



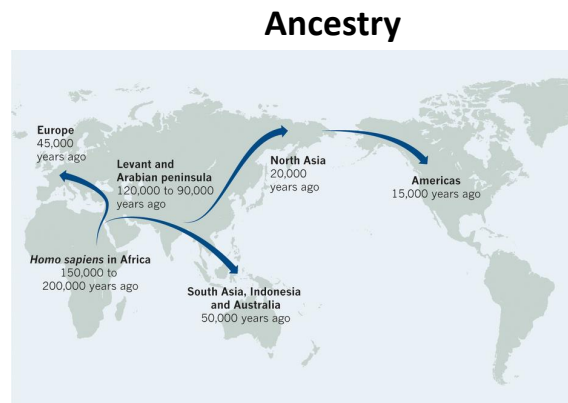
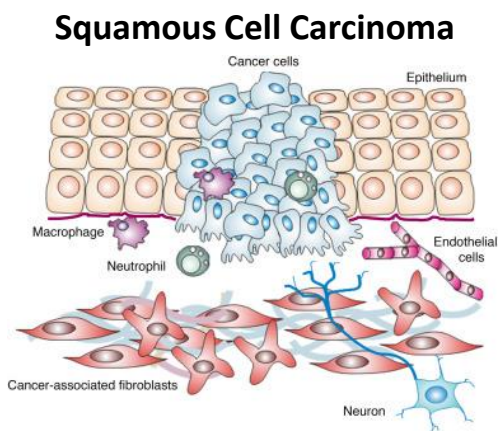
Genetic/epigenetic basis of ethnic differences in cancer predisposition

Gian Paolo Dotto

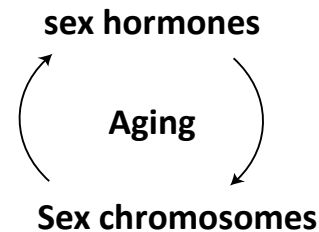
Epigenetics / gene transcription

Cell-cell communication

Field cancerization



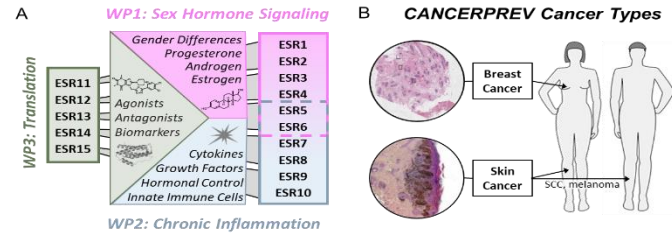
European Research Council



Cancer Prevention: linking science to society



www.cancerprev.ch



Brussels 27-28 Oct 2016



Frontier Research
and
Science Diplomacy

Sharing of scientific knowledge across cultural / ethnic divides

Empowerment for individuals and societies

2 Types of Cancer Prevention:

Primary cancer prevention (at the level of populations)

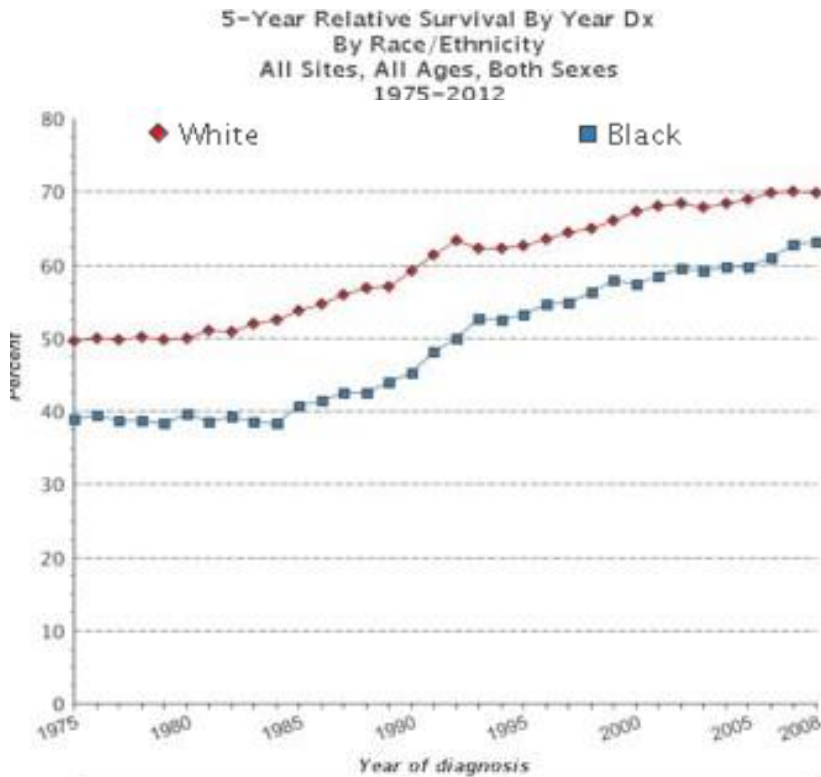
- Life style, socio-economic factors
- infectious diseases
- Aging
- sex
- ancestry

Secondary cancer prevention (at the level of individuals)

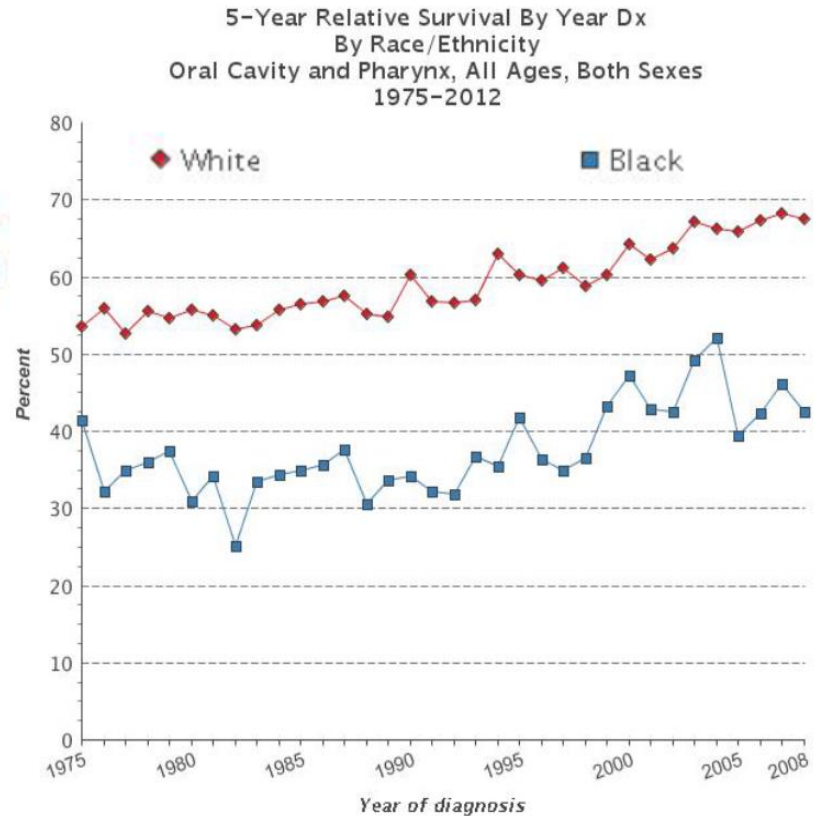
- Detection / treatment of premalignant lesions
- Reduced risk of cancer relapse

