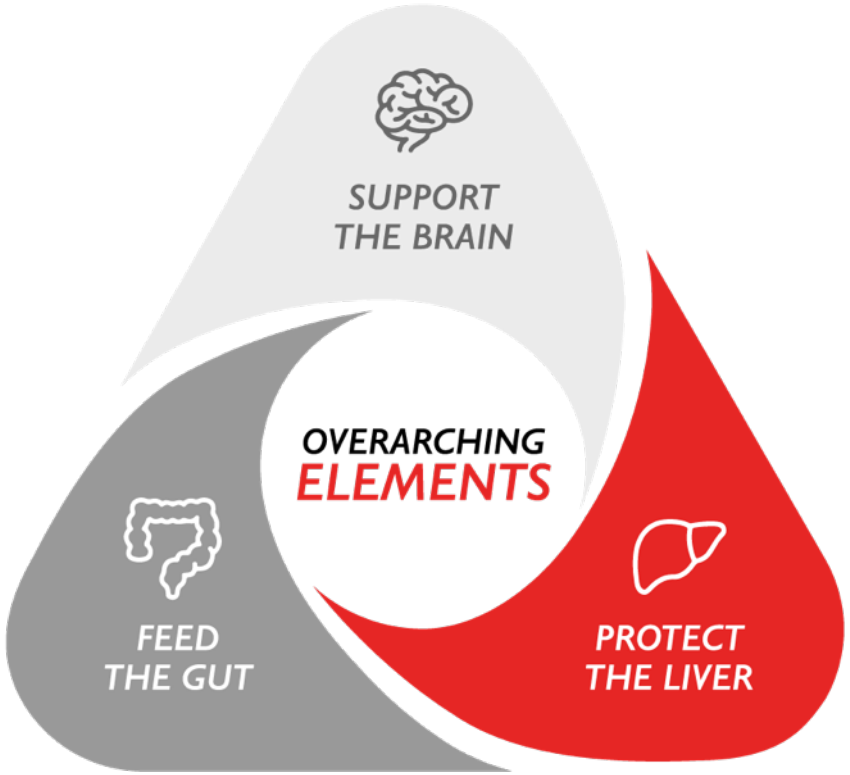


The link between metabolic health and nutrition is fundamental to tackling chronic disease and changing the food system.

Independent Dialogue:
UN-Food System Summit

Wednesday, September 8, 2021

14:00 GMT / 7am Pacific / 10 am Eastern / 5pm Kuwait

The Hypoglycemia Support Foundation, a consumer advocacy organization, is pleased to host global leaders in the field of metabolic health and nutrition to discuss a new framework for designing foods and beverages.

These leaders propose that:

- "**Metabolic health**" is the primary marker and outcome of nutritional security and is a fundamental pillar of food system change.
- **Linking good food, metabolism, and health** reduces or eliminates preventable, diet-related diseases and the financial burdens they foster.
- **Fundamental and structural changes** are needed in the way the food & beverage industry approaches the formulation of foods, and that metabolic health must be adopted as the "North Star" of nutrition science.

Introduction

Roberta Ruggiero and Wolfram Alderson are pleased to welcome our distinguished panelists today.

Convenor
Roberta Ruggiero
Founder & President
Hypoglycemia Support Foundation

Ms. Ruggiero founded the Hypoglycemia Support Foundation in 1980 and is author of ***The Do's and Don'ts of Hypoglycemia: An Everyday Guide to Low Blood Sugar,*** which was acclaimed by the American Library Association as "one of best lay medical books in public libraries."

Curator
Wolfram Alderson, MS
CEO
Hypoglycemia Support Foundation

Mr. Alderson has worked for over four decades in human and environmental health. He led the establishment of California's first Certified Farmers' Markets in the late 1970s and has been a life-long leader in the field of food system change. He also serves as CEO of the Robert H. Lustig Research Foundation, Co-founder of Perfact.co, and Executive Manager of Health & Nutrition at KDD.

Panelists

V.V. Subramanian, MBA

Mr. Subramanian is VP & Chief Business Officer for KDD, a Mechanical Engineer with an MBA, and has been with the company for over 21 years. He heads the Sales & Marketing functions and also guides the company on business strategy. His priorities are customer centricity, sustainability and profitability.

Robert H. Lustig, MD, MSL

Dr. Lustig is professor emeritus of Pediatrics in the Division of Endocrinology, and Member of the Institute for Health Policy Studies at UCSF. He has expertise in obesity, diabetes, and nutrition. He is a best-selling author of three books and one of the key leaders of the “anti-sugar” movement that is changing the food industry.

Timothy S. Harlan, MD

Dr. Harlan is an Associate Professor of Medicine at George Washington University and leads the Culinary Medicine programming as a university-wide project. He also serves as Chairman of the Culinary Medicine Specialist Board.

Rachel Gow, PhD

Dr. Gow is a Neuropsychologist, Registered Nutritionist (under the category of science) and neurodevelopmental specialist. She has worked in the field of Nutritional Neuroscience for many years and is skilled in clinical trials involving dietary supplementation of omega-3 fatty acids.

Andreas Kornstädt, PhD

Dr. Kornstädt is a computer scientist focusing on dealing with complex systems. He co-founded Perfact while at Stanford’s Graduate School of Business Venture Studio to take food system transparency and ease of use to the level required to make change happen.

What is Metabolic Health?

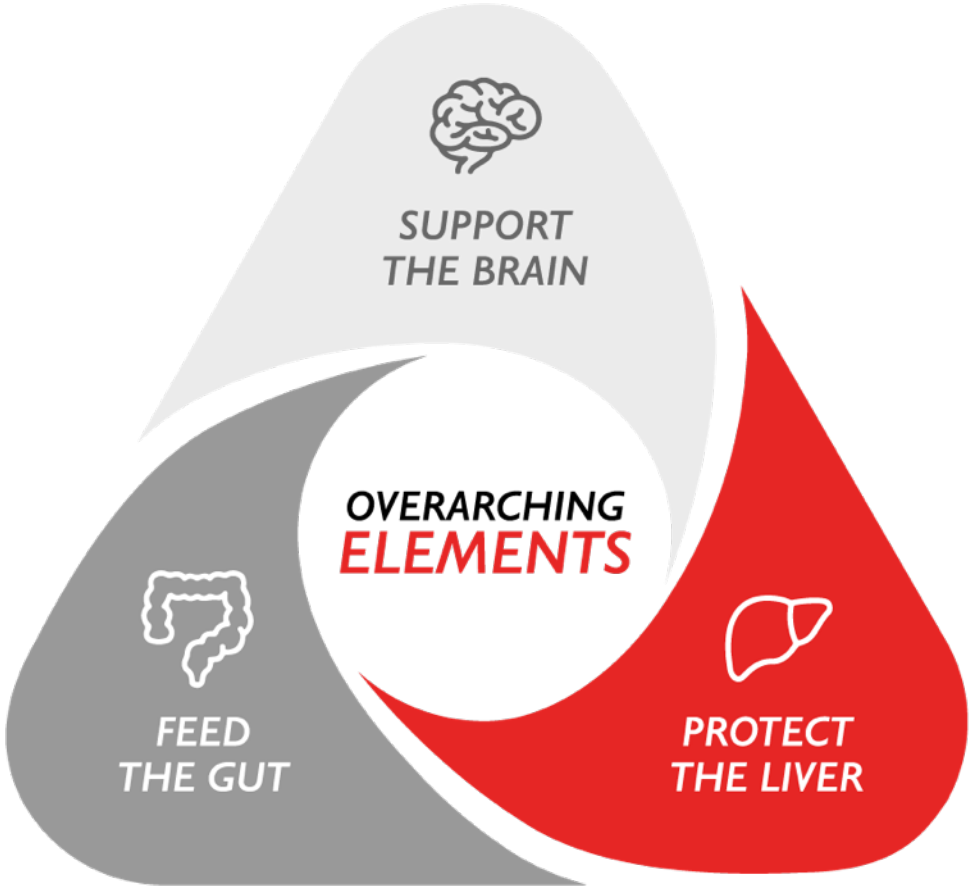
Each panelist answers with one sentence:

- Rachel Gow, PhD, RNutr, Founder of Nutritious Minds
- Roberta Ruggiero, Founder & President, Hypoglycemia Support Foundation
- Timothy S. Harlan, MD, Editor in Chief: CulinaryMedicine.org
- V.V. Subramanian, VP & Chief Business Officer, KDD
- Andreas Kornstädt, PhD, CEO & Founder, Perfact
- Wolfram Alderson, CEO, Hypoglycemia Support Foundation
- Robert H. Lustig, MD, MSL, Robert H. Lustig Research Foundation

What is a Metabolic Matrix?

Sir Mohammad Jaafar, Chairman & CEO of KDD, a leading food & beverage company based in Kuwait, posted an article and paper on the WEF platform introducing an “actionable idea” featuring a “metabolic matrix” and a “metabolic reset.”

- Food meets health: How a new approach to metabolic health could tackle chronic disease
- Health Meets Food through a Metabolic Matrix



KDD Product Re-engineering Matrix

Food meets health: Why the world needs a 'metabolic reset' | World Economic Forum

WORLD ECONOMIC FORUM

/2021

Food meets health: How a new approach to metabolic health could tackle chronic disease

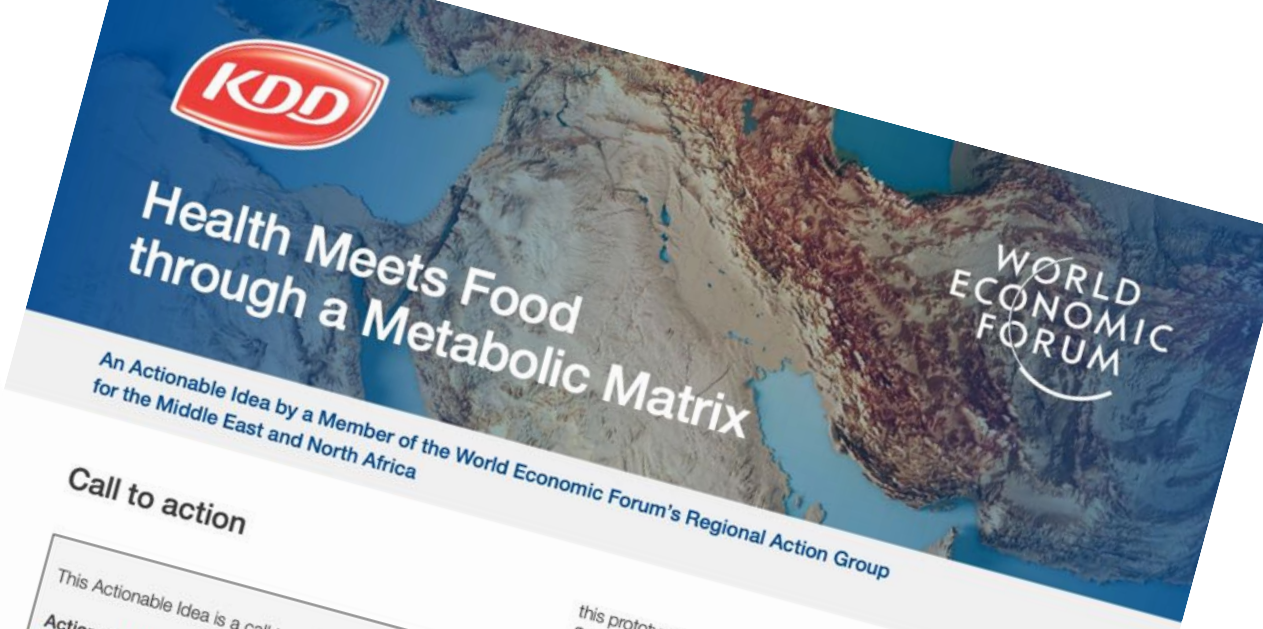
Diabetes, just one of the metabolic diseases that are devastating human health, currently affects 468 million people.

Image: REUTERS/ Sayaghi

23 Jun 2021

Sir Mohammad Jaafar
Chairman and Chief Executive Officer, Kuwaiti Danish Dairy (KDD)

AUDIO: LISTEN TO THE ARTICLE



An Actionable Idea by a Member of the World Economic Forum's Regional Action Group for the Middle East and North Africa

Call to action

This Actionable Idea is a call to action, contributing to:

Action 1: Principles of Stakeholder Capitalism for the Middle East and North Africa

Principle 5: Mitigating global health risks
Governments and the private sector are called upon to cooperate on a regional level in order to mitigate the impact of global health risks affecting their populations, as well as guest workers, and collaborate in such areas as research and development, digital health, and vaccine development and distribution.

Action 2: UN Sustainable Development Goals

- **UN SDG3: Ensure healthy lives and promote well-being for all at all ages**
- **UN SDG12: Ensure sustainable consumption and production patterns**

A new paradigm: health meets food

"Metabolic health" – the primary marker and outcome of nutritional security – needs to be re-conceptualized as a fundamental organizing principle to drive food system change. To achieve this outcome, the Kuwaiti Danish Dairy (KDD) company, currently working with an independent, evidence-based food re-engineering team, seeks the support of stakeholders from the Regional Action Group for the Middle East and North Africa to champion this prototype and bring it to the United Nations Food Systems Summit and other international fora as an example of how a metabolic paradigm shift is not only possible, but necessary.

To work towards this outcome, **the metabolic matrix** developed by KDD proposes a scalable and replicable prototype for fundamentally shifting the basis for making commercial food and beverage products, built upon a new and safe paradigm of food processing that promotes metabolic health.

