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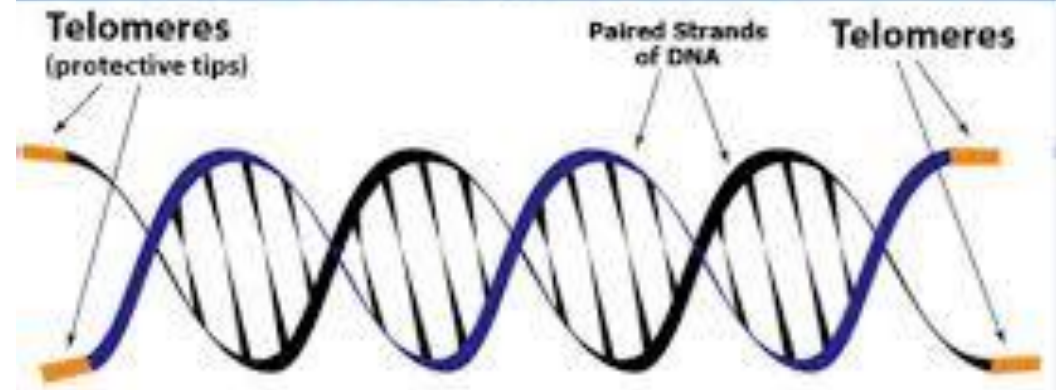


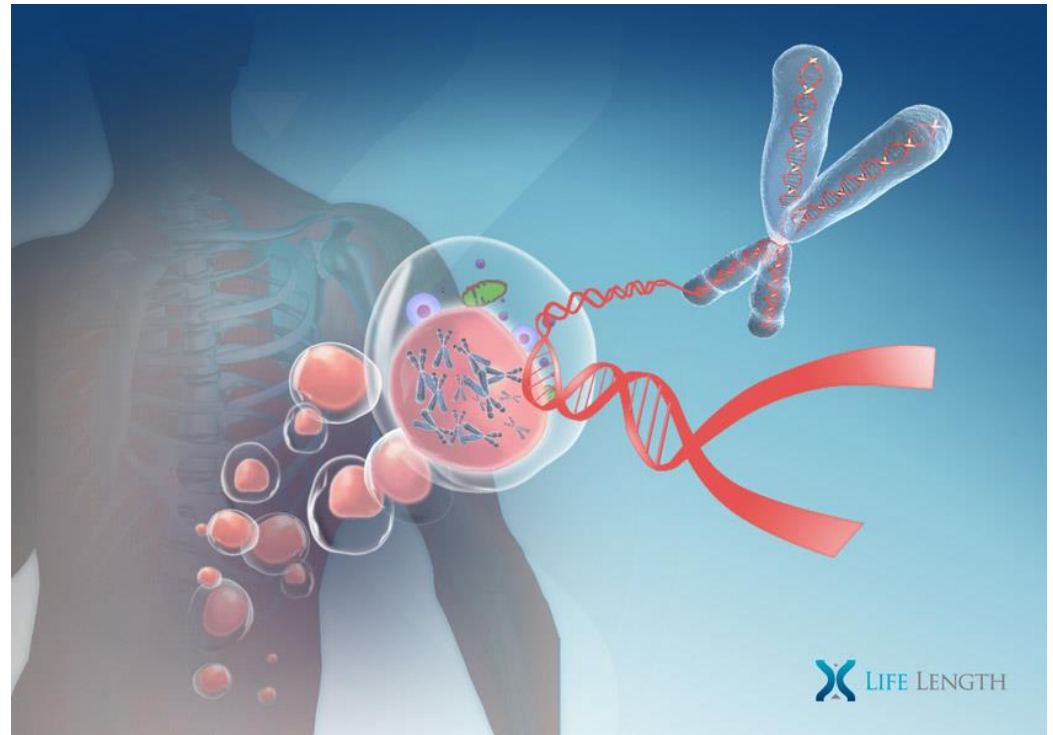
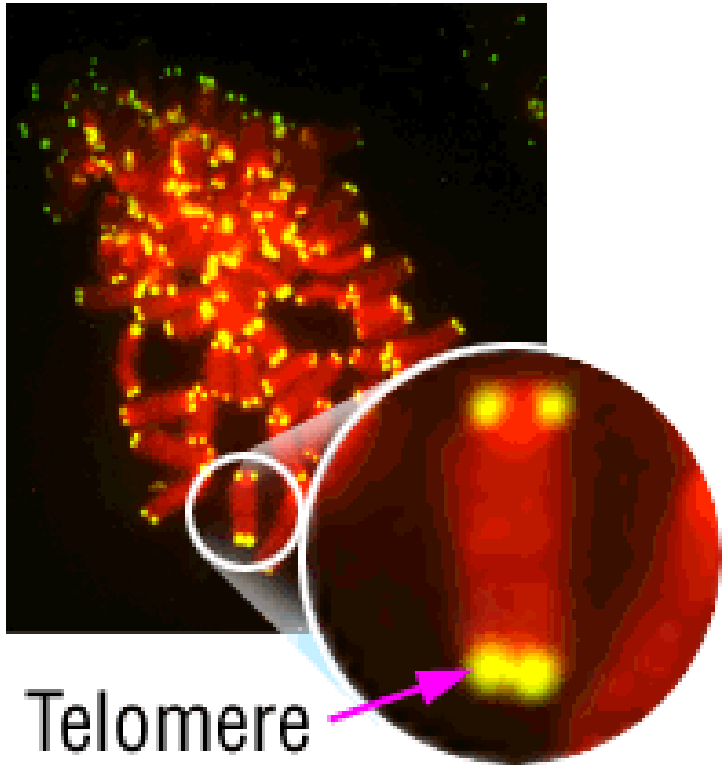


