



Omega-3 Overview

The Importance to China

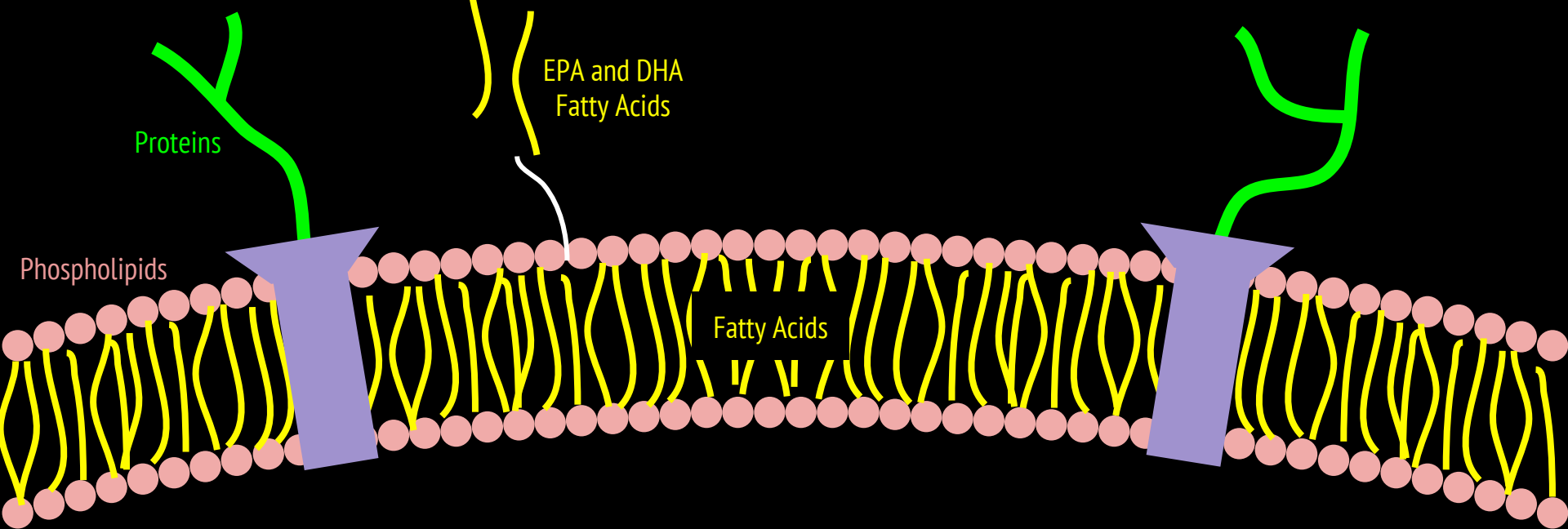
GOED
OMEGA-3

June 22, 2015

The background of the image consists of numerous glowing green spheres of varying sizes, scattered across a dark green gradient. The spheres have a soft, ethereal glow and some overlap, creating a sense of depth and movement. The overall aesthetic is clean and scientific.

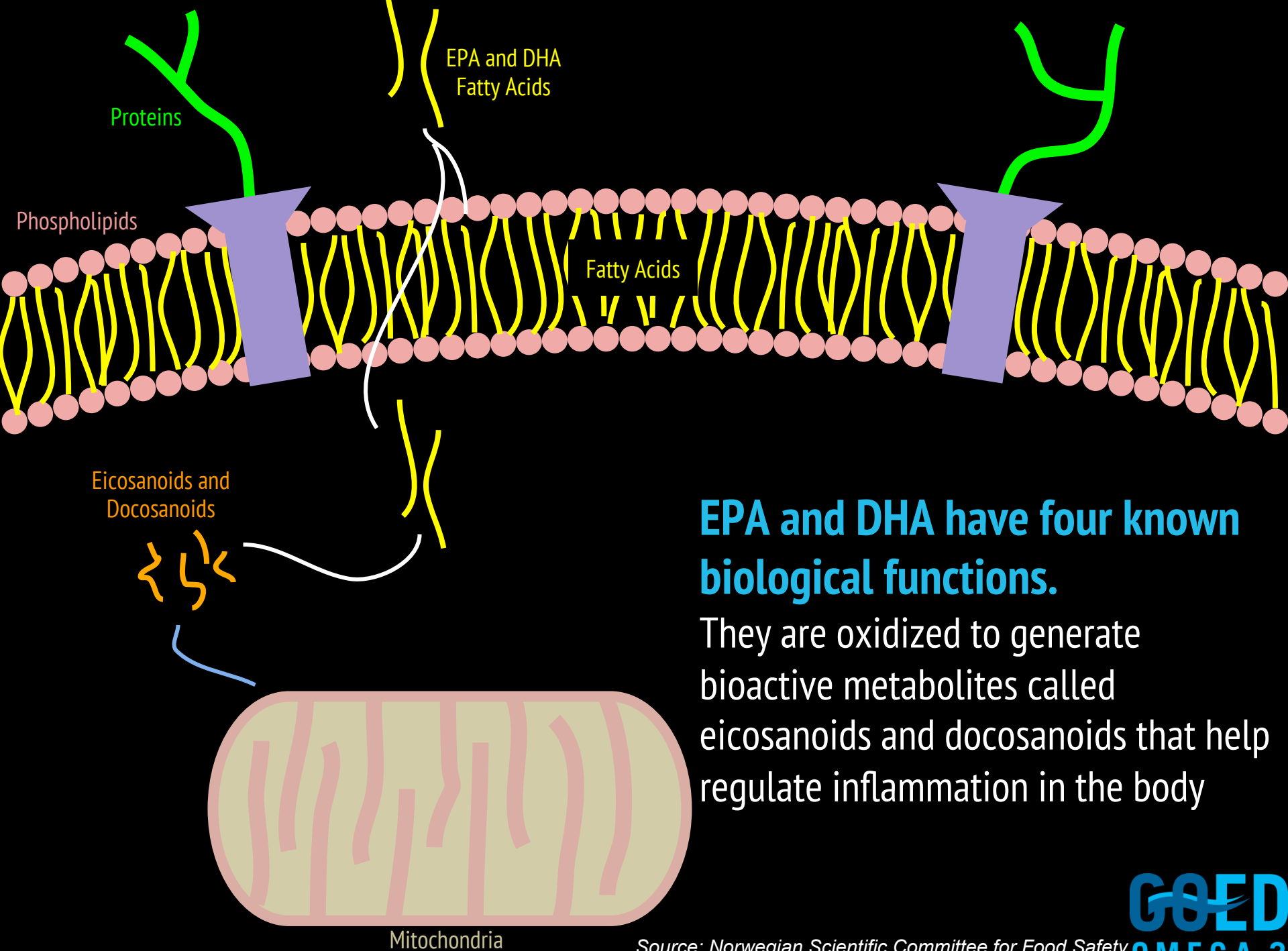
EPA and DHA omega-3s are among the most important resources in the ocean.

They are a critical part of life, helping cells function and develop properly, but they primarily come from the marine environment.



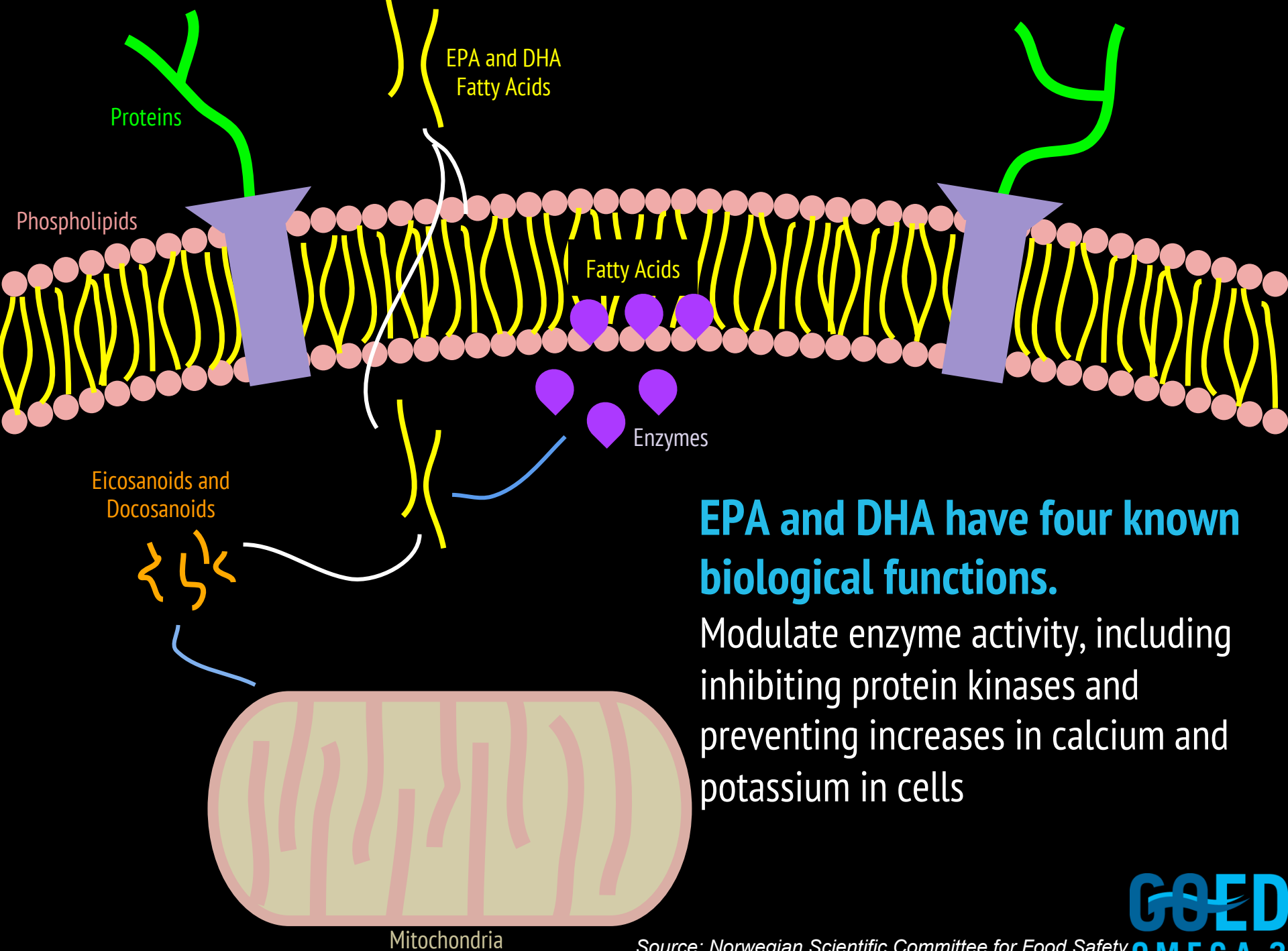
EPA and DHA have four known biological functions.

