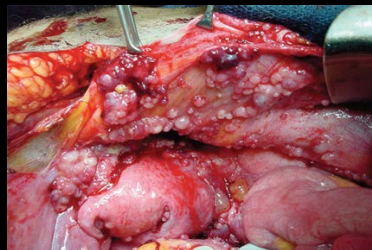


The New Epigenetic Diet Can Overcome Ovarian Cancer Chemoresistance

Trygve Tollefsbol, PhD, DO, Dept. of Biology, CAS
Charles Landen, MD, Dept. Obstetrics & Gynecology, SOM
Xiangqin Cui, Ph.D, Dept. of Biostatistics, SPH
Michael Crowley, PhD, Dept of Genetics, SOM



The Nobel Assembly at Karolinska Institutet has today decided to award

The Nobel Prize in Physiology or Medicine 2009

jointly to

Elizabeth H. Blackburn, Carol W. Greider and Jack W. Szostak

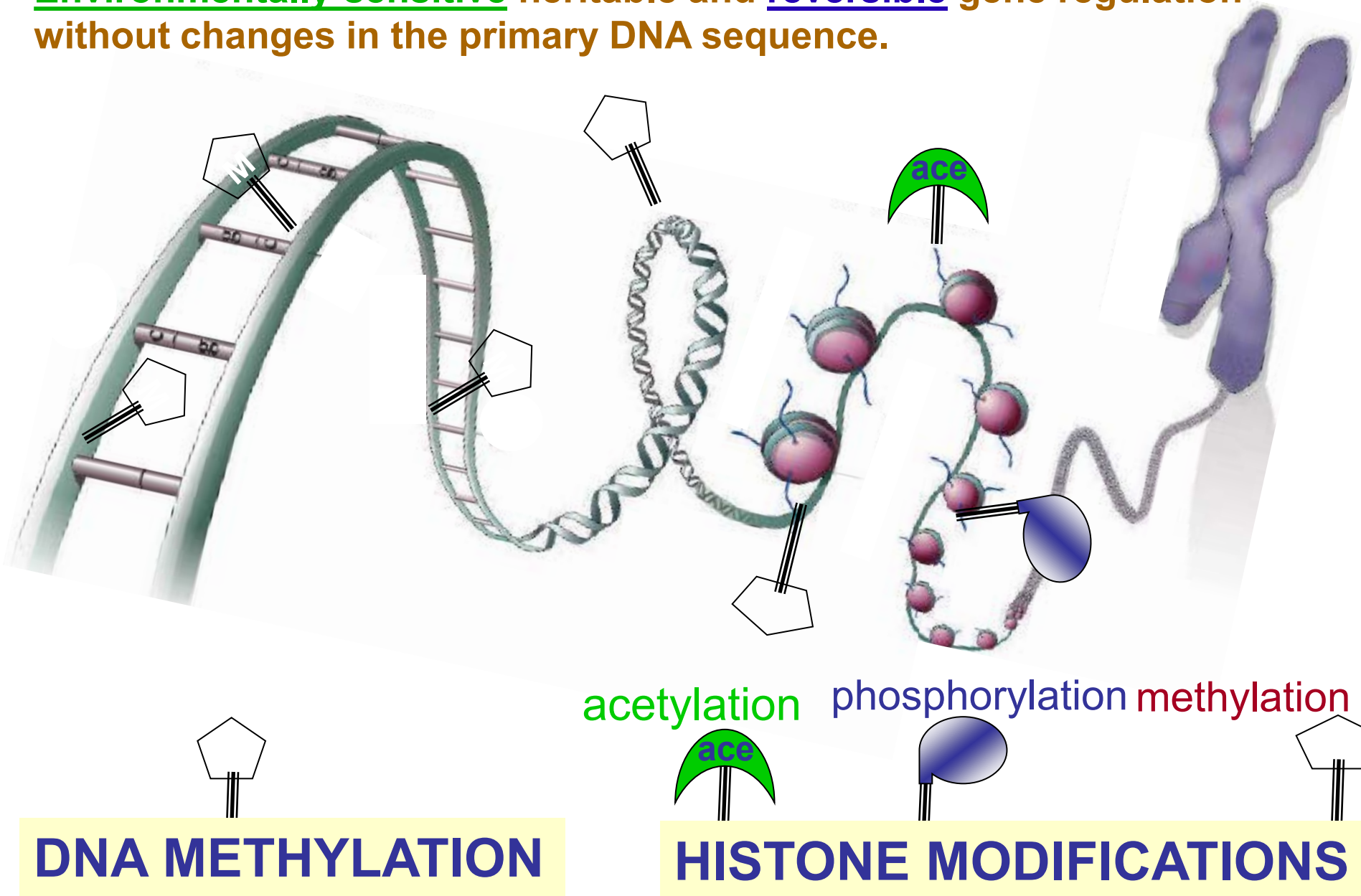
for the discovery of

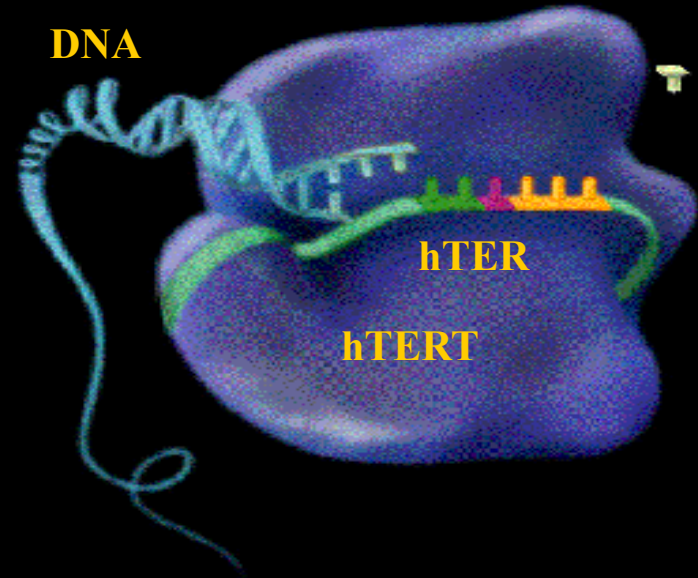
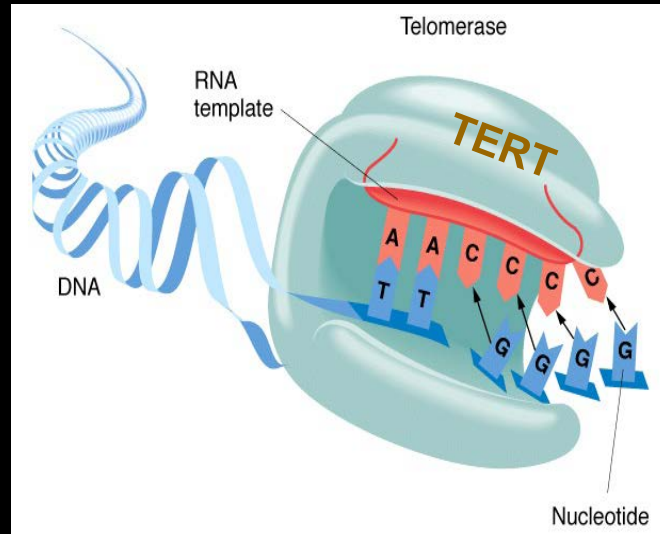
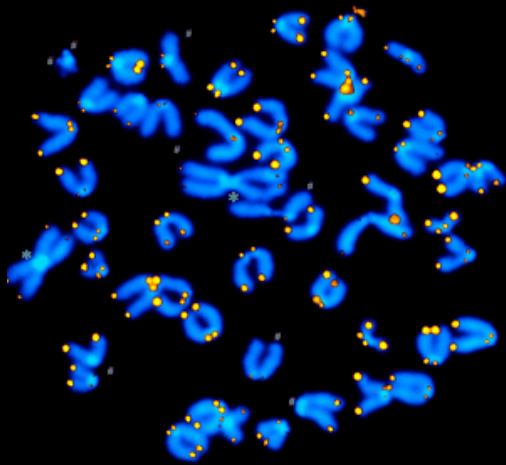
**“how chromosomes are protected
by telomeres and the enzyme telomerase”**



Epigenetic Modifications of the Genome

Environmentally-sensitive heritable and reversible gene regulation without changes in the primary DNA sequence.





