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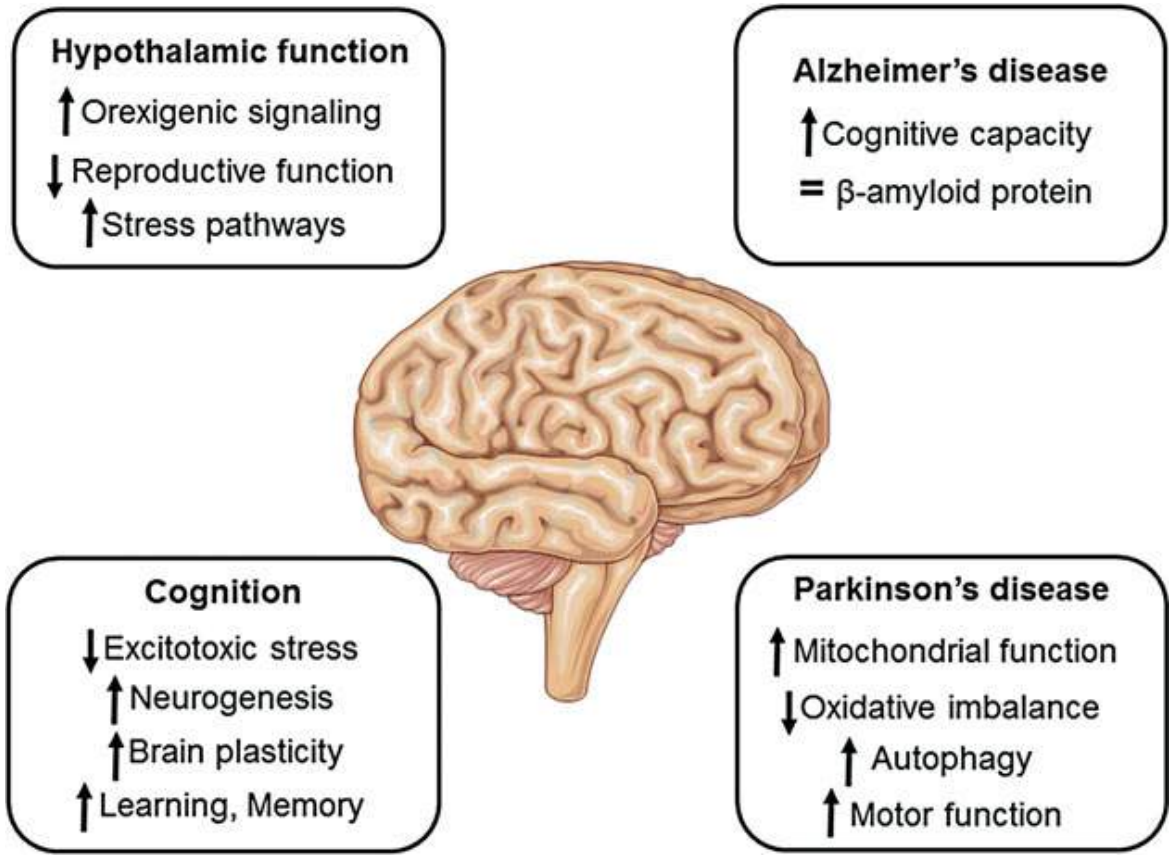
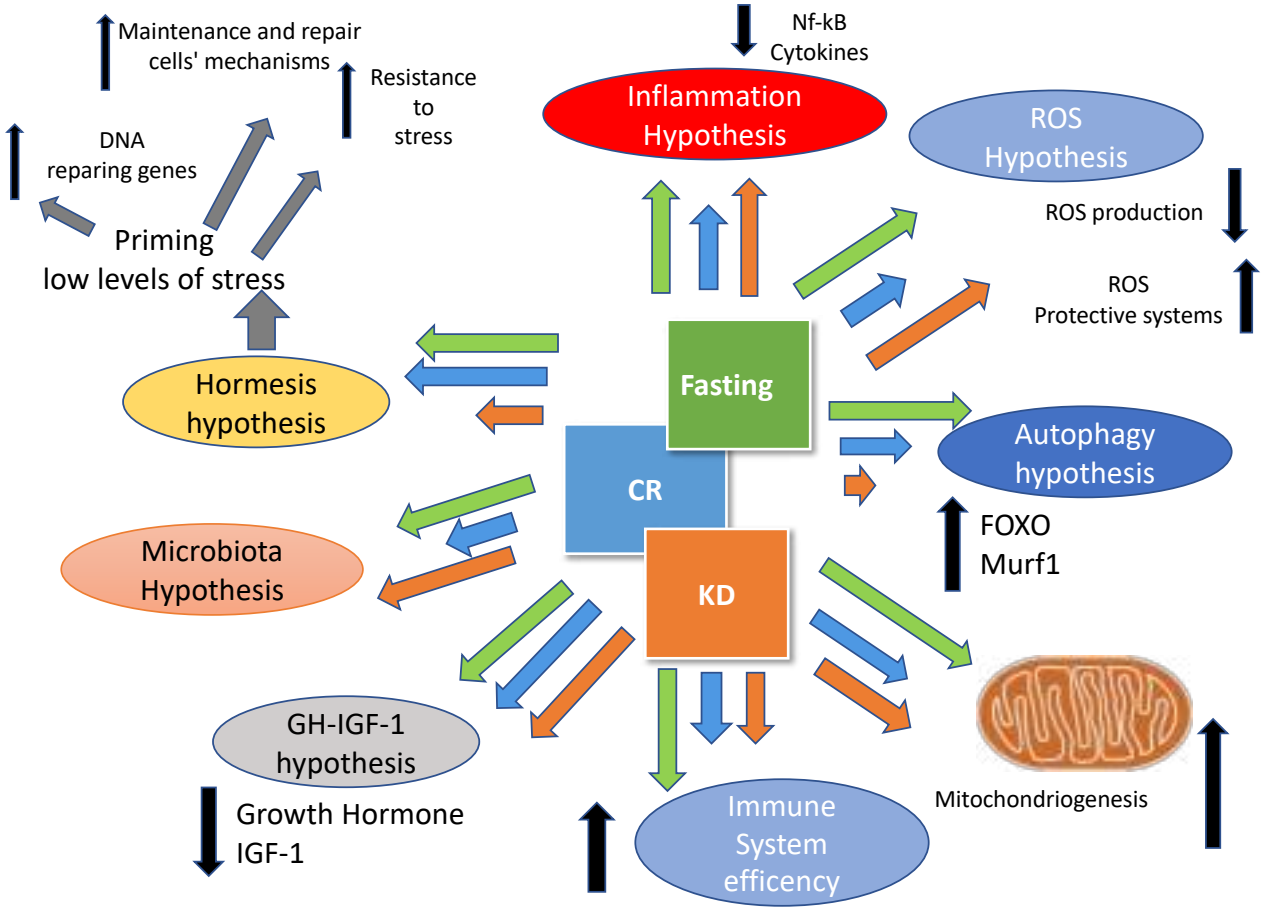


Cerqueira , in Handbook of Famine, Starvation, and Nutrient Deprivation, 1243–1260.

