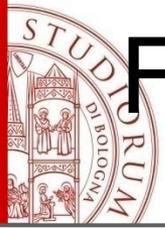


# *Approcci nutrizionali nell'ipovisione*



ASSOCIAZIONE RETINITE PIGMENTOSA E MALATTIE RARE IN OFTALMOLOGIA  
EMILIA-ROMAGNA ODV

**Enzo Spisni, Master in Alimentazione ed Educazione alla Salute**  
**16 Dicembre 2018**



# Fattori che influenzano l'ipovisione



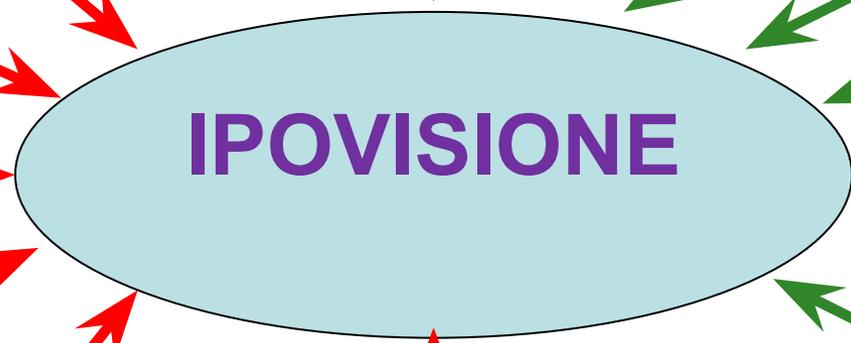
## NEGATIVI

## POSITIVI

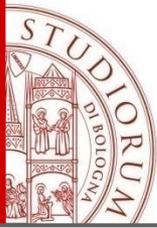
- Alcool
- Danni ossidativi
- Infiammazione
- Glicazione
- Ipovitaminosi
- Disbiosi intestinale

FATTORI GENETICI

STRESS (stile di vita)



- PUFA  $\omega$ 3
- Flavonoidi
- Polifenoli
- Minerali
- Carotenoidi
- Restrizione calorica moderata



# Differenziare i fattori che ne influenzano insorgenza e progressione

Esempio: Degenerazione maculare collegata all'età (AMD)

## INSORGENZA

Carotenoids	Zinc
Vitamin E	Omega-3 PUFA
Folic Acid (Vitamin B9)	Omega-6 PUFA
Pyridoxine (Vitamin B6)	MUFA
Cyanocobalamin (Vitamin B12)	Carbohydrates

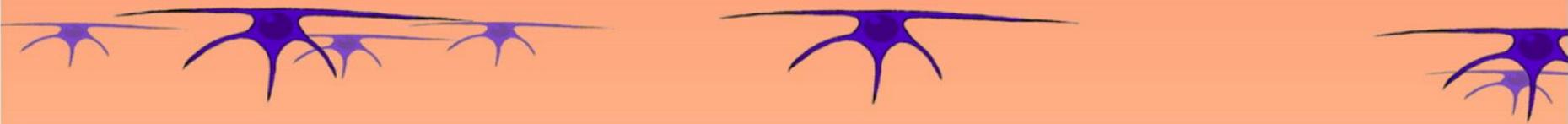
## PROGRESSIONE

Vitamin C	Zinc
Vitamin D	Omega-3 PUFA
Vitamin B12	Omega-6 PUFA

**Normal macula**

**Dry AMD**

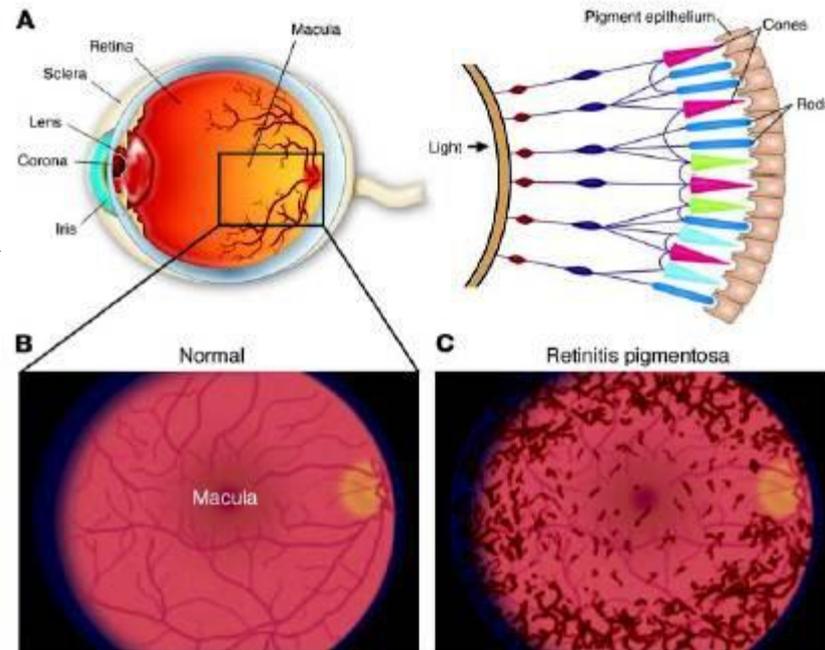
**Wet AMD**



Zampatti et al., Nutr Res. 2014 Feb;34(2):95-105. doi: 10.1016/j.nutres.2013.10.011.  
Review of nutrient actions on age-related macular degeneration.