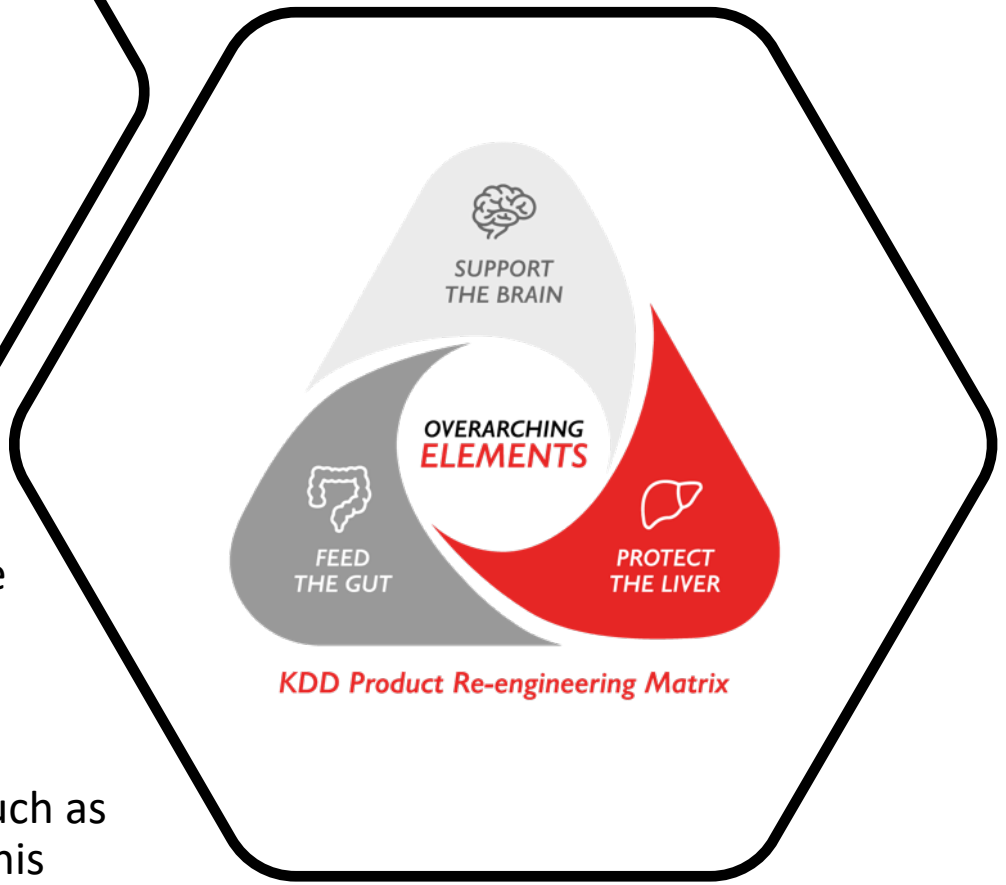
FIGURE 1: **KDD product metabolic matrix**

What is "food re-engineering"?

The key to understanding chronic disease is that there are not four separate problems – nutrition, immunity, inflammation, immunity; there's one.

Robert H. Lustig

Metabolic Matrix? Metabolic Reset?



What are these concepts and why are they being presented?

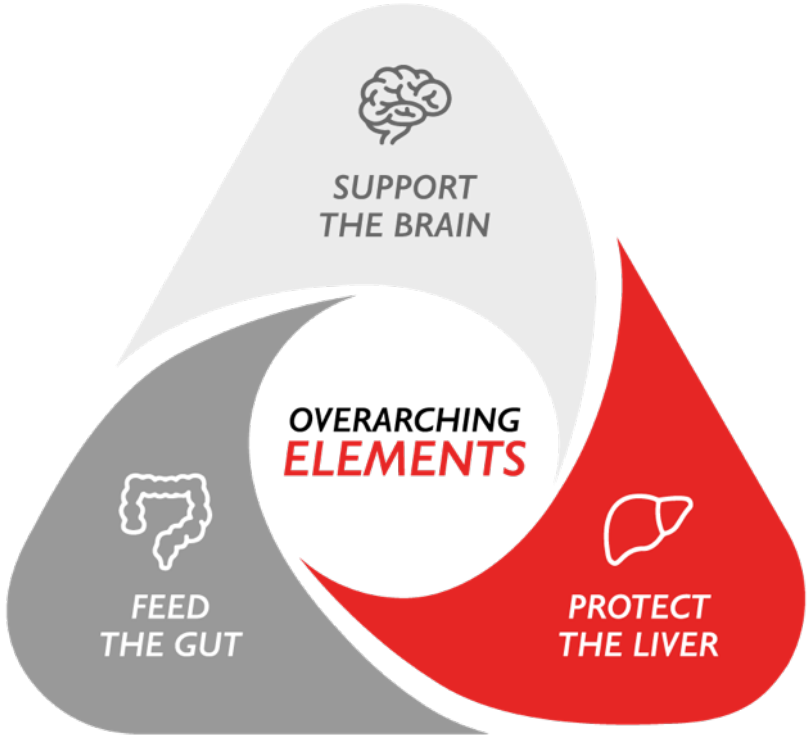
Why is KDD, a leading food and beverage company based in the Middle East, serving as a champion for these ideas?

They seem entirely absent from the UN-FSS agenda.

Why might health Non-Governmental Organizations (NGO's), such as the Hypoglycemia Support Foundation (HSF), be interested in this work?

Why might consumers be interested?

The expert panelists break down the pillars of the metabolic matrix…

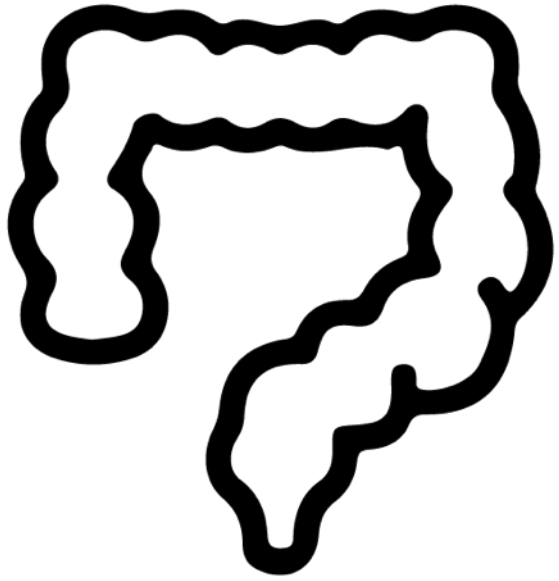


KDD Product Re-engineering Matrix

The Metabolic Matrix: Gut Health

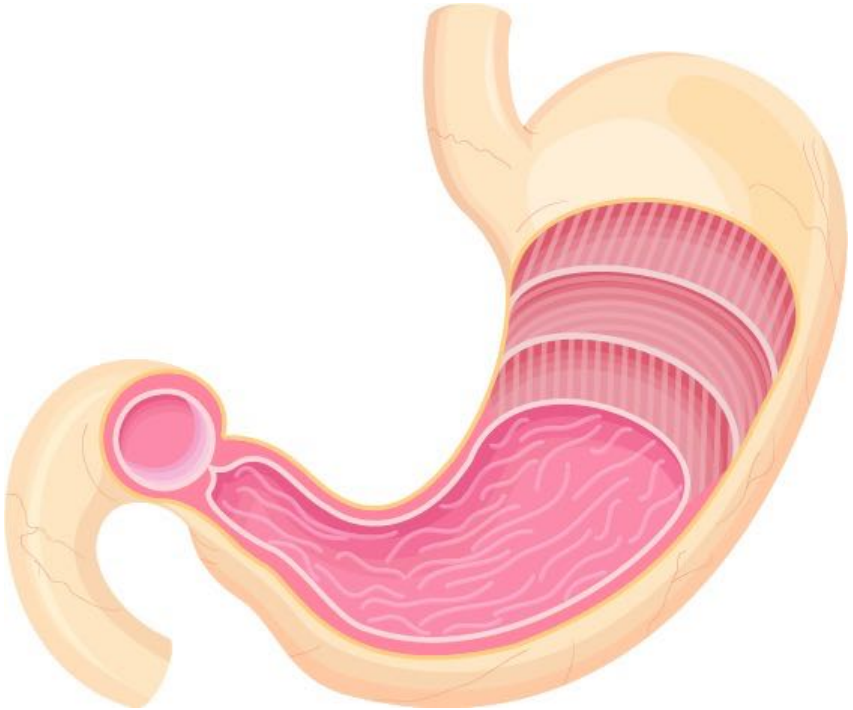
Dr. Tim Harlan

- Digestion, Absorption, Metabolism
- Gut is an organ
- Unprocessed food feeds the gut
- Fiber
- Ultraprocessed food damages the gut
- Microbiome health



FEED
THE GUT

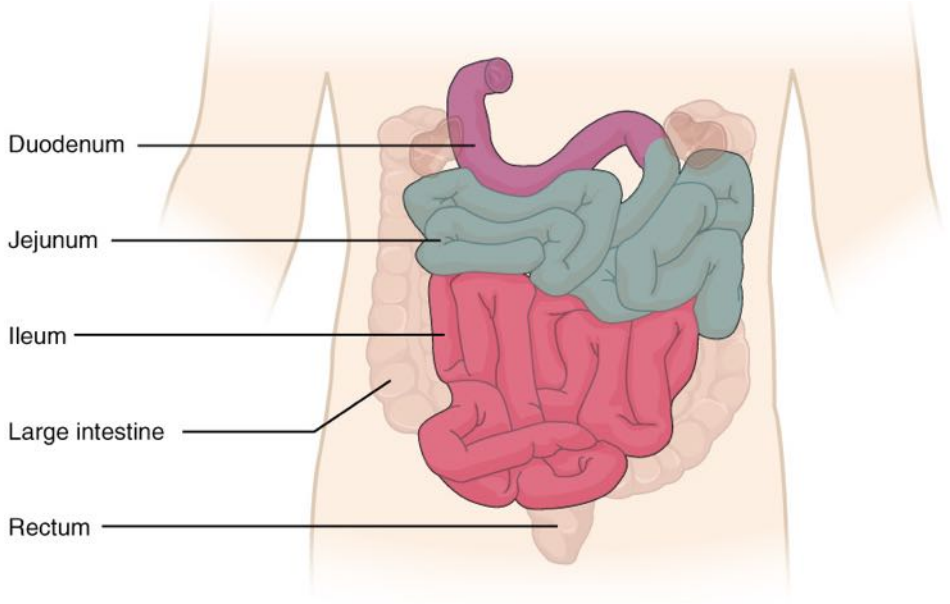
The Metabolic Matrix: Feed the Gut



DIGESTION:

Breakdown of food by mechanical & enzymatic action into pieces that can be absorbed by the body.

The Metabolic Matrix: Feed the Gut



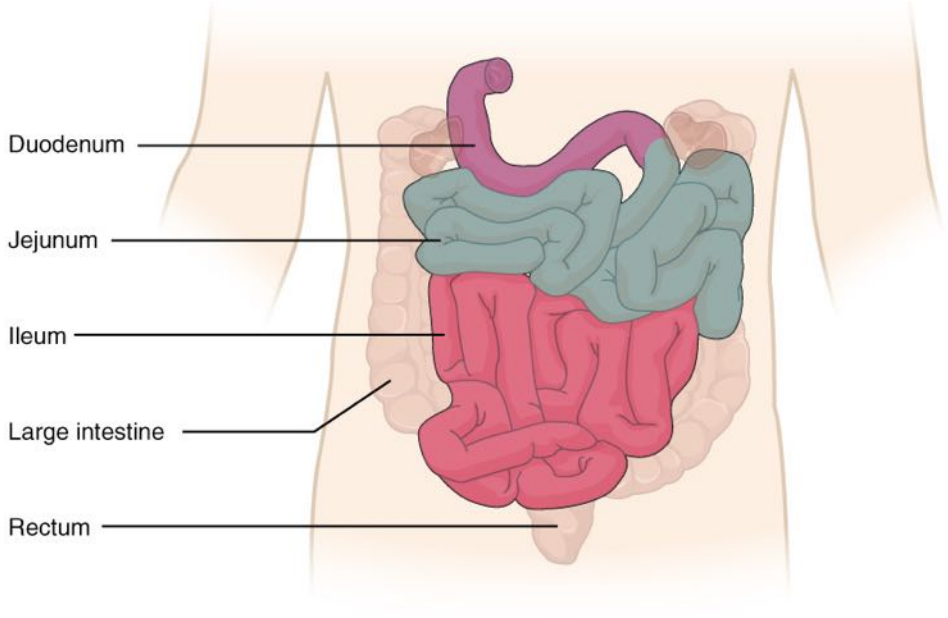
DIGESTION:

Breakdown of food by mechanical & enzymatic action into pieces that can be absorbed by the body.

ABSORPTION:

Transfer of food from outside the body to inside cells

The Metabolic Matrix: Feed the Gut



DIGESTION:

Breakdown of food by mechanical & enzymatic action into pieces that can be absorbed by the body.

ABSORPTION:

Transfer of food from outside the body to inside cells

METABOLISM:

Processes that take place inside cells to extract needed materials and energy from the foods we eat.

