Reframing Agricultural Biotechnology Communication

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Use of light to increase fruit quality
USDA $500,000

Past funding for work in photomorphogenesis, plant photoreceptors and light – USDA $500,000, NSF $1,065,000, NIH - $100,000; Light Emitting Computers $5000.

Graduate students/visiting scientists supported by CAPES (Brazil); Malaysian Government, Chinese Scholarship Fund (2); IFAPA (Spain), Islamic Development Fund, Belgian Visiting Scholars Fund.

Internal grants: $145,000
Dean for Research toward strawberry genome sequencing $40,000
Outreach

www.talkingbiotech.com  Communicating the Science of Science Communication

Modules for schools- Citrus greening disease, crop domestication, plants and light

Modules for extension agents – how to teach about citrus disease, talking about biotechnology

Thank you to Talking Biotech Sponsors!

Oregon Farm Bureau, Manitoba Canola Growers, US Pork Board, American Seed Trade Association, Light Emitting Computers, (others have been received, but have not yet been processed through our the University Foundation account- will post as soon as information arrives).

National Science Foundation - $32,000

(in order received) Ms. Amira Esk, Mr. John Csonka, Dr. William Pilacinski, Mr. Mitchell Weltz, Dr. Karthik Aghoram, Dr. Christine & Joshua Chase, Dr. William Enright, Dr. Alan Kriz, Ms. Kristen Schubach, Mr. Michael Stoler, Mr. Scott Carle, Dr. Curt Hannah, Mr. Mark Keating, Ms. Mary E. Mangan, Ms. Emma Bower, Ms. Allison Gair, Mr. Steve Joehl, Dr. Henri Kester, Mrs. Renee Kester, Ms. Nancy Kurul, Mrs. LaDonna E. Pride, Ms. Laurel Stuart, Amy Levy, Wendy L. Picht, (Many others have been received and information will be posted asap).

Anonymous -- $100, $25

Monsanto Co, $25000
Outreach

www.talkingbiotech.com Communicating the Science of Science Communication

Modules for schools- Citrus greening disease, crop domestication, plants and light

Modules for extension agents- how to discuss citrus disease and biotechnology

Awards, recognition

Schools, retirement homes, public groups like League of Women Voters

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Science Communication

STEM education is critical to US competitiveness

Current, future high-paying jobs are in STEM fields

Innovation in food, medicine, defense, etc are dependent on continued excellence in STEM areas

Still, many areas of medicine and food technology are areas of public controversy, whereas these are well settled among scientists.
Why Is There Resistance to Good Technology?

The companies creating the crops failed to communicate.

Trusted independent scientists don’t speak to the public.

Farmers don’t engage.

There is money to be made with bad information.

Anti-corporate angst targets topics non-scientifically.
Science Communication Crisis

PROBLEM

New technologies in genetic engineering offer solutions for farmers, consumers, the environment and the developing world.

The most trusted sources of information are not engaging a concerned public.

Activists are engaging a concerned public with information inconsistent with the scientific literature.

Neutral, public scientists that engage these opportunities are now subjected to harassment, intimidation, and aggressive defamation using public records requests.
Science Communication Crisis

EFFECTS

Scientists refuse to engage for fear of reprisal

Engaging scientists are marginalized unfairly

Students steer clear of academic jobs, opting for industry positions

New medical technologies may be slow to permeate public space

Deployment of helpful cutting-edge technologies for medical and agricultural application is arrested.
43 Scientists get FOIA requests – US Right to Know
Funded by Organic Consumers Association

I turned over 4600 pages, first to comply

USRTK is distributing emails to journalists, along with proposed stories that have targeted me, and other scientists

All of those that have written agree- I never received personal compensation, and there is no evidence of wrongdoing
"Nobody tells me what to say, and nobody tells me what to think."

KEVIN FOLTA
An aggressive biotech proponent with financial ties to Monsanto
“While Dr. Folta was not personally compensated, Monsanto paid for his trips to testify in Pennsylvania and Hawaii.”

Monsanto and its industry partners have also passed out an undisclosed amount in special grants to scientists like Kevin Folta, the chairman of the horticultural sciences department at the University of Florida, to help with “biotechnology outreach” and to travel around the country to defend genetically modified foods.

Dr. Folta, the emails show, soon became part of an inner circle of industry consultants, lobbyists and executives who devised strategy on how to block state efforts to mandate G.M.O. labeling and, most recently, on how to get Congress to pass legislation that would pre-empt any state from taking such a step.

Every outreach written piece, seminar, lecture, etc, all costs reimbursed

Kfolta.blogspot.com 9/19/2015
“Trial by Internet”

Aggressive graphics, misrepresentation, cherry picking

Phone threats, FBI domestic terrorism task force notified,

Hacking

Impersonation

Doxxing
FOOD BABE: ‘THE SHOCKING EMAIL FROM MONSANTO: WHY I AM SUBMITTING A FOIA REQUEST’

Newly discovered emails reveal "independent" biotech scientist received thousands from Monsanto

by VANI HARI | FOODBabe.COM | SEPTEMBER 9, 2015

I’ve always said that food and chemical corporations work with public university scientists “behind closed doors” to manipulate the public—and now our movement has irrefutable PROOF. But first, let me start at the beginning...