Manick Aep

# TELOMERES

Telomeres are protective, DNA - protein complexes at the end of our chromosomes

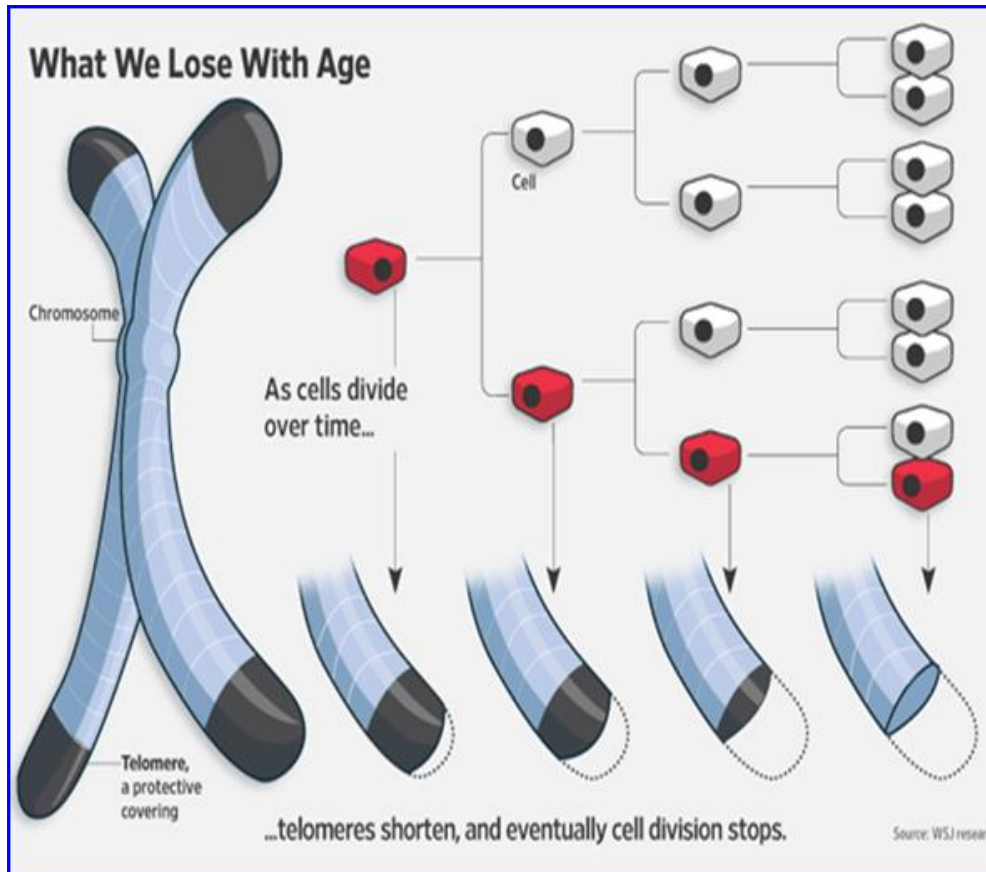




# Telomere und Telomerase

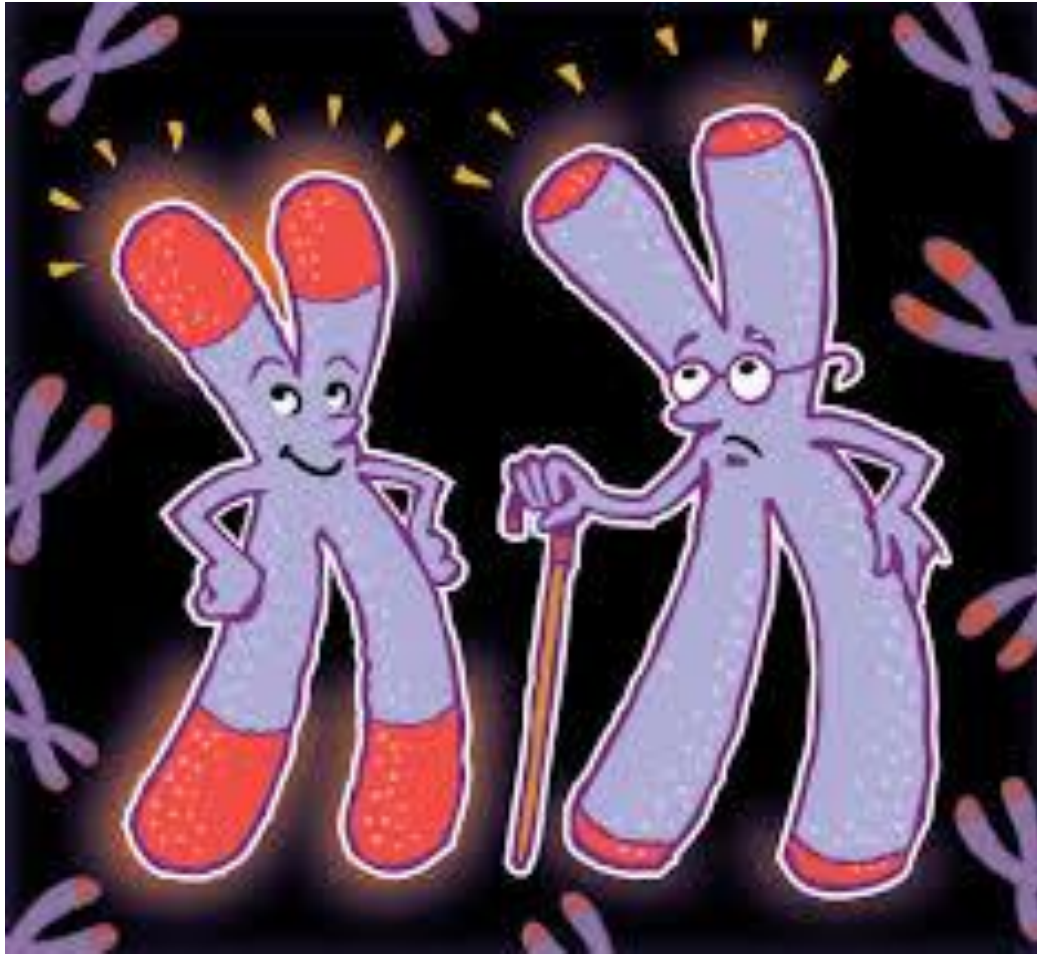


# Telomere Structure und Function (2)



Acting as buffers  
to **prevent loss of**  
**genetic information**





## SOME FACTORS IN AGING

### **Telomere Shortening**

chromosomes lose telomeres over time



### **Chronological Age:**

risk factors increase over time



### **Oxidative Stress:**

oxidants damage DNA, proteins and lipids



### **Glycation:**

glucose sugar binds to and inhibits DNA, proteins and lipids



**Resveratrol down-regulates the growth and telomerase activity of breast cancer cells in vitro.**

[Lanzilli G](#)<sup>1</sup>, [Fuggetta MP](#), [Tricarico M](#), [Cottarelli A](#), [Serafino A](#), [Falchetti R](#), [Ravaqnan G](#), [Turriziani M](#), [Adamo R](#), [Franzese O](#), [Bonmassar E](#).

