




Labeling of foods derived from GM plants and animals



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Overview

- **Principles of U.S. food labeling**
- **Mandatory versus voluntary**
- **Arguments for mandatory labeling**
 1. **Public opinion**
 2. **Consumer choice**
 3. **Right to know**
- **Case study: AquAdvantage salmon**





THIS IS NOT A FOOD SAFTY ISSUE

The World Health Organization, the National Academy of Sciences, AMA and more than 300 independent medical studies on the health and safety of genetically modified foods have reached the same determination that foods made using GM ingredients are safe, and in fact are substantially equivalent to conventional alternatives.

June 2012. The American Medical Association (AMA) adopted a formal statement explicitly opposing the mandatory labeling of genetically modified foods.

"there is no scientific justification for special labeling of genetically modified bioengineered foods, as a class, and that voluntary labeling is without value unless it is accompanied by focused consumer education."



Background

The principles of food labeling in the U.S. are the same, whether or not the food is made from a GM source (plant or animal).

1. Labels cannot be false
2. Labels cannot be misleading
3. Label must describe basic nature of the food (e.g. fish)
4. FDA cannot require labels include information about production methods **if there is no material difference** in the products due solely to the production process

Source: <http://www.fda.gov/Food/LabelingNutrition/FoodLabelingGuidanceRegulatoryInformation/Topic-SpecificLabelingInformation/ucm222608.htm>



What is a “material” difference?

Definition(s) of material (adjective)

- Of substantial import; **of much consequence**, important
- Directly relevant to a matter (especially a law case)





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5. Voluntary labeling is allowed if not false or misleading

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Voluntary labeling is allowed if it is not false or misleading

Non-misleading

“Cholesterol-free oil”

- Such claims are forbidden in the USA because they imply other vegetable oils have cholesterol, when in fact, none do.





Although some labels do exist that are both false and misleading!!

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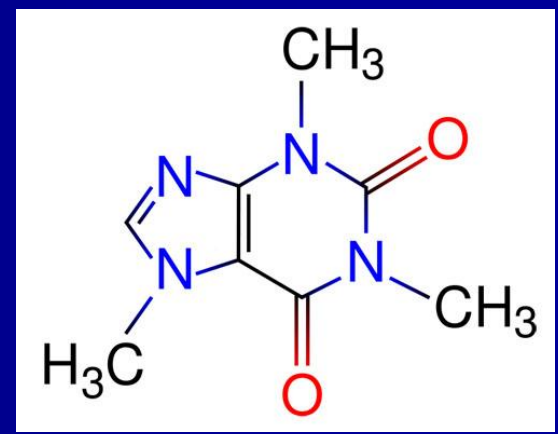


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CAFFEINE!!!



FDA cannot **mandate** that labels include information about production methods if there is no material difference in the products

FDA cannot require additional labeling about production methods unless it is necessary to ensure that the labeling is not false or misleading. Another way of stating this point is that FDA cannot require labeling based solely on differences in the production process if the resulting products are not materially different due solely to the production process.

<http://www.fda.gov/Food/LabelingNutrition/FoodLabelingGuidanceRegulatoryInformation/Topic-SpecificLabelingInformation/ucm222608.htm#Background>



Voluntary production method labeling





rBST Labeling: Voluntary labeling stating the milk is from cows not treated with r-BST must also have a disclaimer of similar font next to it stating the FDA has found no significant difference between milk from treated and untreated cows.





Legal opinion regarding mandatory production method labeling



The Second U.S. Circuit Court of Appeals ruled that a labeling mandate grounded in consumer perception, rather than in a product's measurable characteristics, raises serious constitutional concerns – namely, that it violates commercial free speech. **The court held that food labeling cannot be mandated merely because some people would like to have the information,** and ruled mandatory rBST labeling unconstitutional because they forced producers to make involuntary statements contrary to their views when there was no material reason to do so.

Source: International Dairy Foods Association vs. Amestoy 92 F.3d 67 (1996)
http://www.public.iastate.edu/~jwcwolf/Papers/IDFA_Amestoy.pdf



Voluntary labels have provided the US consumer with a wide range of production method choices - including GM free





Three main arguments for mandatory GM labeling

1. **Public opinion:** Polls show an overwhelming majority of people support mandatory labeling of GM foods
2. **Consumer choice:** People should have a choice in what types of products they purchase and consume
3. **Right to know:** People have the right to know what is in their food





“Opinion polls show an overwhelming majority of people support mandatory labeling of GM foods”