Digiuno intermittente e invecchiamento



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Tipi di TRE

Skipping breakfast

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Skipping dinner –early breakfast

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Skipping dinner –late breakfast

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Digiuno intermittente, esercizio e invecchiamento

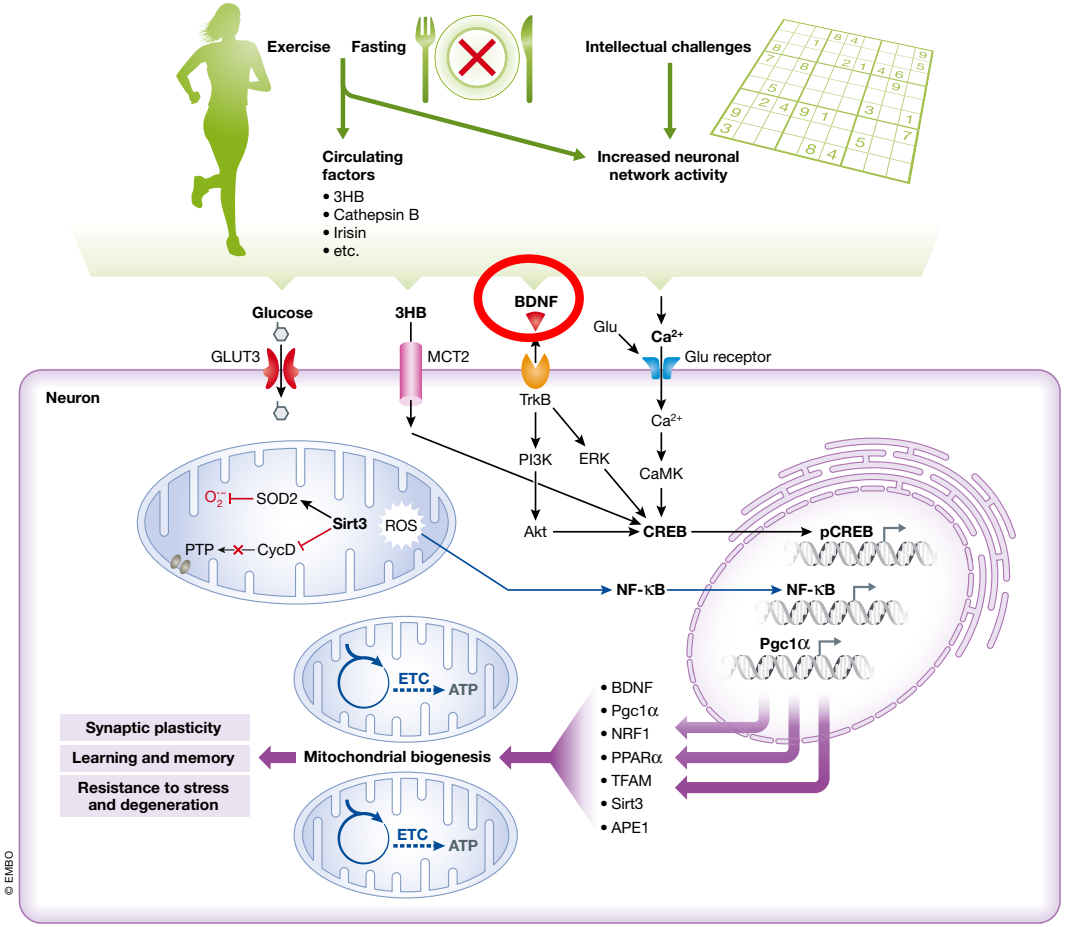
"L'invenzione dell'agrigoltura, la rivoluzione industriale e le nuove tecnologie che riducono la fatica fisica hanno portato ad una drammatica riduzione o eliminazione dell'esercizio fisico intenso e del digiuno lasciando il compito di stimolare il cervello solo alle sfide intellettive. In aggiunta alla riduzione delle risposte adattive cerebrali l'attuale l'indulgente stile di vita sedentario promuove obesità, diabete e CVD che a loro volta aumentano il rischio di AD.
Bisogna affrontare la realtà: c'è necessità di esercizio, periodi di digiuno e cahllenges intellettive per mantenere la salute del cervello."

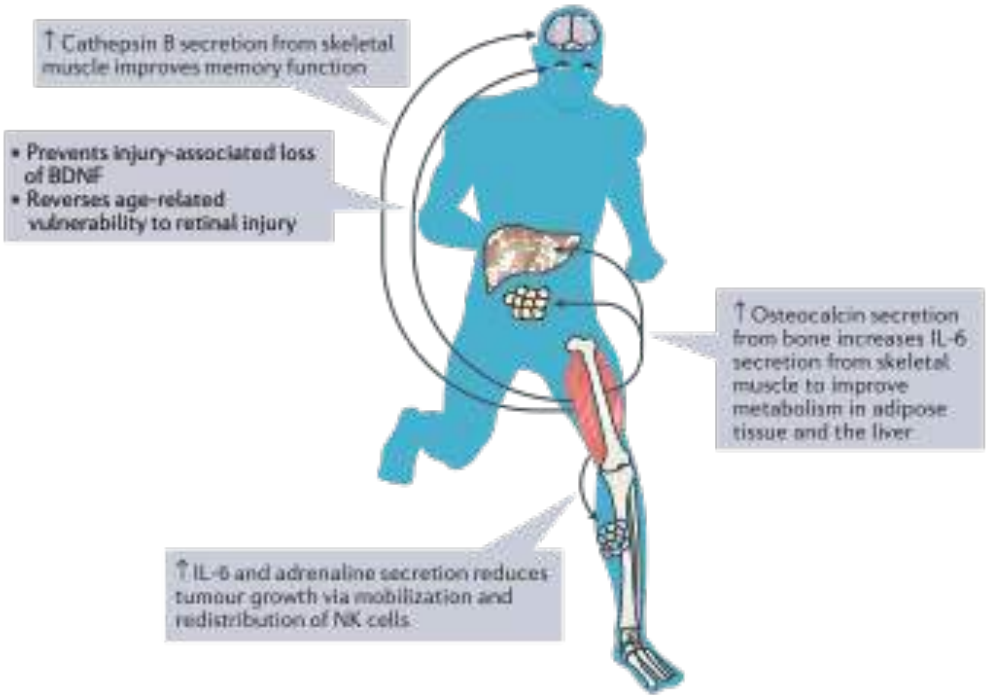
Mark P Mattson

Professor of Neuroscience at Johns Hopkins University
Former Chief of the Laboratory of Neurosciences at the National Institute on Aging.

Mattson MP. Ageing Res Rev. 2015 Mar;20:37-45

Digiuno intermittente, esercizio e invecchiamento





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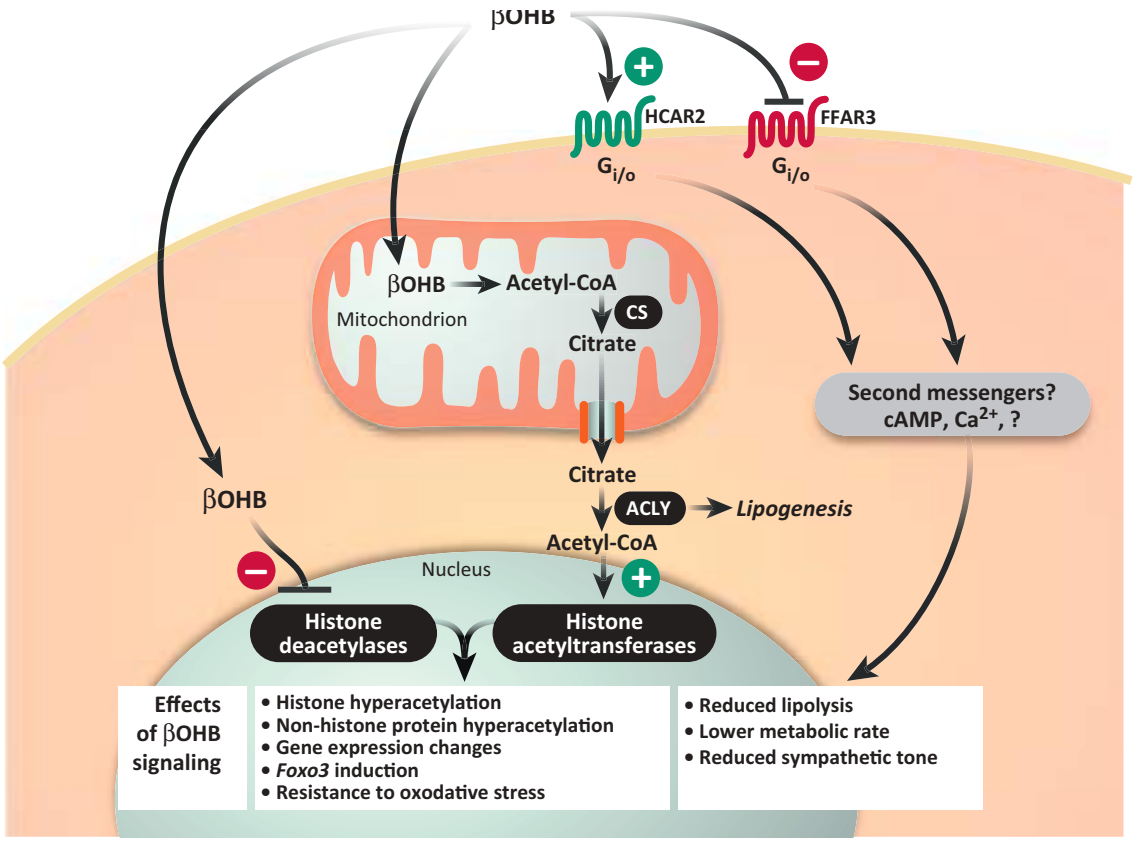
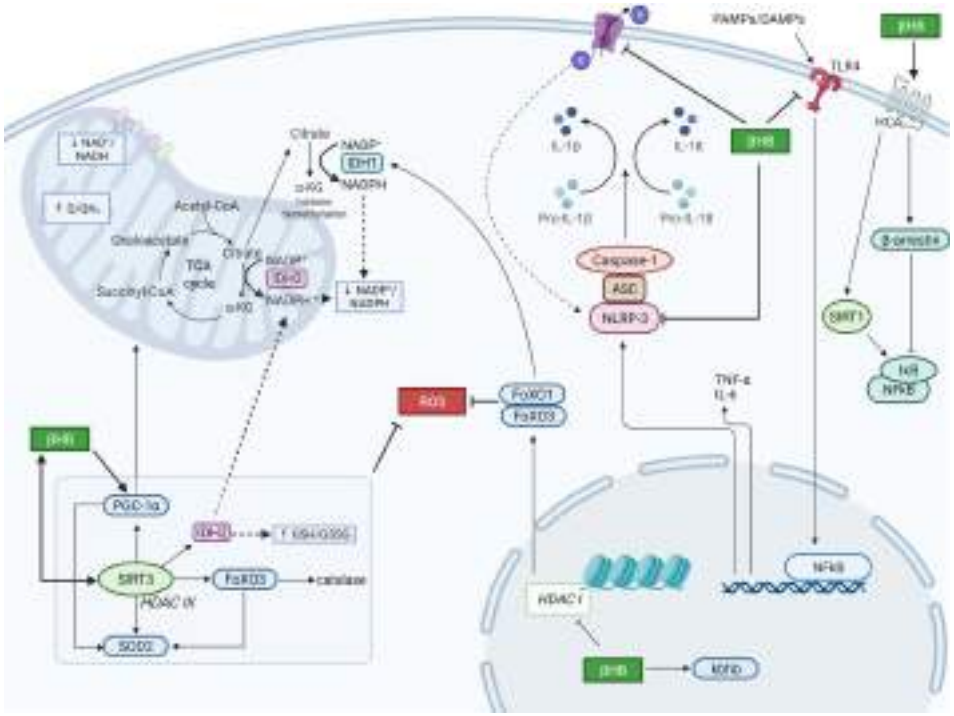
Digiuno intermittente, esercizio e invecchiamento