# Anche in retinite pigmentosa

Vitamina A  
(palmitato)



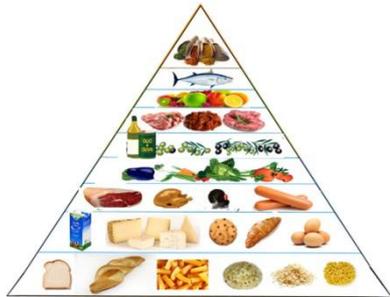
[JAMA Ophthalmol.](#) 2018 May 1;136(5):490-495. doi: 10.1001/jamaophthalmol.2018.0590.

## Association of Vitamin A Supplementation With Disease Course in Children With Retinitis Pigmentosa.

Berson EL<sup>1</sup>, Weigel-DiFranco C<sup>1</sup>, Rosner B<sup>2</sup>, Gaudio AR<sup>3</sup>, Sandberg MA<sup>1</sup>.

[Author information](#)

# Il concetto di esposoma

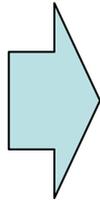


Ambiente esterno specifico

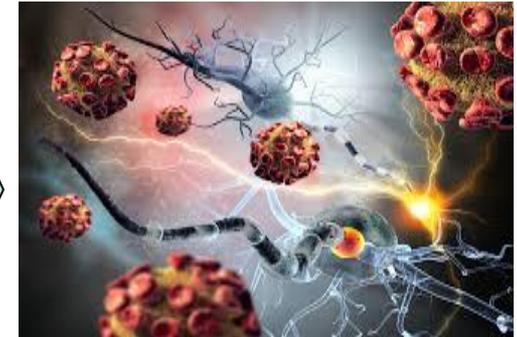


Ambiente esterno generale

**ESPOSOMA**



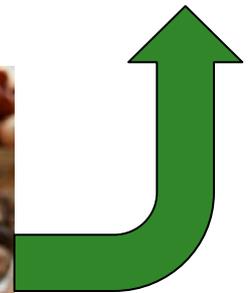
Predisposizione genetica



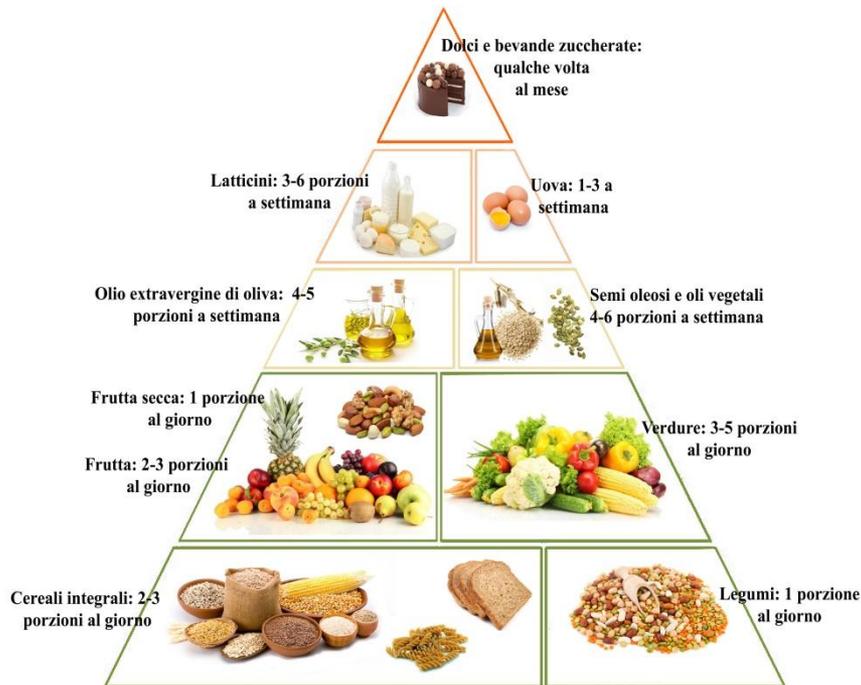
Ambiente interno (Degenerazione)



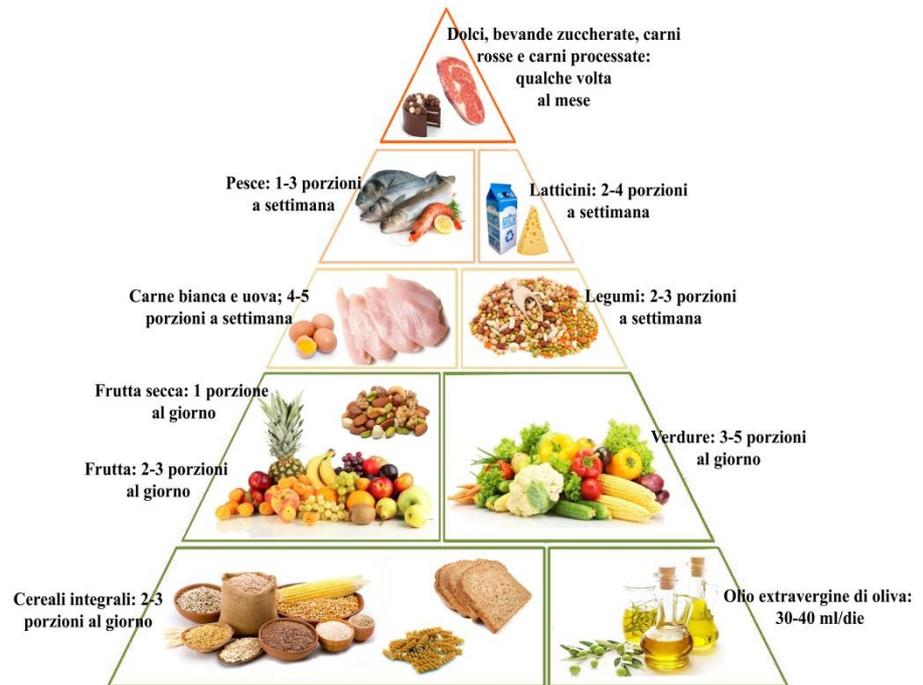
Analisi dei rischi e nutrizione personalizzata



