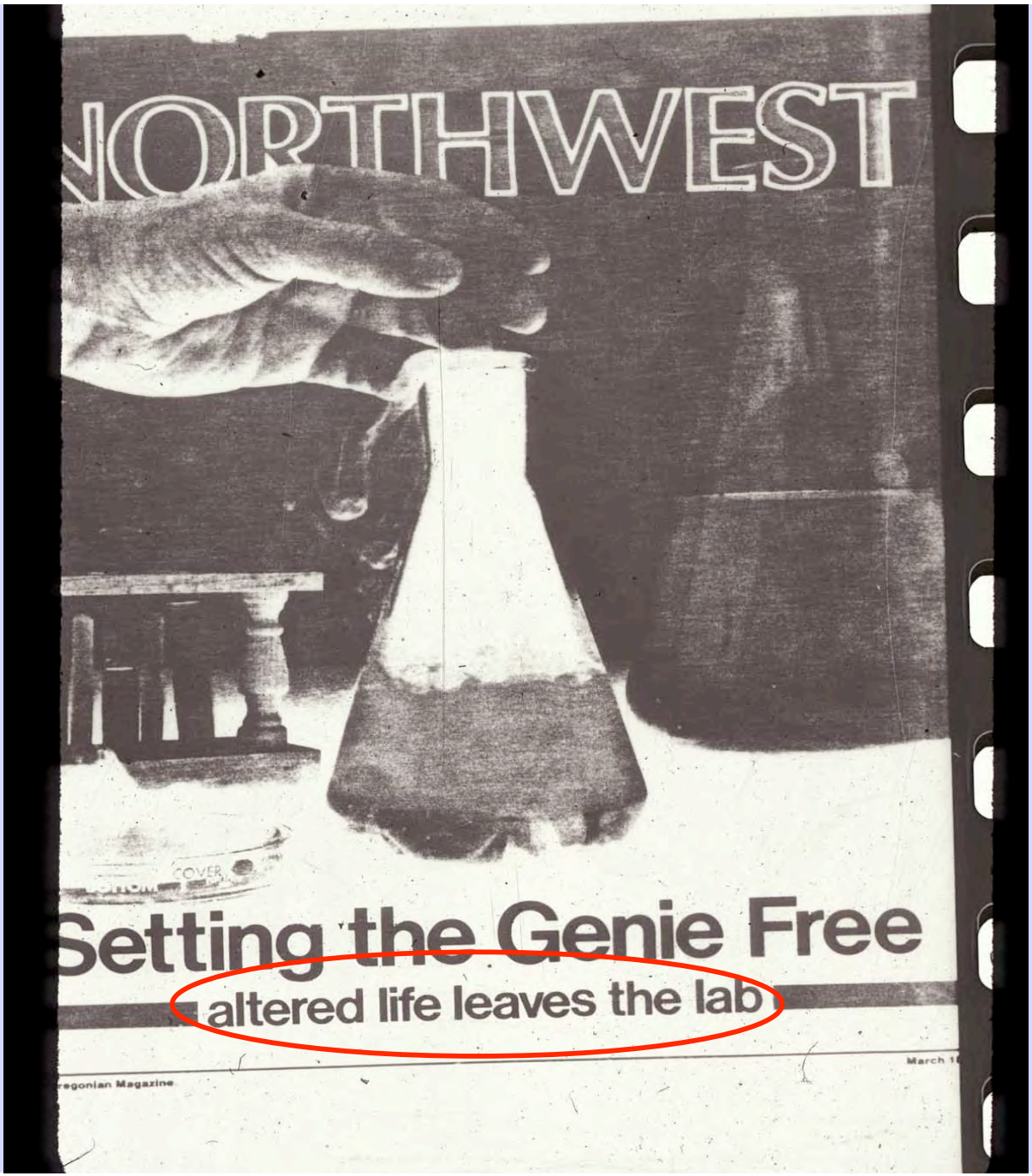
FOOD FIGHTS IN CALIFORNIA

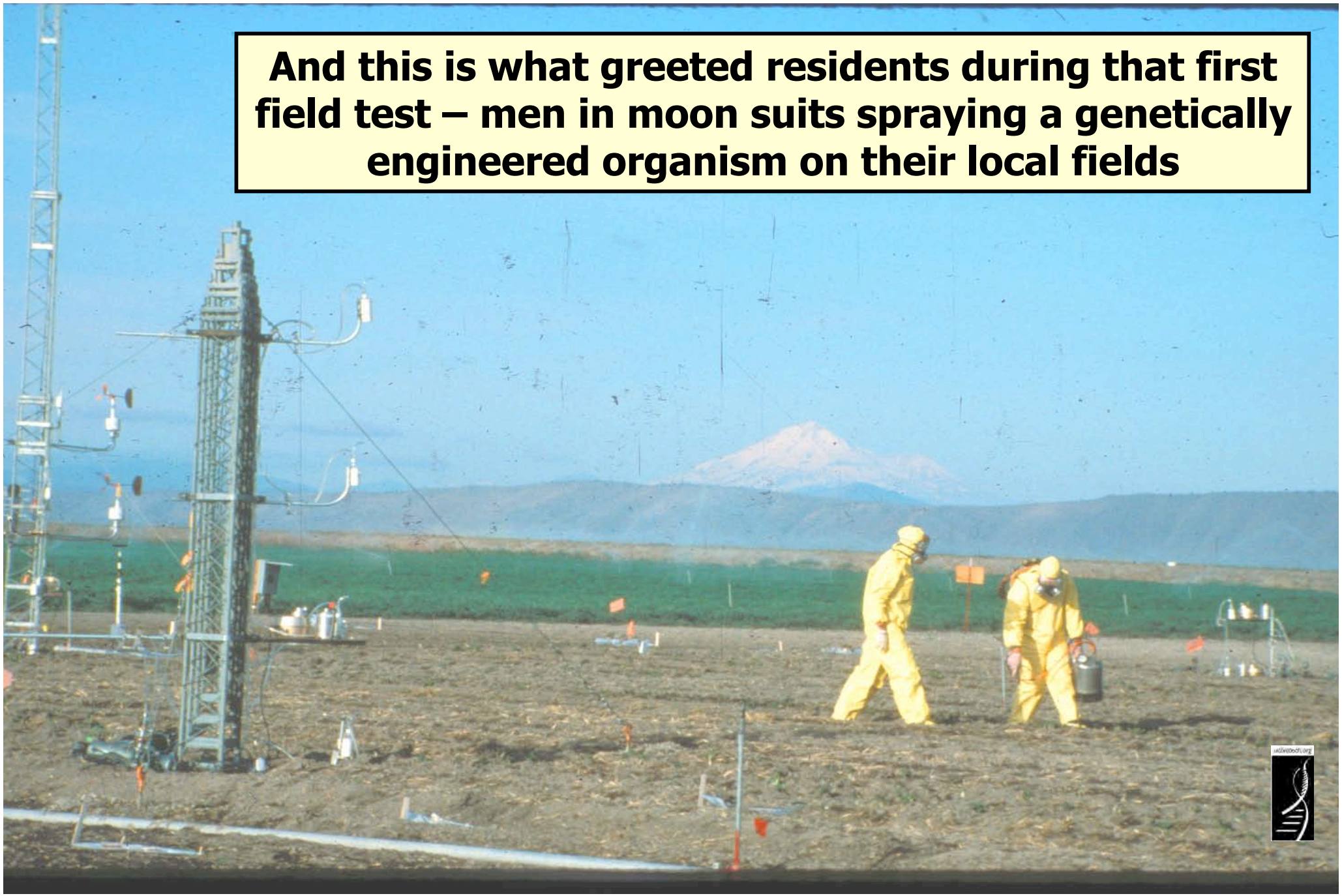
Educational Challenges of the GMO Debate

Peggy G. Lemaux, Barbara Alonso University of California, Berkeley
Alison van Eenennaam University of California, Davis

Newspaper coverage of the first field test of a genetically engineered organism in northern California in 1986.

The ice-minus bacterium




And this is what greeted residents during that first field test – men in moon suits spraying a genetically engineered organism on their local fields

More than a decade later concern over GE foods spread to Europe, when governments failed to quell consumer fears about mad cow disease and dioxin contamination of foods. In the late 90's Greenpeace stages protests and destroys fields of GE crops.

Greenpeace decontaminates GM field - Lord Melchett arrested

SOURCE: 7/26/99, Lyng/Norfolk, Greenpeace

14 April 1998 Corinth, Greece
Greenpeace action against genetically engineered soya at soya mill.
© Greenpeace/Karayannis

And protests have continued – forty Greenpeace activists in 2004 ready to destroy GE crops in Switzerland

And in July 2008 Greenpeace activists vandalize field of GE maize in France

A letter in 1999 from Greenpeace to Gerber starts corporate reaction in U.S.

