ΤΜΗΜΑ ΒΙΟΧΗΜΕΙΑΣ & ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
25 ΧΡΟΝΙΑ

Επιπτώσεις της διατροφής στην υγεία του ανθρώπου και του πλανήτη

Δρ. Μαρία Κοντού
Επ. Καθηγήτρια Πρωτεϊνικής Χημείας
Τμήμα Βιοχημείας και Βιοτεχνολογίας
Πανεπιστήμιο Θεσσαλίας

2ο Ιατρικό Συνέδριο για τη Φυτική Διατροφή: Διατροφή, Φλεγμονή και Καρκινογένεση
8-9 Μαρτίου 2025, Εθνική Πινακοθήκη

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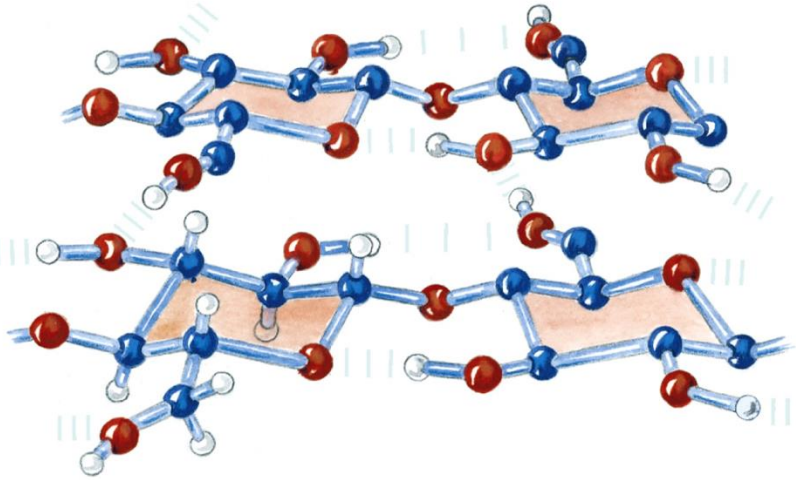
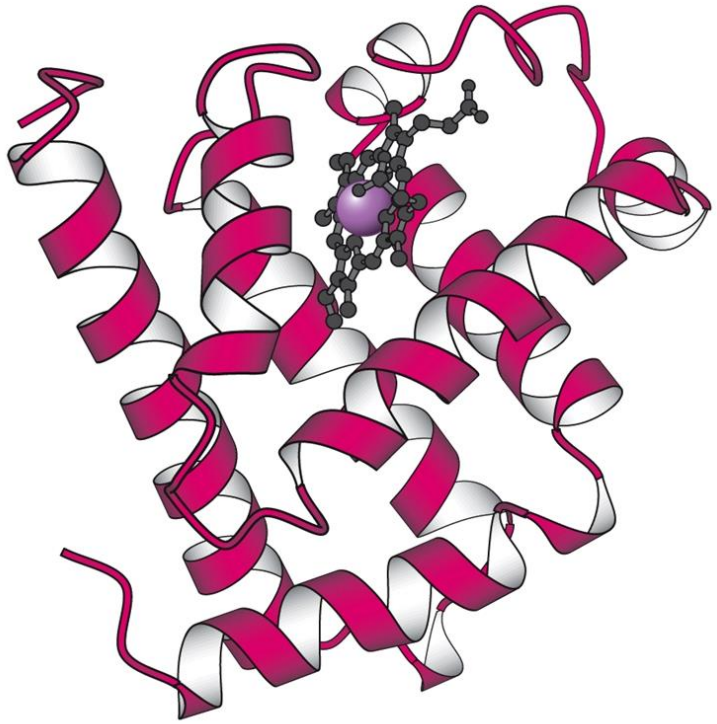
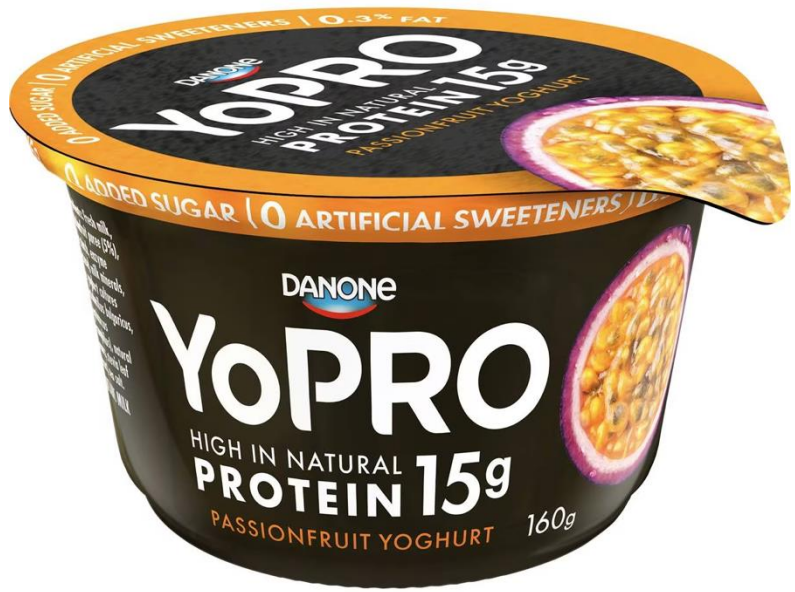


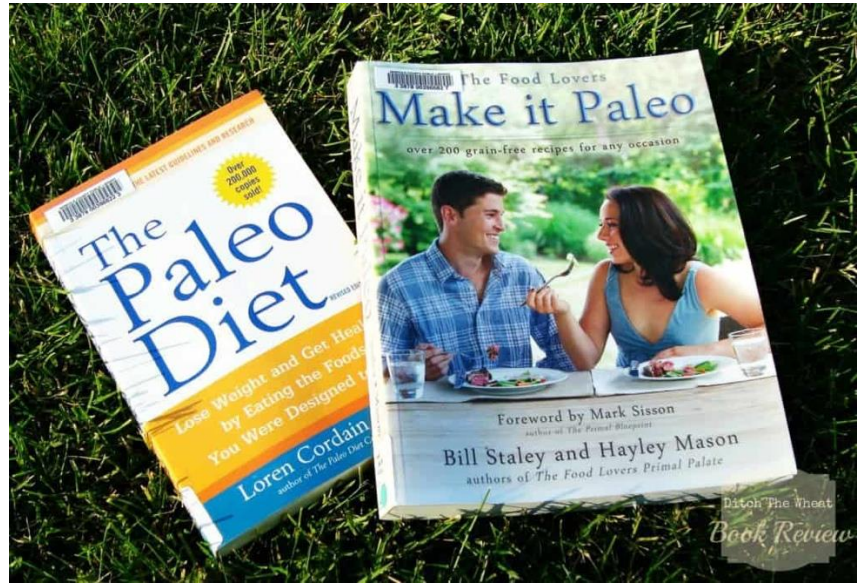


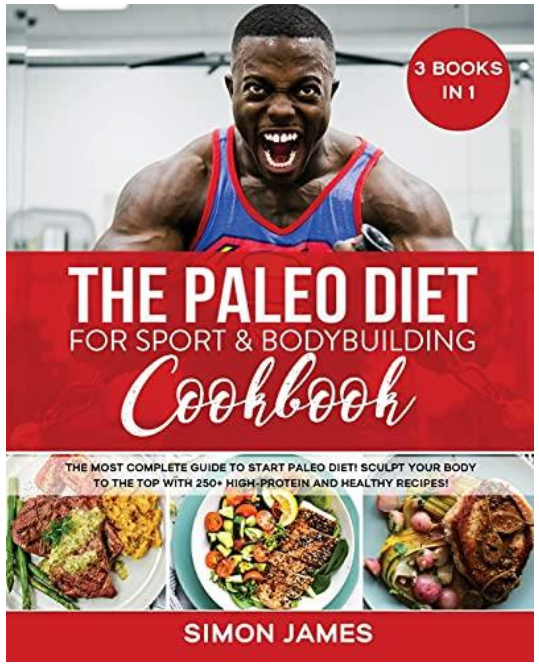

#1 SOURCE WHEY PROTEIN ISOLATE
#1 SOURCE WHEY PROTEIN ISOLATE
360°CUT
PERFORMANCE SUPPLEMENTS
360PRO WHEY
PREMIUM WHEY PROTEIN
PERFORMANCE BLEND*
24 PROTEIN
2 NET CARBS
1 SUGAR
30 SERVINGS
CHOCOLATE SILK
NATURALLY AND ARTIFICIALLY FLAVORED
GLUTEN FREE PROTEIN POWDER | NET WT. 2.1 LBS (951 G)

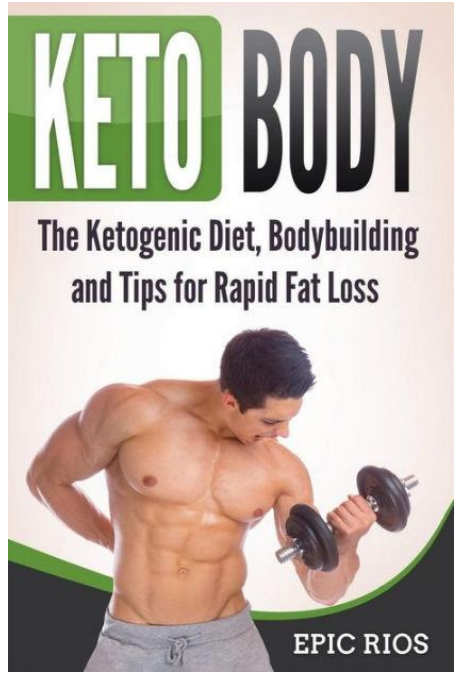

0 ADDED SUGAR | 0 ARTIFICIAL SWEETENERS
DANONE
YoPRO
HIGH IN NATURAL PROTEIN 15g
PASSIONFRUIT YOGHURT
160g

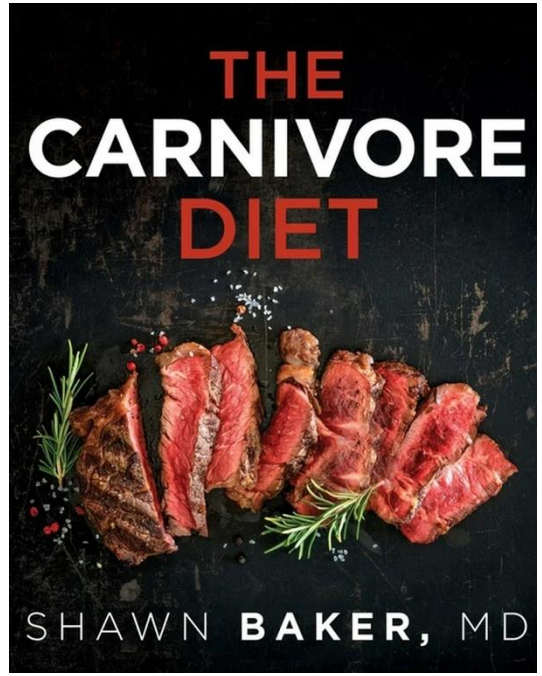

THE PASTA TASTE YOU LOVE
PROTEIN+
ROTINI
DAL 1877
Barilla
14.5 oz

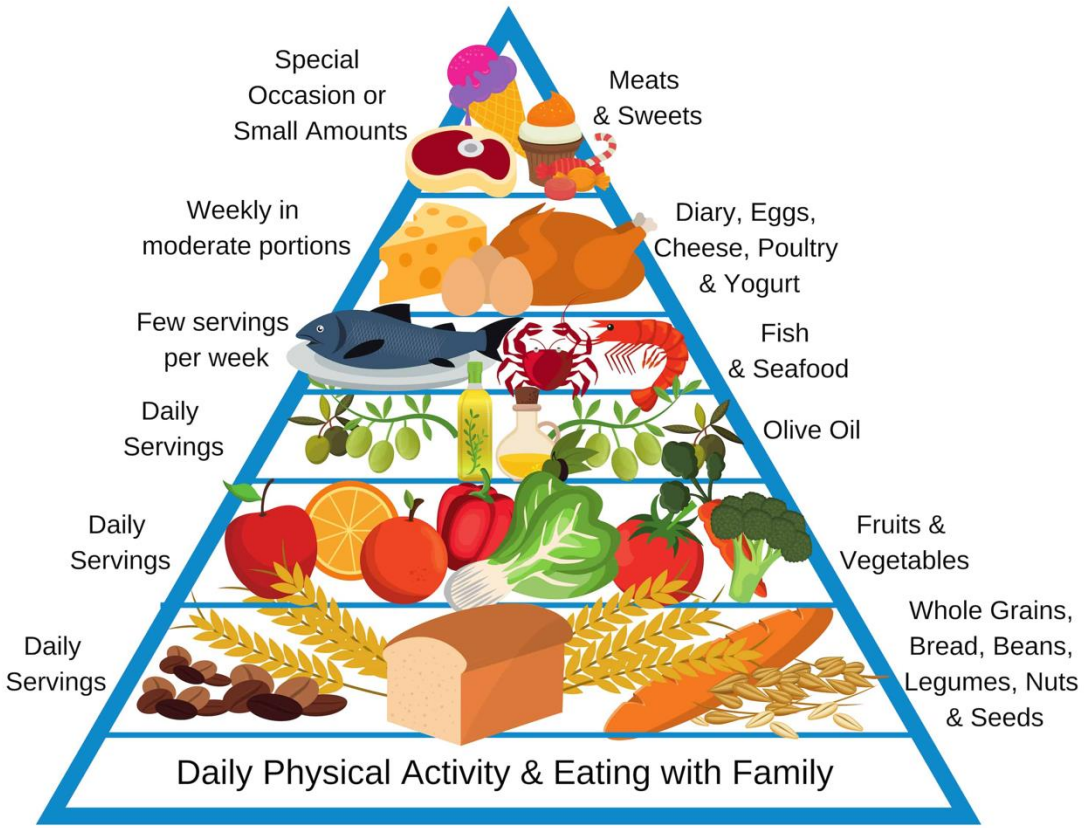

117
Paleo foods you can eat
7-day
beginner plan
PALEO FOR BEGINNERS
Essentials to get started
#1 Amazon BEST SELLER
ROCKRIDGE PRESS
99
easy
recipes


The Paleo Diet
Lose Weight and Get Healthy by Eating the Foods You Were Designed to Eat
Loren Cordain
The Food Lovers
Make it Paleo
over 200 grain-free recipes for any occasion
Foreword by Mark Sisson
Bill Staley and Hayley Mason
authors of The Food Lovers Primal Palate
Ditch The Wheat
Book Review

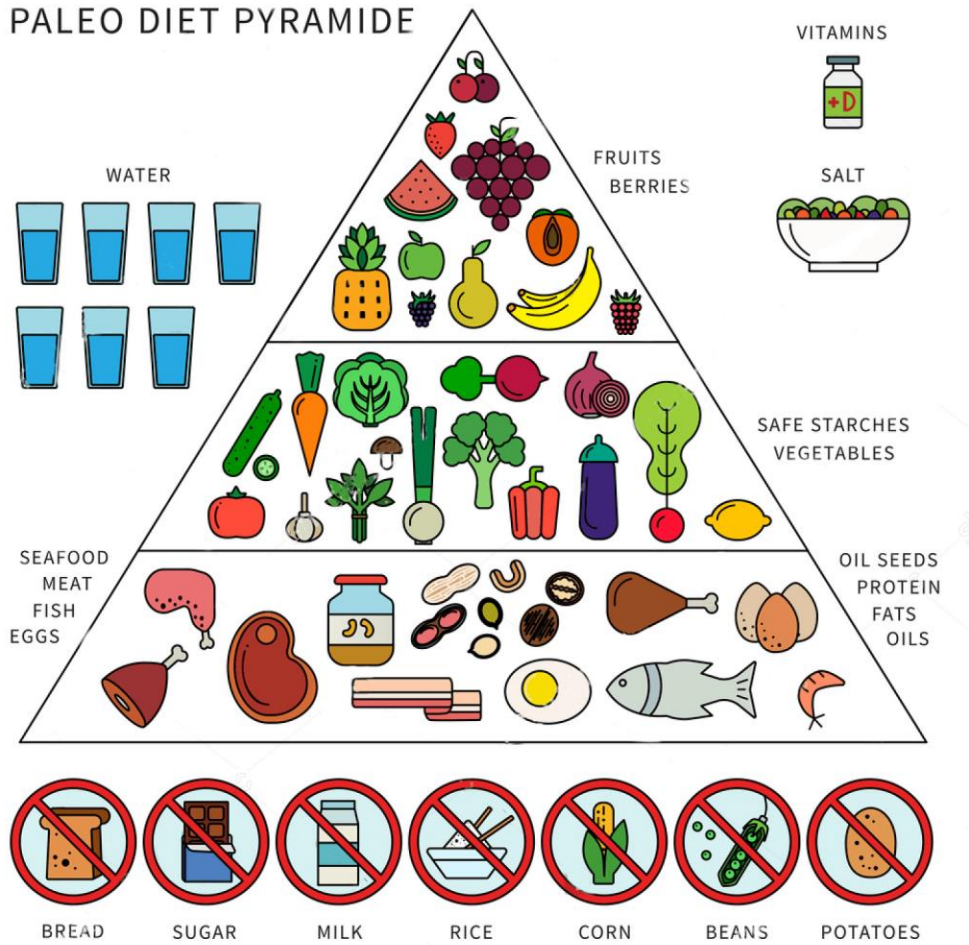

3 BOOKS IN 1
THE PALEO DIET
FOR SPORT & BODYBUILDING
Cookbook
THE MOST COMPLETE GUIDE TO START PALEO DIET! SCULPT YOUR BODY TO THE TOP WITH 250+ HIGH-PROTEIN AND HEALTHY RECIPES!
SIMON JAMES

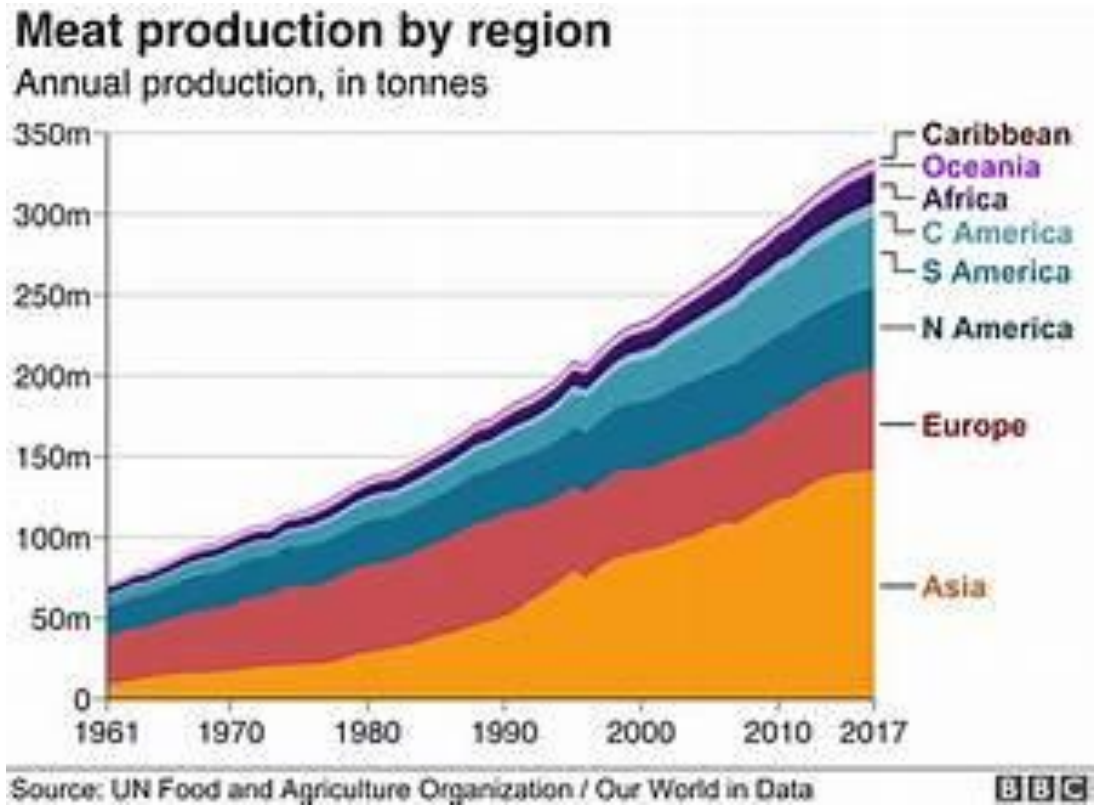

KETO BODY
The Ketogenic Diet, Bodybuilding and Tips for Rapid Fat Loss
EPIC RIOS

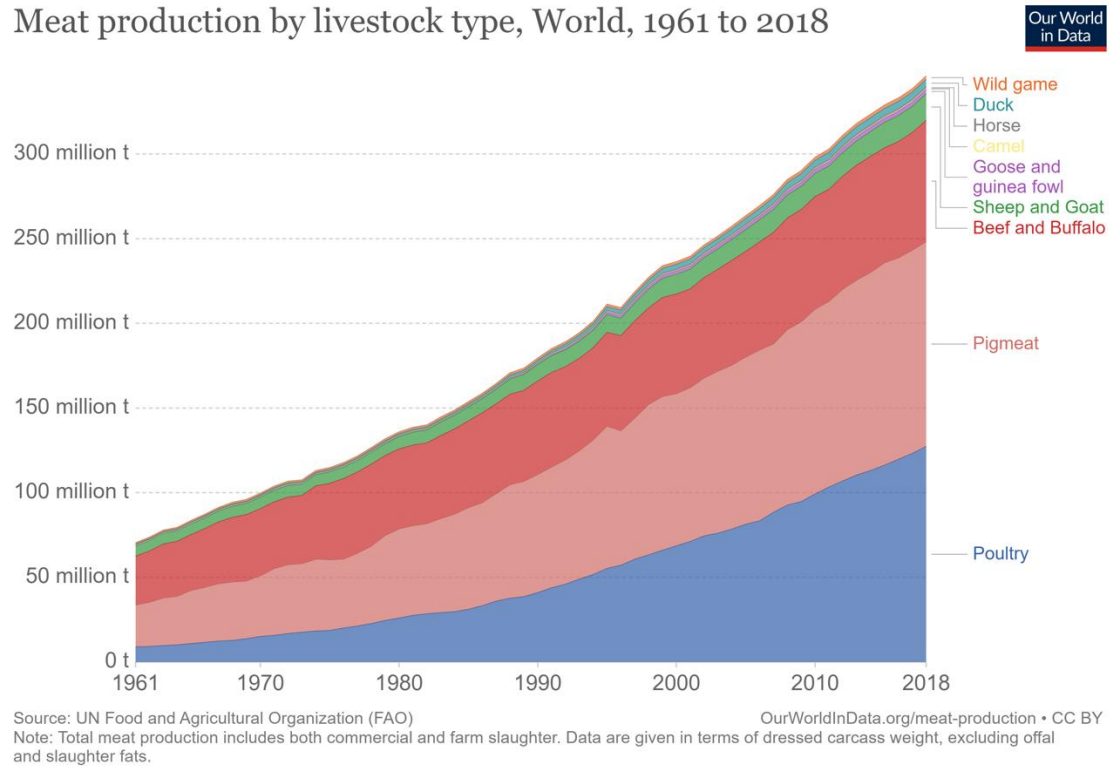

THE CARNIVORE DIET
SHAWN BAKER, MD



MEDITERRANEAN DIET




Meat production by region
Annual production, in tonnes
350m
300m
250m
200m
150m
100m
50m
0
1961
1970
1980
1990
2000
2010
2017
Caribbean
Oceania
Africa
C America
S America
N America
Europe
Asia
Source: UN Food and Agriculture Organization / Our World in Data
BBC


Meat production by livestock type, World, 1961 to 2018
Our World in Data
300 million t
250 million t
200 million t
150 million t
100 million t
50 million t
0 t
1961
1970
1980
1990
2000
2010
2018
Wild game
Duck
Horse
Camel
Goose and guinea fowl
Sheep and Goat
Beef and Buffalo
Pigmeat
Poultry
Source: UN Food and Agricultural Organization (FAO)
OurWorldInData.org/meat-production • CC BY
Note: Total meat production includes both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.

