

From the Collaboratorium to the Community

A quick guide to Science Communication

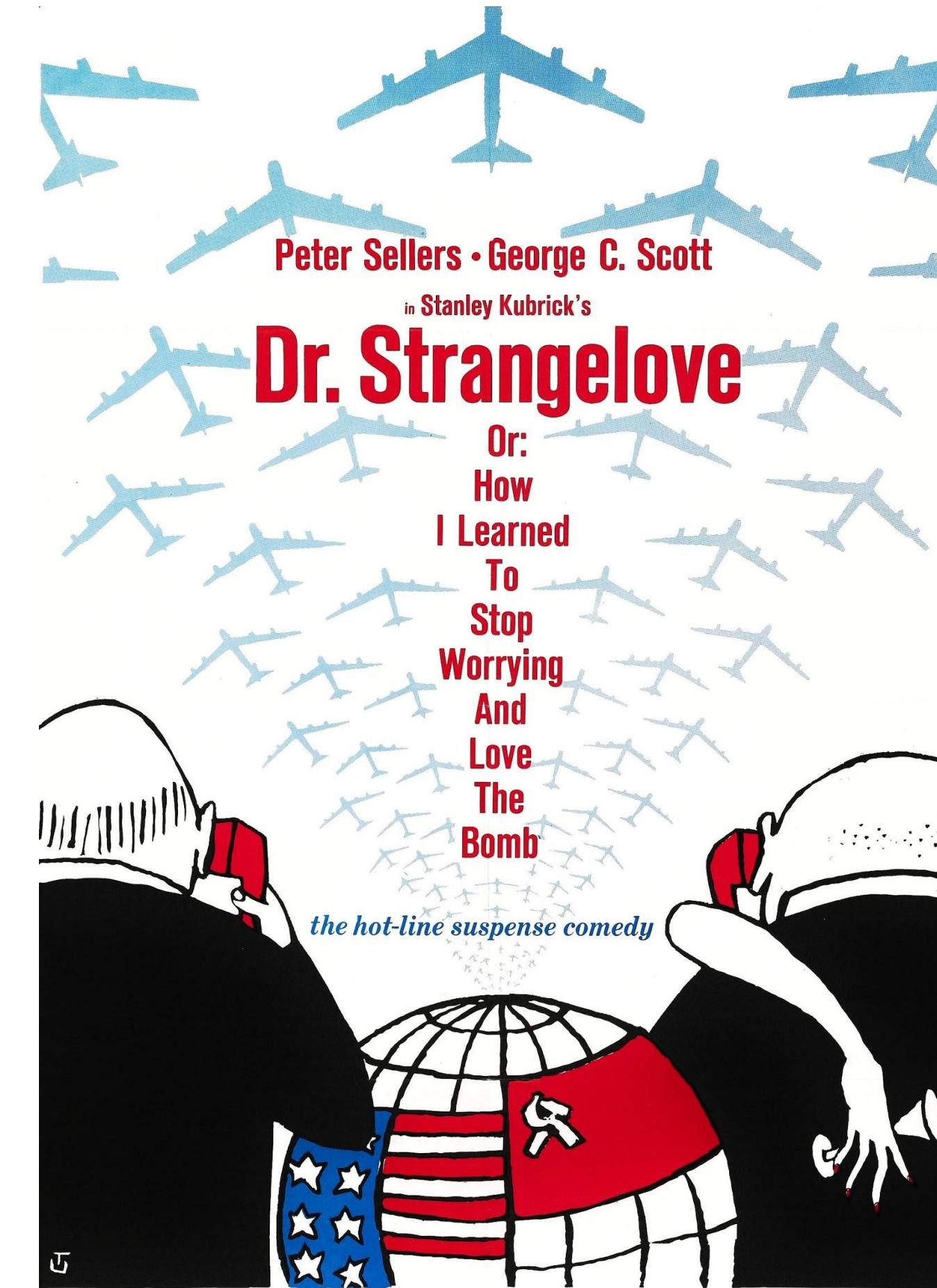
Parmvir Kaur Bahia, PhD

Or: How I Learned To Start Worrying And Love The SciComm



Attribution: DOGE cuts by Dave Whamond

Or: How I Learned To Start Worrying And Love The SciComm



also starring Sterling Hayden·Keenan Wynn·Slim Pickens and introducing Tracy Reed (as "Miss Foreign Affairs")

Screenplay by Stanley Kubrick, Peter George & Terry Southern Based on the book "Red Alert" by Peter George

Produced & Directed by Stanley Kubrick A Columbia Pictures Release

Topics we'll cover



- What is SciComm?
- Why should we communicate science?
- How to communicate effectively
 - Strategies
 - Platforms
 - Messaging

Who am I?

- A neuroscientist with 25+ years of research experience
- A science communicator and outreach practitioner running a nonprofit since 2014
- Creator of science festivals, podcasts, workshops
- A passionate advocate for STEM and who gets to participate



What is SciComm?



Dr. Pascal Gagneux dressed as a giant sperm
at **taste of science** San Diego.



What is SciComm?

Science 8
Scientific 4
Understandable 3

explaining the scientific process and findings to a lay audience in a way that is effective and engaging

Taking about science

Explain my work to mass people

Informing the non-expert individuals about the details of science in more understandable way.

Engaging in explaining to the general public the scientific research process and research results

Science to lay people

Using regular language to describe science

Explain science to larger community (non-scientific)

Being forced (tortured) to give journal club presentations as a PhD student.

Transmitting scientific information to the wider audience in an understandable format

Explaining the impact of our projects to the general public

communicating science

Explaining your science in understandable and engaging form

Distilling complex topics to manageable ideas for a broad group

The ability to explain science in its basics to a lay person

Join at
slido.com
#1101 5025

What is SciComm?

