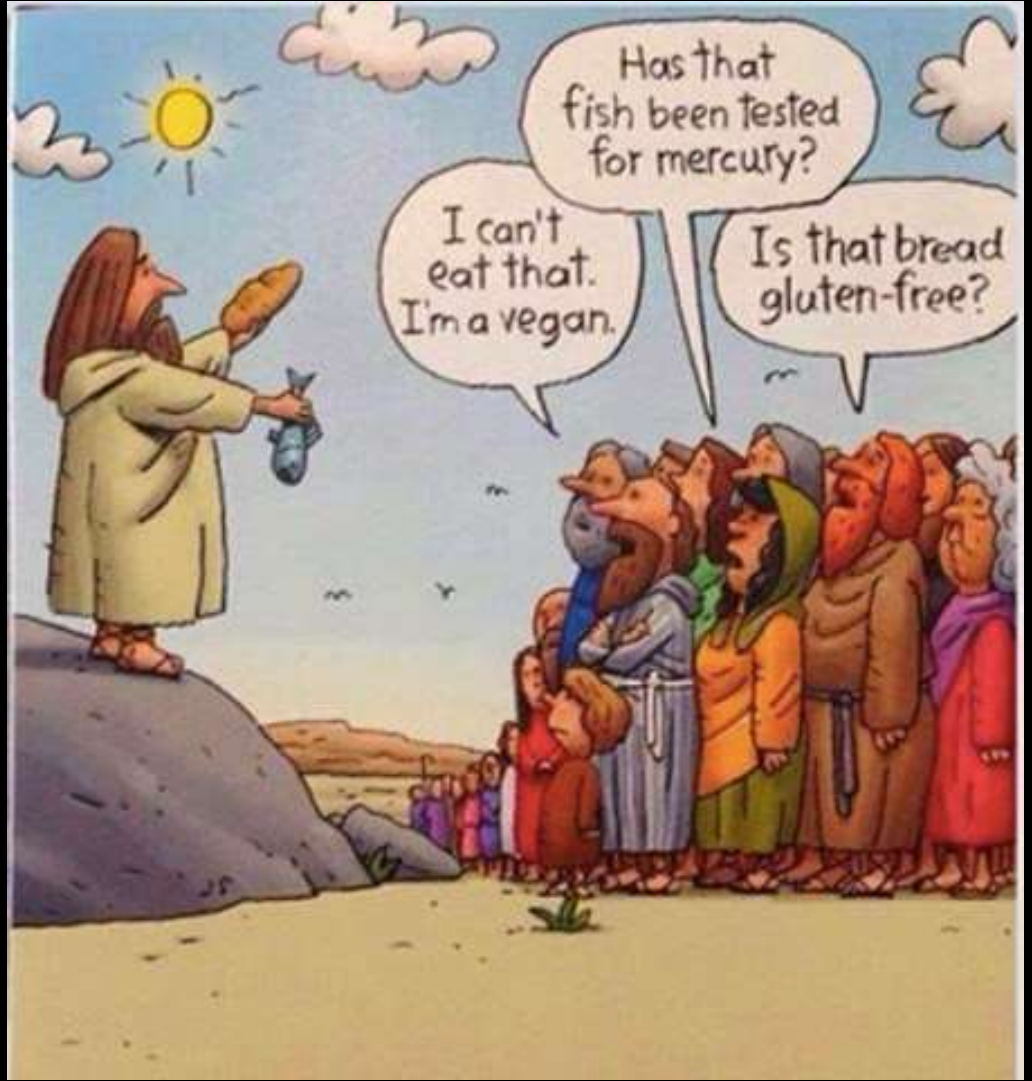
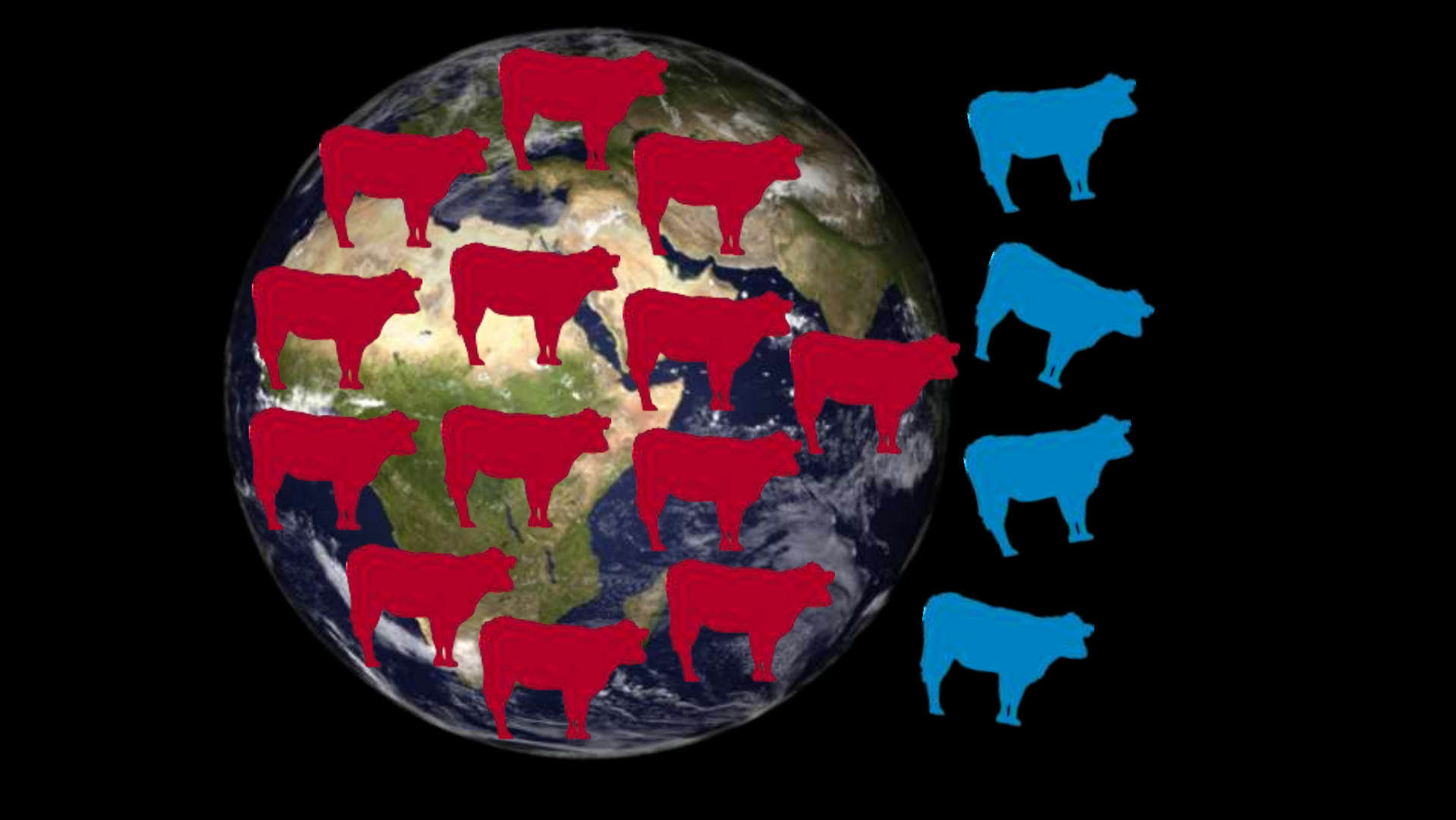
Mark Post, Maastricht University
@MarkPost6

NVWV, 2018

I
MEAT


Has that fish been tested for mercury?
I can't eat that. I'm a vegan.
Is that bread gluten-free?