They are incorporated as structural components of cell membranes, increasing fluidity and allowing for proper functioning of proteins



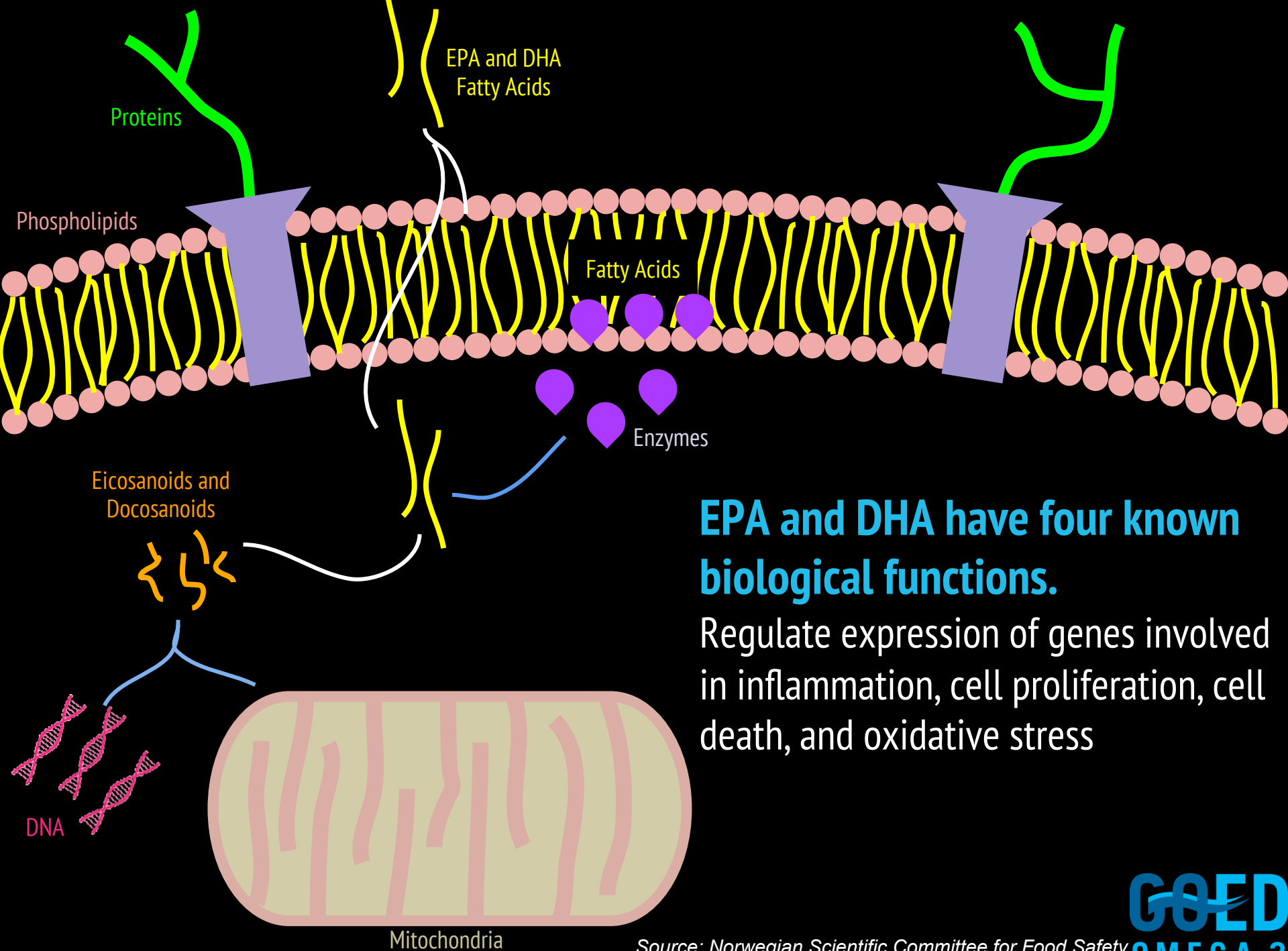
EPA and DHA have four known biological functions.

They are oxidized to generate bioactive metabolites called eicosanoids and docosanoids that help regulate inflammation in the body



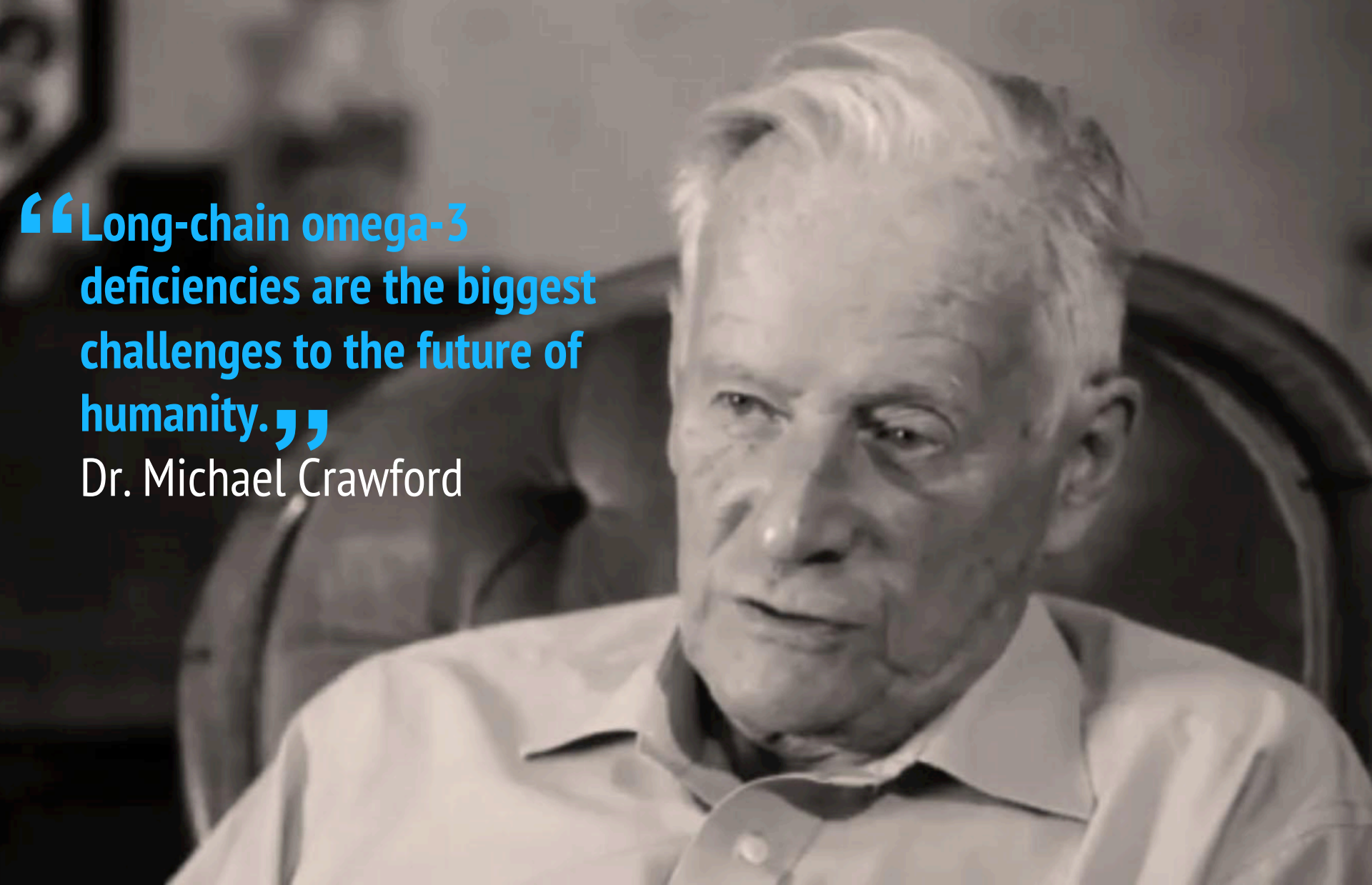
EPA and DHA have four known biological functions.

Modulate enzyme activity, including inhibiting protein kinases and preventing increases in calcium and potassium in cells



EPA and DHA have four known biological functions.

Regulate expression of genes involved in inflammation, cell proliferation, cell death, and oxidative stress

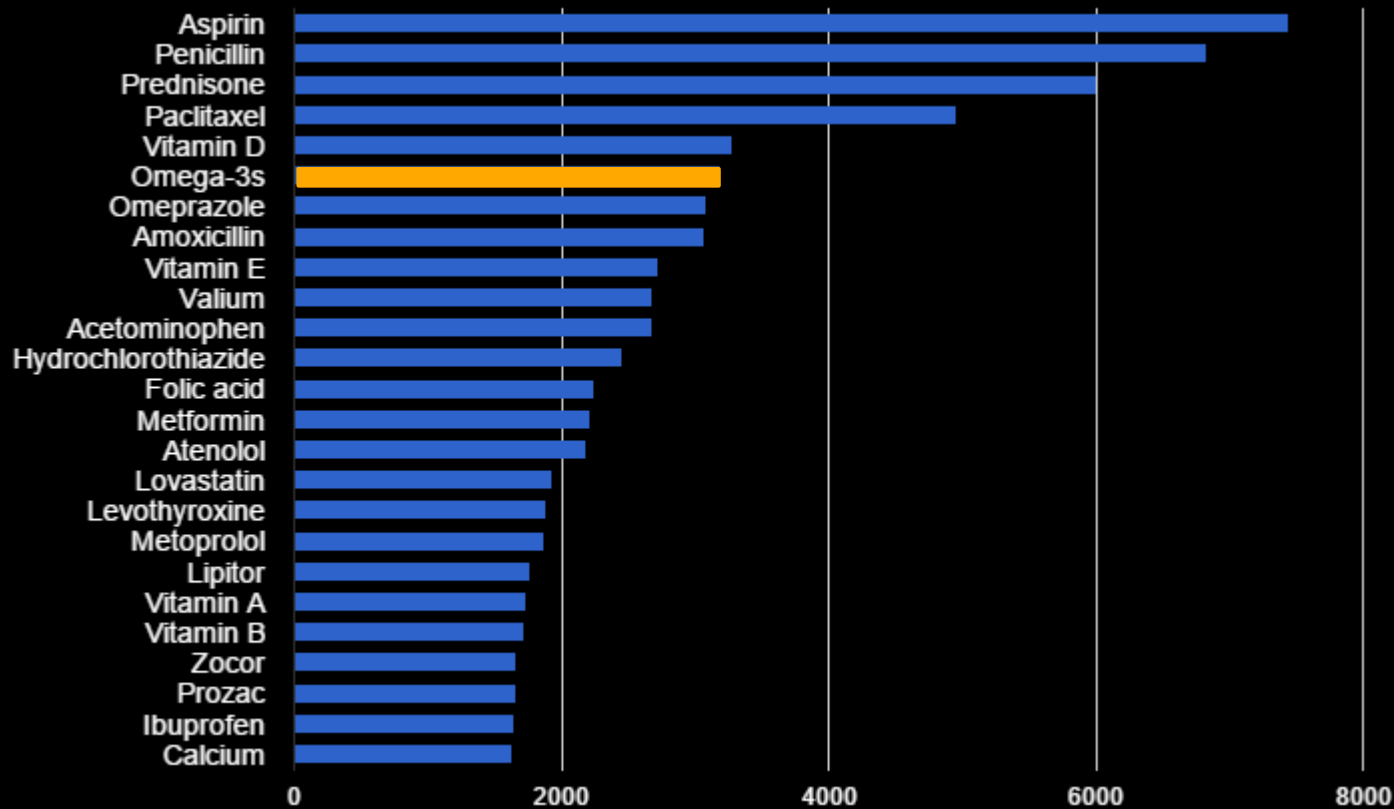
A black and white photograph of an elderly man with short, light-colored hair, wearing a light-colored button-down shirt. He is seated in a dark, upholstered chair and looking slightly to his left with a thoughtful expression. The background is blurred, showing what appears to be a wall with some framed pictures or artwork.

““ Long-chain omega-3
deficiencies are the biggest
challenges to the future of
humanity.””