The Metabolic Matrix: Feed the Gut

FEED THE GUT

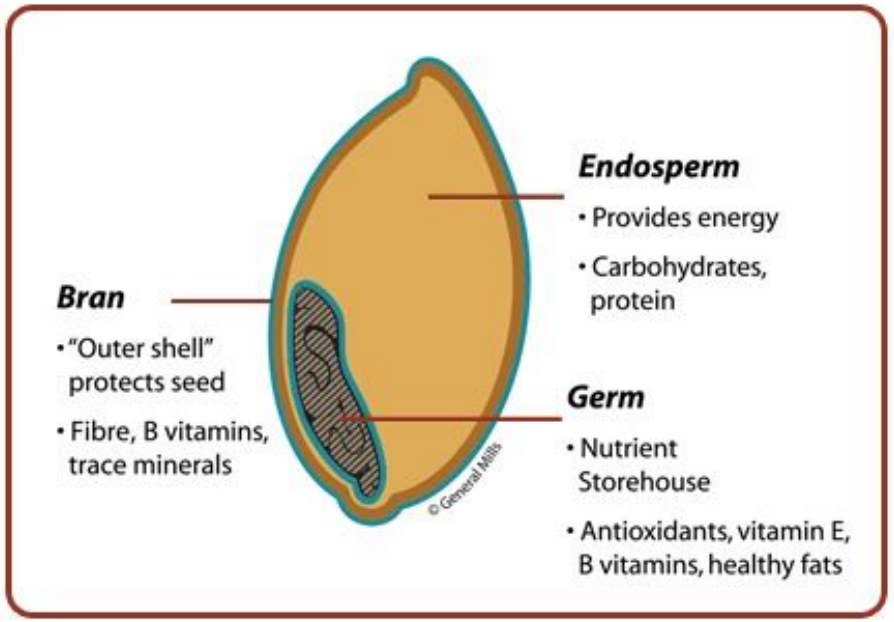
The Gut is an Organ

- Is central to digestion and absorption of nutrients
- Part of the immune system
- Accounts for 70% of the immune system's interaction with the outside world
- Stomach has a very low pH

  Acidity destroys many harmful microorganisms, preventing them from getting any further into the body
- Inside of large intestines is coated with a thick layer of mucus

  Prevents harmful bacteria from entering bloodstream

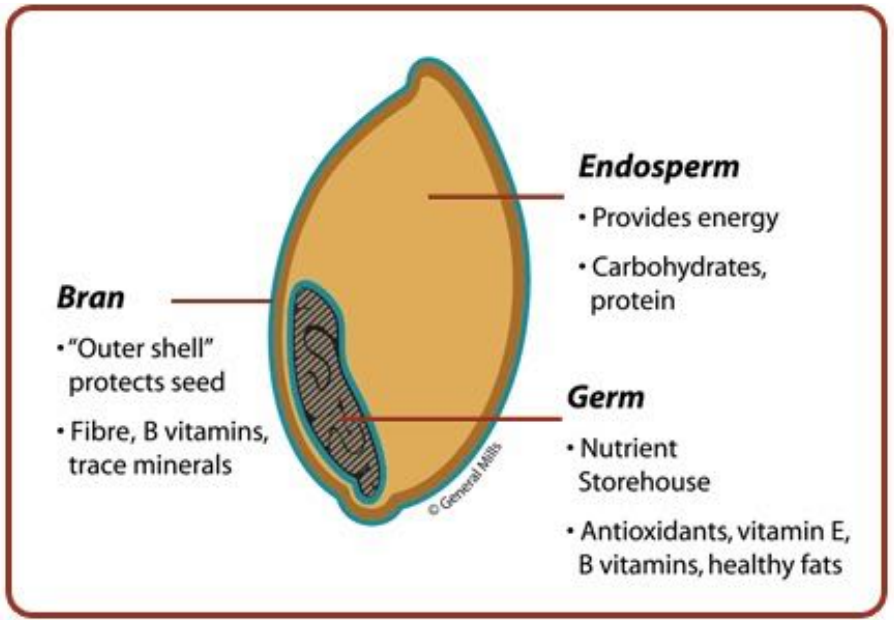
The Metabolic Matrix: Feed the Gut



Unprocessed Food Feeds the Gut

- Soluble fiber
- Insoluble fiber
- Reduce processed carbohydrates
- Whole intact food (cellular) matrix
- Provide prebiotic nourishment
  (dietary fiber)
- Replace probiotic nourishment
  (gut microbiota)

The Metabolic Matrix: Feed the Gut



Fiber is critical

- Supports healthy metabolism & regulates bowel movement through delayed gastric emptying
- Increases satiety
- Helps regulate blood glucose levels
- May help prevent certain cancers
- Lowers LDL (bad cholesterol)
- In Type 2 Diabetics, increasing fiber consumption may reduce fasting glucose and HbA1c

The Metabolic Matrix: Feed the Gut

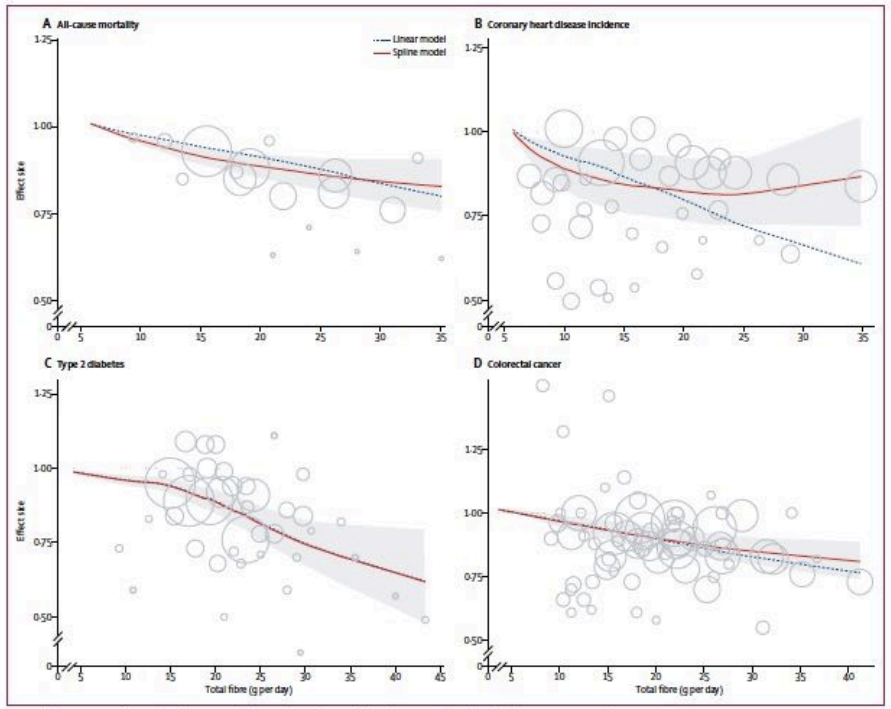


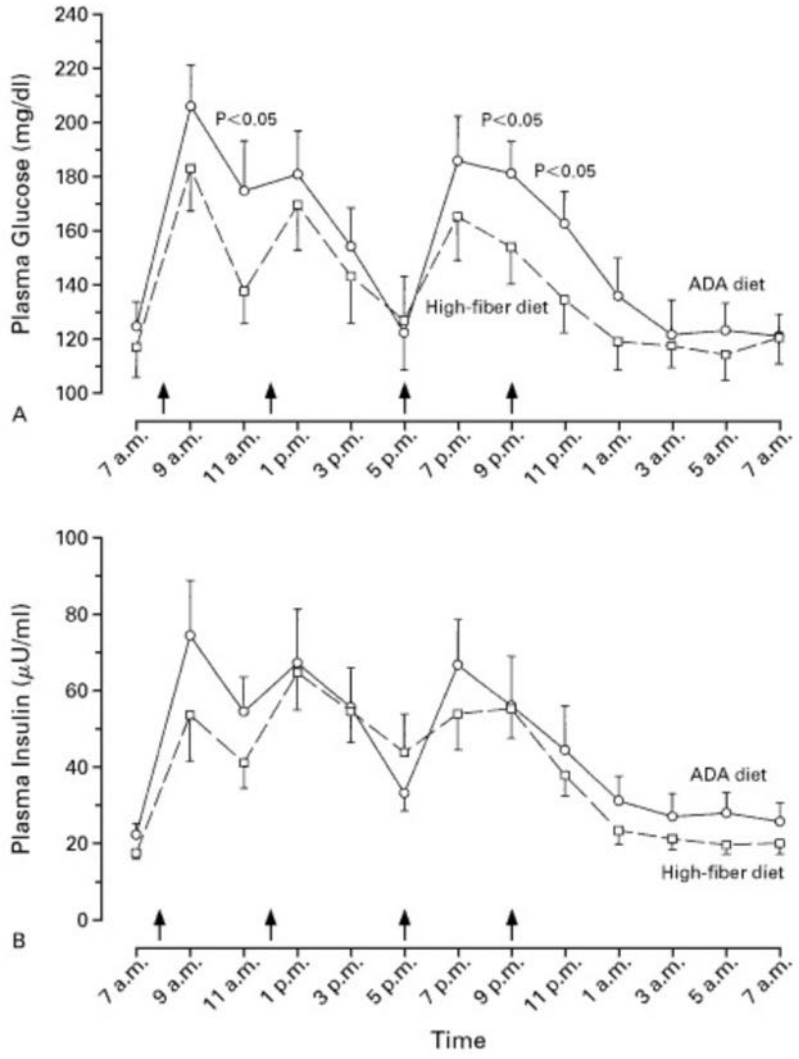
Figure 1: **Dose-response relationships between total dietary fibre and critical clinical outcomes based on data from prospective studies**
(A) Total fibre and all-cause mortality. 68 183 deaths over 11·3 million person-years. Assuming linearity a risk ratio of 0·93 (95% CI 0·90–0·95) was observed for every 8 g more fibre consumed per day. (B) Total fibre and incidence of coronary heart disease. 6449 deaths over 2·5 million person-years. Assuming linearity a risk ratio of 0·81 (0·73–0·90) was observed for every 8 g more fibre consumed per day. (C) Total fibre and incidence of type 2 diabetes. 22 450 cases over 3·2 million person-years. Assuming linearity a risk ratio of 0·85 (0·82–0·89) was observed for every 8 g more fibre consumed per day. (D) Total fibre and incidence of colorectal cancer. 20 009 cases over 20·9 million person-years. Assuming linearity a risk ratio of 0·92 (0·89–0·95) was observed for every 8 g more fibre consumed per day.

Reynolds et al. Lancet 393: 434, 2019

Fiber is critical

- High dietary fiber content correlates with reduction in chronic disease
- Inverse relationship between fiber intake and:
  - All-cause Mortality
  - Coronary Heart Disease
  - Type 2 Diabetes Mellitus
  - Colon Cancer

The Metabolic Matrix: Feed the Gut



Fiber is critical

A high intake of dietary fiber, particularly of the soluble type, above the level recommended by the ADA, improves glycemic control, decreases hyperinsulinemia, and lowers plasma lipid concentrations in patients with type 2 diabetes.

Chandalia et al. N Engl J Med 342:1392, 2000

The Metabolic Matrix: Feed the Gut

FEED
THE GUT

Ultraprocessed Food Damages the Gut

The Metabolic Matrix: Feed the Gut

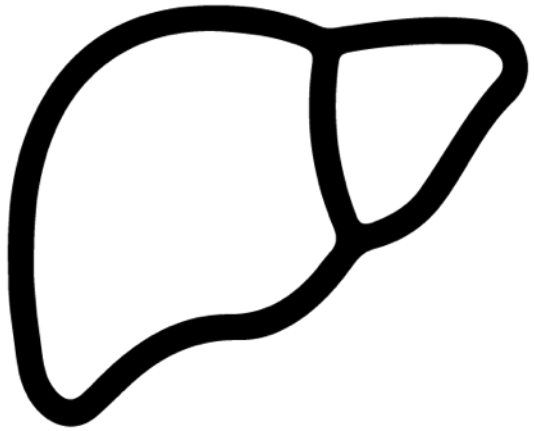
Microbiome health is also critical

- An important bi-directional relationship
- Vital to health

The Metabolic Matrix: Liver Health

Dr. Robert Lustig

- Fat Fraction Maps
- Fructose reduction, metabolism, etc.
- Reduce total sugar, glycemic load
- Fiber
- Appropriate hydration
- Reduce environmental toxins
- Intestinal barrier



PROTECT THE LIVER

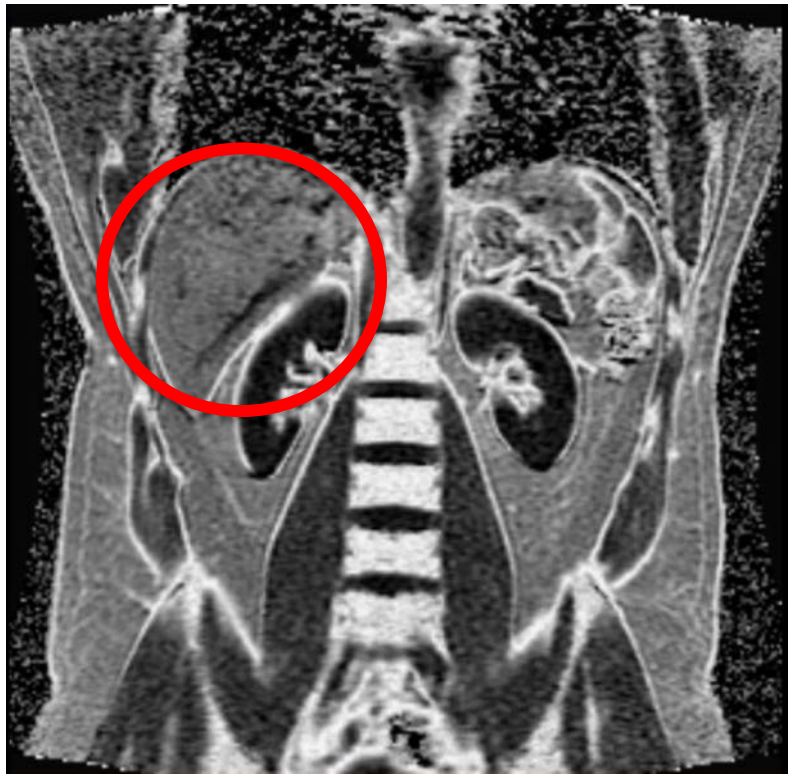
The Metabolic Matrix: Protect the Liver
MRI Fat Fraction Maps