Wall Street Journal
Friday, July 30, 1999

Strained Peace

Gerber Baby Food, Grilled by Greenpeace, Plans Swift Overhaul

Gene-Modified Corn and Soy Will Go, Although Firm Feels Sure They Are Safe

Heinz Takes Action, Too

By LUCETTE LAGNADO
Staff Reporter of THE WALL STREET JOURNAL

The letter scrolling out of a fax machine at the Gerber baby-food company in Michigan May 28 was just one of many arriving that day and didn't even name the person it was meant for, but it sure got attention. Within days, it had found its way to Gerber's parent company in Switzerland, Novartis AG, and come to the attention of its CEO. There, executives soon were taking steps to overhaul a decades-old product

And protests continue in the U.S. in 2007 – like rallies associated with the BIO meeting

IN CALIFORNIA IT ALL STARTED IN 2004 IN

MENDOCINO COUNTY

MENDOCINO COUNTY ORDINANCE
March 2004

- "Unlawful for any person, firm, or corporation to propagate, cultivate, raise, or grow genetically modified organisms in Mendocino County" (excluded microorganisms)

- "DNA or deoxyribonucleic acid means a complex protein that is present in every cell of an organism…"

- At election time, no GE organisms were known to be in production in Mendocino County

The discourse on both sides of the issue was often driven by alarming assertions and facts that were not derived from, nor supported by science

Dear Friends,

While the rest of the country focuses on one presidential candidate or another, Measure D represents Biodemocracy in action. Rarely do we have the opportunity to change the

Contamination is spreading so quickly that we have little time to waste before our entire food supply is lost forever…

statewide ban on GE crops. California's future is organic!

Yours in organics,

Organic Consumers Association

www.organicconsumers.org

The discourse on both sides of the issue was often driven by alarming assertions and facts that were not derived from, nor supported by, science

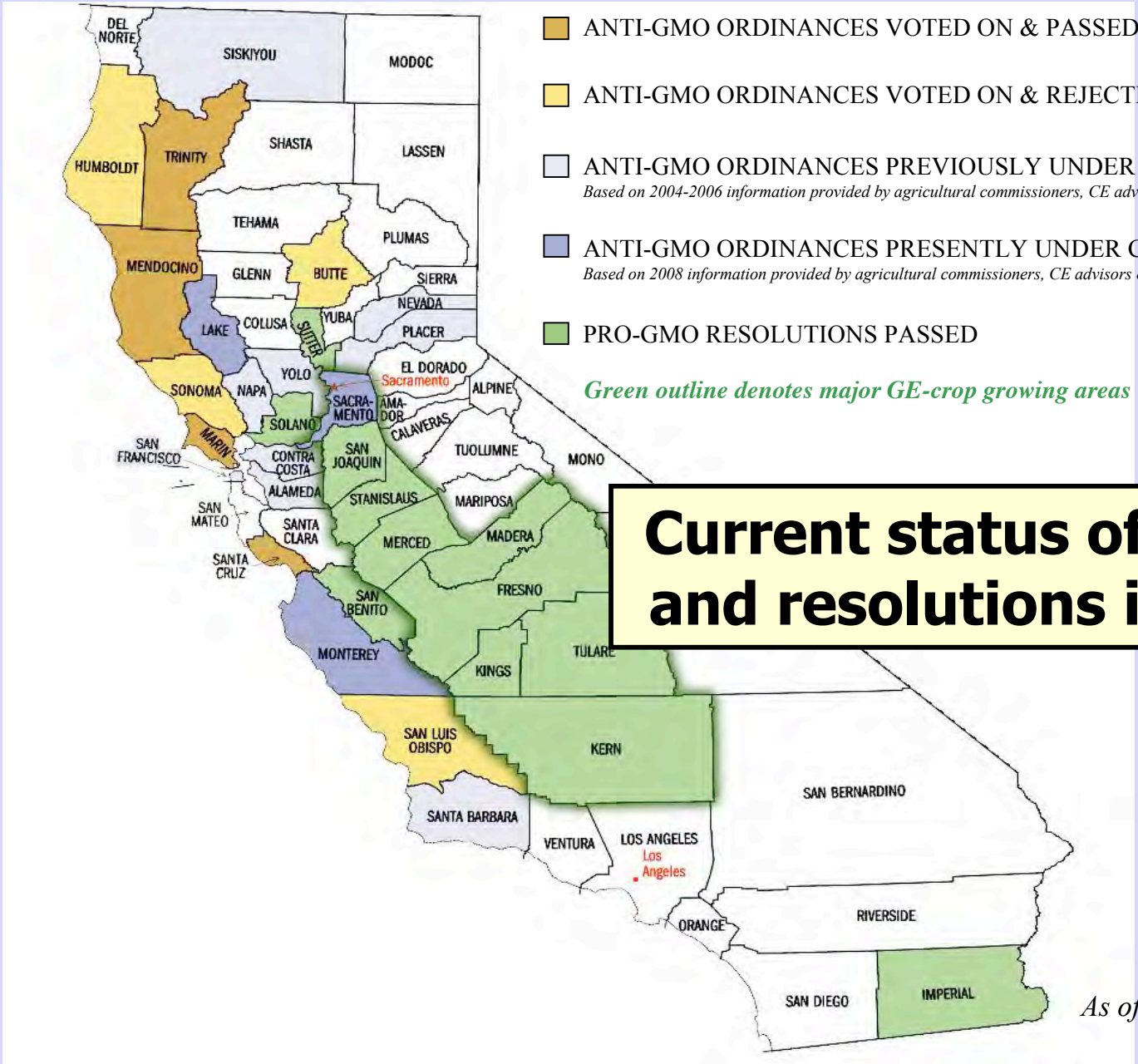
"Measure H should be rescinded…on the basis that multitudinous GMOs have alway… because:

1. **…in order to remove present GMOs all soil would have to be plowed under or removed…**
2.
3. **Fire retardants for fighting forest fires cannot be abolished…**
4. **…in order to remove present GMOs all soil would have to be plowed under or**
5. **…anyone visiting another county or coming in on a plane, train, or boat would have to have a security check…** **ected at**
6. **uld**

All of the above I have thoroughly investigated through pertinent organizations…"

Marie White, Ukiah Daily Journal

November 16, 2003



ANTI-GMO ORDINANCES VOTED ON & PASSED

ANTI-GMO ORDINANCES VOTED ON & REJECTED

ANTI-GMO ORDINANCES PREVIOUSLY UNDER CONSIDERATION

Based on 2004-2006 information provided by agricultural commissioners, CE advisors & the internet.

ANTI-GMO ORDINANCES PRESENTLY UNDER CONSIDERATION

Based on 2008 information provided by agricultural commissioners, CE advisors & the internet.

PRO-GMO RESOLUTIONS PASSED

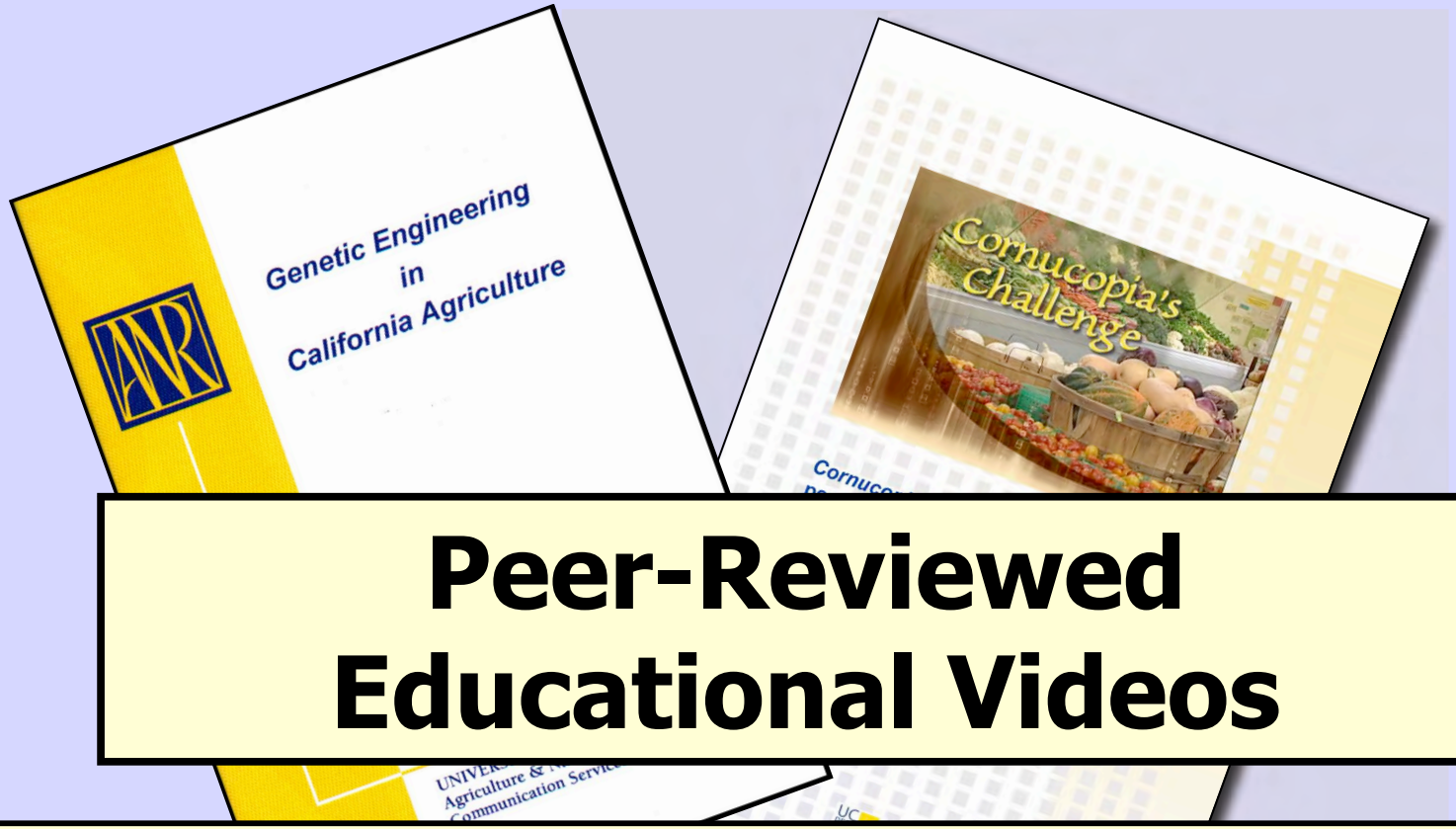
Green outline denotes major GE-crop growing areas