Dr. Michael Crawford

Omega-3s are one of the most researched compounds in health and nutrition

The Body of Evidence: Randomized, Controlled Trials in Humans



3000

New Scientific Papers
Published on EPA and
DHA, 1967-2014

2250

1500

750



Even with more than

28,000

published papers and

3,100

human clinical trials,
we are still only

beginning

to discover the
complete role EPA
and DHA play in

human

health

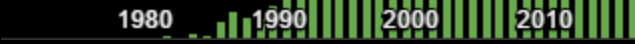
400

New Human RCTs
Published on EPA and
DHA, 1967-2014

300

200

100



Through our life stages, we can see why omega-3s may be valuable



Fetal growth

Maternal stores

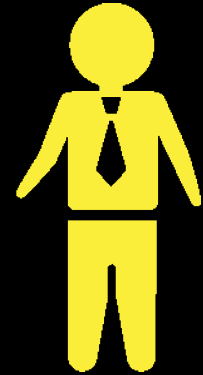


Brain Growth

Visual Development



Brain Growth



Regulating Inflammation

Cardiovascular Protection



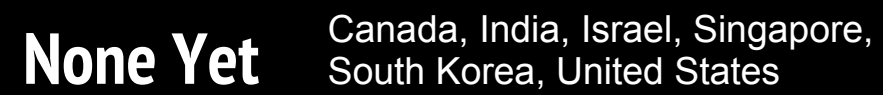
Neurological Cell Preservation

Regulating Inflammation

Cardiovascular Protection

China now has a recommended intake level that is in line with most of the other countries of the world that have taken action

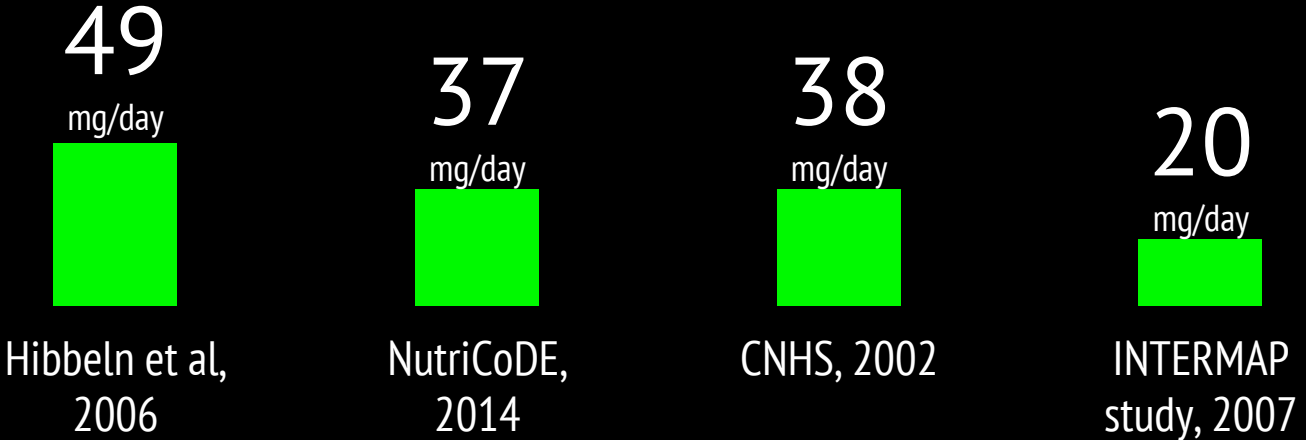
Recommended Intakes of EPA and DHA in the Top Economies of the World



Multiple estimates of Chinese intakes of EPA and DHA have been made, but they all agree that average intakes are quite low

Estimates of Daily EPA and DHA Consumption in Chinese Adults

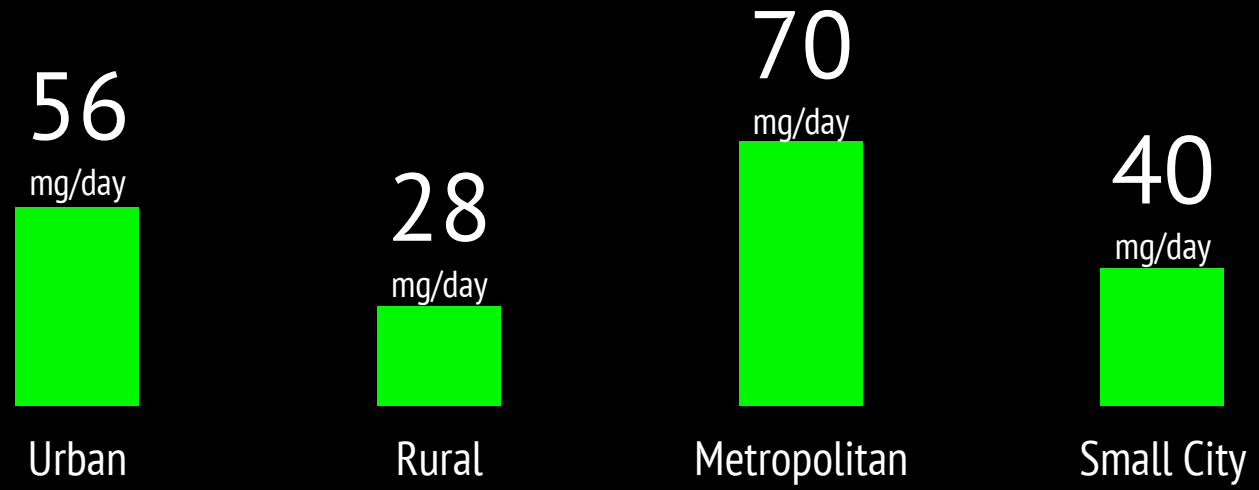
250mg/day DRI



Income is a factor though, which would lead one to believe that as China's economy continues to grow, intakes will increase

Daily EPA and DHA Consumption in Chinese Adults by Living Area

250mg/day DRI

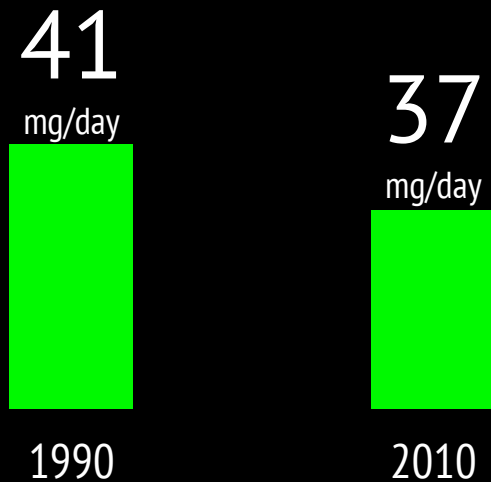


Source: Chinese Nutrition and Health Survey 2002

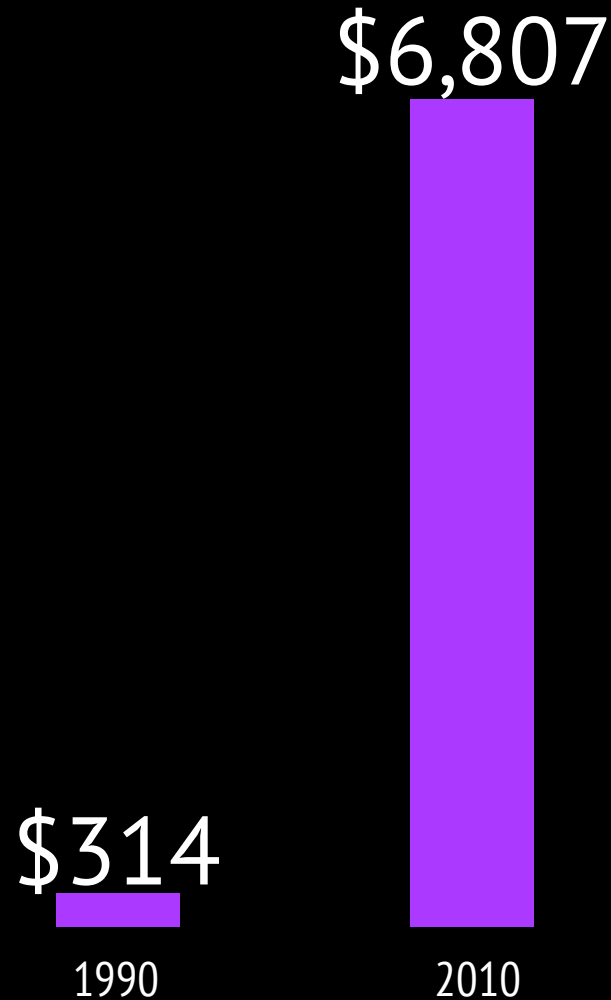


The real problem is that intakes are actually declining, even though the economy has been growing

Daily EPA and DHA Intake in Chinese Adults

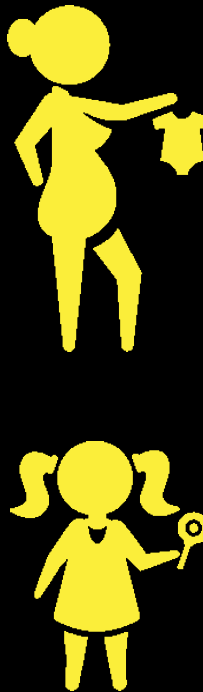
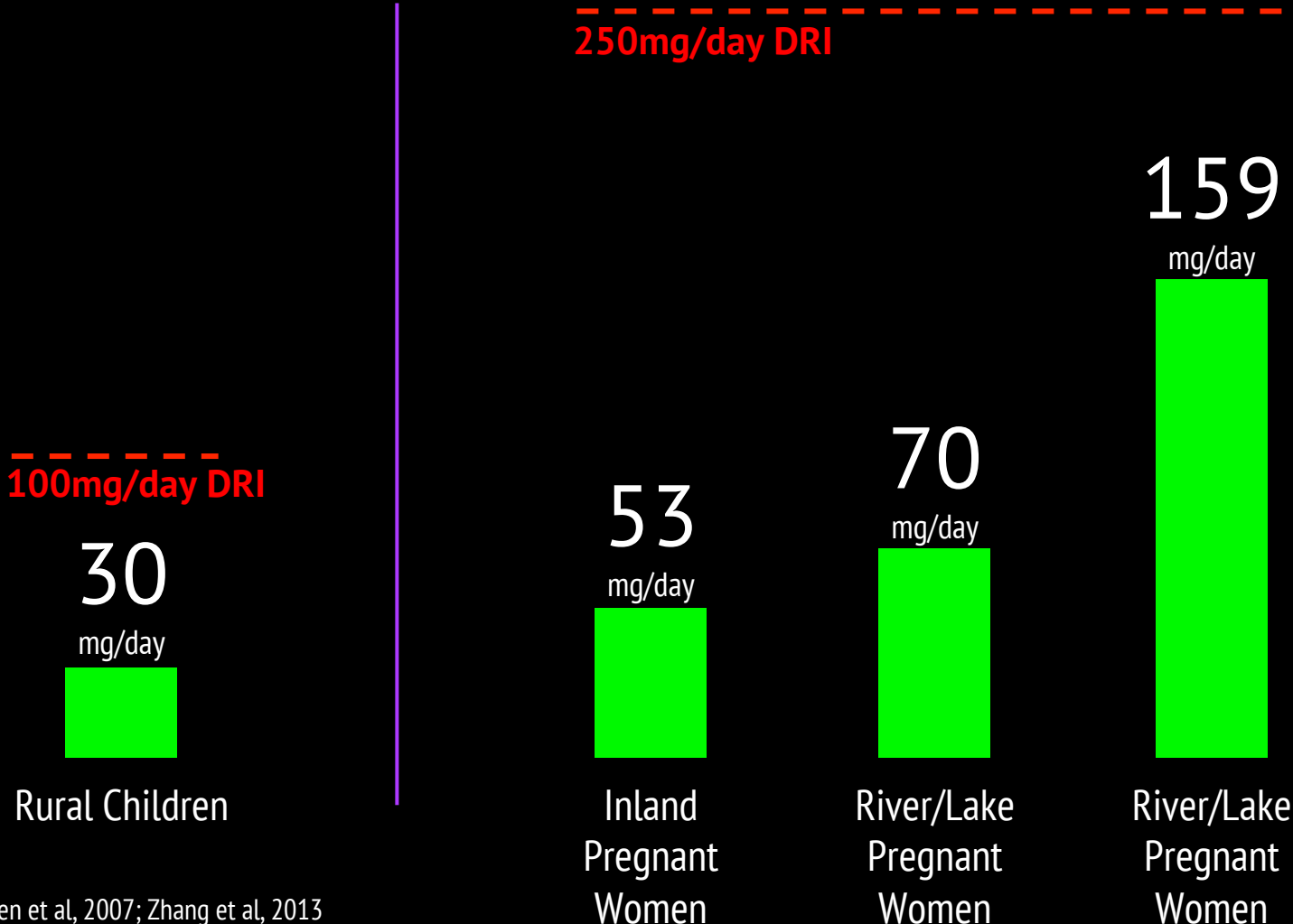