GREENHOUSE GASES

World Average Virtual Water Content

15,500 Beef

4,850 Pork

3,900 Chicken

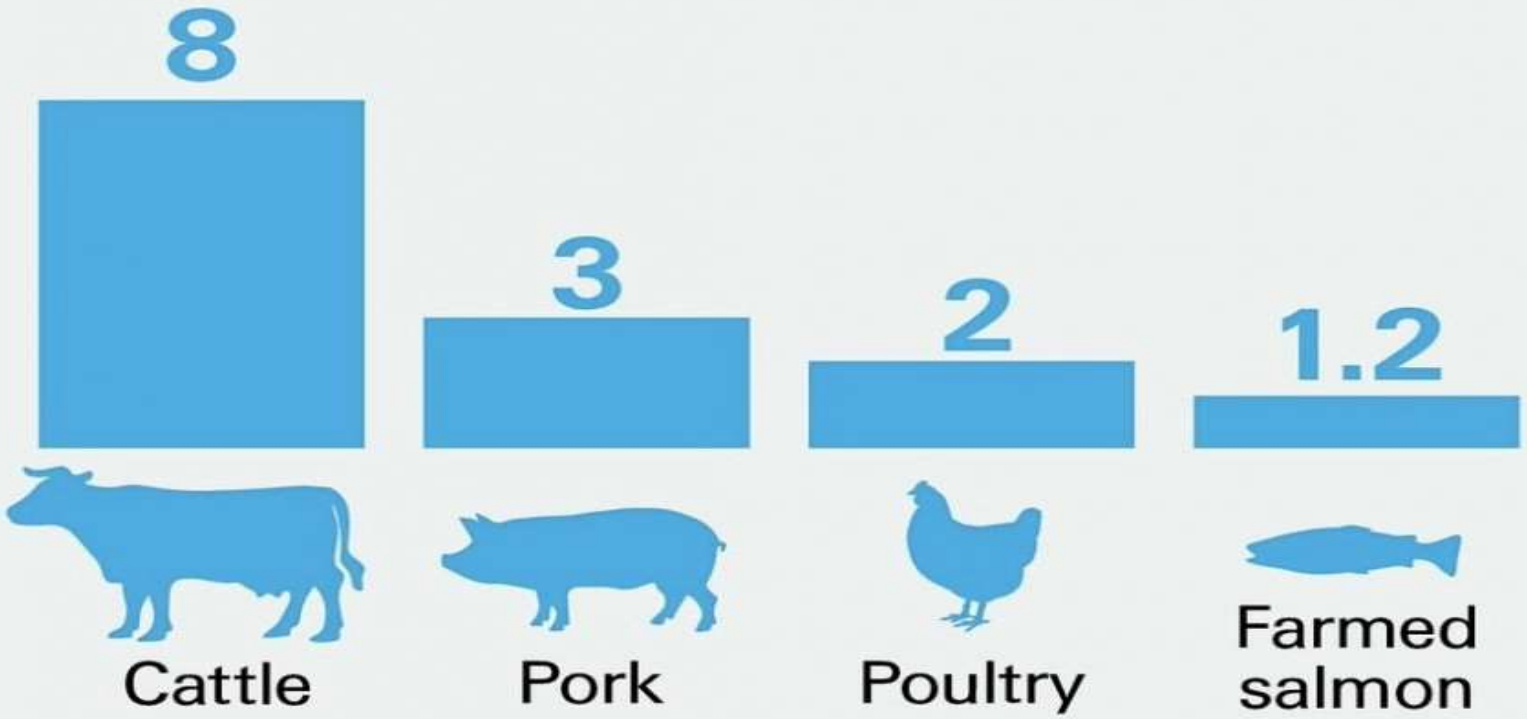
V.S.