The activity of explaining scientific work and information to people who are non-experts.

Connecting science with society

science
communication

public
engagement

outreach

broader
impacts

What is SciComm?



journals.sagepub.com/home/scx
ISSN: 1075-5470

s

A field of study looking at how science is communicated.



Why should we engage in SciComm?

Funding 5

Science 4

Interdisciplinary research, keeping the non-scientist community informed about science for example to comply with preventive strategies.

We have a responsibility to inform the public about what their tax dollars are being spent on and to encourage further funding.

Expanding the common knowledge builds a solid base for future progress

First, the dissemination of knowledge. Second we rely on public funding to do the science so it helps to communicate what we do

Promote work, allow others to become part of the conversation

To engage general interest and recruit people

To excite others about the science

So we can reach more audience and correct misconceptions

Encourage collaborations, show impact of research, get fundings

Prevent misinformation and inform public about why funding is needed

To get money and encourage people to learn truths

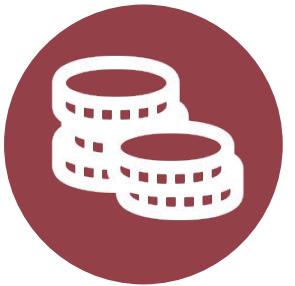
Combat current political climate

If you can't explain your science you don't understand your science

Because we need funding

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Why communicate science?



PUBLICLY FUNDED RESEARCH

An obligation to share outcomes with tax payers



INFORM PATIENTS

Offer people hope and opportunity



GET FUNDING

Clearer communication to develop a sales pitch



BE A BETTER SCIENTIST

Gain inspiration and improve communication skills



SHAPE POLICY

Help to better inform representatives



FOSTER TRUST IN SCIENCE

Fight disinformation & misinformation



ESTABLISH COLLABORATIONS

Reach new organizations and researchers



IT'S FUN

We're allowed to do things because they bring joy!



This is fine meme, from K.C. Green, *Gunshow* #648, “The Pills Are Working,” 9 January 2013.

But what if my research isn't interesting to others?

Video by
 @gracewellsphoto



How to communicate



Participate in existing
efforts



Create your own

How to communicate: strategy



**GOALS &
MOTIVATIONS**



AUDIENCE



STRENGTHS



PLATFORM



**DESIGN &
IMPLEMENTATION**



GOALS & MOTIVATIONS



AUDIENCE



STRENGTHS



PLATFORM



DESIGN & IMPLEMENTATION

Inspire the next generation of scientists

Students

Inform – better understand therapies

Patients

New collaborations

Scientists in industry/biotech

Share with broader audiences

Adult community members



GOALS & MOTIVATIONS



AUDIENCE



STRENGTHS



PLATFORM



DESIGN & IMPLEMENTATION

Writing

Speaking

Artistic

Organizer



**GOALS &
MOTIVATIONS**



AUDIENCE



STRENGTHS



PLATFORM



**DESIGN &
IMPLEMENTATION**



WRITING

Blogs, articles, social media

Mathematical Oncology
The Mathematical Oncology Blog

Generative AI & Mathematical Oncology
Written by Ari Barnett, Zhiyan Jiang, Daria Laslo on September 01, 2023

Parkinson's non-invasively study shows
Device could replace deep brain stimulation and may also help with Tourette syndrome, Alzheimer's and depression

Ivana Drobniak O'Brien
Fri Sep 01 2023 05:00 EDT

Drop! Cover! Hold On!

