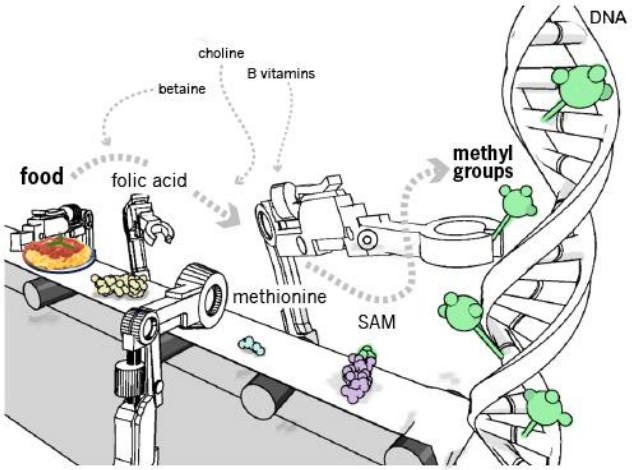
Nutrition and Your Epigenome

Scientists are studying how food can produce epigenetic effects. Food is digested and turned into molecules that can change the activity of our DNA. Some foods turn up activity, while others turn it down.

The Genetic Science Learning Center at the University of Utah developed this picture and table to show examples of how this works. We're learning more everyday about new foods and their epigenetic roles. Oregon State University is currently doing a lot of research in this area.



Nutrient	Food Origin	Epigenetic Role
Methionine	Sesame seeds, brazil nuts, fish, peppers, spinach	SAM synthesis
Folic Acid	Leafy vegetables, sunflower seeds, baker's yeast, liver	Methionine synthesis
Vitamin B12	Meat, liver, shellfish, milk	Methionine synthesis
Vitamin B6	Meats, whole grain products, vegetables, nuts	Methionine synthesis
SAM-e (SAM)	Popular dietary supplement pill; unstable in food	Enzymes transfer methyl groups from SAM directly to the DNA
Choline	Egg yolks, liver, soy, cooked beef, chicken, veal and turkey	Methyl donor to SAM
Betaine	Wheat, spinach, shellfish, and sugar beets	Break down the toxic byproducts of SAM synthesis
Resveratrol	Red wine	Removes acetyl groups from histones, improving health (shown in lab mice)
Genistein	Soy, soy products	Increased methylation, cancer prevention, unknown mechanism
Sulforaphane	Broccoli	Increased histone acetylation turning on anti-cancer genes
Butyrate	A compound produced in the intestine when dietary fiber is fermented	Increased histone acetylation turning on 'protective' genes, increased lifespan (shown in the lab in flies)
Diallyl sulphide (DADS)	Garlic	Increased histone acetylation turning on anti-cancer genes

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http://learn.genetics.utah.edu/content/epigenetics/nutrition/