Differences in cancer survival between “White” and “Black” populations

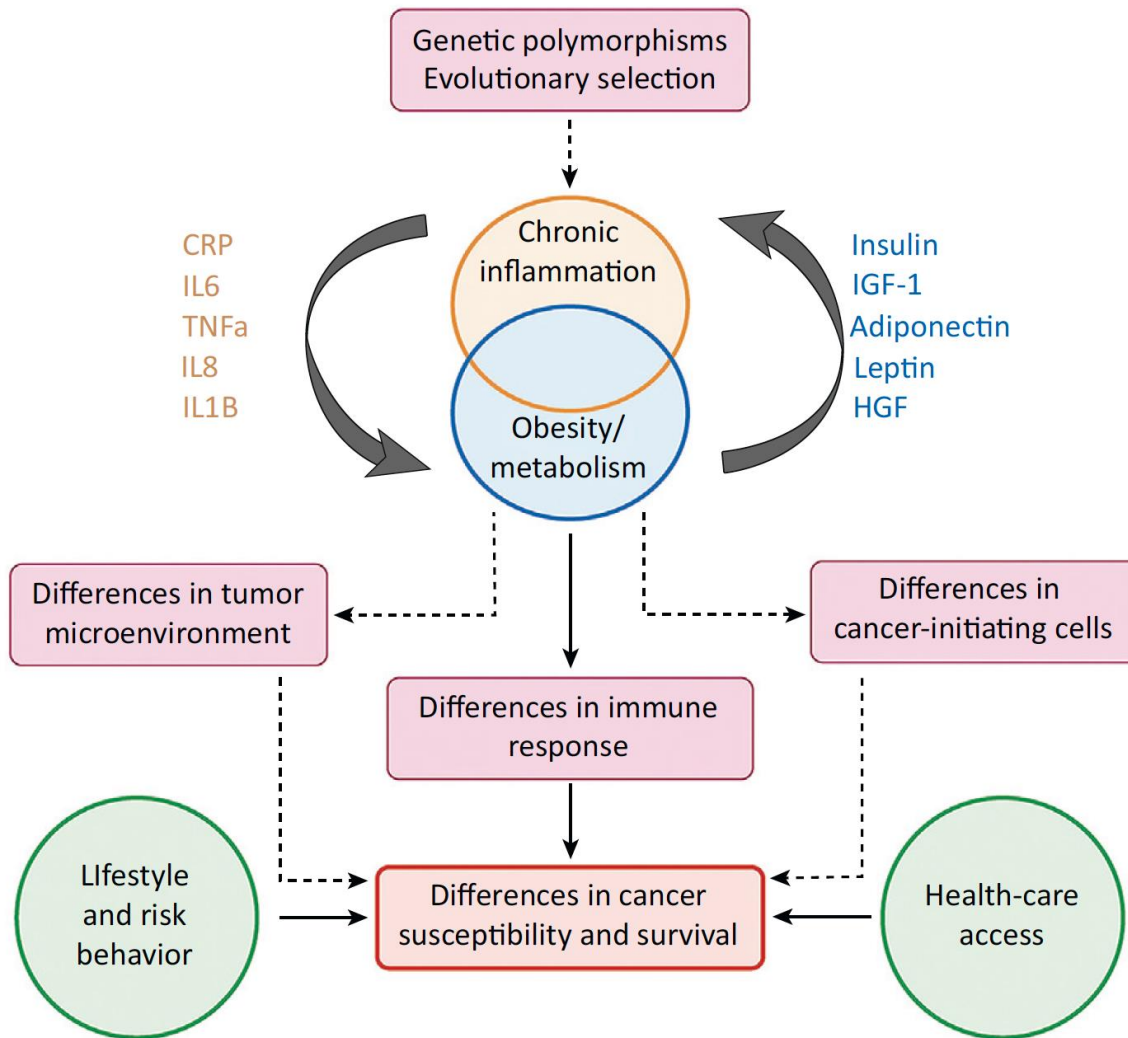
All cancer types



Head & Neck Squamous Cell Carcinoma



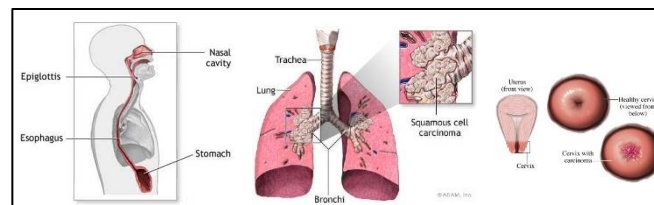
Determinants of cancer susceptibility



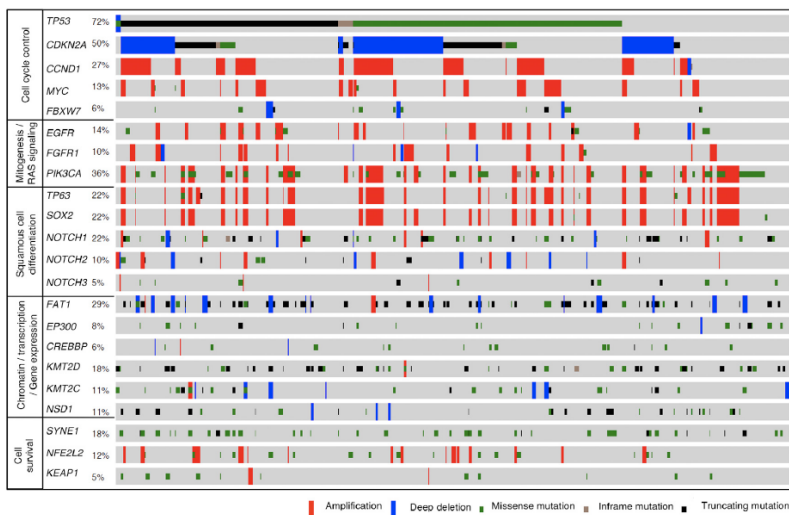
Squamous Cell Cancers: A Unified Perspective on Biology and Genetics