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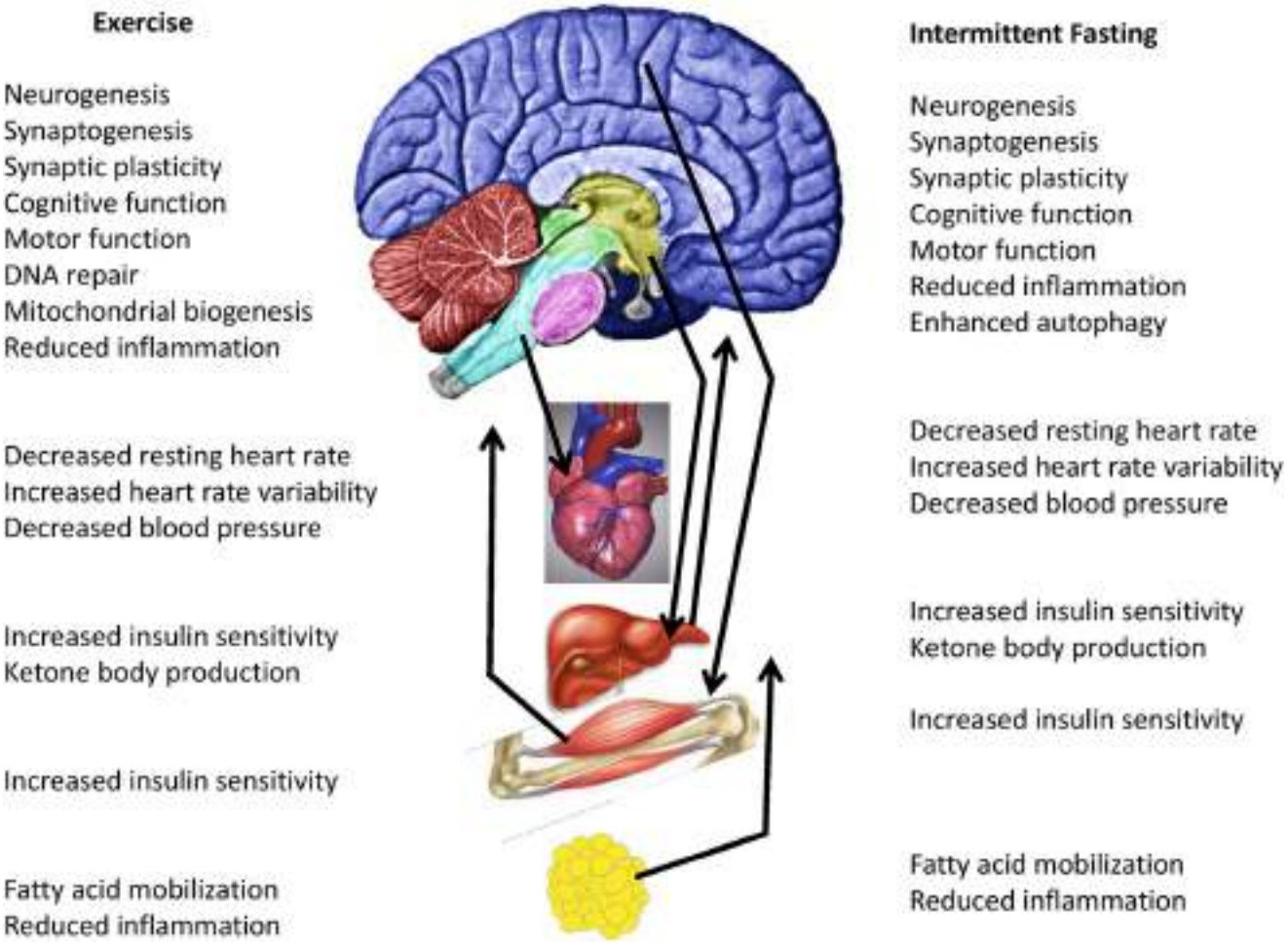
Newman & Verdin Trends Trends Endocrinol Metab. 2014 Jan;25(1):42-52

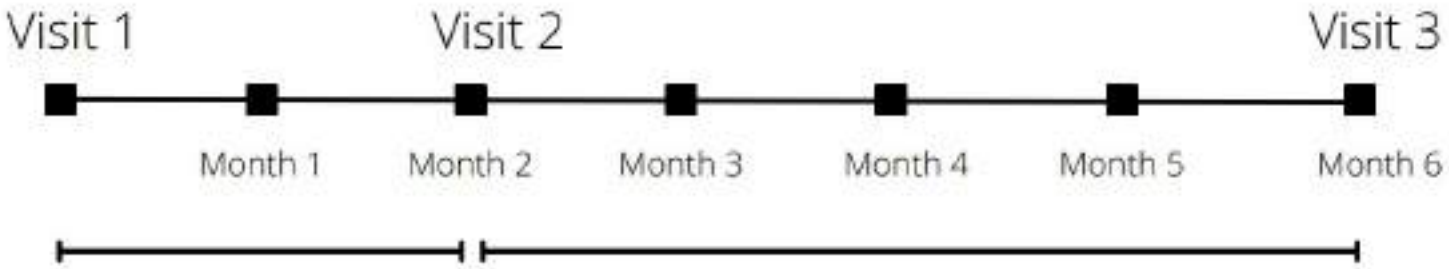
Digiuno intermittente, esercizio e invecchiamento



van Praag et al. J Neurosci. 2014 Nov 12;34(46):15139-49

Digiuno intermittente, esercizio e invecchiamento

Sedentary subjects

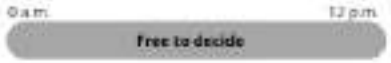


Visit:
1. Body composition
2. Blood analysis
3. Food diary
4. IPAQ

TRE intervention

N° subjects
10
11
10
10

Follow-up:



Unpublished data

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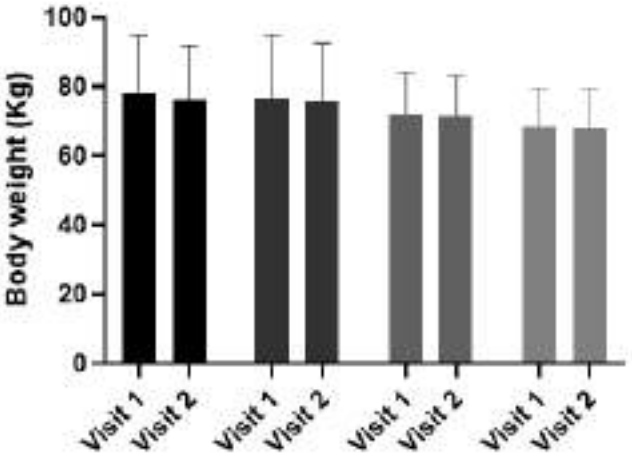
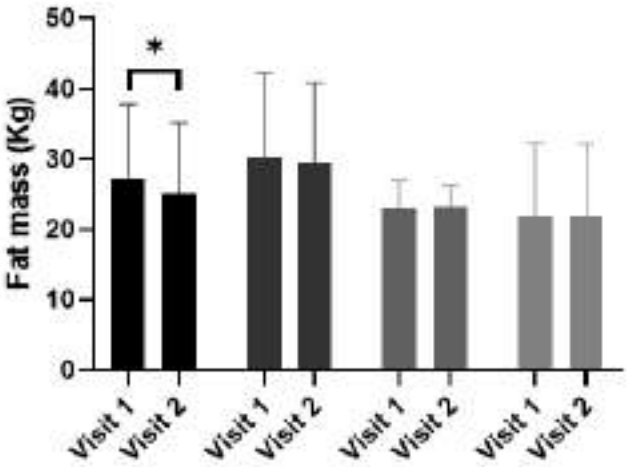
Digiuno intermittente, esercizio e invecchiamento

