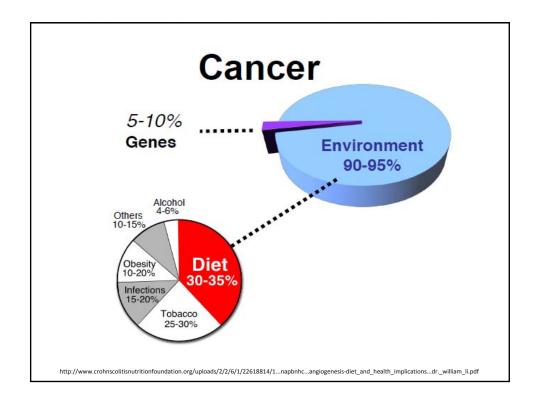


Statistically significant increase in age-adjusted death rate from 2014 to 2015 (p < 0.05).
Statistically significant decrease in age-adjusted death rate from 2014 to 2015 (p < 0.05).
Statistically significant decrease in age-adjusted death rate from 2014 to 2015 (p < 0.05).
NOTES: A total of 2,712,630 resident deaths were registered in the United States in 2015. The 10 leading causes accounted for 74.2% of all deaths in the United States in 2015. Causes of death are ranked according to number of deaths. Access data table for Figure 3 at: http://www.cdc.gov/nchs/data/databriefs/

db267_table.pdf#3. SOURCE: NCHS, National Vital Statistics System, Mortality



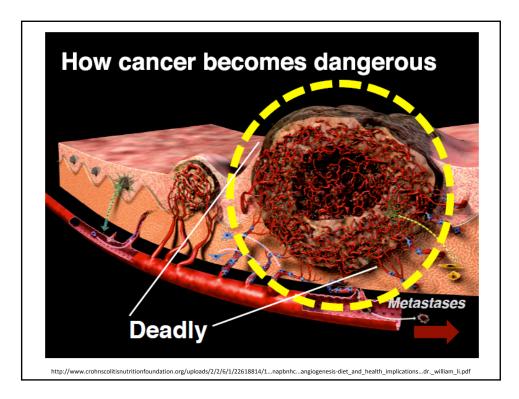
Cancer Stats:

- Between now and 2050, the number of new cancer patients diagnosed annually is expected to double.
- Treatment costs of more than \$80 billion are projected over the next decade.
- Cancer affects 24 million people worldwide, and results in over six million deaths each year.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184418/

- In the United States, men and women have a 43% and 38% chance, respectively, of being diagnosed with any type of cancer during their lifetime.
- Cancer treatment costs are escalating. Thus, cancer <u>prevention</u> is key to manage the cancer pandemic.
- Potent antiangiogenic molecules have now been identified in dietary sources.
- A rationally designed antiangiogenic diet could provide a safe, widely available, and novel strategy for preventing cancer.

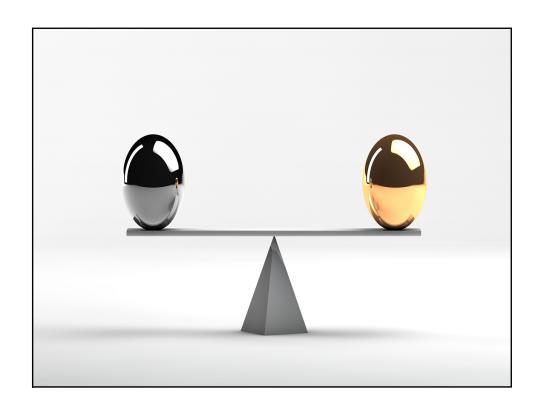
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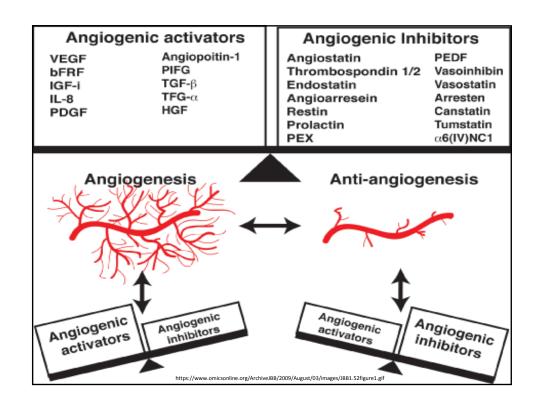