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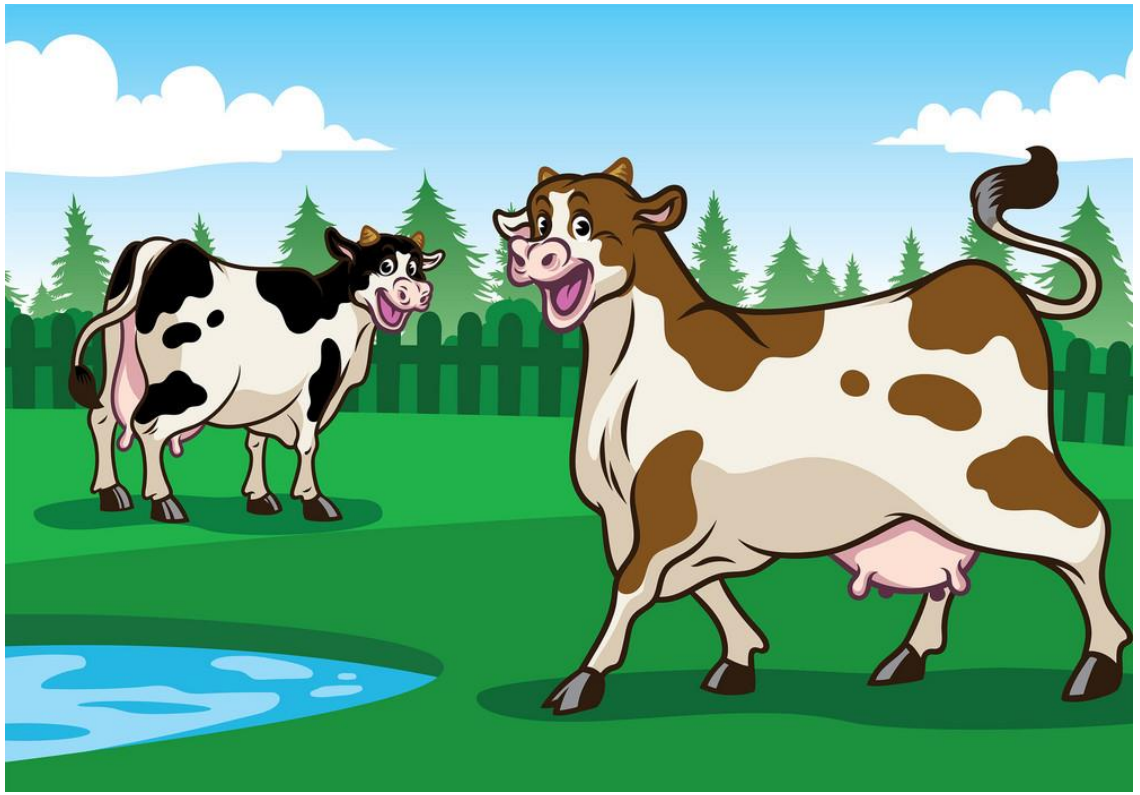
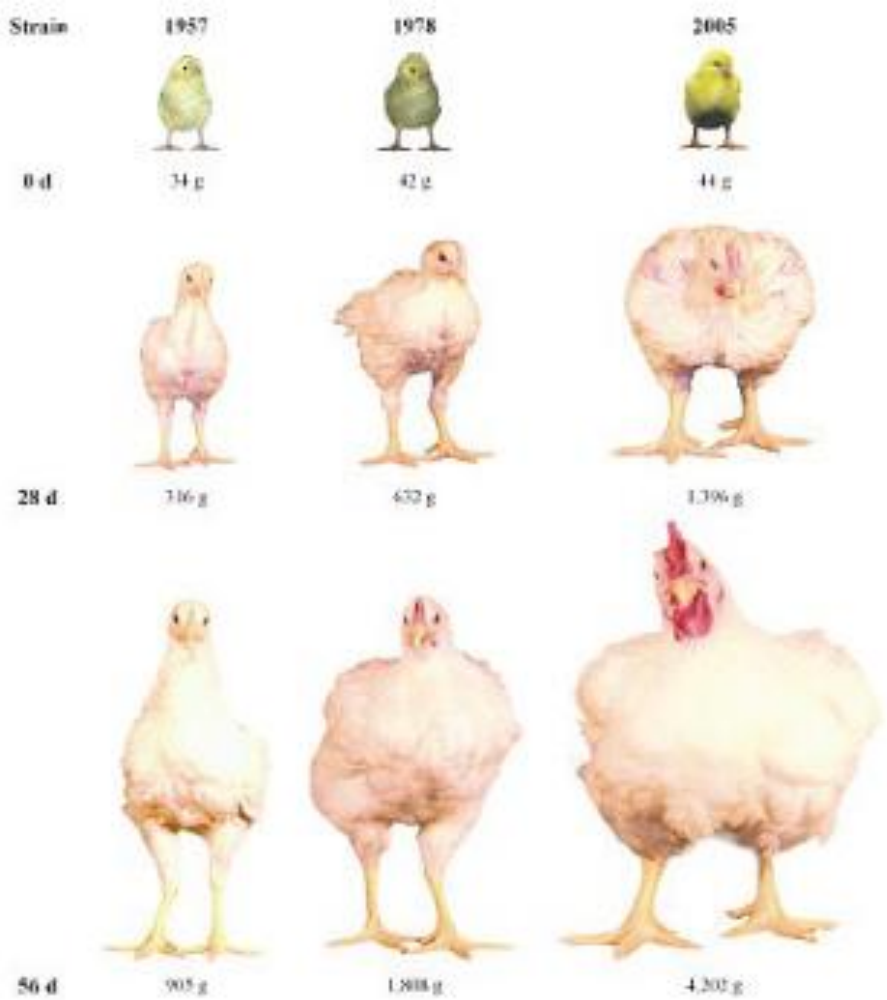
60 δισεκατομμύρια χερσαία ζώα θανατωνονται ετησίως


La Vache qui rit®
The Laughing Cow®
CALCIUM
FER




Το ipad σου
είναι μεγαλύτερο
από το κλουβί
που ζει όλο το βίο της
μια
αυγοπαραγωγική κότα!
7.31"
9.50"



https://academic.oup.com/ps/article/93/12/2970/2730506

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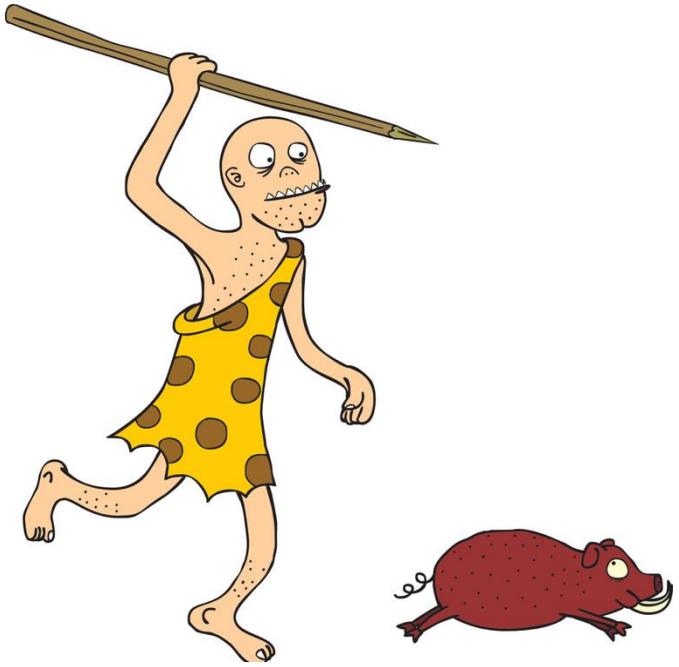
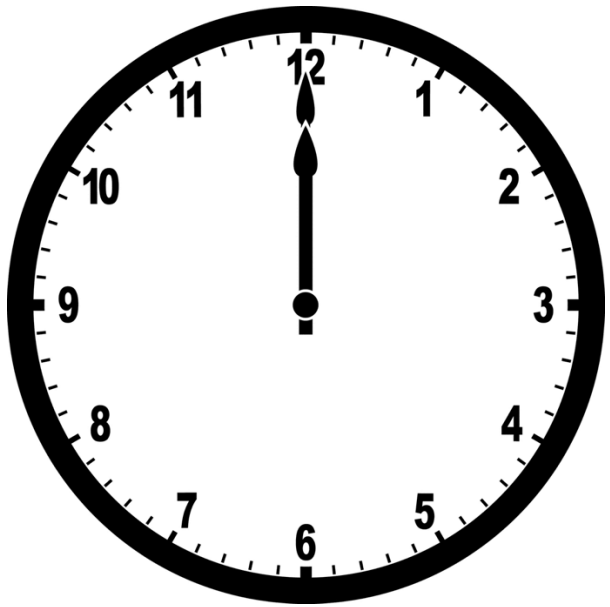
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
25 ΧΡΟΝΙΑ



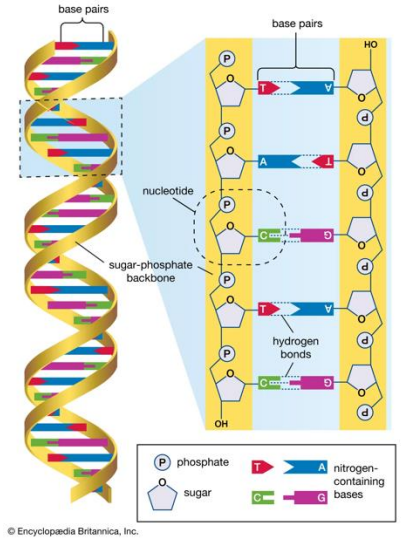
Μύθος Νο 1:
Το ανθρώπινο είδος εξελίχθηκε καταναλώνοντας κρέας

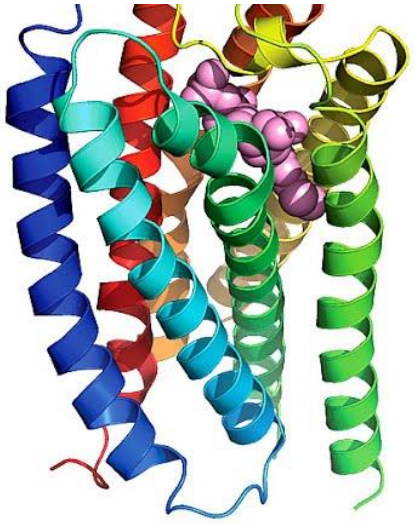


1st Agricultural Revolution

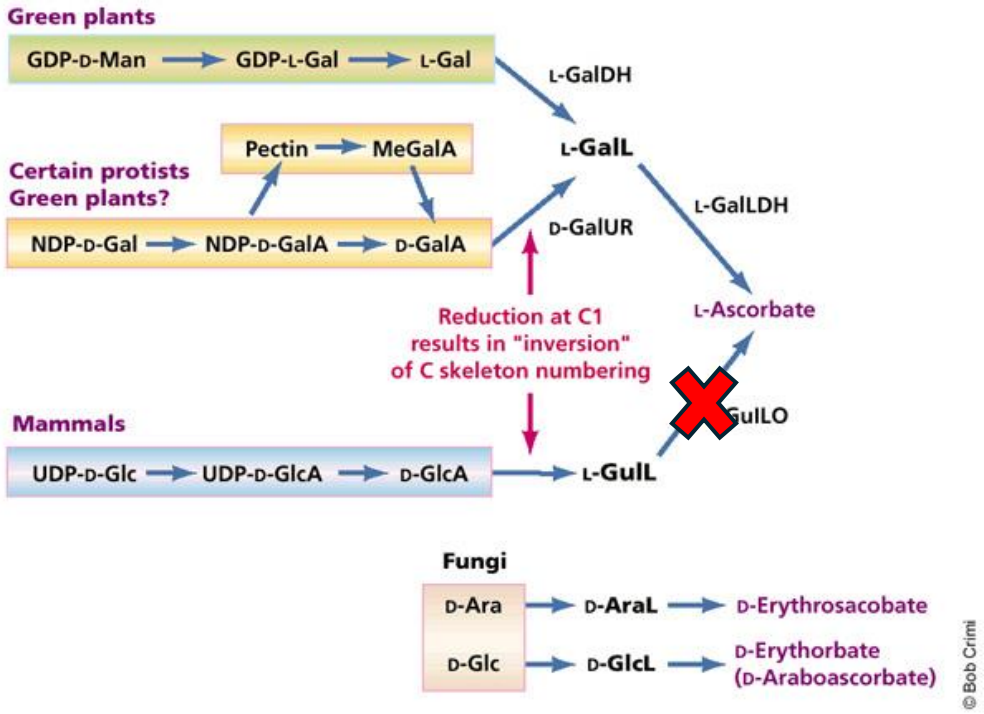
To

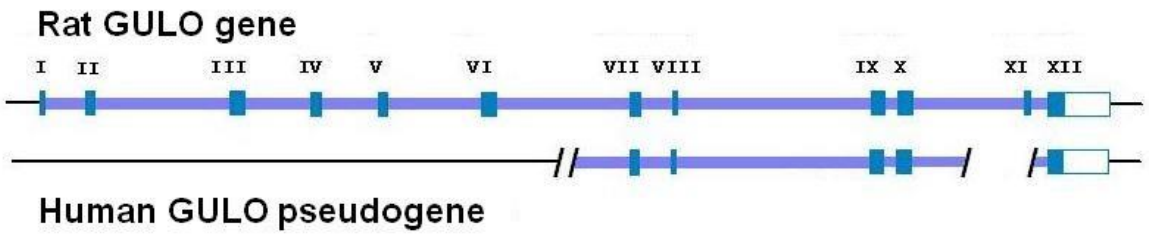
- **Η μεγάλη πλειοψηφία των βιοχημικών και γενετικών εξελικτικών προσαρμογών του ανθρώπινου είδους έγιναν για την κατανάλωση φυτικών τροφών**





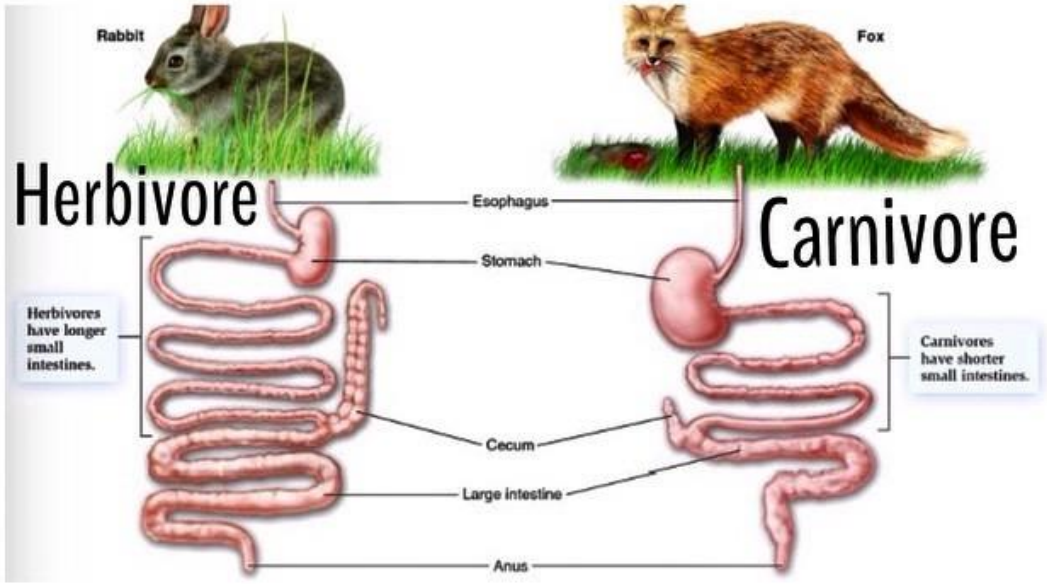
Βιταμίνη C

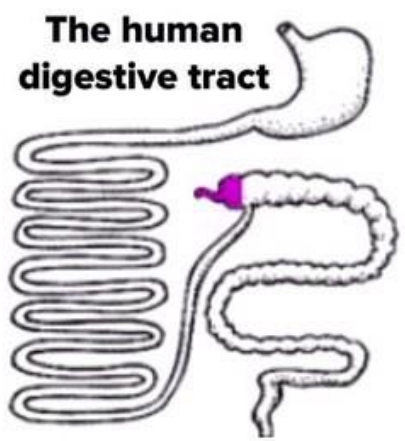




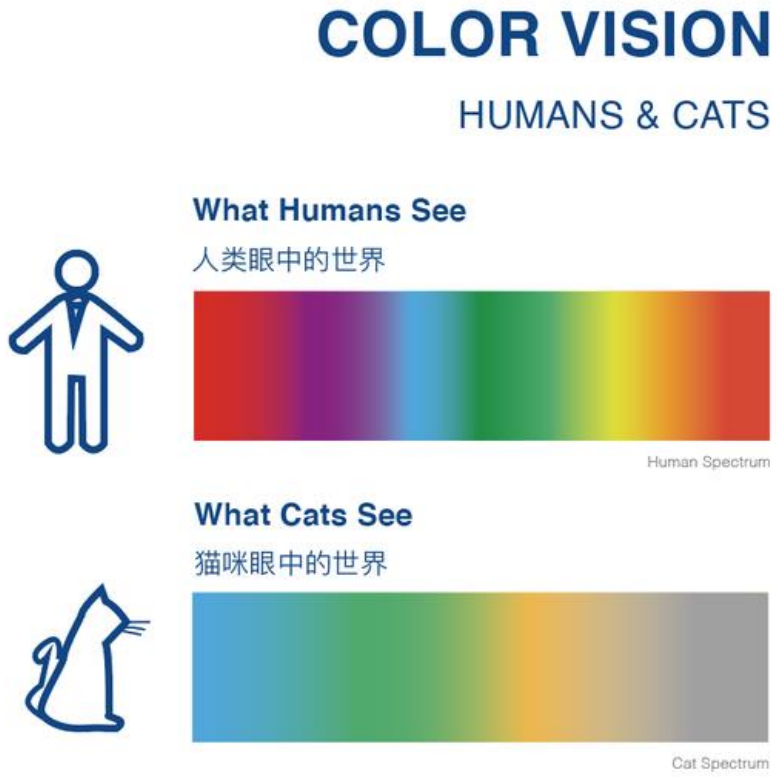
Yuriko Ohta, Morimitsu Nishikimi, Random nucleotide substitutions in primate nonfunctional gene for l-gulono-γ-lactone oxidase, the missing enzyme in l-ascorbic acid biosynthesis,
Biochimica et Biophysica Acta (BBA) - General Subjects, Volume 1472, Issues 1–2,1999, Pages 408-411, ISSN 0304-4165,

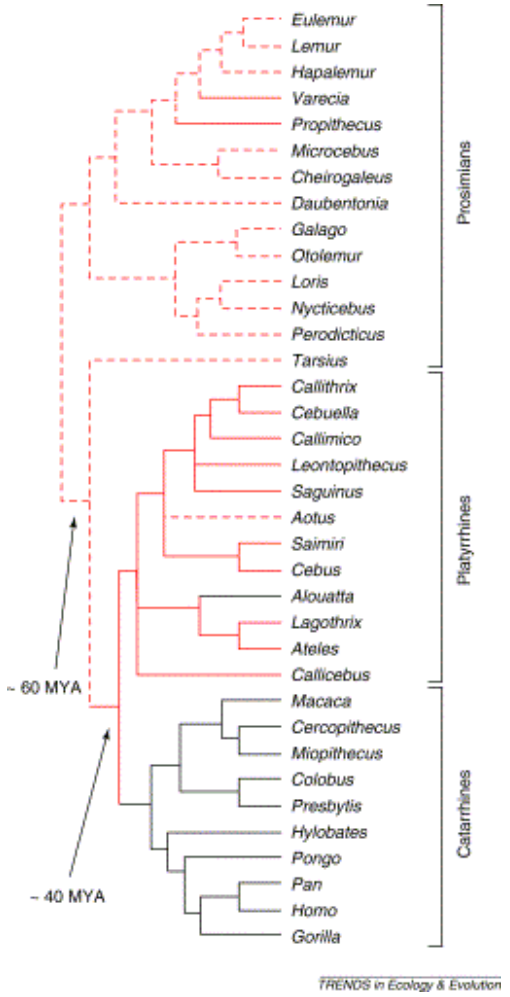
Γαστρεντερικός σωλήνας





Τριχωματική όραση





Alison K. Surridge, Daniel Osorio, Nicholas I. Mundy,
Evolution and selection of trichromatic vision in primates,
Trends in Ecology & Evolution, Volume 18, Issue 4, 2003, Pages 198-205,ISSN 0169-5347