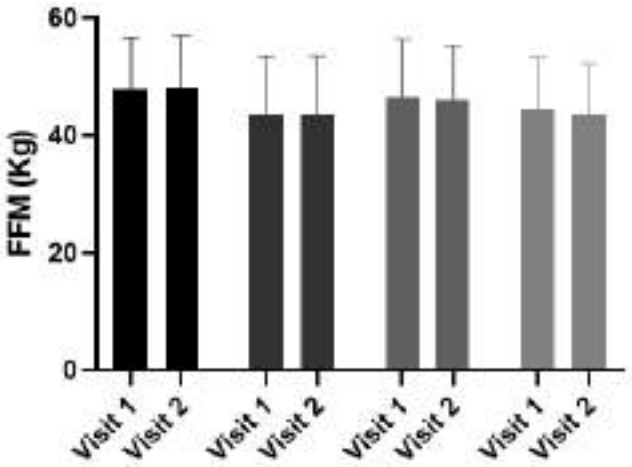
16/8 14/10 12/12 ctrl



16/8 14/10 12/12 ctrl

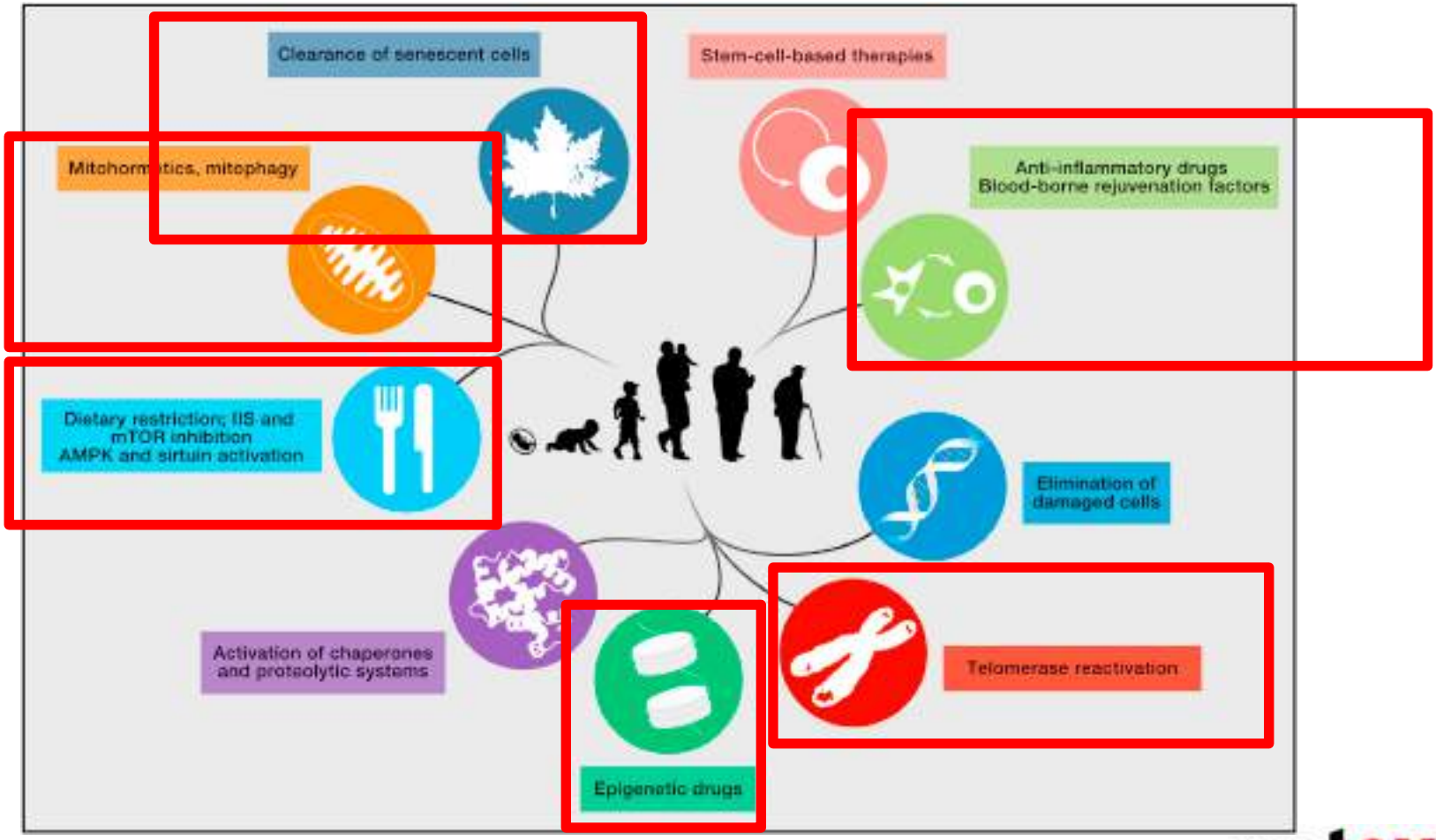


16/8 14/10 12/12 ctrl



Unpublished data

NUTRACEUTICA E INVECCHIAMENTO



López-Otín et al. Cell *153*, 1194–1217, 2013

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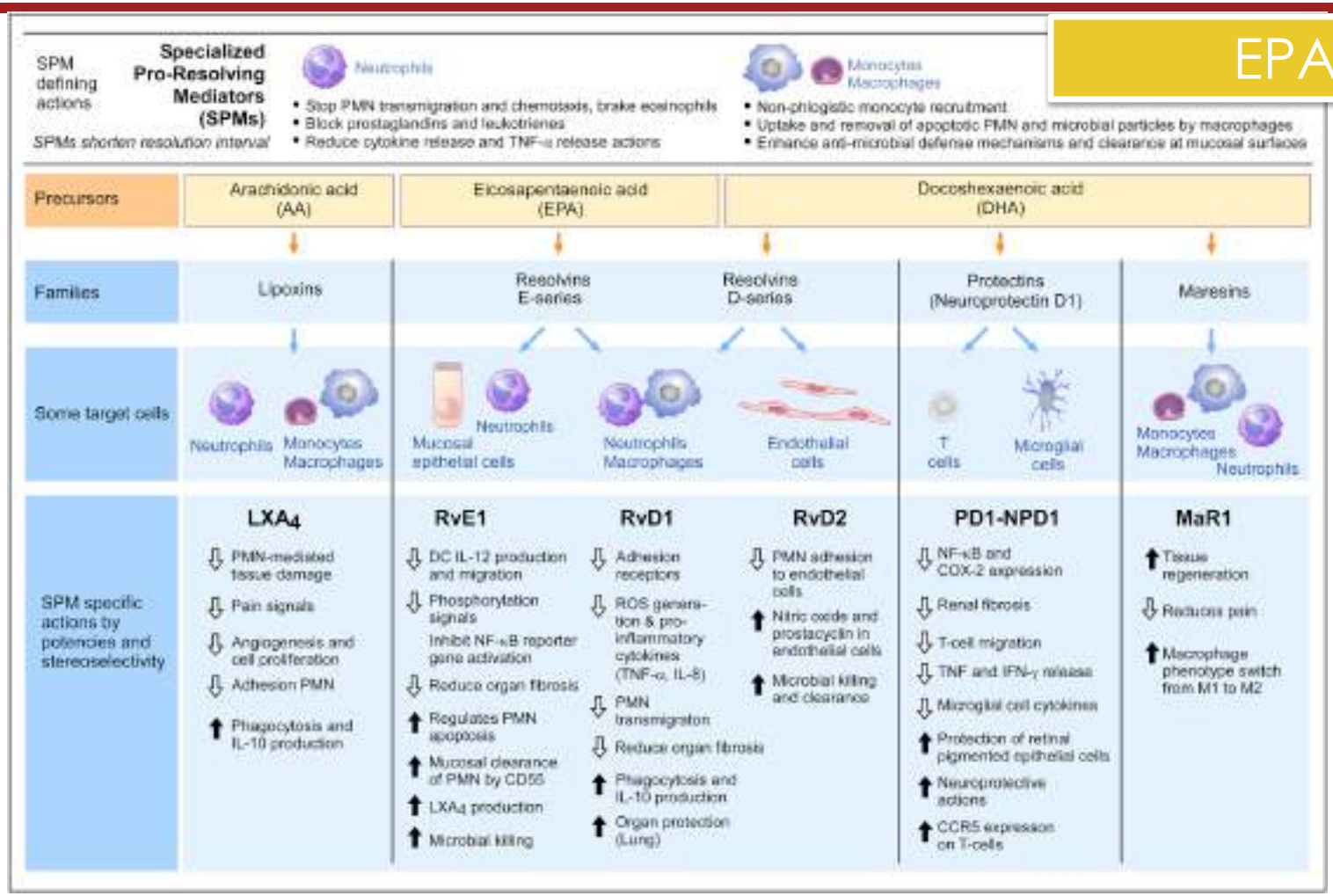
Nutraceutica e invecchiamento

EPA DHA



Barnig et al. Front Immunol. 2019 Jul 23;10:1699

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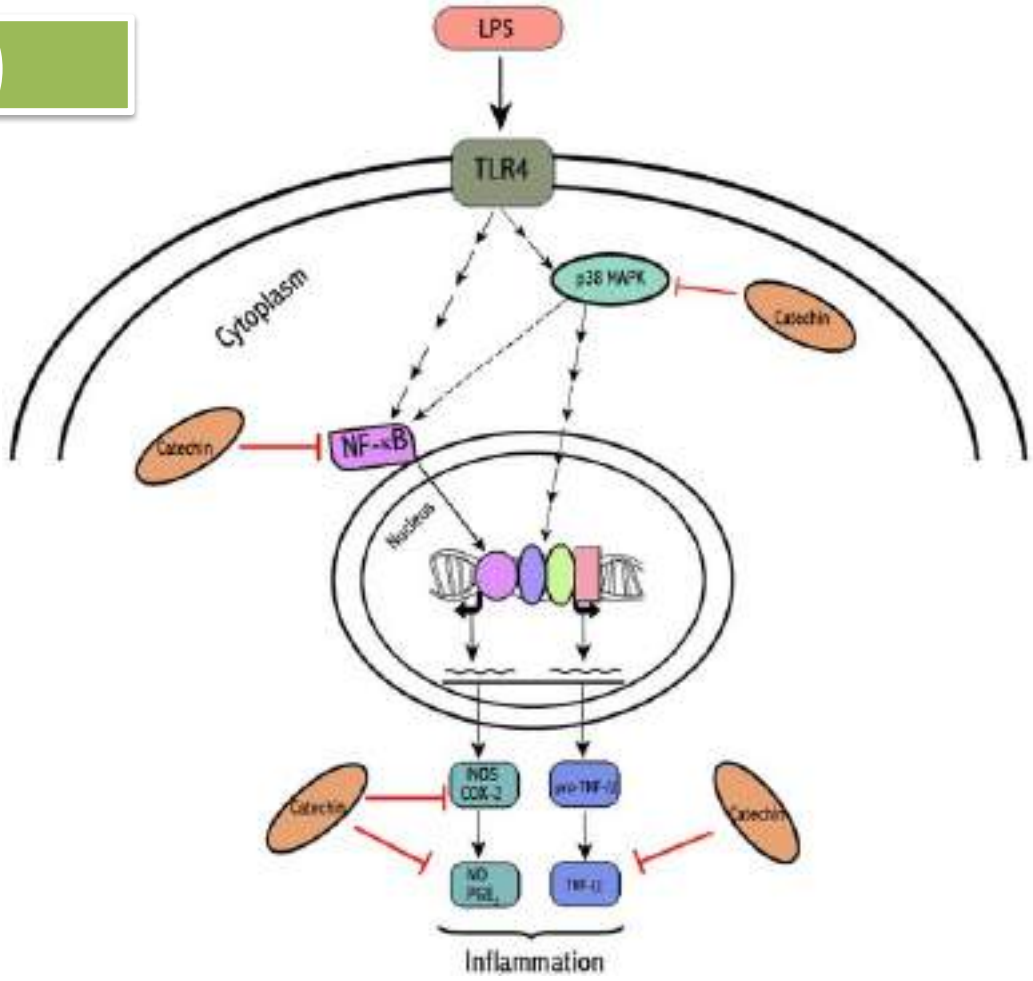
Nutraceutica e invecchiamento

CATECHINE)



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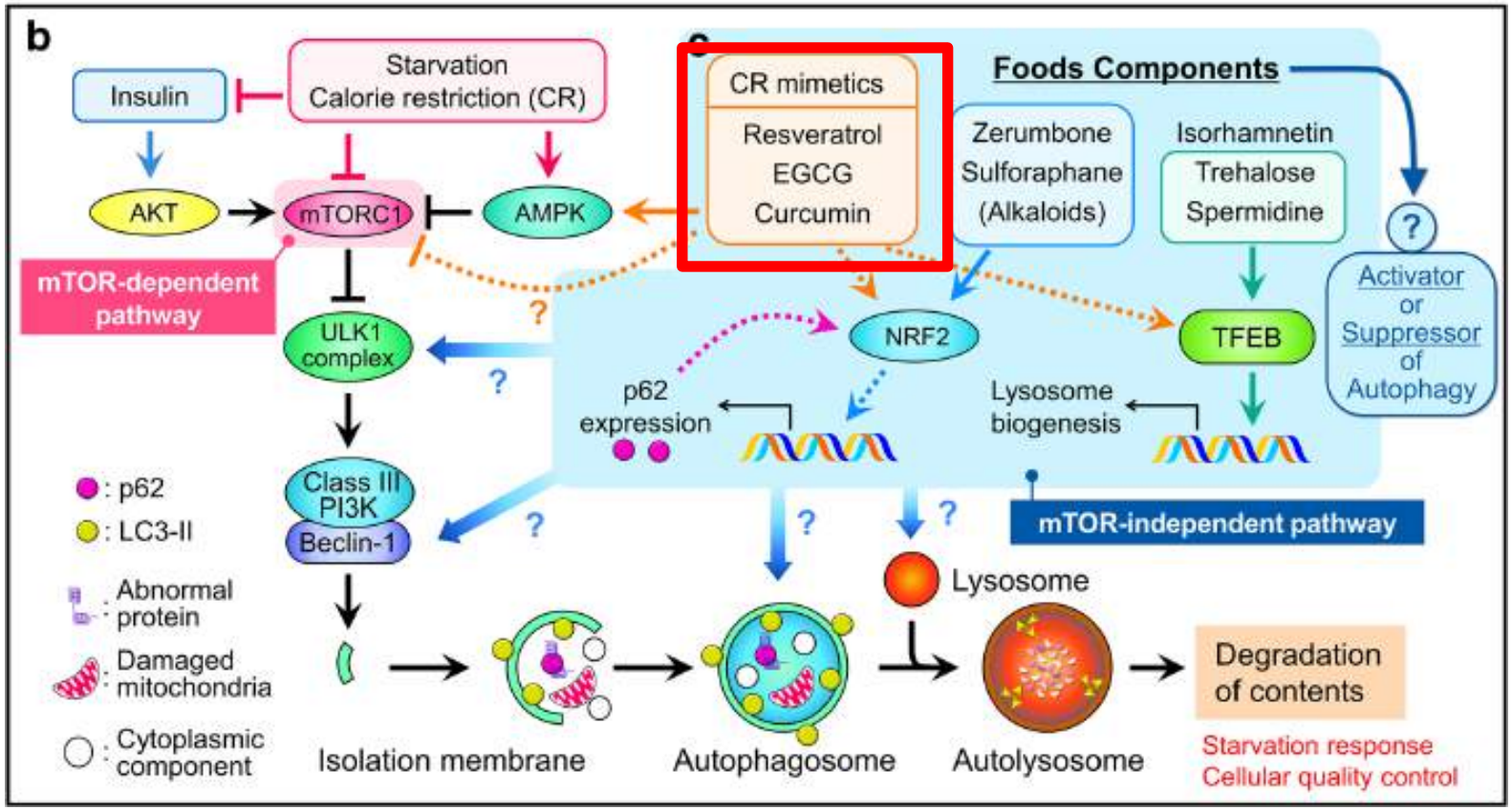