Telomerase activity is proposed to be regulated through epigenetic control of the *hTERT* gene.

Medical Hypotheses (2001) 56(6), 630–637

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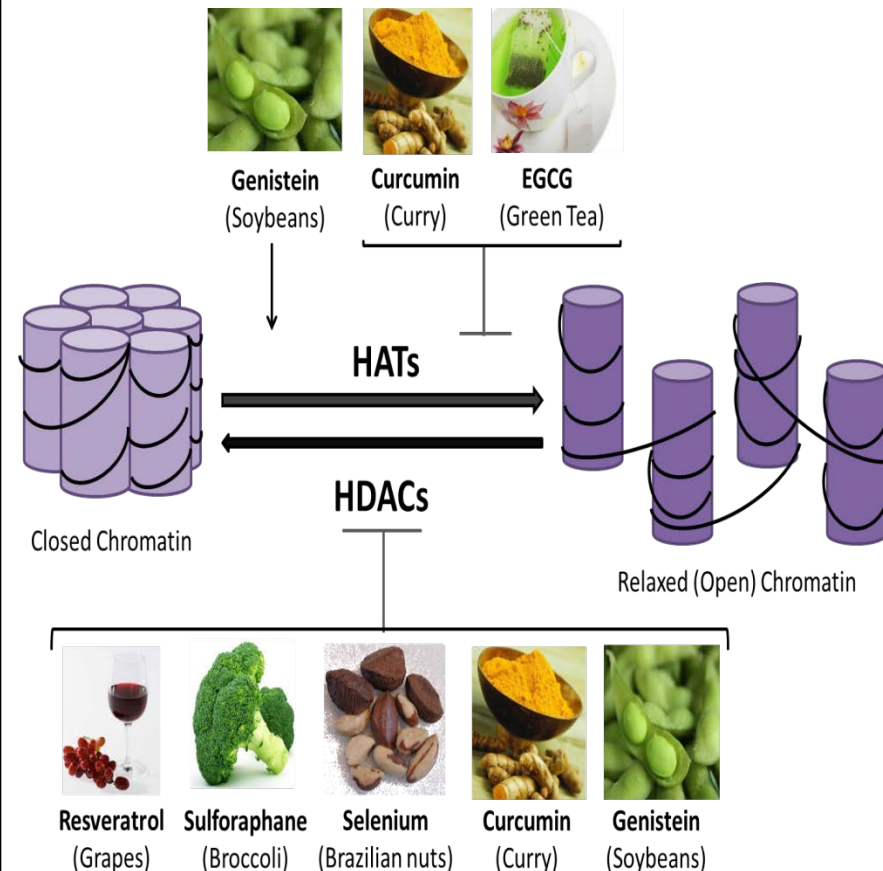
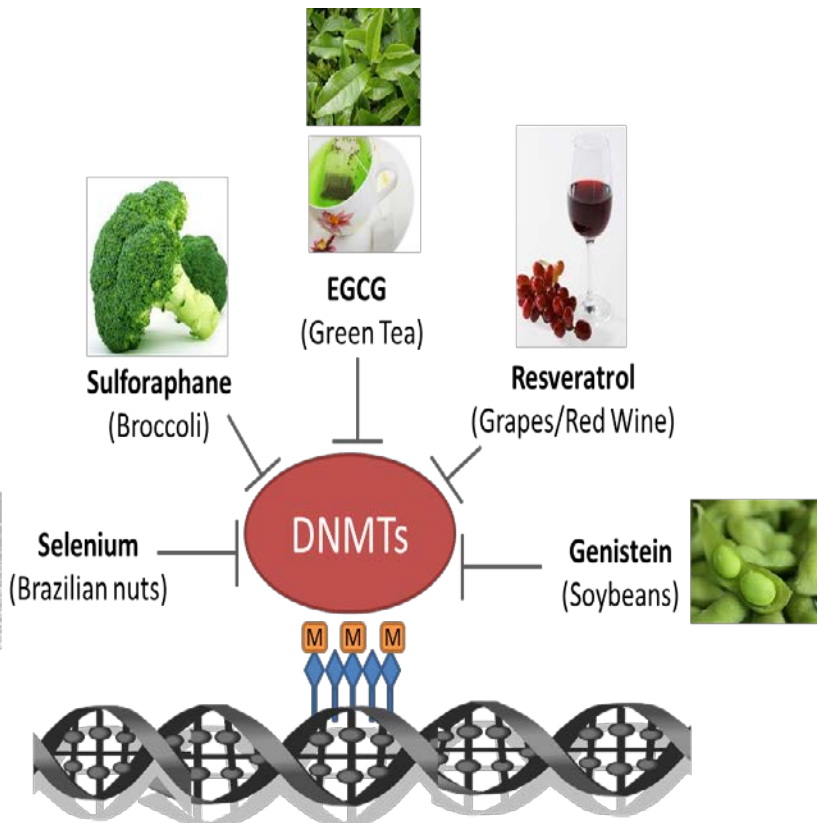
available online at <http://www.idealibrary.com> on IDEAL[®]