2,300 Rice

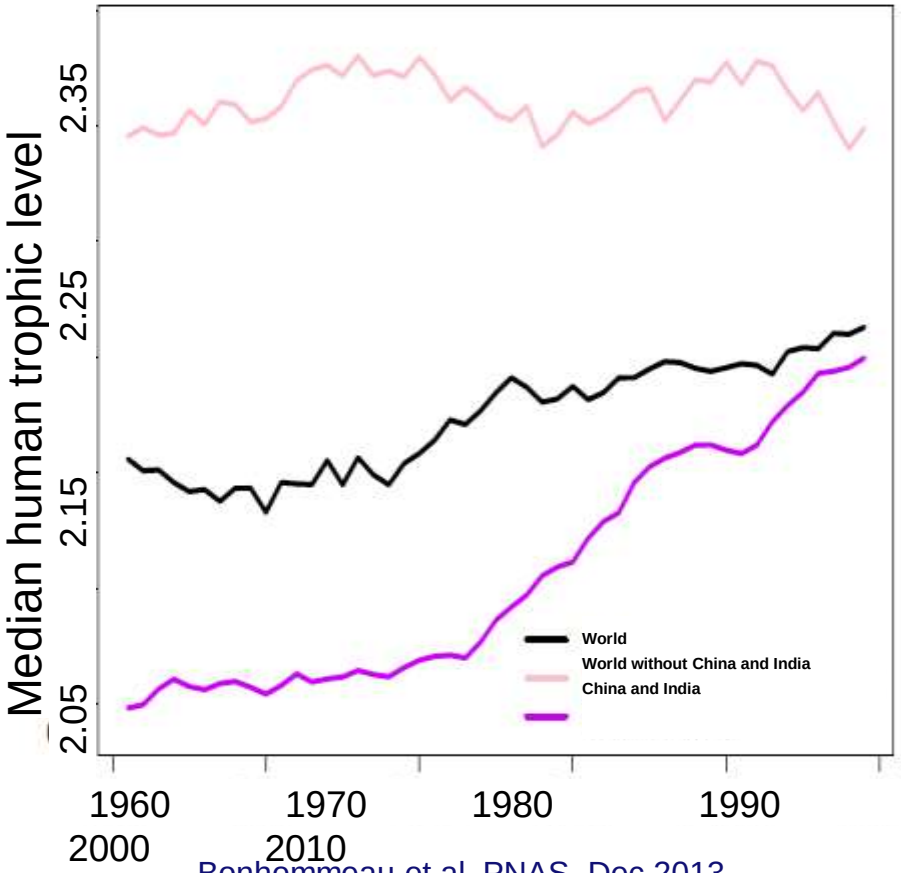
1,800 Soya

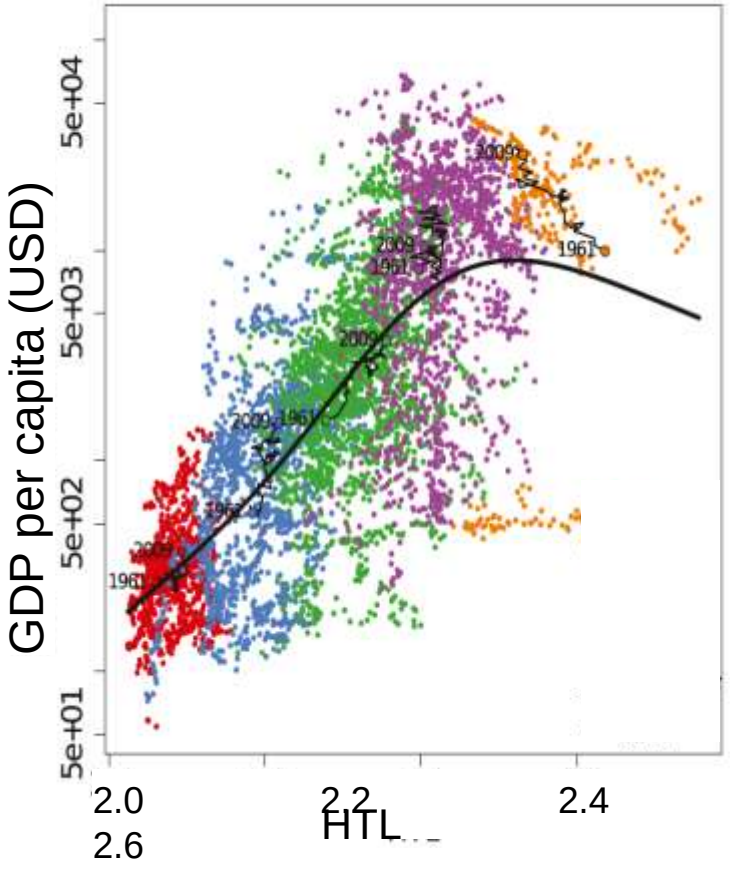
1,300 Wheat

FEED CONVERSION RATIO OF SELECTED MEAT AND FISH WORLDWIDE



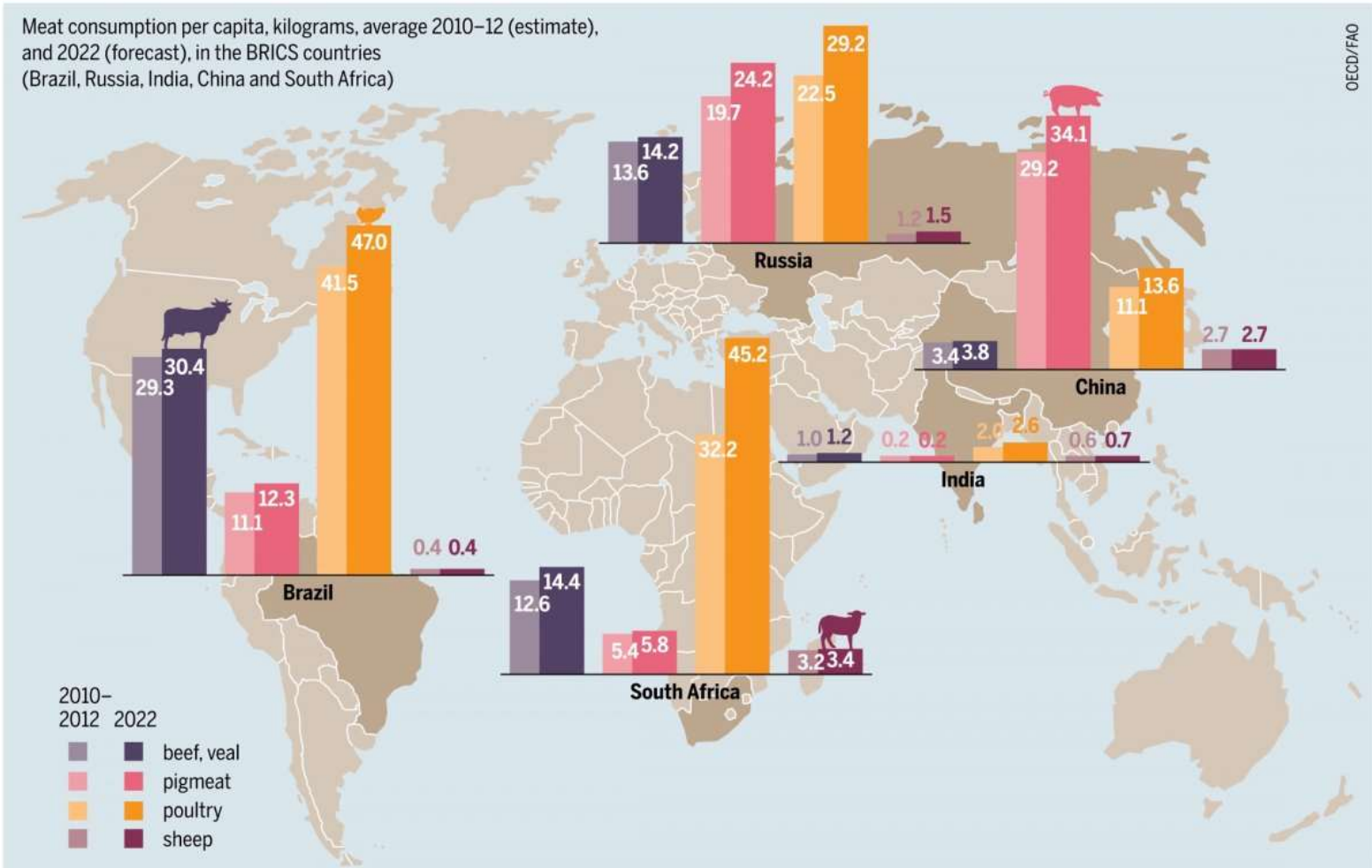
