L’alimentazione:
ruolo nella prevenzione e nella cura

SAPIENZA
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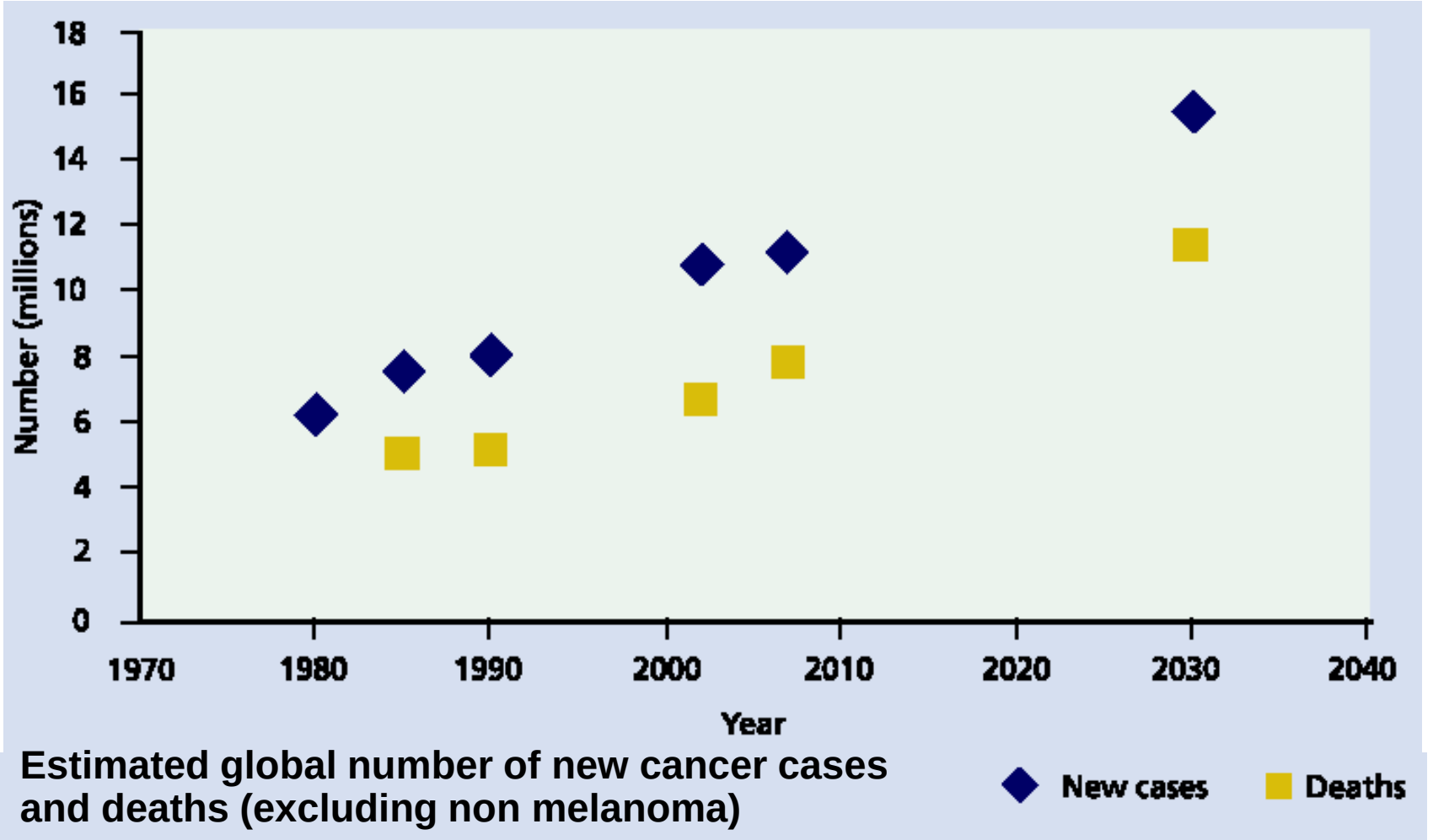
SANT' ANDREA
FACOLTÀ DI MEDICINA E
PSICOLOGIA

The cancer burden



Estimated global number of new cancer cases and deaths (excluding non melanoma)

World Cancer Research Fund/American Institute for Cancer Research: "Policy and Action for Cancer Prevention." Washington DC: AICR, 2009

JAMA Oncology | Special Communication

Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life-years for 32 Cancer Groups, 1990 to 2015

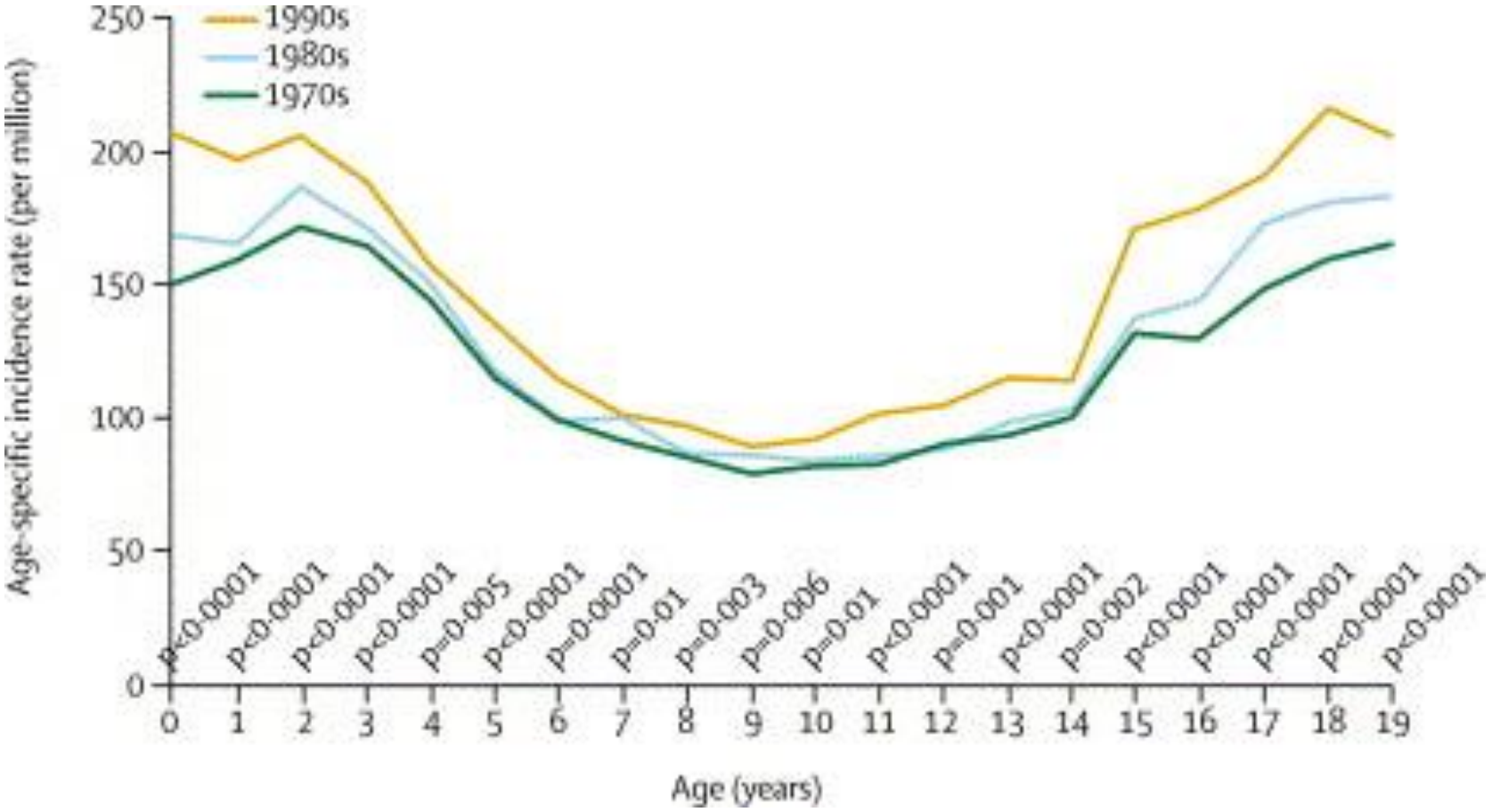
A Systematic Analysis for the Global Burden of Disease Study

FINDINGS In 2015, there were 17.5 million cancer cases worldwide and 8.7 million deaths. Between 2005 and 2015, cancer cases increased by 33%, with population aging contributing 16%, population growth 13%, and changes in age-specific rates contributing 4%. For men, the most common cancer globally was prostate cancer (1.6 million cases). Tracheal, bronchus, and lung cancer was the leading cause of cancer deaths and DALYs in men (1.2 million deaths and 25.9 million DALYs). For women, the most common cancer was breast cancer (2.4 million cases). Breast cancer was also the leading cause of cancer deaths and DALYs for women

JAMA Oncol. 2017;3(4):524-548.

