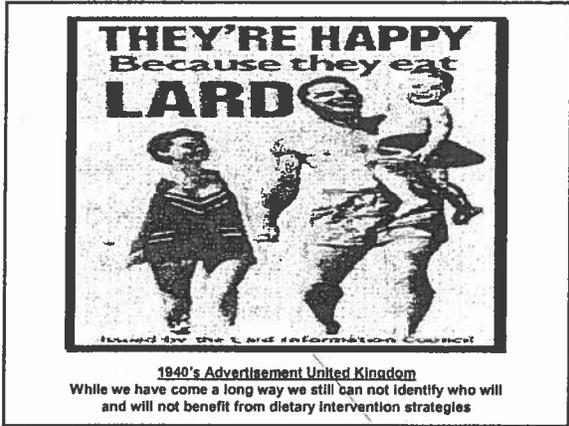
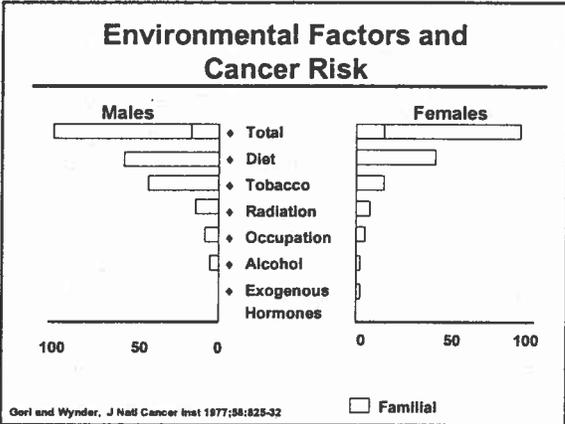
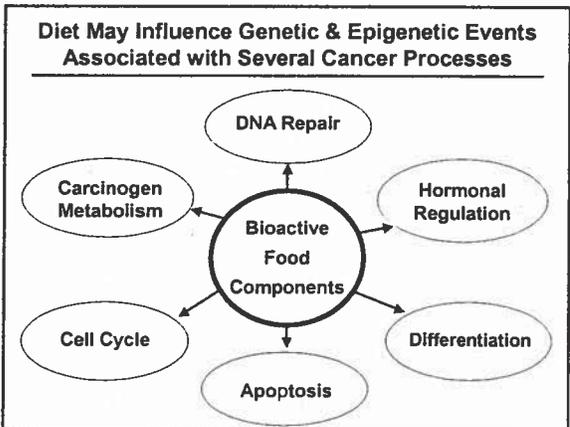
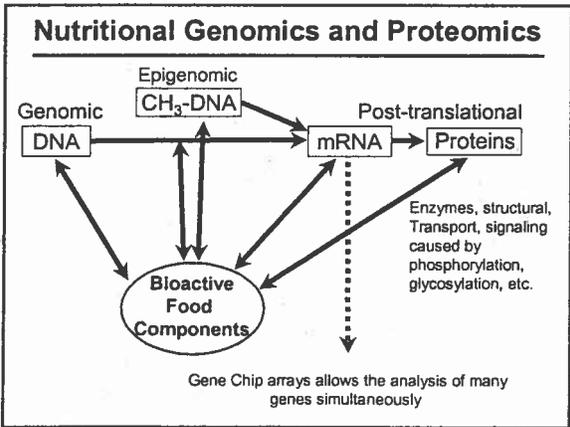


Nutrition and Cancer Prevention

John Milner, Ph.D.
 Nutrition Science Research Group
 Division of Cancer Prevention



- ### Numerous Dietary Components Can Alter Genetic and Epigenetic Events
- Essential Nutrients- Ca, Zn, Se, Folate, C, E
 - Non-Essential
 - Phytochemicals - Carotenoids, Flavonoids, Indoles, Isothiocyanates, Allyl Sulfur
 - Zoochemicals - Conjugated linoleic acid, n-3 fatty acids
 - Fungochemicals - Several compounds in mushrooms
 - Bacteriochemical - Those formed from food fermentations and those resulting from intestinal flora