Current status of ordinances and resolutions in California

As of 6/12/08

VIDEOS AND ARTICLES ARE AVAILABLE FOCUSED ON AN ANTI-GE STANCE but…

WHAT EDUCATIONAL MATERIALS DID WE CREATE TO COUNTER THESE MESSAGES?

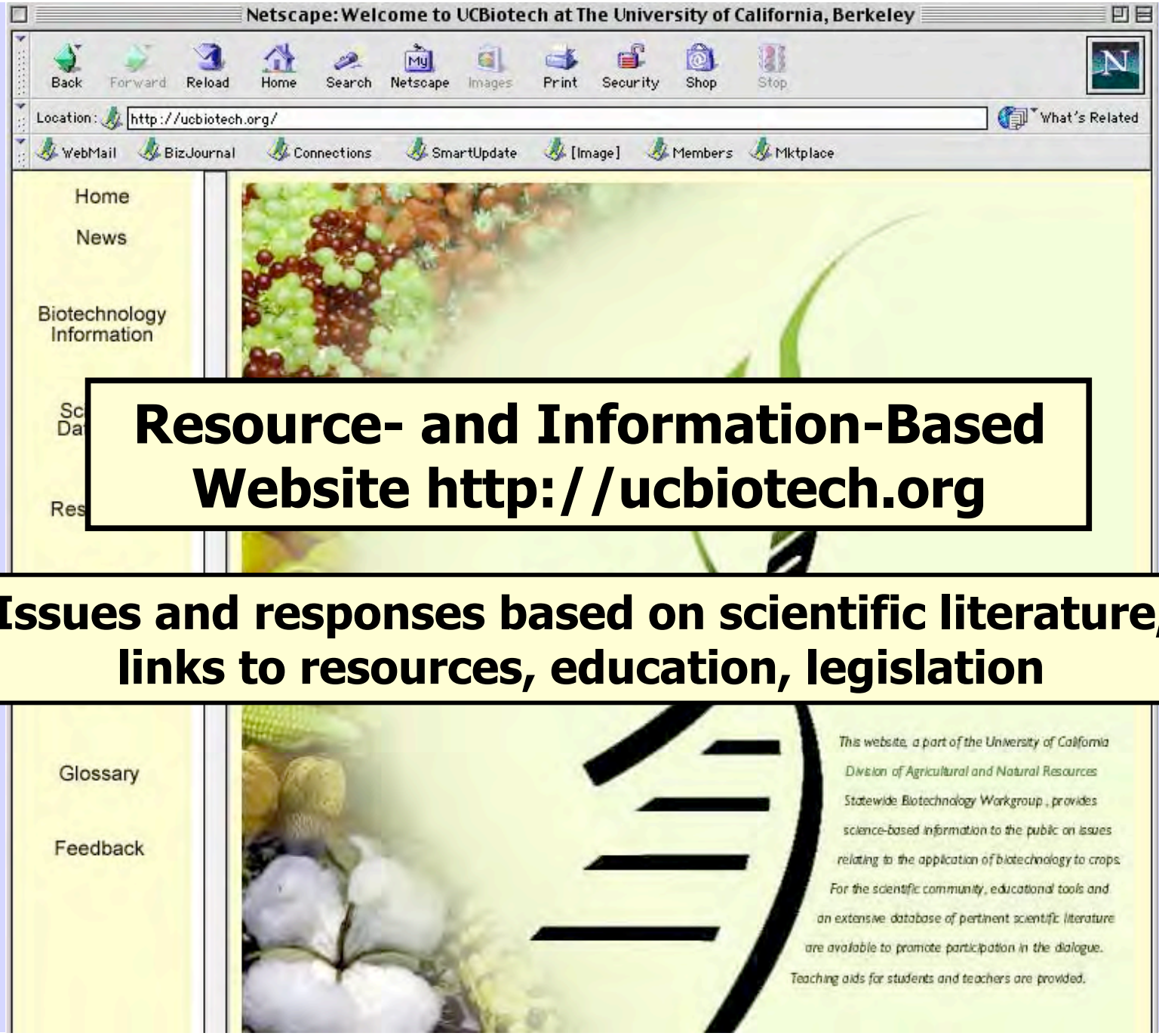


Peer-Reviewed Educational Videos

30-minute, Peer-reviewed Videos

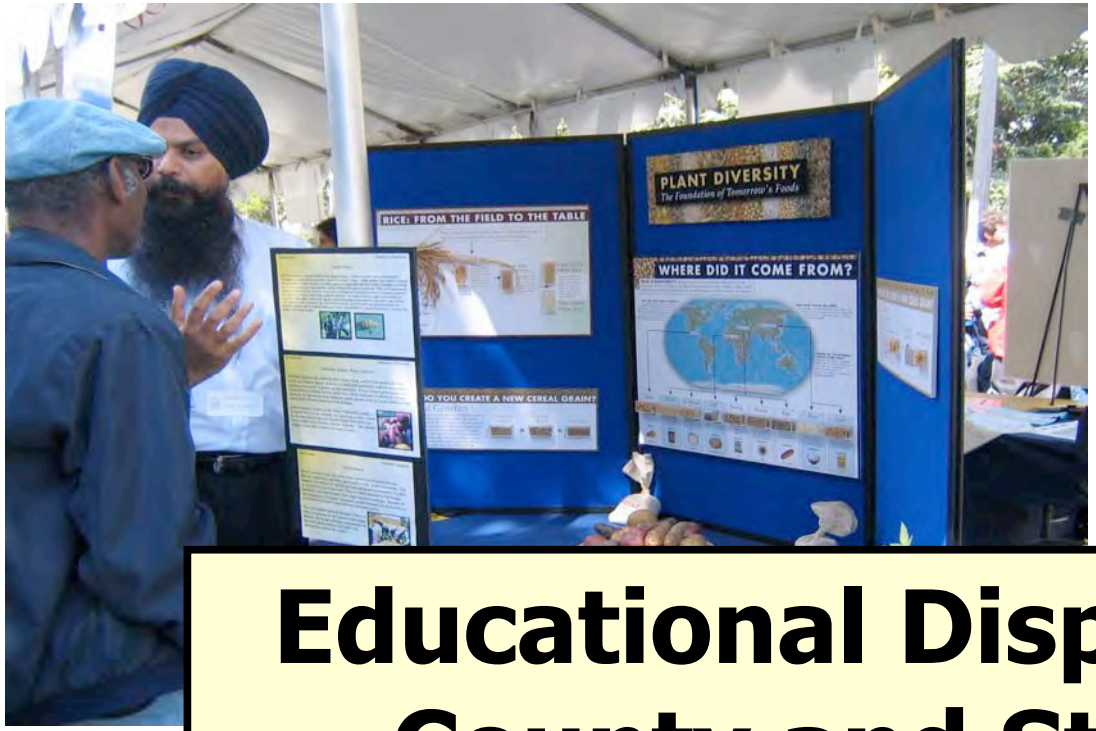
"Genetic Engineering in California Agriculture" explains where and why genetically engineered crops and animals are being used in California.

"Cornucopia's Challenge" explains the challenges farmers face in growing and marketing crops for diverse markets and consumer preferences.



Resource- and Information-Based Website http://ucbiotech.org

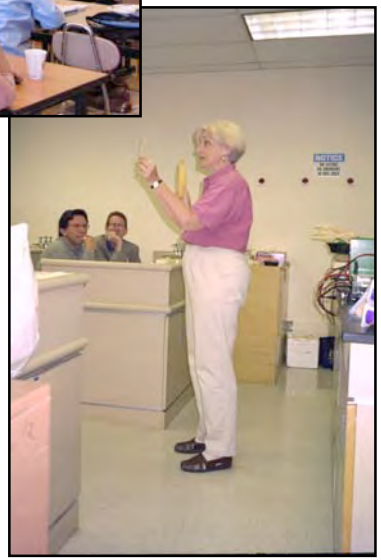
Issues and responses based on scientific literature, links to resources, education, legislation