Chinese per Capita GDP



Pregnant and nursing women and children should be striving for 200mg of DHA alone, but total EPA+DHA intakes could create a public health crisis

Daily EPA and DHA Consumption in Select Chinese Populations

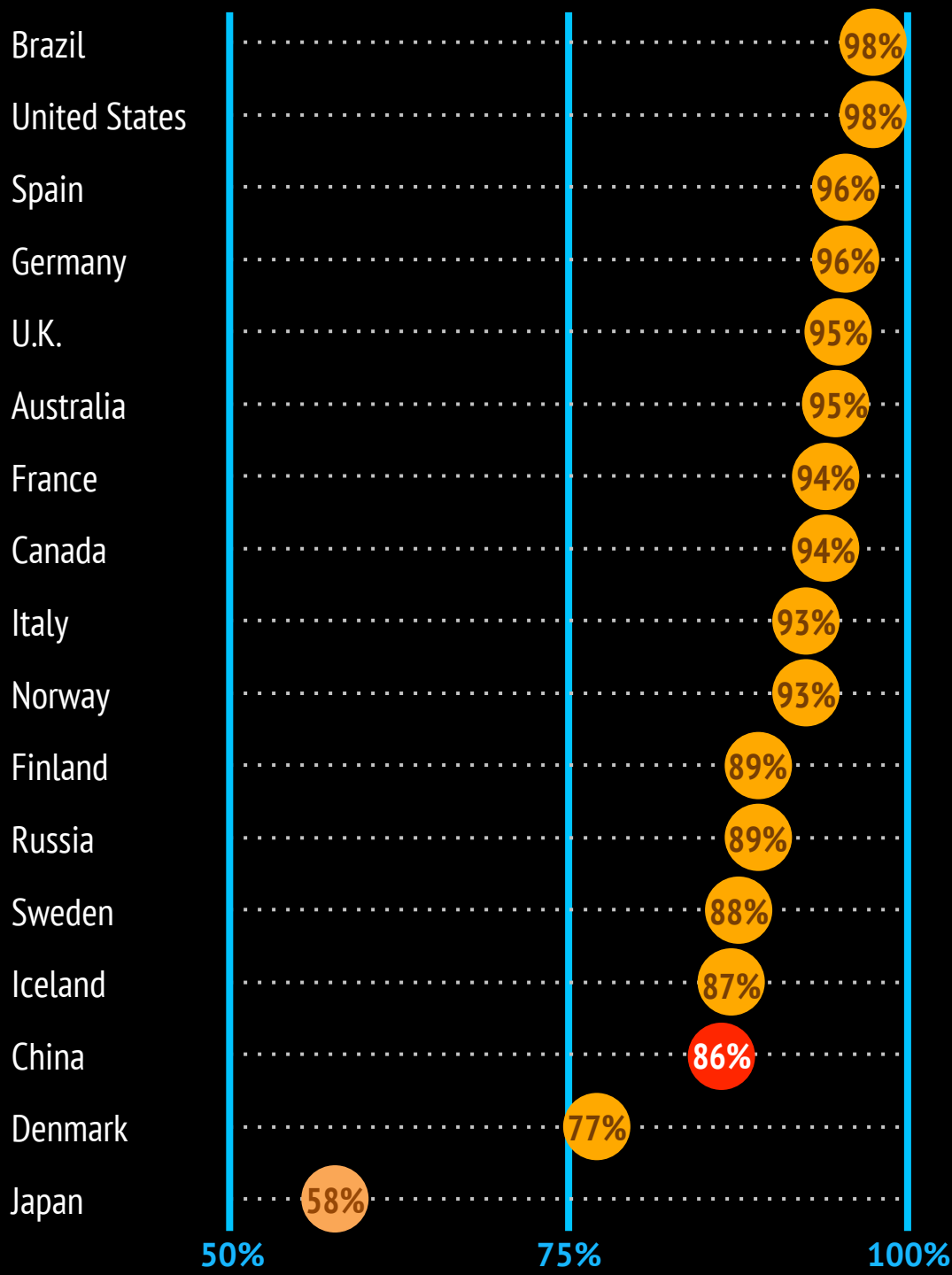


Source: Lien et al, 2007; Zhang et al, 2013



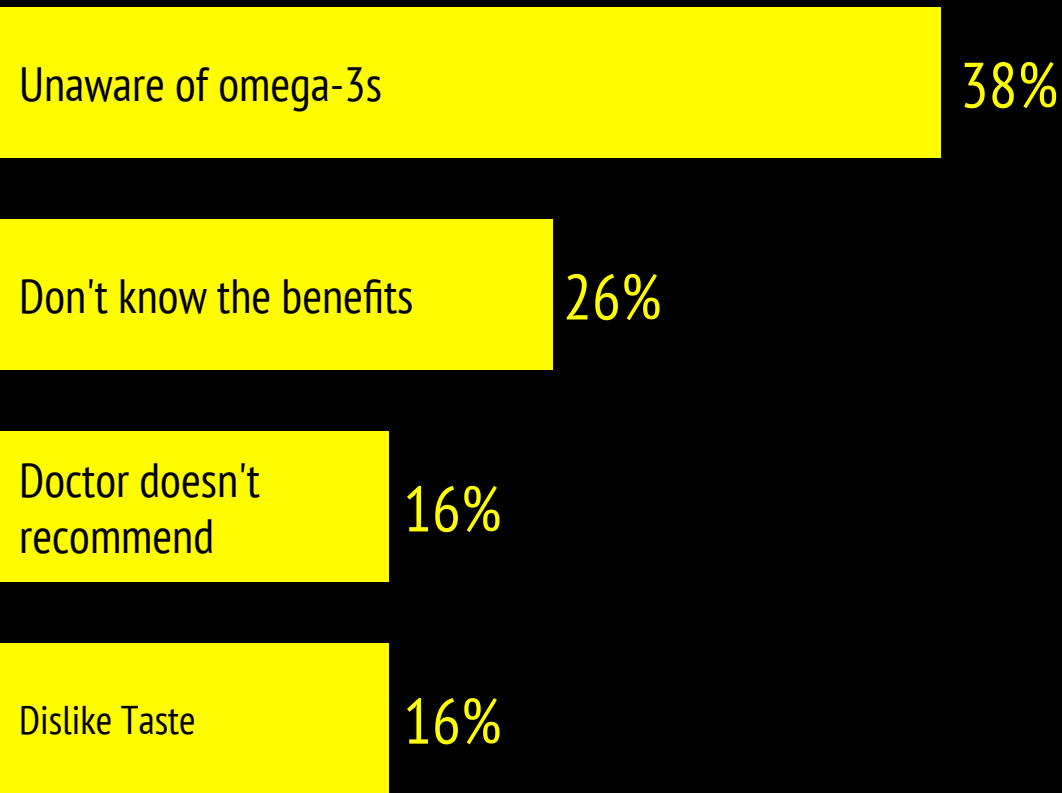
Market potential in China starts with consumer awareness.

Urban Chinese consumers are on the low-end of the awareness spectrum for the terms omega-3s, DHA or EPA, but there are many positives hidden in the data.



Sources: GOED Proprietary Consumer Research, Leatherhead, YouGov

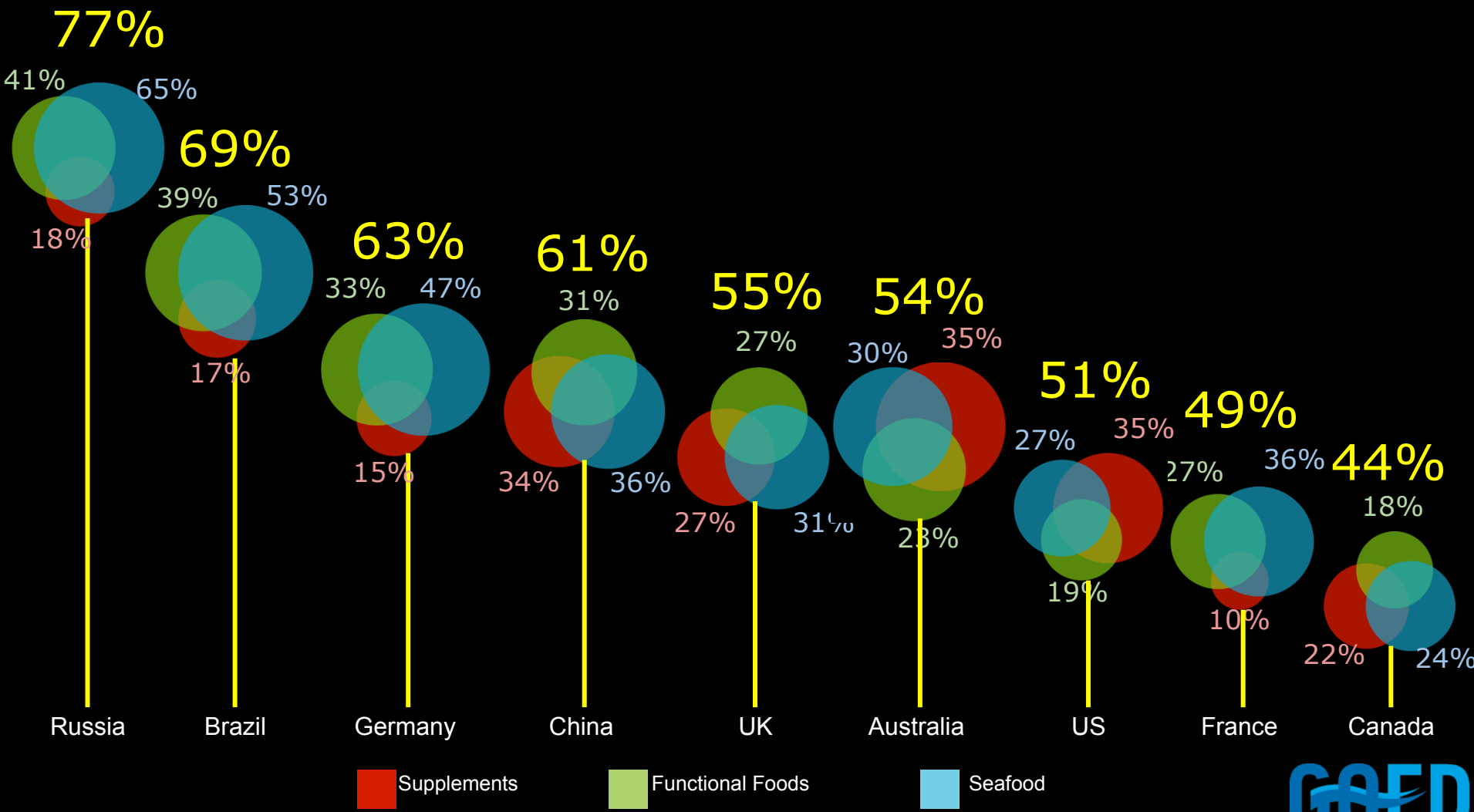
Top Reasons Cited for Not Using Omega-3s



Market potential in China starts with consumer awareness.

Low awareness of omega-3s is holding back consumption, but this means education is needed and is a powerful tool.

