

The background features a microscopic view of biological tissue. The top portion shows pink, irregularly shaped cells with a central yellow and orange circular structure. The bottom portion shows green, rectangular cells with internal orange striations and purple nuclei. Yellow dashed lines and arrows indicate specific points of interest or movement within the cells.

Communicating Your Science to Different Audiences



IN THE SPIRIT OF INQUIRY AND DISCOVERY
EMBODIED BY BENJAMIN FRANKLIN,
THE MISSION OF THE FRANKLIN INSTITUTE
IS TO INSPIRE A PASSION FOR LEARNING
ABOUT SCIENCE AND TECHNOLOGY.

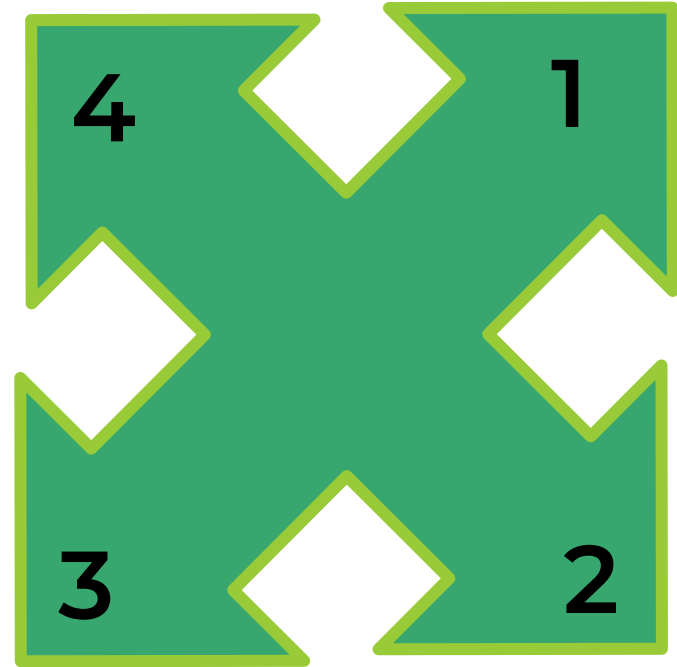
Founded in 1824, opened as
science center in 1934

Most visited cultural
institution in Pennsylvania

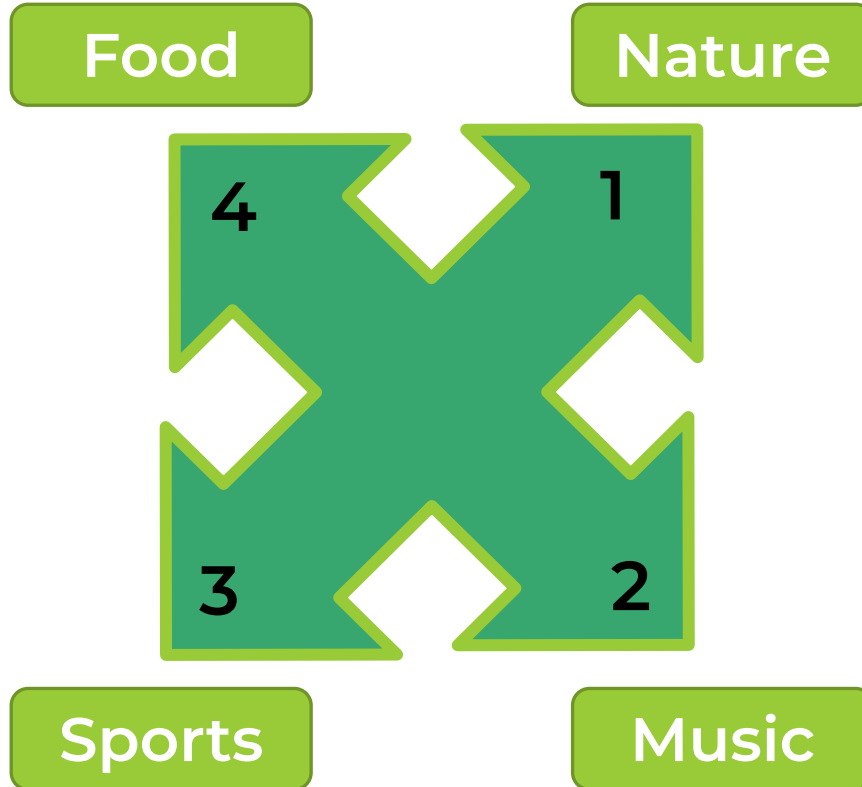
Informal science education
programs for youth, families,
educators in museum,
community, and nationally