G. Paolo Dotto^{1,2,*} and Anil K. Rustgi^{3,*}

Cancer Cell 2016



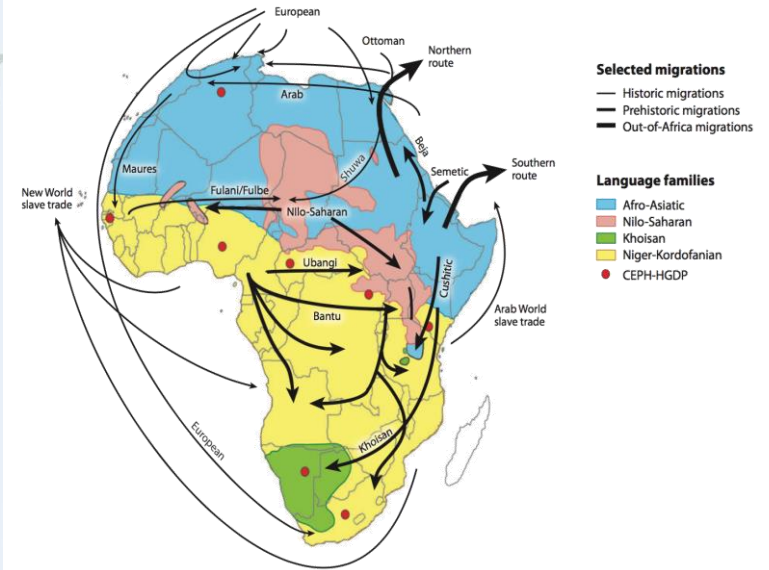
Pattern of Frequently Altered Genes in HNSCC



The Notch / p63 signaling network



Higher genetic variability of Black African populations because of migration bottlenecks : the “Out of Africa hypothesis”



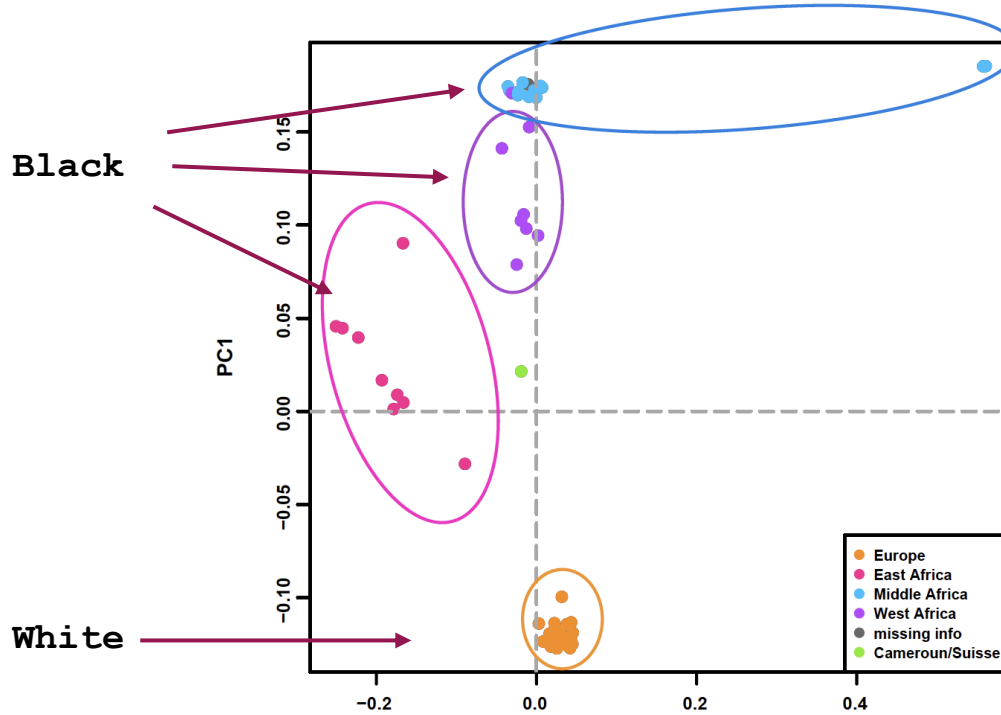
(Michael C. Campbell, 2008)

Peter B. deMenocal & Chris Stringer *Nature* 2016, **538**, 49–50

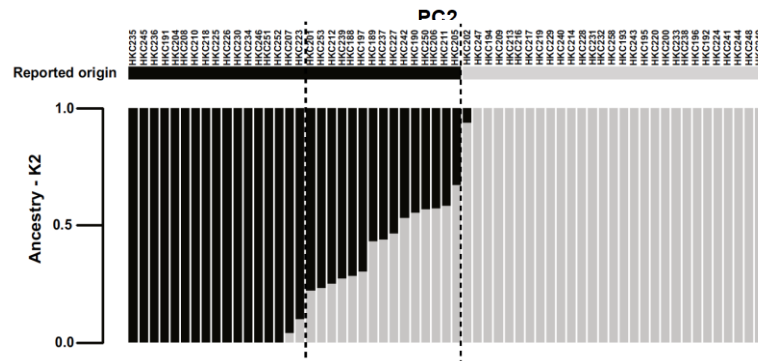
Greater genetic variability of primary foreskin keratinocytes from boys of Black versus White ancestries