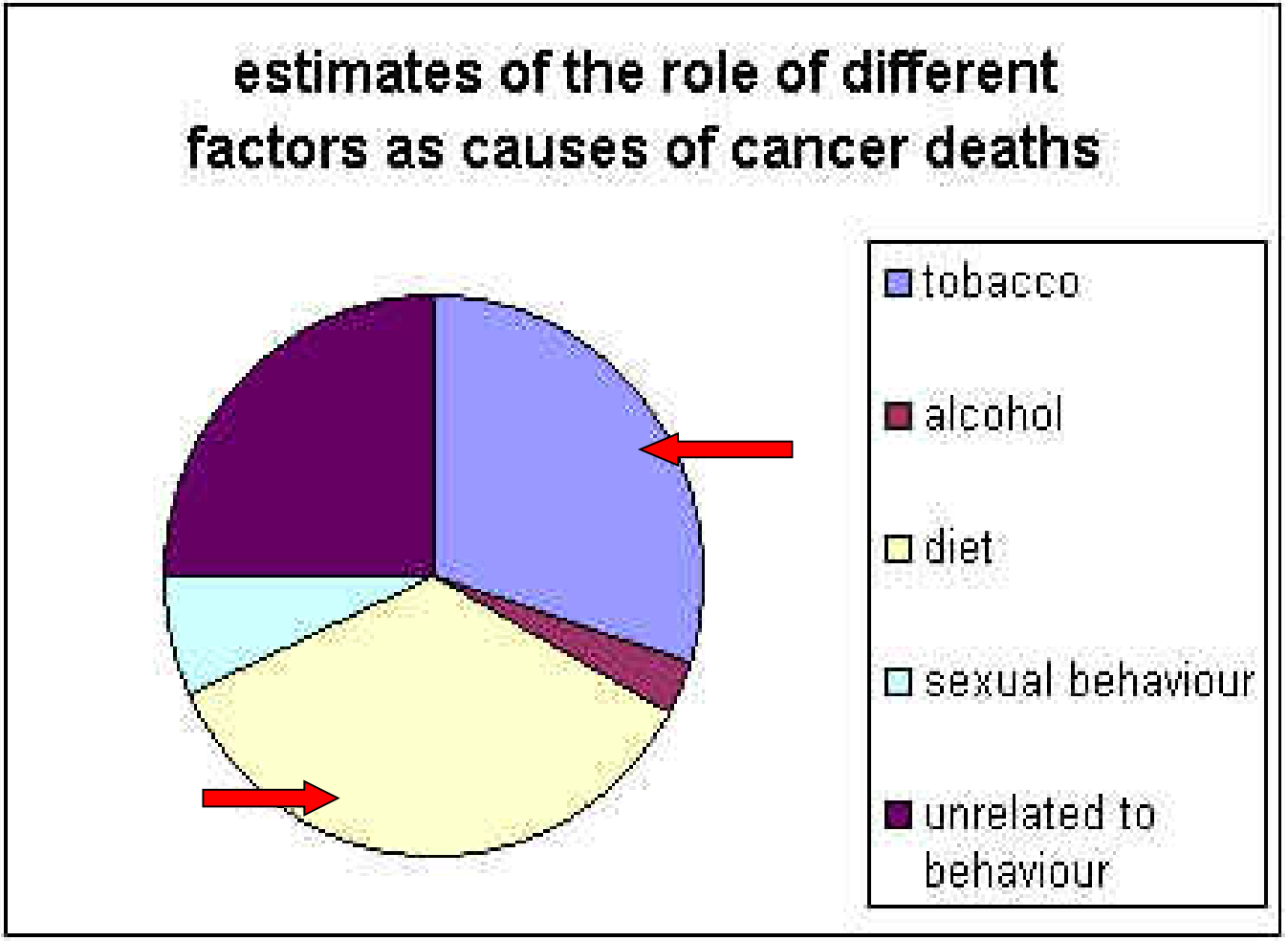
Incrementi in ogni gruppo di età

- **Bambini e adolescenti**

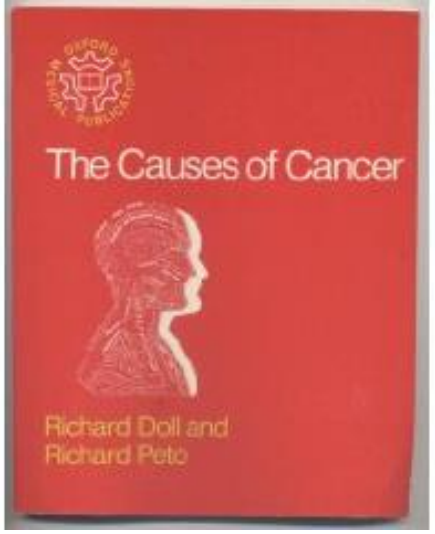


Steliarova-Foucher E, Lancet, 2004

I tumori sono prevenibili

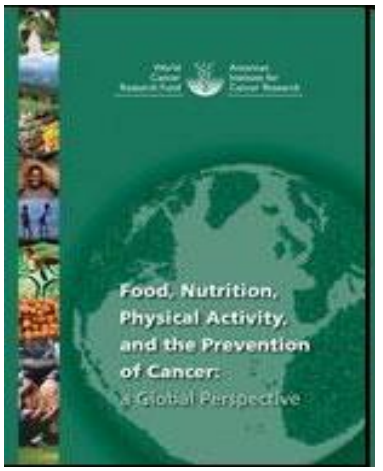


Adapted from Doll & Peto, JNCI, 1981



1981

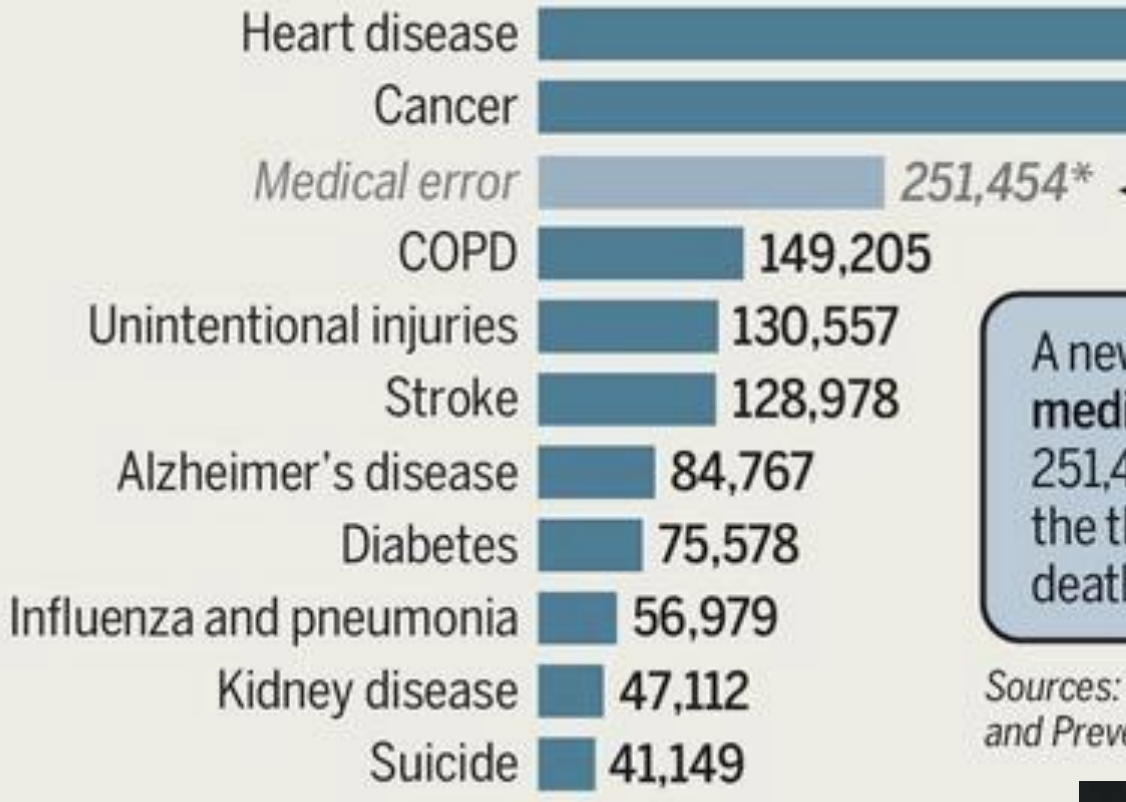
1997



2007

Top ten causes of death, 2013

Estimate



*Authors' calculation

A new study estimates that **medical error** was the cause of 251,454 deaths in 2013, making it the third-most common cause of death in the U.S.