- Resveratrol treatment in MCF-7 breast cancer cells down-regulated the telomerase activity of target cells and the nuclear levels of hTERT
- Resveratrol showed direct antiproliferative and pro-apoptotic effects

**Resveratrol-induced augmentation of telomerase activity delays senescence of endothelial progenitor cells.**

[Wang XB](#)<sup>1</sup>, [Zhu L](#), [Huang J](#), [Yin YG](#), [Kong XQ](#), [Rong QF](#), [Shi AW](#), [Cao KJ](#).

- Resveratrol dose-dependently inhibited the onset of EPC senescence in culture and increased telomerase activity and the expression of the catalytic subunit, hTERT
- Resveratrol delayed EPCs senescence in vitro, which may be dependent on telomerase activation!

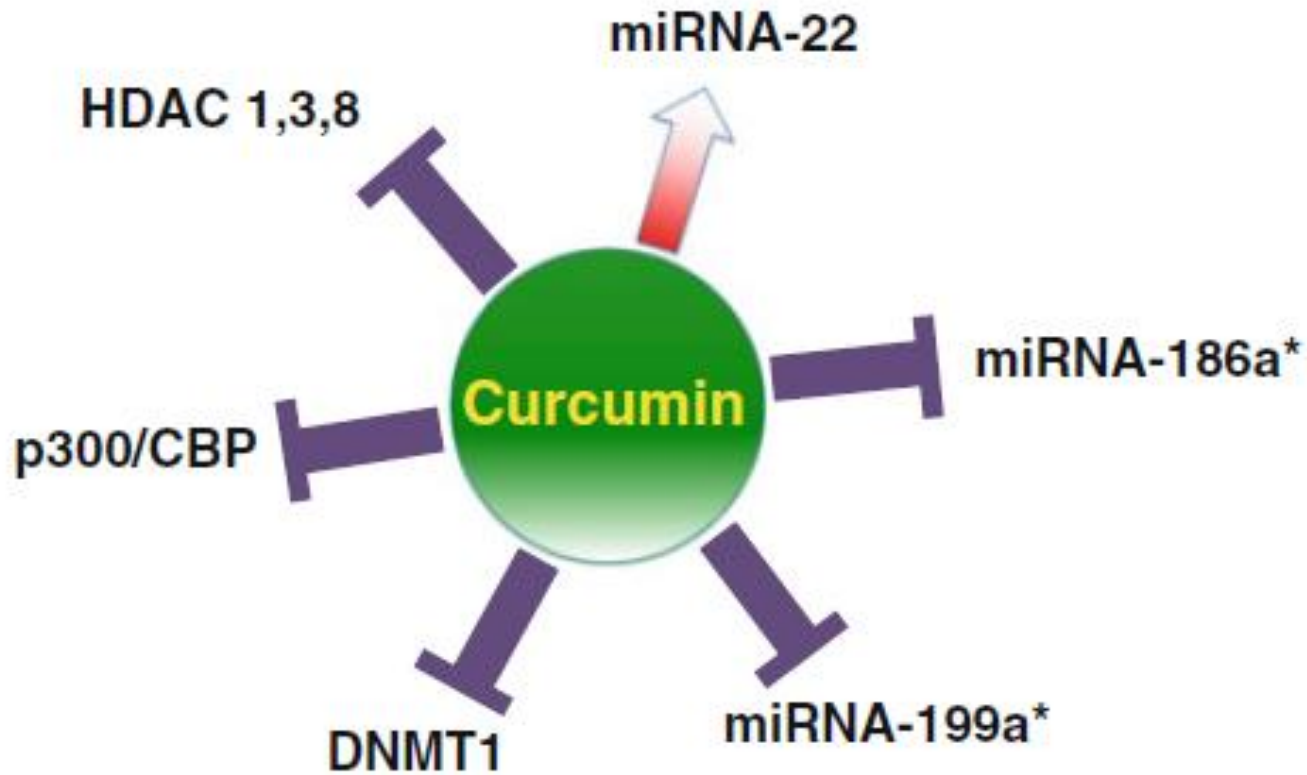




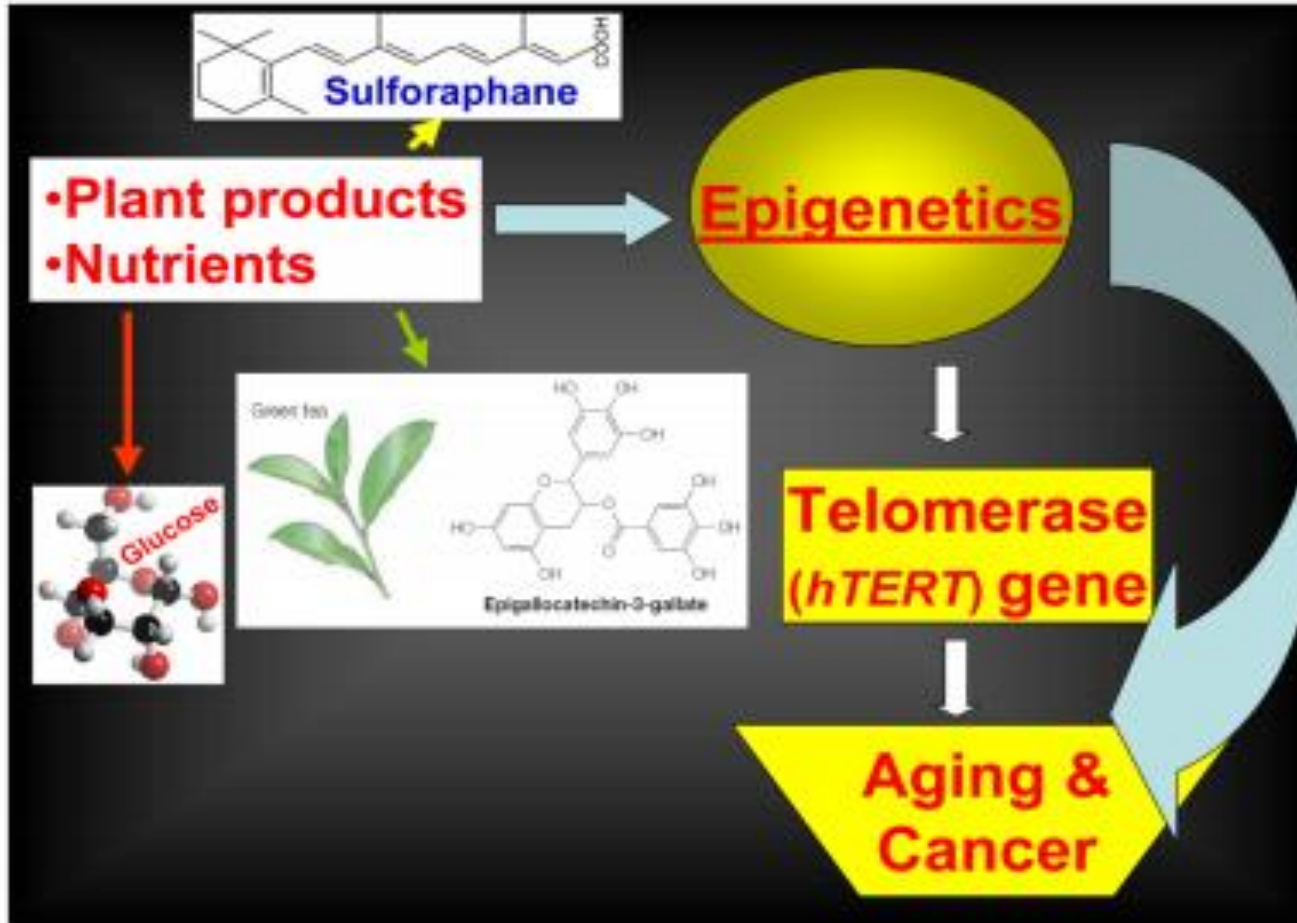
## Examples of dietary ingredients with epigenetic and chromatin remodeling properties

- Sulforanes from Brassica – HDAC inhibitors
- EGCG from green tea – DNA demethylation
- Genistein from soy – DNA methylation/demethylation
- Resveratrol from red grapes – affects NAD<sup>+</sup>- dependent histone deacetylases (i.e., SIRT1) that deacetylates histones and regulatory proteins like PGC-1 $\alpha$
- Lunasin from soy – chromatin binding peptide and inhibitor of histone acetylation

# Flavonoids act on mRNAs



# EGCG



# verzögert den Alterungsprozess und verlängert die Telomere

Die Pflanzen aus denen der Telomer-Complex® gewonnen wird beinhalten eine bis zu 10-fach höhere Wirkstoffkonzentration im Vergleich zu herkömmlichen Grundstoffen. Diese hohen Konzentrationen werden durch spezielle Kultivierungs/-Anbau und Herstellungsverfahren erreicht.