PCA of Single Nucleotide Polymorphism profiles

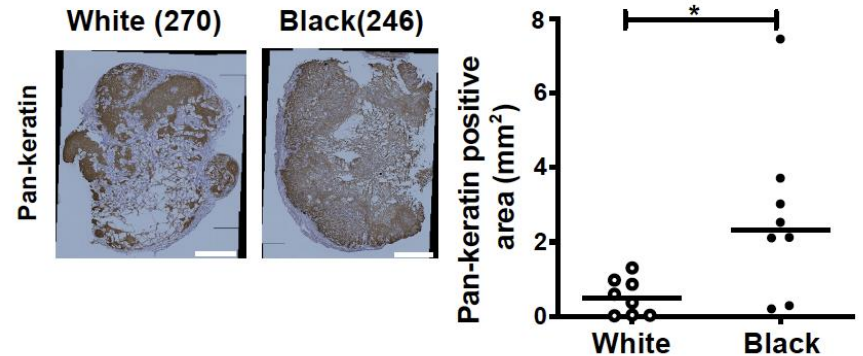
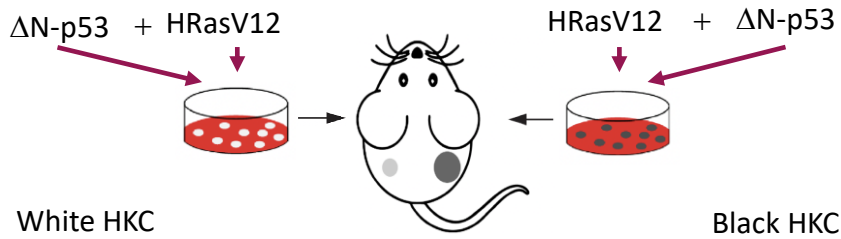
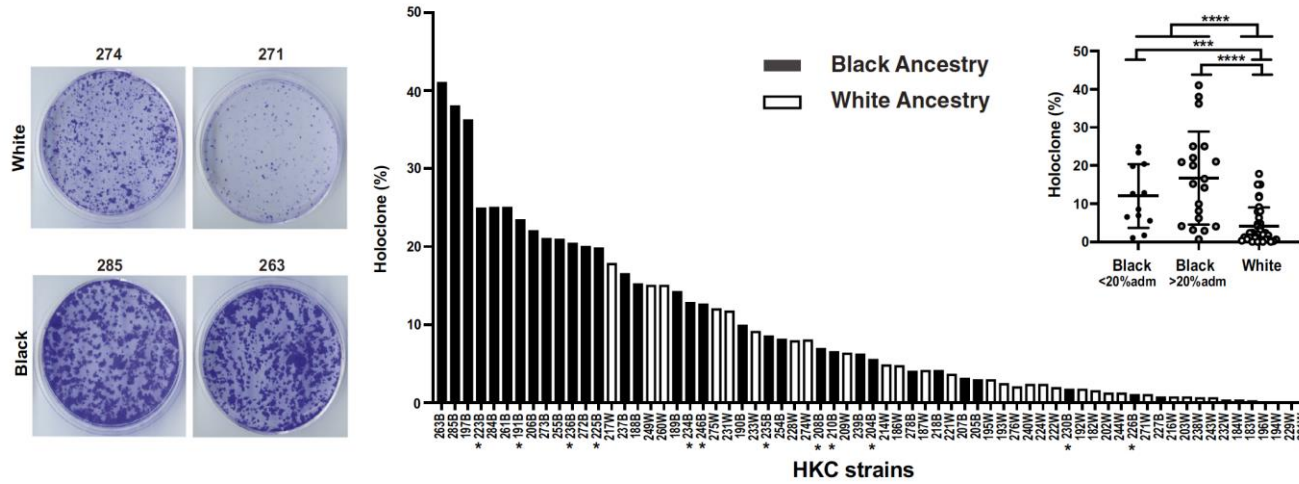