Human trophic level

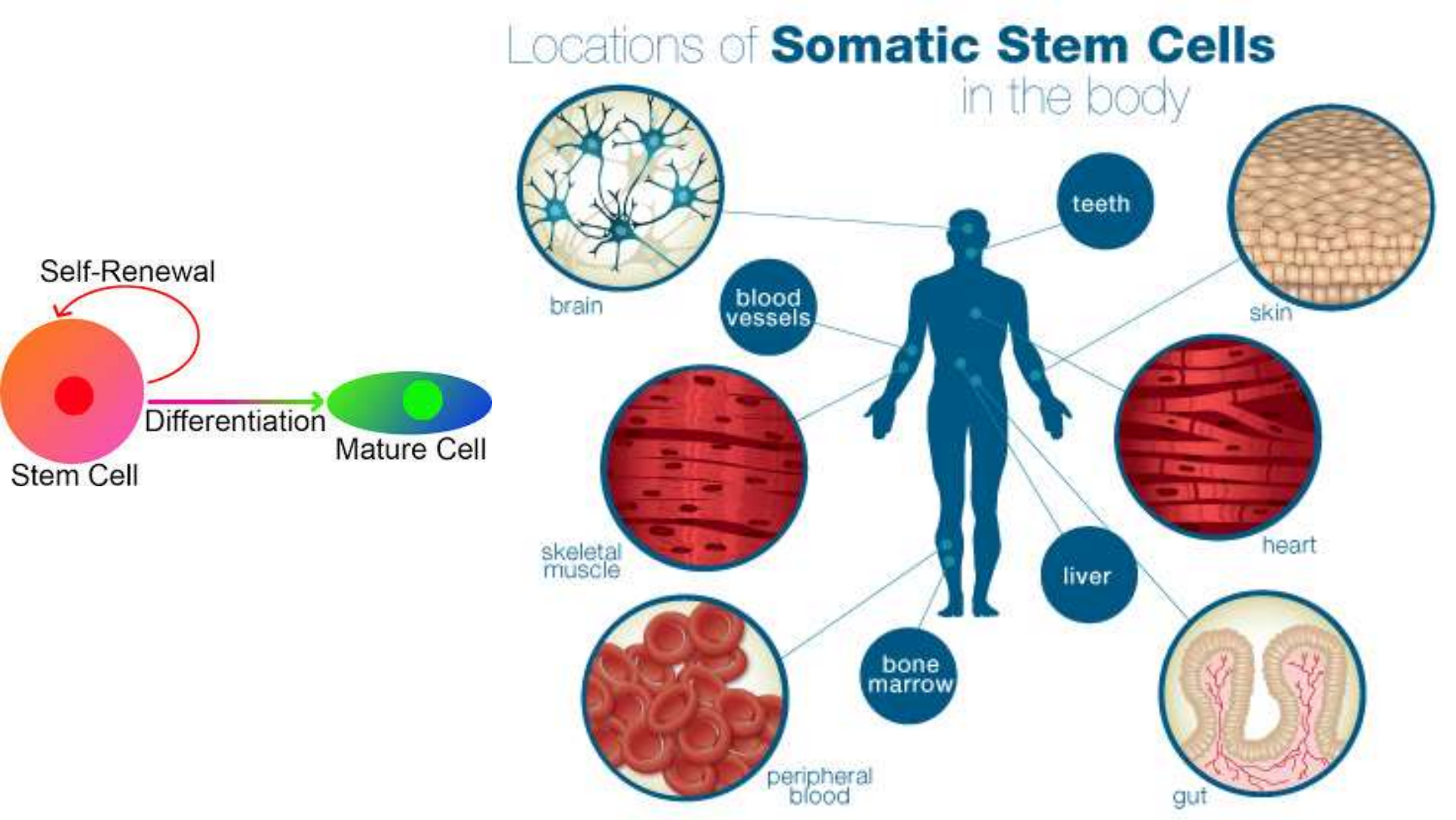


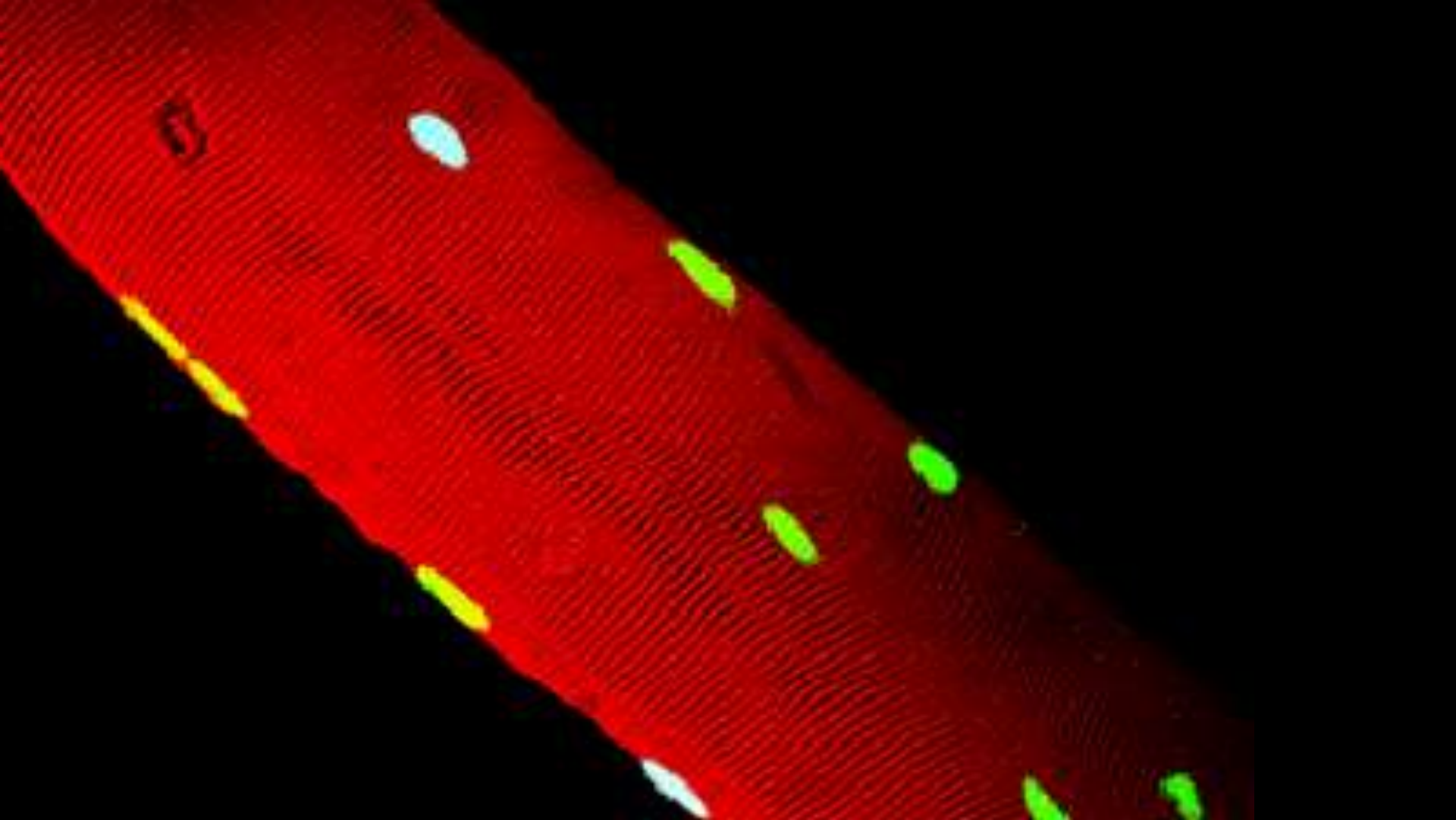


Bonhommeau et al, PNAS, Dec 2013

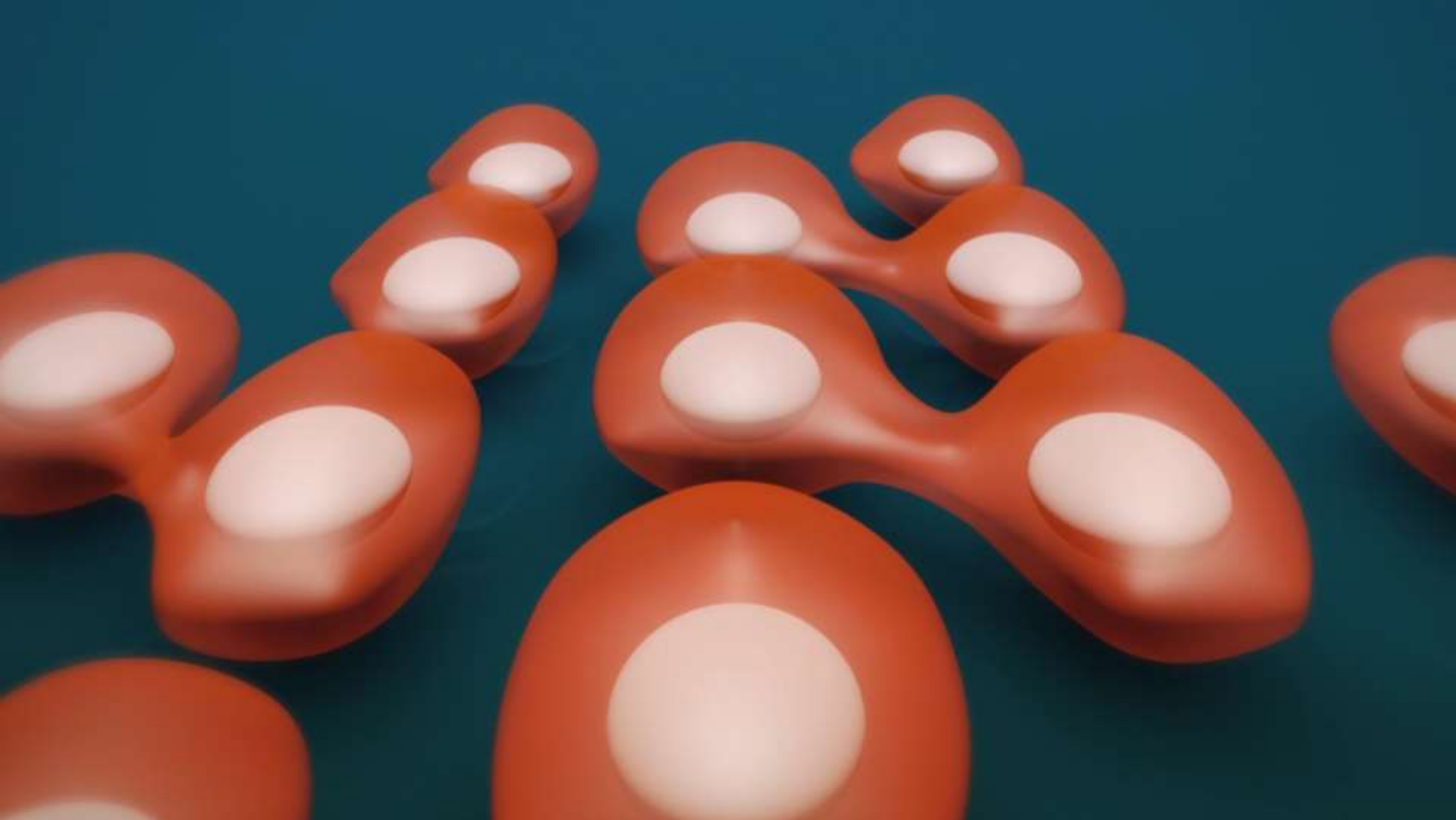
Demand in the developing world is rising steeply