Fat, Metabolically Healthy

Low Liver Fat = 2.6%

Fat, Metabolically Ill

High Liver Fat = 24%



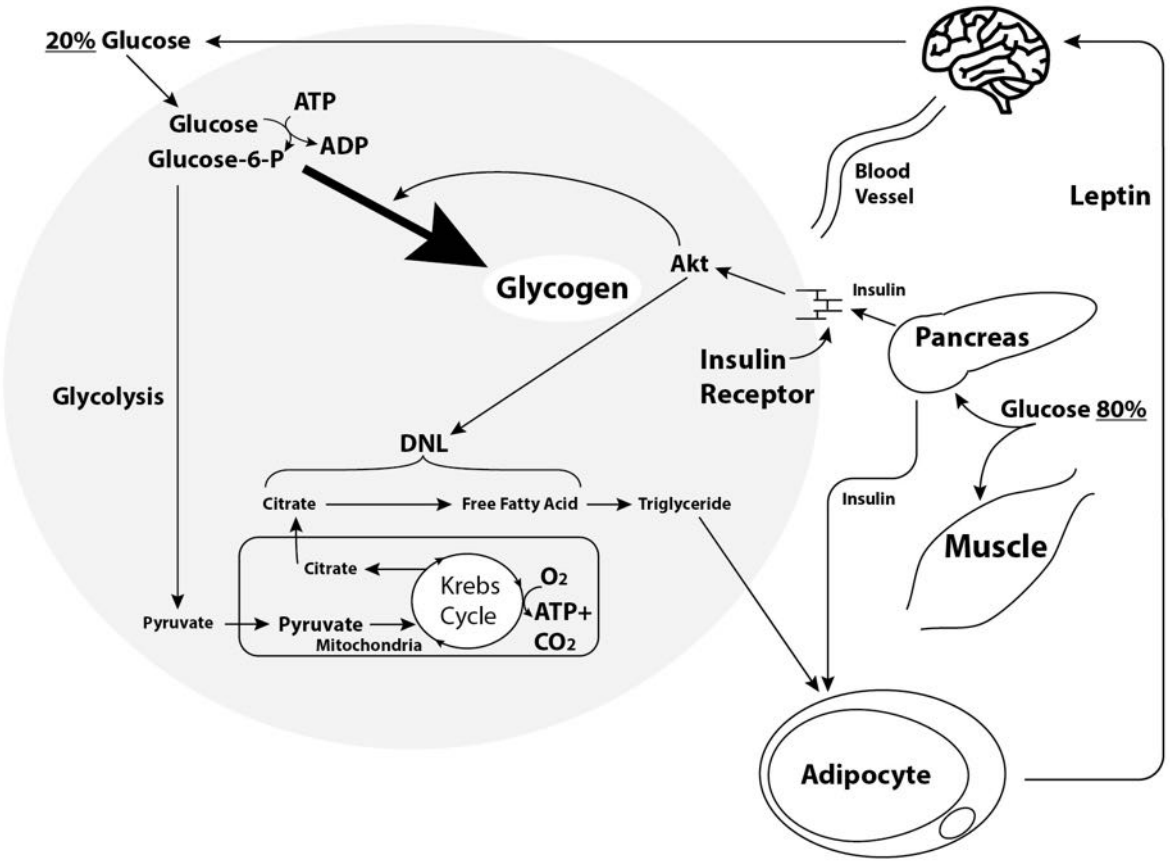
Thin, Metabolically Ill

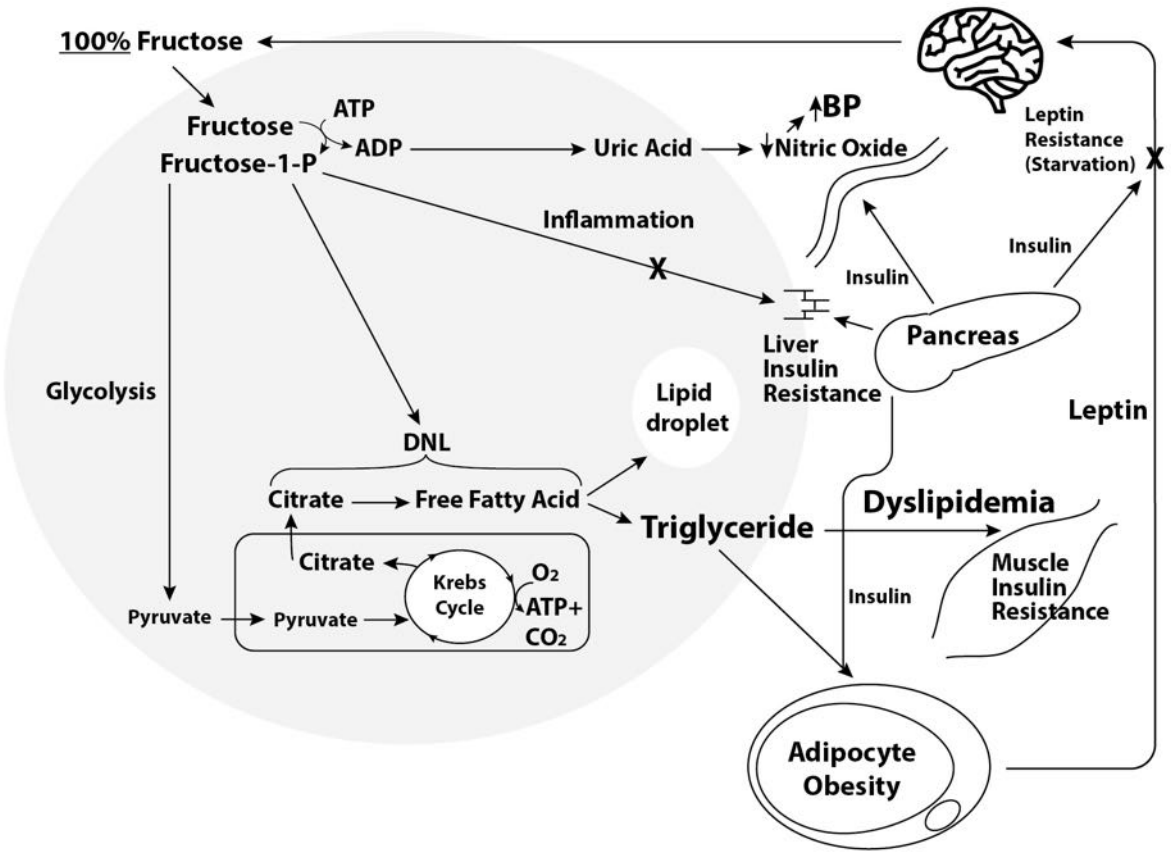
High Liver Fat = 23%

The Metabolic Matrix: Protect the Liver

- Fructose reduction
- Reduce total sugar intake
- Reduce glycemic load
- Appropriate hydration
- Reduce environmental toxins

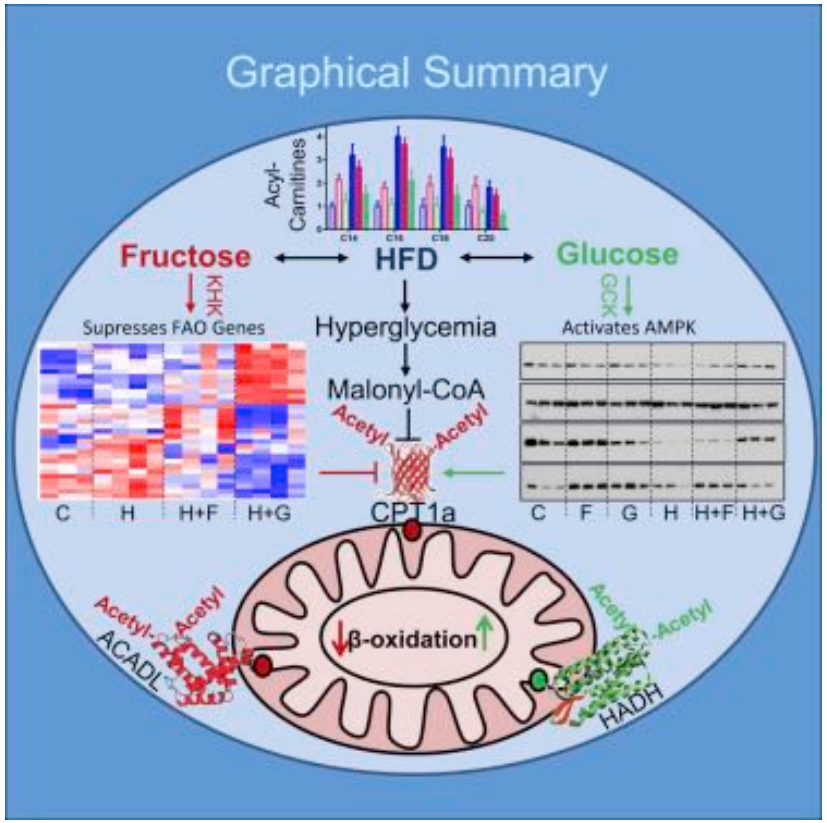
Fructose is metabolized in the liver differently than glucose





Fructose inhibits mitochondrial functioning

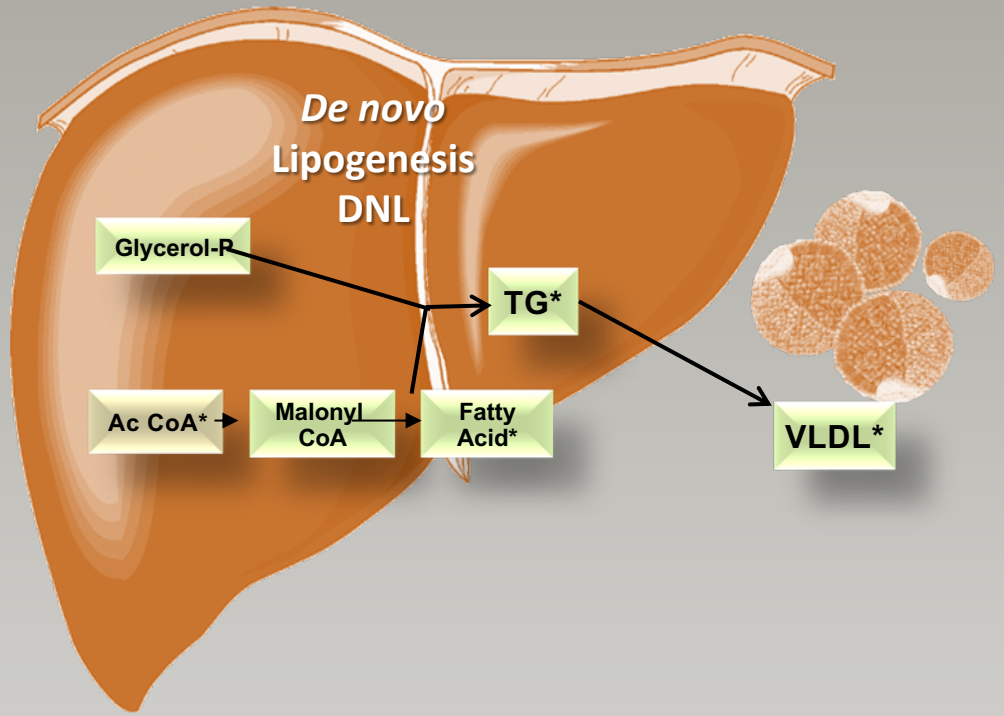
1. AMP Kinase — turns on mitochondria
2. Acyl CoA Dehydrogenase Long-Chain (ACADL) — burns fat
3. Carnitine Palmitoyl Transferase-1 — shuttles fat into mitochondria