- It all depends on how the question is asked

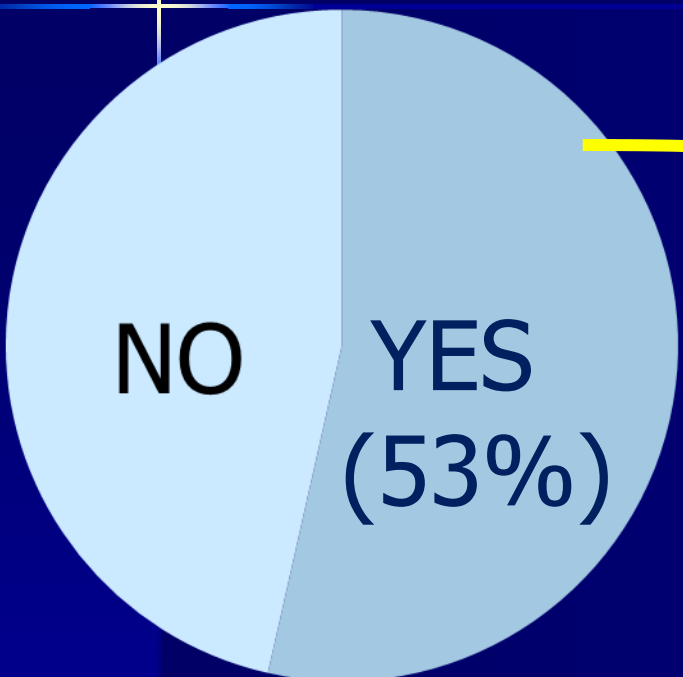


Environmental groups and critics of biotechnology claim that >95% of consumers responding to surveys indicate that they want GM labeling, but other surveys show that consumers rarely put forward GM labeling unless they are prompted.

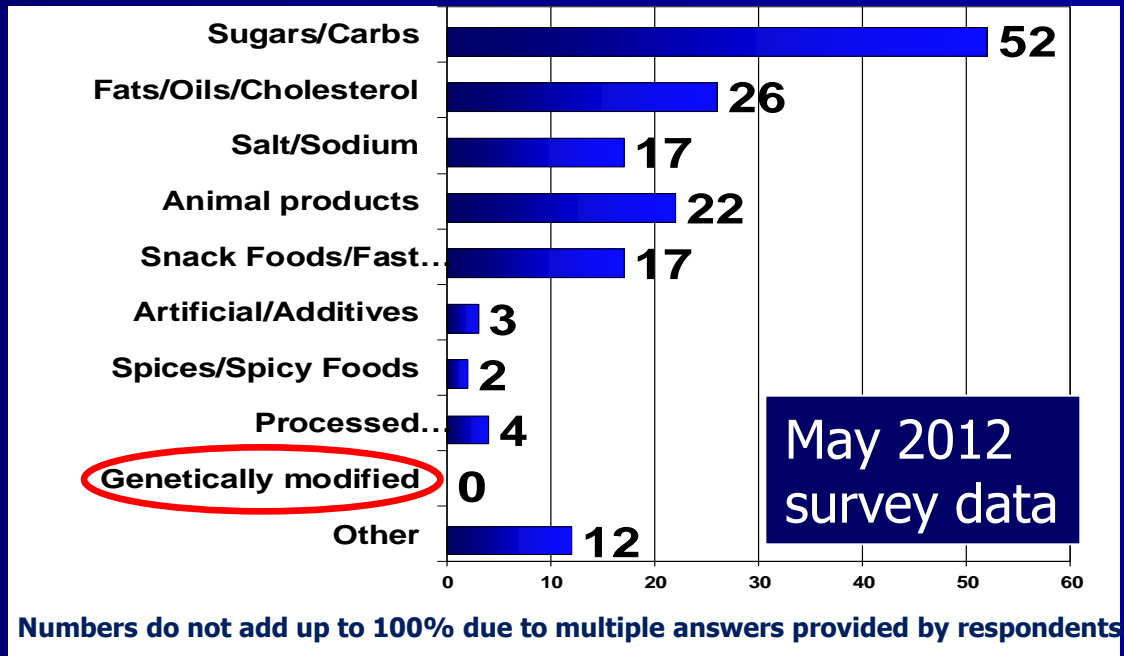
The results depend on how the questions are worded.



Thinking about your diet over the past few months, are there any foods or ingredients that you have avoided or eaten less of?? (n=750)