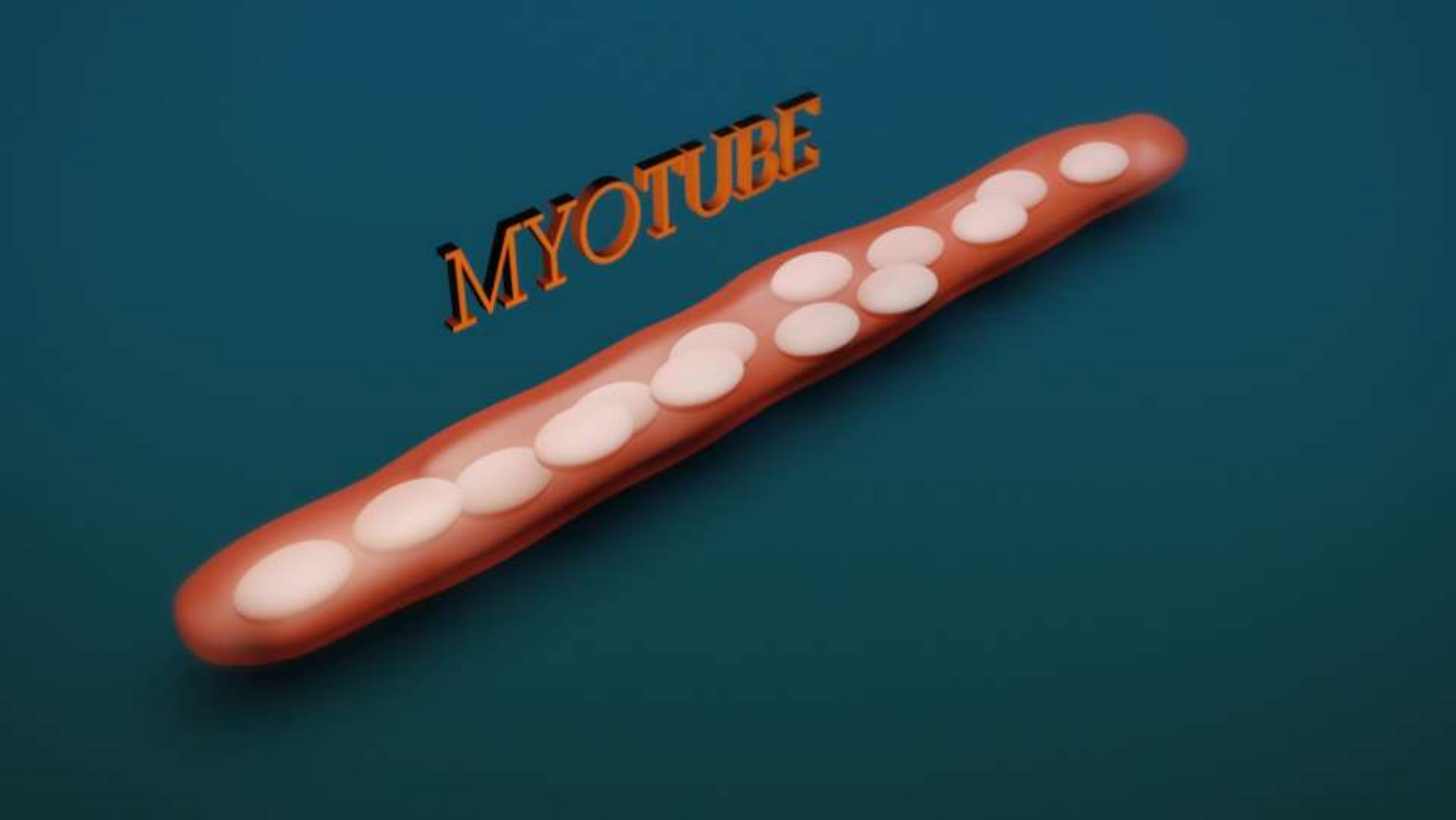



Locations of Somatic Stem Cells
in the body
Self-Renewal
Differentiation
Mature Cell
Stem Cell
brain
teeth
skin
blood vessels
skeletal muscle
heart
liver
bone marrow
peripheral blood
gut