Sources: Centers for Disease Control and Prevention; BMJ Publishing group Ltd.


ANALYSIS

Medical error—the third leading cause of death in the US

Medical error is not included on death certificates or in rankings of cause of death. Martin Makary and Michael Daniel assess its contribution to mortality and call for better reporting

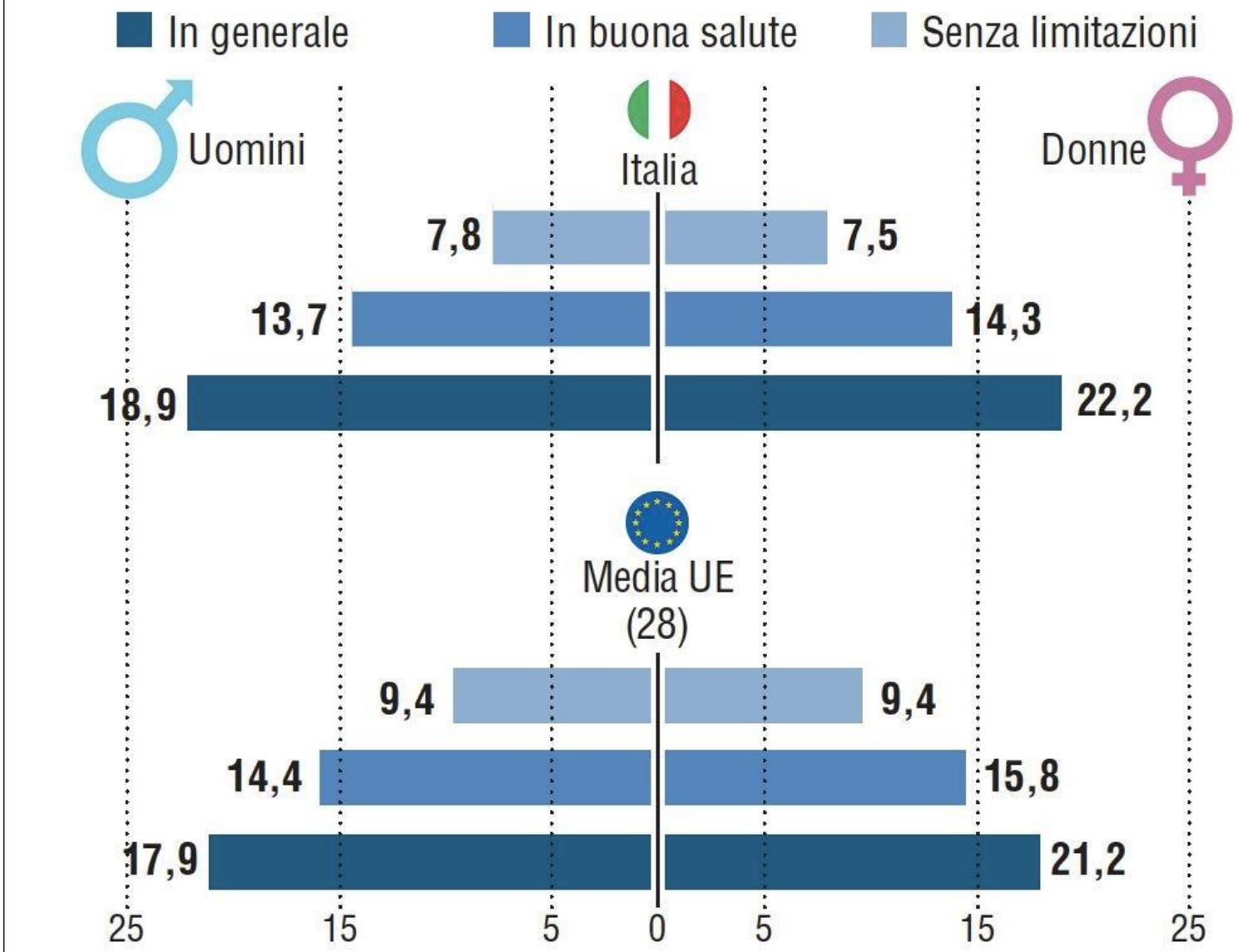
Martin A Makary professor, Michael Daniel research fellow

How big is the problem?

Death from medical care itself

Gli anziani italiani

Speranza di vita (in anni) per i 65enni

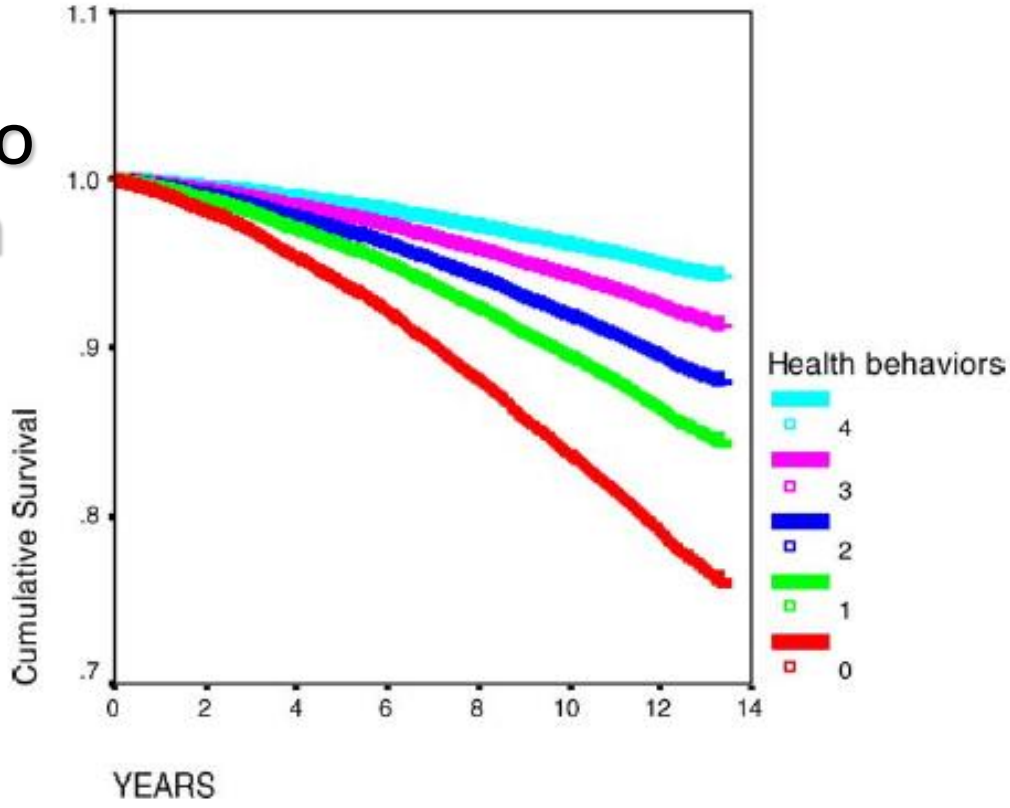


Fonte: Istat

ANSA centimetri

Stile di vita e mortalità

Il rischio di tumore in donne e uomini di 45-79 aa è aumentato di due volte e mezzo **in chi non ha nessun comportamento salutare**, rispetto a chi ne ha 4 (astensione dal fumo, attività fisica, moderato alcool, vit C >50 mmol/l)



Mortality	No. of Events/*n*	Number of Health Behaviours				
		4 (*n* = 498)	3 (*n* = 761)	2 (*n* = 564)	1 (*n* = 198)	0 (*n* = 36)
Mortality rate (*n*)	—	15.5 (77)	25.9 (197)	34.9 (197)	44.4 (88)	55.6 (20)
All cause	579/2,057	1	1.50 (1.15–1.97)	1.90 (1.44–2.50)	2.49 (1.81–3.43)	3.41 (2.05–5.68)
Cardiovascular	270/2,057	1	1.75 (1.12–2.72)	2.35 (1.51–3.64)	2.71 (1.63.–4.51)	3.76 (1.75–8.08)
Cancer	227/2,057	1	1.35 (0.92–1.97)	1.34 (0.89–2.02)	2.22 (1.38–3.55)	2.46 (1.03–5.86)

All values given as relative risk (95% confidence intervals)

Khaw KT, PLoS Med, 2008

Quando più è meglio

Individui con 4 vs nessun comportamento salutare hanno una riduzione del rischio di morte equivalente ad avere 14 anni di meno

La differenza in sopravvivenza si è riscontrata anche in individui con malattie croniche