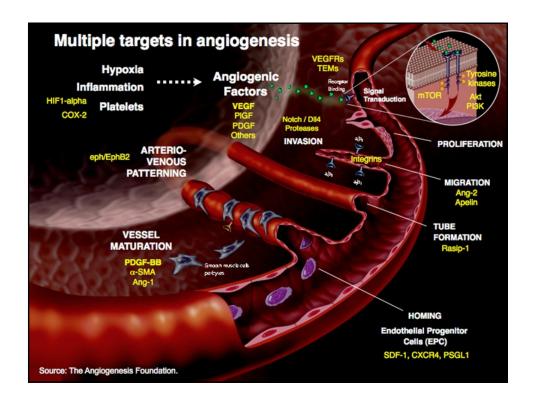
Angiogenesis Regulation:

- The human body contains 60,000 miles of blood vessels, including 19 billion capillaries.
- Normal cells in the body are located no further than 100–200 μm from the nearest capillary, the diffusion limit of oxygen.
- Under physiological conditions, the rate of cell proliferation is balanced with the rate of apoptosis. Hence, there is no net tissue growth.
- The physiological state is maintained by suppressed angiogenesis via endogenous inhibitory mechanisms opposing the action of angiogenic growth and other stimulating factors.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184418/



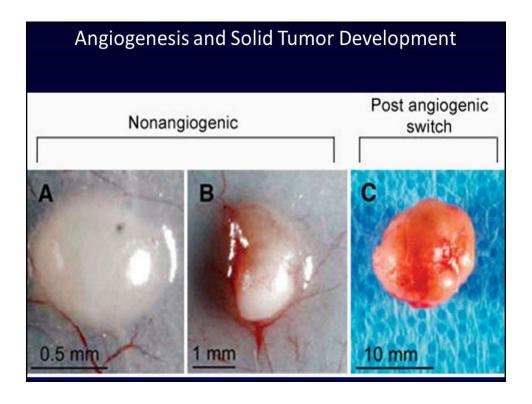


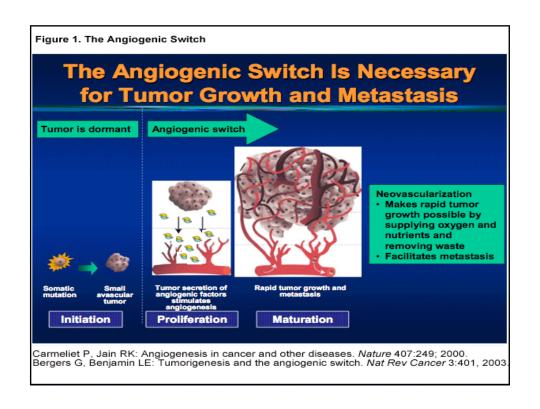


The Avascular Dormant Phase of Cancer:

- Microscopic cancer cells are commonly present in healthy adults (due to errors in replication of trillions of cells).
- Autopsy studies have shown microscopic cancers are present in the breasts of up to 40% of women between 40 and 50 yrs., and in 50% of prostates in men between 50 and 60 yrs.
- By age 70, microscopic cancers are detected in the thyroids of virtually everyone.
- Most of these tumors never become clinically significant, leading to the concept of "cancer without disease" as a normal state during aging.
- <u>Physiological angiogenesis inhibition</u> is regarded as one of the mechanisms that prevent microscopic cancers from converting to a malignant phenotype.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184418/





Dietary Factors / Choices That May "Flick the Switch":

- Processed Meat
- Alcohol
- ??? Sugar indirectly
- Obesity

Processed Meats:

- Meats that have been preserved by curing, salting or smoking, or with chemical preservatives
- Ex: bacon, sausage, hot dogs, pepperoni, prosciutto, beef jerky and salami.
- Eating 50 grams of processed meat (the equivalent of four strips of bacon or one hot dog) every day increases the risk of colorectal cancer by 18 %.
- Choose nitrate and nitrite-free meats, which don't have added preservatives if you choose to eat processed meats.

https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

Charred Meats, Red Meat:

- Charred meats (cooked at high temps) cause changes in your DNA = may lead to cancer.
- Fried or barbecued meats linked to an increased risk of colorectal, pancreatic & prostate cancer.
- Marinating meats before cooking may help reduce the risk of carcinogens forming.

https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/links-are-links-a

Alcohol:

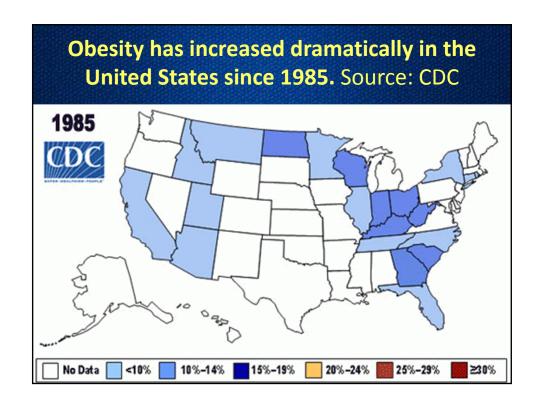
- When metabolized, alcohol produces acetaldehyde = damage DNA = may lead to cancer.
- The more alcohol consumption, the higher risk for certain kinds of cancer: (head & neck, esophageal, liver, etc.).
- Most experts recommend abstaining from alcohol to avoid the risk
- If you choose to indulge, limit your alcohol to no more than one serving/day (women), or two servings/day (men).
- A serving = 12 oz. of beer, 5 oz. of wine or 1.5 oz. of liquor.

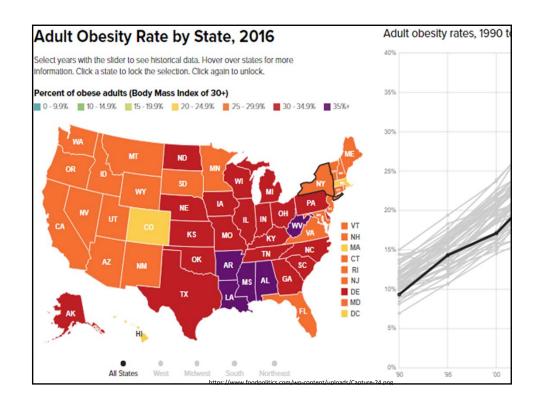
https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/

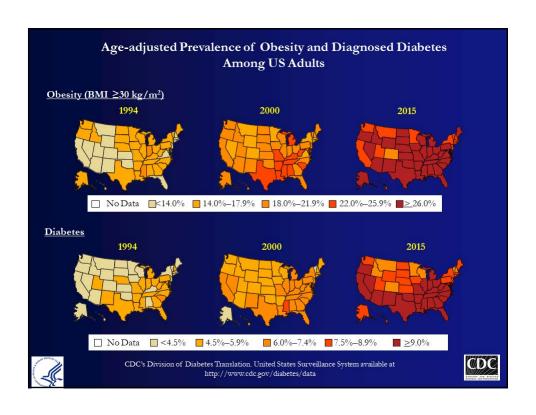
Sugar:

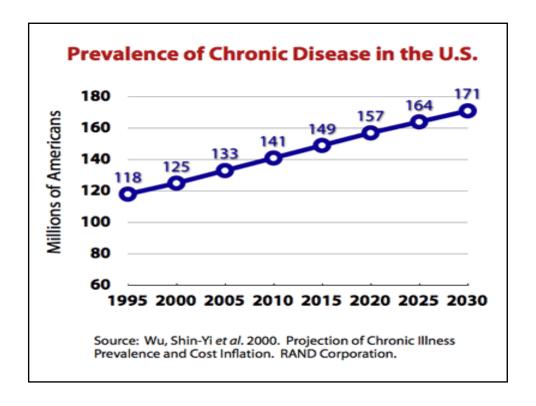
- Sugar: Not directly on the list.
- Due to the fact that it has not been <u>directly</u> linked to cancer.
- HOWEVER Sugar = empty calories = weight gain = obesity.
- **OBESITY** has been linked to 13 types of cancer.
- Average American consumes an estimated 89 grams of added sugars per day (2 to 3 times the recommended amount).

https://www.cancercenter.com/discussions/blog/what-foods-and-drinks-are-linked-to-cancer/









U.S. Preventive Services Task Force Recommendations to combat obesity:

- Most effective interventions were comprehensive and were of high intensity.
- Behavioral interventions included multiple behavioral management activities, (group sessions, individual sessions, setting weight-loss goals).
- Improving diet & nutrition, physical activity, <u>addressing barriers to change</u>, active use of selfmonitoring, & strategizing how to maintain healthy lifestyle changes.

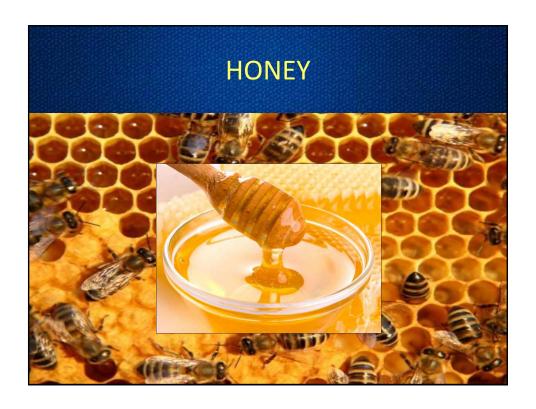
Specific recommendations fit into five guidelines:

- 1. Follow a healthy eating pattern across the lifespan.
- 2. Focus on variety, <u>nutrient-dense foods</u>, and amount.
- 3. Limit calories from <u>added sugars</u> and saturated fats, and reduce sodium intake.
- 4. Support healthy eating patterns for all.
- 5. Shift to healthier food and beverage choices.

http://www.hhs.gov/about/news/2016/01/07/hhs-and-usda-release-new-dietary-guidelines-encourage-healthy-eating-patterns-prevent-chronic.html and the sum of the sum



Dietary Sources of Naturally-Occurring Antiangiogenic Substances Lavender Green tea **Red grapes** Strawberries **Red wine** Cloves **Blackberries Bok choy Beet** Raspberries Kale **Pumpkin Sea Cucumber Blueberries Endive** Cinnamon Soy beans Sardine **Cranberries** Prawn Ginger Maitake mushroom **Parsley Apples Pineapple** Licorice **Garlic Turmeric Tomato** Cherries Olive oil **Sweet potatoes Nutmeg Maple Syrup Artichokes Papaya** Kumquat **Dark chocolate Pomegranate Red Onions** Cauliflower Gouda cheese **HazeInuts** Avocado Spinach Others Source: Angiogenesis Foundation



HONEY

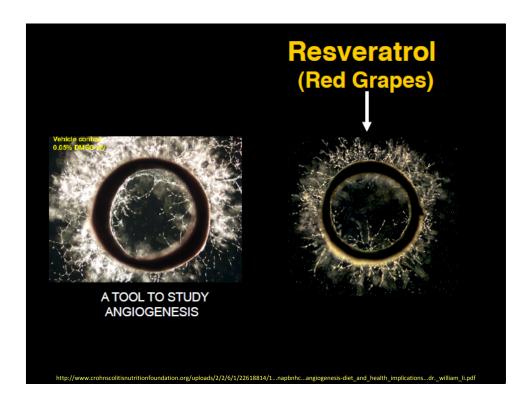
- Research Study: "Effects of Honey and Its Mechanisms of Action on the Development and Progression of Cancer." Molecules. 2014
- Honey has been shown to inhibit or suppress three stages of carcinogenesis at initiation, proliferation, and progression.
- Acts by diverse mechanisms: cell cycle arrest, induction of apoptosis, modulation of oxidative stress, decreased inflammation, inhibition of angiogenesis in cancer cells.

