Genetic Modified Food

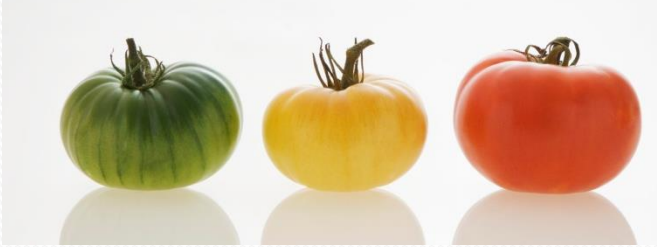
Medical Science may or may not matter

Genetic modification

- Selection of specific strains as part of agriculture and domestication
- For eons, genetic selection through cross breeding and selection
- Understanding of the mechanism of gene replication and protein transcription opens new opportunities to identify and modify genetic material

GMO food

- 1953—structure of DNA published
- 1973—first recombinant DNA organism (bacteria)
- 1980—first patented GMO (oil eating bacteria)
- 1982—Human insulin production in cultured GMOs approved by FDA
- 1986-87—first field trials of GMO crops (tobacco and Tomato)
- 1992—Flavr Savr tomato first sold. FDA says GMO food is “not inherently dangerous” and that if it is “substantially similar” does not need special regulation



GMO food

- 2000--International Biosafety Protocol is approved by 130 countries. The protocol agreed upon labeling of genetically engineered crops, but still needs to be ratified by 50 nations before it goes into effect.
- 2003—Cartagena Protocol on Biodiversity goes into effect. Now 166 signatories. (not US). Labeling is voluntary
  - May cause conflict with WTO rules on trade (SPS)
- 2004—UN whitepaper on GE food and international trade and regulation (http://unctad.org/en/Docs/itcdtab30_en.pdf)

Why GMO Food Concerns?

- Gene transfer to wild crops (Bt)
- General Herbicide resistance (Roundup)
- Harm to beneficial species (Bees, lacewings)
- Allergy from transgenic protein (Brazil nuts=>soy beans)
- Unknown, undescribed ill effects (fear of “frankenfood”)

- “ The next generation of crops--engineered to produce drugs and industrial chemicals and crops engineered to alter regulatory and metabolic pathways—offer far more numerous traits and appear to be more obviously dangerous than Bt and herbicide-tolerant crops.”

  Union of Concerned Scientists, 2003

AMA statement

- “there is no scientific justification for special labeling of bioengineered foods, as a class, and that voluntary labeling is without value unless it is accompanied by focused consumer education.”
- “To better detect potential harms of bioengineered foods, the Council believes that pre-market safety assessment should shift from a voluntary notification process to a mandatory requirement”

AMA Statement

- Seized by both pro-GMO and anti-GMO groups.
  - **Why test if there is no risk for harm**. The AMA is saying there is a potential for harm by requesting testing ("To better detect potential harms of bioengineered foods, the Council believes that pre-market safety assessment should shift from a voluntary notification process to a mandatory requirement")
  - **Why label? Science says it is not harmful**. If it were, it will be kept off the market.("the FDA's science-based labeling policies do not support special labeling without evidence of material differences between bioengineered foods and their traditional counterparts. The Council supports this science-based approach")

State Actions

- Nothing—let the market decide
  - Whole Foods—all foods labeled by 2018
  - "ShopNoGMO", "Non-GMO Project" phone apps
  - Likely defined by market segment targeted—
    - low price, brand loyal, or GMO free (2002 , Baker and Burnham)

- Mandatory labeling
  - 12 States have had legislation, 5 adopted
  - WalMart, PepsiCo, ConAgra, General Mills, 20 other companies talk federal labeling (http://www.organicconsumers.org/articles/article_26864.cfm)
  - 64 other countries currently have mandatory labeling

Two approaches to GMO labeling

- **Scientific**
  - Test new applications of GE to food prior to release
    - If harm—do not allow
    - If no harm—release without labeling

Does not meet the consumer need for transparency and their ability to choose

- **Consumer choice/market approach**
  - May not be justified by science
  - Better in line with international trade systems and exporting

Might cause market confusion

A Possible Approach

- Test new GMO foods for toxicity—
  - Significant new variety
  - Under existing Authority of FDA
- Develop labeling Standards consistent with international trade.
  - Producers are free to label or not
- Voluntary cooperation/labeling within the Standard to meet the market desires.