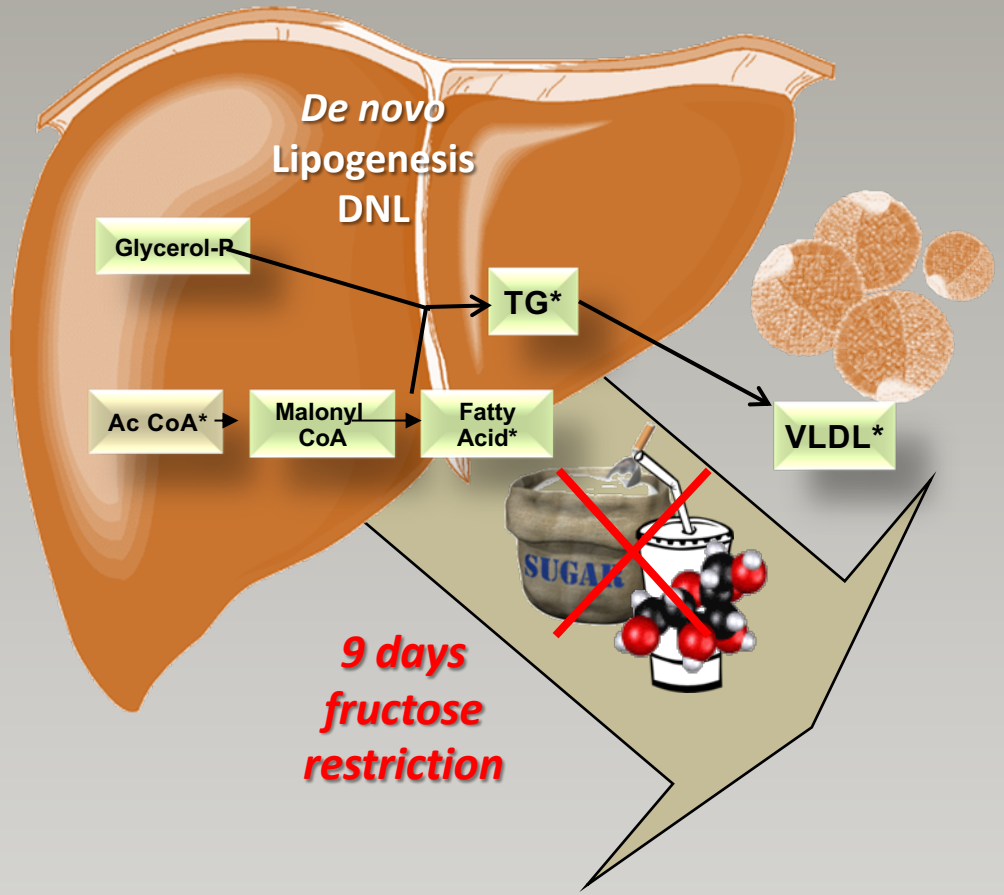


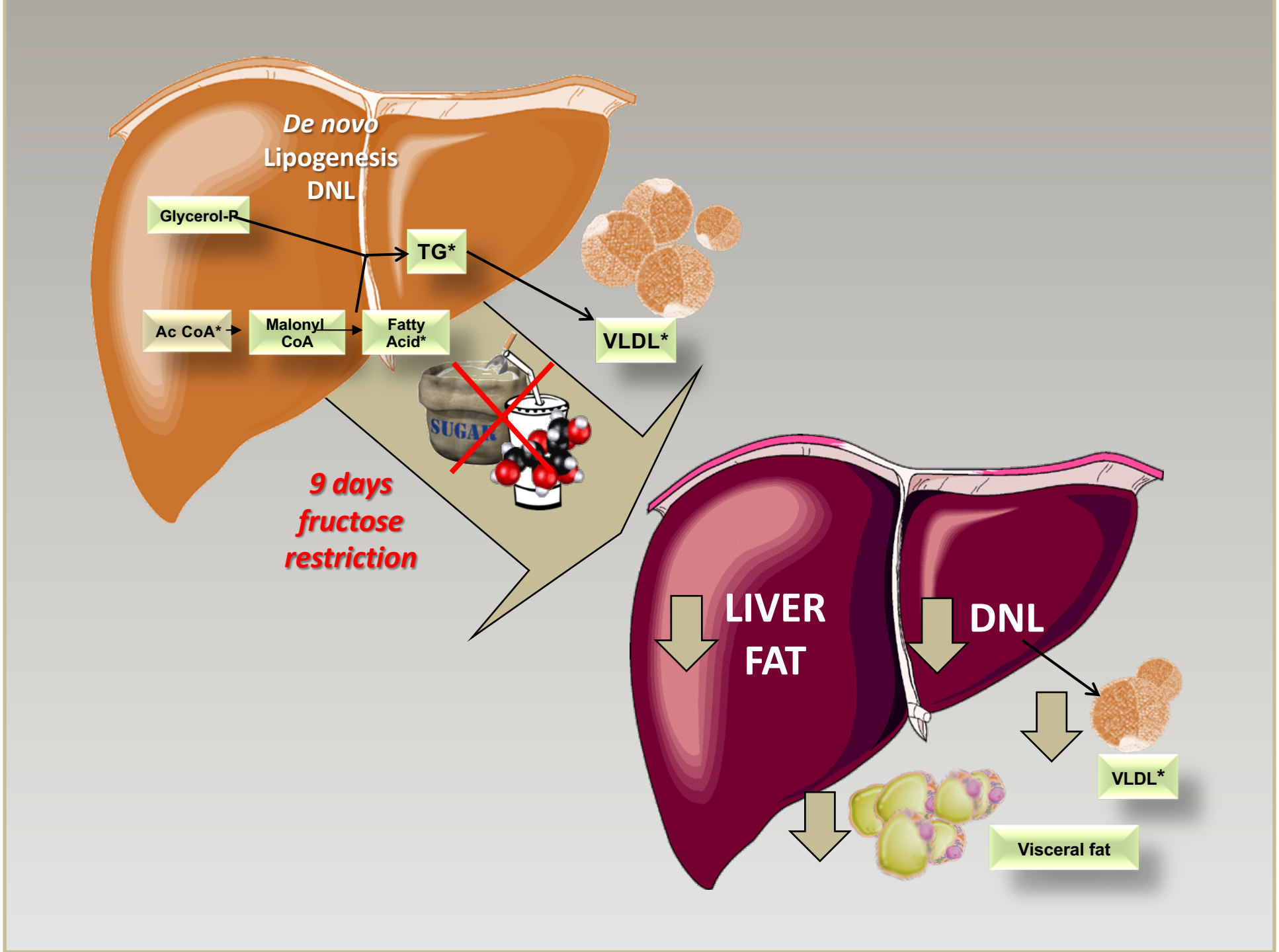
"The most important takeaway of this study is that high fructose in the diet is bad," says Dr. Kahn. "It's not bad because it's more calories, but because it has effects on liver metabolism to make it worse at burning fat. As a result, adding fructose to the diet makes the liver store more fat, and this is bad for the liver and bad for whole body metabolism."

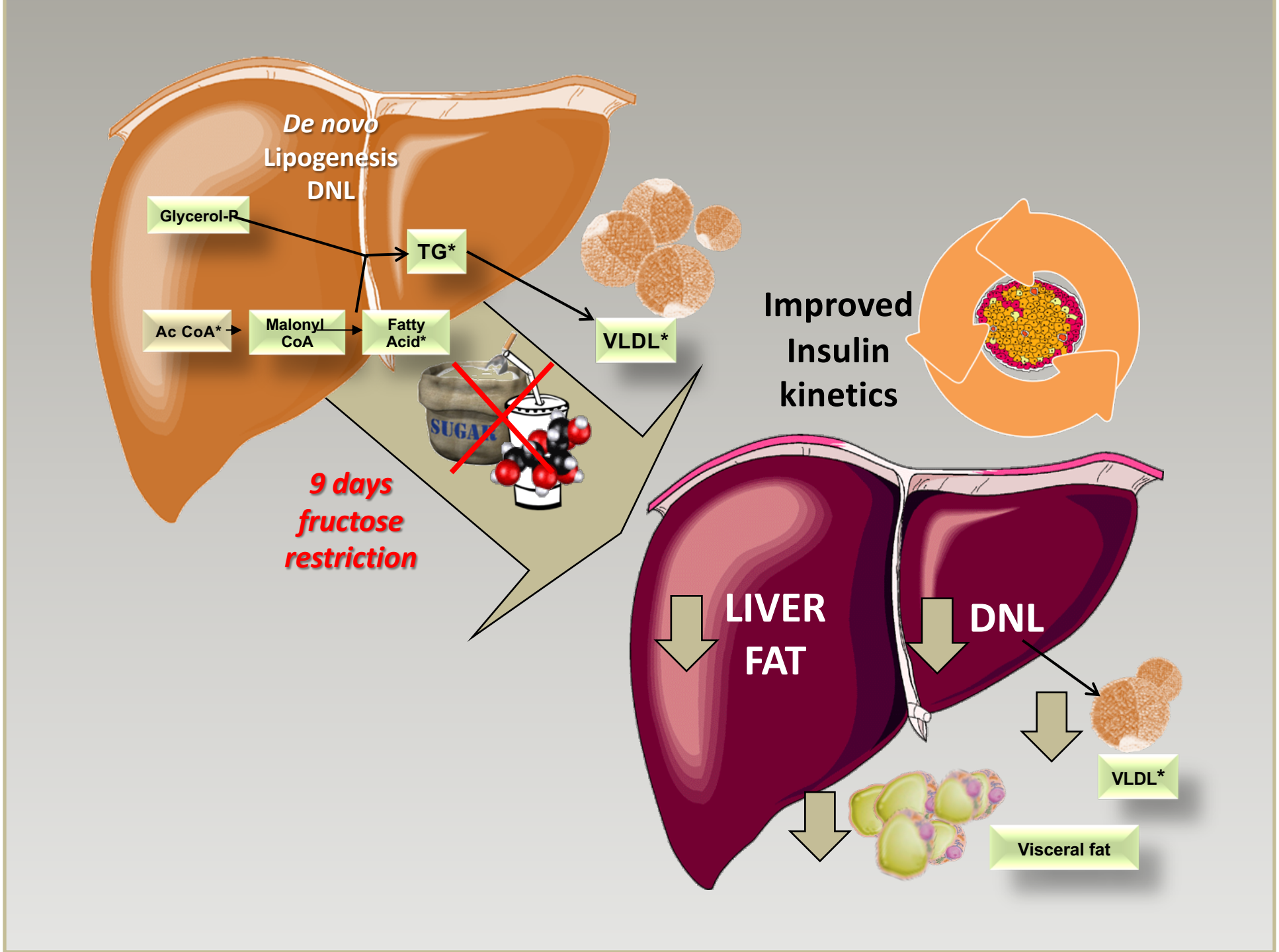
C. Ronald Kahn, MD, CEO Joslin Diabetes Center

Softic et al. Cell Metab 30:735, Oct 1, 2019


De novo
Lipogenesis
DNL
Glycerol-P
TG*
Ac CoA*
Malonyl CoA
Fatty Acid*
VLDL*


De novo
Lipogenesis
DNL
Glycerol-R
TG*
Ac CoA*
Malonyl CoA
Fatty Acid*
VLDL*
SUGAR
9 days
fructose
restriction


De novo
Lipogenesis
DNL
Glycerol-R
TG*
Ac CoA*
Malonyl CoA
Fatty Acid*
VLDL*
SUGAR
9 days
fructose
restriction
LIVER
FAT
DNL
VLDL*
Visceral fat


De novo
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Malonyl CoA
Fatty Acid*
VLDL*
SUGAR
9 days
fructose
restriction
Improved
Insulin
kinetics
LIVER
FAT
DNL
VLDL*
Visceral fat

Article

Dietary fructose improves intestinal cell survival and nutrient absorption

https://doi.org/10.1038/s41586-021-03827-2

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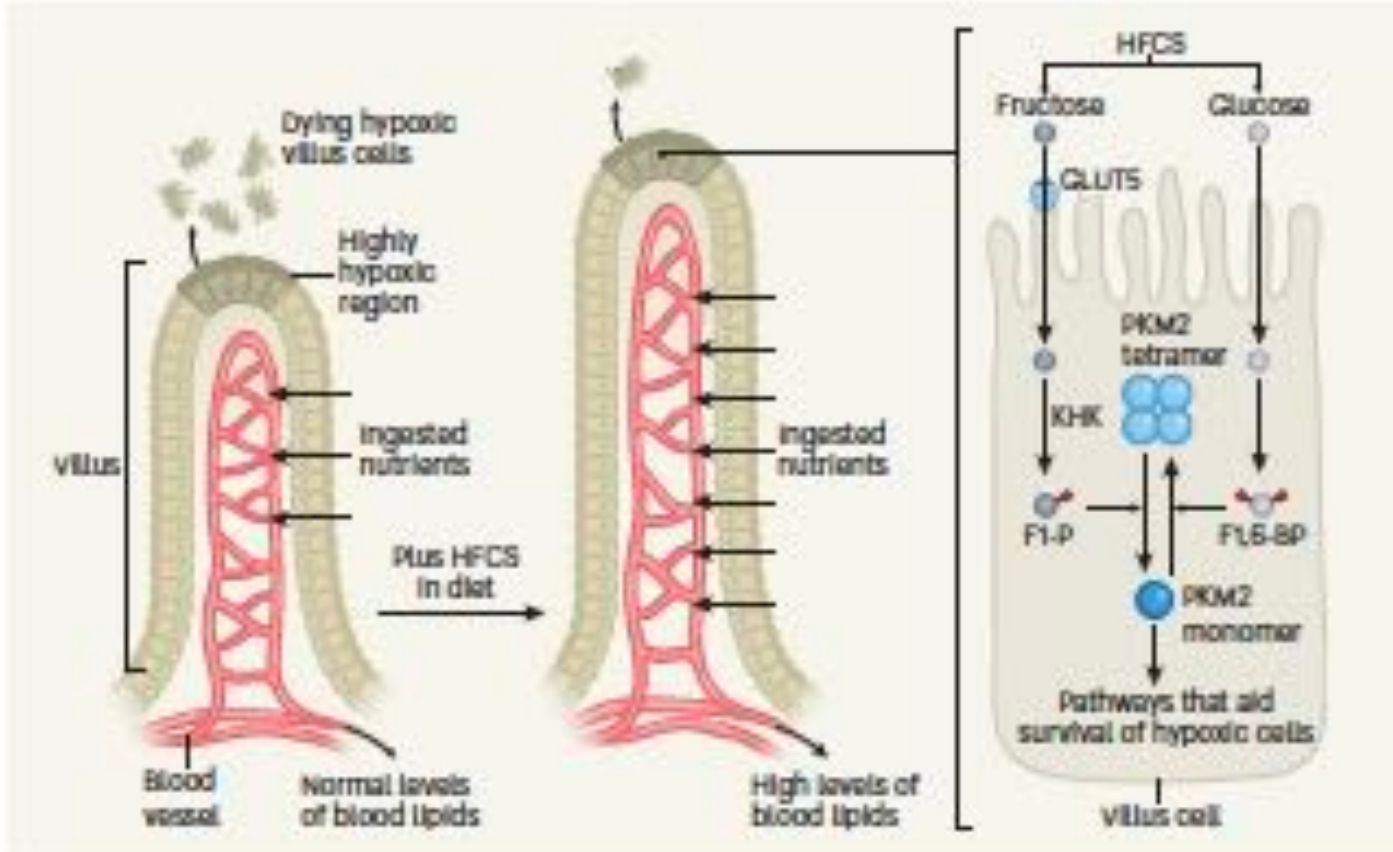
Samuel R. Taylor[1,2,3,4], Shakti Ramsamooj[1,2], Roger J. Liang[1,2], Alyna Katti[2,4], Rita Pozovskiy[1,2], Neil Vasan[2,5], Seo-Kyoung Hwang[1,2], Navid Nahiyaan[6], Nancy J. Francoeur[7], Emma M. Schatoff[1,2,3], Jared L. Johnson[2], Manish A. Shah[2], Andrew J. Dannenberg[2], Robert P. Sebra[7,8], Lukas E. Dow[2], Lewis C. Cantley[2], Kyu Y. Rhee[6] & Marcus D. Goncalves[1,2]✉