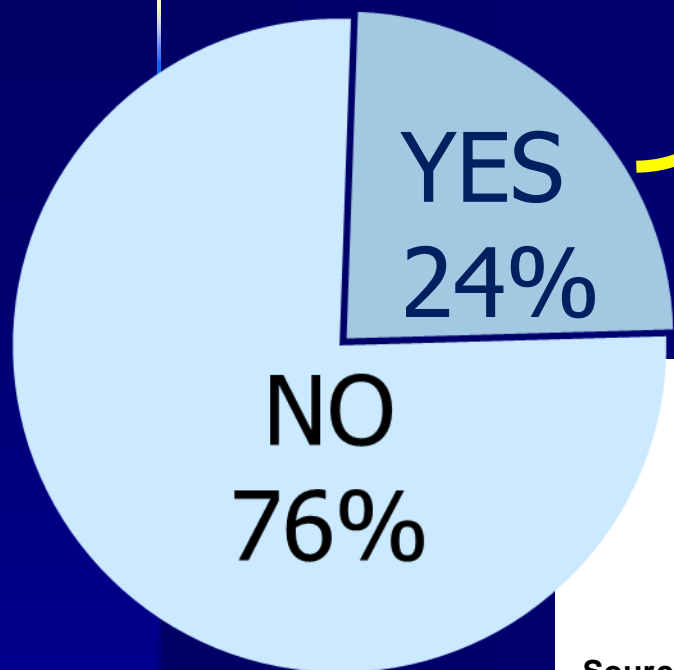


What foods or ingredients have you avoided? [OPEN ENDED]

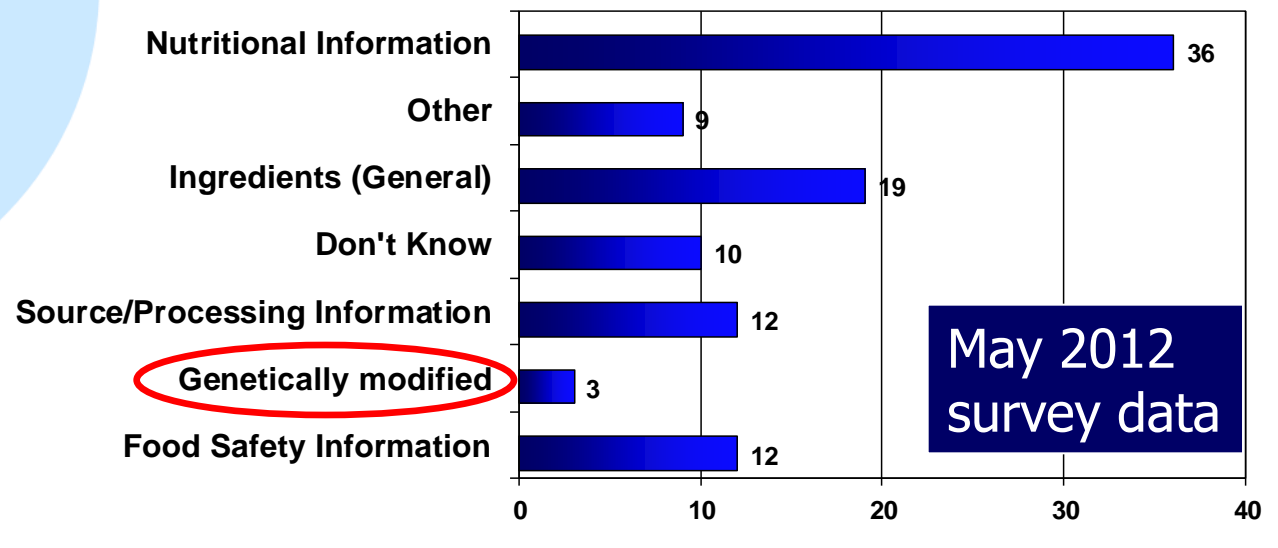




Can you think of any information that is not currently included on food labels that you would like to see on food labels? (n=750)



What types of information would that be? [OPEN ENDED]





Please indicate whether you strongly agree, somewhat agree, somewhat disagree or strongly disagree (n=1,001)

- Food products made from genetically engineered animals should be labeled as such
95 percent agreed or strongly agreed