# I singoli fattori lavorano in sinergia

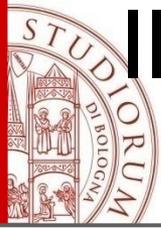


**Piramide alimentare vegetariana**

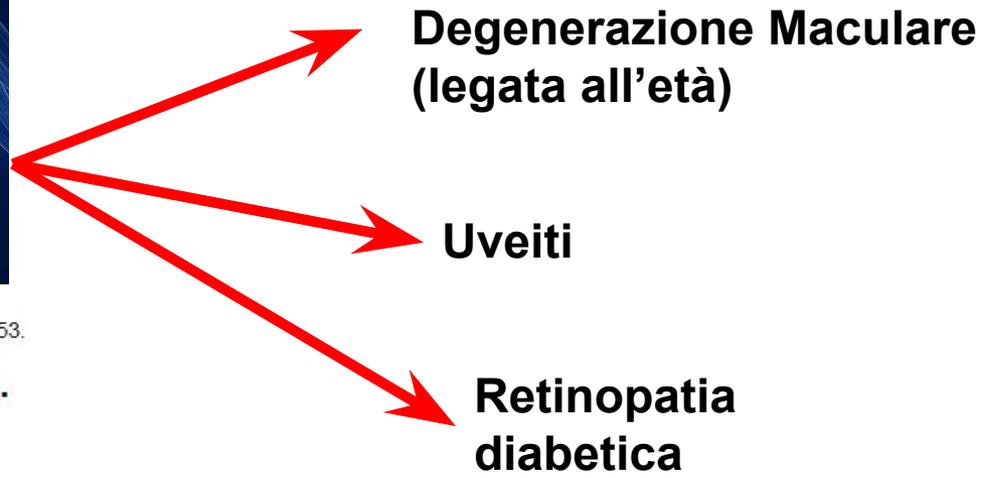


**Piramide alimentare mediterranea**

**L'importanza di attenersi ad una piramide alimentare corretta!**



# Il ruolo del microbiota intestinale nelle patologie retiniche



[Adv Exp Med Biol.](#) 2018;1074:429-435. doi: 10.1007/978-3-319-75402-4\_53.

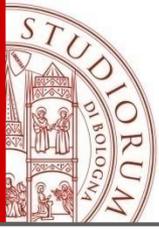
## The Role of Microbiota in Retinal Disease.

[Rowan S](#)<sup>1,2</sup>, [Taylor A](#)<sup>3,4,5</sup>.

[+ Author information](#)

### Abstract

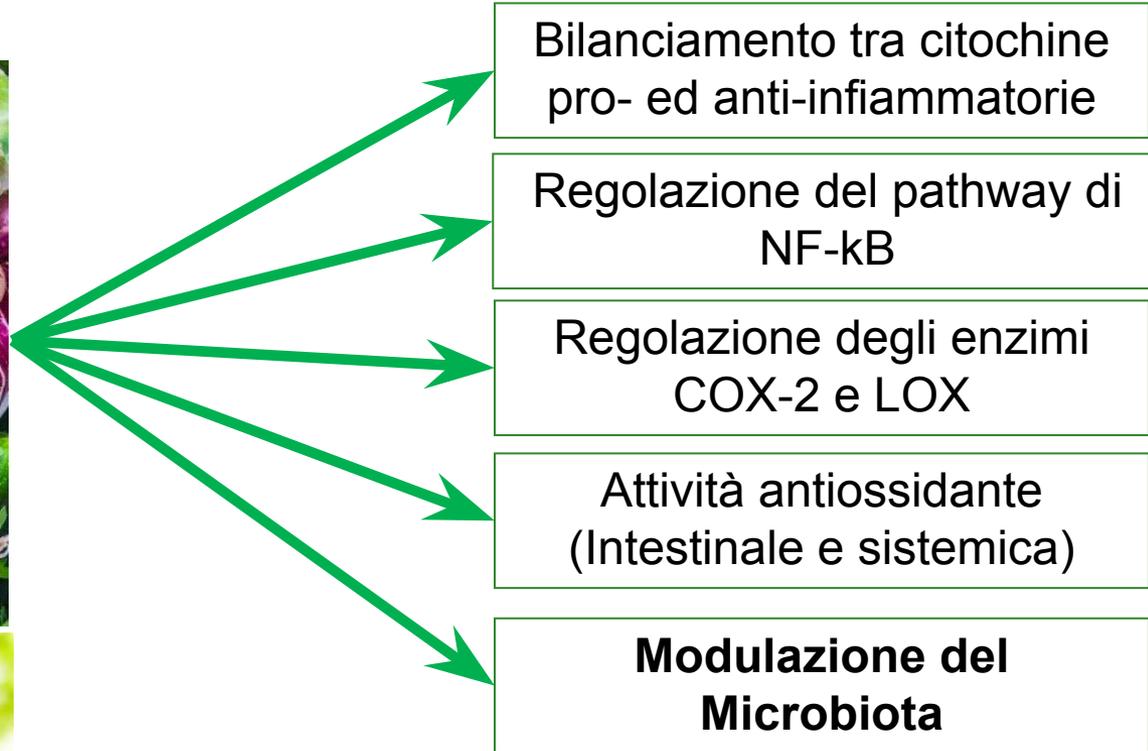
The ten years since the first publications on the human microbiome project have brought enormous attention and insight into the role of the human microbiome in health and disease. Connections between populations of microbiota and ocular disease are now being established, and increased accessibility to microbiome research and insights into other diseases is expected to yield enormous information in the coming years. With the characterization of the ocular microbiome, important insights have already been made regarding corneal and conjunctival tissues. Roles for non-ocular microbiomes in complex retinal diseases are now being evaluated. For example, the gut microbiome has been implicated in the pathogenesis of uveitis. This short review will summarize the few studies linking gut or oral microbiota to diabetic retinopathy (DR), glaucoma, and age-related macular degeneration (AMD). We will also conjecture where the most significant findings still remain to be elucidated. Finally, we will propose the gut-retina axis, related but distinct from the gut-brain axis.