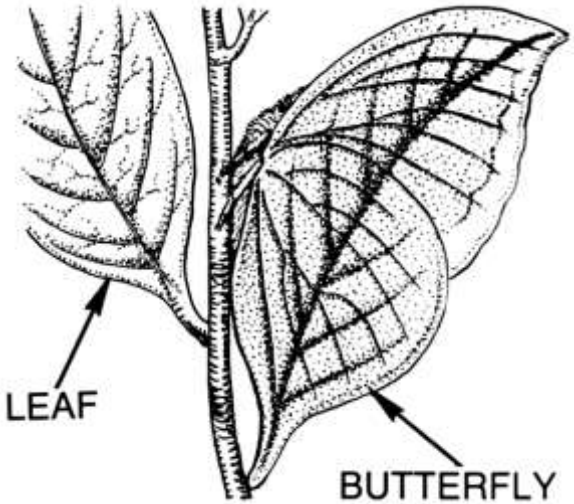
BIOPSY




MYOTUBE

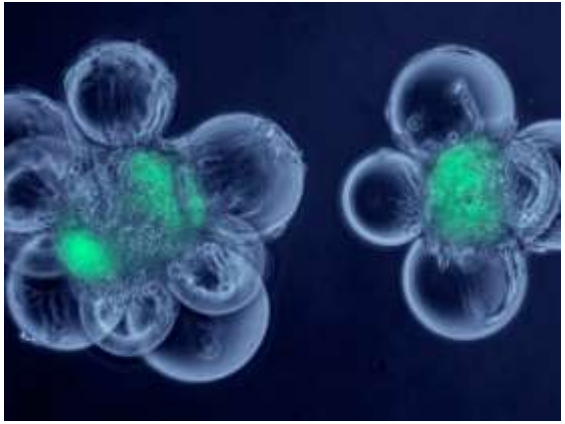
3 weeks

A
B
C
D
E
F
G


LEAF
BUTTERFLY

EFFICIENCY

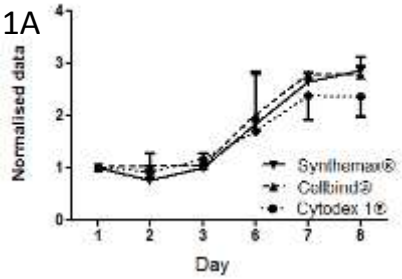
culture conditions



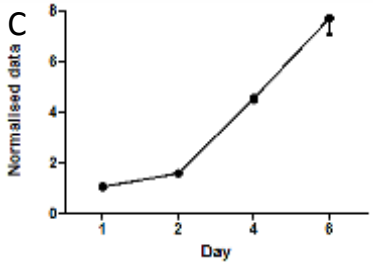
cell selection

scale up

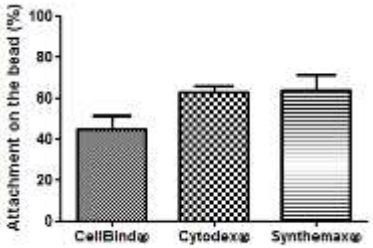
1A


Normalised data
Day
Synthemax®
Cellbind®
Cytodex 1®

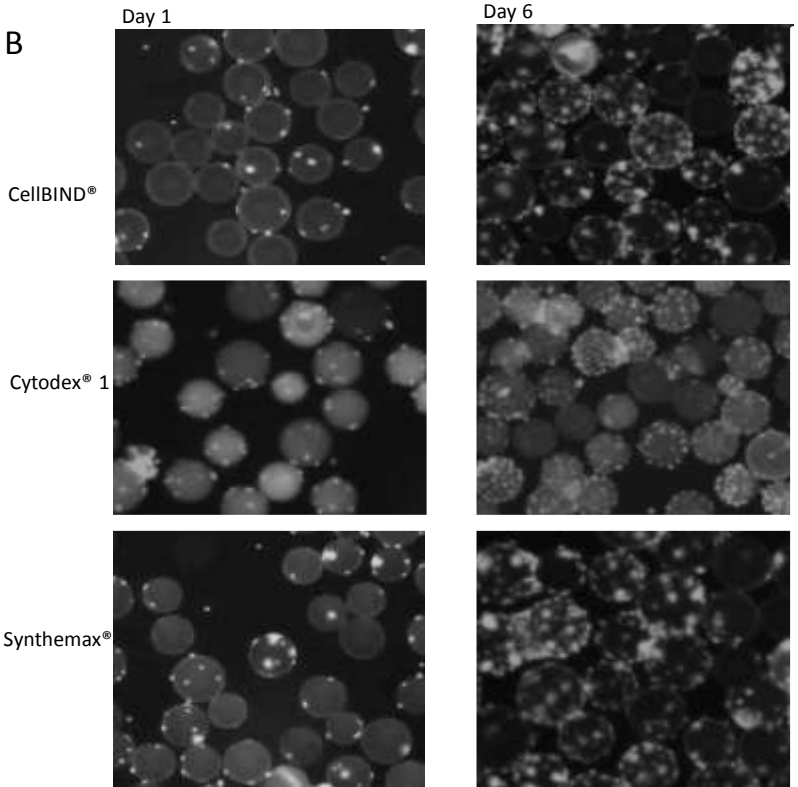
C


Normalised data
Day

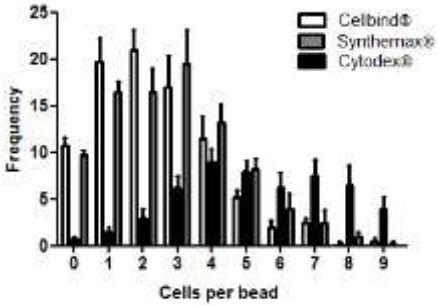
D


Attachment on the bead (%)
CellBind®
Cytodex®
Synthemax®

B


Day 1
Day 6
CellBIND®
Cytodex® 1
Synthemax®

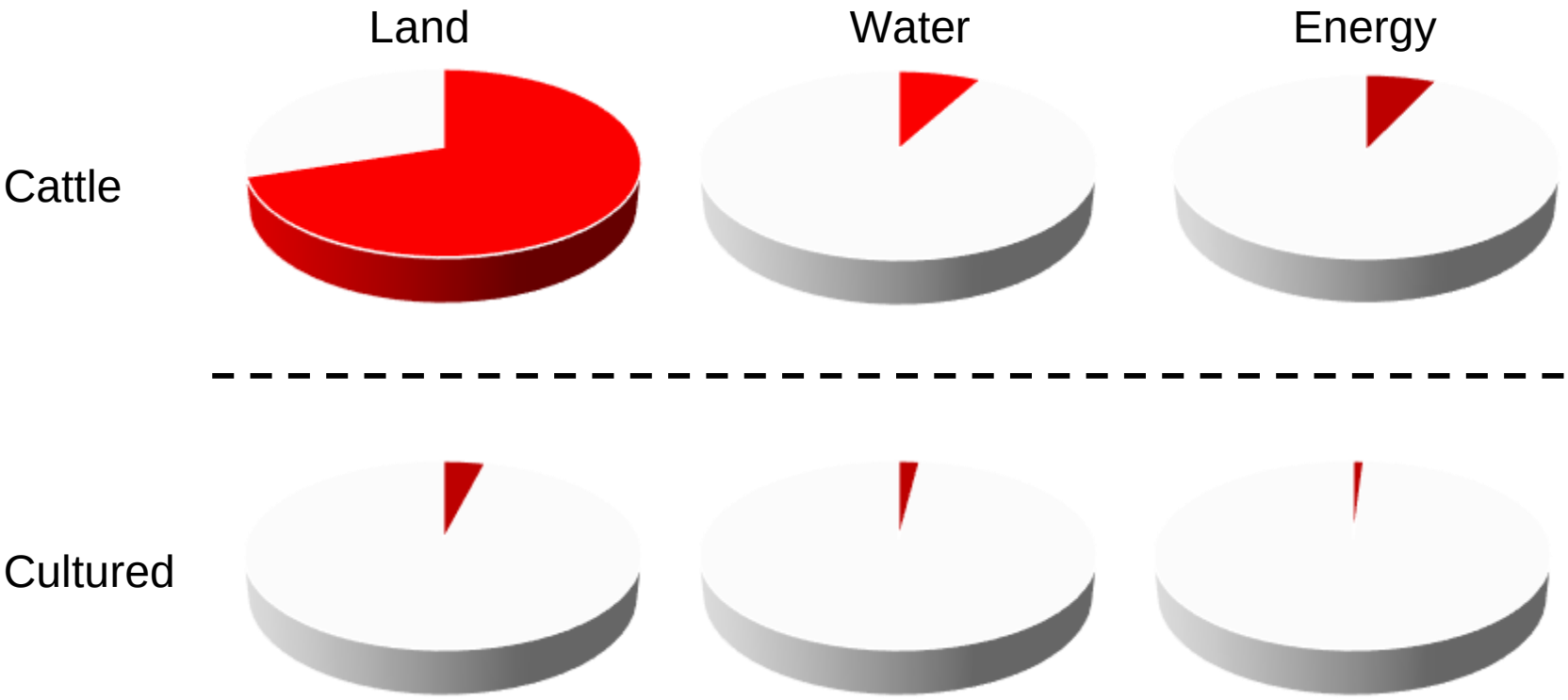
E


Cellbind®
Synthemax®
Cytodex®
Frequency
Cells per bead

Large scale cell production

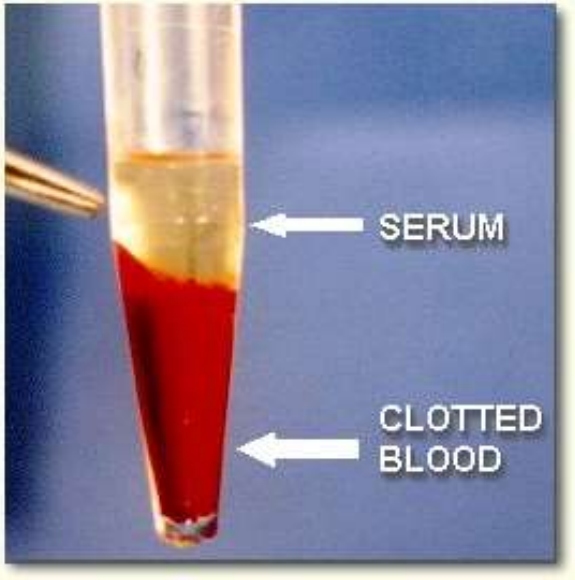
25,000 Ltr

Life cycle analysis