Plant Diversity: The Foundation of Tomorrow's Foods

Educational Displays for City, County and State Events

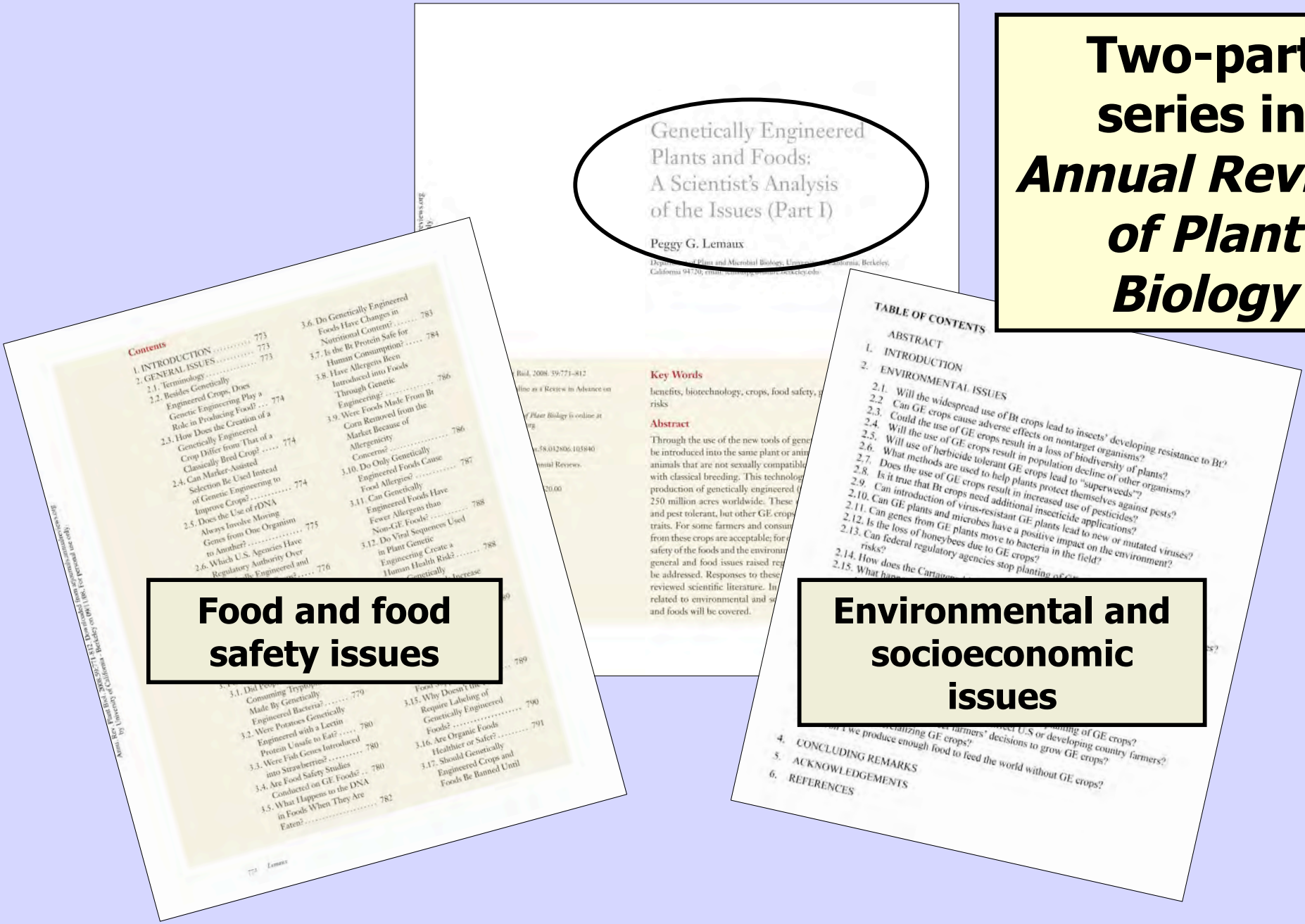
Foods: Yesterday, Today, and Tomorrow



Informational Workshops for County Officials and Staff

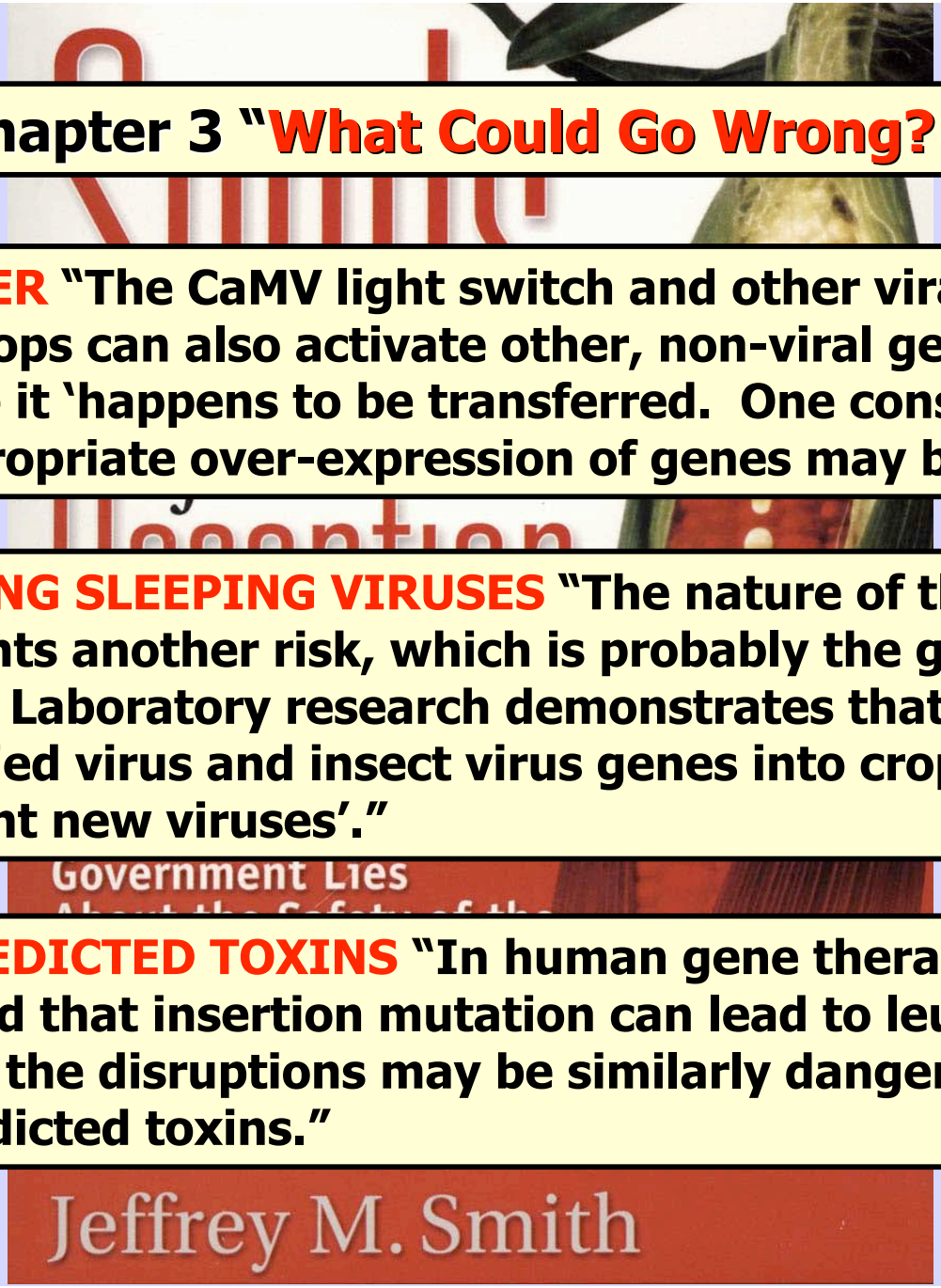
We endorse Measure H!
CRAIG BELL
KATRINA FREY
YES on Measure H
TONY CRAVER
Join us!
Protect our private property!
Keep Mendocino County
GMO FREE!
Mendocino considers ban of genetically engineered plan
NORTH COAST
Letters from our readers
GMO initiative
In our opinio
Remember there are two s
Informational pieces for newspapers – take time to provide your expertise to the debate

Two-part series in *Annual Review of Plant Biology*



What will happen with the application of and research in genetic engineering of agricultural crops and animals in the future?

Are applications in agriculture going to be the only targets?
GENE THERAPY?
GLOBAL WARMING?
NANOTECHNOLOGY?
Will the continuing, often anti-science debates affect the education, attitudes and opportunities for today's students?



In Chapter 3 "What Could Go Wrong? – A Partial List…"

CANCER "The CaMV light switch and other viral promoters used in GM crops can also activate other, non-viral genes in the species where it 'happens to be transferred. One consequence of such inappropriate over-expression of genes may be cancer'."

WAKING SLEEPING VIRUSES "The nature of the CaMV promoter presents another risk, which is probably the greatest risk of GM crops. Laboratory research demonstrates that ' the insertion of modified virus and insect virus genes into crops' can 'create highly virulent new viruses'."

UNPREDICTED TOXINS "In human gene therapy, studies have verified that insertion mutation can lead to leukemia in children…In plants the disruptions may be similarly dangerous, producing unpredicted toxins."