# Alimenti ed effetto positive: Frutta e verdura



**Polifenoli, flavonoidi,  
carotenoidi, vitamina C**



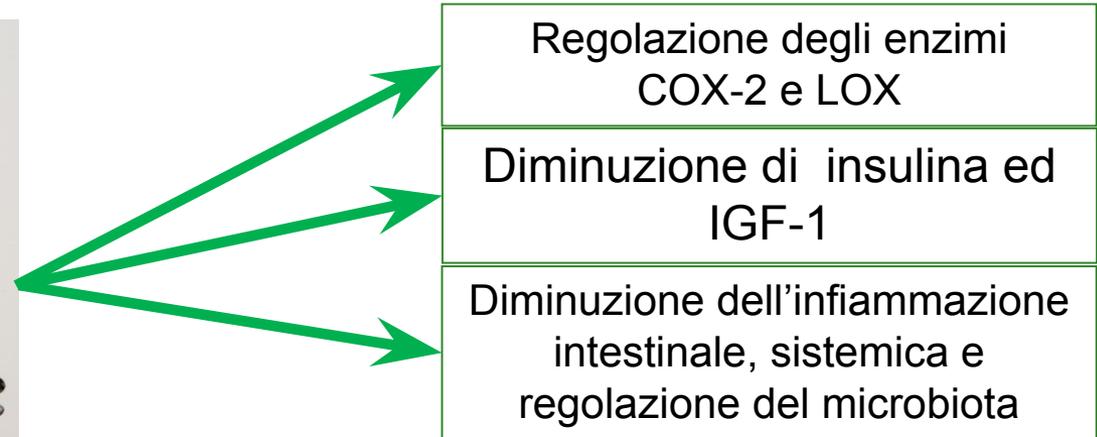
# Pesce



## EPA e DHA

Im et al., FFA4 (GPR120) as a fatty acid sensor involved in appetite control, insulin sensitivity and inflammation regulation. *Mol Aspects Med.* 2017. [S0098-2997\(17\)30064-X](#)

Scaiola et al., Eicosapentaenoic Acid Reduces Fecal Levels of Calprotectin and Prevents Relapse in Patients With Ulcerative Colitis. *Clin Gastroenterol Hepatol.* 2018 Aug;16(8):1268-1275



### C. FISH

#### Early AMD

Cho et al., 2001 <sup>[18]</sup>		6.5	0.65 (0.46-0.91)
Chong et al., 2009 <sup>[21]</sup>		19.8	0.90 (0.79-1.03)
Christen et al., 2011 <sup>[22]</sup>		4.7	0.58 (0.38-0.87)
Wang et al., 2014 <sup>[24]</sup>		19.2	0.93 (0.82-1.07)
Joachim et al., 2015 <sup>[24]</sup>		7.8	0.92 (0.68-1.24)
<b>Subtotal</b>		<b>58.0</b>	<b>0.84 (0.73-0.97)</b>