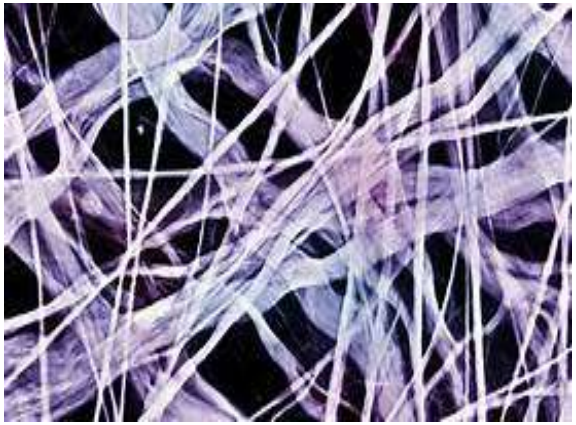


Percent of earth resources dedicated to meat production

SUSTAINABILITY



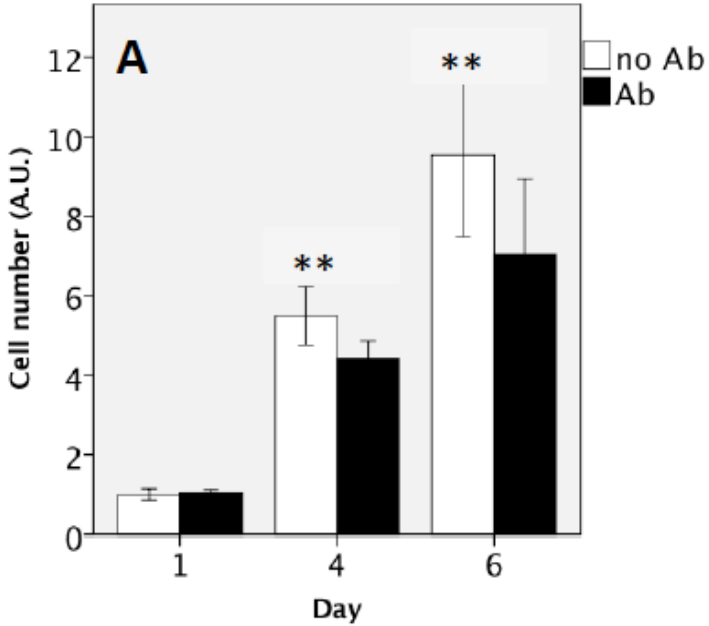
serum

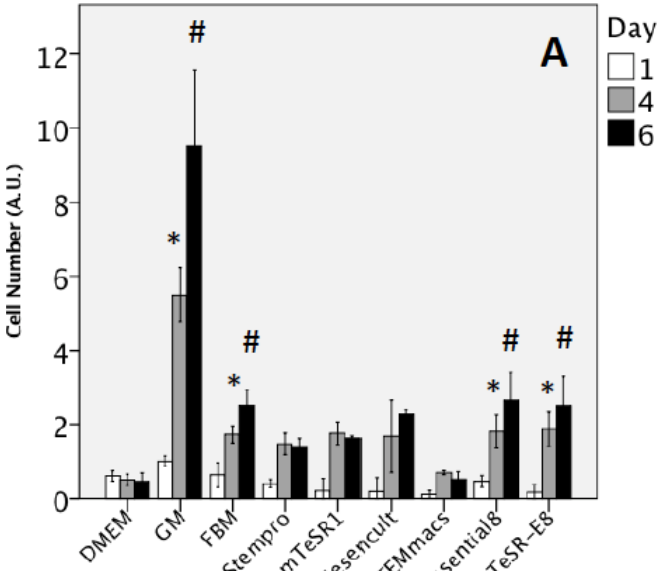


collagen

recycle

No serum, no antibiotics



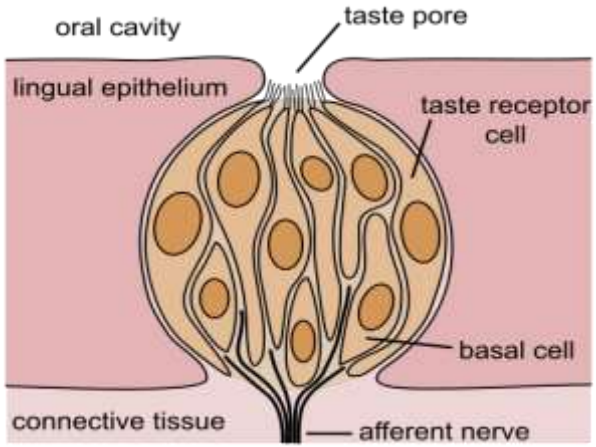


Moritz MSM, 2015. *J of Integr Agric*
Verbruggen S, 2017. *Cytotechnology*

MIMICRY

color

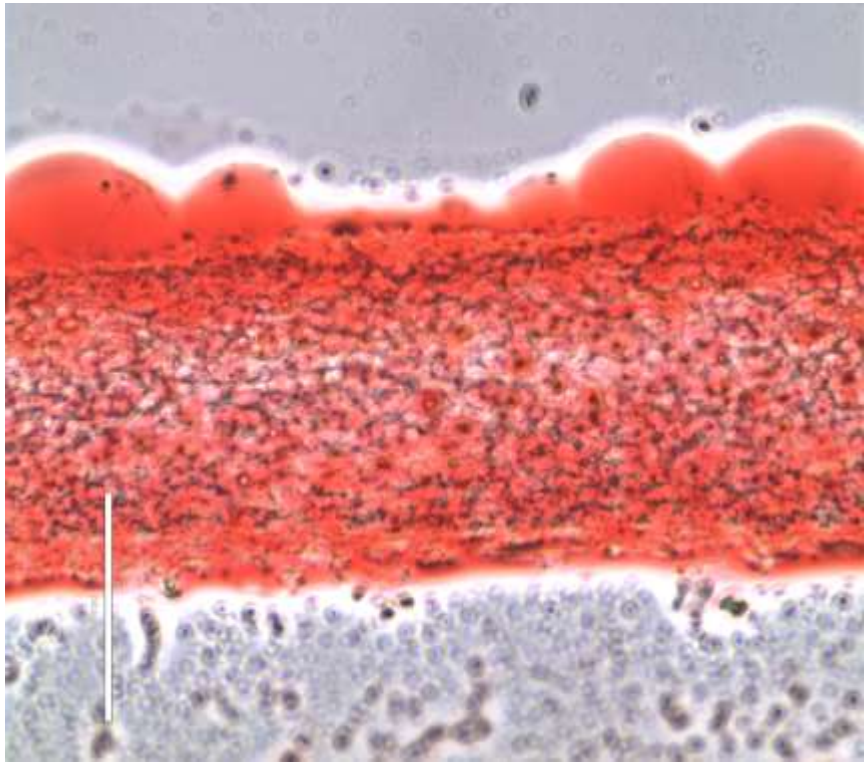
texture

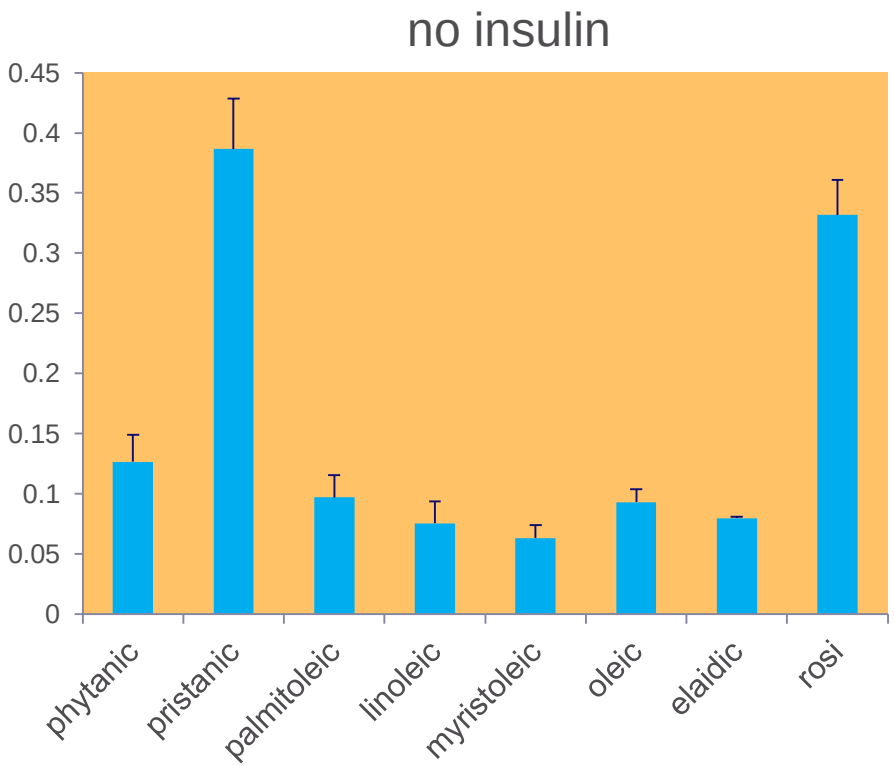


taste

creating fat tissue

Bovine ADSC in alginate

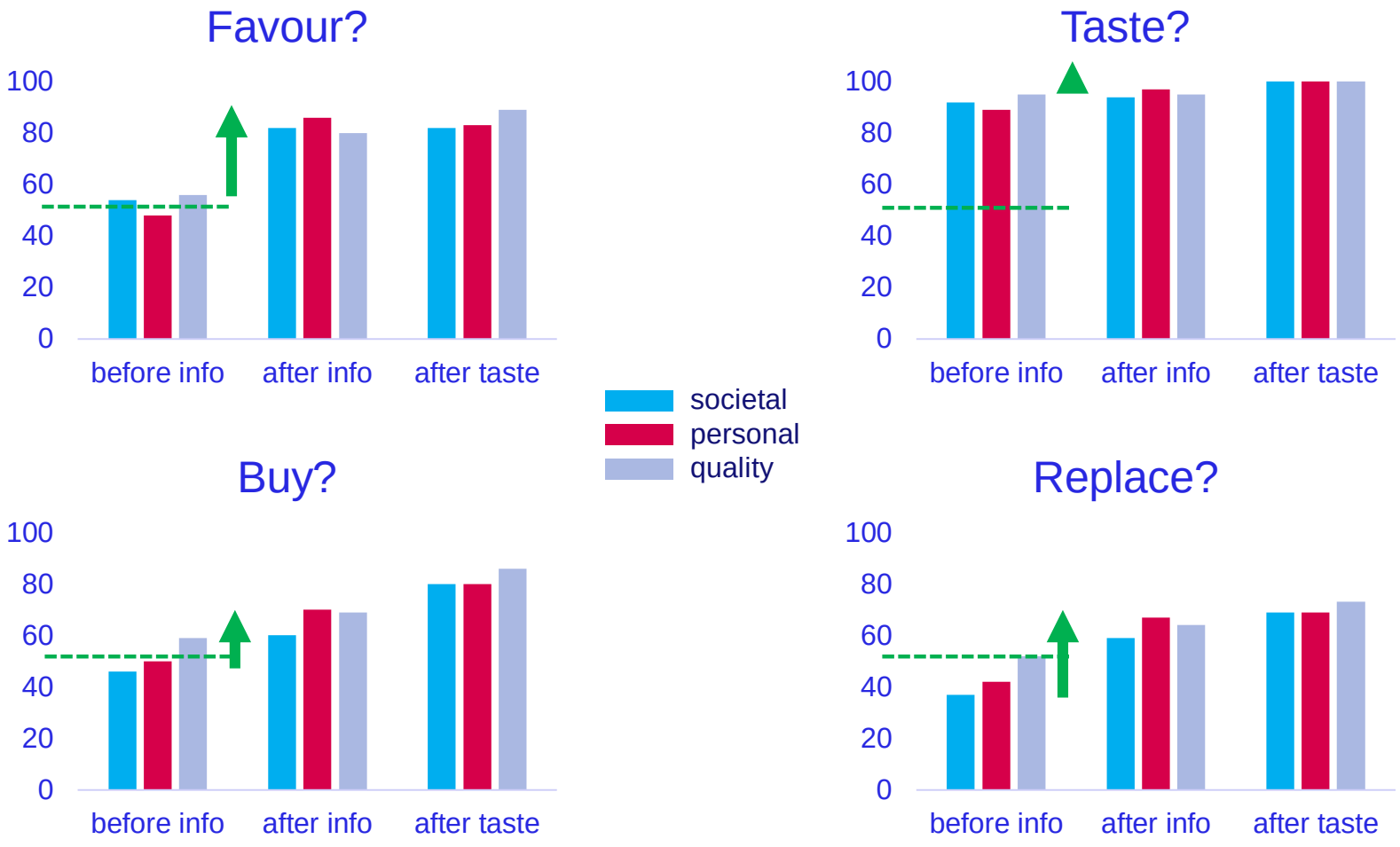


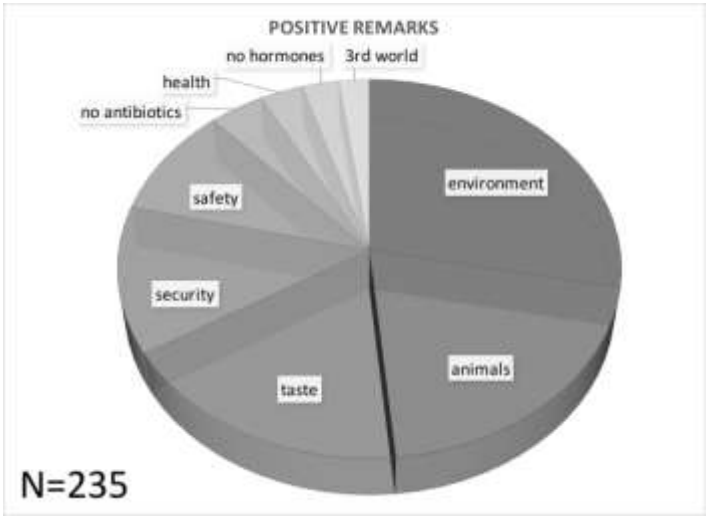


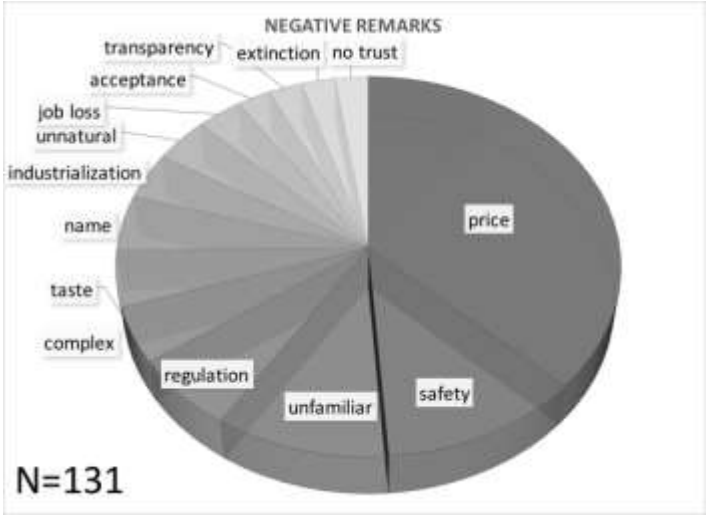
Are acceptance and taste dependent on type of info?

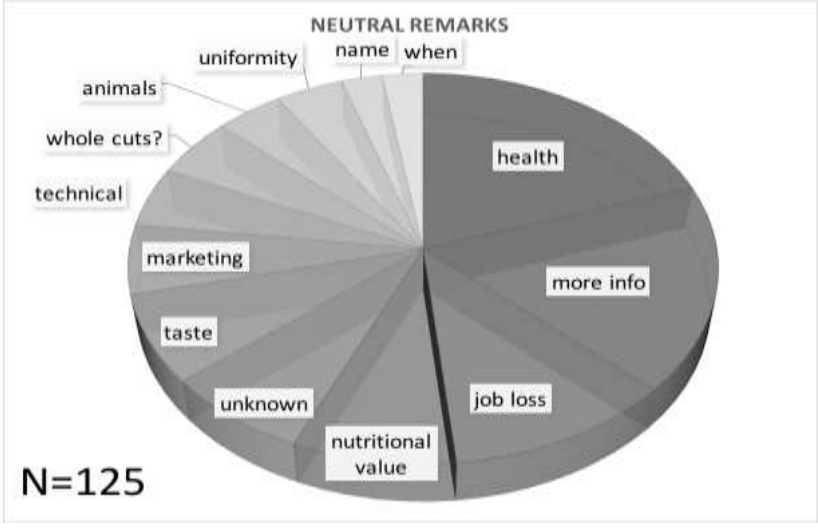
193 participants

N=65	N=64	N=64