Mechanisms for telomerase gene control in aging cells and tumorigenesis

T. O. Tollefsbol, L. G. Andrews



Epigenetic-modulating Dietary Compounds



Hardy, T. M. and Tollefsbol, T.O. The epigenetic diet: Impact on the epigenome and cancer. *Epigenomics* 3, 503-518, 2011.

Epigenetic targets of bioactive dietary components for cancer prevention and therapy.

Meeran SM, Ahmed A, Tollefsbol TO. Clin Epigenetics. 2010 Dec 1;1(3-4):101-116.

The Science

Submitted by Total

The findings were published in the journal Clinical Epigenetics.

The research led the UAB team to coin the term "epigenetic diet," which includes foods known to inhibit those pesky gene aberrations. In addition to broccoli, Brussels sprouts, cabbage and soy beans, the diet includes:

- cauliflower
- kale
- fava beans
- grapes
- green tea
- turmeric

Epigenetics News a

March 11, 2011

Green Eggs & Ham? No – Green Tea & Fava Beans!

In the Media

MAR 8, 2011 by ■ Kathleen Blanchard -

Vegetables in the
fight cancer

Biologist
Cancer-I

On March 11, 2011



etics Diet

for Cancer

5:17 AM

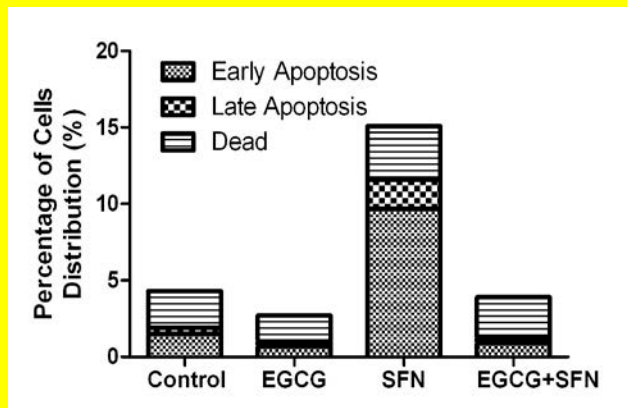
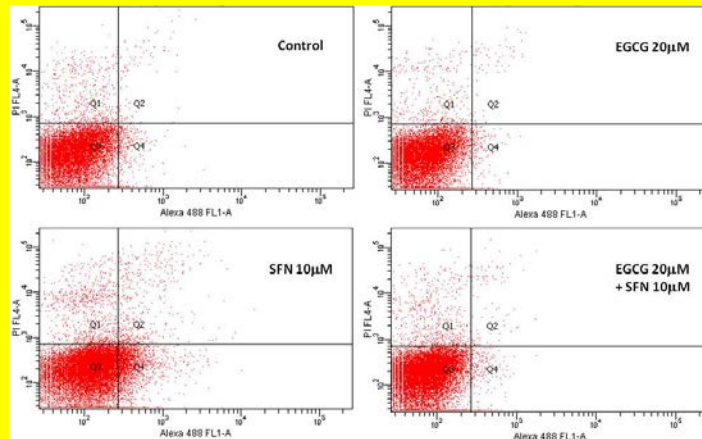
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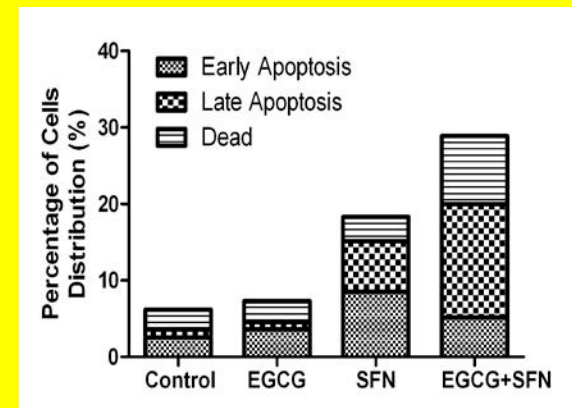
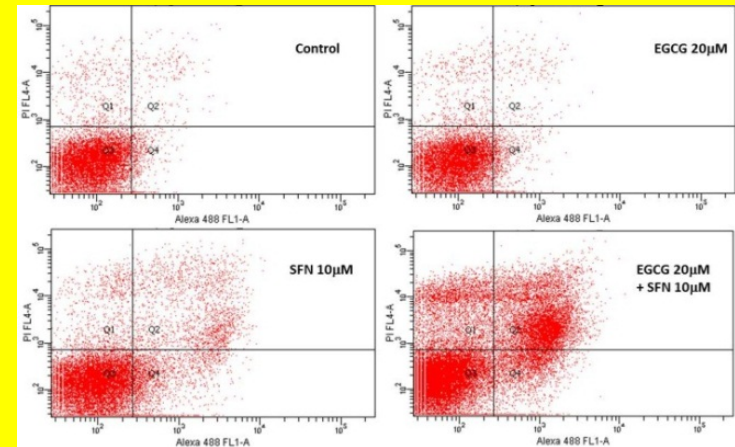
EGCG Can Enhance SFN-mediated Apoptosis in Paclitaxel-resistant Ovarian Cancer Cells