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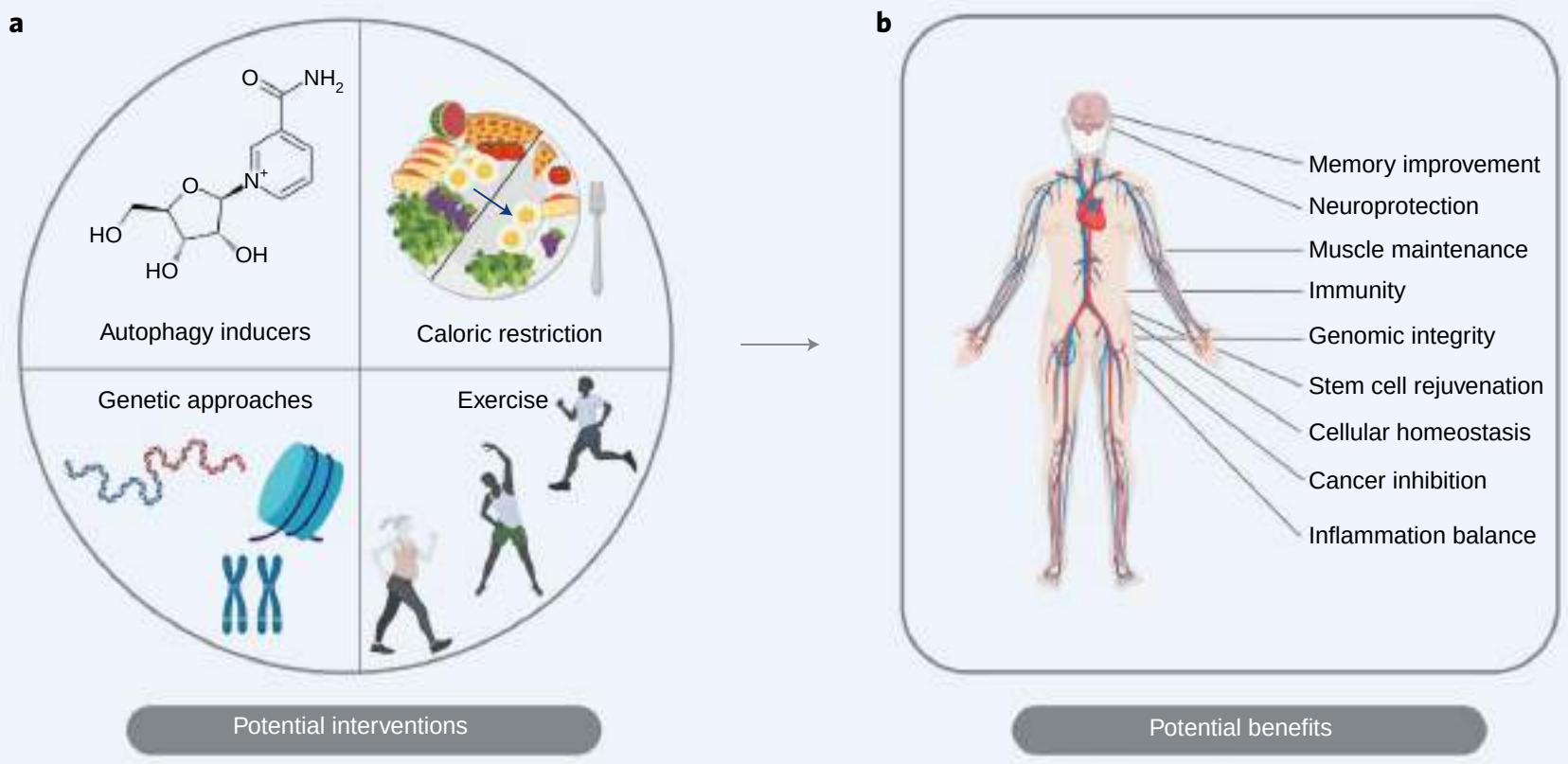
Nutraceutica e invecchiamento



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Nutraceutica e invecchiamento

