talk

Dr. Barb Kaplan

Associate Professor, Department of Comparative Biomedical Sciences,
Center for Environmental Health Science

Toxicity in the Immune System: A Careful Balance



Feedback for speaker

Wrap Up and Reminders

- Don't forget to register for Phase II (March 9):
<https://www.msstate.edu/events/2021/12/science-communication-practice-makes-progress-phase-ii>
- Announcements from ORED
- Questions for any of our speakers?