- Apoptosis: An important mechanism for chemotherapeutic drugs to target cancer cells.

Paclitaxel-sensitive: SKOV3-ip1

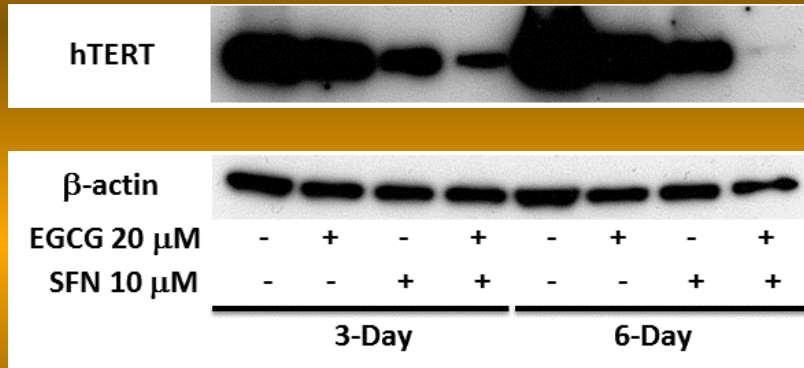


Paclitaxel-resistant: SKOV3TR-ip2

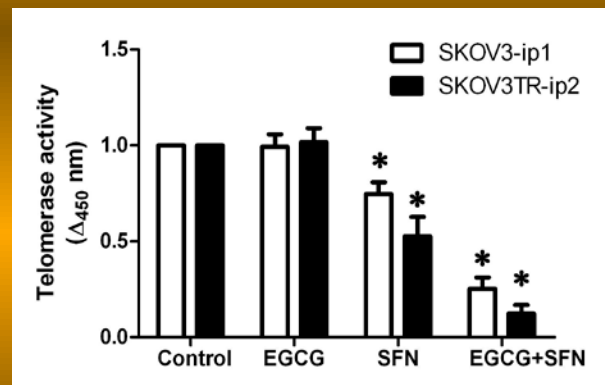
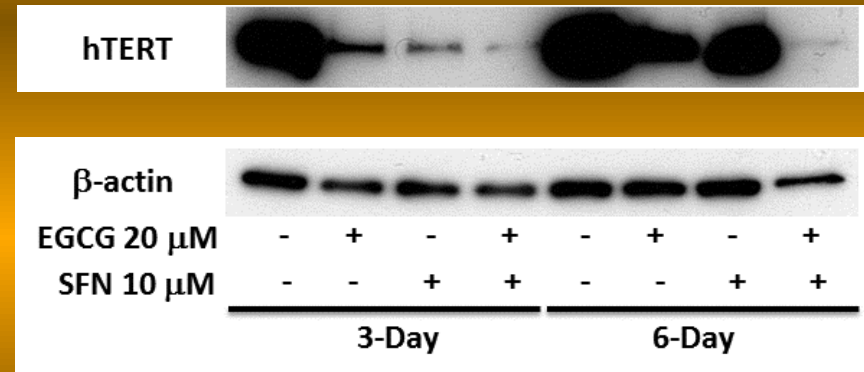