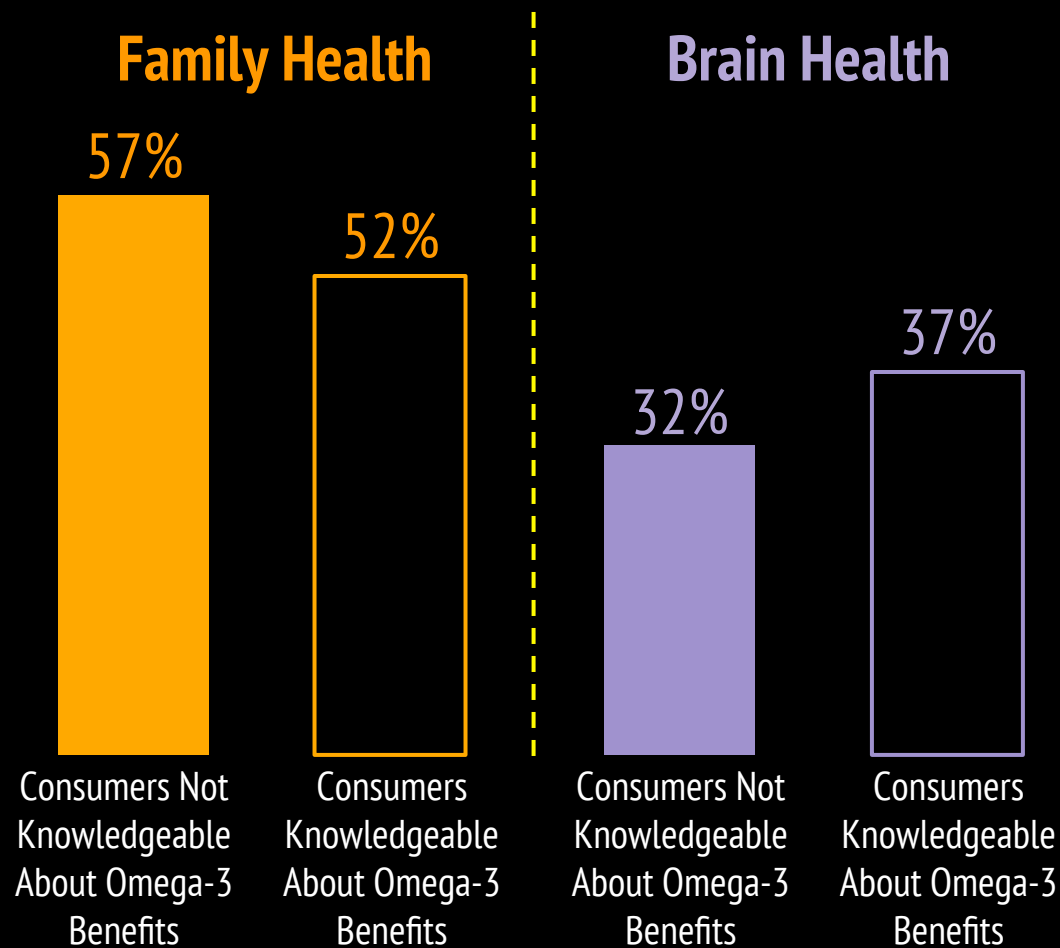
China is one of the few balanced countries in the world in terms of how consumers choose to increase their omega-3 intakes



Source: GOED Proprietary Consumer Research

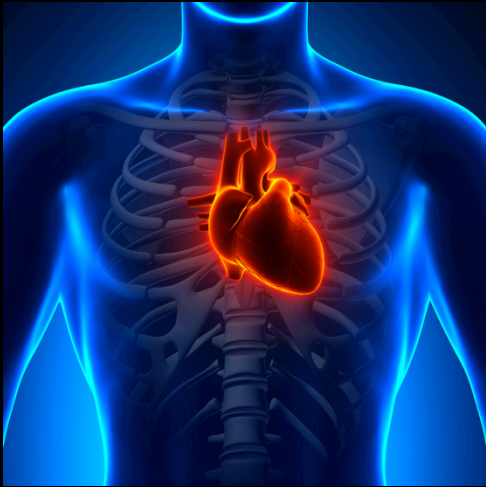


Concern About Family and Heart Health to Chinese Consumer Segments



The goal of education is to increase usage, and there are opportunities to grow the market in China with basic education

For products targeting children and adults, we see three common areas where companies are positioning products



Heart Health

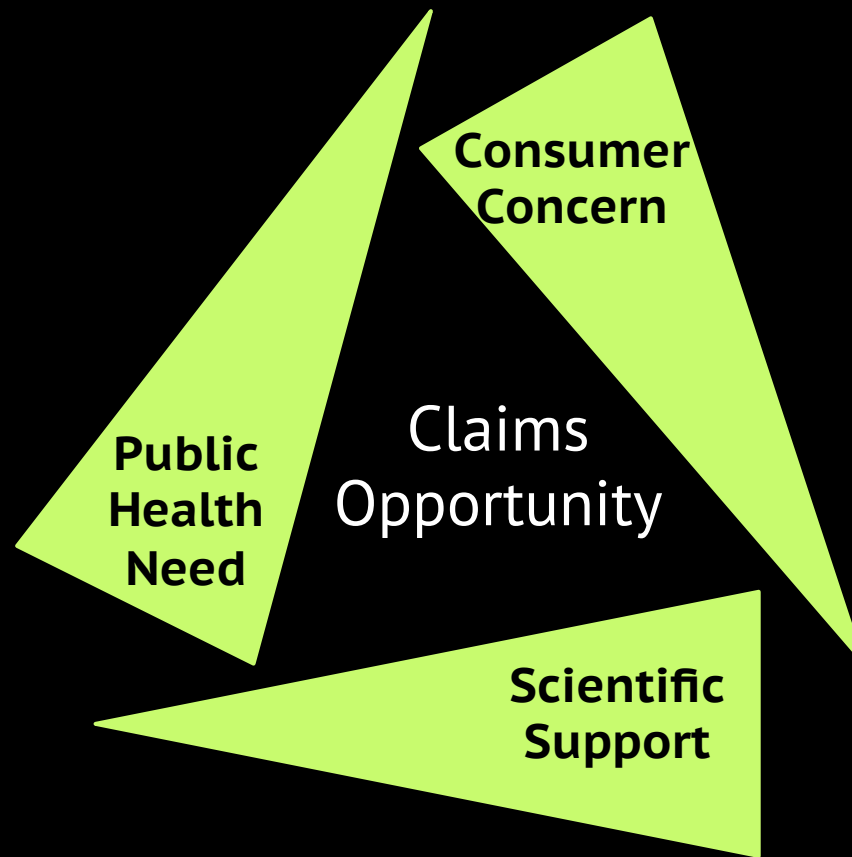


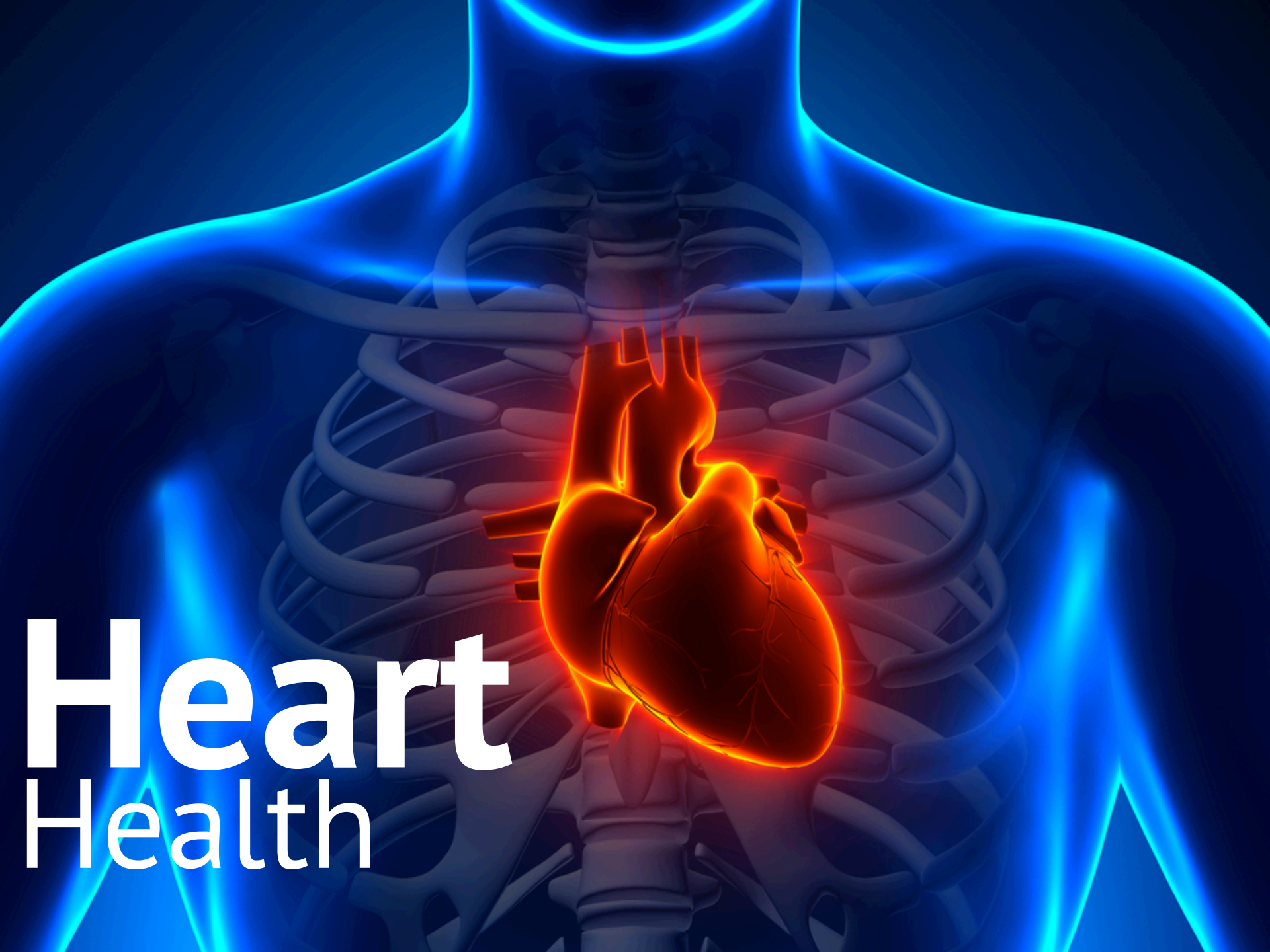
Brain Health



Joint Health

The best way to identify claim opportunities is to look at whether the consumer desires the benefit and if the science supports it