Over 90% agreed with **all** of the labeling questions asked

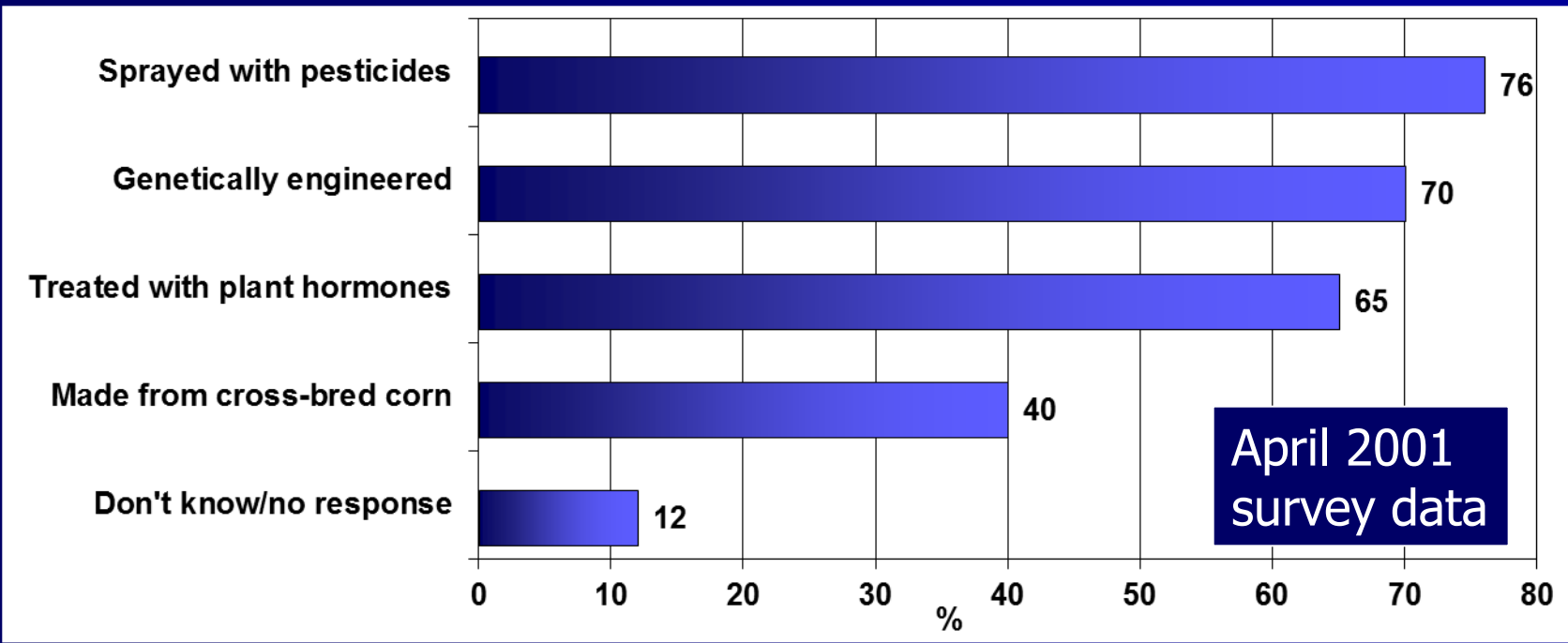
- Processed or packaged foods should be labeled by country of origin
- Meat treated with carbon monoxide should be labeled as such
- Meat and dairy products from cloned animals should be labeled as such
- Meat that contains any irradiated components should be labeled as such
- Specialty meat/fish stores should label their products by country of origin
- Country-of-origin labeling for products should always be available at point of purchase

http://www.consumersunion.org/pub/core_food_safety/006298.html





Modern agriculture uses many technologies to increase productivity. Do you think the words (*item below*) should appear on the label of a food product where one or more ingredients were from crops which were...



http://www.cspinet.org/new/labeling_gefoods.html
n = 1,017



Does the experience in the U.S. show consumers avoiding GE?

- In experimental and real world market tests in North America, the presence of GE-food has not had a significant impact on actual purchase decisions
- If 90% plus of North American consumers wanted products free of GE, then organic food and food labeled as GE-free would be a much larger share of US market

Smyth, S. and P.W.B. Phillips. 2003. Labeling to manage marketing of GM foods. *Trends in Biotechnology*, 21: 389-393.



Labeling about genetically engineered ingredients could increase the cost of food. Would you be willing to pay for such labeling if labeling increased the cost of your family's food by...



- Over \$250 a year 7%
- \$250 per year 5%
- \$50 per year 16%
- \$10 per year 17%
- Nothing 44%
- Don't know 11%

http://www.cspinet.org/new/labeling_gefoods.html



Cost estimates of mandatory GM labeling for food

Increase in consumer prices from 0.5-15%
(Australia/New Zealand)

Phillips, P. and Foster, H. (2000, August). Labelling for GM foods: Theory and practice. Paper presented at the *International Consortium on Agricultural Biotechnology Research(ICABR) Conference*, Ravello, Italy.

Increase of 9-10% processed foods
(Canada)

KPMG Consulting, 2000. Project Report. Economic Impact Study: Potential Costs of Mandatory Labeling of Food Products Derived from Biotechnology in Canada.

Canola segregation increase relevant food costs by 13-15%

Smyth, S. and P. Phillips. 2002. Competitors Cooperating: Establishing a supply chain to manage genetically modified canola. *International Food and Agribusiness Management Review* 4(1), pp. 51-66.



1. Public opinion pros and cons

- **Pro:** Polls show an overwhelming majority of people support mandatory labeling of GM foods
- **Con:** Majority (99%) of consumers don't ask for mandatory labeling of GM (unless specifically prompted by the question)
- Imposes substantial economic costs along the entire food supply chain and puts costs of labeling onto all consumers – including majority who are not concerned about GM





Arguments for mandatory labeling

1. **Public opinion:** Polls show an overwhelming majority of people support mandatory labeling of GM foods
2. **Consumer choice:** People should have a choice in what types of products they purchase and consume
3. **Right to know:** People have the right to know what is in their food





Does mandatory labeling provide choice?