Admixture analysis

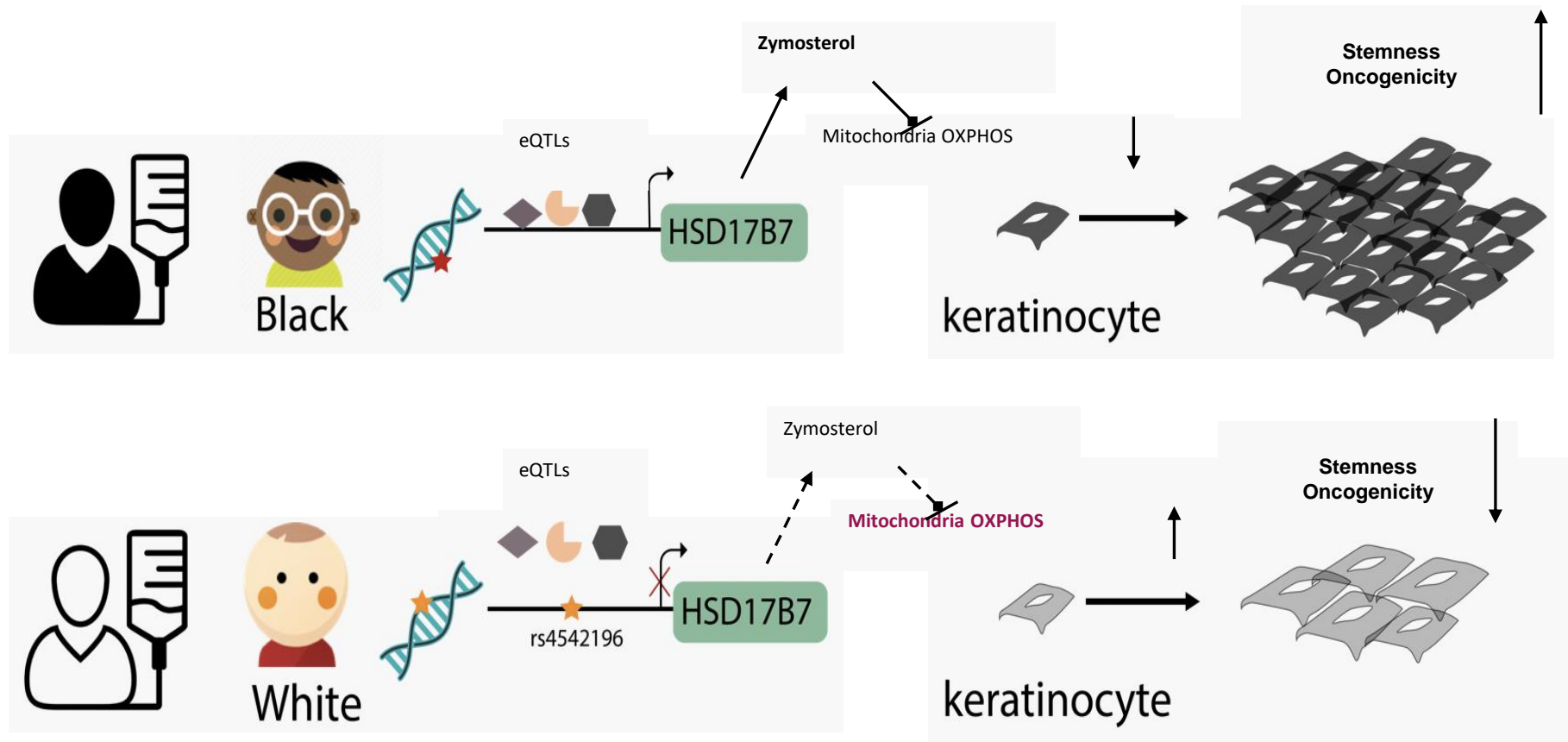




Higher stem cell potential and oncogenicity of primary keratinocytes from Black versus White boys



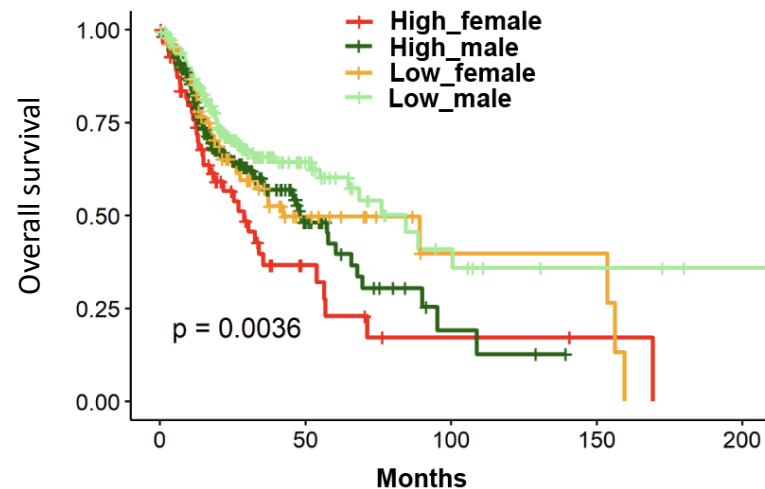
Differential expression of the *HSD17B7* gene in Black versus White keratinocytes promotes stem cell potential and oncogenesis



HSD17B7 (17-beta-hydroxysteroid dehydrogenase) is an enzyme involved in sex hormones activation and cholesterol biosynthesis



HSD17B7 association with worse patients' survival



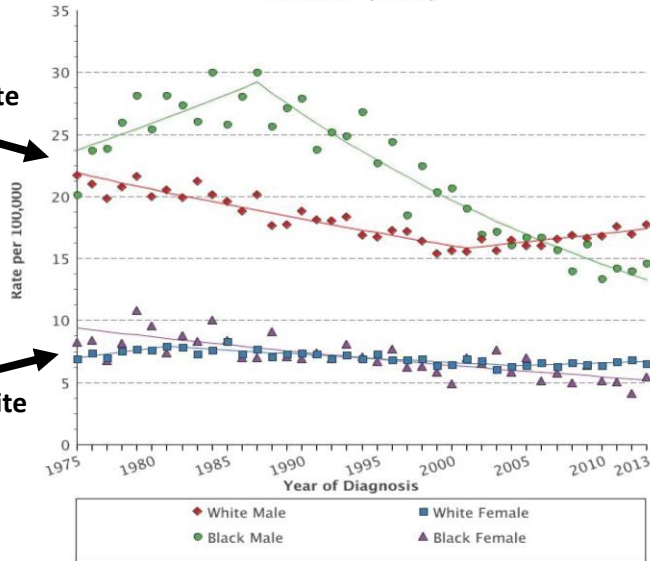
Ancestry – and Sex- related differences in cancer incidence and survival



Head/Neck Squamous Cell Carcinoma

Incidence

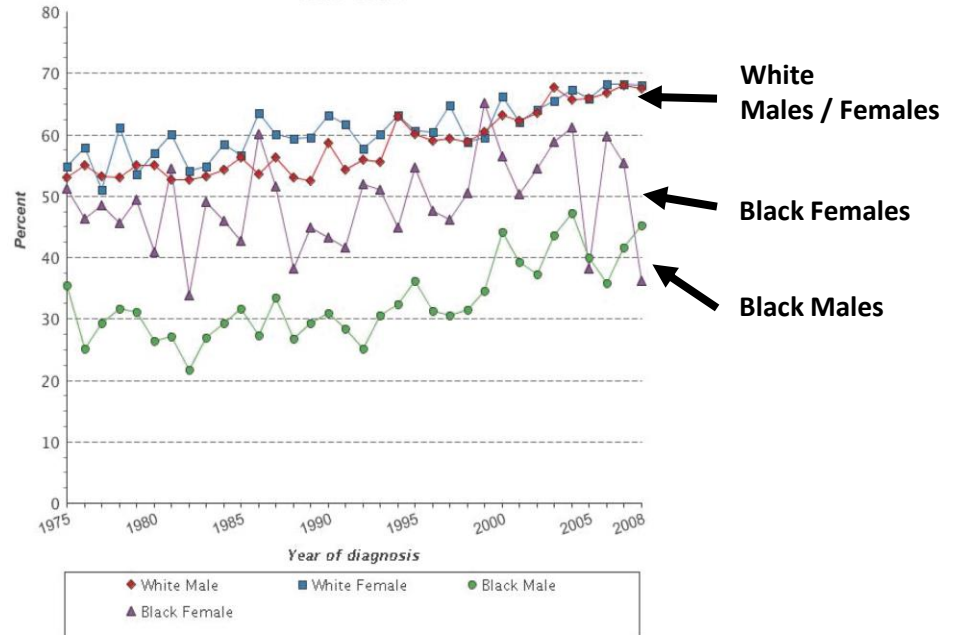
Age-Adjusted SEER Incidence Rates
By Race and Sex
Oral Cavity and Pharynx, All Ages,
1975-2013 (SEER 9)



Cancer sites include invasive cases only unless otherwise noted. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). Regression lines are calculated using the Joinpoint Regression Program Version 4.2.0, April 2015, National Cancer Institute. Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