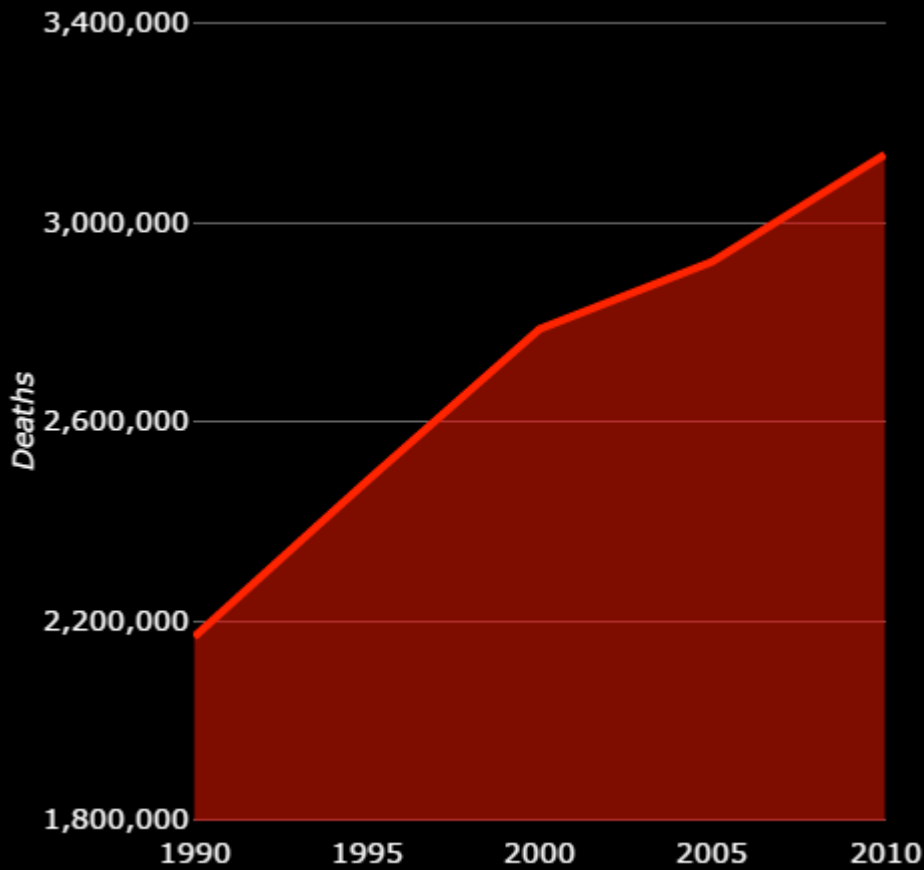




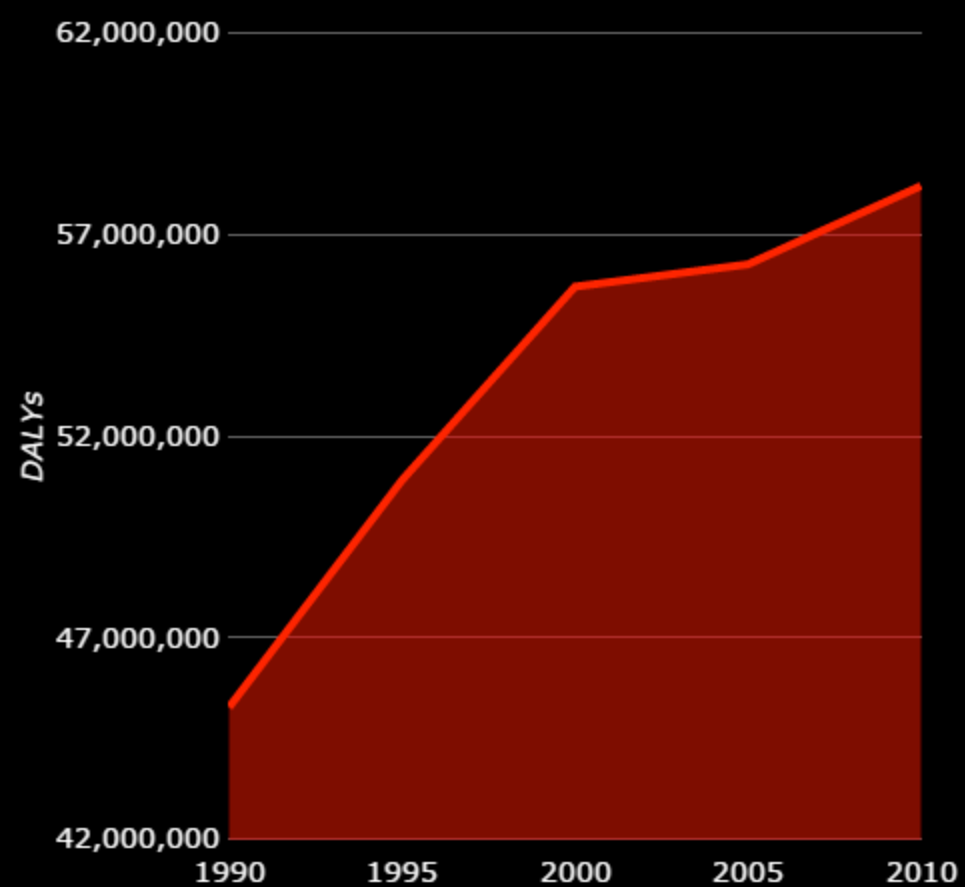
Heart Health

Cardiovascular disease is the leading cause of death in China and is on the rise

Cardiovascular Deaths in China...

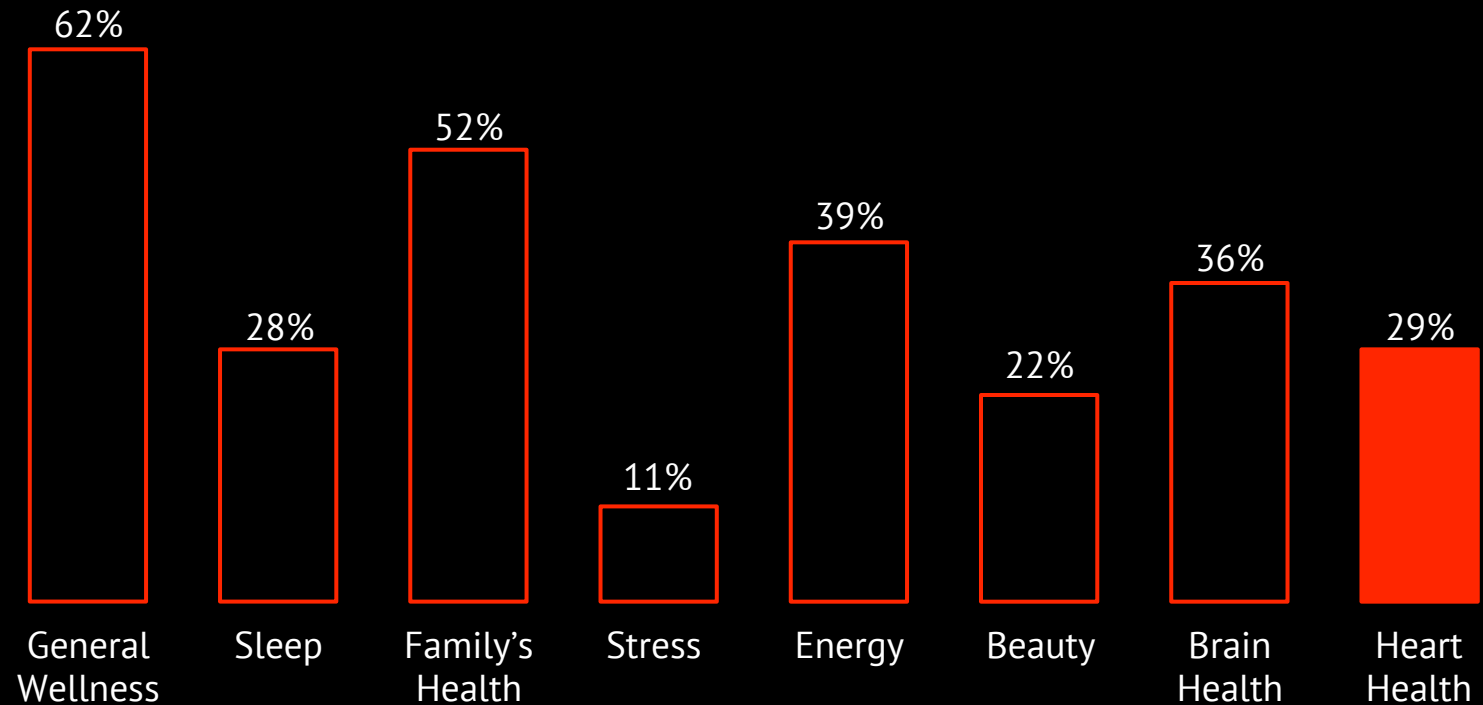


...and Disability Adjusted Life Years Lost



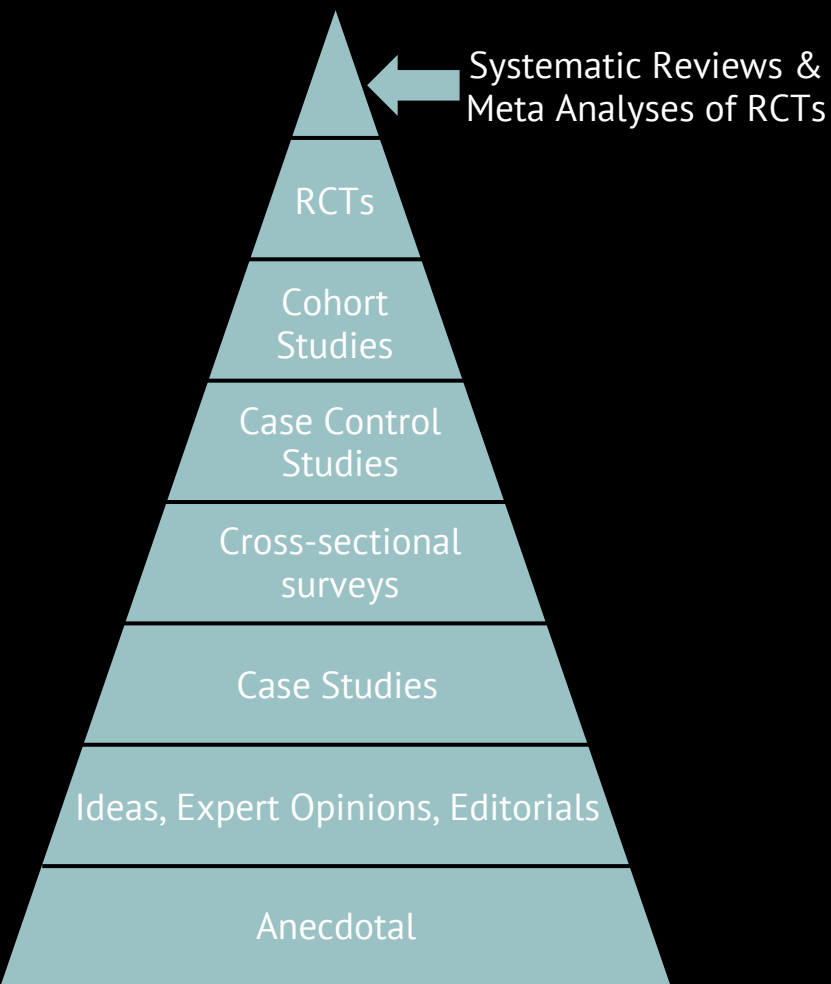
However, consumer concern about heart health is relatively low in China, which reduces the ROI of heart-focused positioning

Self-Identified Health Priorities of Chinese Consumers



The science behind omega-3s and cardiovascular disease is strong, and can support claims

Hierarchy of Evidence in Evidence-Based Medicine



1. Coronary death

Every single meta-analysis of RCTs conducted in the last ten years has found EPA and DHA reduce coronary death risk.

2. Blood Pressure

The latest meta-analysis included 72 RCTs, one of the largest ever conducted in nutrition, and found EPA and DHA reduce blood pressure.

3. Triglycerides

Every meta-analysis of RCTs has found EPA and DHA lower triglycerides 20-40%.

There are three common claims related to heart health used in other countries

“Helps Support a Healthy Heart”

“Helps Maintain Normal Blood Pressure”

“Helps Maintain Healthy Triglyceride Levels”

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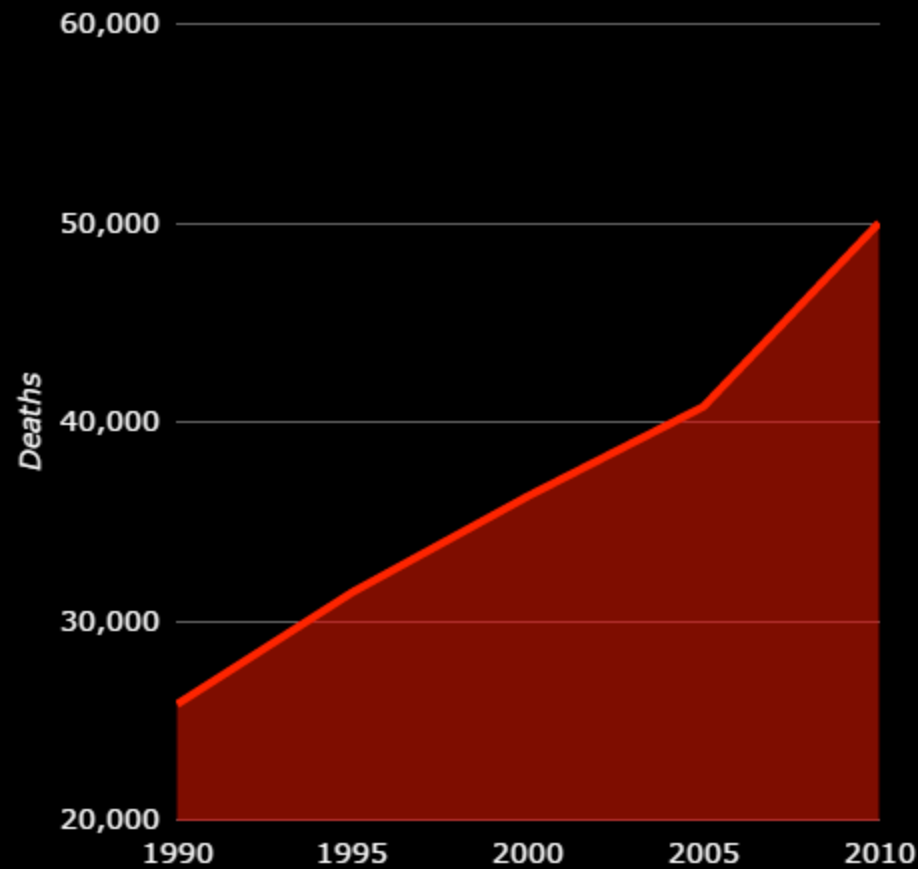
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A glowing 3D illustration of a human brain inside a blue-tinted head silhouette. The brain is rendered in a bright orange and yellow color, with a glowing blue outline. The head silhouette is also glowing blue. The background is dark blue. The text "Brain Health" is overlaid in white, bold, sans-serif font on the left side of the image.