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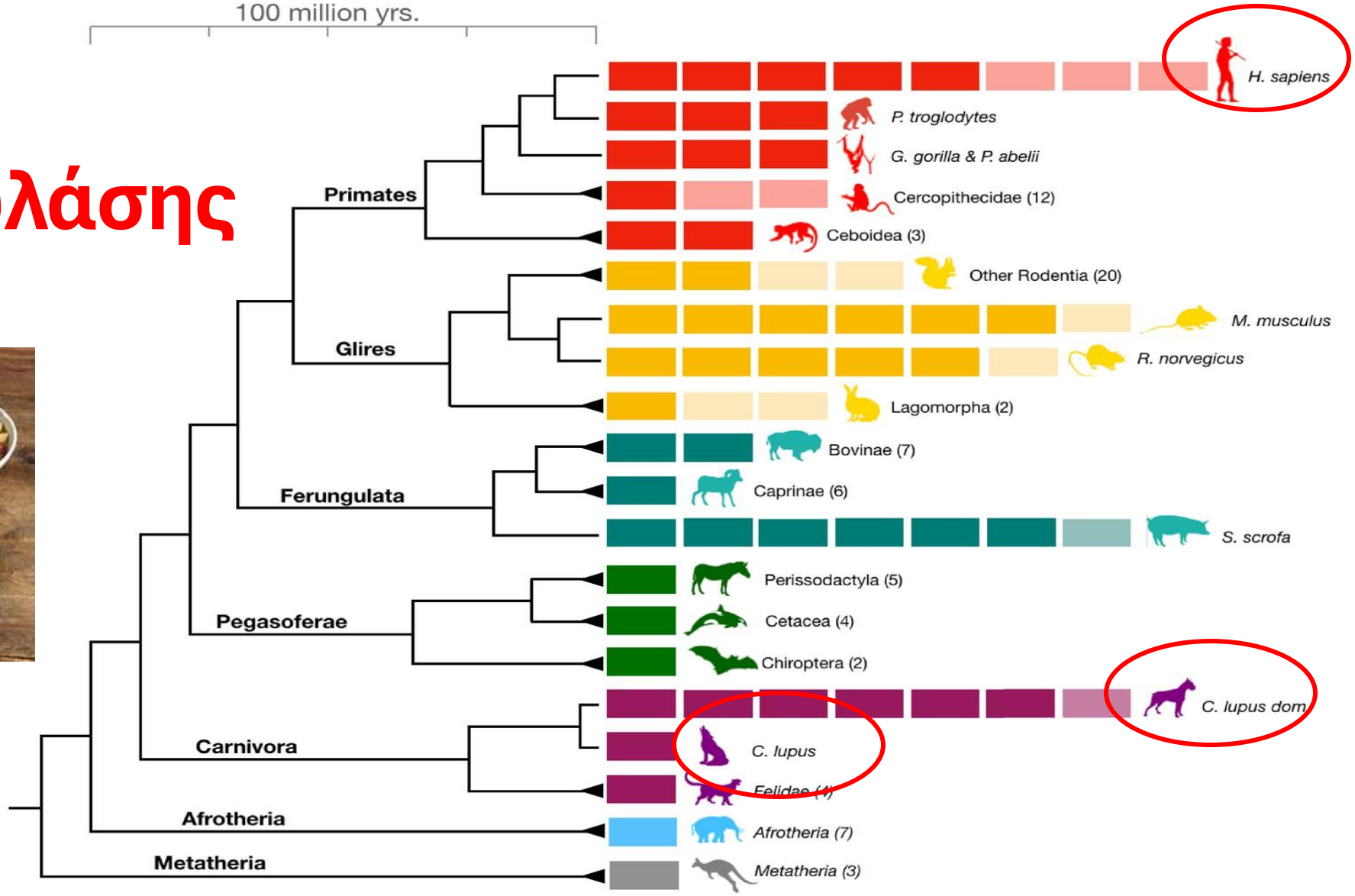
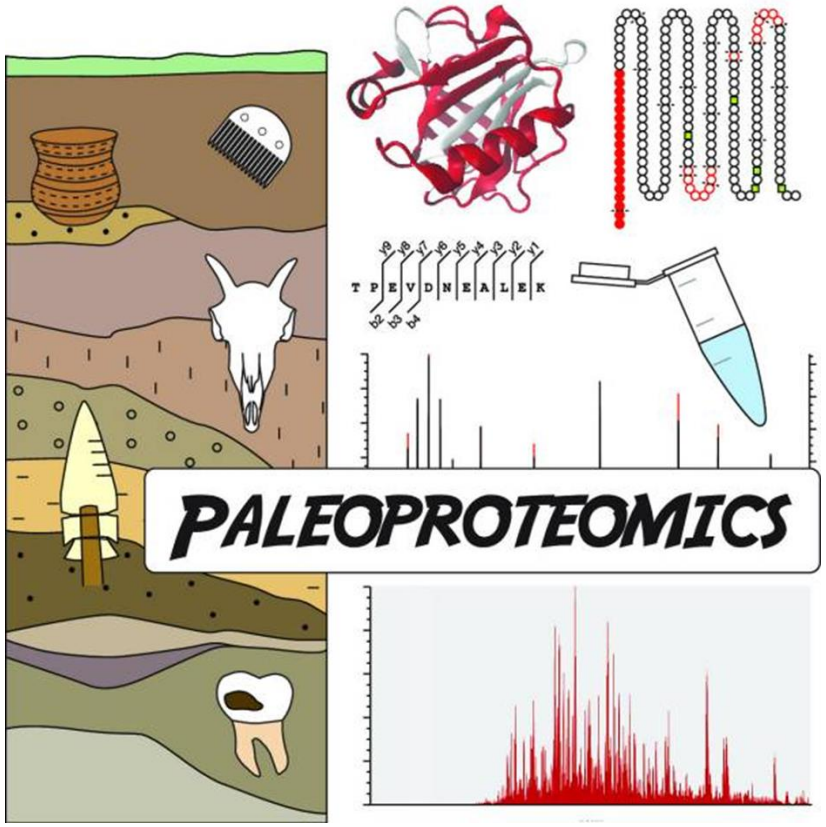
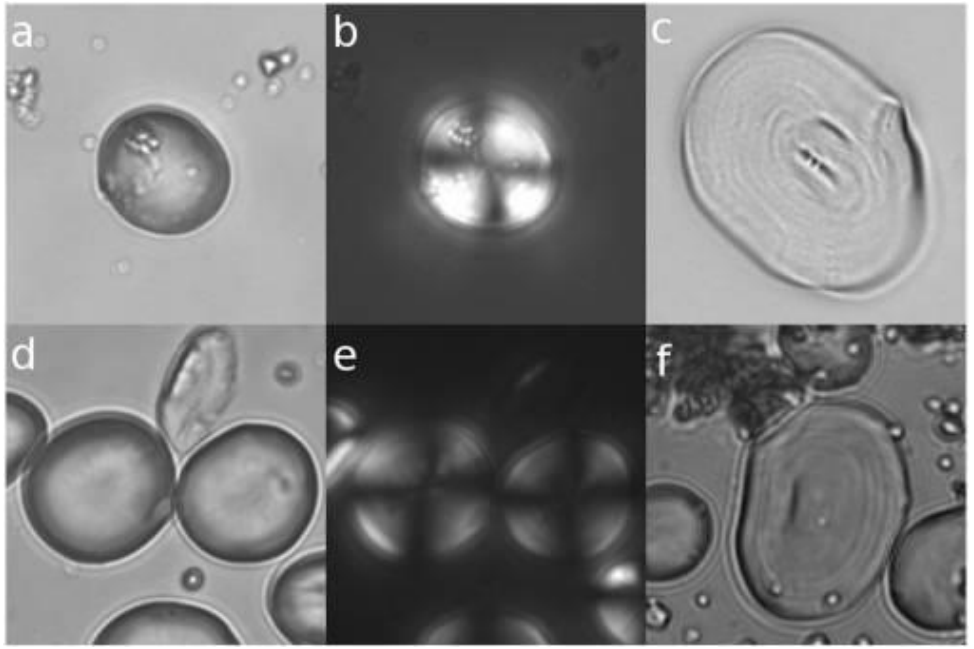
Γονίδιο αμυλάσης



Petar Pajic, Pavlos Pavlidis, Kirsten Dean, Lubov Neznanova, Rose-Anne Romano, Danielle Garneau, Erin Daugherity, Anja Globig, Stefan Ruhl, Omer Gokcumen (2019) Independent amylase gene copy number bursts correlate with dietary preferences in mammal





Henry AG, Brooks AS, Piperno DR. Microfossils in calculus demonstrate consumption of plants and cooked foods in Neanderthal diets (Shanidar III, Iraq; Spy I and II, Belgium). Proc Natl Acad Sci U S A. 2011 Jan 11;108(2):486-91. doi: 10.1073/pnas.1016868108. Epub 2010 Dec 27. PMID: 21187393; PMCID: PMC3021051.

Κοπρόλιθοι

Εμπλουτισμένα με CAZymes που αποικοδομούν το άμυλο, λόγω της υψηλότερης κατανάλωσης σύνθετων υδατανθράκων

Wibowo, M.C., Yang, Z., Borry, M. et al. Reconstruction of ancient microbial genomes from the human gut. Nature 594, 234–239 (2021).

Μύθος νο 2

Ο μύθος της "πρωτεΐνης"

ΤΜΗΜΑ ΒΙΟΧΗΜΕΙΑΣ & ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
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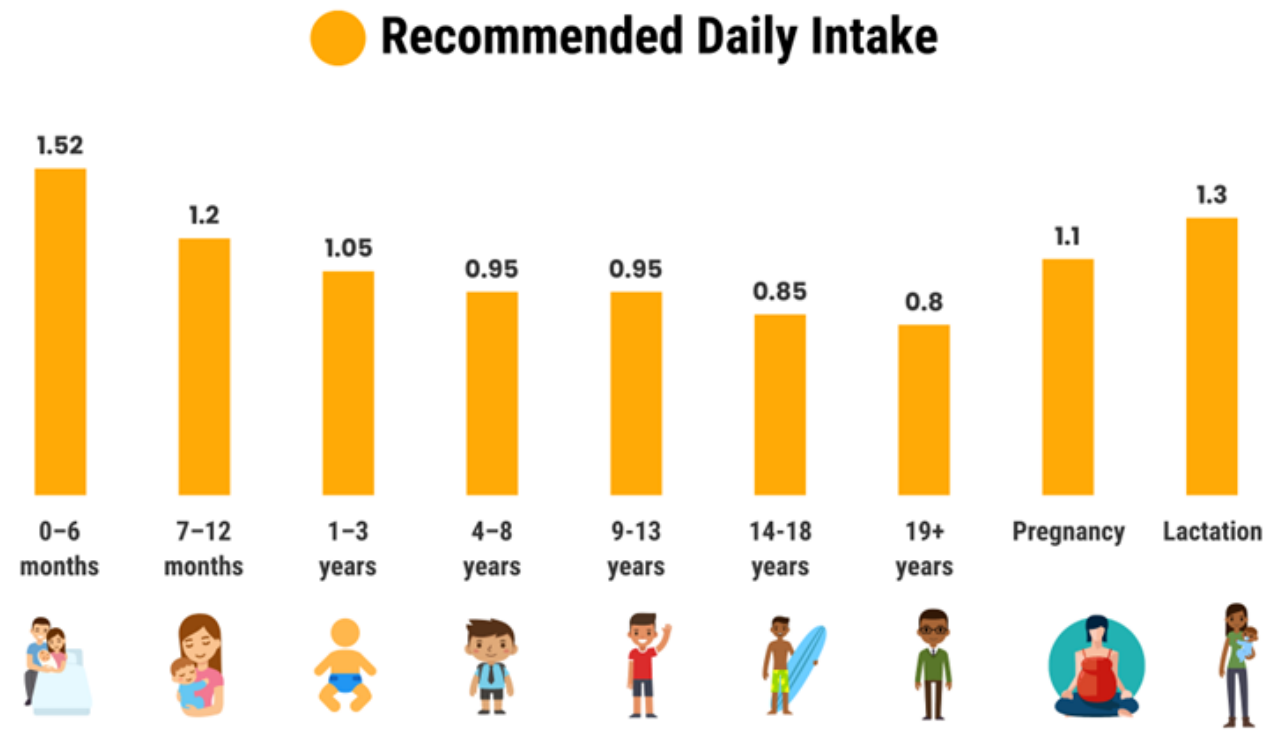
PROTEIN INTAKE

RECOMMENDED INTAKE LEVELS FOR ALL AGE GROUPS (g/kg/d)

FromGreens



Source: Institute of Medicine (2005) - Dietary reference intake guide (NAP.edu)

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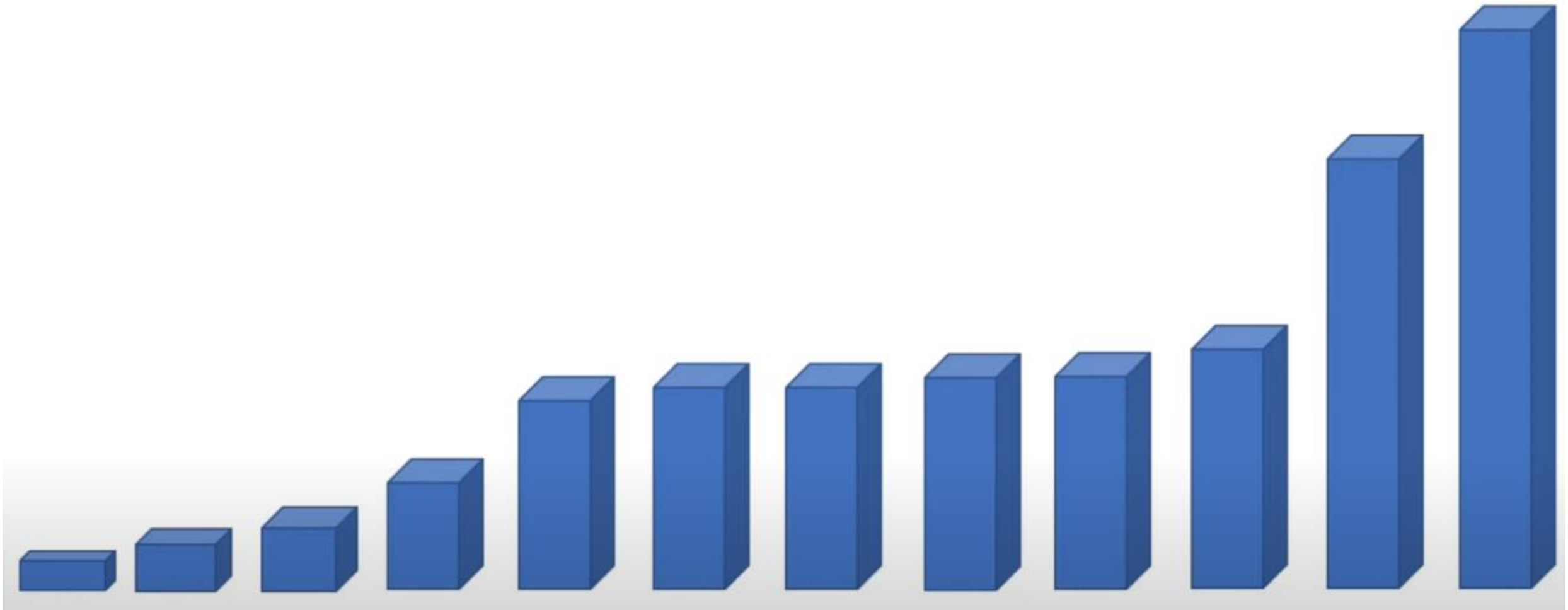
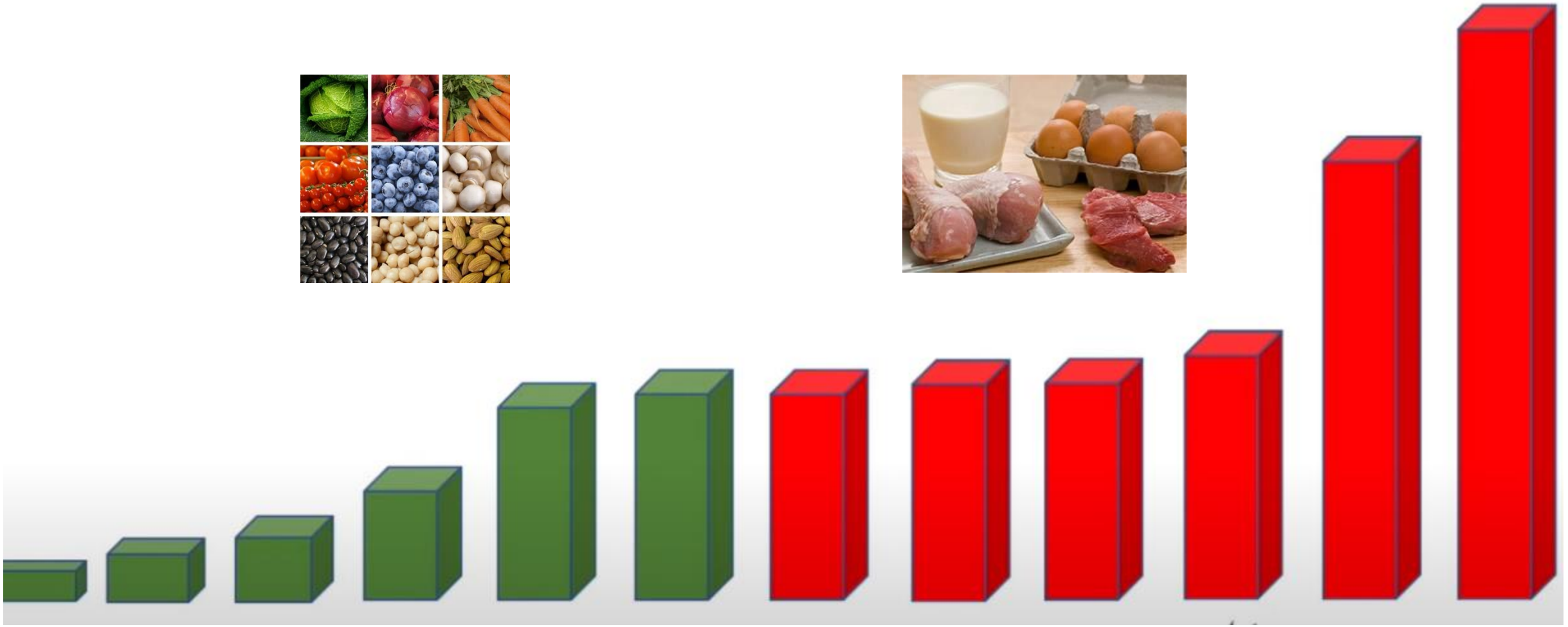
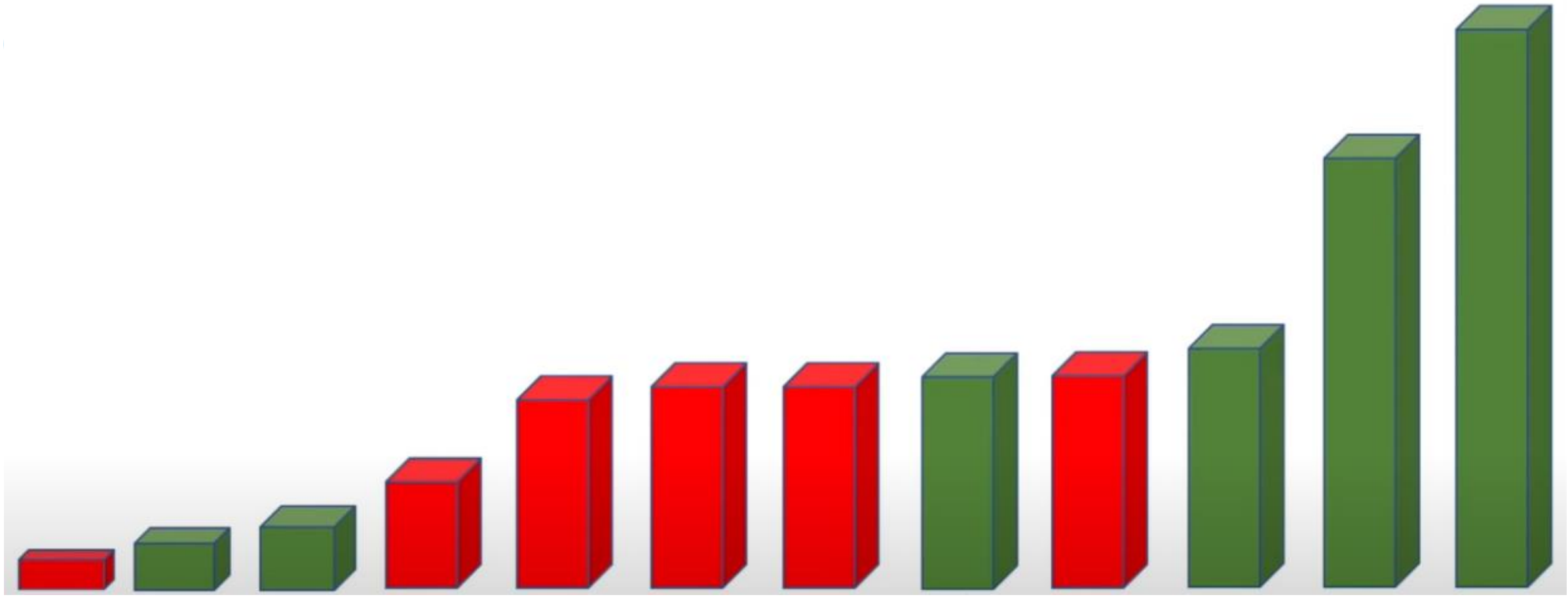
ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ

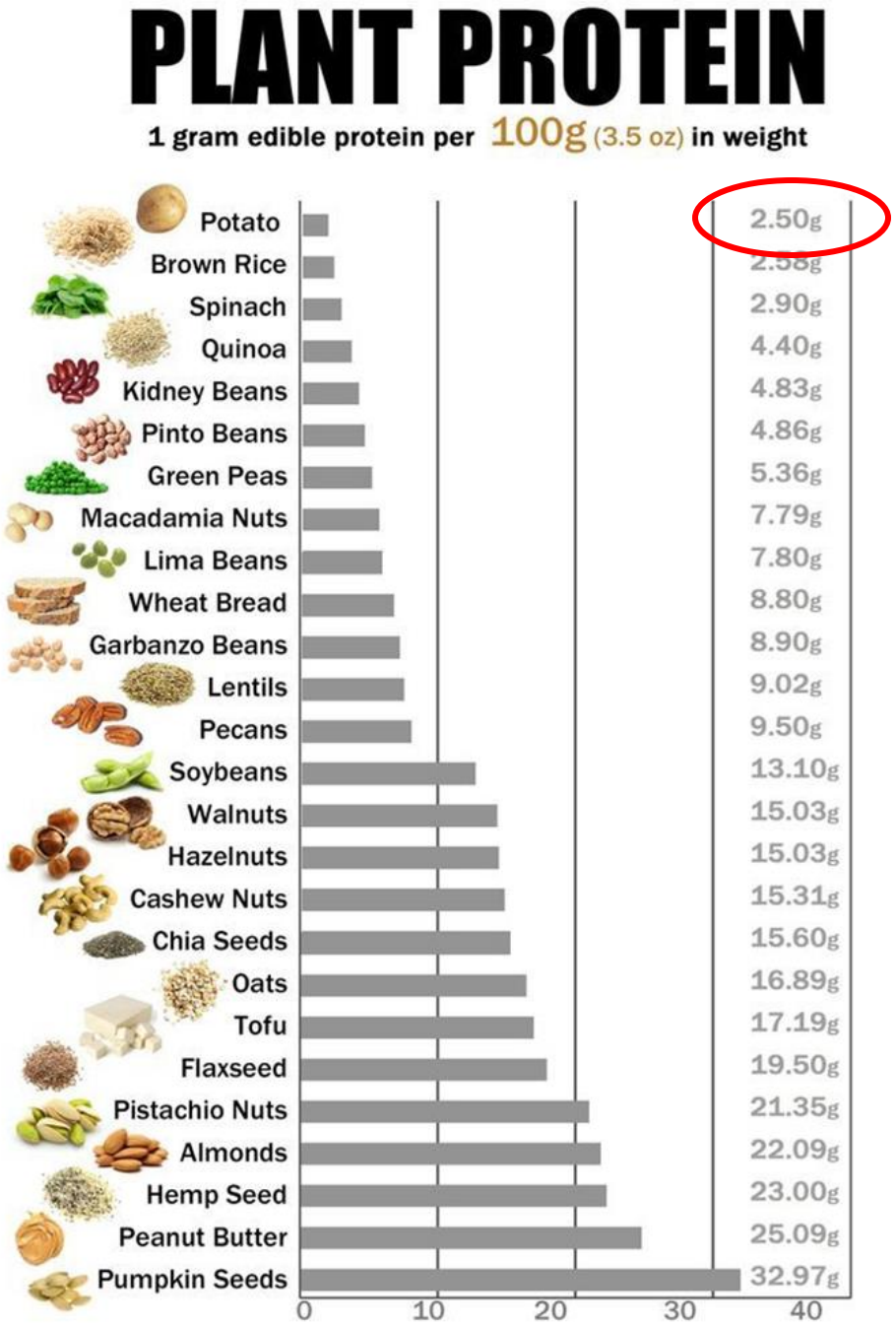
25 ΧΡΟΝΙΑ







*(protein per 1 cup, cooked)



→ **50g**

0,8 g/kg σωματικού βάρους/ημέρα

70Kg- -> 56g

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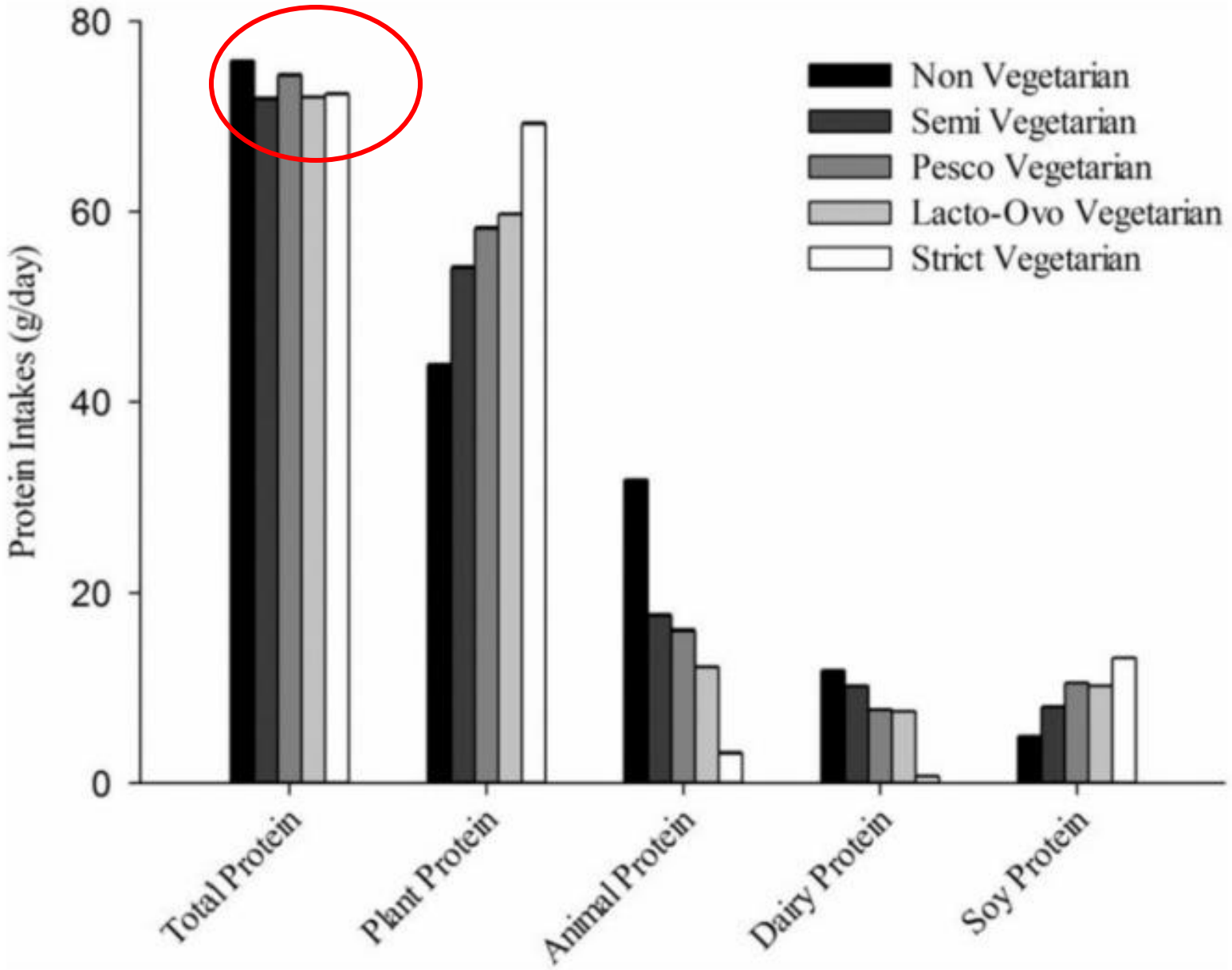
25 ΧΡΟΝΙΑ

Πρόσληψη πρωτείνης (g/ημέρα) από την Adventist Health Study 2



Rizzo N.S., Jaceldo-Siegl K., Sabate J., Fraser G.E. Nutrient profiles of vegetarian and nonvegetarian dietary patterns. J. Acad. Nutr. Diet. 2013;113:1610–1619. doi: 10.1016/j.jand.2013.06.349.

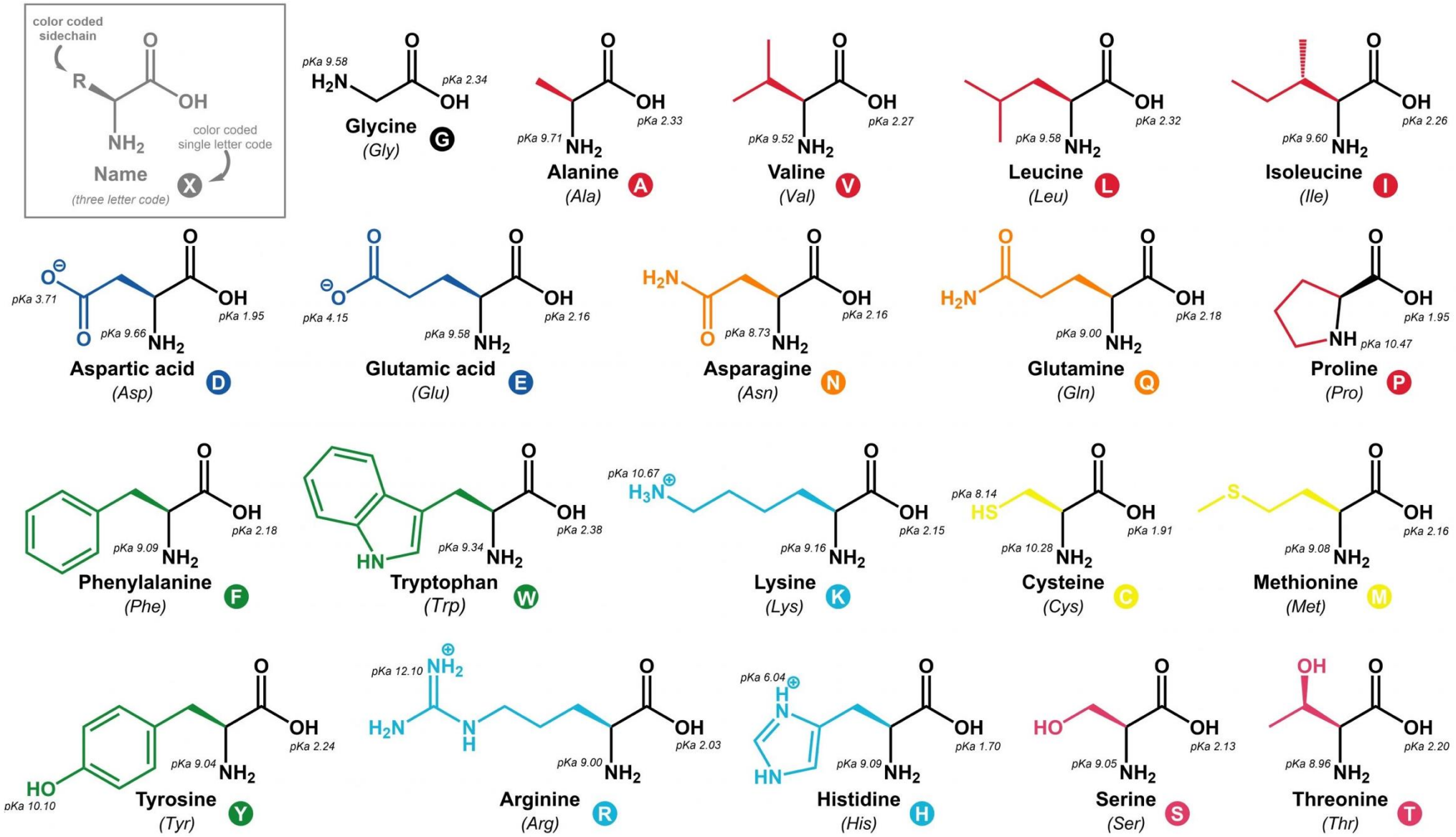
Children with Kwashiorkor

http://www.cs.stedwards.edu/chem/Chemistry/CHEM43/CHEM43/Leukotr/Kwashiorkor.GIF

Μύθος νο 3

Ο μύθος της "πλήρους πρωτείνης"

Υπάρχουν 20 αμινοξέα που κωδικοποιούνται από τον γενετικό κώδικα.
Όλες οι πρωτεΐνες σε όλα τα είδη δημιουργούνται από αυτά τα 20 αμινοξέα



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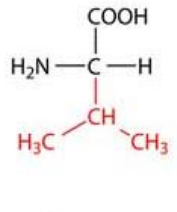
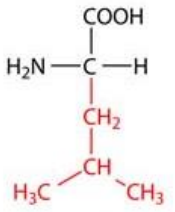
25 ΧΡΟΝΙΑ

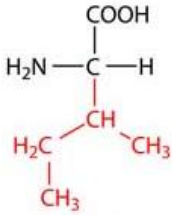
Απαραίτητα αμινοξέα



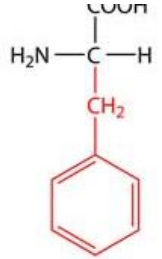
Valine



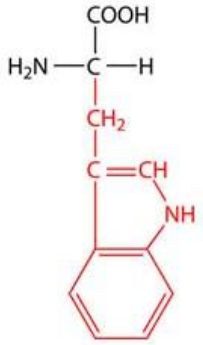
Leucine



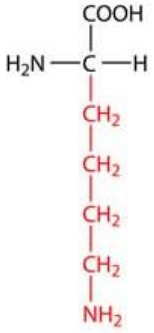
Isoleucine



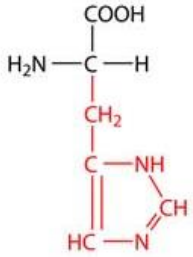
Phenylalanine



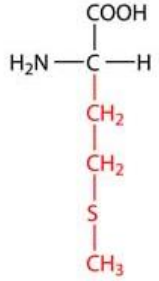
Tryptophan



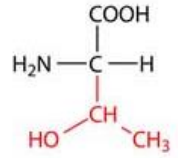
Lysine



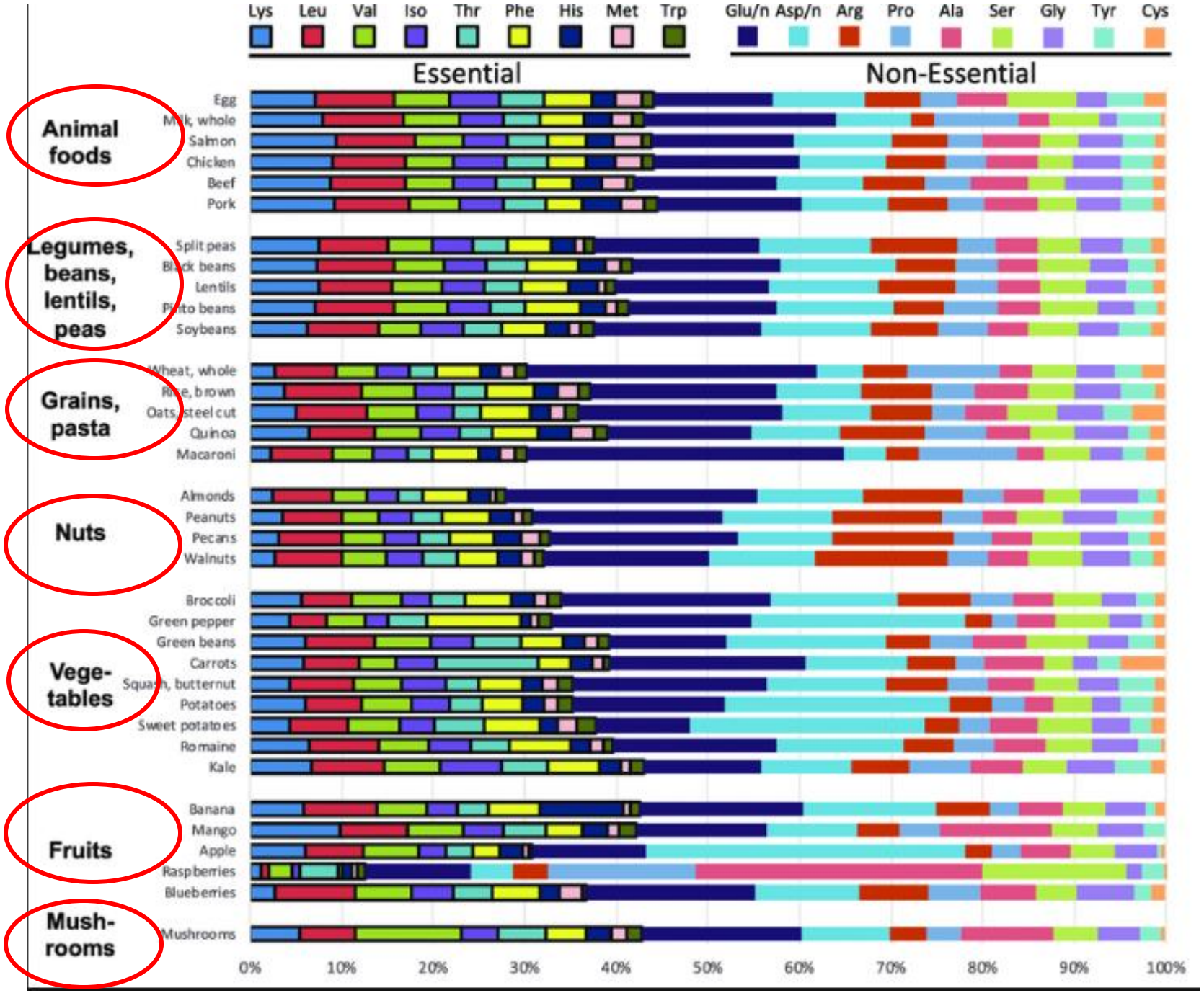
Histidine



Methionine



Threonine


Lys
Leu
Val
Iso
Thr
Phe
His
Met
Trp
Glu/n
Asp/n
Arg
Pro
Ala
Ser
Gly
Tyr
Cys
Essential
Non-Essential
Animal foods
Egg
Milk, whole
Salmon
Chicken
Beef
Pork
Legumes, beans, lentils, peas
Split peas
Black beans
Lentils
Pinto beans
Soybeans
Grains, pasta
Wheat, whole
Rice, brown
Oats, steel cut
Quinoa
Macaroni
Nuts
Almonds
Peanuts
Pecans
Walnuts
Vege-tables
Broccoli
Green pepper
Green beans
Carrots
Squash, butternut
Potatoes
Sweet potatoes
Romaine
Kale
Fruits
Banana
Mango
Apple
Raspberries
Blueberries
Mush-rooms
Mushrooms
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

Essential amino acids in some common foods*

	chicken egg, boiled, 1 large (50 g)	ground beef, lean, broiled, 100 g (3.5 oz)	cow's milk, lowfat, 2%, 246 g (8 fl oz)	soybeans, dry roasted, 86 g (1/2 cup)	cornmeal, whole grain, 122 g (1 cup)	flour, whole wheat, 120 g (1 cup)	pinto beans, boiled, 171 g (1 cup)	sunflower seeds, dry roasted, 28 g (1 oz)
tryptophan	77	277	115	494	70 **	254	166	84
threonine	302	1,080	366	1,478	372	474	592	223
isoleucine	343	1,111	490	1,651	355	610	621	274
leucine	538	1,954	795	2,772	1,215	1,111	1,122	399
lysine	452	2,057	644	2,265	278	454	964	225
methionine	196	633	205	459	207	254	212	119
phenylalanine	334	965	393	1,777	487	775	759	281
valine	384	1,202	544	1,699	501	742	735	316
histidine	149	846	220	918	303	380	392	152

*In milligrams.
**Underscored number indicates limiting amino acid.
Source: Jean A.T. Pennington, *Bowes and Church's Food Values of Portions Commonly Used*, 17th ed. (1998).

FROM THE ACADEMY

Position Paper

Position of the Academy of Nutrition and Dietetics: Vegetarian Diets

ABSTRACT

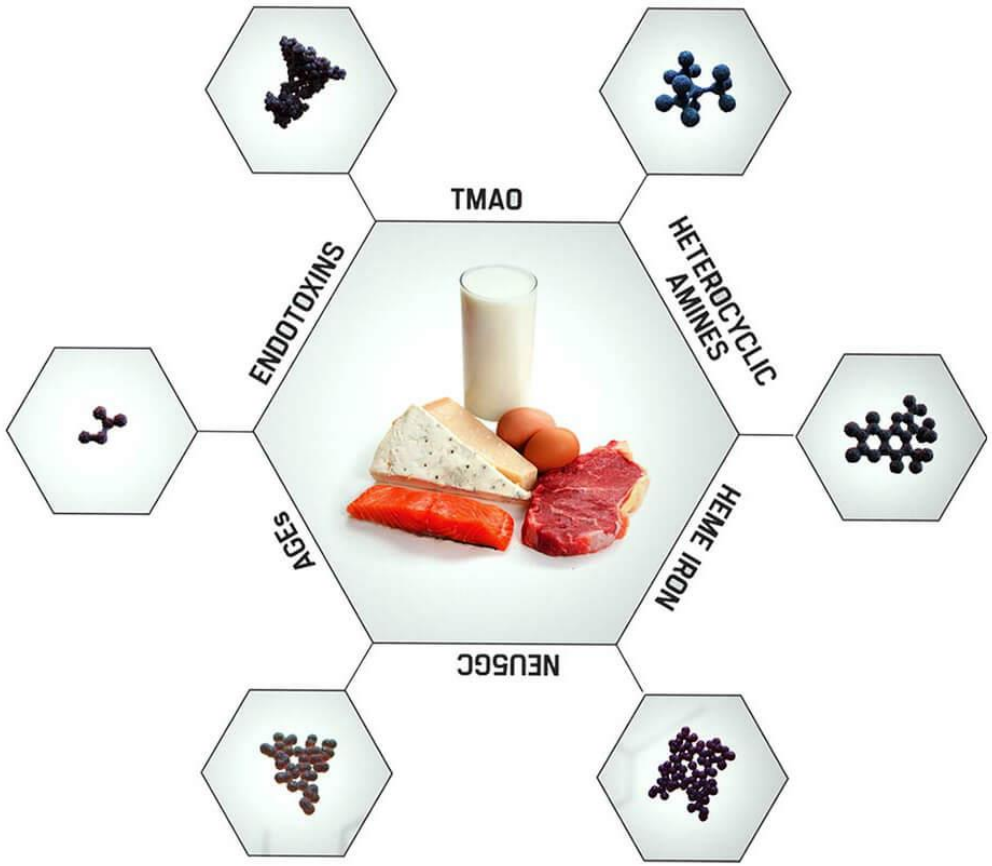
It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits for the prevention and treatment of certain diseases. These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes. Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage. Vegetarians and vegans are at reduced risk of certain health conditions, including ischemic heart disease, type 2 diabetes, hypertension, certain types of cancer, and obesity. Low intake of saturated fat and high intakes of vegetables, fruits, whole grains, legumes, soy products, nuts, and seeds (all rich in fiber and phytochemicals) are characteristics of vegetarian and vegan diets that produce lower total and low-density lipoprotein cholesterol levels and better serum glucose control. These factors contribute to reduction of chronic disease. Vegans need reliable sources of vitamin B-12, such as fortified foods or supplements.