Survival

5-Year Relative Survival By Year Dx
By Race and Sex
Oral Cavity and Pharynx, All Ages,
1975-2012

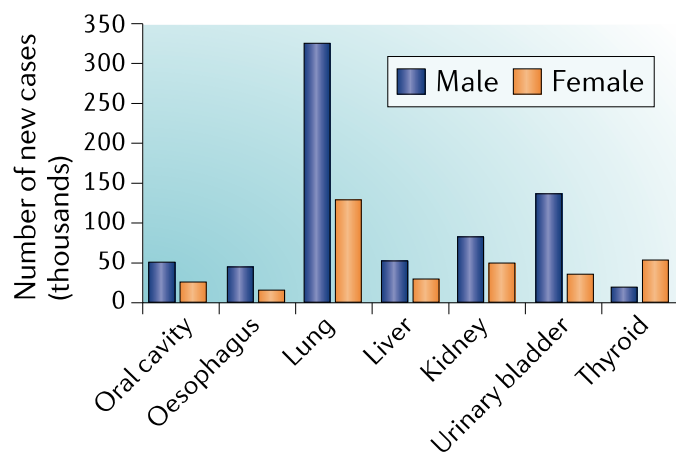


Cancer sites include invasive cases only unless otherwise noted. The 5-year survival estimates are calculated using monthly intervals.

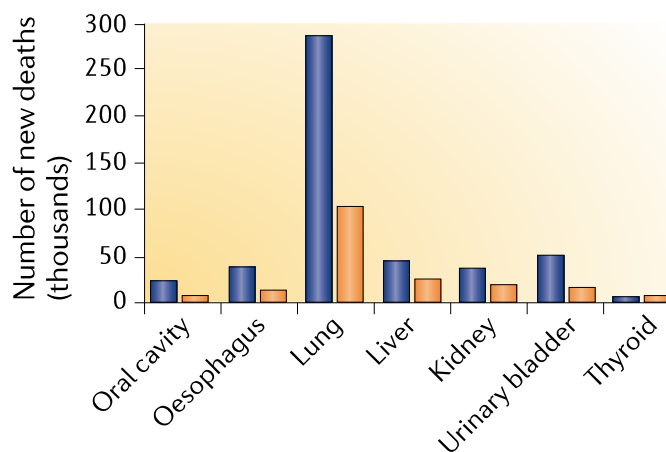
Sexual dimorphism in cancer

Andrea Clocchiatti, Elisa Cora, Yosra Zhang and G. Paolo Dotto

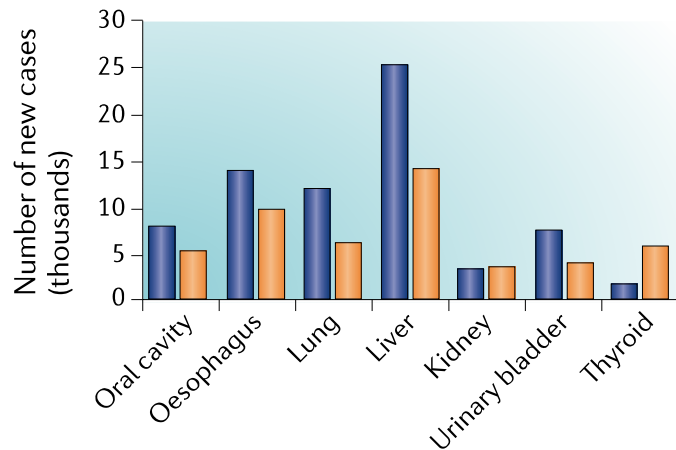
a Incidence: European region



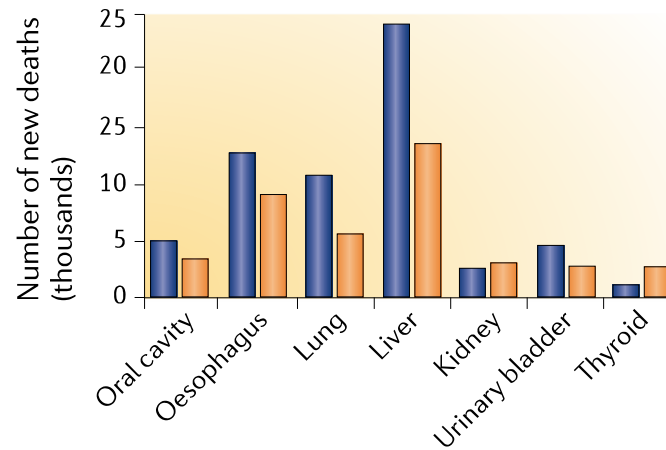
b Mortality: European region



Incidence: African region



Mortality: African region



Sex Hormones and Anticancer Immunity

Berna C. Özdemir^{1,2} and Gian-Paolo Dotto^{2,3,4}



JOURNAL OF CLINICAL ONCOLOGY

COMMENTS AND CONTROVERSIES

Sex Differences in Efficacy and Toxicity of Systemic Treatments: An Undervalued Issue in the Era of Precision Oncology