PERFORMING

Comedy, music, dance



INSPIRING THE NEXT GENERATION

Share your work with students



SPEAKING

Public events, podcasts



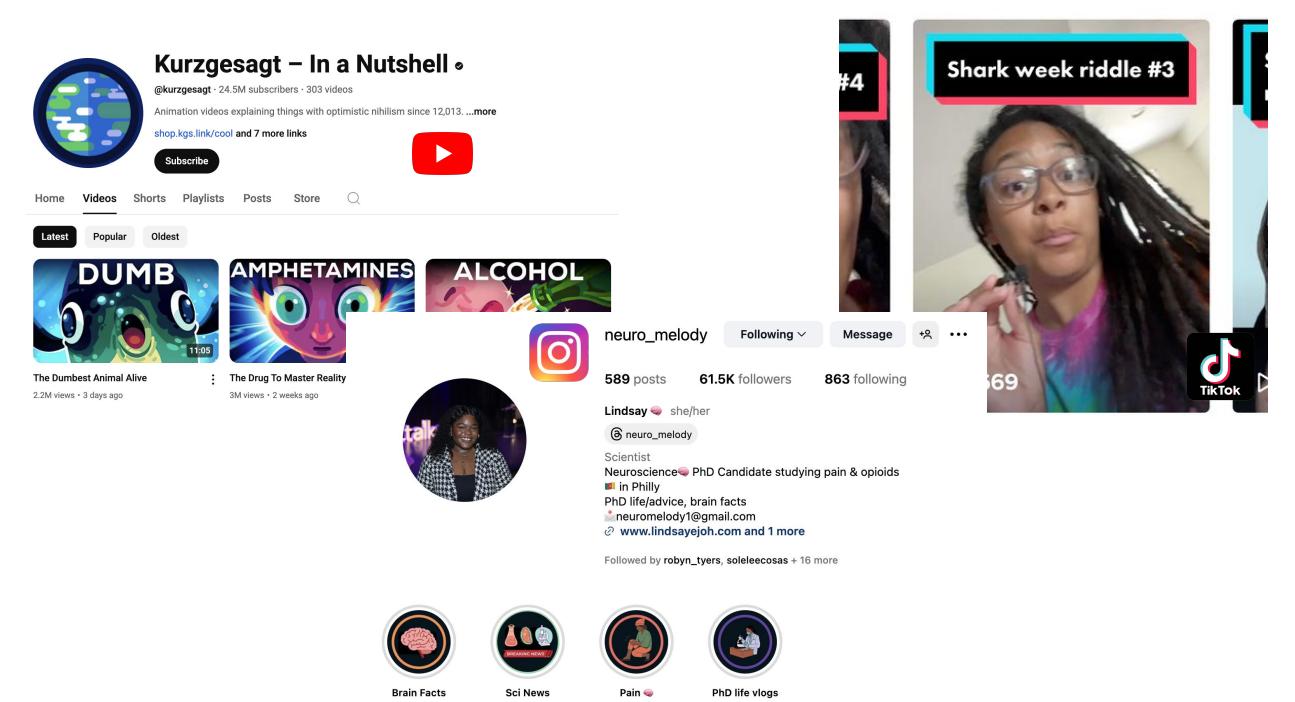
VISUAL ART

Comics, crafts, sci-art



VIDEO

YouTube, Instagram, TikTok





GOALS & MOTIVATIONS



AUDIENCE



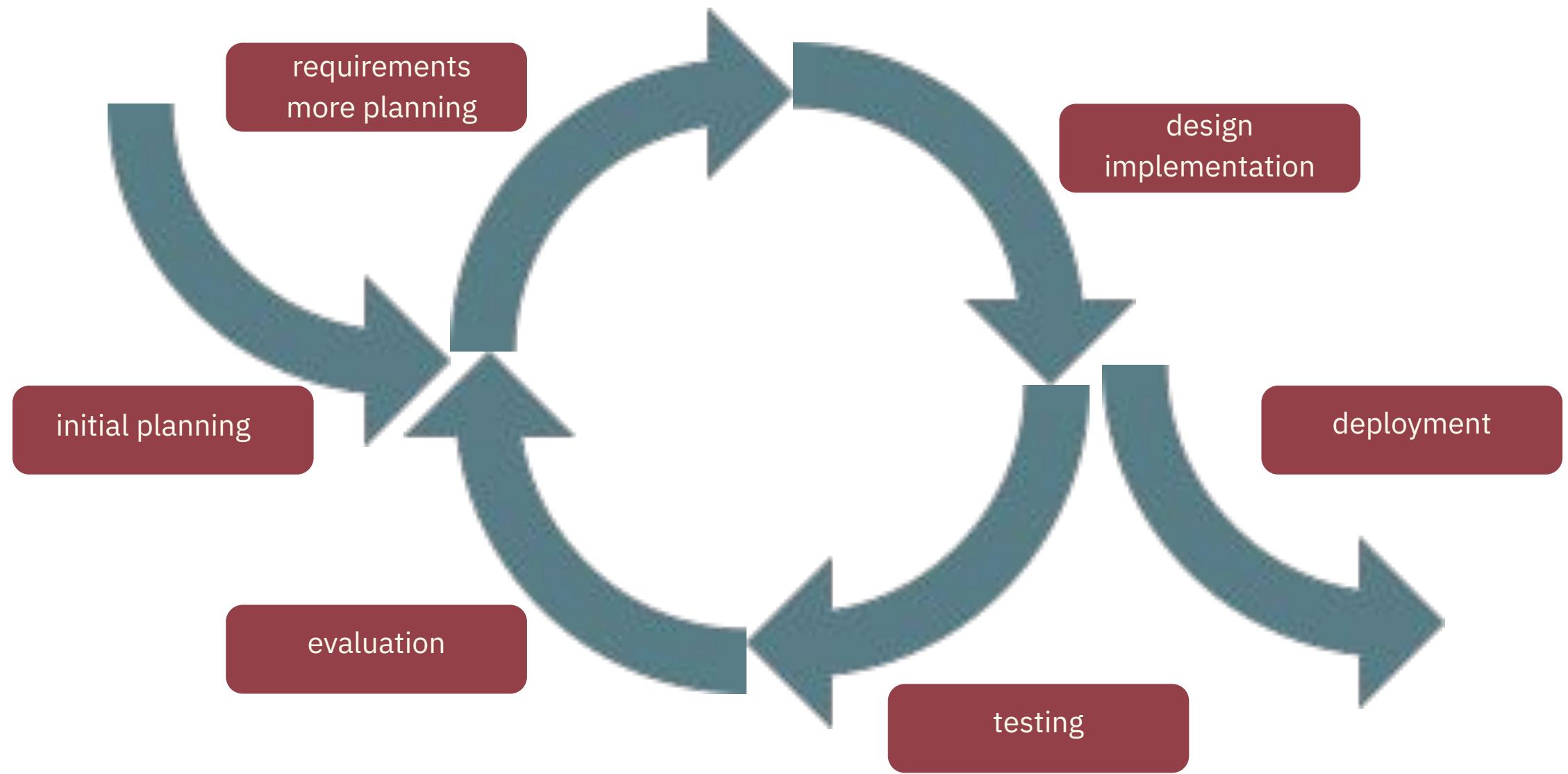
STRENGTHS



PLATFORM



DESIGN & IMPLEMENTATION



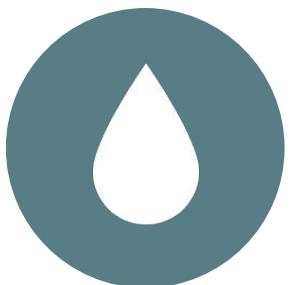
How to communicate: craft a message



AVOID JARGON



**FIND COMMON
GROUND**



**DISTILL YOUR
MESSAGE**



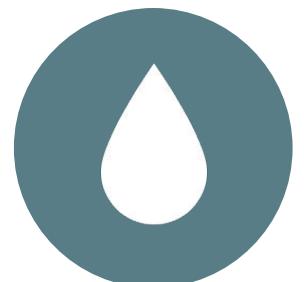
**TELL A
STORY**



AVOID JARGON



FIND COMMON GROUND



DISTILL YOUR MESSAGE

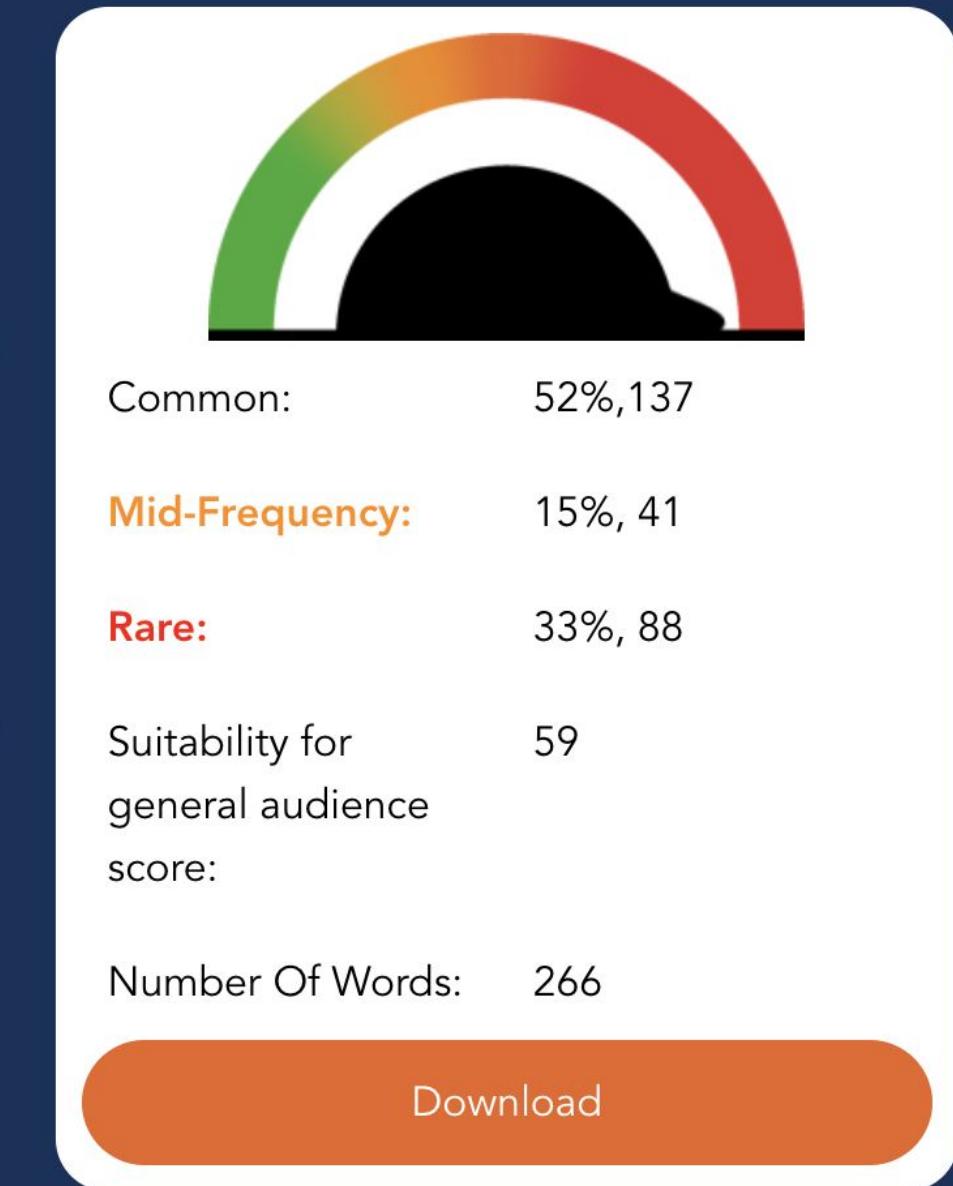


TELL A STORY



RESULT

Most **vagal sensory afferents innervating** the lower airways are **activated** by **noxious stimuli** including **irritants** (e.g. **TRPV1 agonist capsaicin**) and **inflammatory mediators**, causing **nociceptive cardiorespiratory reflexes** (e.g. cough, **bronchospasm**, changes in **respiratory** drive and heart rate). **Vagal ganglia** are **comprised of embryologically distinct nodose** and **jugular neurons**, but little is known of their specific contribution to **nociceptive reflexes**. Using a novel **TRPV1Flp** mouse in combination with P2X2^{Cre}, Tac1^{Cre}, **intersectional reporter mice**, and **AAV** we **mapped** and **modulated** **distinct nociceptive afferents**. **TRPV1+P2X2+ neurons** were found **exclusively** in the **nodose ganglion** and were **activated** by **abmATP** and **capsaicin**, but rarely expressed Tac1. **TRPV1+P2X2+ fibers innervated** the **lungs** (many **projected** into the **alveoli**) but not the **trachea**. **Centrally** they **innervated** the **nucleus tractus solitarius (nTS)**. >90% of **TRPV1+Tac1+ neurons** were found in the **jugular ganglion** and were **activated** by **capsaicin** but not **abmATP**. **TRPV1+Tac1+ fibers innervated** the **lungs** (although none **projected** into the **alveoli**) and the **trachea submucosa**. They **terminated solely** in the **paratrigeminal** complex (Pa5). Many **TRPV1-Tac1+ neurons** were found in both **nodose** and **jugular ganglia** that **innervated** the **trachea** and large **pulmonary airways**. These **projected** to both **nTS** and Pa5. Using **intersectional chemogenetics**, we **selectively stimulated** lower airway **afferent subsets** using **intravenous injections** of **clozapine-N-oxide (CNO)**. **Activation** of **TRPV1+**, **TRPV1+P2X2+** or **TRPV1+Tac1+ fibers evoked bradycardia** and **bradypnea**. **Activation** of **Tac1+ fibers evoked tachycardia** and **tachypnea**. **Activation** of **vagal TRPV1-Tac1+ neurons** only **evoked tachycardia**. These data show the **distinct innervation patterns** and **reflex** function of multiple **nociceptive vagal afferent subsets**.