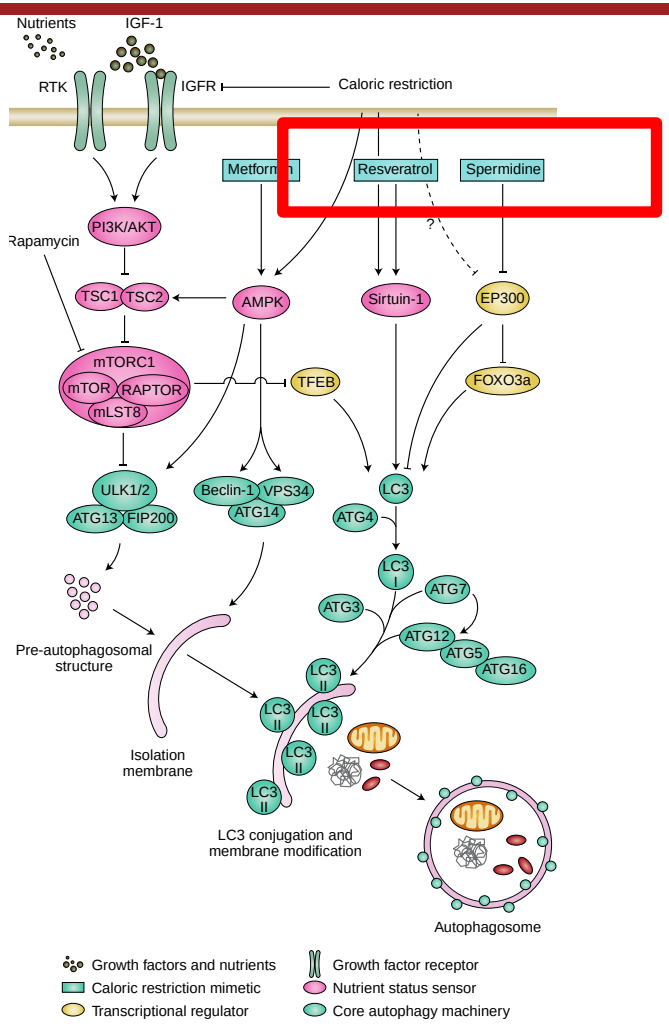

Table 2 | Select compounds that induce autophagy

Agent	Developmental status	Mechanism of autophagy induction
ABT-199 (also known as Venetoclax)	Approved for the treatment of chronic lymphocytic leukaemia (CLL)	BH3 mimetic and Beclin-1 activator
ABT-263 (also known as Navitoclax)	Phase I/II clinical trials for cancer	BH3 mimetic and Beclin-1 activator
ABT-737	In preclinical development	BH3 mimetic and Beclin-1 activator
Alvespimycin (also known as 17-DMAG)	Discontinued from clinical tests (hepatotoxicity)	HSP90 inhibitor and inhibition of Akt/mTOR/p70S6K signalling?
Beclin-1-derived peptide	In preclinical development	Beclin-1 activator
Carbamazepine	Approved for treatment of seizures and bipolar disorders	Reduction in Ins(1,4,5)P_3 and inositol levels
Clonidine and Rilmenidine	Approved for the treatment of hypertension	Reduction in cAMP levels
Caloric restriction	Not available	Multiple
Everolimus (also known as RAD001)	Approved for cancer therapy	Inhibition of mTORC1
Geldanamycin	Discontinued from clinical tests (hepatotoxicity)	Inhibition of Akt/mTOR/p70S6K signalling?
Hydroxycitrate	Nutritional supplement	CRM and AMPK activation
Lithium	Approved for treatment of bipolar disorders	Reduction in Ins(1,4,5)P_3 and inositol levels
Metformin	Approved for type II diabetes	CRM and AMPK activation
Perhexiline	Approved for angina	CRM, AMPK activation and Acetyl-CoA reduction
Physical exercise	Not available	Multiple
Rapamycin (also known as sirolimus)	Approved for immunosuppression and cancer therapy	Inhibition of mTORC1
Resveratrol	Nutritional supplement	CRM and SIRT1 activation
Statins	Approved for obesity	Depletion of geranylgeranyl disphosphate, AMPK activation and mTORC1 inhibition
Spermidine	Nutritional supplement	CRM and EP300 deacetylase inhibitor
Tanespimycin (also known as 17-AAG)	Discontinued from clinical tests	HSP90 inhibitor and inhibition of Akt/mTOR/p70S6K signalling?
Temsirolimus (also known as CCI-779)	Approved for cancer therapy	Inhibition of mTORC1
Torins	Experimental agent	Inhibition of mTORC1
Trehalose	Nutritional supplement, Phase I/II clinical trials for bipolar disorder and vascular aging	Glucose transporter inhibition and AMPK activation
Trifluoperazine	Approved for schizophrenia	Dopamine agonist and unknown

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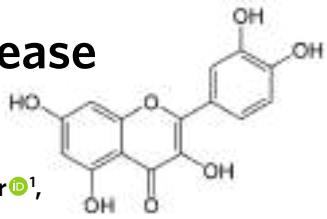
Nutraceutica e invecchiamento

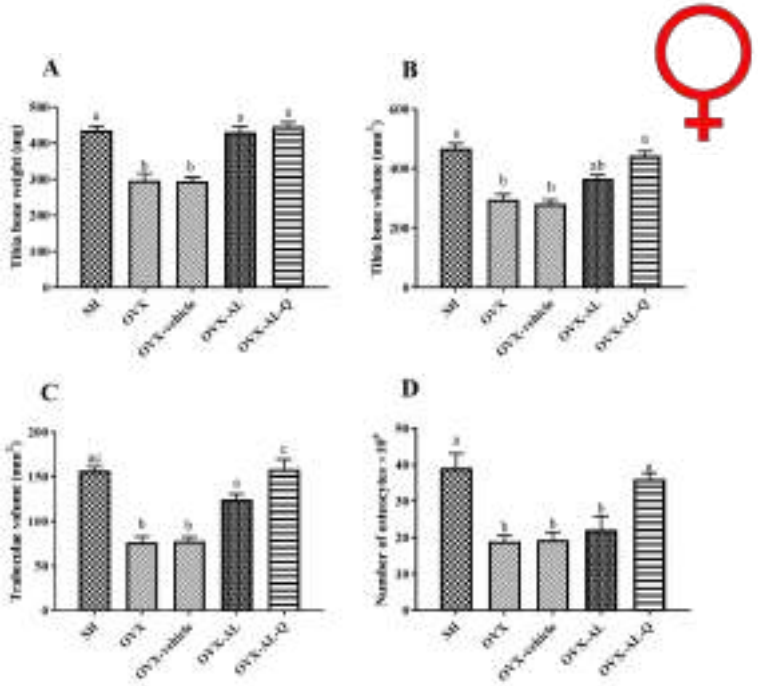
ARTICLES
https://doi.org/10.1038/s41591-018-0092-9
nature medicine

Senolytics improve physical function and increase lifespan in old age

Ming Xu[1,2*], Tamar Pirtskhalava[1], Joshua N. Farr[1], Bettina M. Weigand[1,3], Allyson K. Palmer[1], Megan M. Weivoda[1], Christina L. Inman[1], Mikolaj B. Ogrodnik[1,3], Christine M. Hachfeld[1], Daniel G. Fraser[1], Jennifer L. Onken[1], Kurt O. Johnson[1], Grace C. Verzosa[1], Larissa G. P. Langhi[1], Moritz Weigl[1], Nino Giorgadze[1], Nathan K. LeBrasseur[1], Jordan D. Miller[1], Diana Jurk[3], Ravinder J. Singh[4], David B. Allison[5,6], Keisuke Ejima[5,6], Gene B. Hubbard[7], Yuji Ikeno[7,8], Hajrunisa Cubro[9], Vesna D. Garovic[9], Xiaonan Hou[10], S. John Weroha[10], Paul D. Robbins[11], Laura J. Niedernhofer[11], Sundeep Khosla[1], Tamara Tchkonia[1*] and James L. Kirkland[1*]

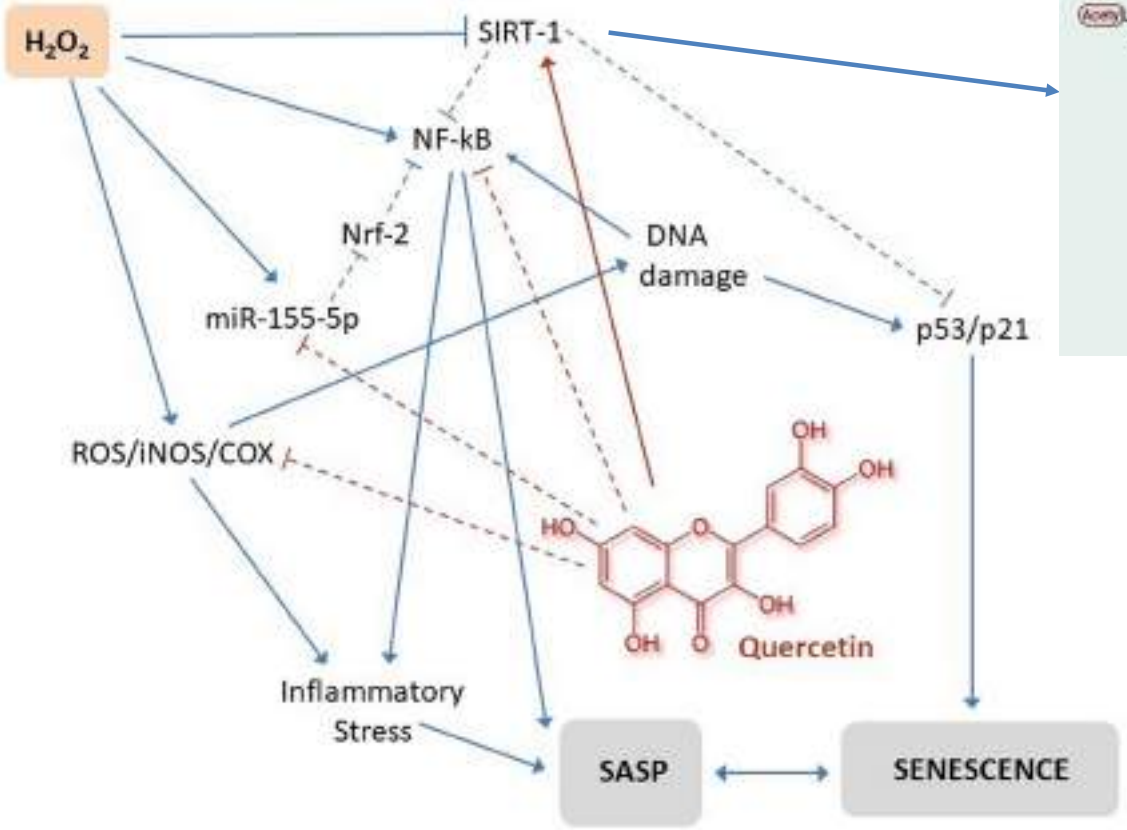
Physical function declines in old age, portending disability, increased health expenditures, and mortality. Cellular senescence, leading to tissue dysfunction, may contribute to these consequences of aging, but whether senescence can directly drive age-related pathology and be therapeutically targeted is still unclear. Here we demonstrate that transplanting relatively small numbers of senescent cells into young mice is sufficient to cause persistent physical dysfunction, as well as to spread cellular senescence to host tissues. Transplanting even fewer senescent cells had the same effect in older recipients and was accompanied by reduced survival, indicating the potency of senescent cells in shortening health- and lifespan. The senolytic cocktail, dasatinib plus quercetin, which causes selective elimination of senescent cells, decreased the number of naturally occurring senescent cells and their secretion of frailty-related proinflammatory cytokines in explants of human adipose tissue. Moreover, intermittent oral administration of senolytics to both senescent cell–transplanted young mice and naturally aged mice alleviated physical dysfunction and increased post-treatment survival by 36% while reducing mortality hazard to 65%. Our study provides proof-of-concept evidence that senescent cells can cause physical dysfunction and decreased survival even in young mice, while senolytics can enhance remaining health- and lifespan in old mice.