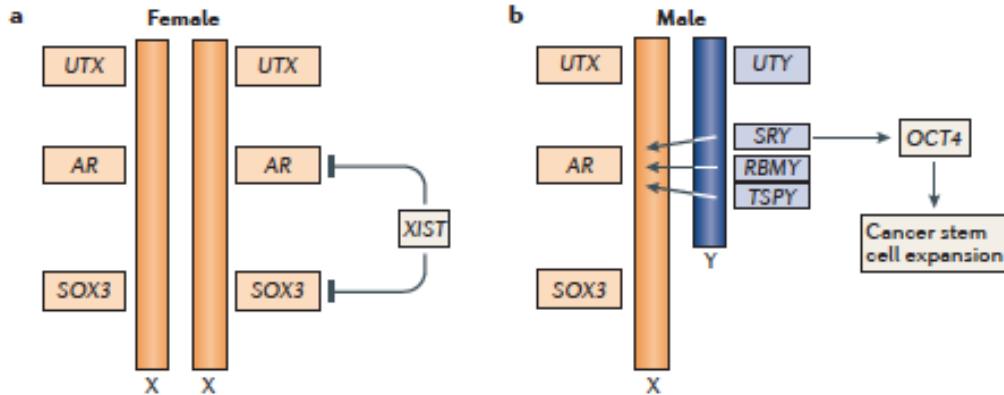
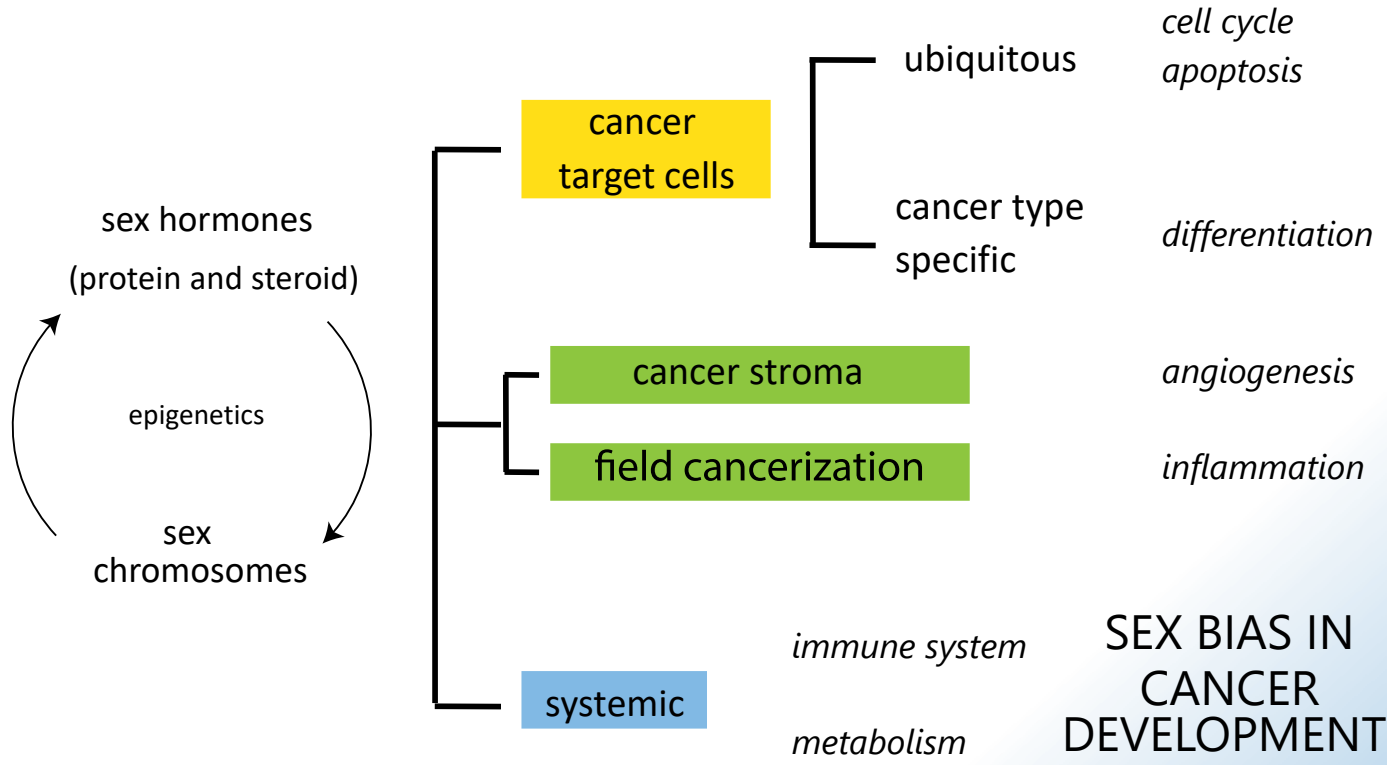
Berna C. Özdemir, *Lausanne University Hospital; and International Cancer Prevention Institute, Lausanne, Switzerland*

Chantal Csajka, *Lausanne University Hospital; and University of Lausanne, Lausanne, Switzerland*

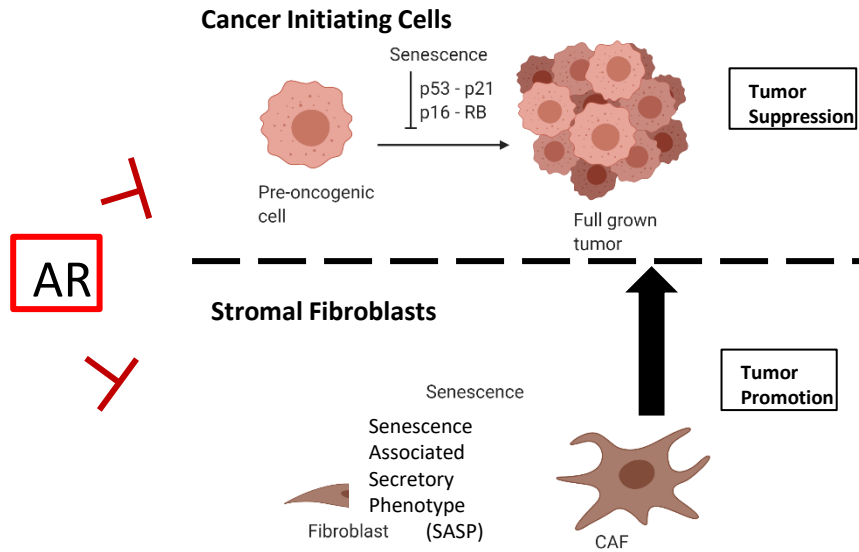
Gian-Paolo Dotto, *International Cancer Prevention Institute; University of Lausanne, Lausanne, Switzerland; and Massachusetts General Hospital, Charlestown, MA*

Anna Dorothea Wagner, *Lausanne University Hospital, Lausanne, Switzerland*

Interplay between sex hormones and chromosomes



Androgen Receptor, a double-edged role in senescence and cancer



nature communications



Article

<https://doi.org/10.1038/s41467-023-42239-w>

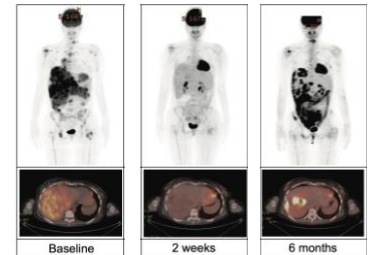
Androgen receptor is a determinant of melanoma targeted drug resistance