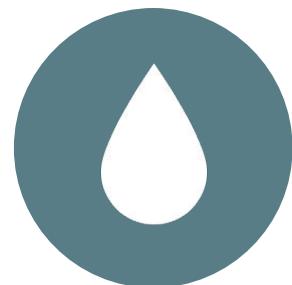




AVOID JARGON



FIND COMMON GROUND



DISTILL YOUR MESSAGE



TELL A STORY



Language

Punjabi-English

Empathy

Related to a family member

Analogy

Culturally relevant

Know your audience

No scientific training

Native Punjabi speakers

Devout Sikhs

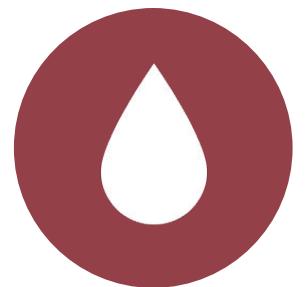
Consume information through YouTube and WhatsApp



AVOID JARGON



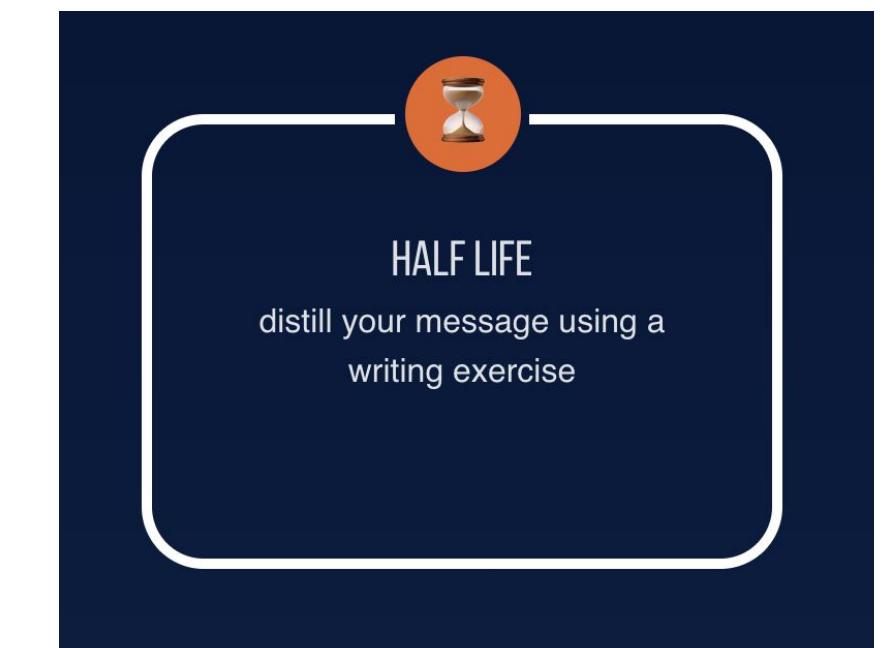
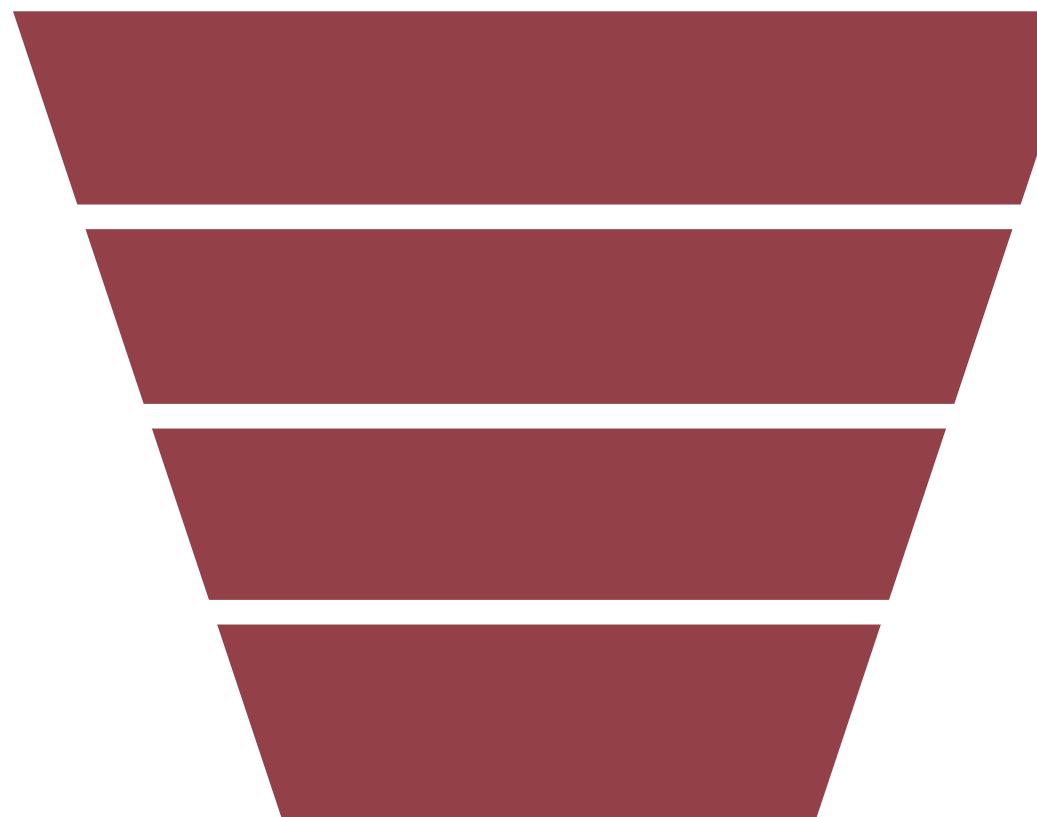
FIND COMMON GROUND