EGCG and SFN Treatment Can Decrease hTERT Expression in Ovarian Cancer Cells

Paclitaxel-sensitive: SKOV3-ip1



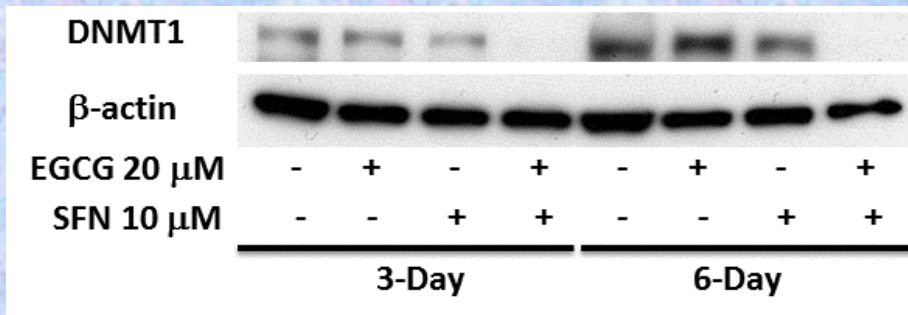
Paclitaxel-resistant: SKOV3TR-ip2



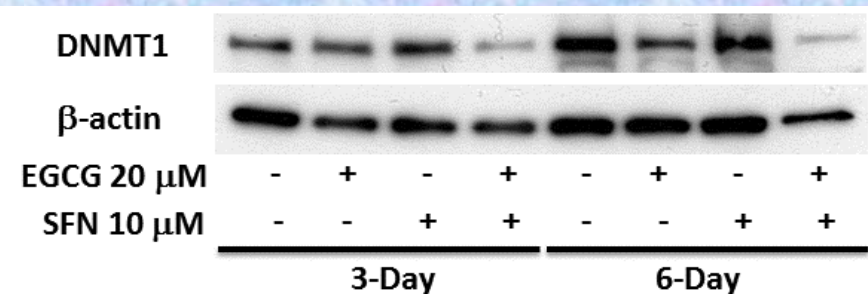
EGCG and SFN Treatment Decreases DNMT1 Expression in Ovarian Cancer Cells

- SFN-mediated down-regulation of hTERT expression in breast cancer cells is through down-regulation of DNMT1.

Paclitaxel-sensitive: SKOV3-ip1



Paclitaxel-resistant: SKOV3TR-ip2



Accomplishments/Funding Plans

Papers Published:

Chen, H., Landen, C.N., Li, Y., Alvarez, R.D., and Tollefsbol, T.O. Epigallocatechin gallate and sulforaphane combination treatment induce apoptosis in paclitaxel-resistant ovarian cancer cells through hTERT and BCL-2 down-regulation. [Experimental Cell Research](#) 319, 697-706, 2013.

Chen, H., Landen, C.N., Li, Y., Alvarez, R.D., and Tollefsbol, T.O. Enhancement of cisplatin-mediated apoptosis in ovarian cancer cells through potentiating G2/M arrest and p21 upregulation by combinatorial epigallocatechin gallate and sulforaphane. [Journal of Oncology](#), vol. 2013, Article ID 872957, 9 pages, 2013. doi:10.1155/2013/872957.

Funding Plans:

NIH PA-10-035 (Prioritizing Molecular Targets for Cancer Prevention with Nutritional Combinations)

DOD “Ovarian Cancer Synergistic Translational Leverage Award”



afar

american federation for aging research



Glenn Foundation For Medical Research

Unsolicited funding for lifetime achievements in aging research.

CAS Interdisciplinary Support