- Experience with mandatory labeling in the European Union, Japan, and New Zealand has not resulted in consumer choice. Rather, retailers have eliminated GM products from their shelves to avoid being targeted by NGOs
- "A real concern is that mandatory labeling could force GM foods out of the market. Mandatory labeling in Europe virtually eliminated any ability to choose GM foods, because there were fewer than 10 acknowledged GM products."

Gary E. Marchant, Guy Cardineau, and Thomas Redick. 2010. Thwarting Consumer Choice: The Case Against Mandatory Labeling for Genetically Modified Foods. Rowman and Littlefield Publishing Group.





Is labeling being sought to provide consumer choice?

“Following the launch of the European labeling requirement, Greenpeace announced it would summon thousands of volunteers across Europe to police grocery stores and ensure they were not stocking food with GM labels”

Gary E. Marchant, Guy Cardineau, and Thomas Redick. 2010. Thwarting Consumer Choice: The Case Against Mandatory Labeling for Genetically Modified Foods.

“Proponents of mandatory GM labeling make no secret that mandatory labeling is not their final goal.”

Klintman, M. (2002), ‘The Genetically Modified (GM) Food Labelling Controversy: Ideological and Epistemic Crossovers’, Social Studies of Science, Vol.32, No.1, pp.71–91.

“Personally, I believe GM foods must be banned entirely, but labeling is the most efficient way to achieve this. Since 85 percent of the public will refuse to buy foods they know to be genetically modified, this will effectively eliminate them from the market just the way it was done in Europe.”

Dr. Mercola, <http://vtdigger.org/2012/04/17/wanzek-genetically-modified-food-is-perfectly-healthy/>





What about when the GM product is materially-different? e.g. Labels for Golden Rice



- Method-based label
 - “This product has been genetically modified”
- Product-based label
 - “This product contains high levels of vitamin A”
- Which label enables consumers to make an informed choice?



2. Consumer choice pros and cons

- **Pro:** People should have a choice in what types of products they purchase and consume
- **Con:** Implementation of mandatory labeling has not resulted in consumer choice. In fact it has been used as a weapon to demonize GM food and prevent the availability of that option to consumers
- What information does labeling as "Contains GMO" provide to enable informed choice – GM for WHAT and how does the product differ?





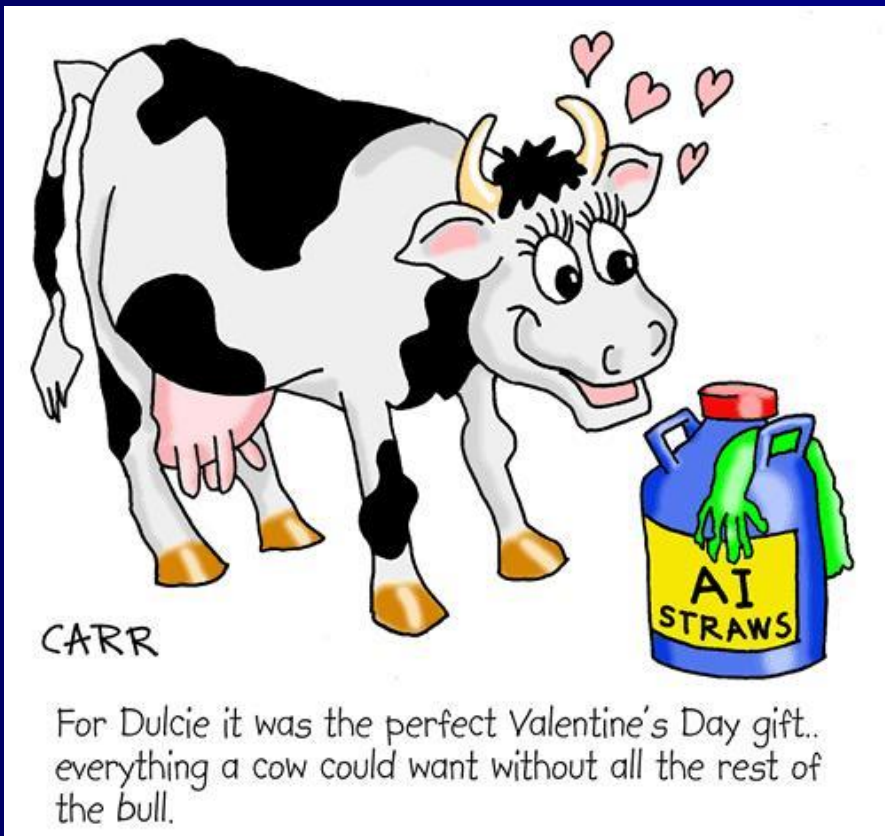
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Do other production methods that do not “materially” affect the product qualify for right to know?