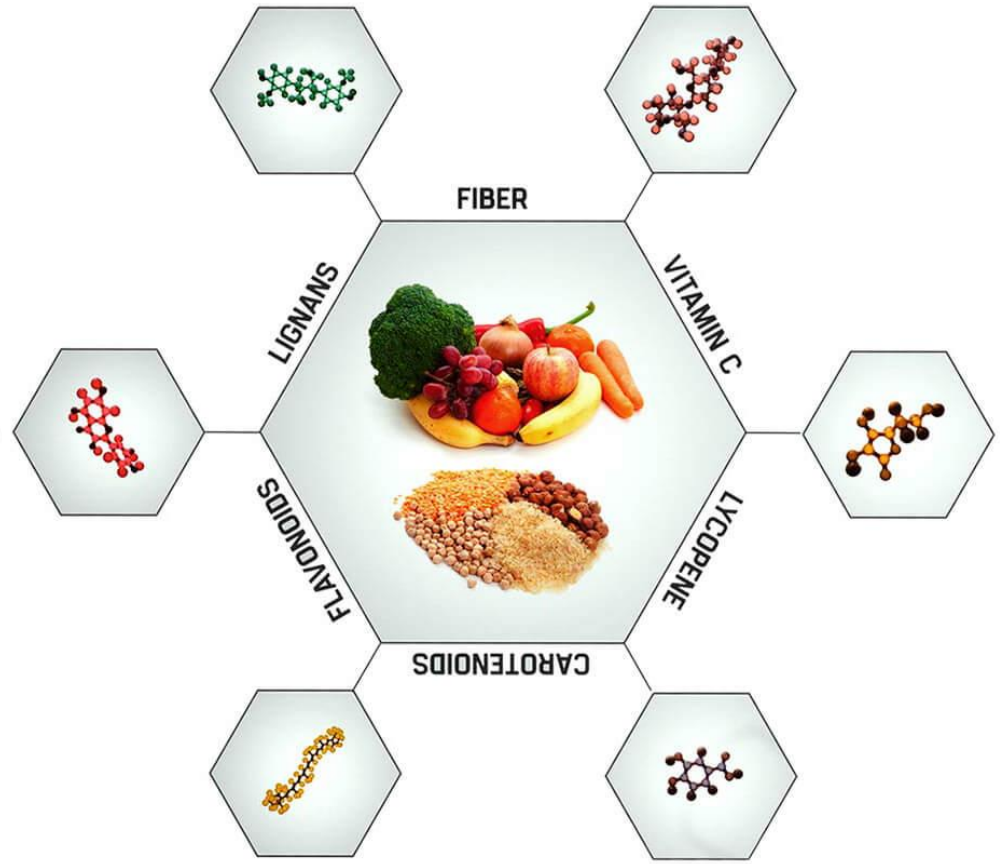
J Acad Nutr Diet. 2016;116:1970-1980.

POSITION STATEMENT

It is the position of the Academy of Nutrition and Dietetics that appropriately planned vegetarian, including vegan, diets are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases. These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes. Plant-based diets are more environmentally sustainable than diets rich in animal products because they use fewer natural resources and are associated with much less environmental damage.

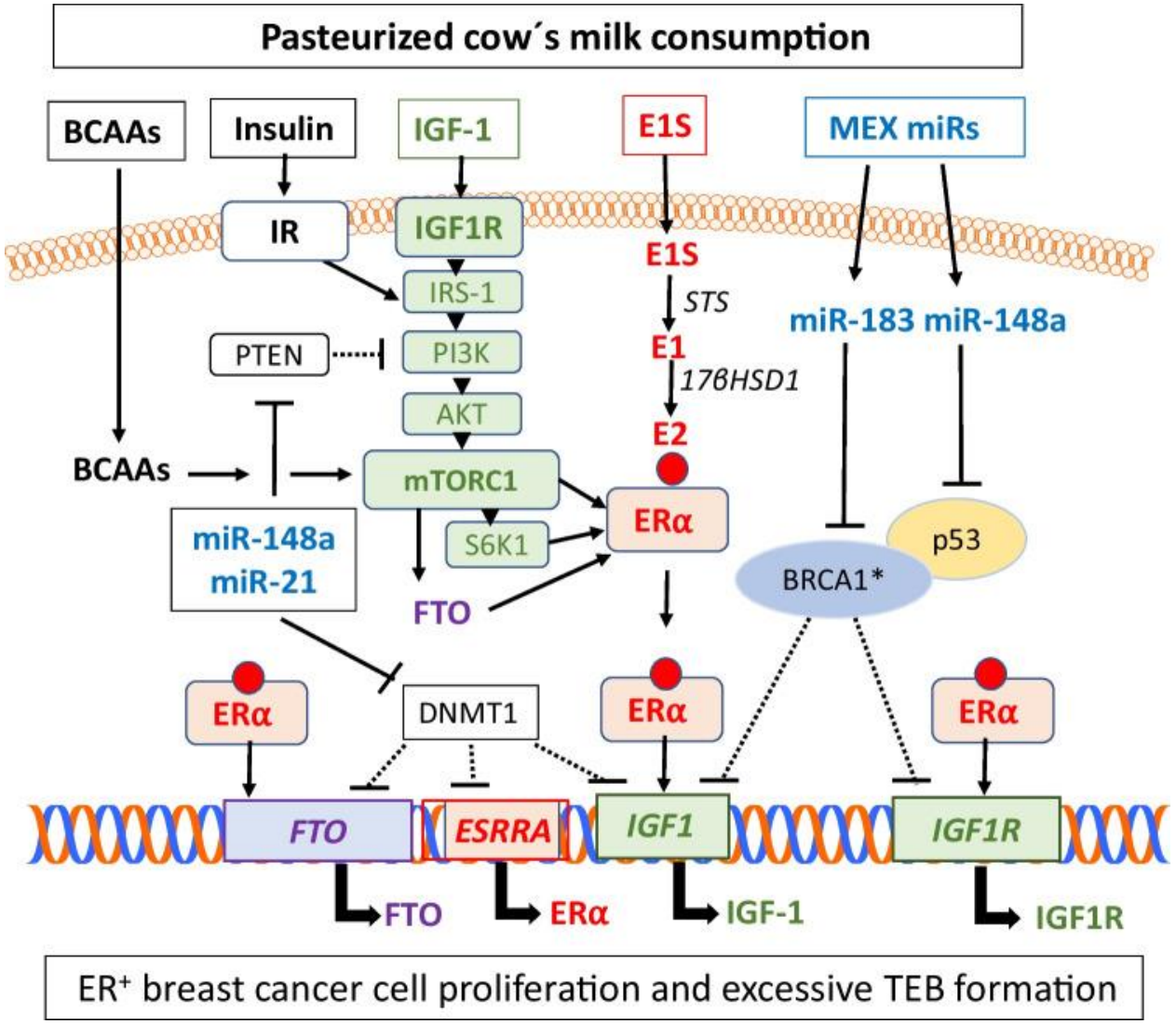
protein intakes, when caloric intakes are adequate.[6-8] The terms *complete* and *incomplete* are misleading in relation to plant protein. Protein from a variety of plant foods, eaten during the course of a day, supplies enough of all indispensable (essential) amino acids when caloric requirements are met.[7] The regular use of legumes and soy products will ensure an adequate protein intake for the vegetarian, as well as providing other essential nutrients.[9]


TMAO
HETEROCYCLIC AMINES
HEME IRON
NEU5GC
AGES
ENDOTOXINS

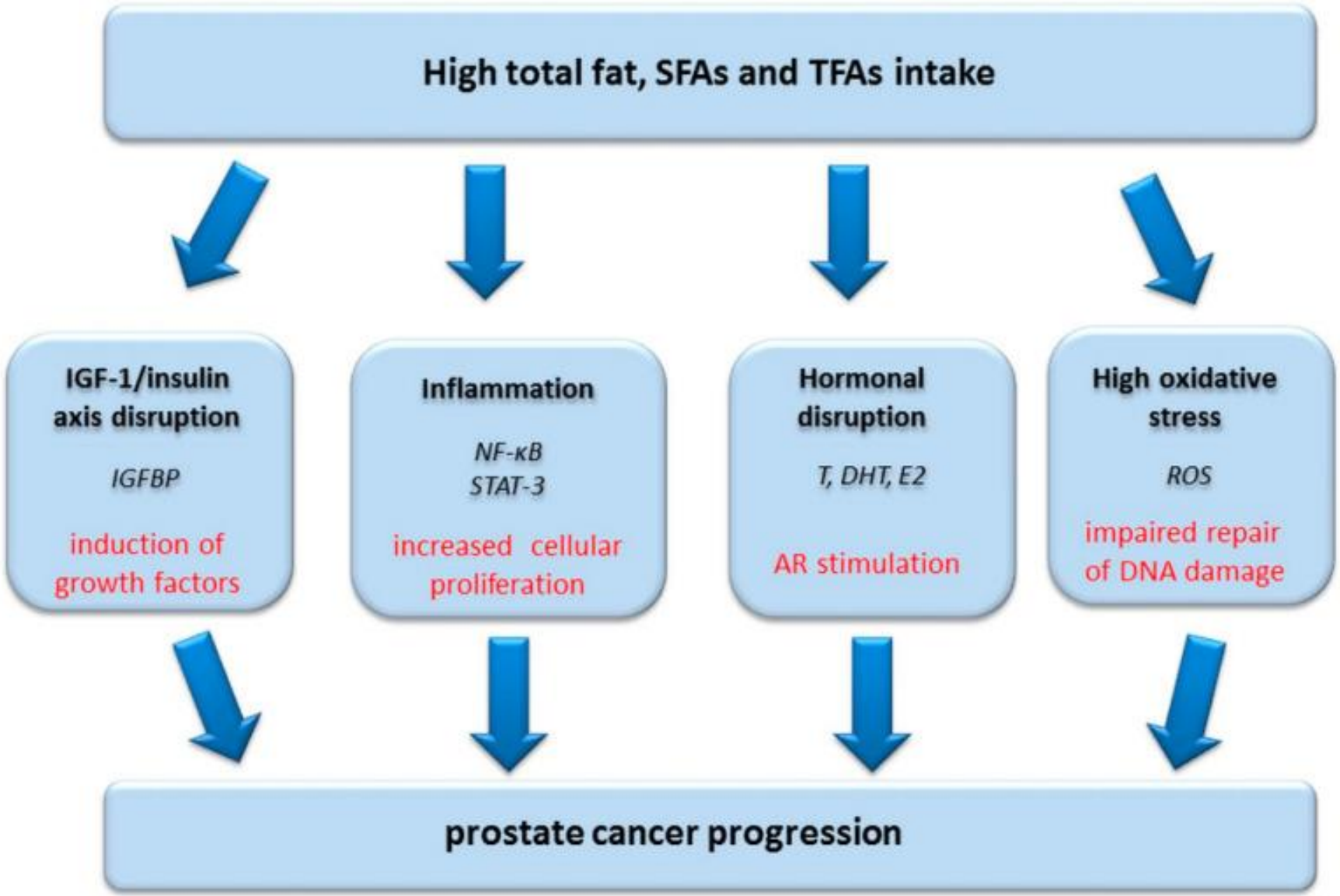

FIBER
VITAMIN C
LYCOPENE
CAROTENOIDS
FLAVONOIDS
LIGNANS

ΤΜΗΜΑ
ΒΙΟΧΗΜΕΙΑΣ &
ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
25 ΧΡΟΝΙΑ

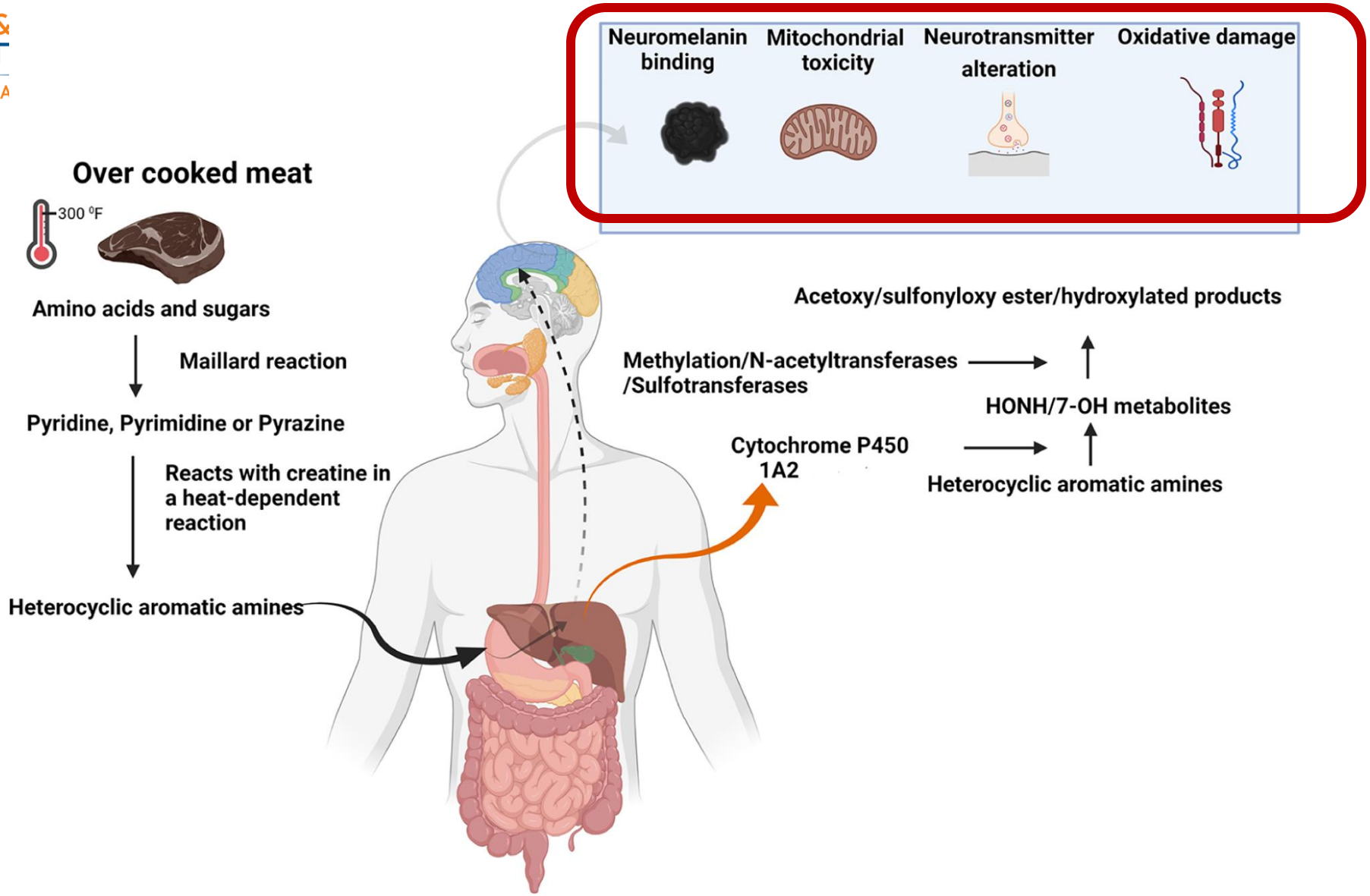
Επιπτώσεις στην ανθρώπινη υγεία



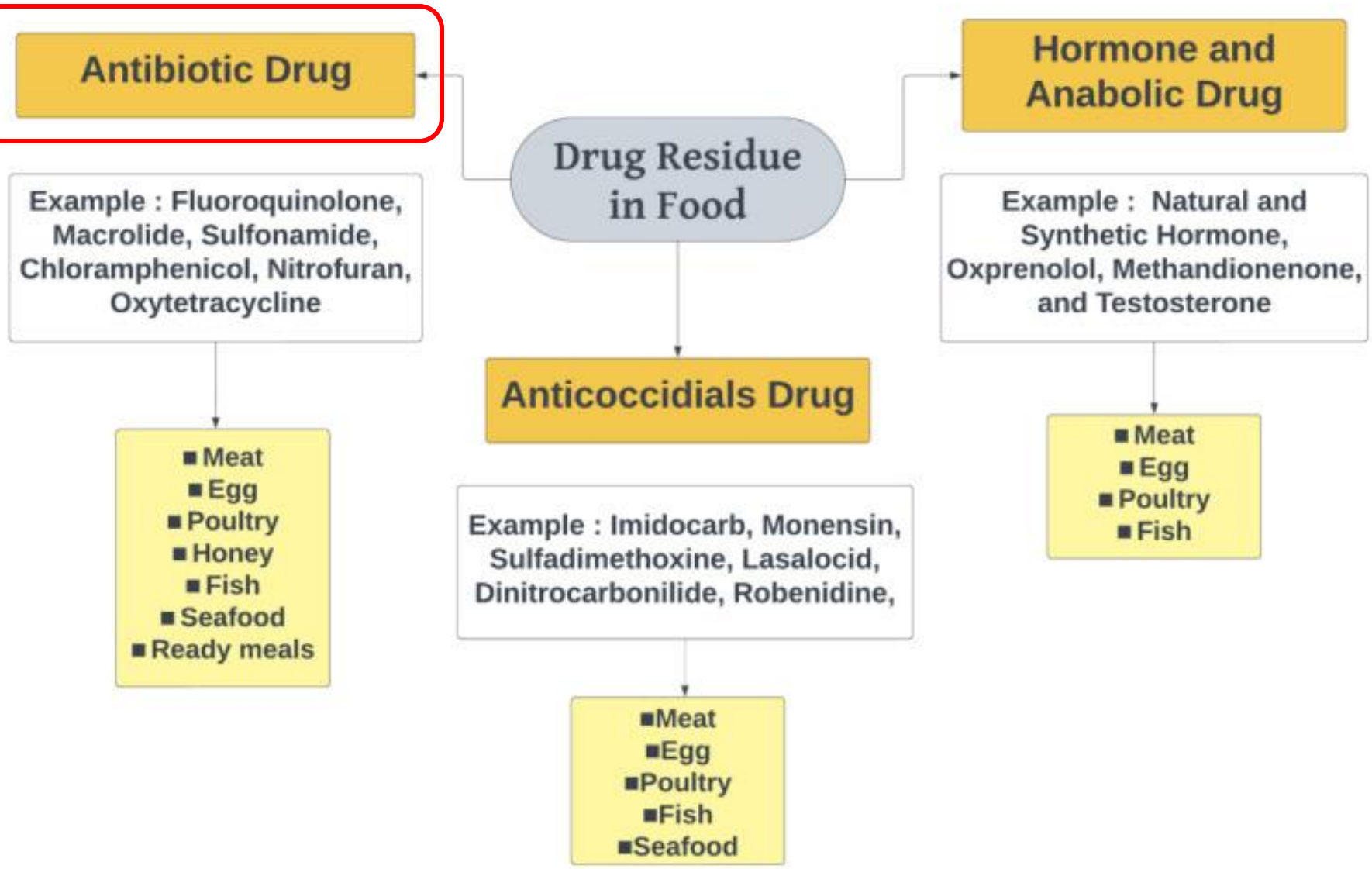
Melnik BC, John SM, Carrera-Bastos P, Cordain L, Leitzmann C, Weiskirchen R, Schmitz G. The Role of Cow's Milk Consumption in Breast Cancer Initiation and Progression. Curr Nutr Rep. 2023 Mar;12(1):122-140. doi: 10.1007/s13668-023-00457-0. Epub 2023 Feb 2. PMID: 36729355; PMCID: PMC9974716.



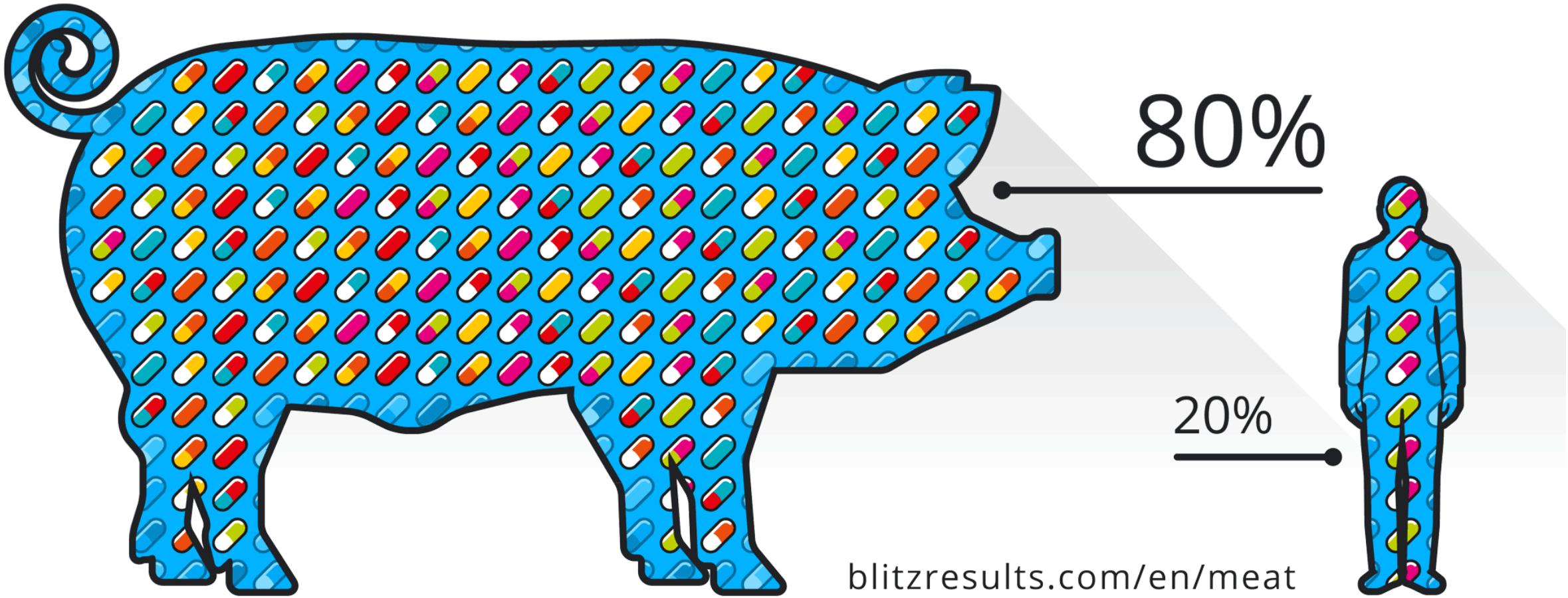
Oczkowski M, Dziendzikowska K, Pasternak-Winiarska A, Włodarek D, Gromadzka-Ostrowska J. Dietary Factors and Prostate Cancer Development, Progression, and Reduction. Nutrients. 2021 Feb 3;13(2):496. doi: 10.3390/nu13020496. PMID: 33546190; PMCID: PMC7913227.