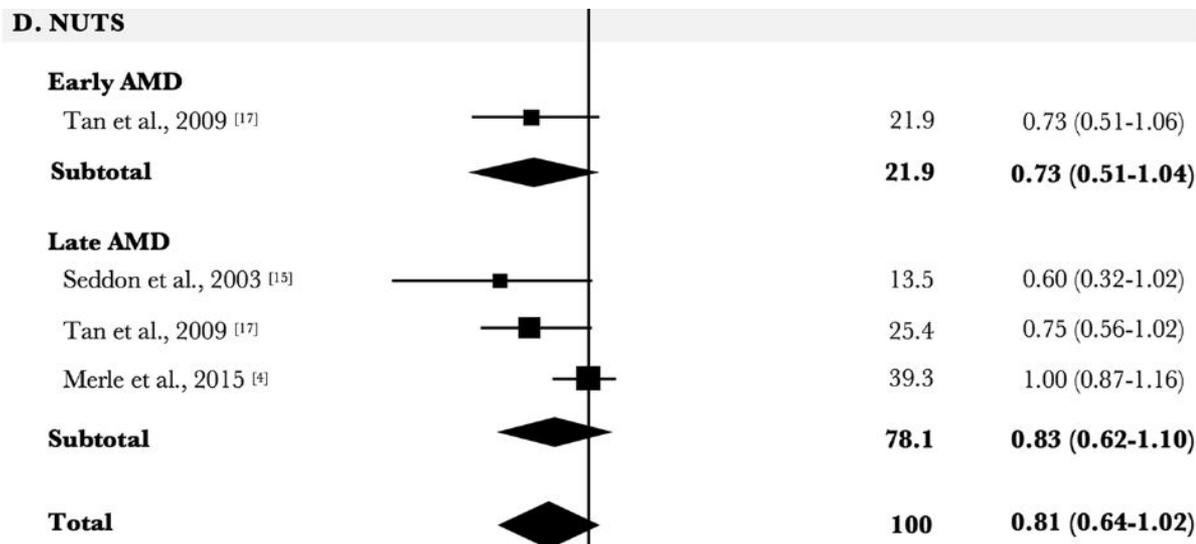
#### Late AMD

Seddon et al., 2003 <sup>[15]</sup>		2.4	0.88 (0.49-1.60)
Chong et al., 2009 <sup>[21]</sup>		2.4	0.76 (0.42-1.38)
Wang et al., 2014 <sup>[23]</sup>		7.1	0.72 (0.52-0.99)
Joachim et al., 2015 <sup>[24]</sup>		3.3	0.48 (0.29-0.79)
Merle et al., 2015 <sup>[4]</sup>		19.1	0.86 (0.74-0.99)
Wu et al., 2017 <sup>[23]</sup>		7.7	0.80 (0.59-1.08)
<b>Subtotal</b>		<b>42.0</b>	<b>0.79 (0.70-0.90)</b>

# Noci e frutta secca



Attività antinfiammatoria ed antiossidante



## The phytochemical composition and antioxidant actions of tree nuts

Bradley W Bolling PhD, Diane L McKay PhD, Jeffrey B Blumberg PhD

Antioxidants Research Laboratory, Jean Mayer USDA Human Nutrition Research Center on Aging, Tufts University, Boston, USA

# Spezie



Curcumina

Attività antinfiammatoria ed  
antiossidante

Modulazione del microbiota

## **Dietary Phytochemicals: Natural Swords Combating Inflammation and Oxidation-Mediated Degenerative Diseases**

Oxidative Medicine and Cellular Longevity Volume 2016, Article ID 5137431

Md. Asiful Islam,<sup>1</sup> Fahmida Alam,<sup>1</sup> Md. Solayman,<sup>2</sup> Md. Ibrahim Khalil,<sup>1,2</sup>

# Cioccolato fondente



Attività antinfiammatoria,  
abbassano l'attivazione di  
monociti e neutrofilii

Cacao >80%



*nutrients*

Nutrients. 2016 Jun; 8(6): 321.

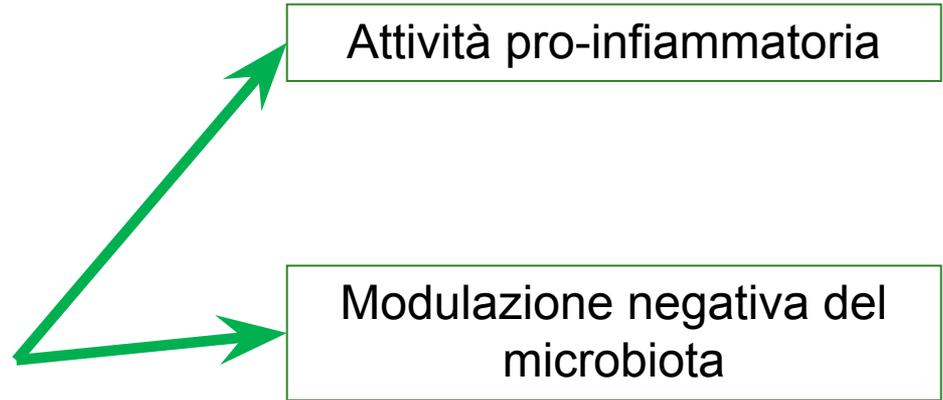
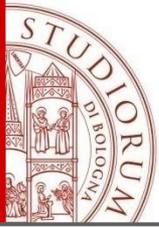


*Review*

## Impact of Cocoa Consumption on Inflammation Processes—A Critical Review of Randomized Controlled Trials

Sabine Ellinger <sup>1,\*</sup> and Peter Stehle <sup>2</sup>

# Alimenti da limitare per la salute dell'occhio: la carne



## A. MEAT

### Early AMD

Cho et al., 2001 <sup>[18]</sup>		11.9	1.35 (1.07-1.69)
Arnarsson et al., 2006 <sup>[14]</sup>		1.7	1.54 (0.56-4.17)
Chong et al., 2009 (fresh) <sup>[19]</sup>		14.7	1.33 (1.14-1.56)
Chong et al., 2009 (processed) <sup>[19]</sup>		12.3	1.13 (0.89-1.41)
Chong et al., 2009 (chicken) <sup>[19]</sup>		14.8	1.15 (0.99-1.32)
Islam et al., 2014 <sup>[9]</sup>		15.7	0.95 (0.84-1.08)
<b>Subtotal</b>		<b>71.0</b>	<b>1.17 (1.02-1.34)</b>

Dinu et al., Food groups and risk of age-related macular degeneration: a systematic review with meta-analysis. Eur J Nutr. 2018 Jul 5