The Metabolic Matrix: Protect the Liver

- Fructose reduction
- Reduce total sugar intake
- Reduce glycemic load
- Appropriate hydration
- Reduce environmental toxins

Sugar is the marker for ultra-processed food
56% of the food sold in America is ultra-processed food
Accounts for 62% of the sugar in the American diet

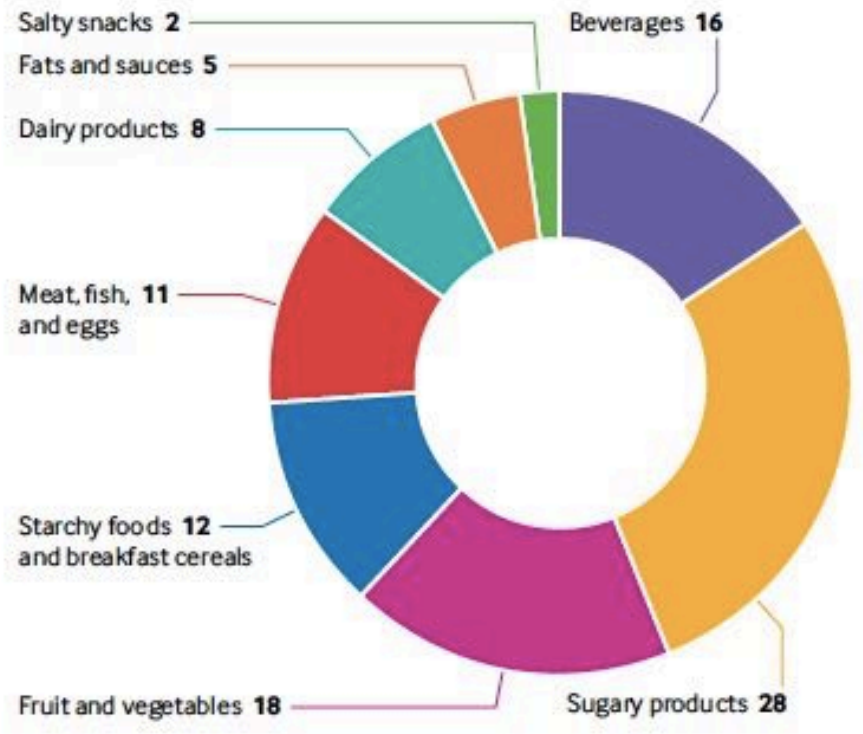


Fig 2 | Relative contribution (%) of each food group to consumption of ultra-processed food in diet

Srour et al. BMJ 365:l1451, 2019

Sugar is the 'alcohol of the child', yet we let it dominate the breakfast table

Robert Lustig

With kids consuming half their sugar quota first thing, it's no wonder they're getting diabetes and liver disease. We have to fight corporate interests

'On average, cereal contains a whopping 12g of sugar, all added, in a typical serving.' Photograph: Stockbyte/Rex Features

Wednesday 4 January 2017 08.31 EST

The Metabolic Matrix: Protect the Liver

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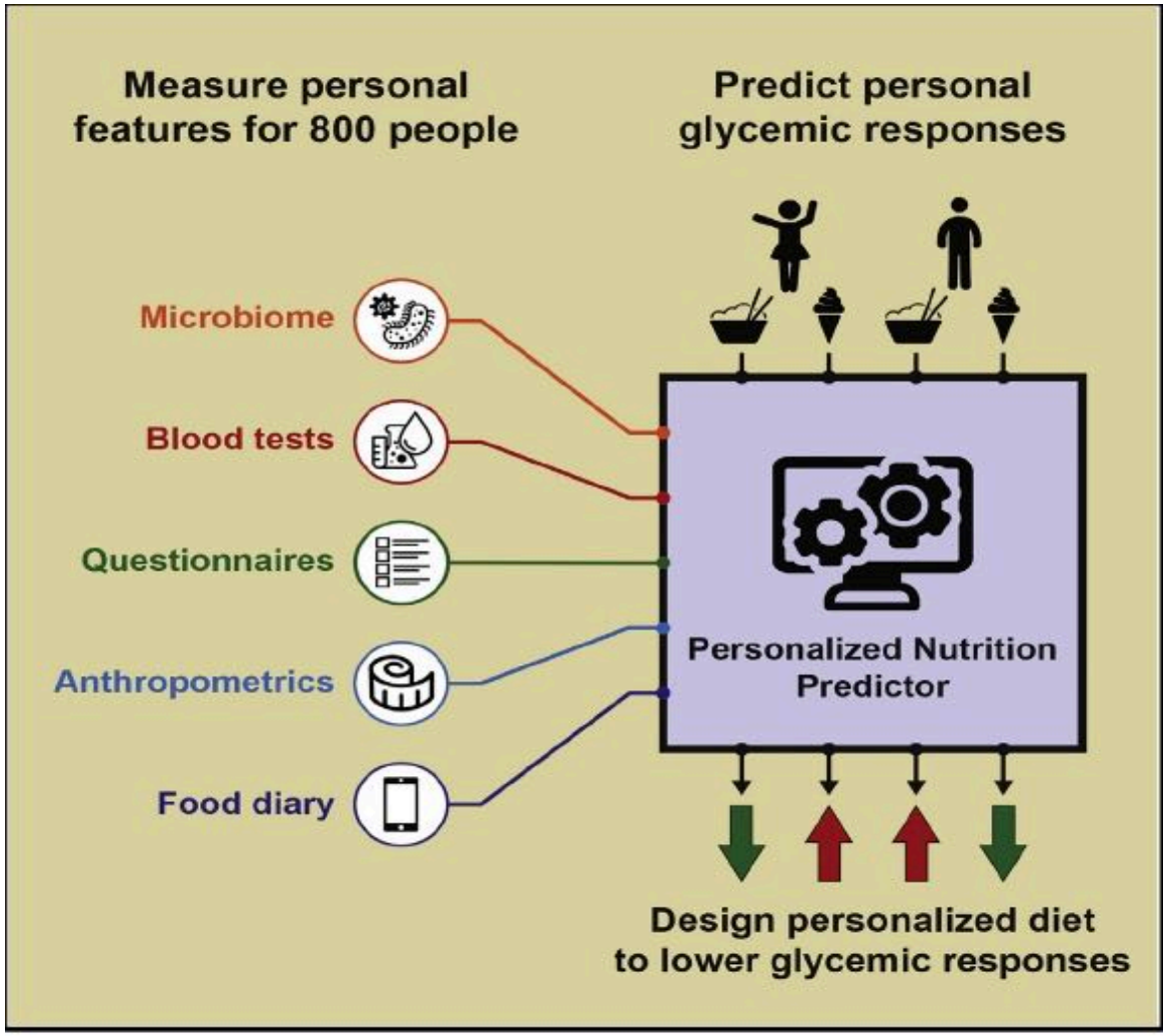
- Reduce glycemic load
- Appropriate hydration
- Reduce environmental toxins

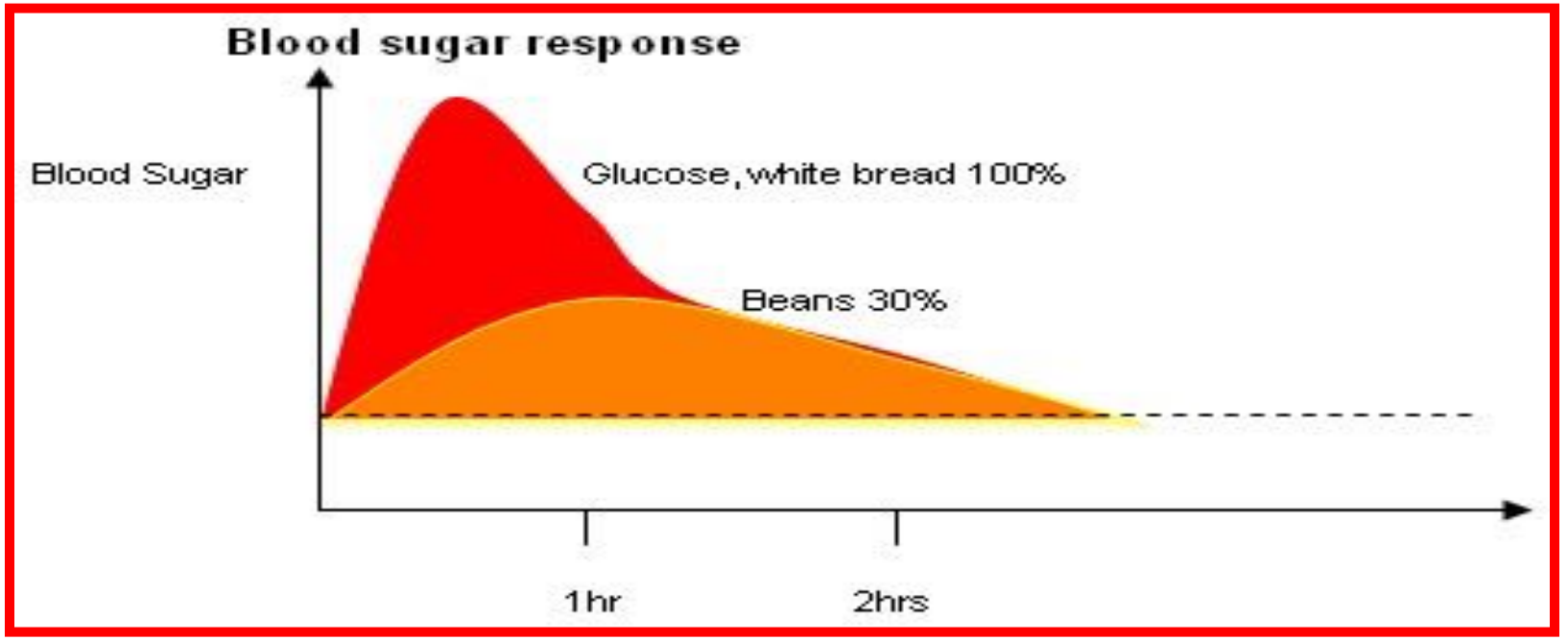
Personalized Nutrition — Reduce Glycemic Response



But Glycemic Response is Really a Proxy for Insulin Response

Zeevi et al. Cell 163:1079, 2015

Glycemic Index is irrelevant — It's Glycemic Load that matters



- Glycemic Index (GI) = $AUC_{beans} \div AUC_{Glucose} \times 100 = 30$
- Glycemic Load (GL) = GI * gm CHO/serving

  Carrots are High GI, but Low GL

  Everything that is High Fiber is automatically Low GL
- Fructose is Low GI — but so what?