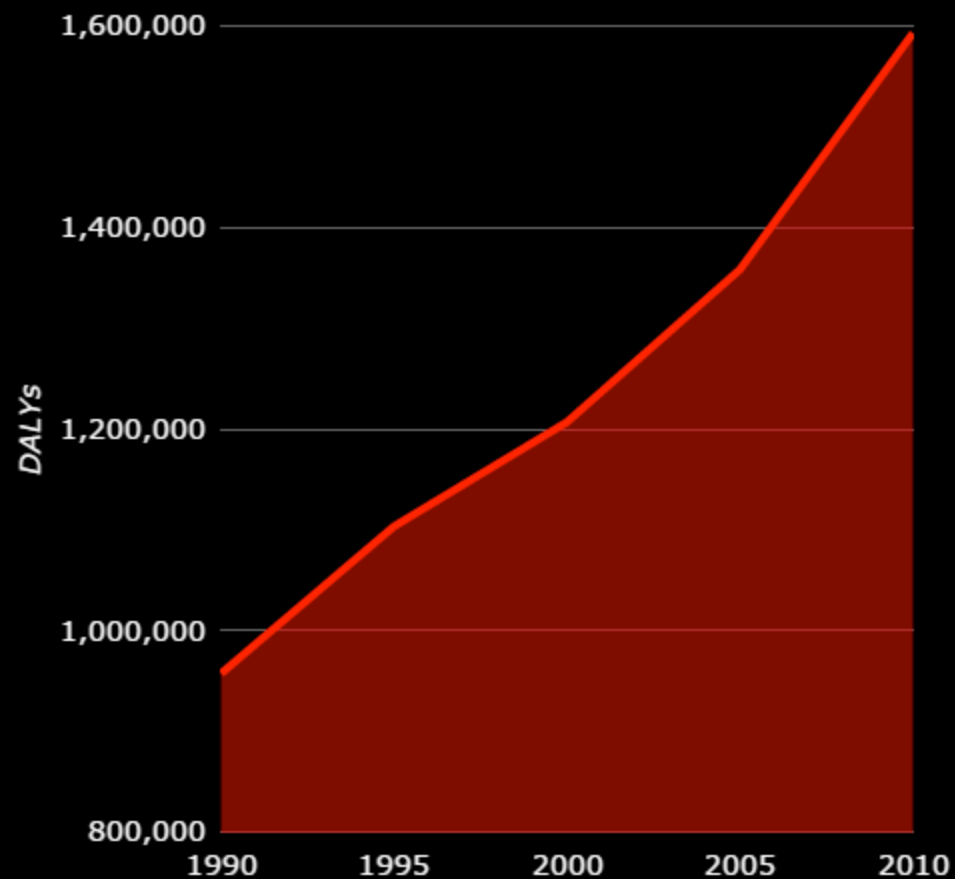
Brain Health

Alzheimer's and dementia is on the rise in China, but pales in comparison to the impact of cardiovascular disease

Alzheimer and Dementia Death in China...

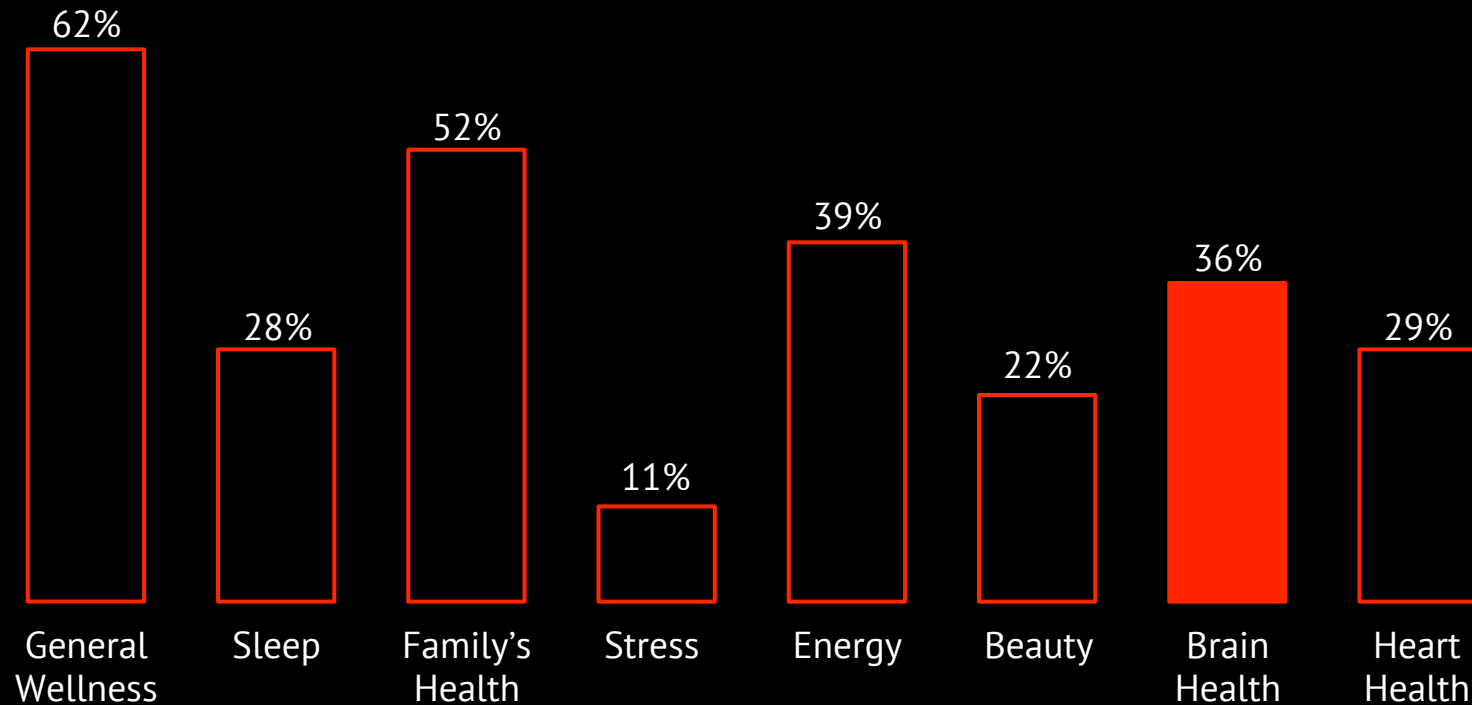


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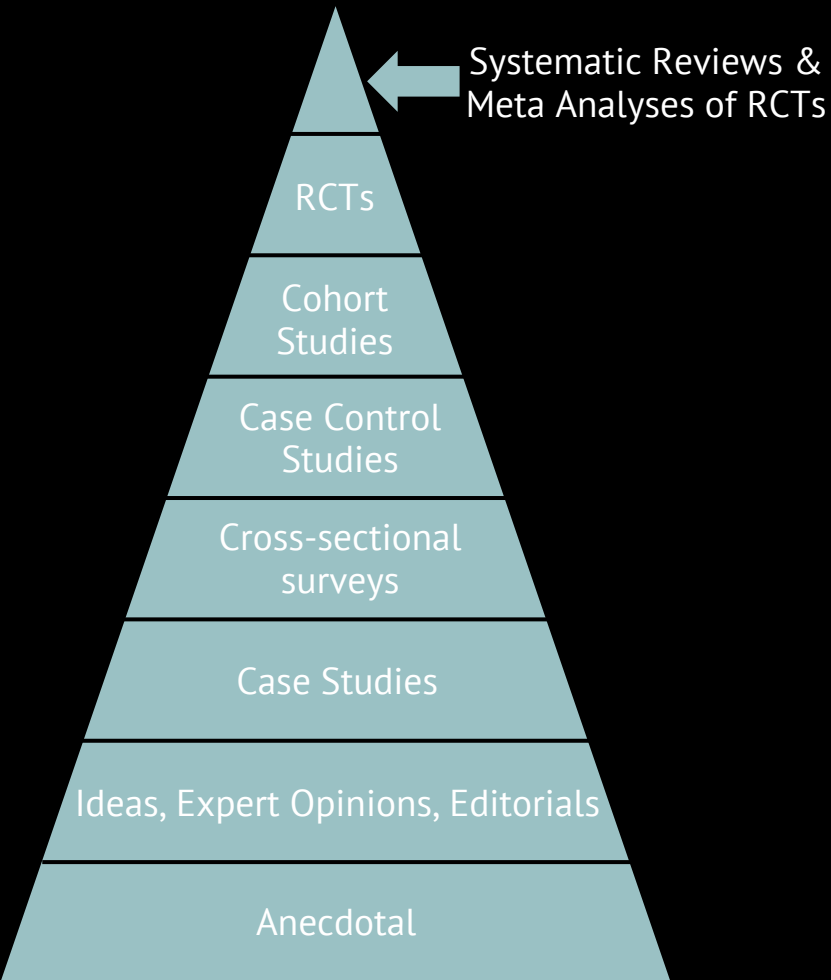
Consumer concern about brain health in China is higher than heart health, one of the only countries where this is true!

Self-Identified Health Priorities of Chinese Consumers



The evidence to support brain health as we age is mixed

Hierarchy of Evidence in Evidence-Based Medicine



1. Alzheimer's Disease

No systematic review or meta-analysis has ever found that EPA/DHA can treat Alzheimer's.

2. Memory

A recent comprehensive meta-analysis found that >1g of DHA improved episodic, semantic, and working memory in adults, regardless of cognitive status.

3. Mild Cognitive Impairment

A few meta-analyses have seen benefits in brain function and memory in people with mild cognitive impairment without dementia. More evidence is needed.

There are a few common claims related to brain health used in other countries, but companies struggle with how to keep regulators happy in this area

“Helps Improve Memory”

This claim has been removed in the US due to regulatory actions, despite the strong evidence.