# Latticini, proteine animali ed infiammazione

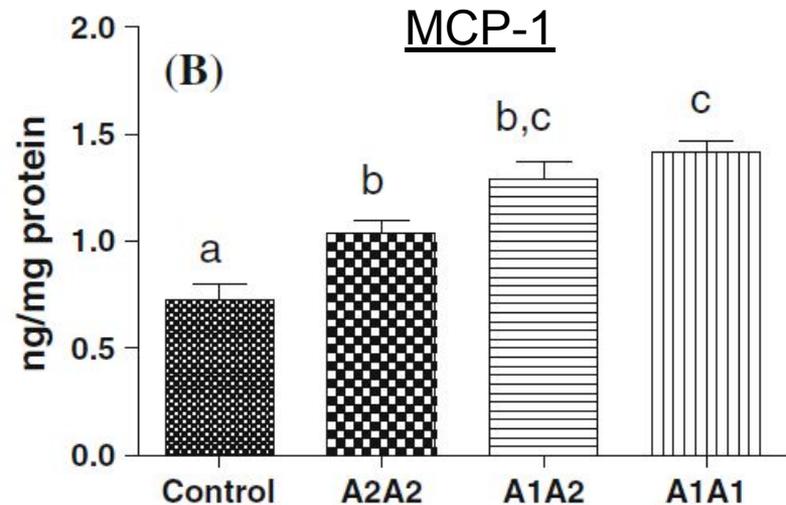
Eur J Nutr (2014) 53:1039–1049  
DOI 10.1007/s00394-013-0606-7

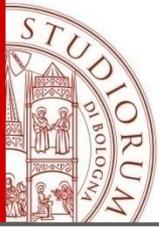
ORIGINAL CONTRIBUTION

## Comparative evaluation of cow $\beta$ -casein variants (A1/A2) consumption on Th<sub>2</sub>-mediated inflammatory response in mouse gut

Mohammad Raies Ul Haq · Rajeev Kapila ·  
Rohit Sharma · Vamshi Saliganti · Suman Kapil

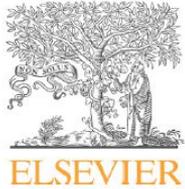
$\beta$ -caseina causa  
infiammazione  
intestinale in topi





# Alimenti ad elevato indice glicemico

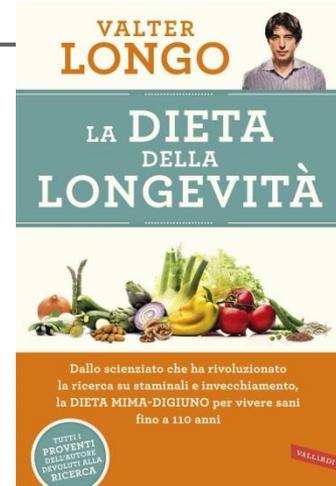
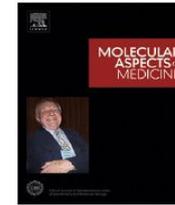
Molecular Aspects of Medicine 46 (2015) 14–20



Contents lists available at ScienceDirect

## Molecular Aspects of Medicine

journal homepage: [www.elsevier.com/locate/mam](http://www.elsevier.com/locate/mam)



Review

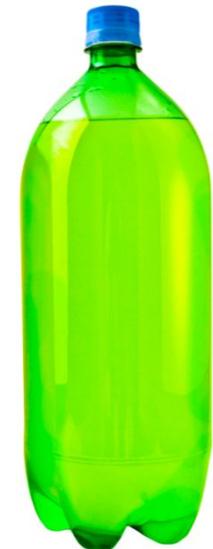
## Dietary glycemia as a determinant of health and longevity