When our movement got big companies to change, Dr. Kevin Folta, from University of Florida appeared on the scene. Every time we made headway on an important issue, Kevin Folta, who claimed to be an unbiased scientist, appeared on network TV and gave us a “party line” of propaganda. Then when we knock down one wall, another one is put up in its place.
Arresting Communication

The most trusted and neutral sources are discouraged from participating

Scientists and students

Farmers and producers

Industry ends associations
Our most trusted sources are not participating
**What we know**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Transgenic crop technology (familiar “GMO”) is a precise extension of conventional plant breeding.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>“The techniques used pose no more risk (actually less risk) than conventional breeding.” (NAS, AAAS, AMA, EFSA many others)</td>
</tr>
<tr>
<td>Safety</td>
<td>In over 18 years of use there has not been one case of illness or death related to these products</td>
</tr>
<tr>
<td>Environment</td>
<td>There are environmental concerns that were predicted and require new solutions</td>
</tr>
<tr>
<td>Products</td>
<td>There are several traits used in only eight commercial crops</td>
</tr>
<tr>
<td>Oversight</td>
<td>These are the most well studied and extensively tested plant products in history.</td>
</tr>
</tbody>
</table>
Overwhelming Scientific Consensus

1. **THE AMERICAN MEDICAL ASSOCIATION (Chicago)**
   “There is no scientific justification for special labeling of genetically modified foods. Bioengineered foods have been consumed for close to 20 years, and during that time, no overt consequences on human health have been reported and/or substantiated in the peer-reviewed literature.”

   “The science is quite clear: crop improvement by the modern molecular techniques of biotechnology is safe.”

3. **THE ROYAL SOCIETY OF MEDICINE (United Kingdom)**
   “Foods derived from GM crops have been consumed by hundreds of millions of people across the world for more than 15 years, with no reported ill effects.”

4. **THE ROYAL SOCIETY (United Kingdom)**
   “Foods derived from GM or conventional crops have been consumed by hundreds of millions of people across the world for more than 15 years, with no reported ill effects that are specific to GM crops.”

5. **THE FRENCH ACADEMY OF SCIENCE (France)**
   “All criticisms against GMOs can be largely rejected on strictly scientific criteria.”

   “The science is quite clear: crop improvement by the modern molecular techniques of biotechnology is safe.”

7. **THE EUROPEAN COMMISSION (Belgium)**
   “The main conclusion to be drawn from the efforts of more than 130 research projects, covering a period of more than 25 years of research, and involving more than 500 independent research groups, is that biotechnology, and in particular GMOs, are no more risky than conventional plant breeding technologies.”

8. **THE UNION OF GERMANY FOR ACADEMIES OF SCIENCES AND HUMANITIES (Germany)**
   “In consuming food derived from genetically modified crops, we are not riding a rocket: we are riding a bus.”

9. **FOOD STANDARDS AUSTRALIA NEW ZEALAND (Australia & New Zealand)**
   “Genetic technology has not been shown to introduce any new or altered hazards into the food supply, therefore the potential for long-term risks associated with GM foods is considered to be no different to that for conventional foods already in the food supply.”

10. **SEVEN OF THE WORLD ACADEMIES OF SCIENCE (Brazil, China, India, Third World Academy of the Royal Society, and Academy of Sciences)**
    “Foods can be produced using techniques that are more efficient and in principle, bring additional benefits to consumer’s health and environments.”

11. **WORLD HEALTH ORGANIZATION (WHO)**
    “Genetic technology has not been shown to introduce any new or altered hazards into the food supply, therefore the potential for long-term risks associated with GM foods is considered to be no different to that for conventional foods already in the food supply.”
Why Is There Resistance to Good Technology?

- FEAR
- FACTS
Why Is There Resistance to Good Technology?

It is critical that we change our approach as scientists – We are learning.
Biofortification - Engineering metabolism so that plants can produce needed compounds

- Beta carotene
- Folate
- Anthocyanin
- High oleic soy oils
Allergy-Suppression

Using technology to remove potential allergens and anti-nutrients

**Aiieviating peanut allergy using genetic engineering: the silencing of the immunodominant allergen Ara h 2 leads to its significant reduction and a decrease in peanut allergenicity**

Hortense W. Dodo¹, Koffi N. Konan¹, Fur C. Chen², Marceline Egnin³ and Olga M. Viquez³

¹Department of Food and Animal Sciences, Food Biotechnology Laboratory, Alabama A&M University, Normal, AL 35762, USA
²Department of Pathology, Vanderbilt University, Nashville, TN 37232, USA
³Institute of Agricultural and Environmental Research, Tennessee State University, Nashville, TN 37209-1561, USA

**Down-Regulating γ-Gliadins in Bread Wheat Leads to Non-Specific Increases in Other Gluten Proteins and Has No Major Effect on Dough Gluten Strength**

Fernando Pistón¹, Javier Gil-Humanes¹, Marta Rodríguez-Quijano², Francisco Barro¹

¹Instituto de Agricultura Sostenible, CSIC, Córdoba, Spain, ²Universidad Politécnica de Madrid, Madrid, Spain
Decreasing toxic compounds

Low acrylamide potatoes

Decreased presence of acrylamide, a naturally-forming compound upon frying/high heat cooking

Low gossypol cotton seed

Cotton seeds contain high protein, but are not used in the human diet because of gossypol. Transgenic plants have been made with low gossypol levels.
Better performance from standard varieties

Non-browning apple

More likely to be eaten, can be used in wider recipes and food service application

Non-browning potato

More potatoes from the same amount of farm inputs
There are many more solutions to pressing ag problems, yet few are being developed.
Science Communication Crisis

SOLUTIONS?

Incentives for scientists to engage (NSF, USDA, etc have these requirements, but they need to expand)

Development of programs for scientific communication and outreach, in addition to scientific grants

Greater voluntary transparency for academic / government scientists

Media demanding comparable transparency in activists

Increased participation of farmers and producers that also have credibility

Revision of transparency laws that preserve their intent, while limiting abuses

*The way to protect transparency is make sure it is fairly used*
Science Communication Crisis

SOLUTIONS?

Policy decisions can gain tremendously by incorporating information from a well-trained and willing set of public scientists.
Thank you

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www.talkingbiotech.com
www.talkingbiotechpodcast.com