**Cooperative Grants For Nutritional
Modulation Of Genetic Pathways Leading
To Cancer**

I. P20 Planning Grant (CA-01-015)

30 Applications 6 awards.

**II. U54 Cooperative Specialized Center Award
Mechanism (RFA-CA-03-001)**

14 Applications reviewed November 7-8, 2002

Similar to Drugs

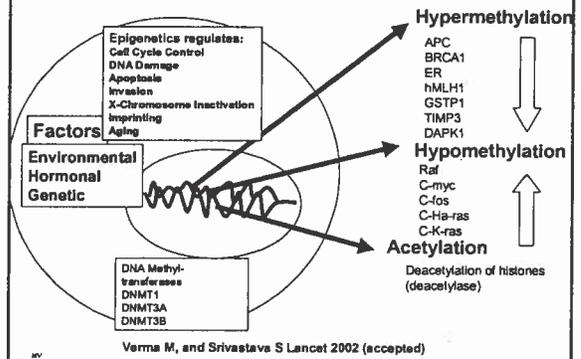
Nutrients

Have Molecular Targets

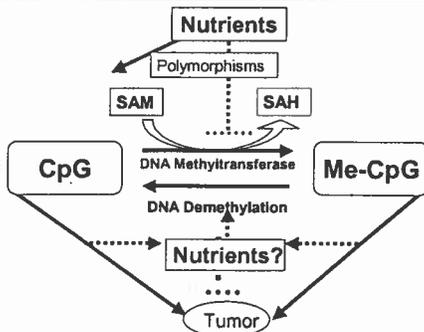
**Variety of Approaches Proposed in Applications in
Response to RFA (RFA-CA-03-003) Molecular Targets for
Nutrients in Prostate Cancer Prevention**

<u>Expression Level</u>	<u>In Vitro</u>	<u>In Vivo</u>
	Transfection Adenoviral Infection	Transgene
	Antisense Nucleotide Metabolic Inhibitors	Conditional Knockout Metabolic Inhibitors

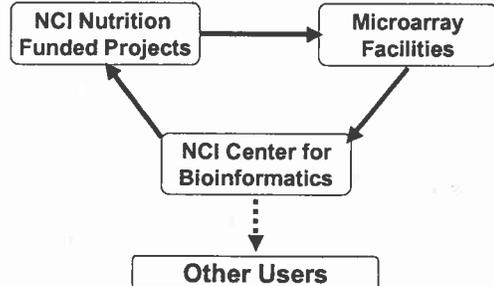
Epigenetic Regulation of Cancer

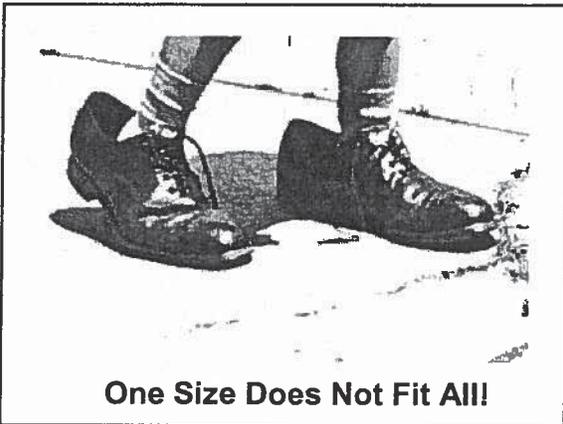


**RFA CA-03-016: Diet, DNA Methylation and Other
Epigenetic Events and Cancer Prevention will
Examine the Effects of Bioactive Food Components**



**Supplement Announcement for Promoting
the Discovery of Gene-Nutrient Targets**





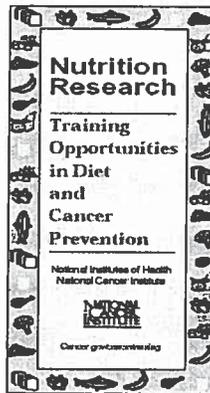
One Size Does Not Fit All!

Other NSRG Activities

- Grants Management- 114 in portfolio for 2002
- Workshops/Conferences
 - New Paradigm in Nutrition Workshop
 - Nutrition and Genomics Workshop
 - Diet & DNA Methylation Conference
 - Diet, Microbial Environment and Colorectal Cancer Workshop
 - Nutritional Genomics and Proteomics in Cancer Prevention Conference
 - Nutritional Links to Plausible Mechanisms Underlying Pancreatic Cancer (Dec 02)

Other NSRG Activities (Continued)

- Research and Training Updates- Web (<http://www.cancer.gov/prevention/nsrq/>)
- Listserv (700 individuals)
- New Web Gene-Nutrient Search Engine



Coordinated Effort with Dr. C. Stretz in Cancer Training Branch

Clinical Scientist Awards (K 08) in Nutrition by Institute (2000)

	<u>Nutrition Awards</u>	<u>Total Awards</u>	<u>Percent</u>
NCI	2	141	1.4
NIDDK	28	197	14.2
NICHD	1	45	2.0
NHLBI	12	265	4.5
NIMH	4	96	4.2

In Summary

The Division of Cancer Prevention's Nutritional Science Research Group uses a multi-faceted approach to promote research on the role of nutrition in cancer prevention by focusing on genomic and proteomic interactions with bioactive food components.