Warm-up: Four Corners

- Go to the corner that suits you.
- Discuss the assigned question with another person in your corner.



Favorite HOBBY



Share a
**memorable
science
experience**
from childhood.

Why do we do science communication?

- Share excitement & benefits of science
- Increase appreciation of science as a process
- Inform about issues
- Influence behavioral change
- Seek diverse perspectives
- Communicate shared values & care for society



Photo: Morehead Planetarium

A detailed microscopic illustration of cells. The top portion shows pinkish-red cells with a prominent blue cytoskeleton and a central yellow-orange nucleus. The bottom portion shows green cells with a blue cytoskeleton and a central purple nucleus. Yellow dashed lines and arrows indicate signaling pathways between the cells. A white text box is overlaid on the left side.

Mechanobiology Mobile Exhibit Project

Goals for Broader Impacts: Public Audiences

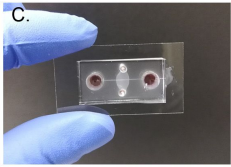


Children ages 8-13 and their families:

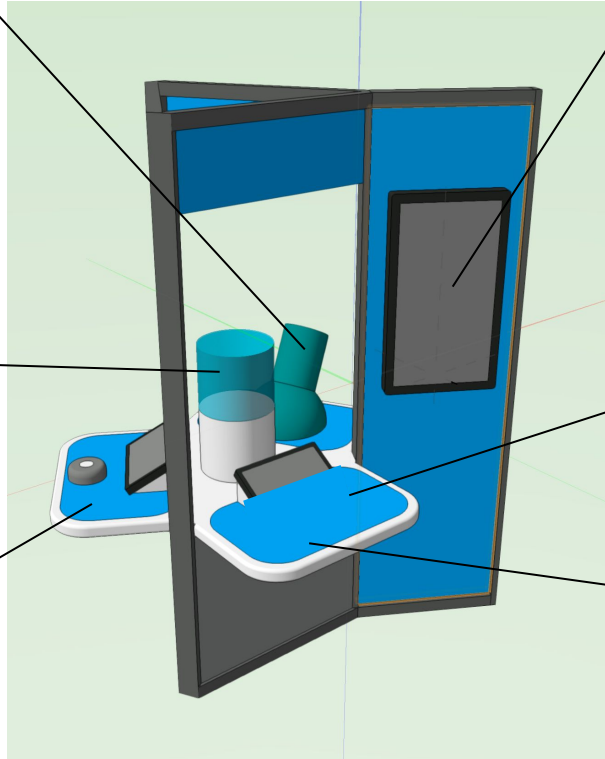
- Engage curiosity and critical thinking
- Promote awareness and relevance of science
- Increase awareness of scientists & current research

Interactive: Microscope for observing real cell/tissue specimens

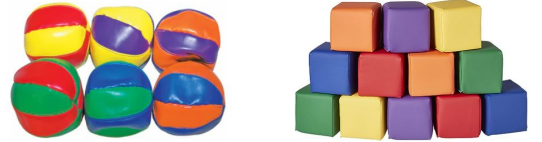
Objects: Observe examples of new technology in development, e.g., bile duct on a chip



Interactive Media: Spin browser to scroll through time lapse videos of growth and movement



Media: Video of scientists & experimental footage of plant research important for climate adaptation



Interactive: Building with squishy vs. rigid blocks to compare plant and animal cell properties

Facilitated Activity: Animal & plant hierarchy card sort



Pilot locally, scale to other CEMB cities



CEMB scicomm training workshop and retreat brainstorming

Flower in colored water - watch fluid movement

Objects

Metastasis model: 500µm apart with holes - push materials (ie silly putty) through (into holes) make artificial cells - soft nuclei?