Elizabeth A. Whitcomb, Chung-Jung Chiu, Allen Taylor \*

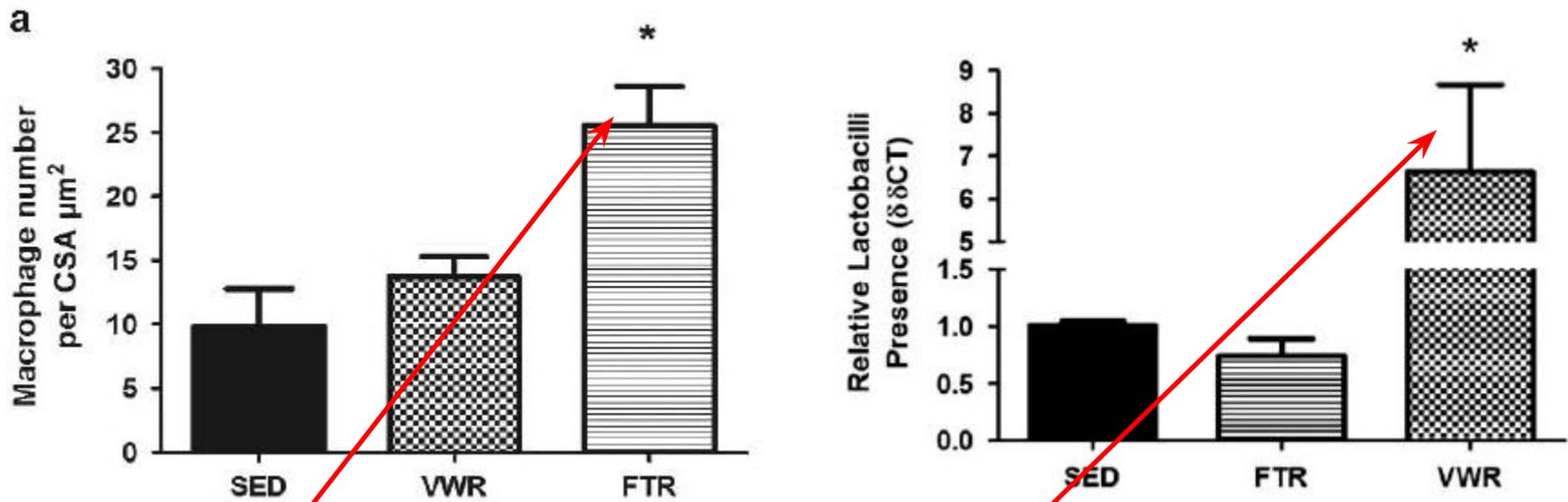


Laboratory for Nutrition and Vision Research, USDA-Human Nutrition Research Center on Aging at Tufts University, Boston, MA 02111, USA

**Consumo quotidiano!**



# Attività fisica GALT e microbiota



Corsa Forzata (FTR)

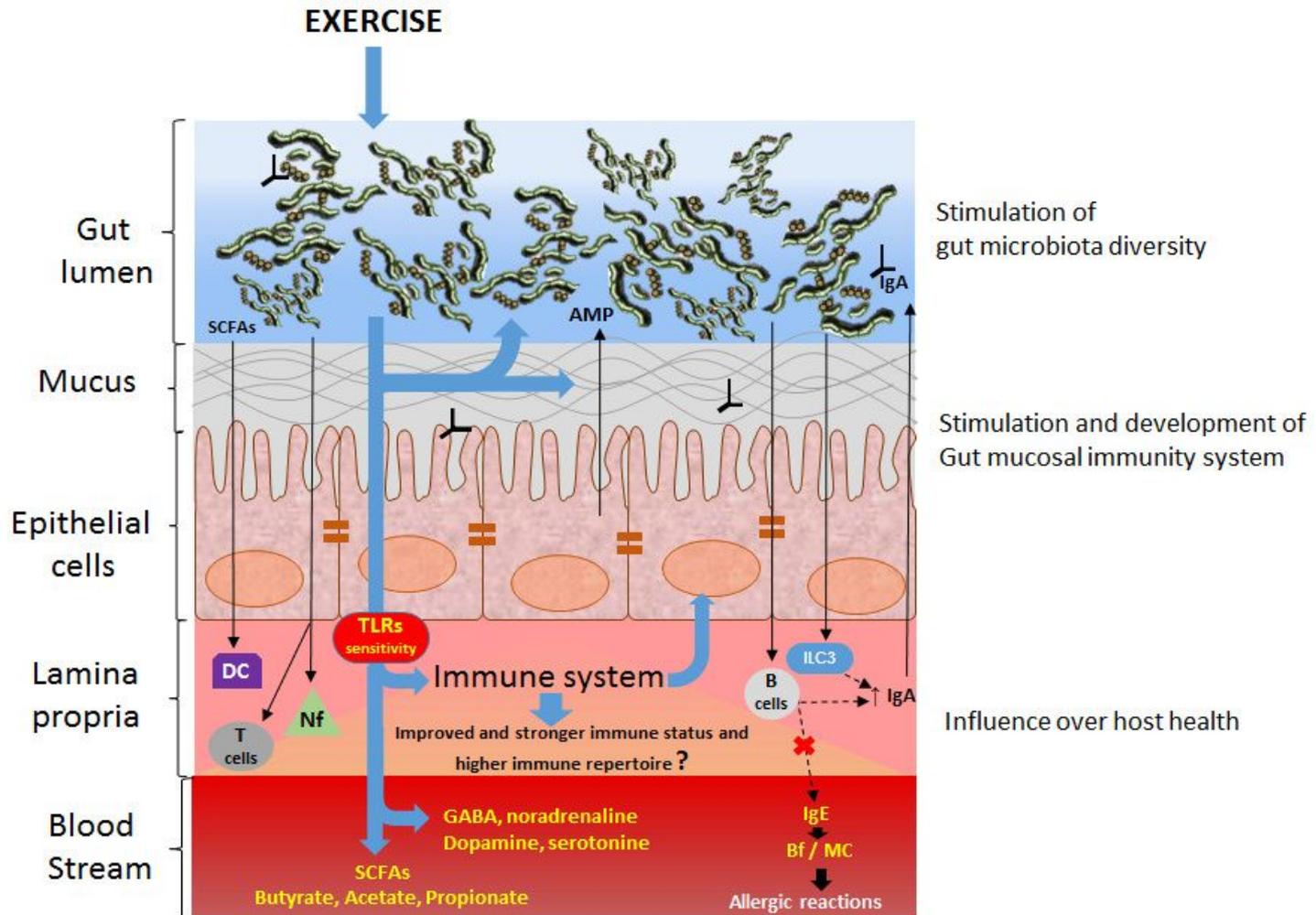


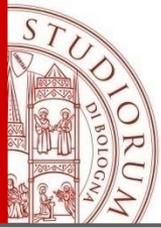
Corsa volontaria (VWR)

Immunol Cell Biol. 2016 Feb;94(2):158-63. Exercise and gut immune function... Cook et al.