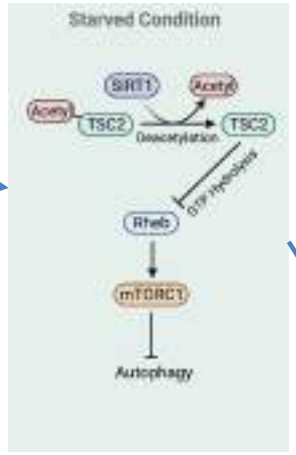


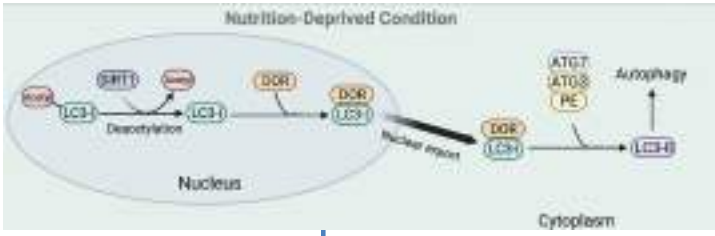


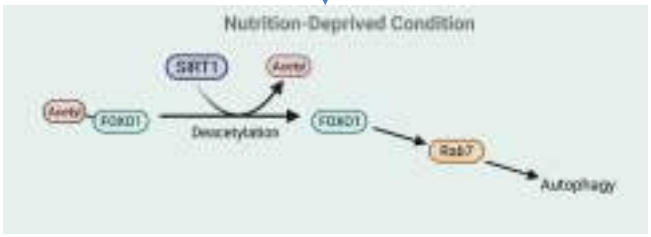
Quercetin potentiates the anti-osteoporotic effects of alendronate through modulation of autophagy and apoptosis mechanisms in ovariectomy-induced bone loss rat model

Nutraceutica e invecchiamento









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CONCLUSIONI 1

Se fossimo in grado di fornire a ciascuno la dose giusta di nutrimento ed esercizio fisico, né in difetto né in eccesso, avremmo trovato la strada per la salute.

Ippocrate (460-377 a.C.)

- L'attuale stile di vita, pur prolungando l'aspettativa di vita, ha influenzato negativamente alcuni aspetti
- Per mantenere un cervello sano è importante mantenere anche un corpo efficiente
- TUTTO MUSCOLI E NIENTE CERVELLO È UNA "FAKE NEWS"
- Un approccio attento all'alimentazione (quantitativo e qualitativo) è fondamentale per il benessere dell'organismo

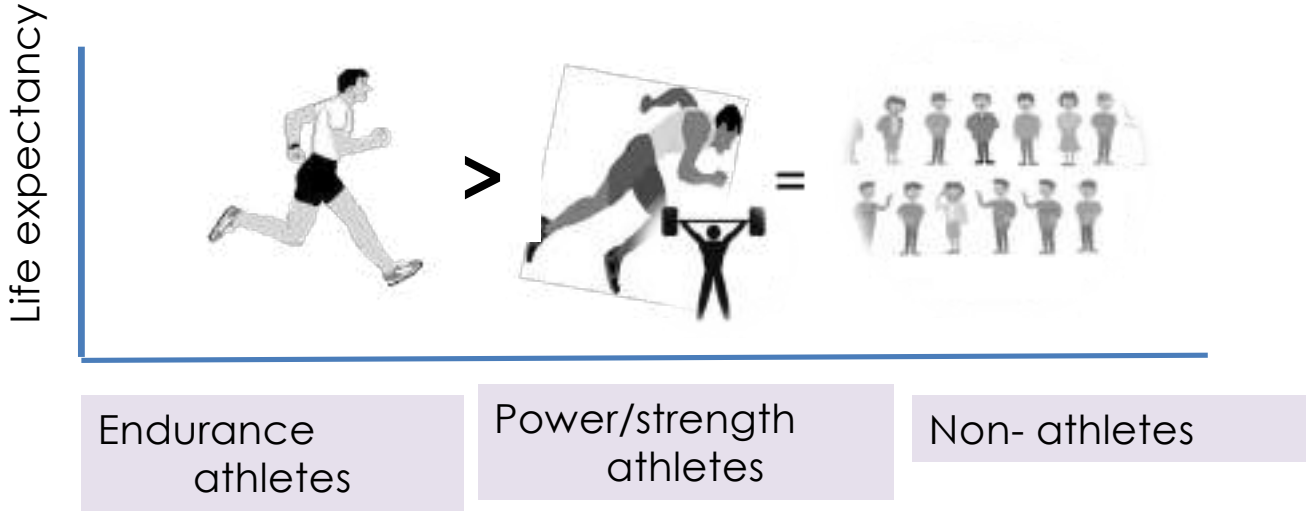
CONCLUSIONI 2

- Il digiuno intermittente e la caloric reduction si sono dimostrati un'arma efficace per il mantenimento della salute fisica e cognitiva
- Il digiuno intermittente lavora in sinergia dell'esercizio
- Vi sono alcuni attivi che agiscono migliorando alcuni aspetti legati all'invecchiamento e quindi, di fatto, MIGLIORANDO il processo di invecchiamento
- Infiammazione, stress ossidativo, riduzione dell'autofagia sono alcuni tra gli Hallmarks of aging
- Catechine, Omega 3, Resveratrolo, Quercetina agiscono su questi fenomeni

CONCLUSIONI 3

Differences between sports

The trend of longer survival observed in endurance and mixed-sports athletes is not obvious among power/strength athletes



Teramoto & Bungum. J Sci Med Sport. 2010 Jul;13(4):410-6.

Non è finita… finché non è finita…

Gerontology

Behavioral Science Section: Research Article

Gerontology
DOI: 10.1159/000524885

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Feeling Younger, Rehabilitating Better: Reciprocal and Mediating Effects between Subjective Age and Functional Independence in Osteoporotic Fracture and Stroke Patients

Daphna Magda Kalir[a] Amit Shrira[b] Yuval Palgi[c] Carmel Batz[b]
Aya Ben-Eliezer[d] Noemi Heyman[e] Devora Lieberman[f] Irena Seleznev[e]
Inna Shugaev[d, g] Oleg Zaslavsky[h] Evgeniya Zikrin[f] Ehud Bodner[b, i]

Rehabilitation outcomes following osteoporotic fractures or strokes could improve if subjective age and an optimistic outlook are taken into consideration

SAPETE A CHE VELOCITÀ CAMMINA LA MORTE…?

A CHE VELOCITÀ DOVETE CAMMINARE PER SFUGGIRLE?

LA VELOCITÀ DELLA TRISTE MIETITRICE…
1600 persone ultrasettantenni
Misurata la velocità di marcia
Dopo 5 anni
266 deceduti… camminavano a meno di 2,9 Km/h
Di chi camminava a più di 4,9 Km/h non era morto nessuno!

How fast does the Grim Reaper walk? Receiver operating characteristics curve analysis in healthy men aged 70 and over

BMJ

BMJ 2011;343:d7679 doi: 10.1136/bmj.d7679

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THANKS FOR YOUR ATTENTION!