“Helps Support a Brain Health”

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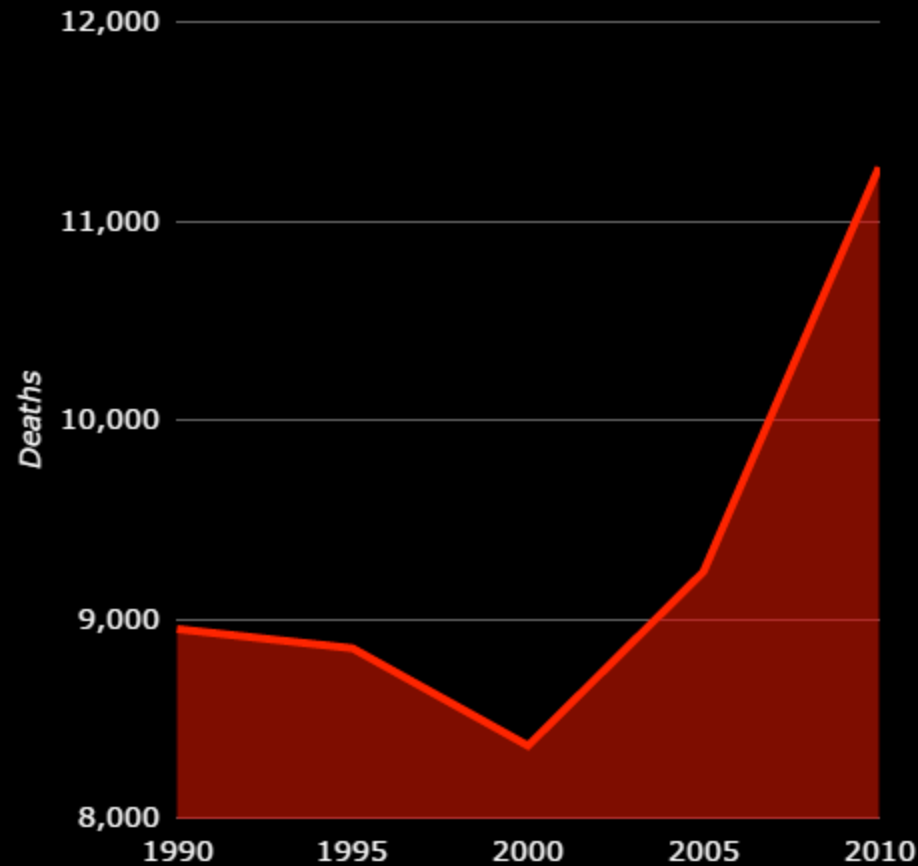
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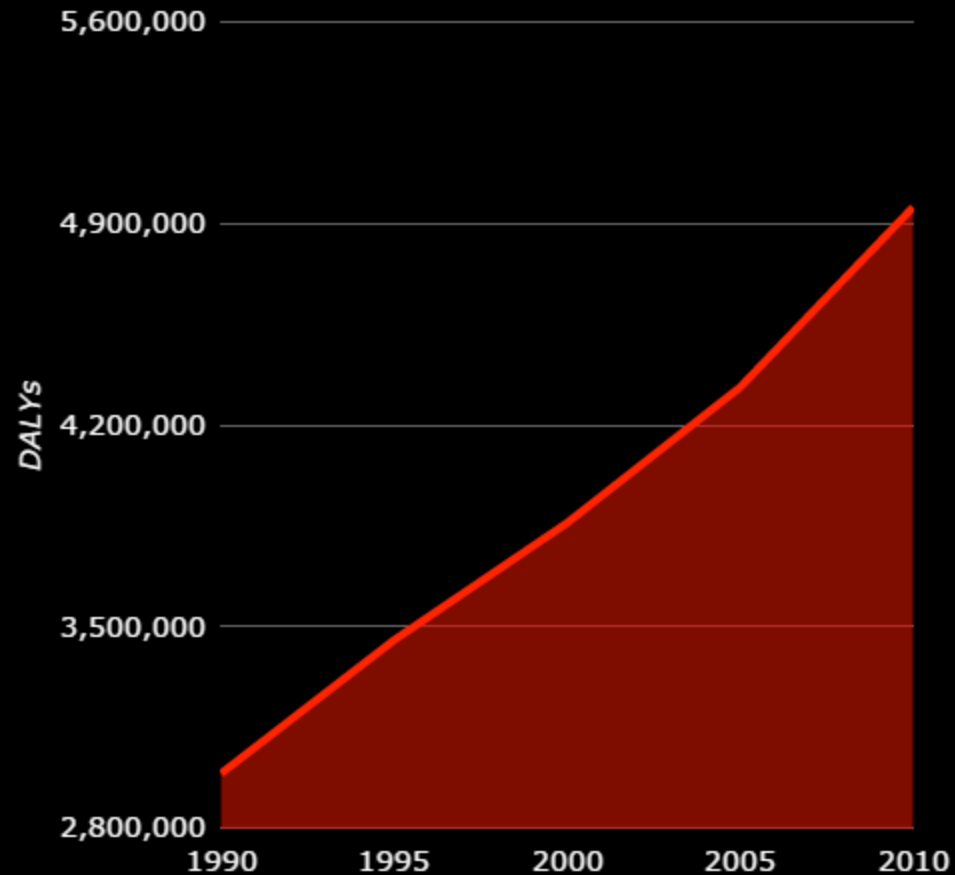
Joint Health

Arthritic diseases are also on the rise in China and cause more economic losses than brain disorders

Arthritis Deaths* in China...



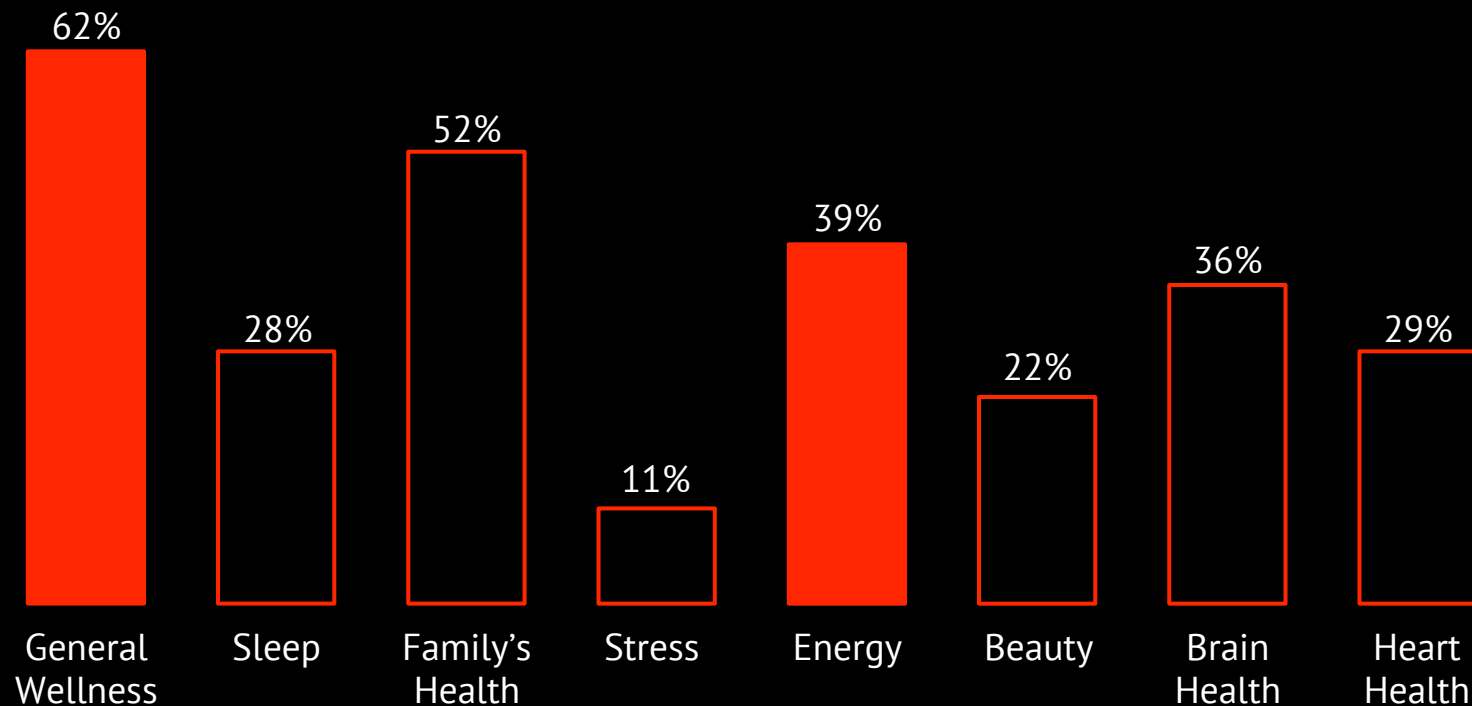
...and Disability Adjusted Life Years Lost



* Deaths are due to rheumatoid arthritis, as osteoarthritis is not fatal. DALYs represent both rheumatoid and osteoarthritis

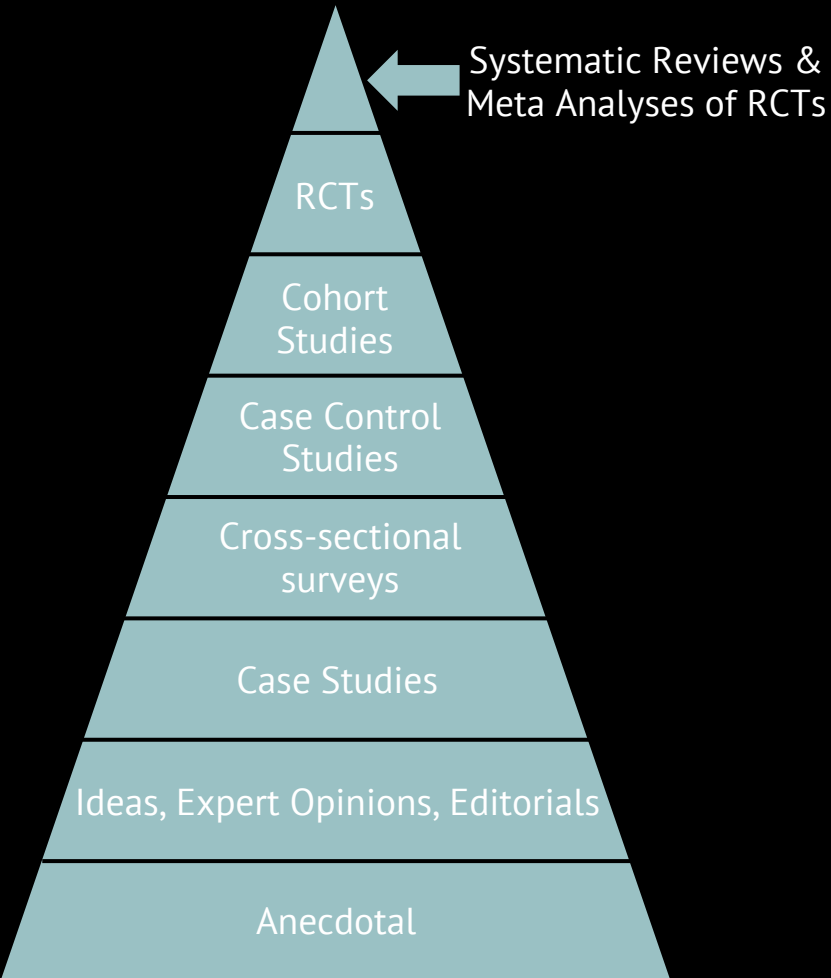
Joint health is linked to other health priorities, most of which are highly important to Chinese consumers

Self-Identified Health Priorities of Chinese Consumers



The real question is does the science support joint health claims?

Hierarchy of Evidence in Evidence-Based Medicine



1. Osteoarthritis

No meta-analysis or well-designed RCT has found a beneficial improvement in osteoarthritis from EPA and DHA.

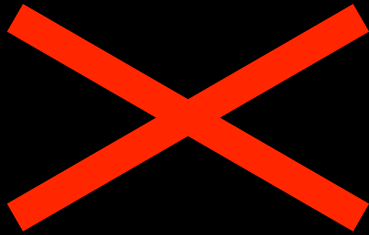
2. Rheumatoid Arthritis

Multiple meta-analyses have consistently found that high dosages of EPA and DHA (>2-3g/day) can help reduce the use of NSAID pain medications in rheumatoid arthritis patients.

The most common claims about joint health are bland, but have caught regulatory scrutiny

“Helps Maintain Healthy Joints”

This claim has been scrutinized heavily in Australia, where the market declined after negative media attention about the benefits.



Rheumatoid arthritis is very clearly a disease that would prevent these types of claims in most geographies.

1. Osteoarthritis

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Summary

There are opportunities to grow the market for omega-3s in China with basic consumer education

Heart health presents the strongest science opportunity, but consumers do not appear to be concerned about the problem

The brain health opportunity is big, but it will be important to have sound regulatory advice