# The microbiota: An exercise immunology perspective

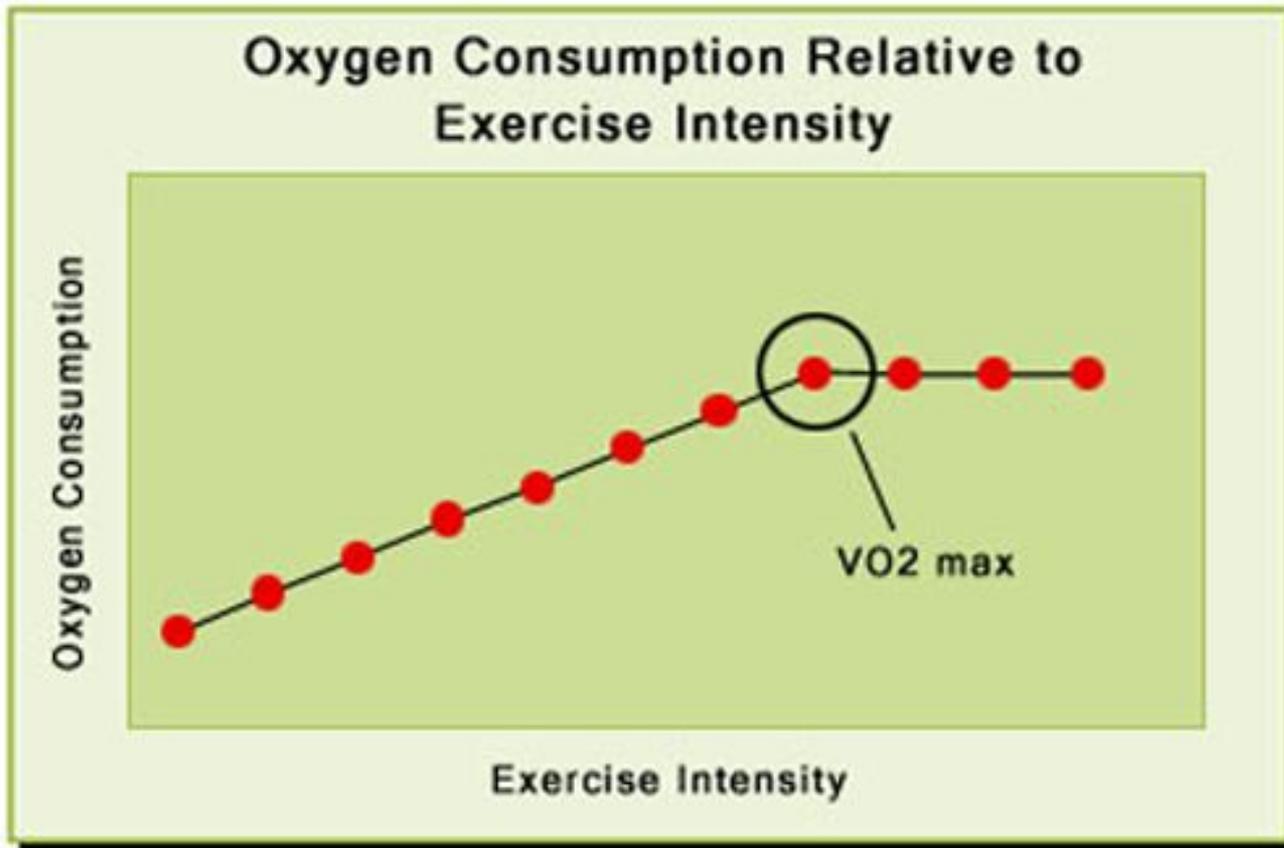
Stéphane Bermon<sup>1,2</sup>, Bernardo Petriz<sup>3,4</sup>, Alma Kajènienė<sup>5,6</sup>, Jonato Prestes<sup>7</sup>, Lindy Castell<sup>8</sup>, Octavio L. Franco<sup>3,7,9</sup>





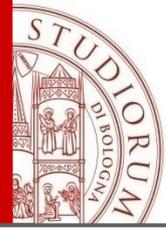
# Fitness cardiorespiratoria come fattore di predizione della diversità microbica intestinale

Estaki *et al. Microbiome* (2016) 4:42  
DOI 10.1186/s40168-016-0189-7



Picco VO2  
Gold Standard

# QUALI CONCLUSIONI??



# Esistono alimenti amici dell'occhio



Pesce allevato o pescato?

Biologica o no?

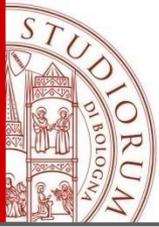


Di stagione o no?



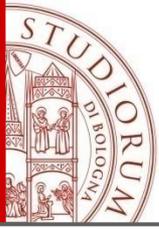
Fondente >80%





# Conclusioni

- Una dieta scorretta tende ad accelerare i processi infiammatori, ossidativi degenerativi ed il danno vascolare che sono al centro dei processi patologici legati all'ipovisione.
- Una dieta attenta e corretta associata ad una attività fisica quotidiana contrasta i processi degenerativi legati all'ipovisione.
- Anche in forme genetiche di degenerazione retinica, l'alimentazione e lo stile di vita possono modulare favorevolmente l'espressione genica, rallentando i processi degenerativi.
- **Modulatori del microbiota nel trattamento dell'ipovisione?**



# *Aspetti fisiopatologici funzionali alimentari nell'ipovedente.*

Grazie per l'attenzione



enzo.spisni@unibo.it



68th SIF National Congress Pavia, Italy • 6-8 September 2017