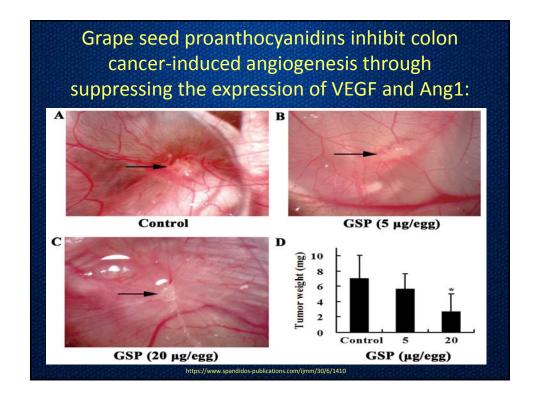
Erejuwa OO, Sulaiman SA, Wahab MSA. Effects of Honey and Its Mechanisms of Action on the Development and Progression of Cancer. Molecules. 2014; 19(2):2497-2522.

HONEY

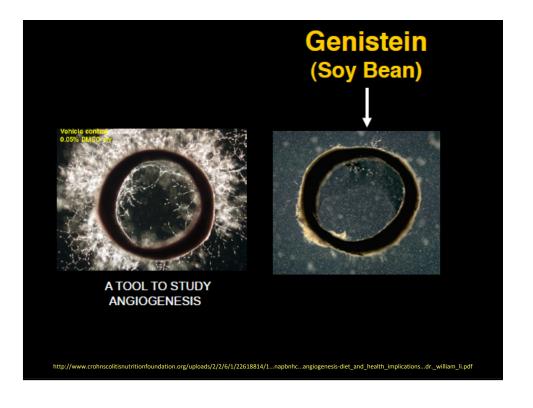
- In vitro and in vivo studies have highlighted a broad range of activities provided by honey in burn treatment.
- These include:
 - anti-infectious
 - anti-inflammatory
 - antiexudative
 - antioxidant
 - wound healing, wound debriding and nutritional properties.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4158441/



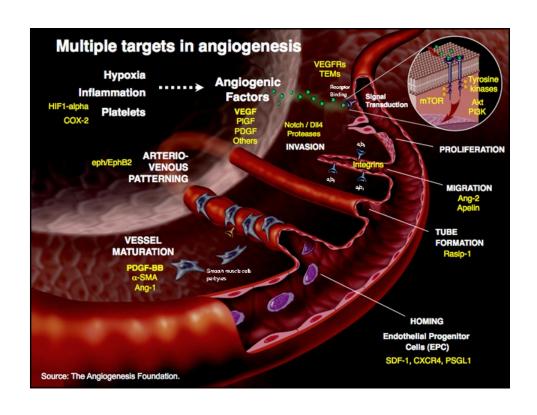






QUESTION: Why isn't the antiangiogenic paradigm THE (one & only) cancer cure?

- ANSWER: Because typically only arrests NEW tumor blood vessel formation.
- Older, more mature vessels keep the tumor(s) richly supplied with nutrients.
- Furthermore, when angiogenesis is restricted, some tumors maintain the ability to convert to anaerobic metabolism → hypoxia-inducing factor genes prevent tumor death → Cytotoxic T cells commit apoptosis → Pro VEGF is reestablished and tumor angiogenesis continues.