Info 1 ***Social benefits***	Info 2 ***Personal benefits***	Info 3 ***Meat quality and taste***
Sensory analysis	Sensory analysis	Sensory analysis

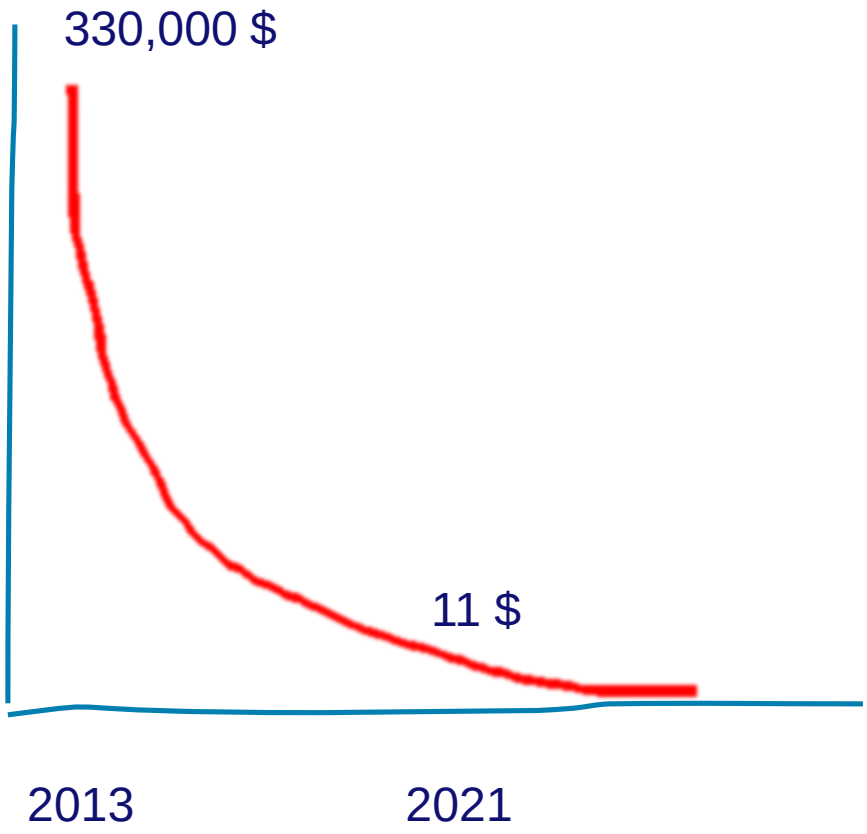

Favour?
Taste?
Buy?
Replace?
100
80
60
40
20
0
before info
after info
after taste
societal
personal
quality


POSITIVE REMARKS
no hormones
3rd world
health
no antibiotics
safety
environment
security
animals
taste
N=235


NEGATIVE REMARKS
transparency
extinction
no trust
acceptance
job loss
unnatural
industrialization
name
taste
complex
regulation
unfamiliar
safety
price
N=131


NEUTRAL REMARKS
uniformity
name
when
animals
whole cuts?
technical
health
marketing
more info
taste
unknown
job loss
nutritional value
N=125

PRESCRIPTION OF THE FUTURE


330,000 $
11 $
2013
2021

€ 15/L
glucose, aminoacids, vitamins, minerals

Groeifactoren (6 eiwitten)

+

+