Khaw KT, PLoS Med, 2008

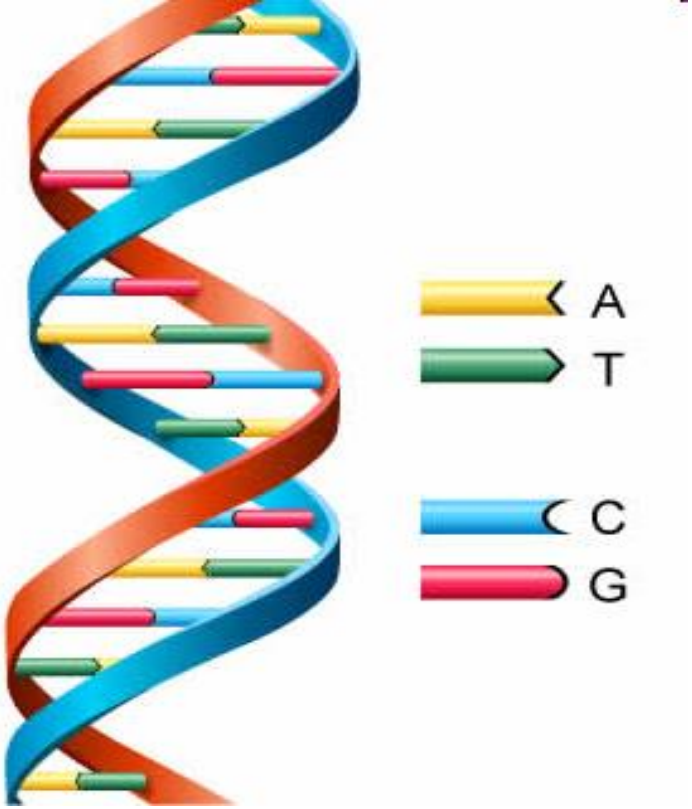
Stile di vita e mortalità in anziani Europei: the Hale Project

Table 3. Cox Proportional Hazard Ratios and Population-Attributable Risks of the Combined Diet and Lifestyle Factors for 10-Year All-Cause and Cause-Specific Mortality in Elderly Europeans

Mortality	No. of Protective Factors			
	0-1 (n = 246)	2 (n = 702)	3 (n = 954)	4 (n = 437)
All-cause				
HR (95% CI)	1.00	0.62 (0.51-0.75)	0.45 (0.37-0.54)	0.35 (0.28-0.44)
PAR (%)		14	37	60
Cancer				
HR (95% CI)	1.00	0.65 (0.45-0.96)	0.42 (0.28-0.62)	0.31 (0.19-0.50)
PAR (%)		14	38	60

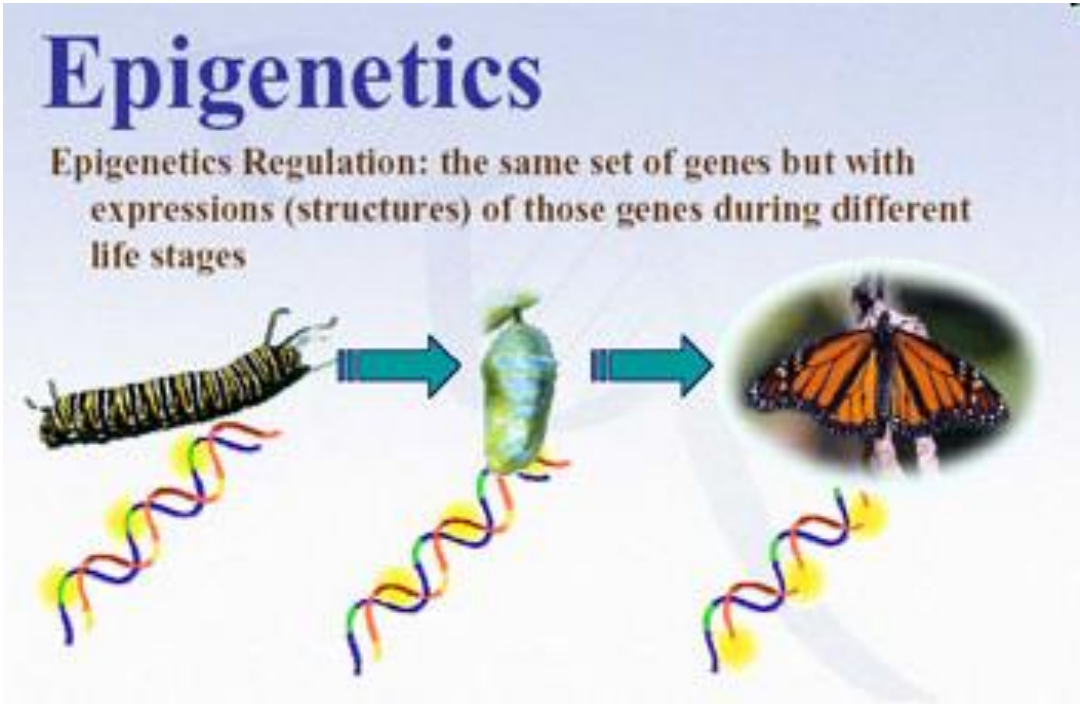
CI, confidence interval; HR, hazards ratio; PAR, population attributable risk.