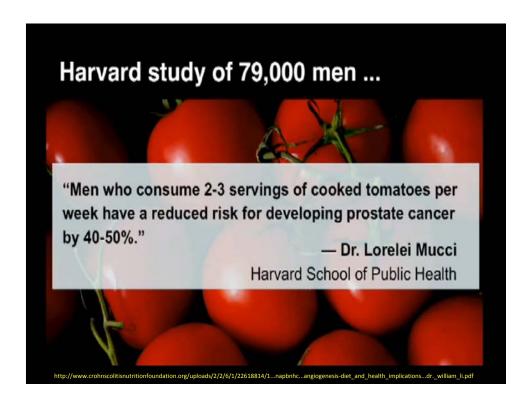
HHS and USDA New Dietary Guidelines to Prevent Chronic Diseases

- A variety of vegetables, including dark green, red and orange, legumes (beans and peas),
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes, etc.
- Oils, (soybean, sunflower, olives, etc.)

http://www.hhs.gov/about/news/2016/01/07/hhs-and-usda-release-new-dietary-guidelines-encourage-healthy-eating-patterns-prevent-chronic.html

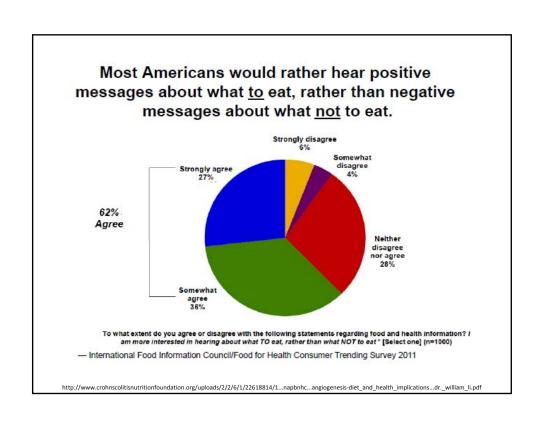
HHS and USDA New Dietary Guidelines to Prevent Chronic Diseases:

- Consume less than 10 percent of calories per day from added sugars (sugars and syrups that are added when they are processed or prepared.)
- Less than 10 percent of calories per day from saturated fats. (butter, whole milk, meats that are not labeled as lean, and tropical oils such as coconut oil).
- Less than 2,300 mg per day of sodium.





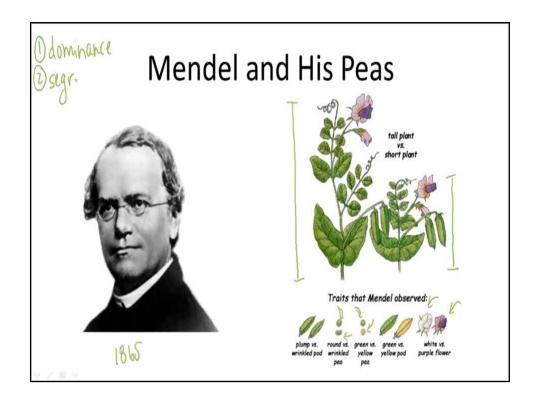




GMO's:

- Genetically modified crops the DNA is modified to introduce a new trait which does <u>not occur naturally</u> in the species.
- Ex: resistance to bugs, disease, or chemical treatments (e.g. resistance to a herbicide).
- They have the potential to contaminate forever.
- They increase herbicide use:
- Between 1996 and 2008, US farmers sprayed an extra 383 million pounds of herbicide on GMOs = <u>higher</u> <u>residues of toxic herbicides</u>. (linked with sterility, hormone disruption, birth defects, and cancer.)

http://www.responsibletechnology.org/10-Reasons-to-Avoid-GMO: http://truthwiki.org/Genetically_modified_crops



GMO Studies:

- Claims that Americans eat millions of GMO meals with NO ill effects are unscientific.
- NO HUMAN EPIDEMIOLOGICAL STUDIES HAVE
 BEEN DONE to establish whether GMO foods may be affecting the health of Americans.
- Because most GMOs are NOT labeled, there is no way of tracing any effects.
- In the U.S., GMOs are in as much as 80% of conventional processed food.