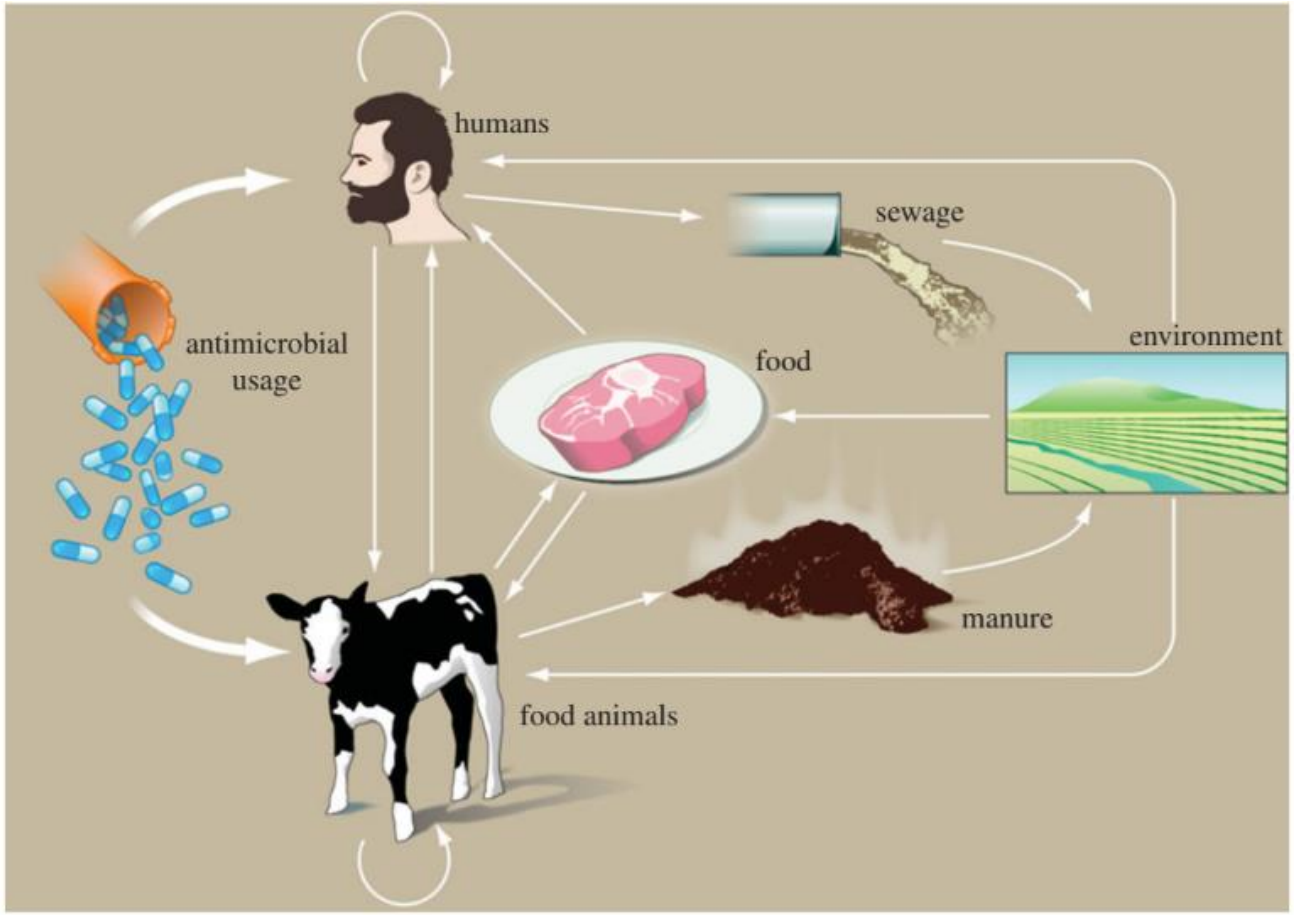


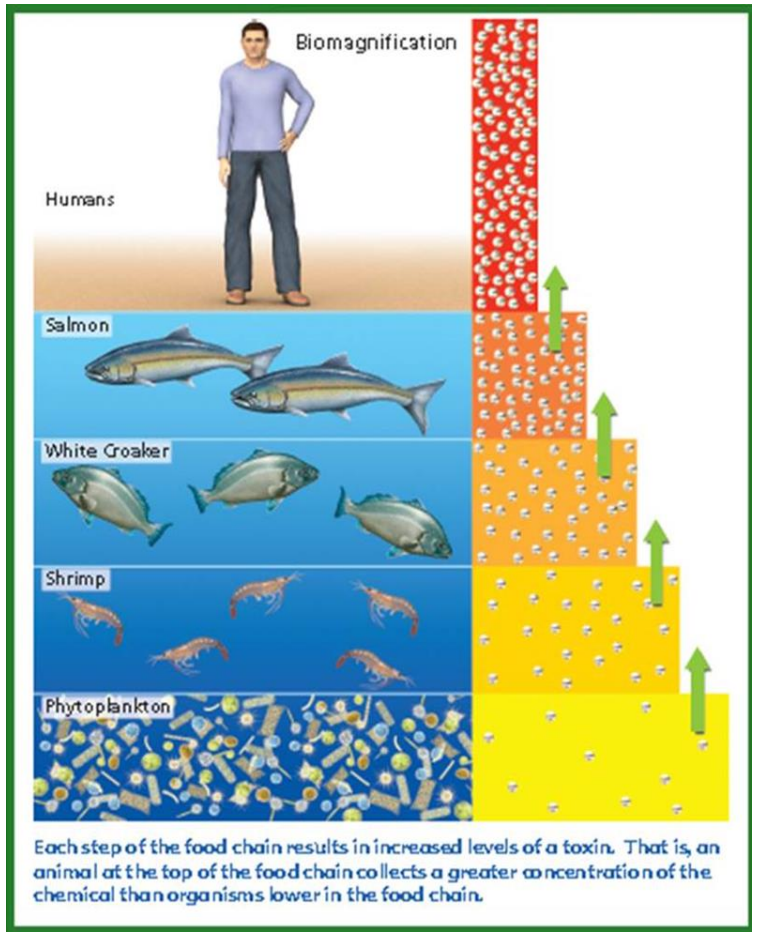
Syeda T, Cannon JR. Potential Role of Heterocyclic Aromatic Amines in Neurodegeneration. Chem Res Toxicol. 2022 Jan 17;35(1):59-72. doi: 10.1021/acs.chemrestox.1c00274. Epub 2022 Jan 6. PMID: 34990108; PMCID: PMC10443083.

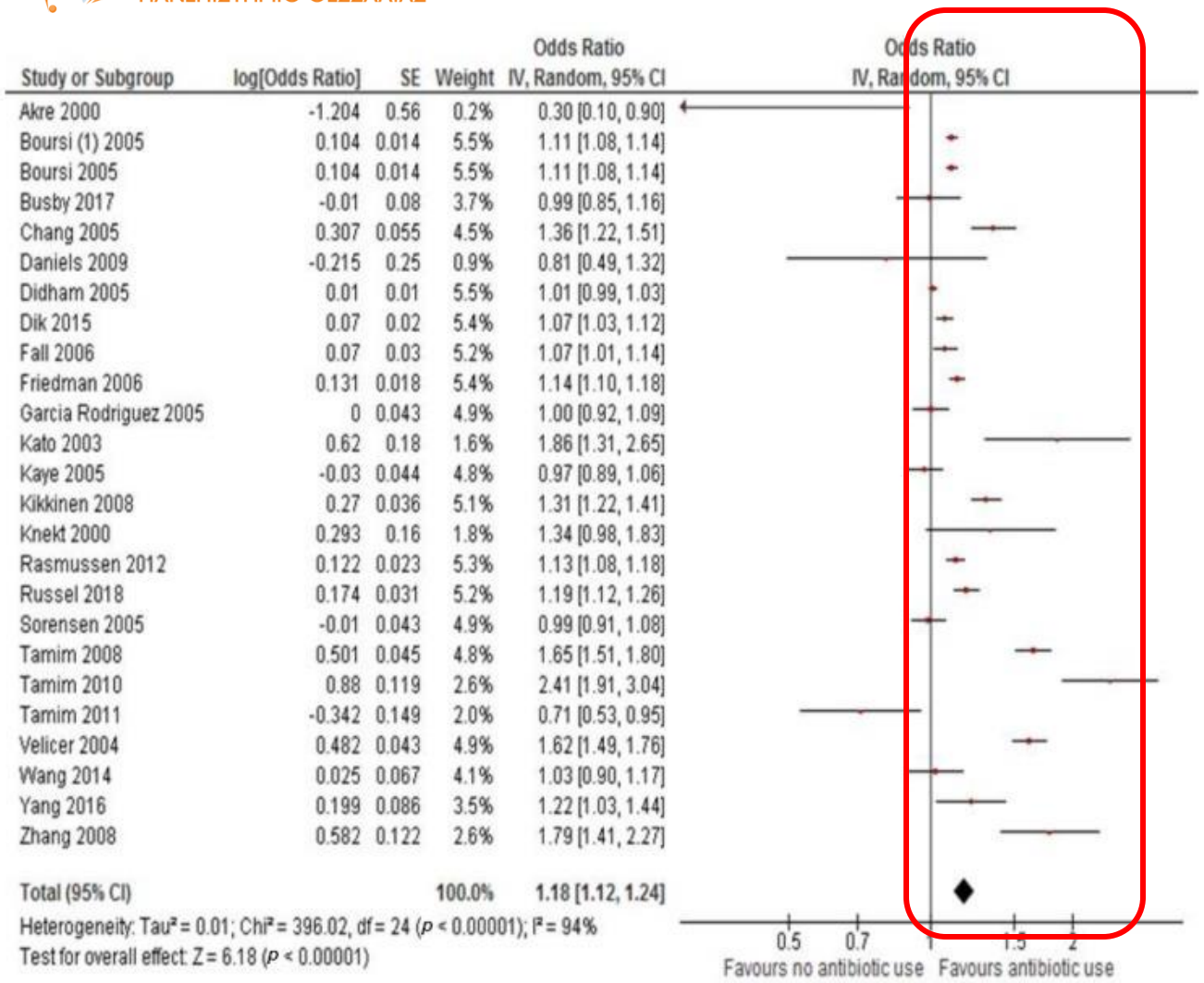


Pratiwi R, Ramadhanti SP, Amatulloh A, Megantara S, Subra L. Recent Advances in the Determination of Veterinary Drug Residues in Food. Foods. 2023 Sep 14;12(18):3422. doi: 10.3390/foods12183422. PMID: 37761131; PMCID: PMC10527676.


80%
20%
blitzresults.com/en/meat


humans
sewage
antimicrobial usage
food
environment
manure
food animals


Biomagnification
Humans
Salmon
White Croaker
Shrimp
Phytoplankton
Each step of the food chain results in increased levels of a toxin. That is, an animal at the top of the food chain collects a greater concentration of the chemical than organisms lower in the food chain.



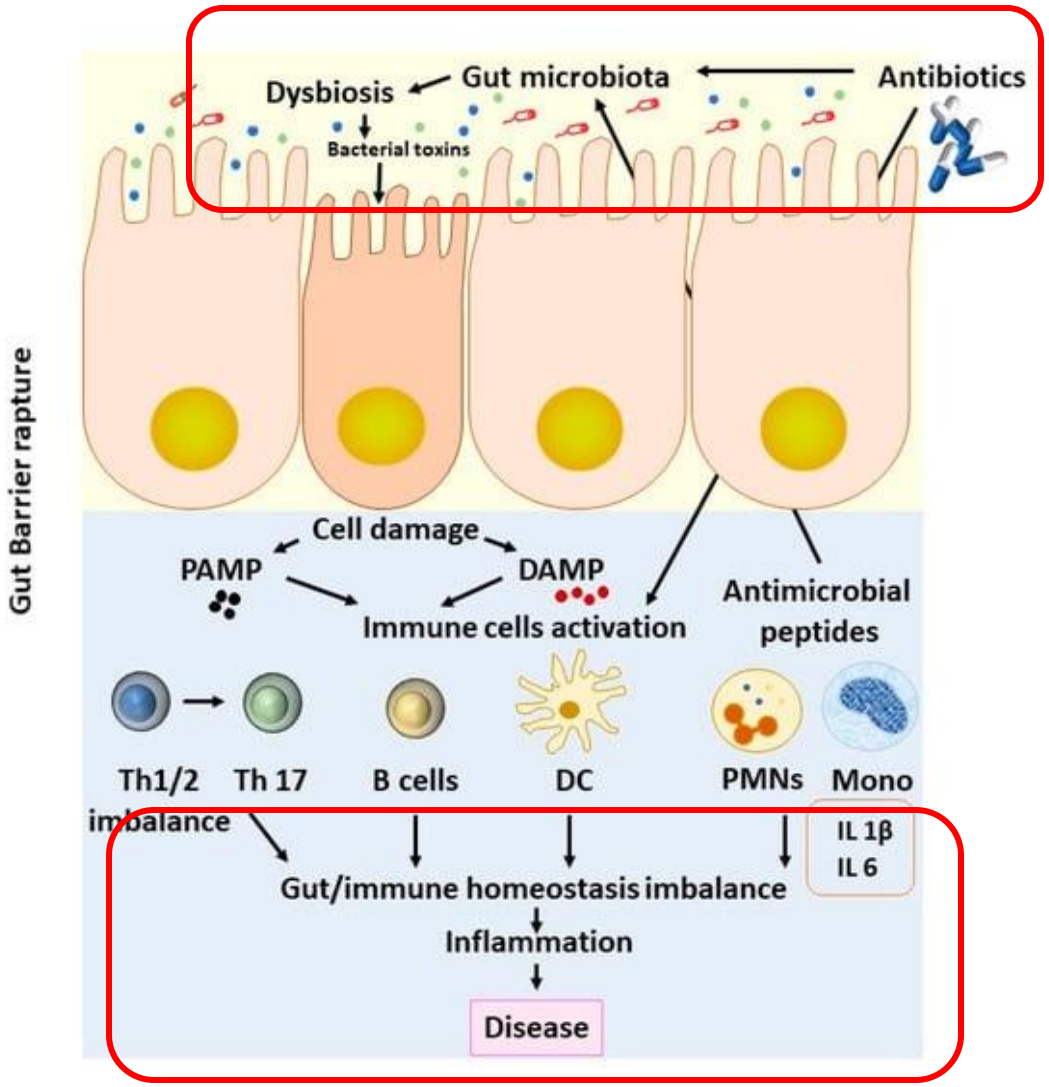
Study or Subgroup	log[Odds Ratio]	SE	Weight	Odds Ratio IV, Random, 95% CI
Akre 2000	-1.204	0.56	0.2%	0.30 [0.10, 0.90]
Boursi (1) 2005	0.104	0.014	5.5%	1.11 [1.08, 1.14]
Boursi 2005	0.104	0.014	5.5%	1.11 [1.08, 1.14]
Busby 2017	-0.01	0.08	3.7%	0.99 [0.85, 1.16]
Chang 2005	0.307	0.055	4.5%	1.36 [1.22, 1.51]
Daniels 2009	-0.215	0.25	0.9%	0.81 [0.49, 1.32]
Didham 2005	0.01	0.01	5.5%	1.01 [0.99, 1.03]
Dik 2015	0.07	0.02	5.4%	1.07 [1.03, 1.12]
Fall 2006	0.07	0.03	5.2%	1.07 [1.01, 1.14]
Friedman 2006	0.131	0.018	5.4%	1.14 [1.10, 1.18]
Garcia Rodriguez 2005	0	0.043	4.9%	1.00 [0.92, 1.09]
Kato 2003	0.62	0.18	1.6%	1.86 [1.31, 2.65]
Kaye 2005	-0.03	0.044	4.8%	0.97 [0.89, 1.06]
Kikkinen 2008	0.27	0.036	5.1%	1.31 [1.22, 1.41]
Knekt 2000	0.293	0.16	1.8%	1.34 [0.98, 1.83]
Rasmussen 2012	0.122	0.023	5.3%	1.13 [1.08, 1.18]
Russel 2018	0.174	0.031	5.2%	1.19 [1.12, 1.26]
Sorensen 2005	-0.01	0.043	4.9%	0.99 [0.91, 1.08]
Tamim 2008	0.501	0.045	4.8%	1.65 [1.51, 1.80]
Tamim 2010	0.88	0.119	2.6%	2.41 [1.91, 3.04]
Tamim 2011	-0.342	0.149	2.0%	0.71 [0.53, 0.95]
Velicer 2004	0.482	0.043	4.9%	1.62 [1.49, 1.76]
Wang 2014	0.025	0.067	4.1%	1.03 [0.90, 1.17]
Yang 2016	0.199	0.086	3.5%	1.22 [1.03, 1.44]
Zhang 2008	0.582	0.122	2.6%	1.79 [1.41, 2.27]
Total (95% CI)			100.0%	1.18 [1.12, 1.24]

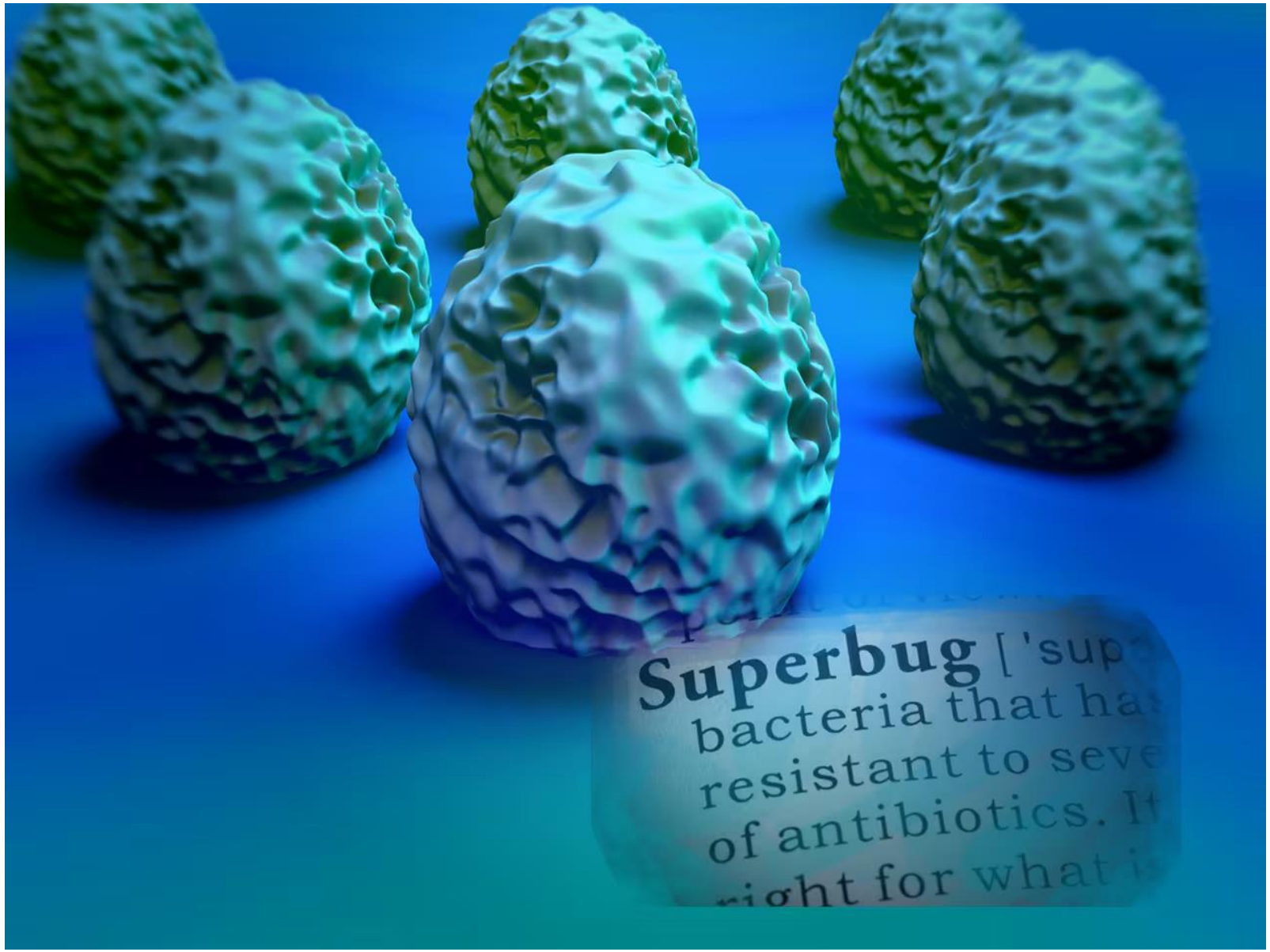
Heterogeneity: Tau² = 0.01; Chi² = 396.02, df = 24 ($p < 0.00001$); I² = 94%
Test for overall effect: Z = 6.18 ($p < 0.00001$)

Odds Ratio IV, Random, 95% CI

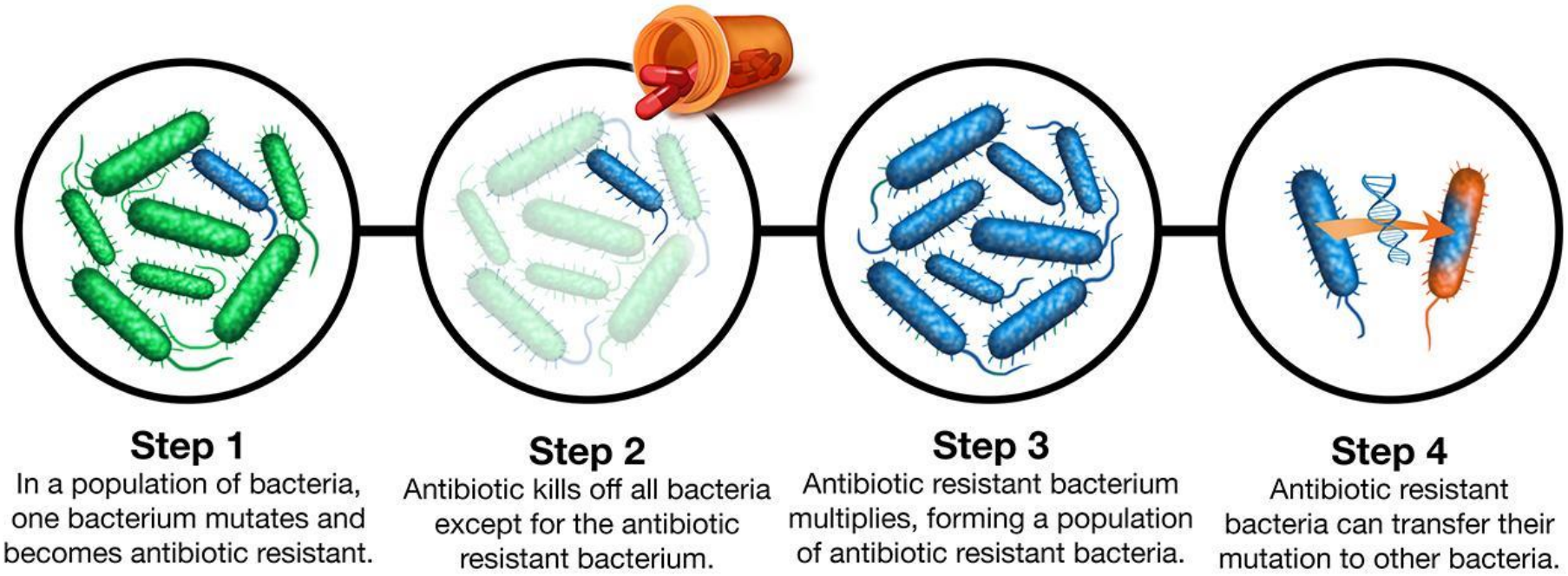
0.5 0.7 1 1.5 2

Favours no antibiotic use Favours antibiotic use

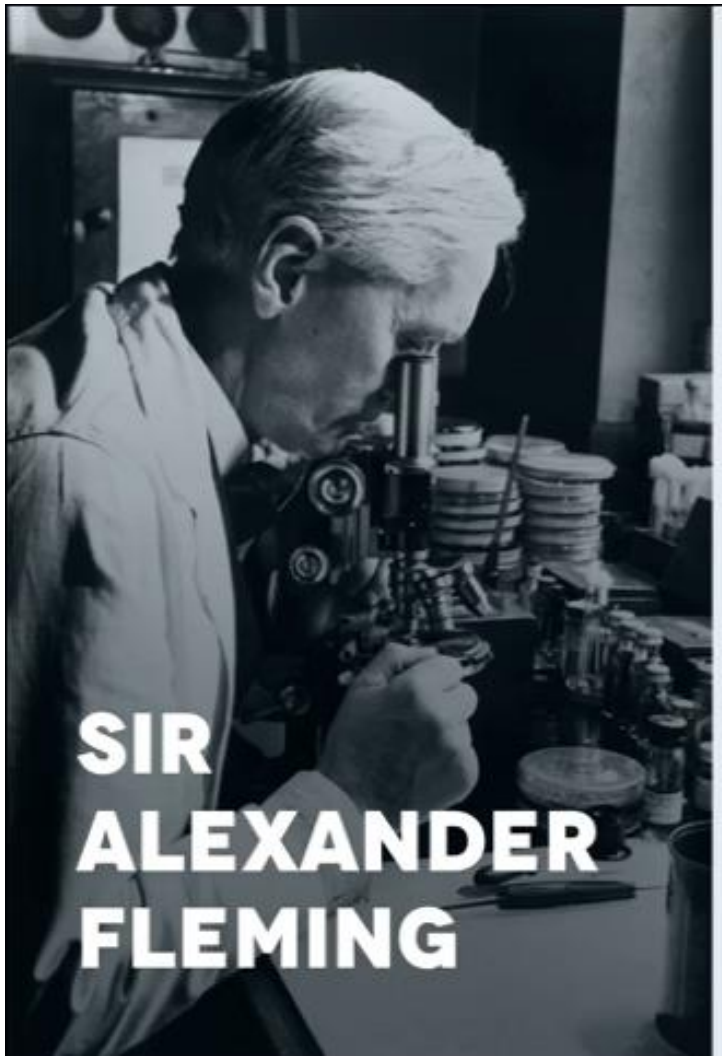



Superbug ['sup
bacteria that ha
resistant to seve
of antibiotics. It
right for what i