DISTILL YOUR MESSAGE

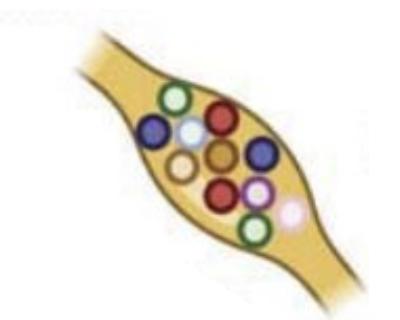
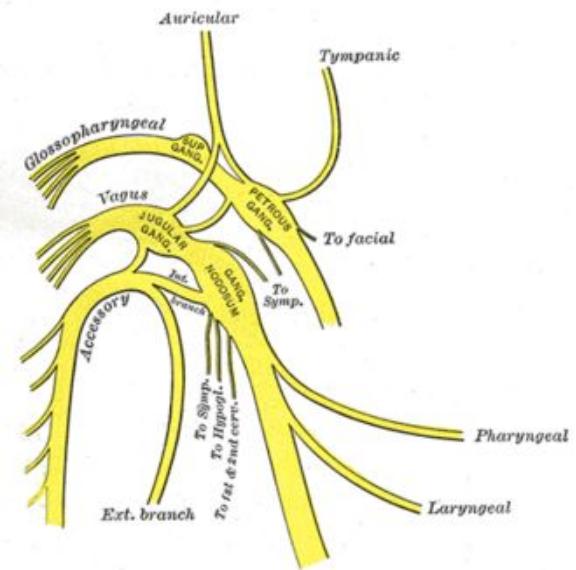
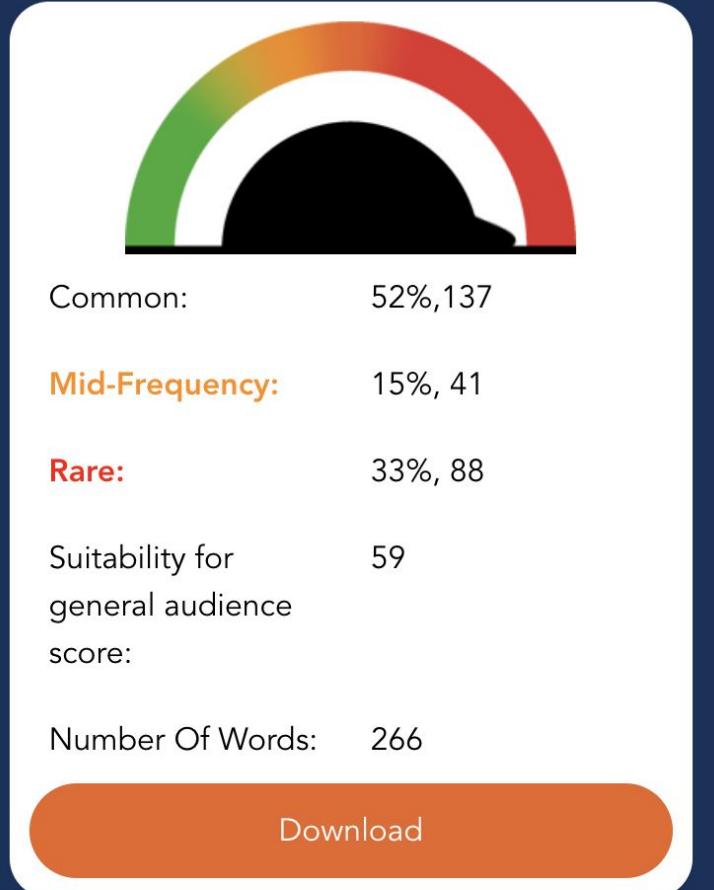


TELL A STORY



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Importance of the vagus nerve in the airways