Knoops KTB, JAMA, 2004



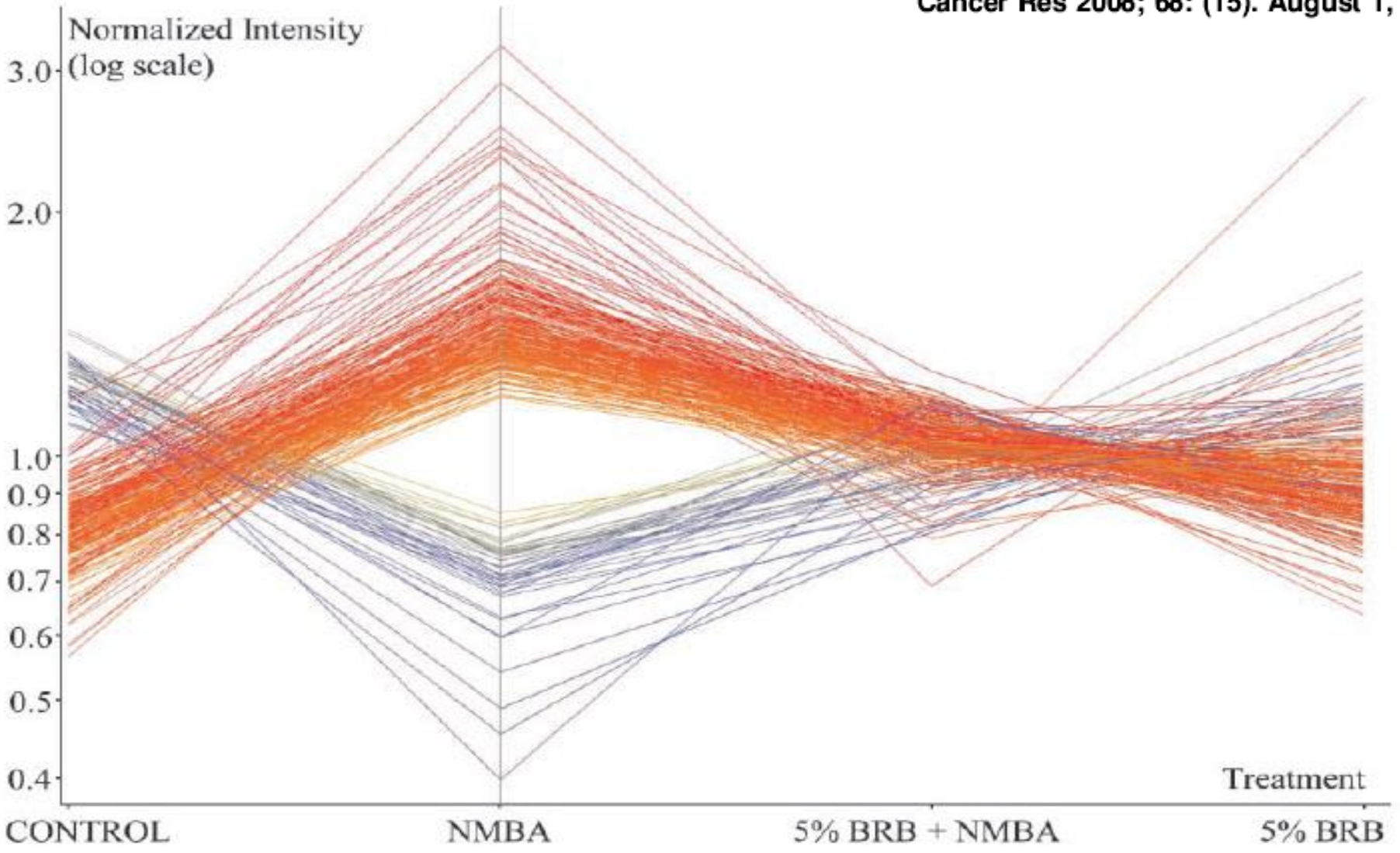
Dal dogma della biologia molecolare…

… all’epigenetica



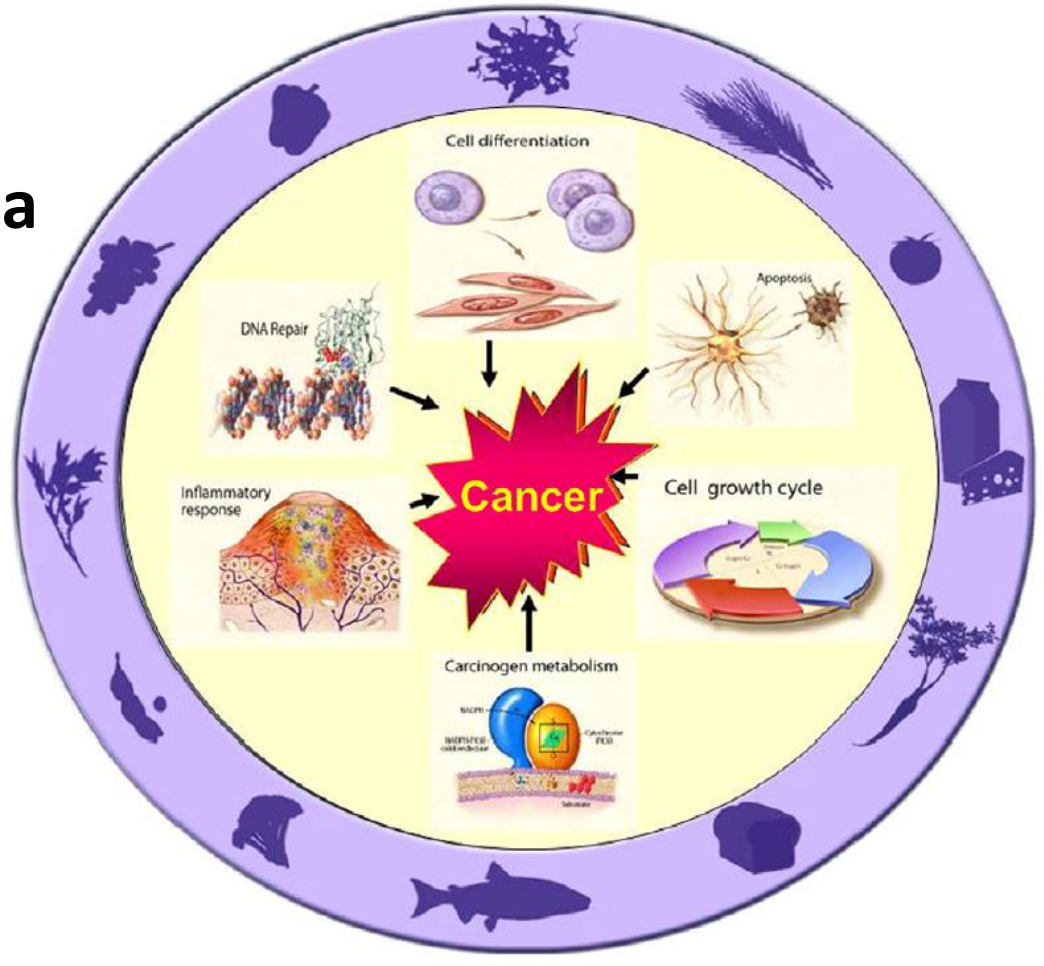
Un concentrato di more ripristina l'espressione di geni alterati da carcinogeno

Cancer Res 2008; 68: (15). August 1, 2008



Proliferazione, apoptosi, differenziazione, DNA repair, angiogenesi, infiammazione, metabolismo di carcinogeni, regolazione endocrina, sono tutti modulabili da uno o più cibi e dai loro costituenti.

Dei 25.000 fitocomponenti fino ad oggi noti, oltre 500 hanno documentata attività antitumorale



Association of Dietary Patterns With Cancer Recurrence and Survival in Patients With Stage III Colon Cancer

Jeffrey A. Meyerhardt, MD, MPH
Donna Niedzwiecki, PhD
Donna Hollis, MS
Leonard B. Saltz, MD
Frank B. Hu, MD, PhD
Robert J. Mayer, MD
Heidi Nelson, MD
Renaud Whittom, MD, FRCPC
Alexander Hantel, MD
James Thomas, MD
Charles S. Fuchs, MD, MPH

JAMA, August 15, 2007—Vol 298, No. 7

Table 4. Associations Between Colon Cancer Recurrence and Mortality and the Western Dietary Pattern[a]

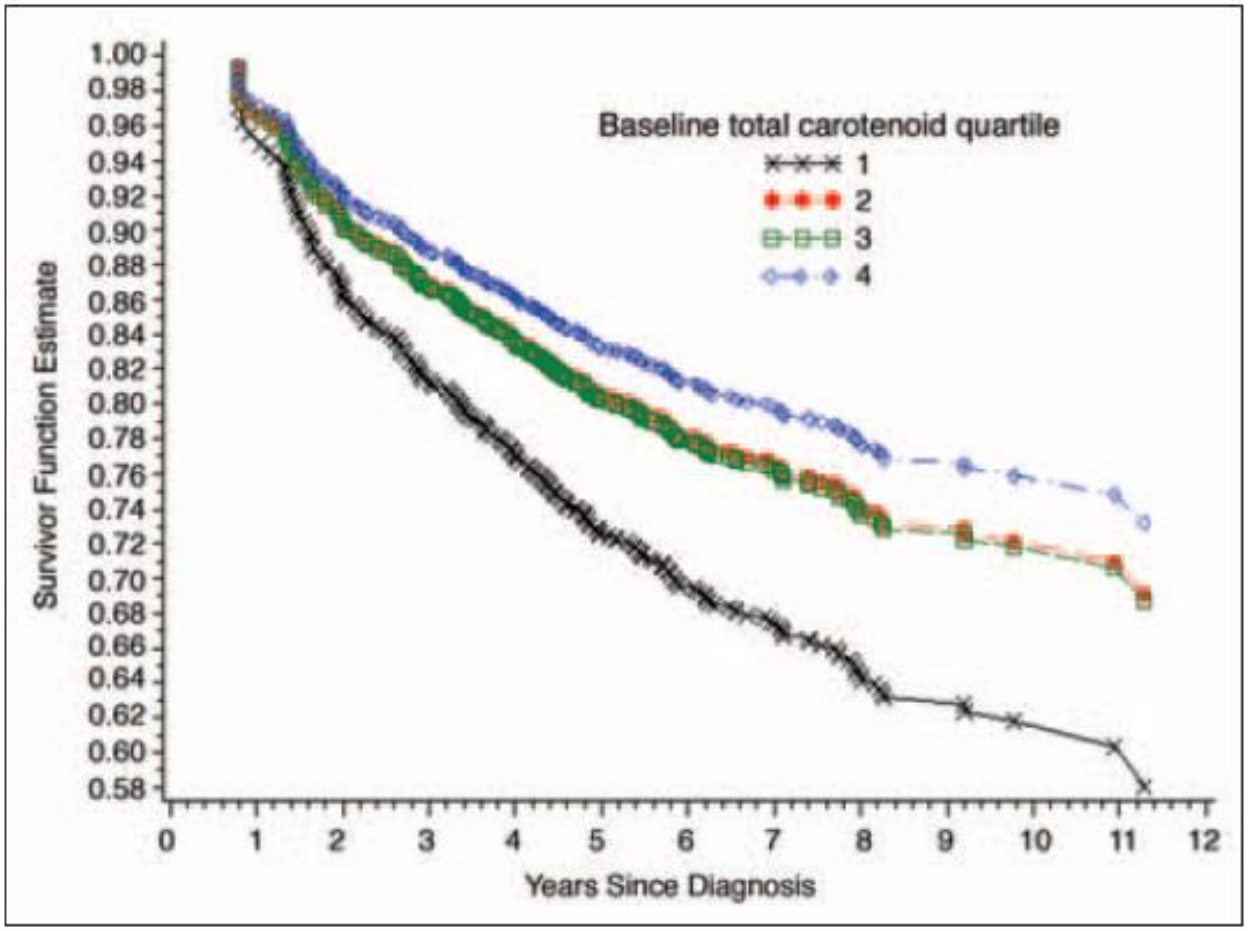
	Western Dietary Pattern by Quintile[b]					
	1 (n = 201)	2 (n = 202)	3 (n = 202)	4 (n = 202)	5 (n = 202)	*P* for Trend
Cancer recurrence or death from any cause (disease-free survival)						
No. of events/person-time at risk[c]	71/795	57/808	73/772	68/768	83/759	
Energy-adjusted only	1[Reference]	0.95 (0.66-1.36)	1.51 (1.06-2.15)	1.75 (1.19-2.58)	3.28 (2.12-5.07)	<.001
Multivariate adjusted[d]	1[Reference]	0.98 (0.68-1.43)	1.51 (1.05-2.17)	1.64 (1.09-2.46)	3.25 (2.04-5.19)	<.001
Cancer recurrence (recurrence-free survival)						
No. of events/person-time at risk[c]	68/795	51/808	68/769	61/768	76/759	
Energy-adjusted only	1[Reference]	0.86 (0.59-1.25)	1.41 (0.98-2.02)	1.54 (1.03-2.30)	2.82 (1.79-4.43)	<.001
Multivariate adjusted[d]	1[Reference]	0.92 (0.63-1.36)	1.42 (0.98-2.07)	1.44 (0.94-2.19)	2.85 (1.75-4.63)	<.001
Overall mortality						
No. of events/person-time at risk[c]	57/916	35/920	51/867	53/842	55/860	
Energy-adjusted only	1[Reference]	0.74 (0.48-1.15)	1.39 (0.93-2.09)	1.81 (1.17-2.80)	2.61 (1.59-4.30)	<.001
Multivariate adjusted[d]	1[Reference]	0.74 (0.48-1.17)	1.38 (0.90-2.11)	1.66 (1.04-2.65)	2.32 (1.36-3.96)	<.001