Long-term toxicology study on pigs fed a combined genetically modified (GM) soy and GM corn diet:

- Study showed a diet of GM feed had a significant effect on inflammation.
- This finding was statistically significant. GM-fed male pigs showed severe stomach inflammation at a rate of 4.0 times that of the non GM fed male pigs; and female pigs showed a rate of severe stomach inflammation that was 2.2 times the rate of the non-GM fed female pigs.

http://www.organic-systems.org/journal/81/8106.pdf

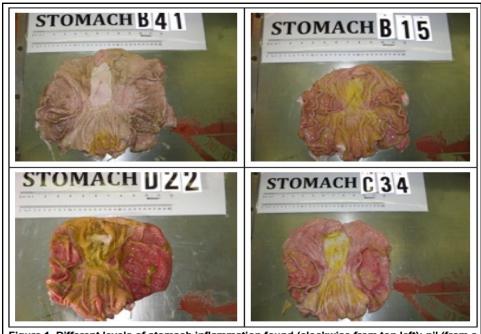
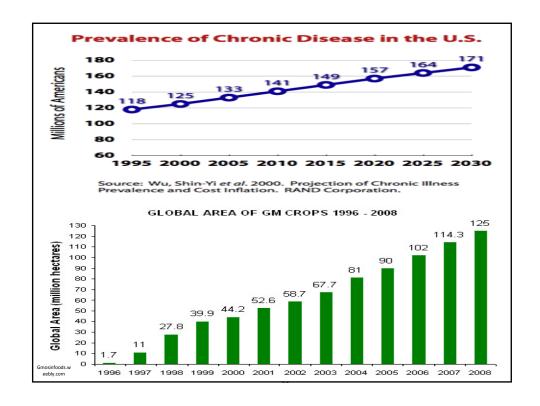


Figure 1. Different levels of stomach inflammation found (clockwise from top left): nil (from a non-GM-fed pig, number B41), mild (from a non-GM-fed pig, number B15), moderate (from a GM-fed pig, number C34) and severe (from a GM-fed pig, number D22).

Study Conclusions:

"Given the widespread use of GMO feed for livestock as well as in humans, this is a cause for concern. The results indicate that it would be prudent for GM crops to undergo long-term animal feeding studies preferably before commercial planting, particularly for toxicological and reproductive effects."

http://www.organic-systems.org/journal/81/8106.pdf



GMO Studies:

- Most animal feeding studies on GMOs are short-medium term studies.
- LONG-TERM, multi-generational studies are needed, as these are often suggestive of harmful health effects.
- Long-term studies are <u>not currently required</u> by GMO regulators anywhere in the world.

GMO Studies:

- "The vast majority of the research on genetically modified (GM) crops <u>suggest</u> that they are safe to eat.
- Pro-GM scientists are, at times, unscientific in their rejection of the counterevidence.
- A careful analysis of the risks and benefits argues for expanded safety testing of GM crops."

http://www.scientificamerican.com/article/the-truth-about-genetically-modified-food/

Dietary Sources of Naturally-Occuring Antiangiogenic Foods

- Green Tea - Red Wine - Pumpkin

- Strawberries - Bok Choy - Sea Cucumber

- Blackberries - Kale - Tuna

- Oranges - Ginseng - Parsley

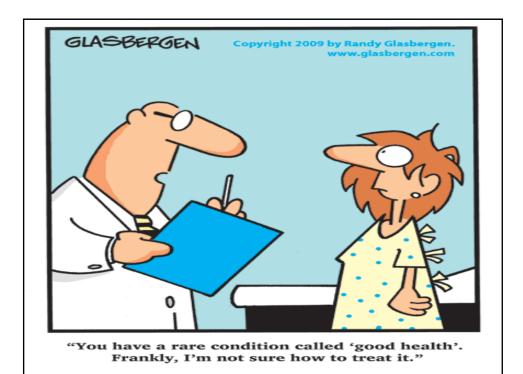
- Grapefruit - Mushrooms - Garlic

- Lemons - Licorice - Tomato

- Apples - Turmeric - Olive Oil

Pineapple - Nutmeg - Grape Seed Oil
 Cherries - Artichokes - Dark Chocolate

- Red Grapes - Lavender - Avocado



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