



# Part 1: Science Communication for Diverse Audiences

DR. DENNEAL JAMISON-MCCLUNG

- ASSOCIATE DIRECTOR, UC DAVIS BIOTECHNOLOGY PROGRAM
- SENIOR FELLOW, INSTITUTE FOR FOOD & AGRICULTURAL LITERACY - UC DAVIS WORLD FOOD CENTER
- PROGRAM COORDINATOR, UC DAVIS ADVANCE
- LECTURER, UNIVERSITY HONORS PROGRAM

# Know your audience

- ▶ In my various roles, I communicate with:
  - ▶ Policy makers
  - ▶ Grad students
  - ▶ Undergraduates
  - ▶ Academic faculty and administrators
  - ▶ Biotech industry executives
  - ▶ K-14 teachers, students and administrators
  - ▶ General public



# Keep it simple



- ▶ Communication Tips:
  - ▶ Make a few main points and avoid getting bogged down in technical details (unless someone asks...know the details and be prepared to answer verbally)
  - ▶ Avoid acronyms and jargon where possible
  - ▶ Use less text and more images, infographics and videos
  - ▶ Tell stories!

# How Crops Are Genetically Modified

## Traditional Breeding



Crossing plants and selecting offspring

Almost All Crops

## Mutagenesis



Exposing seeds to chemicals or radiation



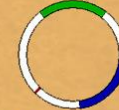
## RNA Interference



Switching off selected genes with RNA



## Transgenics



Inserting selected genes using recombinant DNA methods



### Number of Genes Affected

10K - >300K

? No way to assess

1- 2

1 - 4

Desired gene(s) inserted with other genetic material. No safety testing requirements.

Random changes in genome, usually unpredictable. No safety testing requirements.

Targeted gene(s) switched off or 'silenced'. Safety testing required.

Desired gene(s) inserted only at known locations. Safety testing required.

# Facts vs. Beliefs

- ▶ Science and Society discussions are usually clouded by the beliefs that different groups bring to the discussion
- ▶ Facts are not convincing for groups with entrenched beliefs (unfortunately)
- ▶ Scientists are hampered in persuasive discussions by our training to never “overstate” the data... the average person pays no attention to P value – they want a “yes” or “no” answer
- ▶ When engaging people in controversial discussions, always “take the high road” and have a thick skin



Part 2:

# Transparency and Trust

ACADEMIC SCIENCE COMMUNICATORS AND  
KNOWLEDGE USED FOR PUBLIC GOOD

# Academics...

## Public Servants, Trusted Voices

- ▶ Academic rewards are:
  - ▶ Thrill of discovery/knowing
  - ▶ Professional reputation, respect of your peers
    - ▶ Publications/books
    - ▶ Public talks/seminars
    - ▶ Awards/honoraria
  - ▶ Tenure/job security
- ▶ Academic career advancement relies on..
  - ▶ Grant funding
  - ▶ # and quality of publications (H index)
  - ▶ Teaching courses & grad students trained
  - ▶ University service/committees
- ▶ Items that are not professionally rewarded (typically):
  - ▶ Informal mentoring
  - ▶ Public/K-14 outreach
  - ▶ Engaging policy makers
  - ▶ Talking to journalists/interviews
  - ▶ Social media communications

**What is the motivation to communicate science to the public?...**

# Knowledge as a “Public Good”... the Mission of Land Grant Universities

- ▶ Scientists communicate to the public to...
  - ▶ Educate/share knowledge as a public good
  - ▶ Exchange ideas and get different perspectives (fun conversations!)
  - ▶ Encourage adoption of new technologies – historically part of the land grant mission

## ▶ Land Grant Universities

- ▶ Morrill acts of 1862 and 1890
- ▶ Focus on the teaching of:
  - ▶ Agriculture
  - ▶ Science
  - ▶ Military science
  - ▶ Engineering
- ▶ Translational focus – direct response to the industrial revolution





# Public-Private Partnerships

- ▶ Inform training programs for professional workforce development (undergrad/grad)
- ▶ Key funding source for research and student support
- ▶ Link technical innovations & knowledge with the consumer marketplace
- ▶ Can be ethically managed!
  - ▶ IP agreements – transparency between partners
    - ▶ Balance need to publish with need for IP protection
  - ▶ Disclosure of funding sources and conflict of interest statements

# FOIA'ed!

- ▶ Public scientists are subject to Freedom of Information Act requests
- ▶ Important tool for transparency when unethical practices are suspected
- ▶ May be misused as a tool to quash public dialogue on controversial topics (e.g. GMOs, climate change)



The “Freedom of Information Act” a.k.a. “The public information act of 1966....gives citizens the right to request federal documents

<http://www.foia.gov/>