Plasma Carotenoids and Recurrence-Free Survival in Women With a History of Breast Cancer

J Clin Oncol 23:6631-6638. © 2005

Results

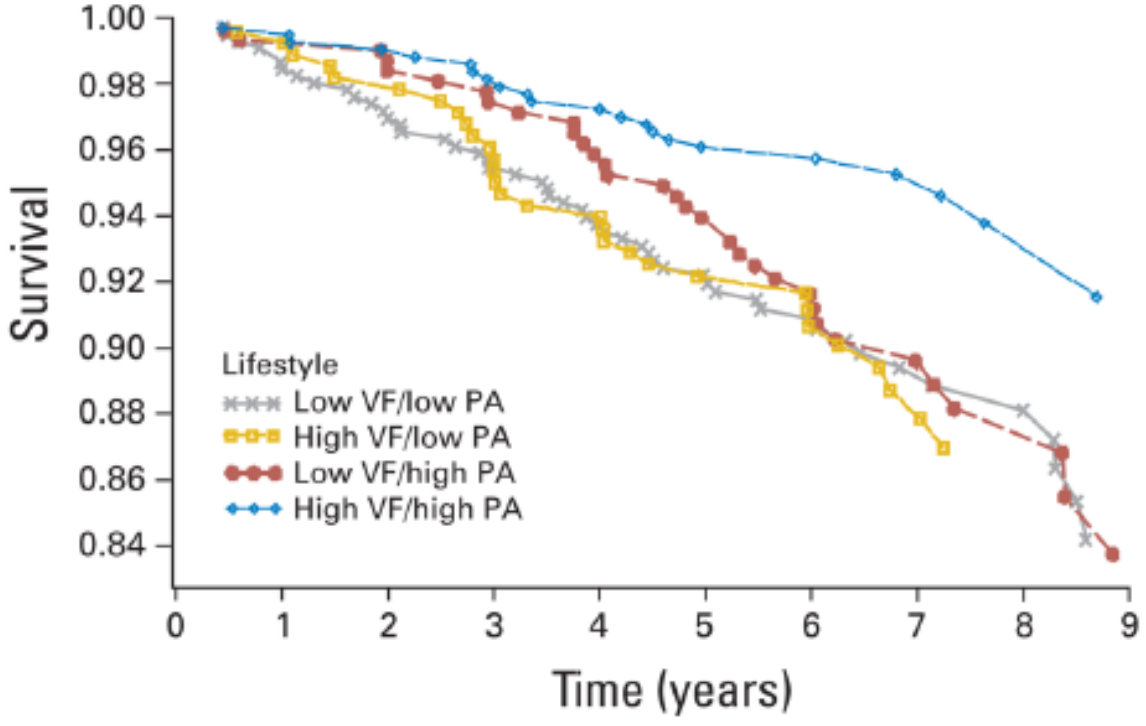
Women in the highest quartile of plasma total carotenoid concentration had significantly reduced risk for a new breast cancer event (HR, 0.57; 95% CI, 0.37 to 0.89), controlled for covariates influencing breast cancer prognosis.



Greater Survival After Breast Cancer in Physically Active Women With High Vegetable-Fruit Intake Regardless of Obesity

J Clin Oncol. 2007 June 10; 25(17): 2345–2351.

nor obese. In a multivariate Cox model, only the combination of consuming five or more daily servings of vegetables-fruits, and accumulating 540+ metabolic equivalent tasks-min/wk (equivalent to walking 30 minutes 6 d/wk), was associated with a significant survival advantage (hazard ratio, 0.56; 95% CI, 0.31 to 0.98). The approximate 50% reduction in risk associated with these healthy lifestyle behaviors was observed in both obese and nonobese women, although fewer obese women



Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

N ENGL J MED 368;14 NEJM.ORG APRIL 4, 2013

In a multicenter trial in Spain, we randomly assigned participants who were at high cardiovascular risk, but with no cardiovascular disease at enrollment, to one of three diets: a Mediterranean diet supplemented with extra-virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (advice to reduce dietary fat).

End Point	Mediterranean Diet with EVOO (N=2543)	Mediterranean Diet with Nuts (N=2454)	Control Diet (N=2450)	P Value†	
				Mediterranean Diet with EVOO vs. Control Diet	Mediterranean Diet with Nuts vs. Control Diet
Hazard ratio for Mediterranean diets combined vs. control (95% CI)					
Primary end point					
Unadjusted	0.70 (0.55–0.89)		1 (ref)	0.003	
Multivariable-adjusted 1§	0.71 (0.56–0.90)		1 (ref)	0.004	
Multivariable-adjusted 2¶	0.71 (0.56–0.90)		1 (ref)	0.005	
Secondary end points‖					
Stroke	0.61 (0.44–0.86)		1 (ref)	0.005	
Myocardial infarction	0.77 (0.52–1.15)		1 (ref)	0.20	
Death from cardiovascular causes	0.83 (0.54–1.29)		1 (ref)	0.41	
Death from any cause	0.89 (0.71–1.12)		1 (ref)	0.32	

Association of Nut Consumption with Total and Cause-Specific Mortality

N ENGL J MED 369;21 NEJM.ORG NOVEMBER 21, 2013

We examined the association between nut consumption and subsequent total and cause-specific mortality among 76,464 women in the Nurses' Health Study (1980–2010) and 42,498 men in the Health Professionals Follow-up Study (1986–2010).

multivariate hazard ratios for death among participants who ate nuts, as compared with those who did not, were 0.93 (95% confidence interval [CI], 0.90 to 0.96) for the consumption of nuts less than once per week, 0.89 (95% CI, 0.86 to 0.93) for once per week, 0.87 (95% CI, 0.83 to 0.90) for two to four times per week, 0.85 (95% CI, 0.79 to 0.91) for five or six times per week, and 0.80 (95% CI, 0.73 to 0.86) for seven or more times per week ($P<0.001$ for trend). Significant inverse associations were also observed between nut consumption and deaths due to cancer, heart disease, and respiratory disease.

Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study

Findings During follow-up, we documented 5796 deaths and 4784 major cardiovascular disease events. Higher carbohydrate intake was associated with an increased risk of total mortality (highest [quintile 5] *vs* lowest quintile [quintile 1] category, HR 1·28 [95% CI 1·12–1·46], p_{trend}=0·0001) but not with the risk of cardiovascular disease or cardiovascular disease mortality. Intake of total fat and each type of fat was associated with lower risk of total mortality (quintile 5 *vs* quintile 1, total fat: HR 0·77 [95% CI 0·67–0·87], p_{trend}<0·0001; saturated fat, HR 0·86 [0·76–0·99], p_{trend}=0·0088; monounsaturated fat: HR 0·81 [0·71–0·92], p_{trend}<0·0001; and polyunsaturated fat: HR 0·80 [0·71–0·89], p_{trend}<0·0001). Higher saturated fat intake was associated with lower risk of stroke (quintile 5 *vs* quintile 1, HR 0·79 [95% CI 0·64–0·98], p_{trend}=0·0498). Total fat and saturated and unsaturated fats were not significantly associated with risk of myocardial infarction or cardiovascular disease mortality.

Interpretation High carbohydrate intake was associated with higher risk of total mortality, whereas total fat and individual types of fat were related to lower total mortality. Total fat and types of fat were not associated with cardiovascular disease, myocardial infarction, or cardiovascular disease mortality, whereas saturated fat had an inverse association with stroke. Global dietary guidelines should be reconsidered in light of these findings.