DAY

- + **Grünte-Extrakt 180 mg**  
(90 mg Epigallocatechingallat)
- + **Gerstengras-Extrakt 300 mg**  
(600 mcg Folsäure)
- + **Weizengras-Extrakt 150 mg**  
(6 mg Tocotrienole)

+ Vit B6 (4,2 mg), Vit B12 (7,5 mcg),  
Selen (55 mcg), Zink (10 mg)

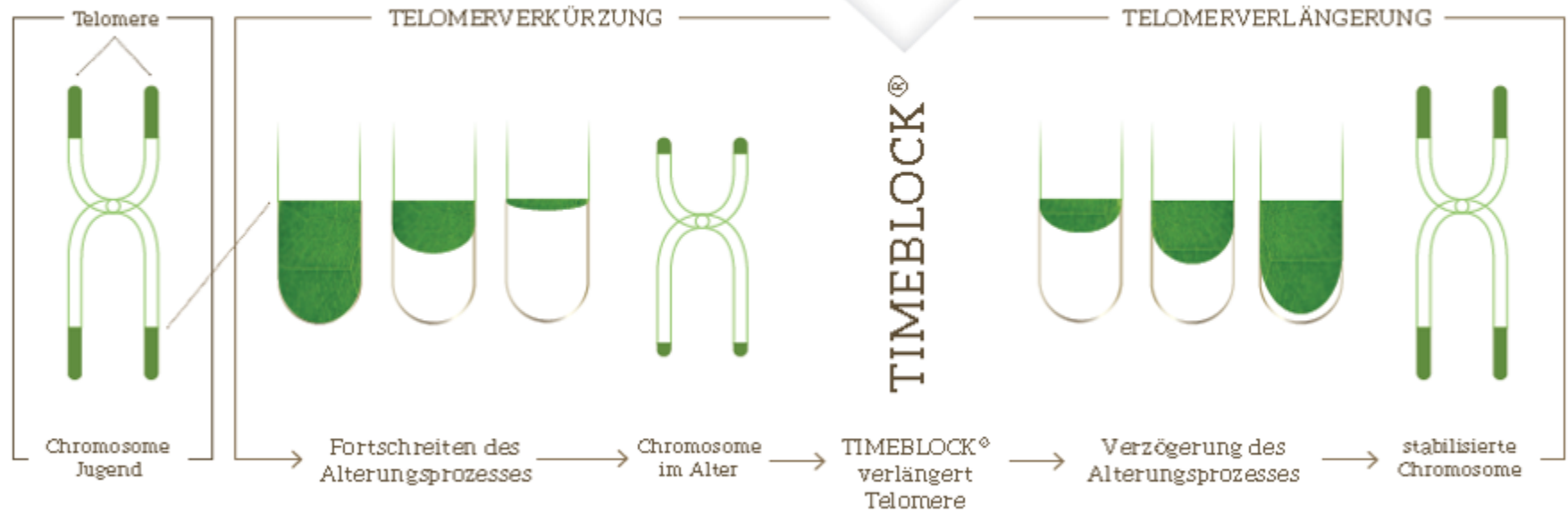


NIGHT



- + **Algen-Extrakt 100 mg**  
(Braunalgen-Polyphenole 60%)
- + **Traubenkern Extrakt 60 mg**  
(95% Proanthocyanidine, 65% OPC)
- + **Tagetes-Extrakt 50 mg**  
(2 mg Zeaxanthin  
10 mg Lutein)
- + **Tomaten-Extrakt 200 mg**  
(10 mg Lycopin)
- + **Weizengras -Extrakt 150 mg**  
(6 mg Tocotrienole)
- + **Shiitake-Extrakt 250 mg**  
(Cholecalciferol)

Telomere sind Schutzkappen der DNA und halten die Chromosome stabil. Bei jeder Zellteilung werden die Telomere verkürzt bis zu einem seneszenten Stadium. Danach kann sich die Zelle nicht mehr teilen und geht in die Apoptose. Die Telomerlänge ist ein Marker für den Alterungsprozess.





# Affinity