Antibiotic Resistance in Bacteria



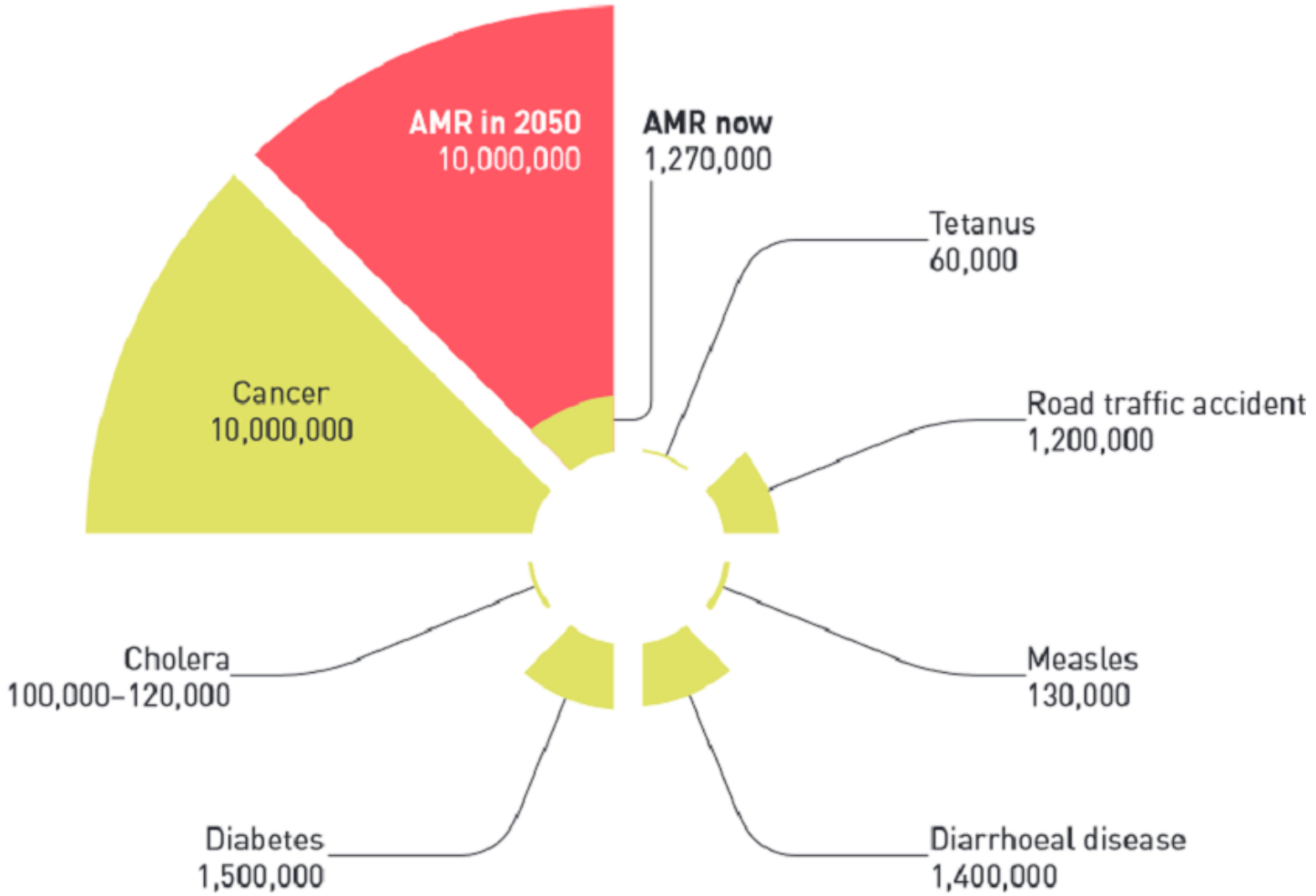
Antimicrobial resistance: a concise update. Ho, Charlotte S et al.
The Lancet Microbe, Volume 0, Issue 0, 100947



The thoughtless person playing with penicillin treatment is morally responsible for the death of the man who succumbs to infection with the penicillin-resistant organism.

- Η AMR αναμένεται να προκαλέσει περίπου 10 εκατομμύρια απώλειες έως το 2050
- Η AMR θα κόστιζει στην παγκόσμια αγορά 100 τρισεκατομμύρια δολάρια

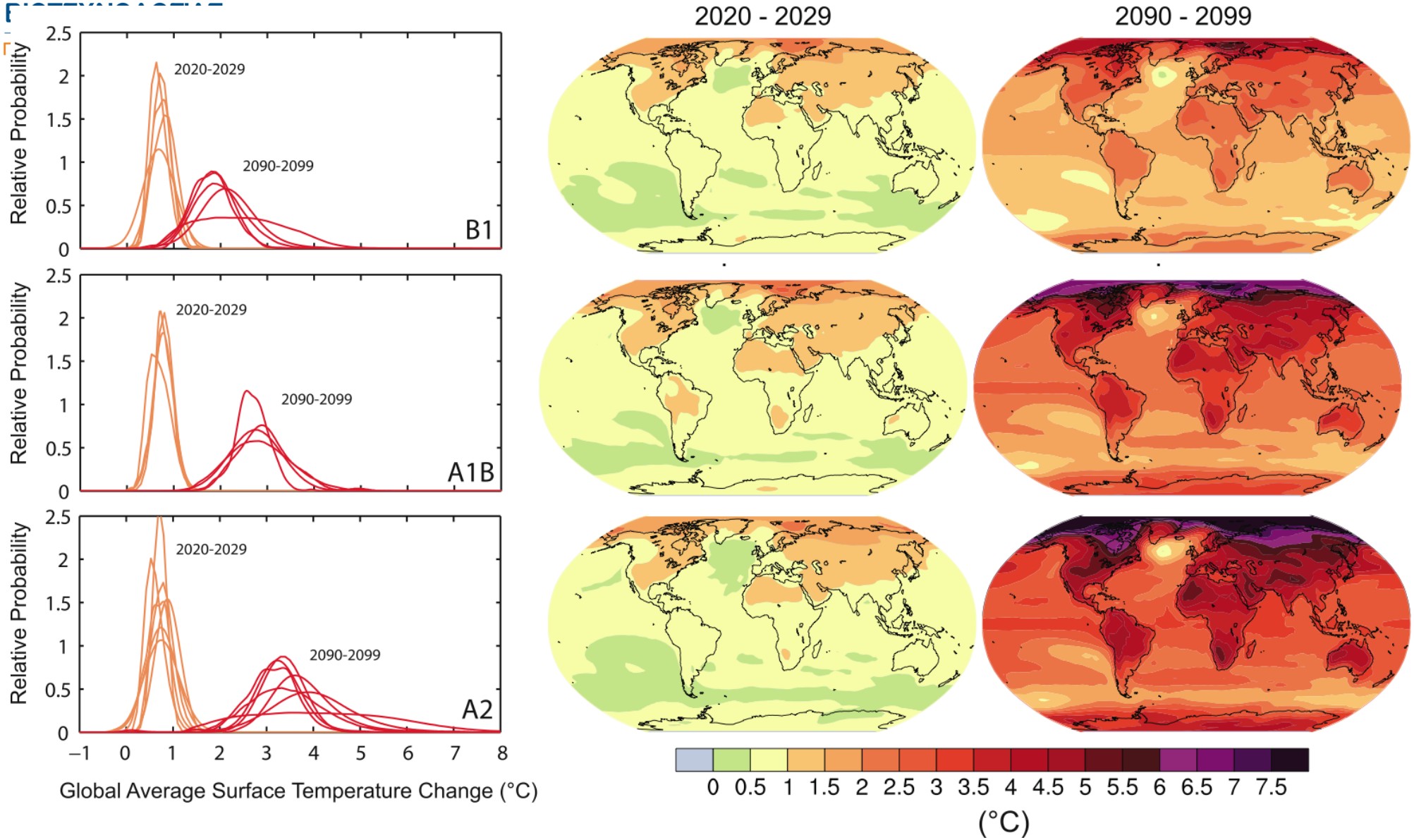
UN environment programme

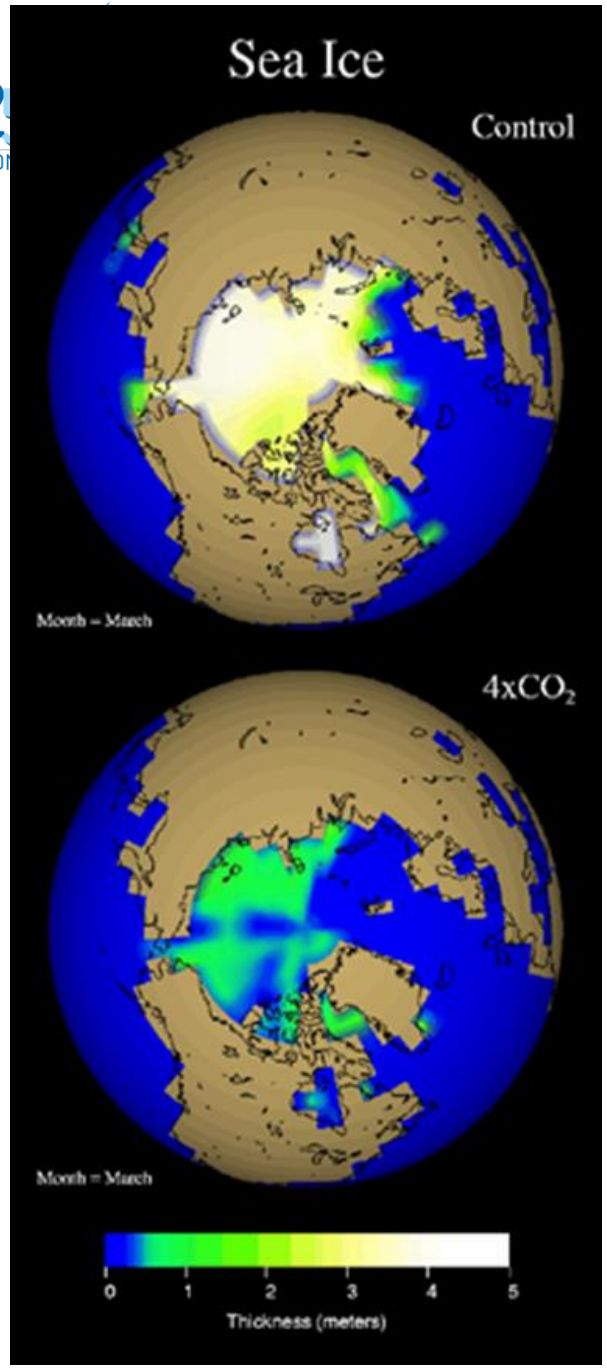


ΤΜΗΜΑ ΒΙΟΧΗΜΕΙΑΣ & ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
25 ΧΡΟΝΙΑ

Επιπτώσεις στο περιβάλλον

Α. Υπερθέρμανση του πλανήτη

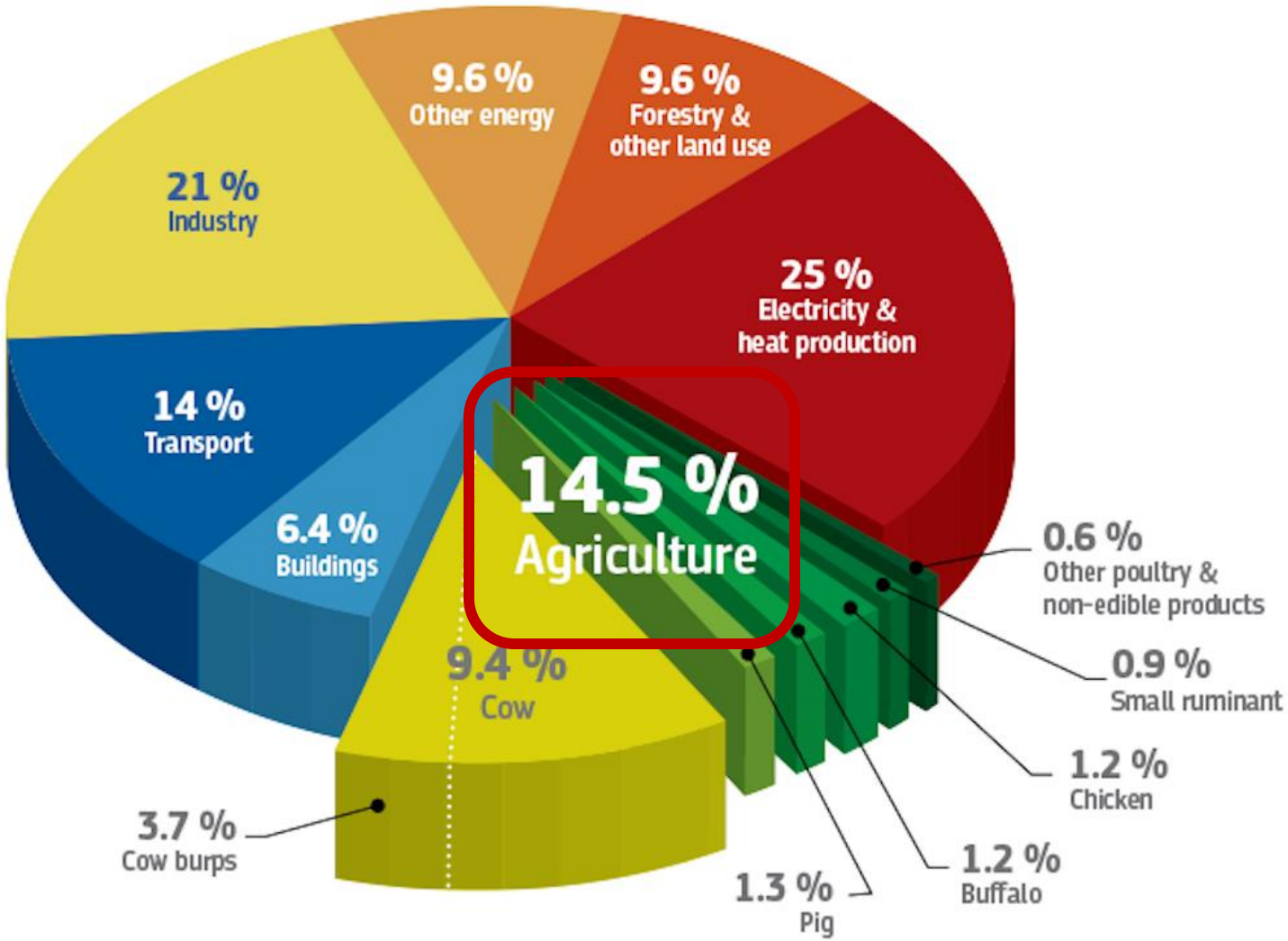

2020 - 2029
2090 - 2099
Relative Probability
2020-2029
2090-2099
B1
A1B
A2
Global Average Surface Temperature Change (°C)
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5
(°C)
©IPCC 2007: WG1-AR4

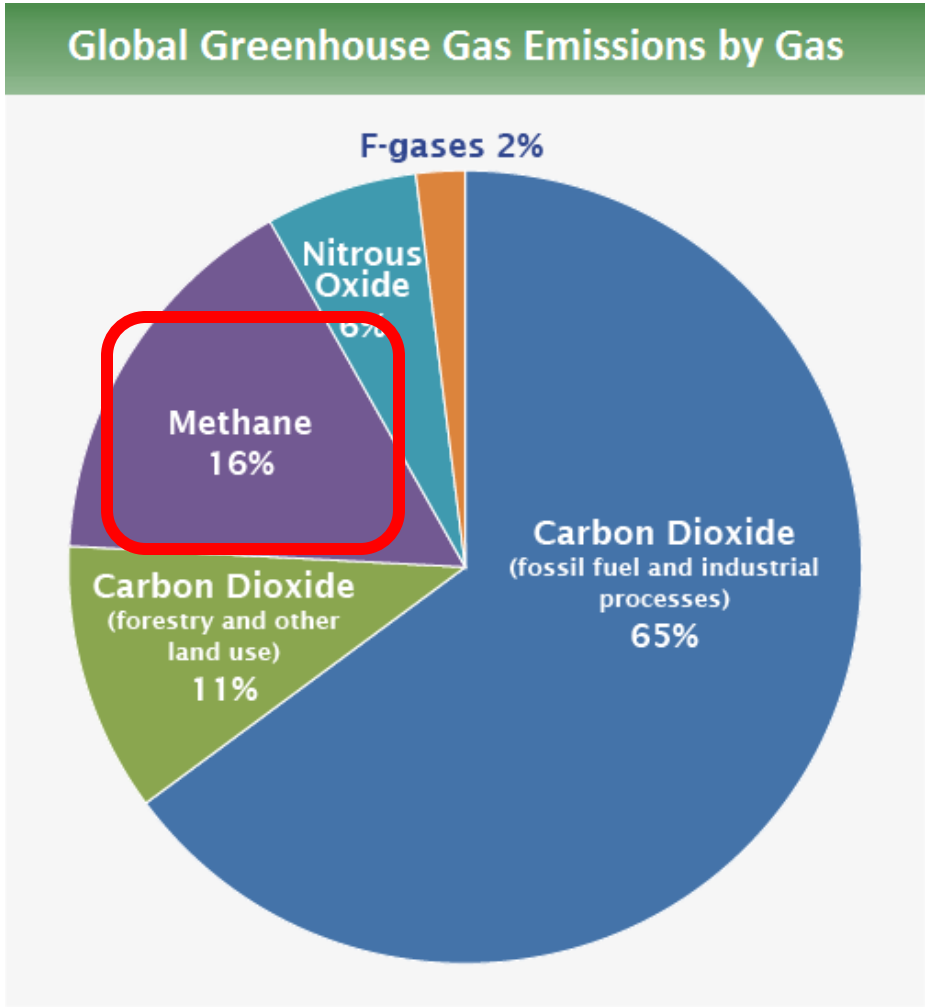

Sea Ice
Control
Month = March
4xCO2
Month = March
0
1
2
3
4
5
Thickness (meters)