“When artificial insemination (AI) was first introduced into cattle breeding there were concerns that AI was not natural, and would lead to abnormal outcomes”

Foote, R.H. (2002). The history of artificial insemination. *Journal of Animal Science* 80, 1-10.



Do consumers who are opposed to eating products from animals that were produced though artificial insemination have a mandatory right to know that information on product labels ?



NO AI

Our cow are allowed to get pregnant the old-fashioned way



**Or label for people
who object to
double-muscled
cattle breeds....**



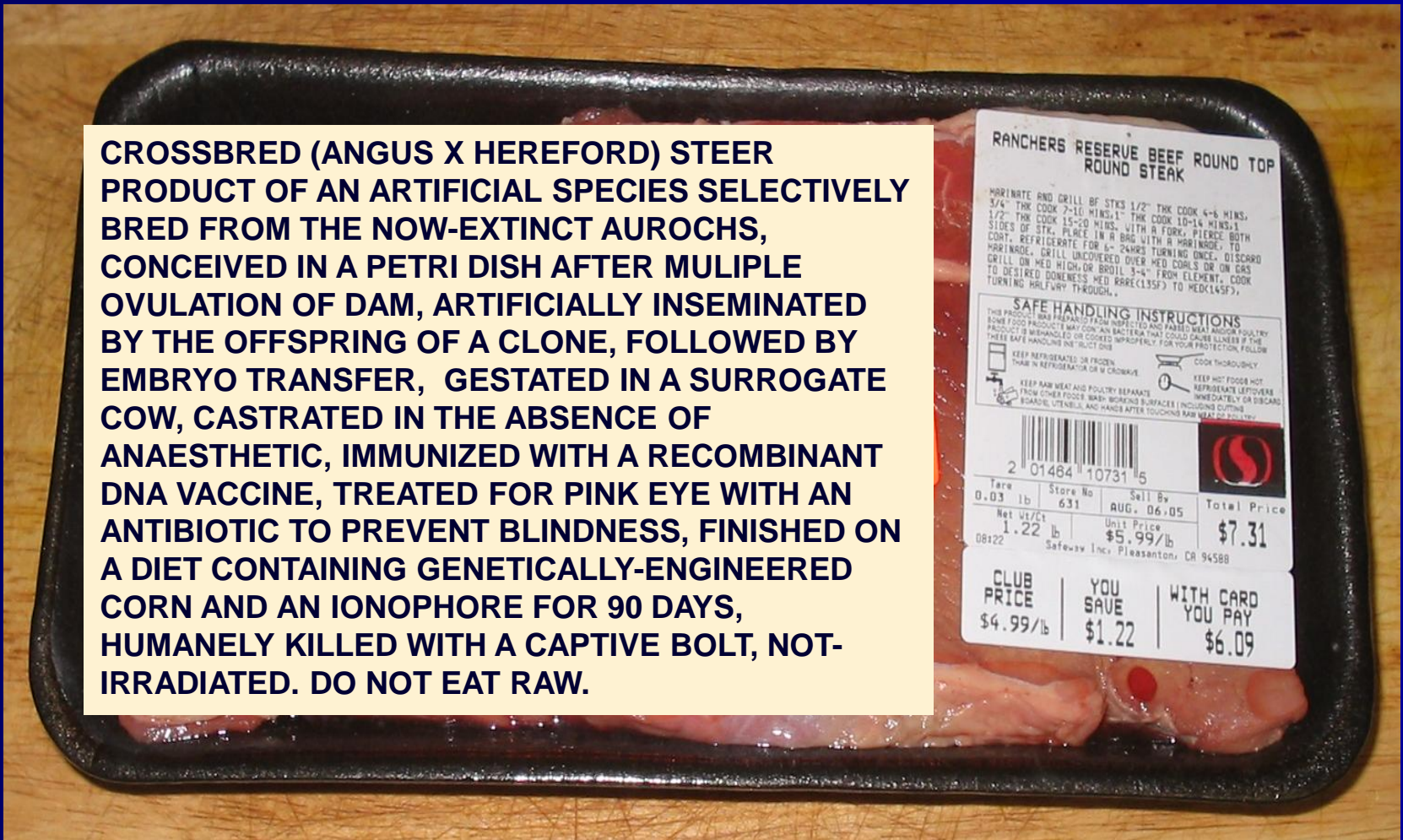
CERTIFIED*
MYOSTATIN
EXPRESSER
RAISED & HANDLED





Should there be mandatory “right to know” labeling about all aspects of the food production process?