Root breaking something (Bansai tree)

Cameras to look into plant organs - ie with vacuole expansion

GIANT HEART = PUMP, FLOW

Differently textured materials mimicking cells and ECM surrounding

Model of a muscle

Migrating cells

Plant response to touch Ca^{2+}

Ropes, meshes, gels

Ballpoms + fibers

lots of wires (connected, ie with magnets) - how to reorganize hard. Work on a platform? See message across the wire with mouse

“Cells are dynamic and adaptive. Cells are really smart!”

Activities

- Force transmission in ECM: how far can you ring a bell in a plastic sheet using a fibrous material as a rod
- Molecular motors: Myosin motors are visible in onion skin using a 10x microscope **look at a pond water sample vs plant cells**
- Biomaterials (PDMS) to do stretch experiments simulate Heart contraction.
- How cells adhere to substrate/ECM **slime, silly putty, foam, etc**
- Capillary forces - shows how plants get water (anti-gravity)
- Toy of war - using different types of ropes
- How much can you lift **essentially in using your muscles**
- Water balloon through **amazing**
- Roll machine with different parts.

tough
stiffly plastic

“Engineering has its own tools that can help medicine.”

“Mechanobiology = living things sensing and responding to force”

Media

Visual cues - types? Images, digital pictures, animations, VR images?

fibrous network. Images of cells interior during

video of balls bouncing vs. not. Time lapses, cytoplasmic streaming. Game - transport cargo?

Scientist as tour guide - connected to research. Show where GFP comes from jelly fish. Many g w/ scientists?

How to convey **scale?** **Zoom ins?**

Animation/VR of internal environment of cell - illustrating how dense it is. **mechanical interactions.**

build your cell/environment -> virtual Migration racing

- Plant Development/movement **time lapse**

cell attach move
Neutrophil crawling

CEMB Trainee Leads



Faviolla Báez-Cruz
Matt Rowe
Paula Camacho Sierra



Josh Coomey



Suraj Sahu





Communicating Science: Audience



What colors do you see in this dress?

Photo: Cecilia Bleasdale



Photo: Cecilia Bleasdale

Reflective Listening Exercise

Partner 1: Talk for 60 seconds.

Talk about...

- A recent vacation
- A hobby
- Your favorite movie
- A book you read
- Anything you're interested in!

Partner 2: Listen for 60 seconds. Then...

Reflect and repeat:

- "I get the sense that..."
- "What I heard was..."

Affirm positives:

- "You have a passion for..."
- "You are really excited about..."

Ask an open-ended question:

- "What do you think about...?"
- "Tell me about a time when..."



Communicating Science: Message

Simplifying Language Exercise

1. Enter your name in Column A to claim a row.
2. Write a 1-2 sentence summary of your research message in Column B.
3. Then copy and paste your text into the XKCD Simple Writer text editor (link in Column C header).
4. Simplify your text until it's "Simple Writer"-friendly.
5. Copy it back into the spreadsheet in Column C.

<https://bit.ly/SEI-simplify>





Communicating Science: Goals and Strategies

Why do we do science communication?

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Photo: Morehead Planetarium

Natural & human-made world

Processes of science & engineering

Societal & environmental impacts

Relevant personal, community, and societal values

Institutional priorities and public policy

8/12/24

Topic or Focus

Look, watch, listen, and read

Ask questions and interact

Talk, discuss, and share views

Deliberate and problem-solve together

Produce reports or make recommendations

How publics interact

Advise informal educators

Make presentations to publics

Work to build communication skills

Welcome and value public input

Act on public input in some way

How experts interact

STC Directors Meeting