Many distinct nerve cell types

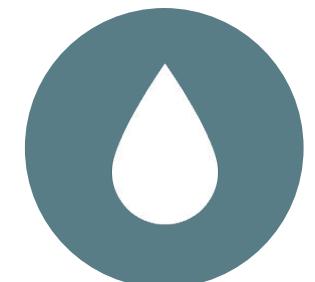
Targeted medicine



AVOID JARGON



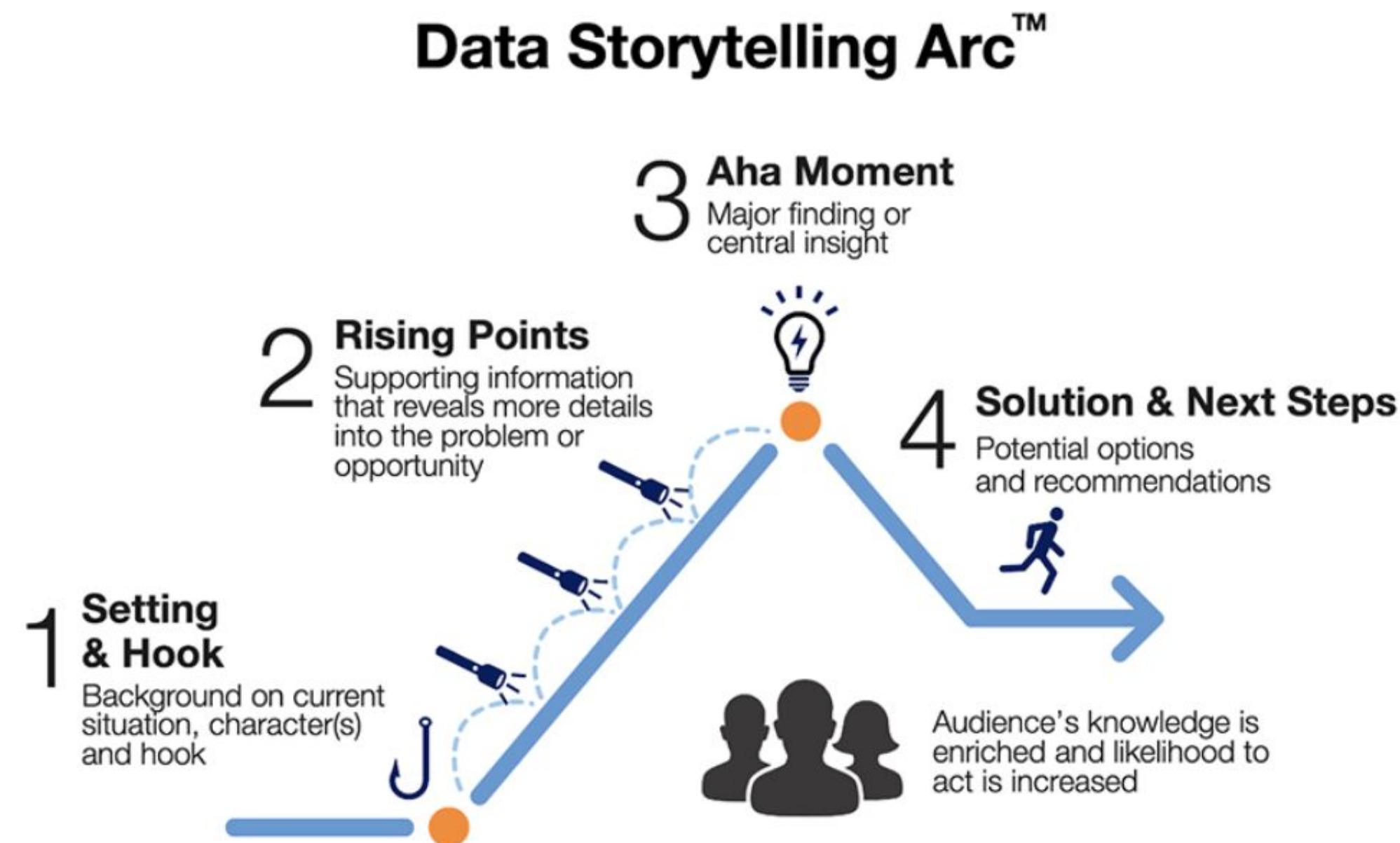
FIND COMMON GROUND



DISTILL YOUR MESSAGE



TELL A STORY



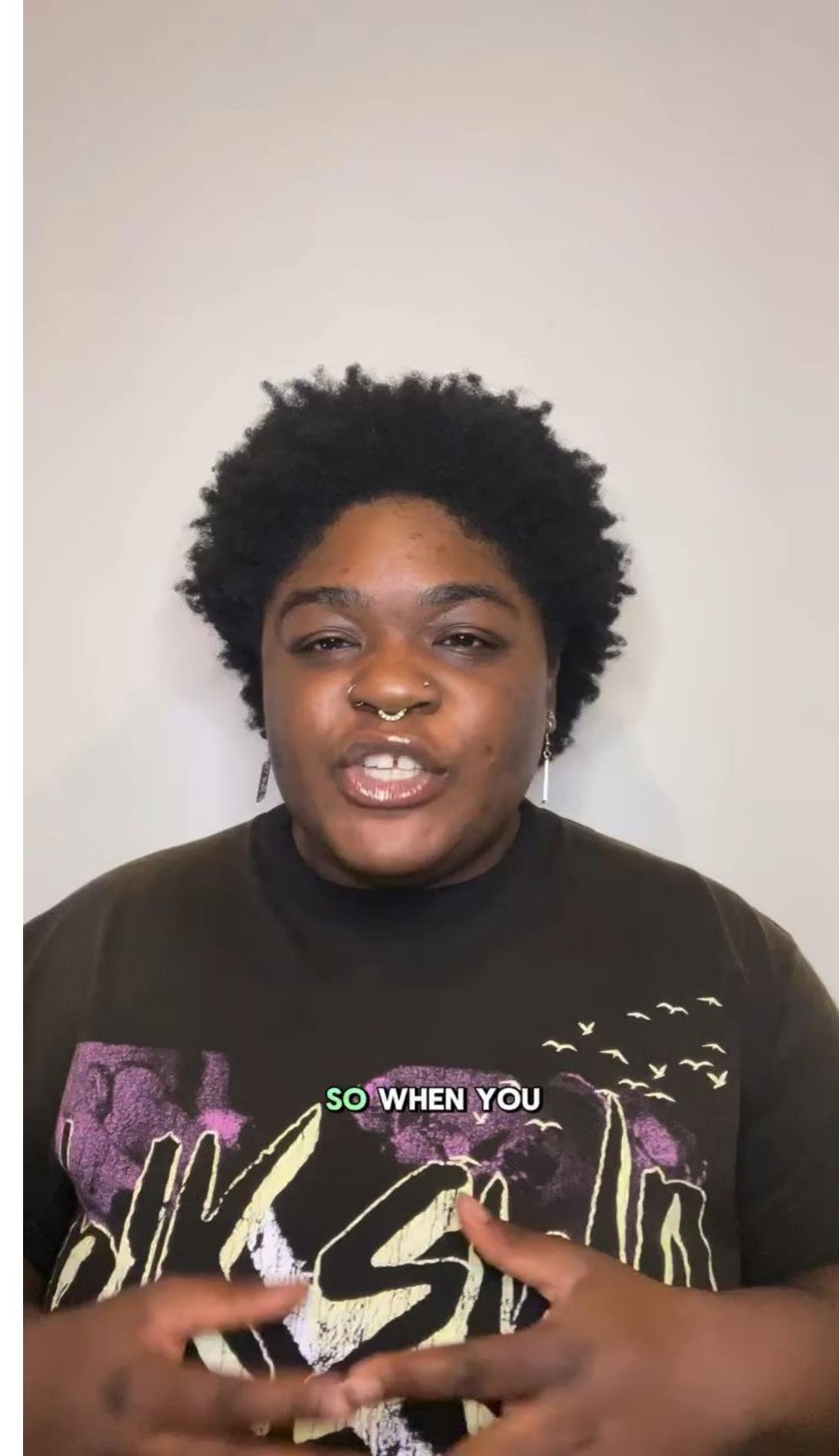


Home About Research @Neuro_Melody Media Resources
Brain Facts Blog



Neuro_Melody

I believe strongly in open science and increasing public engagement in STEM. My goal on social media is to compassionately provide people with neuroscience knowledge that can empower them to make informed decisions about their health and to pursue their own innate sense of curiosity.





What are your key takeaways today?

Science communication is fuuuun!

Time to put some quality efforts in communicating my science