**CROSSBRED (ANGUS X HEREFORD) STEER
PRODUCT OF AN ARTIFICIAL SPECIES SELECTIVELY
BRED FROM THE NOW-EXTINCT AUROCHS,
CONCEIVED IN A PETRI DISH AFTER MULTIPLE
OVULATION OF DAM, ARTIFICIALLY INSEMINATED
BY THE OFFSPRING OF A CLONE, FOLLOWED BY
EMBRYO TRANSFER, GESTATED IN A SURROGATE
COW, CASTRATED IN THE ABSENCE OF
ANAESTHETIC, IMMUNIZED WITH A RECOMBINANT
DNA VACCINE, TREATED FOR PINK EYE WITH AN
ANTIBIOTIC TO PREVENT BLINDNESS, FINISHED ON
A DIET CONTAINING GENETICALLY-ENGINEERED
CORN AND AN IONOPHORE FOR 90 DAYS,
HUMANELY KILLED WITH A CAPTIVE BOLT, NOT-
IRRADIATED. DO NOT EAT RAW.**



**RANCHERS RESERVE BEEF ROUND TOP
ROUND STEAK**

MARINATE AND GRILL BF STEK 1 1/2" THK COOK 4-6 MINS.
3/4" THK COOK 7-10 MINS. 1" THK COOK 10-14 MINS. 1 1/2" THK COOK 15-20 MINS. WITH A FORK, PIERCE BOTH SIDES OF STEK. PLACE IN A BAG WITH A MARINADE. BOTH COAT. REFRIGERATE FOR 1-2 DAYS TURNING ONCE. DISCARD MARINADE. GRILL UNCOVERED OVER MED COALS OR ON GAS GRILL OR MED HIGH OR BROIL 3-4" FROM ELEMENT. COOK TO DESIRED DONENESS MED RARE(135F) TO MED(145F), TURNING HALFWAY THROUGH.

SAFE HANDLING INSTRUCTIONS
THIS PRODUCT IS PREPARED FROM INSPECTED AND PASSED MEAT AND/OR POULTRY. SOME FOOD PRODUCTS MAY CONTAIN BACTERIA THAT COULD CAUSE ILLNESS IF THE PRODUCT IS MISHANDLED OR COOKED IMPROPERLY. FOR YOUR PROTECTION, FOLLOW THESE SAFE HANDLING INSTRUCTIONS:

- KEEP REFRIGERATED OR FROZEN. THAW IN REFRIGERATOR OR IN COLD WATER.
- KEEP RAW MEAT AND POULTRY SEPARATE FROM OTHER FOODS. WASH WORKING SURFACES (INCLUDING CUTTING BOARD), UTENSILS, AND HANDS AFTER TOUCHING RAW MEAT OR POULTRY.
- COOK THOROUGHLY.
- KEEP HOT FOODS HOT. REFRIGERATE LEFTOVERS IMMEDIATELY OR DISCARD.

2 01484 110731 5

Tare 0.03 lb	Store No 631	Sell By AUG. 06.05	Total Price
Net Wt 1.22 lb	Unit Price \$5.99/lb		\$7.31
08122 Safeway Inc., Pleasanton, CA 94588			

CLUB PRICE \$4.99/lb	YOU SAVE \$1.22	WITH CARD YOU PAY \$6.09
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3. Right to know pros and cons

- **Pro:** People have the right to know what is in their food
- **Con:** Singles out GM technology for right to know, not other production methods.
"There is no prima facie case that consumers have a right to know everything through mandated labels or at any cost."

Kalaitzandonakes, N., 2004. "Another look at Biotech Regulation" Regulation. 27(1):44-50.





FDA Public Hearing on the Labeling of Food Made from the AquAdvantage Salmon, September 21st, 2010






Public testimony from Food and Water Watch

“We are not willing to settle for making other labels do double duty. We're not going to settle for country of origin labeling being used as code for how we're somehow supposed to educate people which countries are producing genetically engineered salmon this year. That is not acceptable. **That's not a label that discloses what we need**”.

Patricia Lovera , Food and Water Watch, Washington, D.C.
<http://stopgefish.files.wordpress.com/2011/02/transcript-of-labeling-hearing-fda-2010-n-0385-0339.pdf>



Public testimony from Food and Water Watch




Question from FDA panel: *I would like for you, if you could, to elaborate a little more on really what the messaging is in terms of how to use the food, what specific attributes may be changed in the food if the food says genetically engineered. I mean, through your presentation you mentioned things like allergens. ... But if the food simply says, genetically engineered, how does that convey that to a consumer?*

MS. LOVERA: “Well, we’ve heard a lot about education, and I assume that the industry is going to be trying to educate or market this product in a way”

<http://stopgefish.files.wordpress.com/2011/02/transcript-of-labeling-hearing-fda-2010-n-0385-0339.pdf>