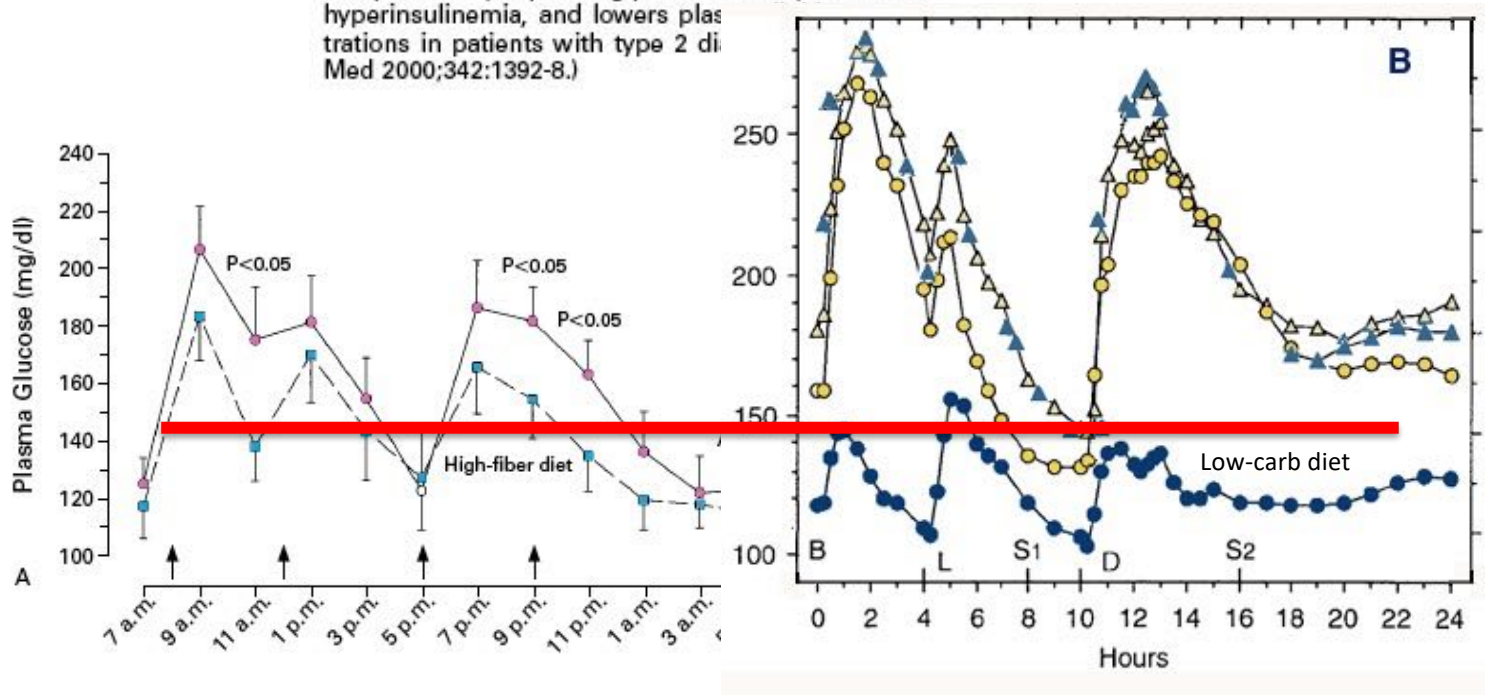
Glucose excursions in the presence or absence of fiber

The New England Journal of Medicine

BENEFICIAL EFFECTS OF HIGH DIETARY FIBER INTAKE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

MANISHA CHANDALIA, M.D., ABHIMANYU GARG, M.D., DIETER LUTJOHANN, PH.D., KLAUS VON BERGMANN, M.D., SCOTT M. GRUNDY, M.D., PH.D., AND LINDA J. BRINKLEY, R.D.

Conclusions A high intake of dietary fiber, particularly of the soluble type, above the level recommended by the ADA, improves glycemic control, decreases hyperinsulinemia, and lowers plas
trations in patients with type 2 di
Med 2000;342:1392-8.)



Chandalia et al. N Engl J Med 342:1392, 2000

The Metabolic Matrix: Protect the Liver

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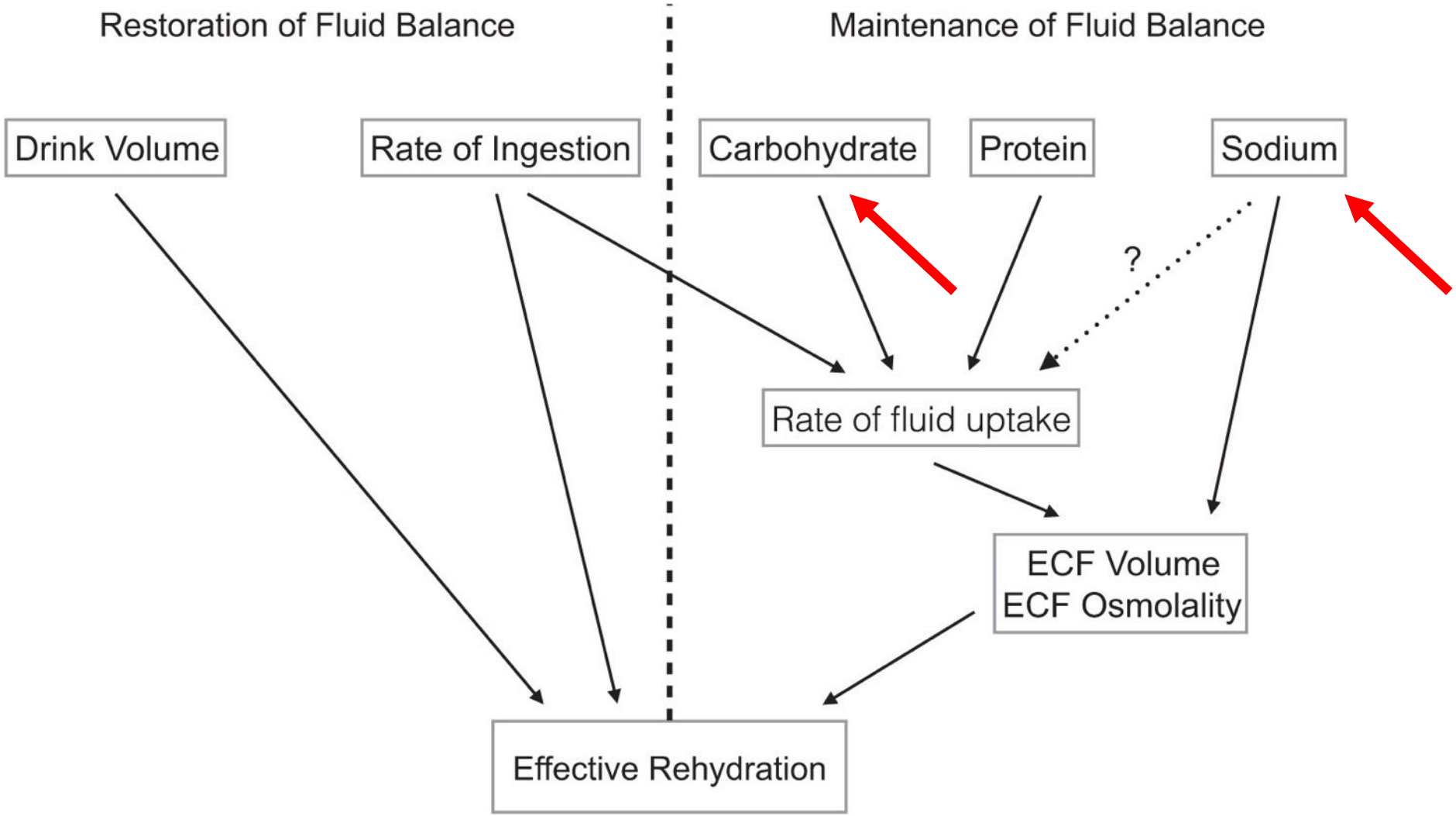
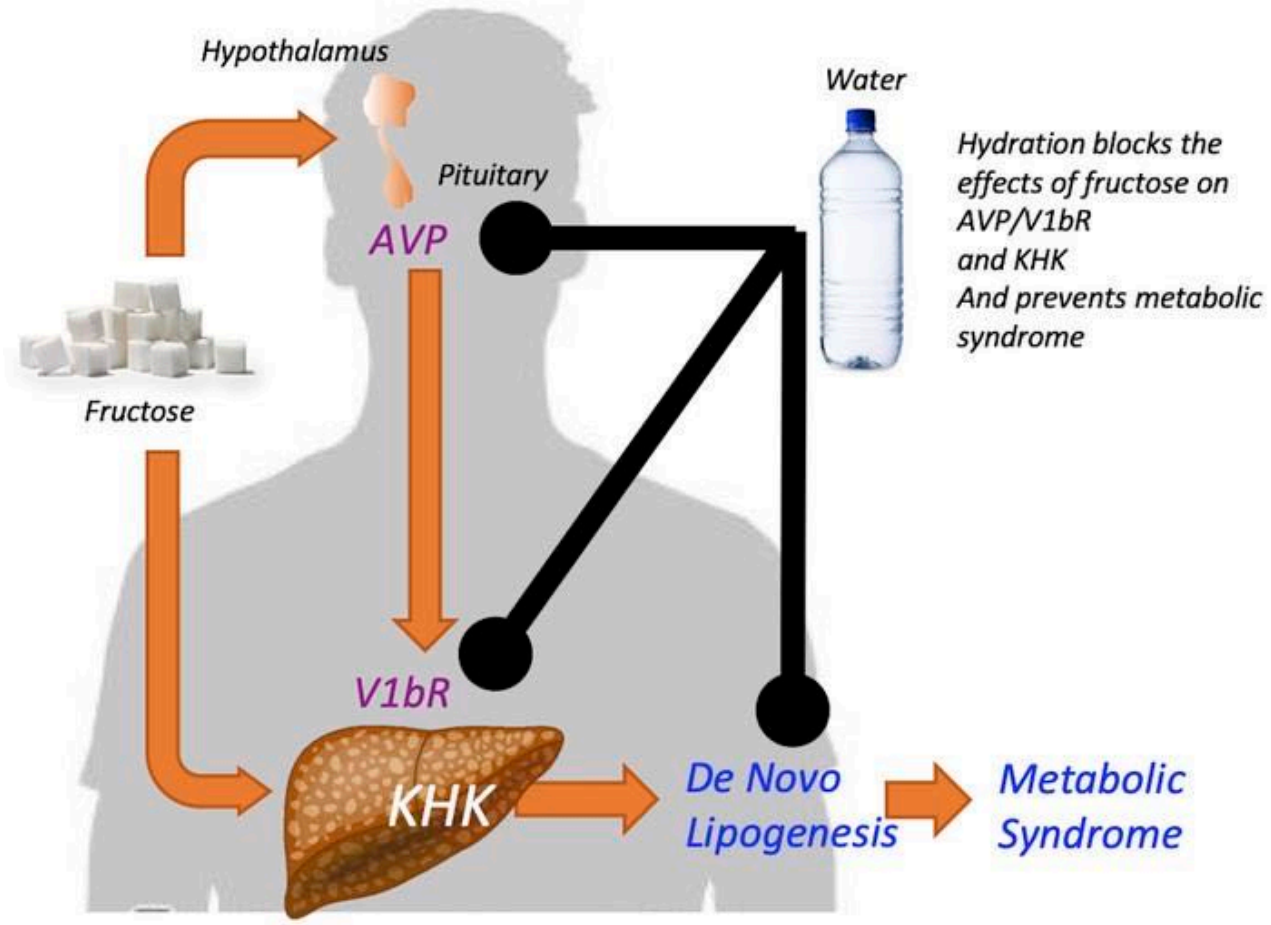
- Reduce total sugar intake
- Reduce glycemic load
- Appropriate hydration
- Reduce environmental toxins

The usual thinking about maintaining hydration



Evans et al. J Appl Physiol 122:945, *2017*

Hydration blocks fructose-induced metabolic syndrome by activating the vasopressin V1b receptor