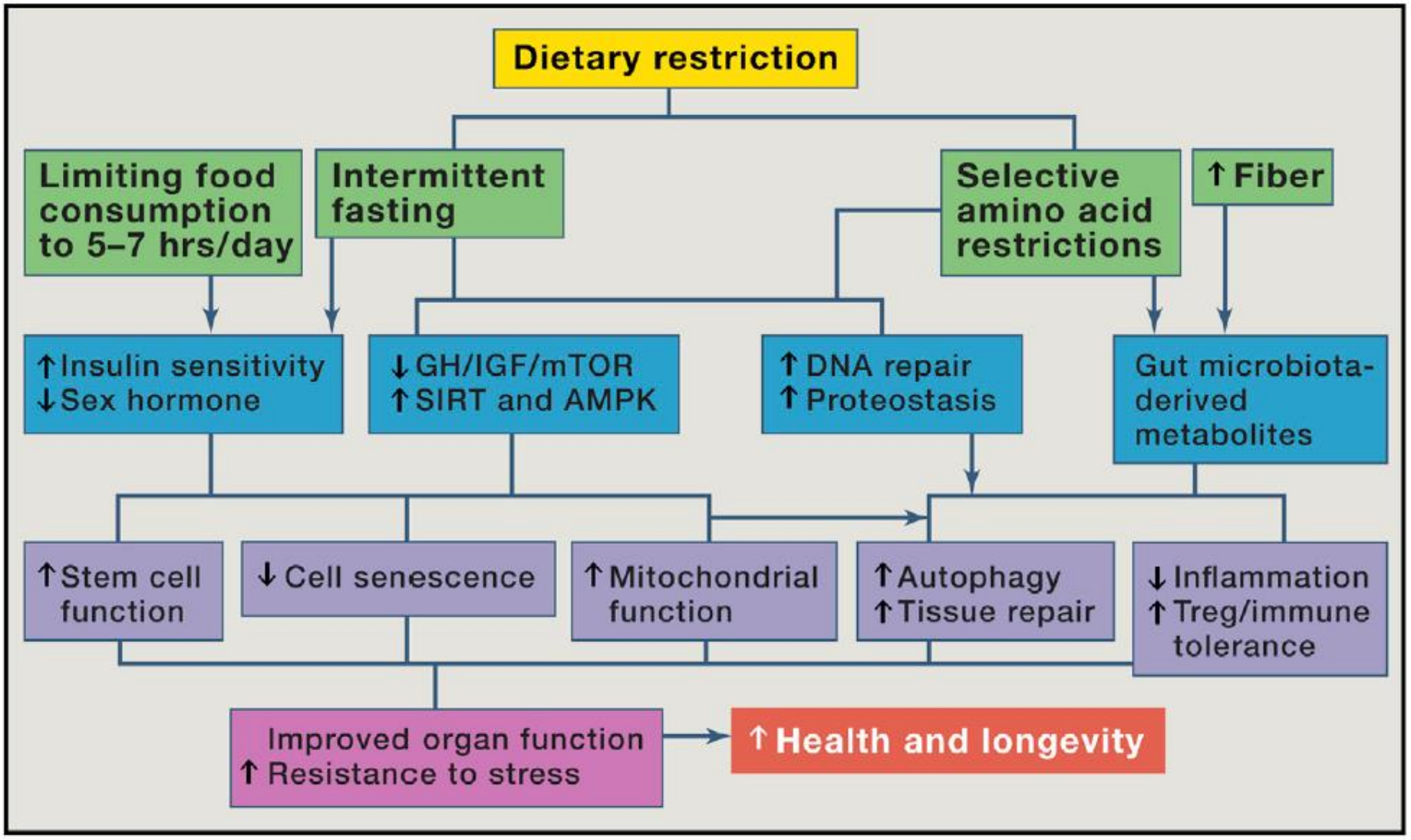
Lancet 2017; 390: 2050–62

Alimentazione industriale vs alimentazione naturale

Promoting Health and Longevity through Diet: From Model Organisms to Humans

Luigi Fontana[1,2,3,*] and Linda Partridge[4,5,*]

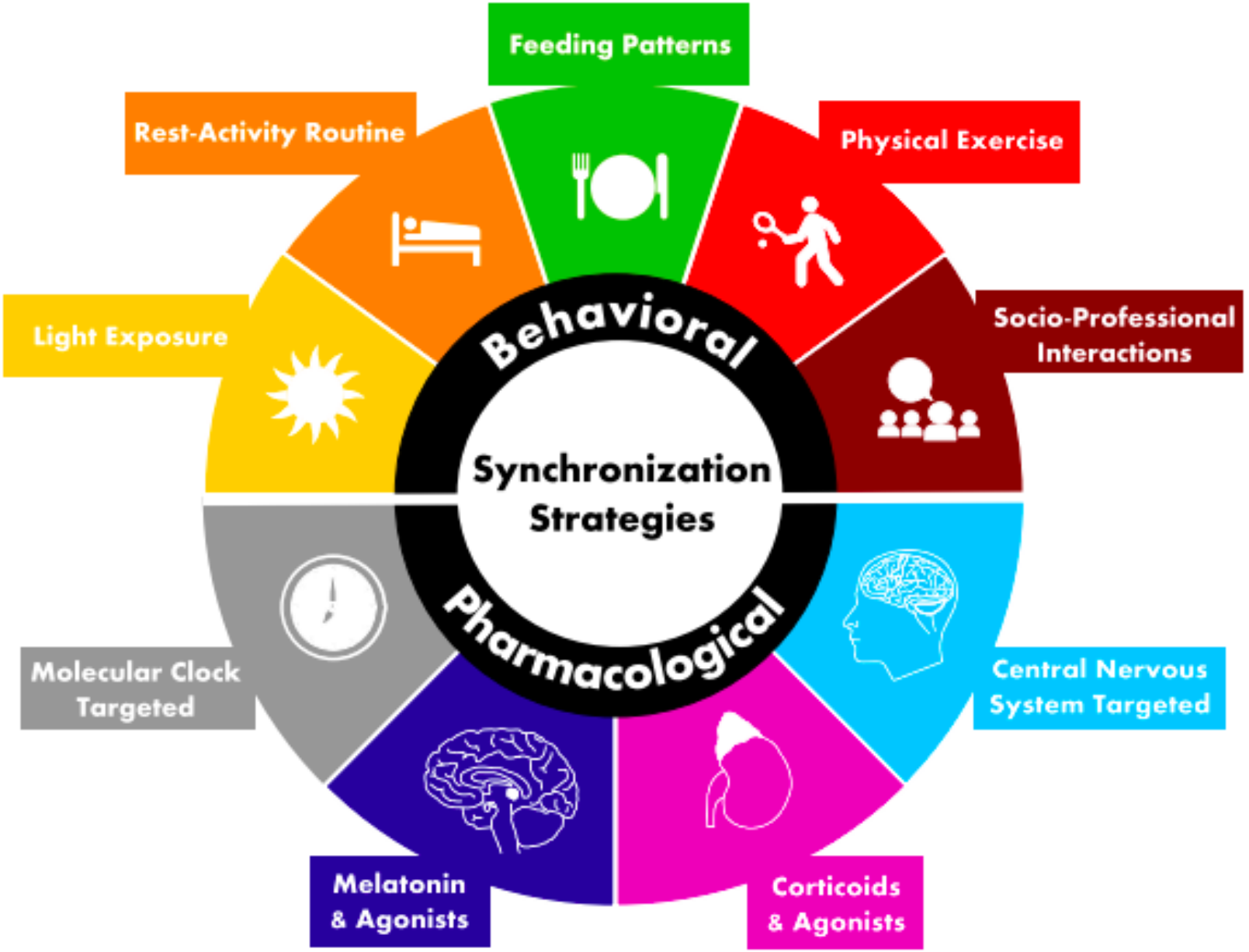
Cell *161*, March 26, 2015



Benefici della chetosi

- Migliora la performance mitocondriale – attiva la mitocondriogenesi
- Riduce lo stress ossidativo
- Riduce l'infiammazione
- Attiva l'autofagia –meccanismo di degradazione cellulare a fini energetici- promuovendo il rinnovo cellulare
- Attiva la produzione di BDNF ad azione trofica sui neuroni
- Armonizza i ritmi circadiani
- Migliora la composizione del microbiota, essenziale per il buon funzionamento del sistema immune
- Aumenta la resistenza agli stressori