Received: 27 May 2022

Accepted: 2 October 2023

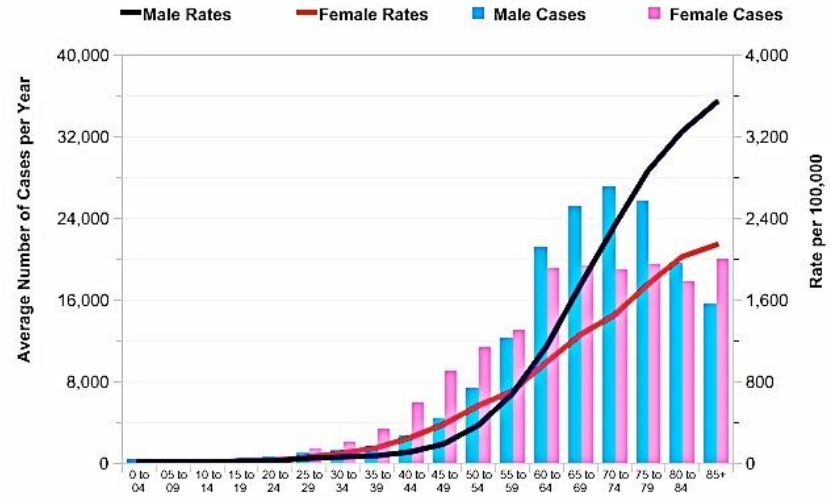
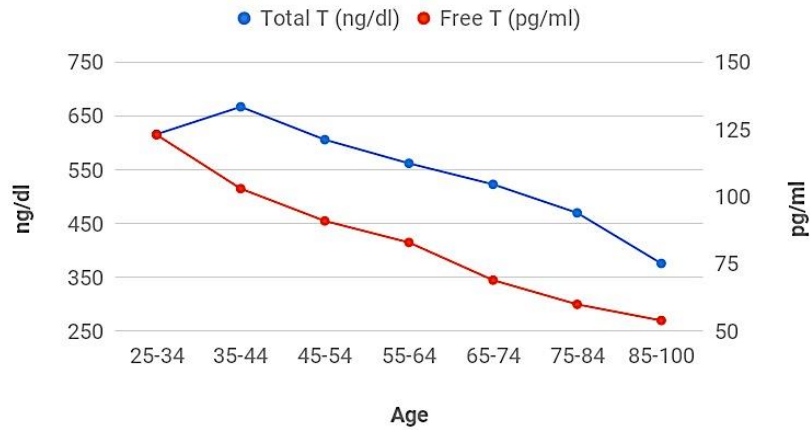
Published online: 14 October 2023

Anastasia Samarkina¹, Markus Kirolos Youssef¹, Paola Ostano², Soumitra Ghosh³, Min Ma⁴, Beatrice Tassone¹, Tatiana Proust¹, Giovanna Chiarino⁵, Mitchell P. Levesque⁶, Sandro Goruppi¹ & Gian Paolo Dotto^{1,4,5,6}

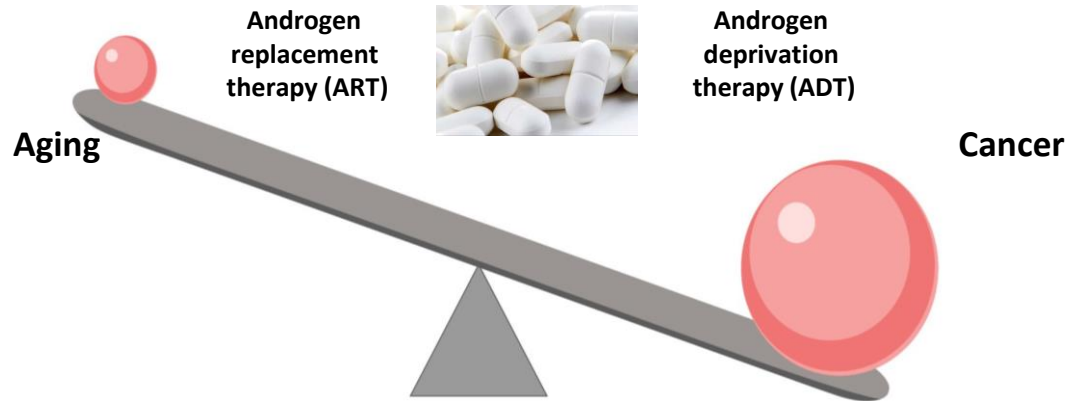


Reduced androgens levels in aging populations and cancer risk

Total and Free Testosterone Levels in Men by Age



Our Aging World: The Striking Statistics About Cancer Cancer Research UK 2014



Published online: April 12, 2019


Opinion



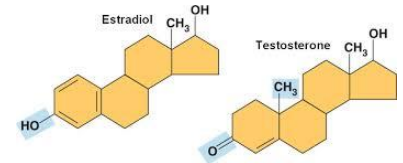
EMBO
Molecular Medicine

e10668 | 2019

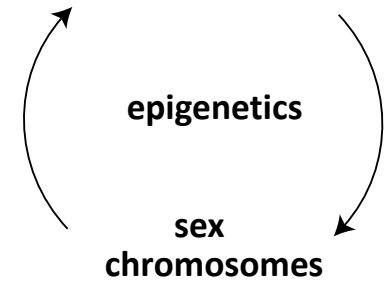
Gender and sex—time to bridge the gap

Gian-Paolo Dotto 

there can be a continuum between male and female sex determinants at the individual level of importance for personalized medicine



sex hormones



Acknowledgements

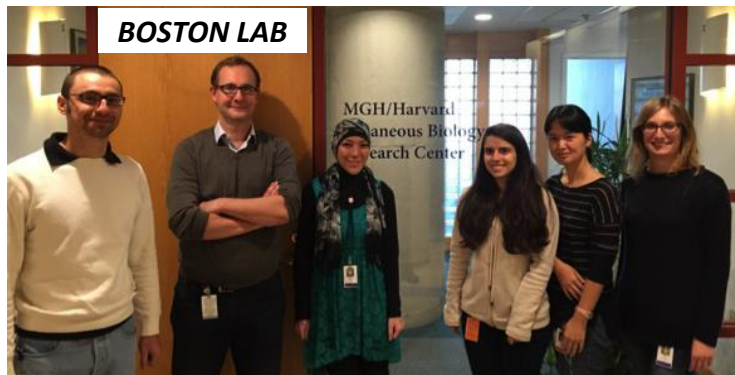


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