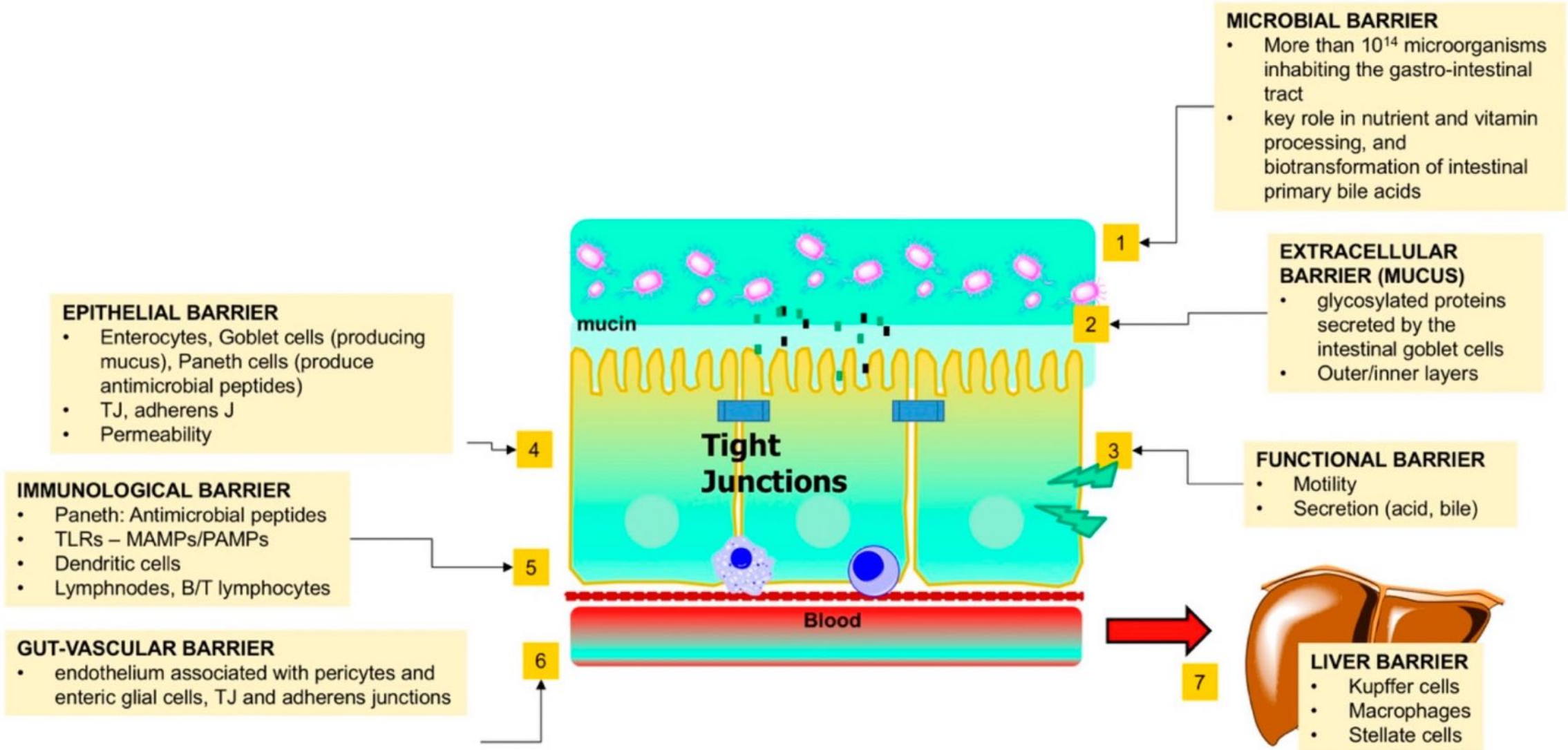


Andres-Hernando et al. JCI Insight 6:e140848, 2021

The Metabolic Matrix: Protect the Liver

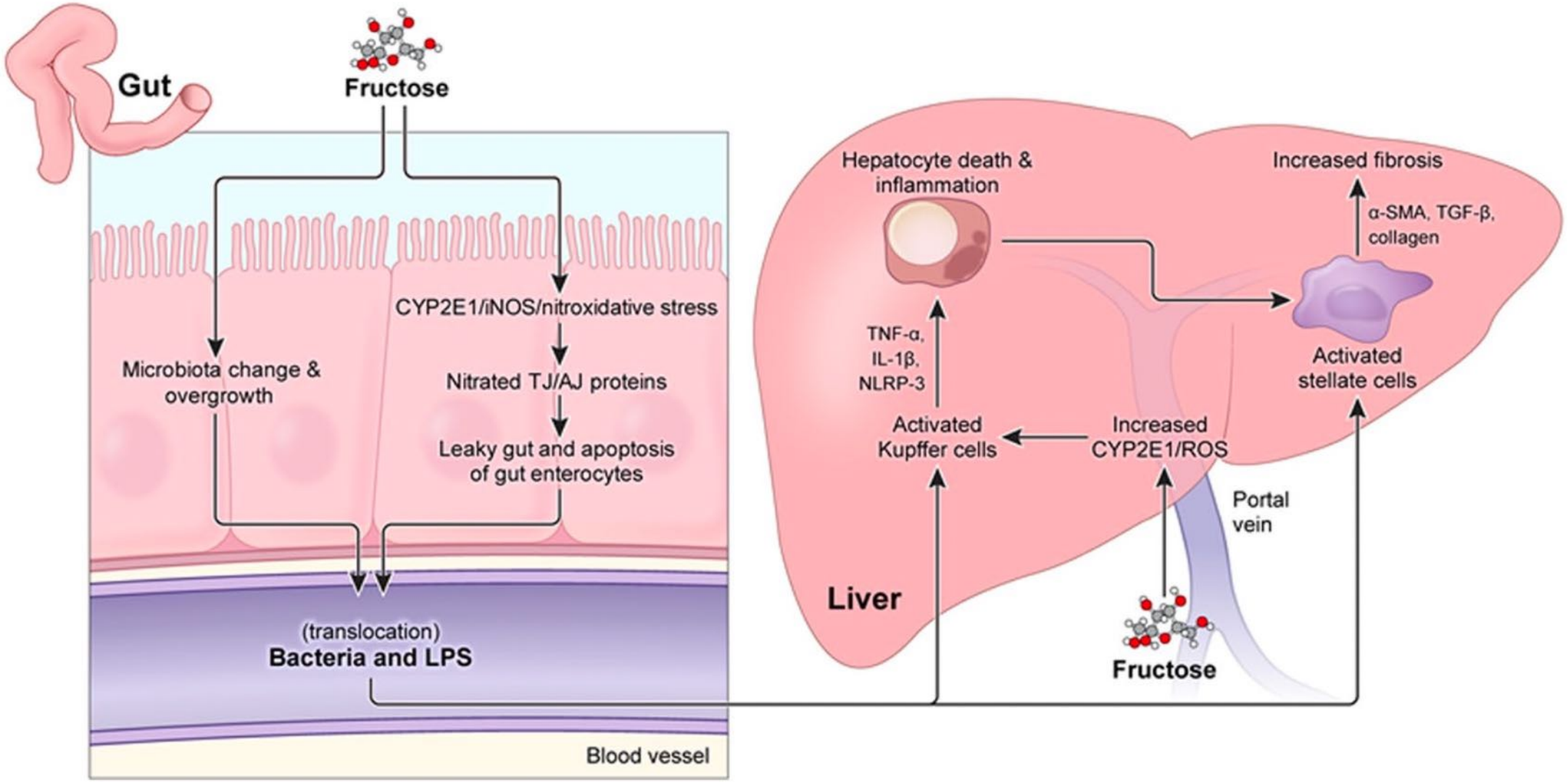
- Fructose reduction
- Reduce total sugar intake
- Reduce glycemic load
- Appropriate hydration
- Reduce environmental toxins

The intestine is the first barrier for the liver



Di Ciaula et al. J Clin Med 9:2648 2020

Fructose weakens the intestinal barrier, and sets up insulin resistance



Cho et al. Hepatology 2019 Apr 8. doi: 10.1002/hep.30652.

The Metabolic Matrix: Brain Health

Dr. Rachel Gow

- Role of nutrition in the brain
- What is your brain made of?
- Healthy & essential fats
- Plant based, short chain, polyunsaturated fatty acids
- Balance of omega 3 & 6 in the brain
- Omega 6
- Omega 3s: pregnancy, lifespan, childhood
- ADHD and depression
- Brain selective nutrients

SUPPORT THE BRAIN

The Role of Nutrition in the Brain

What is your brain made of?

Healthy and Essential Fats

- Omega-3’s are brain essential and perform critical biological functions throughout the central nervous system

Plant-based, short chain, polyunsaturated fatty acids

The head of the omega-3 family is Alpha-linoleic acid (ALA) which can be sourced from certain nuts, seeds and green leafy vegetables. However, the conversion process from ALA to DHA & EPA is highly complex and problematic.

The balance of omega-3 and 6 in the brain is critical

Omega-6 Linoleic Acid

Omega-3 and pregnancy

Omega-3 is critical throughout the life-span

Omega-3 during childhood

Early dietary intervention with DHA results in:

- Improved cognitive development in infants (Birch, 2010)
- Improved visual acuity (Birch, 2010)
- Improved ability in problem solving skills (Willatts, 1998)
- Improvements in literacy including spelling and reading gains (Richardson, 2007)
- Improvements in sleep (DOLAB study)
- Reduction in Attention Deficits (ADHD symptoms)

ADHD and Depression

- Several meta-analyses have confirmed a small-modest effect size for reducing clinical symptoms of ADHD in children (see Hawkey & Niggs 2014, Clin Psychol Rev)
- Hallahan, Davis et al., Br J Psychiatry, 2016 confirmed an effect size of 0.61 (Cohens *d*) for reducing clinical depression – in both cases EPA-rich formulations had the greatest efficacy

Brain-selective nutrients

The Metabolic Matrix: Precision Data

Dr. Andreas Kornstädt

How precision data can transform the food system, and the ways that encourage consumers and industry to interact and align.

- Science is clear
- Knowledge to transformation
- Criteria, Filters, Recommendation Engines
- Just the facts

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (1/4)

The science is clear:

- less fructose (to protect the liver)
- more soluble fiber (to feed the gut)
- more α-linolenic acid (to support the brain)

So, how come the food system transformation isn’t in full swing yet?

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (2/4)

Results from a survey we ran with 500+ people:

- the two foremost things participants look for is tastiness and meeting their preferences
- the reasons they don't buy these products *(besides price)* are the **complexity of the right choice** - encompassing a lack of transparency, fragmentation of information, and unreliability
- the least trust is put in manufacturers and government, the highest trust in scientific findings

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (3/4)

"I want to protect my liver, feed my gut, and protect my brain"

protect my liver

feed my gut

protect my brain

learn to identify fructose
(not on the label – just "sugar")

learn about fructose in sucrose

so, avoid "-ose" in general?

Oh, allulose is ok?

learn about 262 names of sugar

learn to spot α-linolenic acid
(not on the label – just unsaturated fatty acids)

don't confuse with linoleic acid

learn about soluble fiber
(not on the label – just dietary fiber)

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (3/4)

"I want to protect my liver, feed my gut, and protect my brain"

protect my liver

feed my gut

protect my brain

misleading claims ("high in ALA!" – but also high in fructose!)

intentional obfuscation (fruit juice and sucrose added instead of fructose)

my favorite online store doesn't even show ingredients for me to decide (Amazon)

learn to identify fructose (not on the label – just "sugar")

confusing badges - some of them not trustworthy

learn about fructose in sucrose

so, avoid "-ose" in general?

Oh, allulose is ok?

confusing declarations

learn about 262 names of sugar

learn to spot α-linolenic acid (not on the label – just unsaturated fatty acids)

don't confuse with linoleic acid

sites/apps don't have the products in their database

there's no site/app that combines all three so I have to go back and forth all the time

learn about soluble fiber (not on the label – just dietary fiber)

my favorite online store doesn't have a filter

I have no time to check everything at the site/scan everything at my brick and mortar store

I have no reception at my brick and mortar store

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (3/4)

"I want to protect my liver, feed my gut, and protect my brain"

palm oil free

non-GMO

vegan

cruelty free

protect my liver

feed my gut

not carcinogenic

safe for infants

protect my brain

ketogenic

no flavor enhancers

2 or less Weight Watchers smart points

not ultra-processed

eczema-friendly

4+ Amazon Stars

learning about what is entailed by keto

complex ingredient lists (GMO-free: citric acid and many others can be either or depending on process)

learning about what is entailed by palm oil free

learning about what is entailed by GMO free (different levels)

complex ingredient lists (palm oil free: 100+ ingredients)

confusing badges - some of them not trustworthy

misleading claims ("high in ALA!" – but also high in fructose!)

intentional obfuscation (fruit juice and sucrose added instead of fructose)

my favorite online store doesn't even show ingredients for me to decide (Amazon)

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confusing badges - some of them not trustworthy

learn about fructose in sucrose

so, avoid "-ose" in general?

Oh, allulose is ok?

confusing declarations

learn about 262 names of sugar

complex rules (keto) and variants

learn to spot α-linolenic acid (not on the label – just unsaturated fatty acids)

don't confuse with linoleic acid

sites/apps don't have the products in their database

there's no site/app that combines all three so I have to go back and forth all the time

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my favorite online store doesn't have a filter

I have no time to check everything at the site/scan everything at my brick and mortar store

I have no reception at my brick and mortar store

The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (3/4)

"I want to protect my liver, feed my gut, and protect my brain"

"I give up"

palm oil free

non-GMO

vegan

cruelty free

protect my liver

feed my gut

not carcinogenic

safe for infants

protect my brain

ketogenic

no flavor enhancers

2 or less Weight Watchers smart points

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learning about what is entailed by palm oil free

learning about what is entailed by GMO free (different levels)

complex ingredient lists (palm oil free: 100+ ingredients)

confusing badges - some of them not trustworthy

misleading [illegible] („high in ALA! [illegible] high in fructose!)

intentional obfuscation (fruit juice and sucrose added instead of fructose)

my favorite online store doesn't even show ingredients for me to decide (Amazon)

learn to identify fructose (not on the label – just "sugar")

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The Metabolic Matrix: Power of Data

Challenges of going from knowledge to transformation (4/4)

Without these, we probably won't see any food system transformation:

- reduced complexity
- trust
- ease of use
- personalization

The Metabolic Matrix: Power of Data

Criteria, filters, and recommendation engines (1/4)

Branded filters

- arbitrary number of arbitrarily complex, strictly fact-based criteria
- branded to a trusted organization

Recommendation engine

- applies branded filters anywhere
  (on info sites, in online stores, in apps)
- mix and match filters

The Metabolic Matrix: Power of Data

Criteria, filters, and recommendation engines (2/4)

Basic ingredient criteria

…taking into account
100% matching
FLOUR

Complex ingredient criteria

…with neutralizing modifiers
COLD-PRESSED

- *nothing with any of 7946 ingredients:*
  - *nothing with sugars and starches*
  - *nothing with grain flours (but nut flours are ok)*
  - *nothing with caffeine*
  - *nothing with oils - unless they have been cold-pressed*
  - *nothing with dairy derivatives - except whole milk dairy products*
  - *nothing indicating high levels of processing*
  - *nothing with mis-declared ingredients*
- *nothing in general with more than 5g of sugar per 100g*
- *no beverage with more than 2.5g of sugar per 100g*
- *no dairy product with more than 10g of sugar per 100g*

…with offending modifiers
NON-FAT **=** FAT-FREE **=** …

Complex nutrient criteria

… with differentiation by category

The Metabolic Matrix: Power of Data

Benefits of strictly fact-based recommendations with branded filters

1: Consumers

- Makes complexity disappear

2: Complying food manufacturers

- Regain trust
- Products clearing filters stand out on their own
- Dependable standards they can re-engineer products to

3: Everyone

- End of consumer vs. industry antagonism
- Food system transformation actually happens

QUESTIONS?

DIALOGUE

Wrap up

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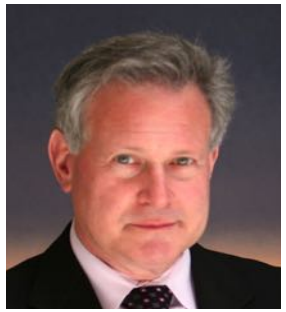

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