Cronomodulazione



Pharmacol Rev 69:161–199, April 2017

The microbiome and the hallmarks of cancer

Laura E. Fulbright[1], Melissa Ellermann[1], Janelle C. Arthur[1,2,3]*

PLOS Pathogens | September 21, 2017

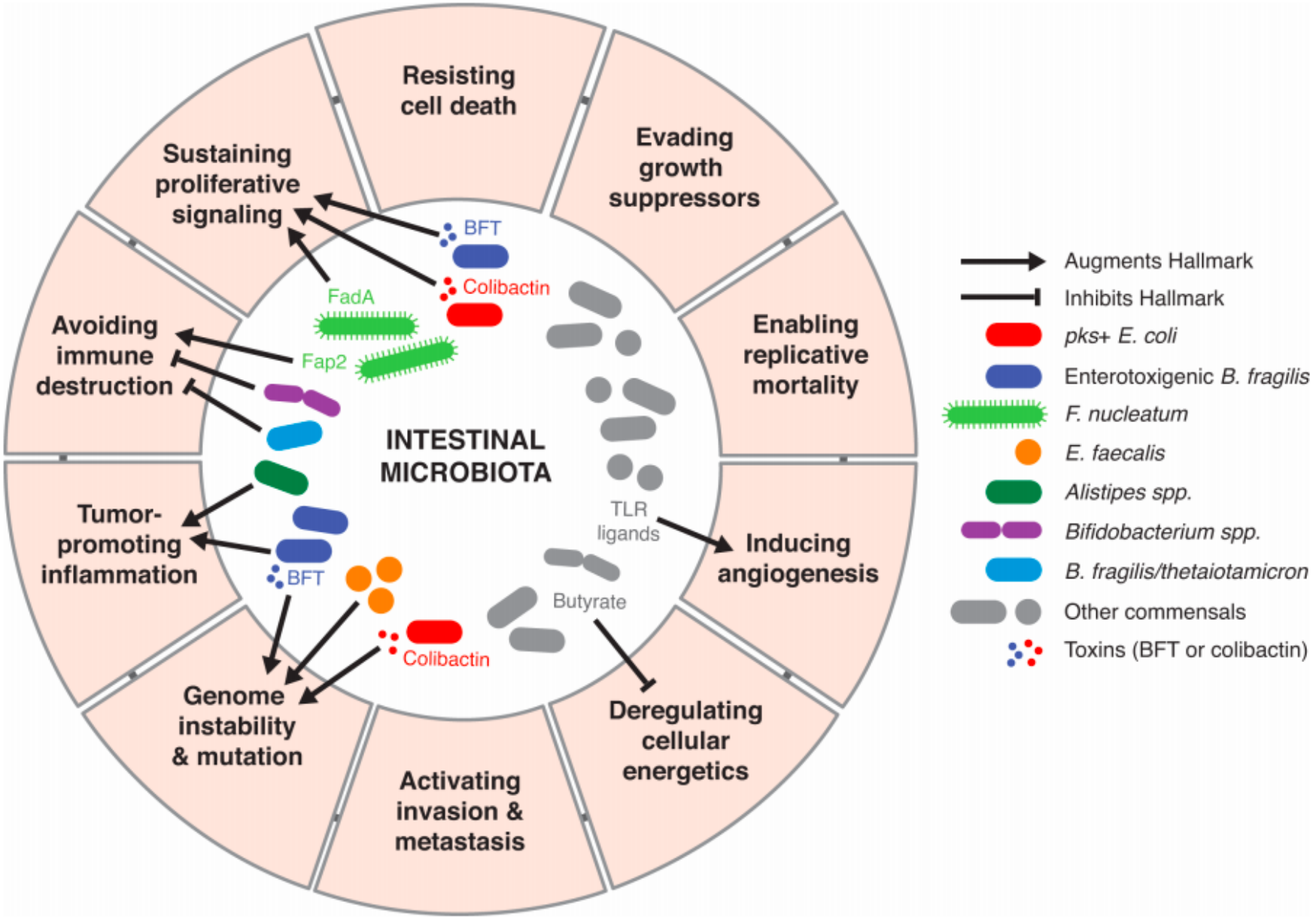
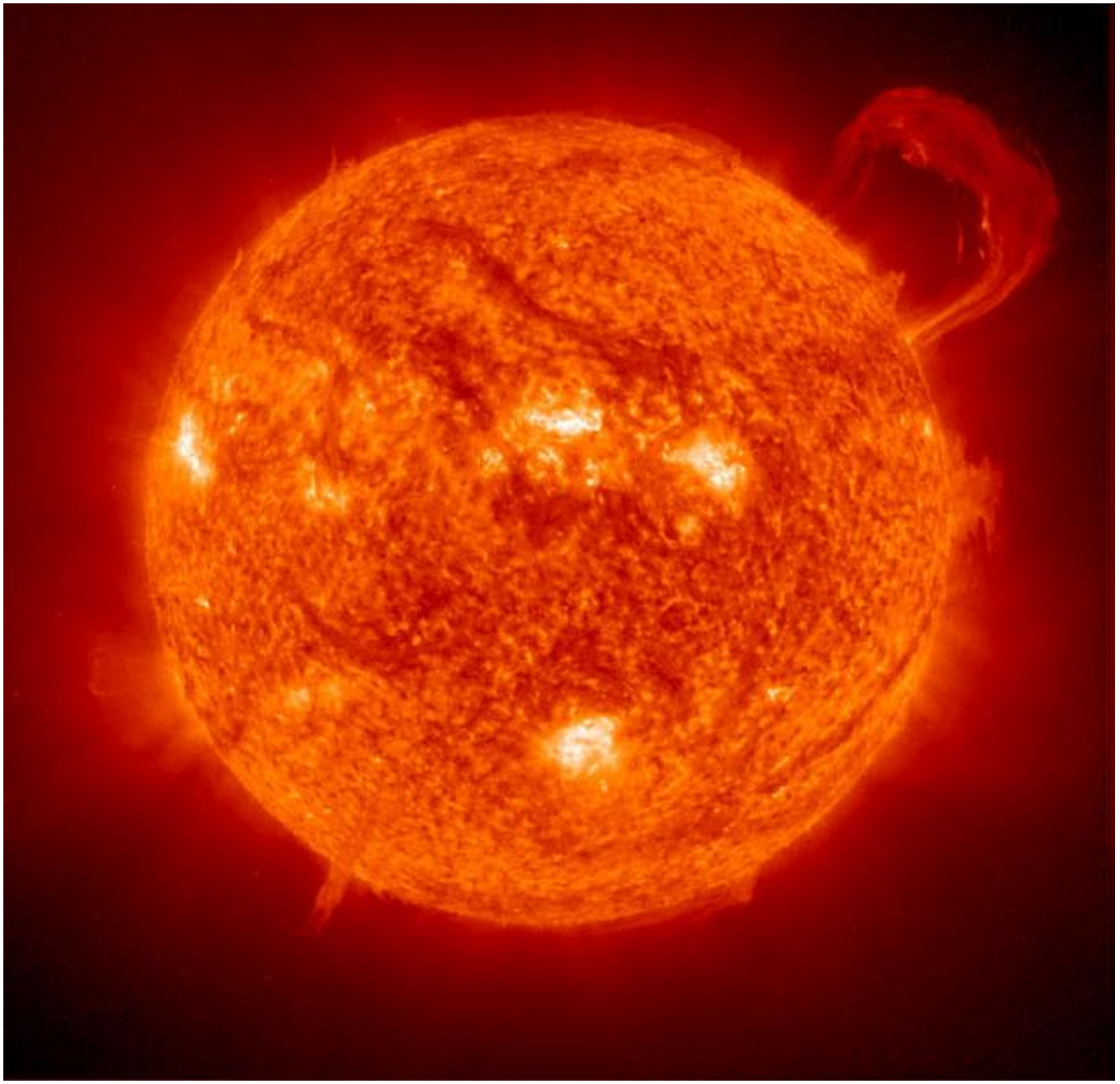


Fig 1. Microbial-derived signals modulate numerous hallmarks of cancer through diverse mechanisms.


FEBRUARY 23, 2004
TIME
BUSH'S MILITARY RECORDS
IS DISNEY MOUSETRAPPED?
THE SECRET KILLER
The surprising link between INFLAMMATION and HEART ATTACKS, CANCER, ALZHEIMER'S and other diseases
What you can do to fight it

Sfruttare l’energia del sole



Conclusioni

Salute e malattia dipendono profondamente dall'ambiente, dallo stress, dall'attività fisica, dal ciclo sonno-veglia, dal microbioma, dal cibo, dalle piante e dai loro componenti bioattivi

Dobbiamo imparare nuovamente a consumare alimenti freschi minimamente processati e nutrizionalmente densi in accordo con i ritmi circadiani

Riappropriarsi della cultura della salute è un passo indispensabile per contrastare l'attuale epidemia di malattie croniche che sottrae tanti anni di vita e tanti più anni di buona qualità di vita a noi e ai nostri cari

Se c'è una via migliore di un altra,
quella, puoi essere certo, è la via della Natura

~ Aristotele – Etica nicomachea ~

Grazie!