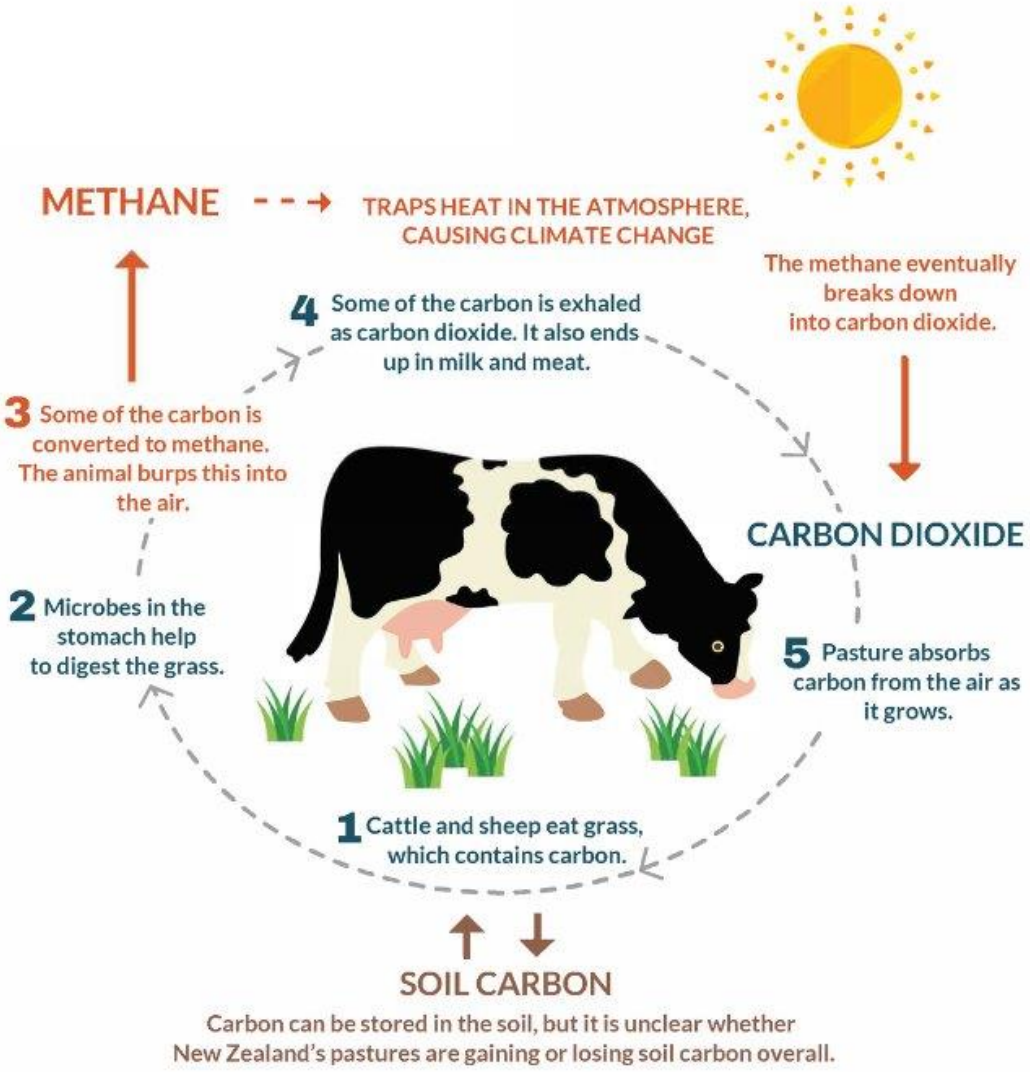

swc.se


swc.se

Greenhouse gas emissions by economic sector

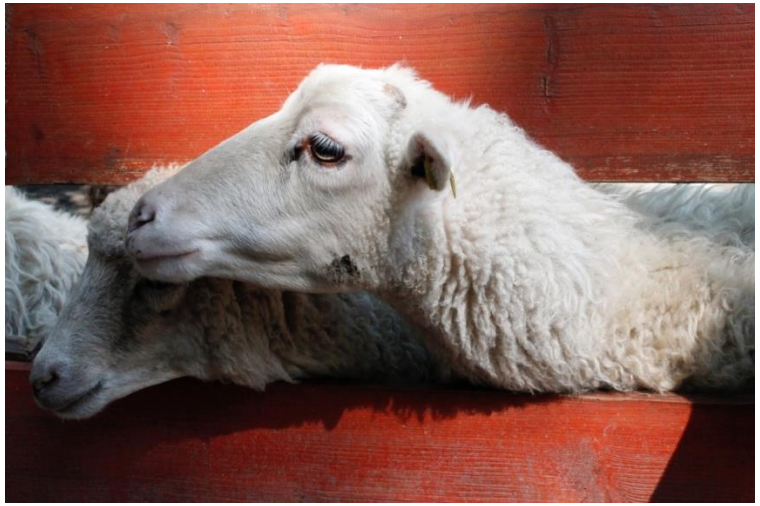


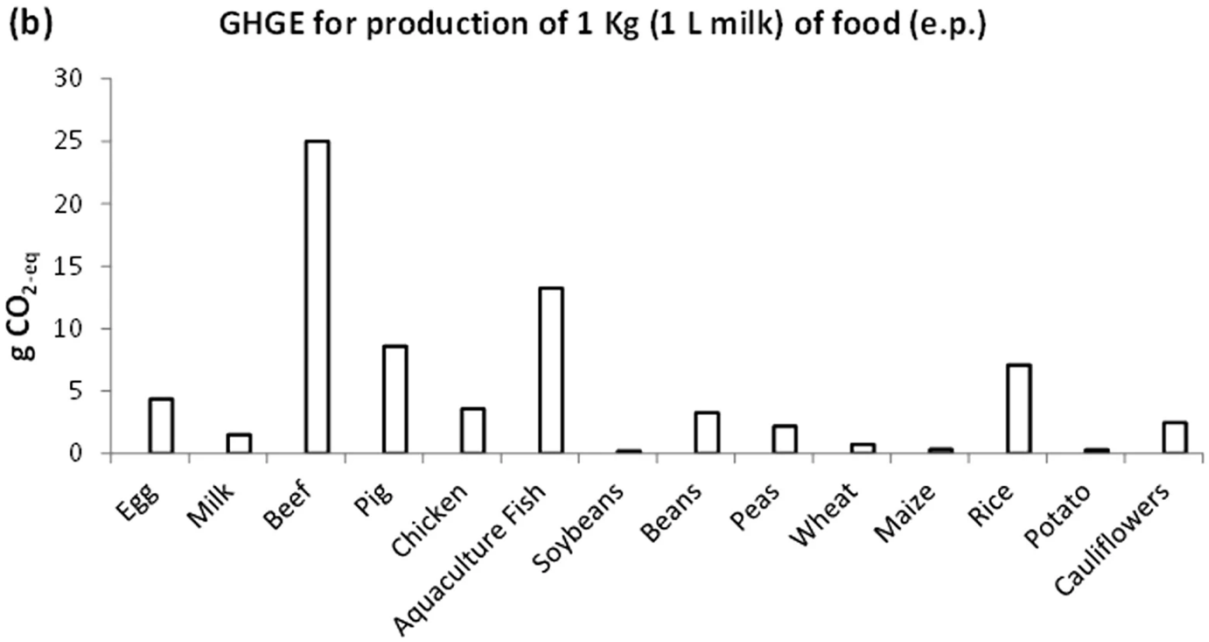

Global Greenhouse Gas Emissions by Gas
F-gases 2%
Nitrous Oxide
Methane 16%
Carbon Dioxide (fossil fuel and industrial processes) 65%
Carbon Dioxide (forestry and other land use) 11%


METHANE
TRAPS HEAT IN THE ATMOSPHERE, CAUSING CLIMATE CHANGE
The methane eventually breaks down into carbon dioxide.
4 Some of the carbon is exhaled as carbon dioxide. It also ends up in milk and meat.
3 Some of the carbon is converted to methane. The animal burps this into the air.
CARBON DIOXIDE
2 Microbes in the stomach help to digest the grass.
5 Pasture absorbs carbon from the air as it grows.
1 Cattle and sheep eat grass, which contains carbon.
SOIL CARBON
Carbon can be stored in the soil, but it is unclear whether New Zealand's pastures are gaining or losing soil carbon overall.

- Το μεθάνιο είναι 72 φορές πιο ισχυρό από το CO2 ως αέριο θερμοκηπίου
- Διασπάται και απομακρύνεται από την ατμόσφαιρα σε 9 χρόνια.
- Ακόμα κι αν ολόκληρος ο κόσμος αλλάξει αύριο σε μια οικονομία και τρόπο ζωής με μηδενικές εκπομπές άνθρακα, θα χρειαζόταν 100 – 1000 χρόνια για να διαλυθεί το CO2 από την ατμόσφαιρα.
- Η μείωση των βραχύβιων αερίων του θερμοκηπίου θα μεταφραστεί γρήγορα σε ψύξη της Γης που θα μας δώσει χρόνο να αντιμετωπίσουμε τις εκπομπές CO2.

Στις κτηνοτροφικές μονάδες καταναλώνεται σημαντική ποσότητα ενέργειας για φωτισμό, θέρμανση, εξαερισμό κλπ, αφού στο μεγαλύτερο μέρος τους οι μονάδες αυτές αποτελούνται από κλειστούς χώρους, απελευθερώνοντας έτσι μεγάλες ποσότητες διοξειδίου του άνθρακα στην ατμόσφαιρα.





Tessari, P., Lante, A. & Mosca, G. Essential amino acids: master regulators of nutrition and environmental footprint?. Sci Rep 6, 26074 (2016). https://doi.org/10.1038/srep26074

ΤΜΗΜΑ ΒΙΟΧΗΜΕΙΑΣ & ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ
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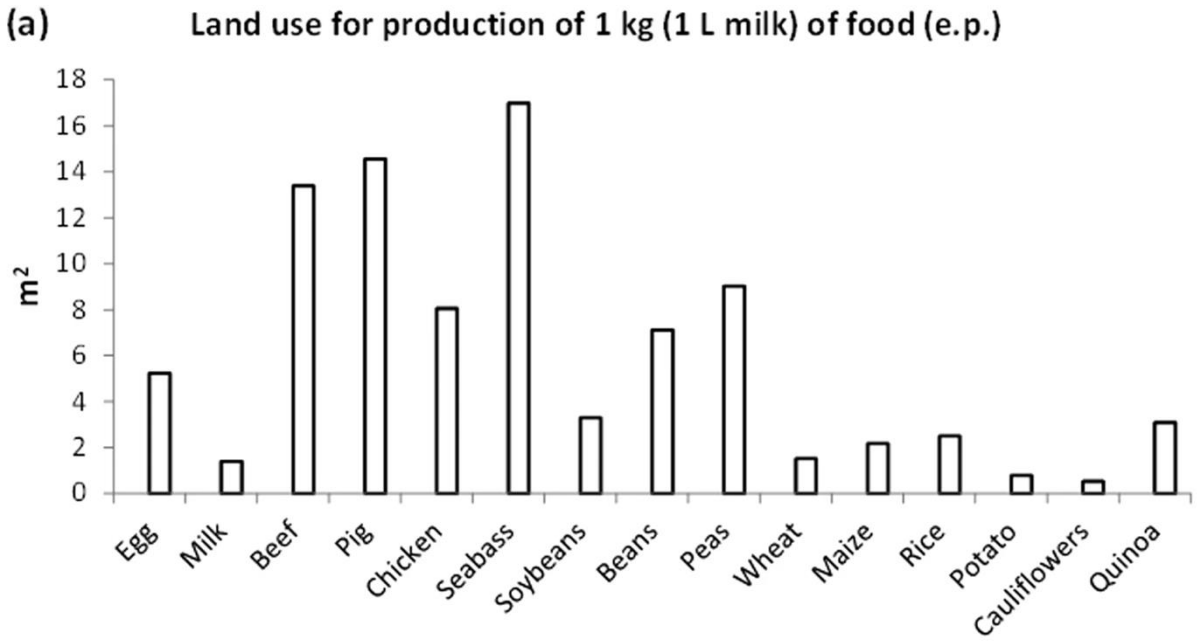
Β. Μείωση βιοποικιλότητας



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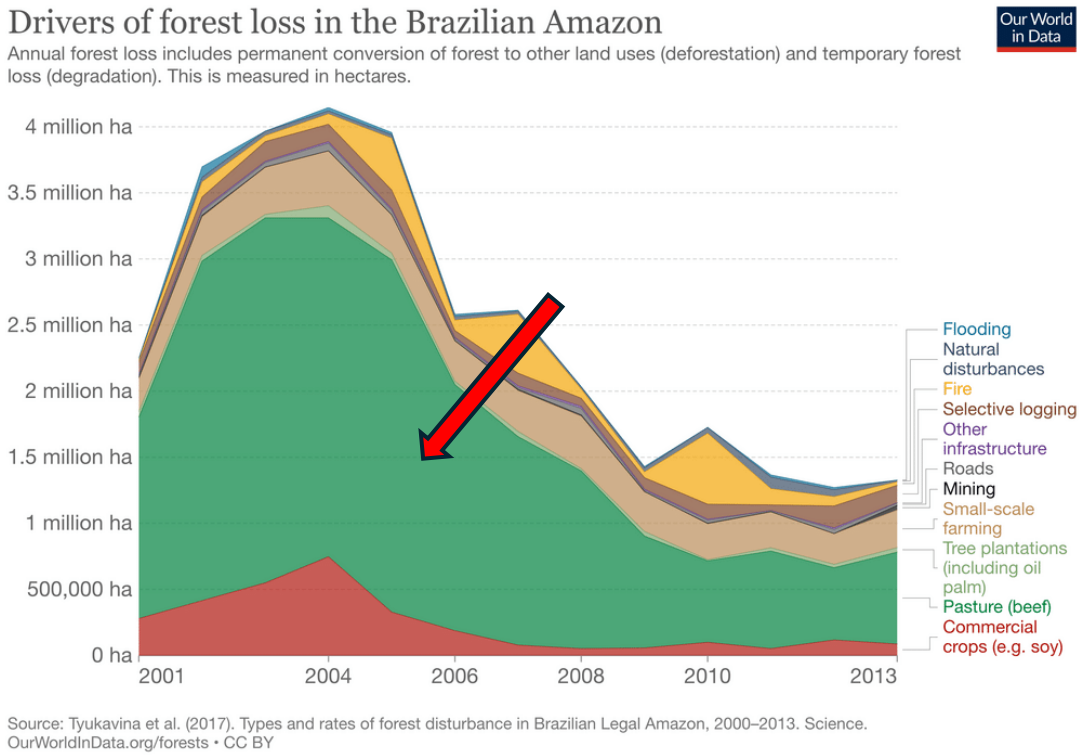
ΒΙΟΜΑΖΑ ΟΛΩΝ ΤΩΝ ΘΗΛΑΣΤΙΚΩΝ ΤΟΥ ΠΛΑΝΗΤΗ

Πηγή: Kalahari Lion Research, based on data from *Harvesting the Biosphere: What We Have Taken From Nature* (MIT Press, 2015) by Vaclav Smil.

Αποψίλωση δασών

- Με την αποψίλωση των δασών, χάνονται οι «πνεύμονες του πλανήτη». Κάθε χρόνο αποψιλώνονται 46-58 χιλιάδες τετραγωνικά μίλια, δηλαδή χάνονται περίπου 48 ποδοσφαιρικά γήπεδα δάσους κάθε λεπτό!



- **Θα μείνουν μόνο οι λέξεις;**
- **Ο χρόνος τελειώνει!**

Food and Agriculture Organization of the United Nations

THE IMPACT OF LIVESTOCK ON BIODIVERSITY

SUMMARY OF THE PRINCIPLES FOR ASSESSMENT

OVERVIEW

The last report of the Intergovernmenta
on Biodiversity and Ecosystem Services (
current rate of species extinction is unp
history and is threatening human well
is the basis for essential ecosystem serv
production, crop pollination, water purification or climate regulation. Reversing species decline will require mainstreaming biodiversity across sectors and landscapes. Livestock is among the sectors with highest impacts on biodiversity. As a direct impact, around 30% of land on Earth are used for pastures

biodiversity can also be positive. For instance, extensive livestock production can be the only way to maintain semi-natural grassland habitats hosting a unique pool of wild species and providing key ecosystem services.

Ο τρέχων ρυθμός εξαφάνισης ειδών είναι πρωτοφανής στην ιστορία και απειλεί την ανθρώπινη ευημερία. Η κτηνοτροφία είναι ο τομέας με τις μεγαλύτερες επιπτώσεις στη βιοποικιλότητα.

CHALLENGES AND SOLUTIONS

Livestock contributes directly or indirectly to the five main drivers of biodiversity loss on the global scale (depicted as green circles in Figure 1). For each driver, specific categories of pressures are relevant to livestock systems (black text), but the impacts of

For instance, in intensive systems based on external feed, the best strategy may be to reduce negative externalities (pollution, greenhouse gas (GHG) emissions) while increasing efficiency to achieve high output levels and sparing land for nature. On the

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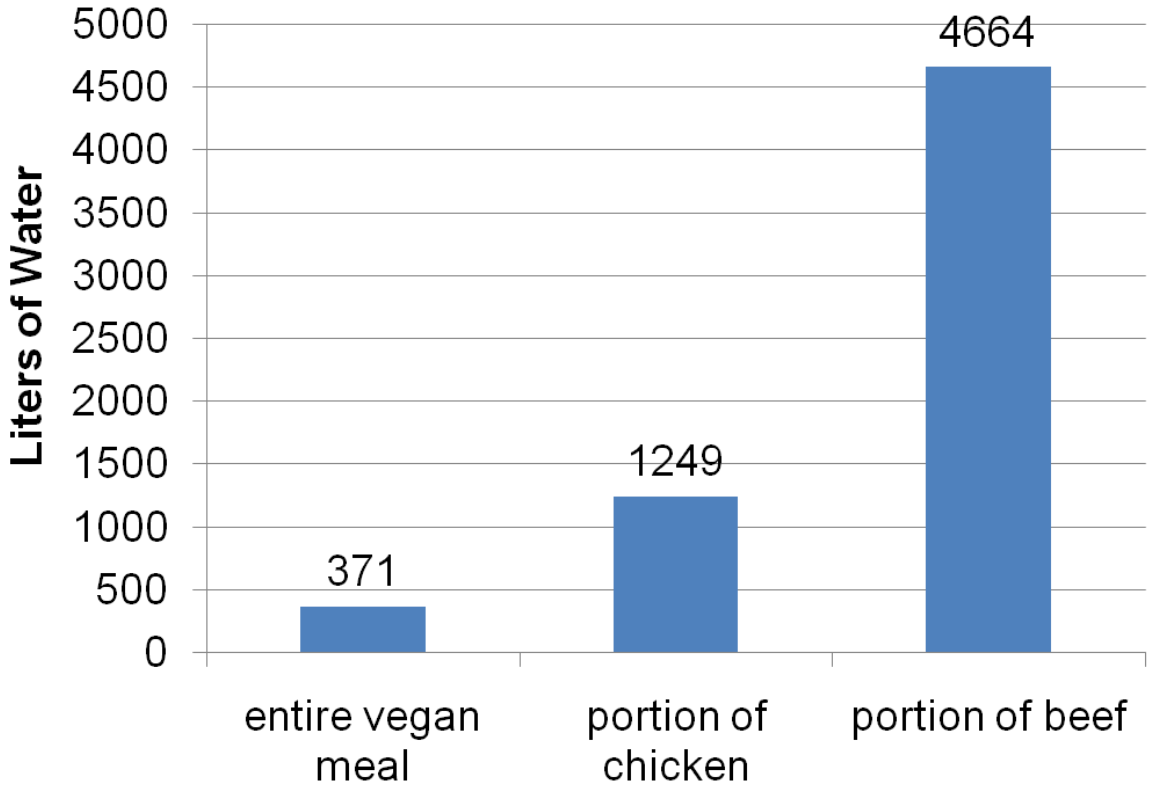
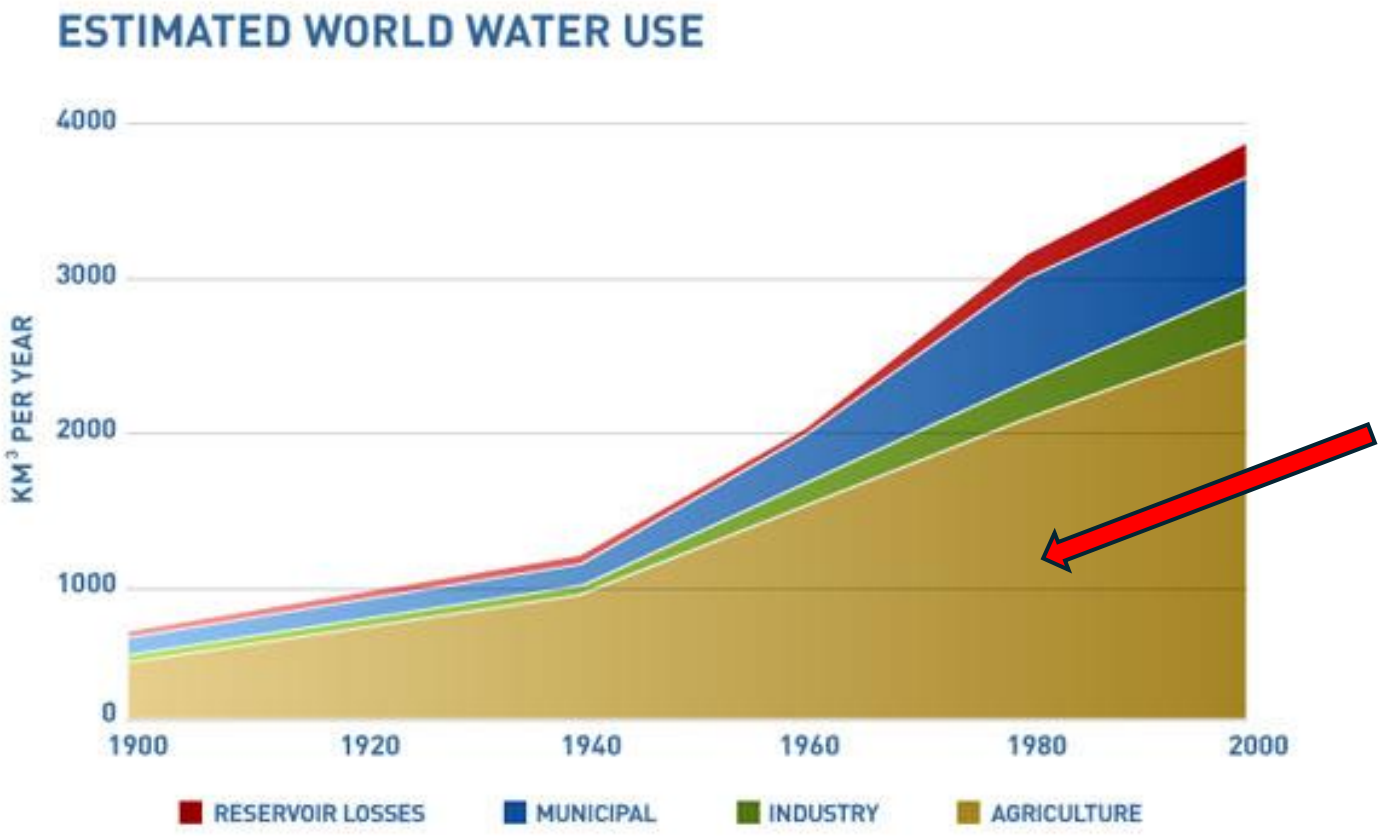
Γ. Αποθέματα νερού

Ο τομέας της κτηνοτροφίας είναι από τους πιο επιζήμιους κλάδους για τους υδάτινους πόρους της Γης.
Η παραγωγή 1 κιλού βοείου κρέατος απαιτεί 13.000-100.000 λίτρα νερού.
Για την παραγωγή 1 κιλού σιταριού απαιτούνται 500-2000 λίτρα νερού.



Water Inputs in California Food Production, Water Education Foundation, September, 1991 (chart E3 p28)
http://tinyurl.com/6kd6kx



- Οικιακη χρήση → 10%
- Βιομηχανία →20%
- Γεωργία → 70% του οποίου το μεγαλύτερο μέρος χρησιμοποιείται από την κτηνοτροφία

- Livestock's Long Shadow, UN Food and Agriculture Organization, 2006 http://tinyurl.com/6bowo7
- Saving Water: from Field to Fork, SIWI, IWMI, Chalmers & SEI, May 2008 http://tinyurl.com/58padp

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ΣΥΝΟΨΗ

- **Η μεγάλη πλειοψηφία των βιοχημικών και γενετικών εξελικτικών προσαρμογών του ανθρώπινου είδους έγιναν για την κατανάλωση φυτικών τροφών**
- **Σε μια διατροφή με ποικιλία τροφών λαμβάνουμε την απαραίτητη ποσότητα και ποιότητα πρωτείνης**
- **Η υπερβολική κατανάλωση ζωικών τροφών έχει σημαντικές αρνητικές επιπτώσεις στην υγεία του ανθρώπου**
- **Οι πρακτικές της εντατικής κτηνοτροφίας είναι από τους βασικούς υπεύθυνους για την ανάπτυξη πολυανθεκτικών στελεχών βακτηρίων**
- **Η εντατική κτηνοτροφία συμβάλει με πολλούς τρόπους στην υποβάθμιση του περιβάλλοντος**

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Ευχαριστώ για την προσοχή σας