(for communicate

Simplicity **efficient** **multiple** **fun** **You can make science fun!**

correctly **scientist** **useful** **strengths**

done story science platforms

science

platforms

Stroy

activity

reather

reather

De jargon tool!

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Aim for accessibility overall

aspect leveraging

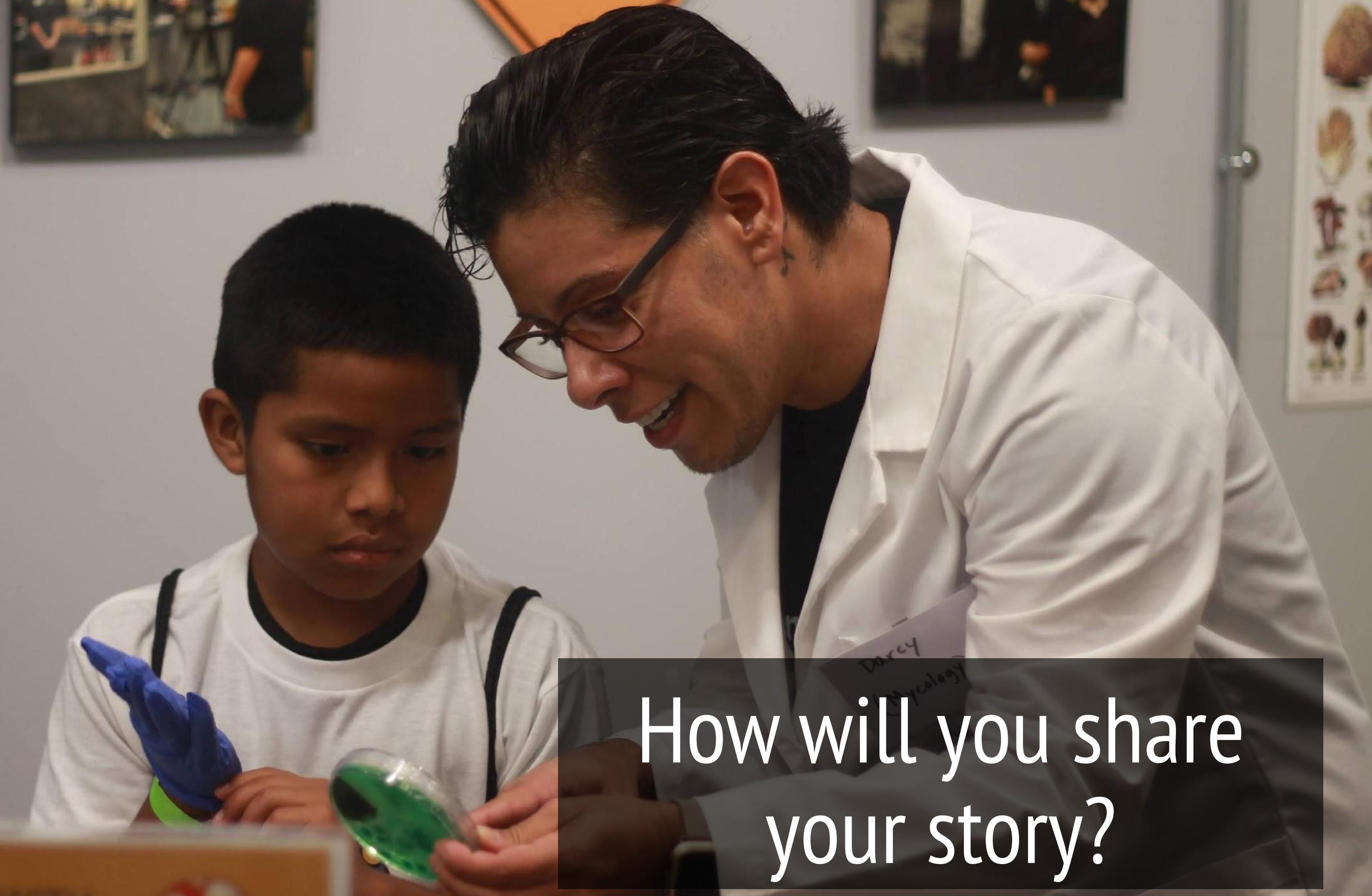
Structure of dialogue

Think about the audience!

communication

Yet long way to go to communicate science.

I am a poor science communicator



How will you share
your story?



parmvir.com



parmvir@arthasciencecmedia.com



@parmvir.com

Thank you for your
attention!



Oregon trail shirt: You have died of peer review