Public testimony from Center for Science in the Public Interest




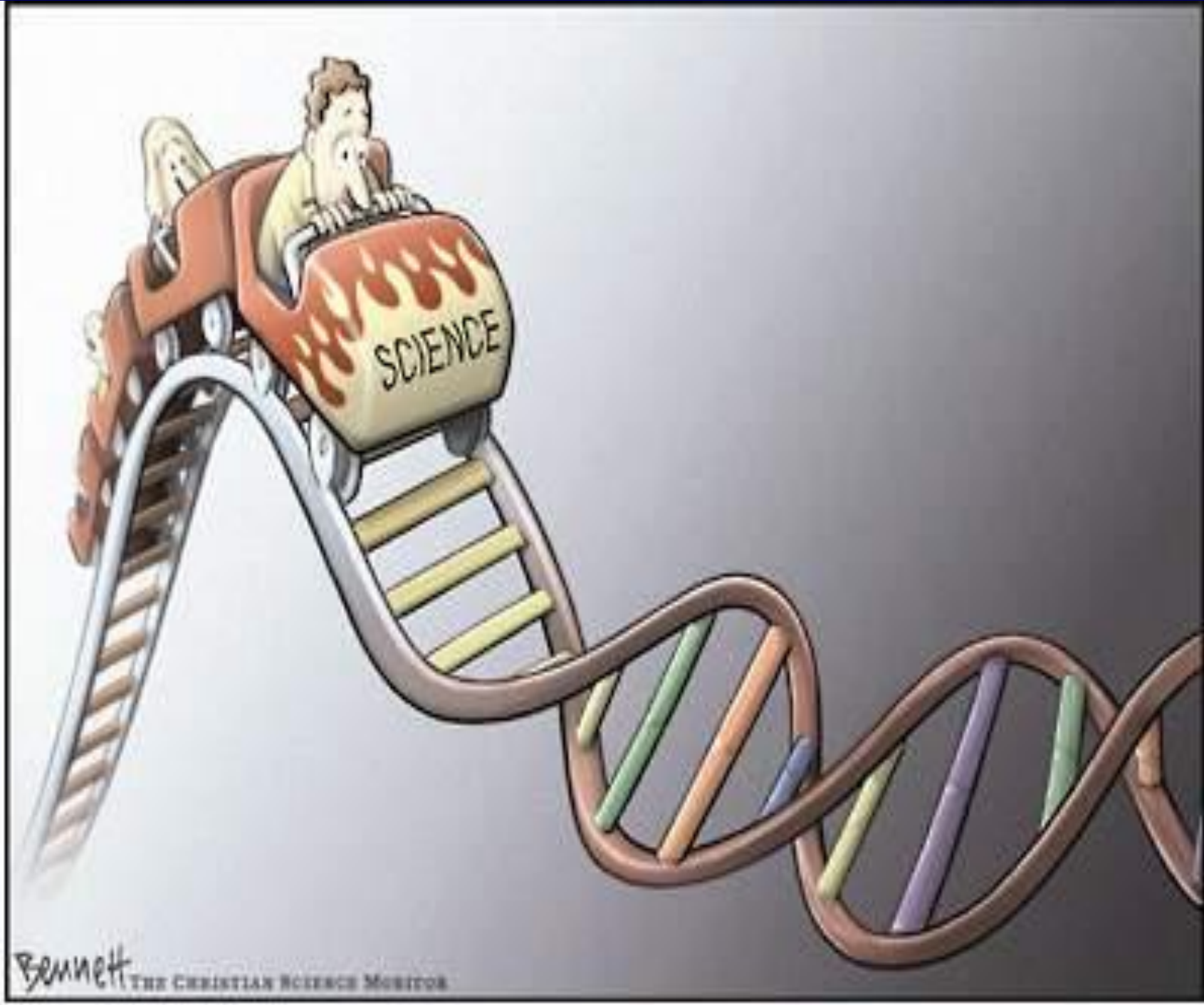
“There are many production methods for food products and many production methods for salmon. Identifying this production method without requiring all the other production methods to be identified would needlessly discriminate against genetic engineering and not provide the consumer with information about the “material” differences in this particular salmon... Providing information without education about what that information means is not particularly helpful to the consumer.”

Greg Jaffe, Center for Science in the Public Interest, Washington, D.C.
http://cspinet.org/new/pdf/salmon_labeling_presentation.pdf



Conclusions

- 
- Mandatory labeling is not a simple matter of putting some additional ink on a package
 - There are several reasons put forward for mandatory labeling which can be argued either way
 1. Public opinion/depends on question
 2. Consumer choice/lack of choice
 3. Right to know/scope of methods to include
 - Labeling GM is not a food safety issue and developers are understandably wary of the additional costs of supply chain segregation – and having their brand targeted by opponents



Bennett
THE CHRISTIAN SCIENCE MONITOR

