



Research, Validation and Commercialization of Technologies

## Part 1:

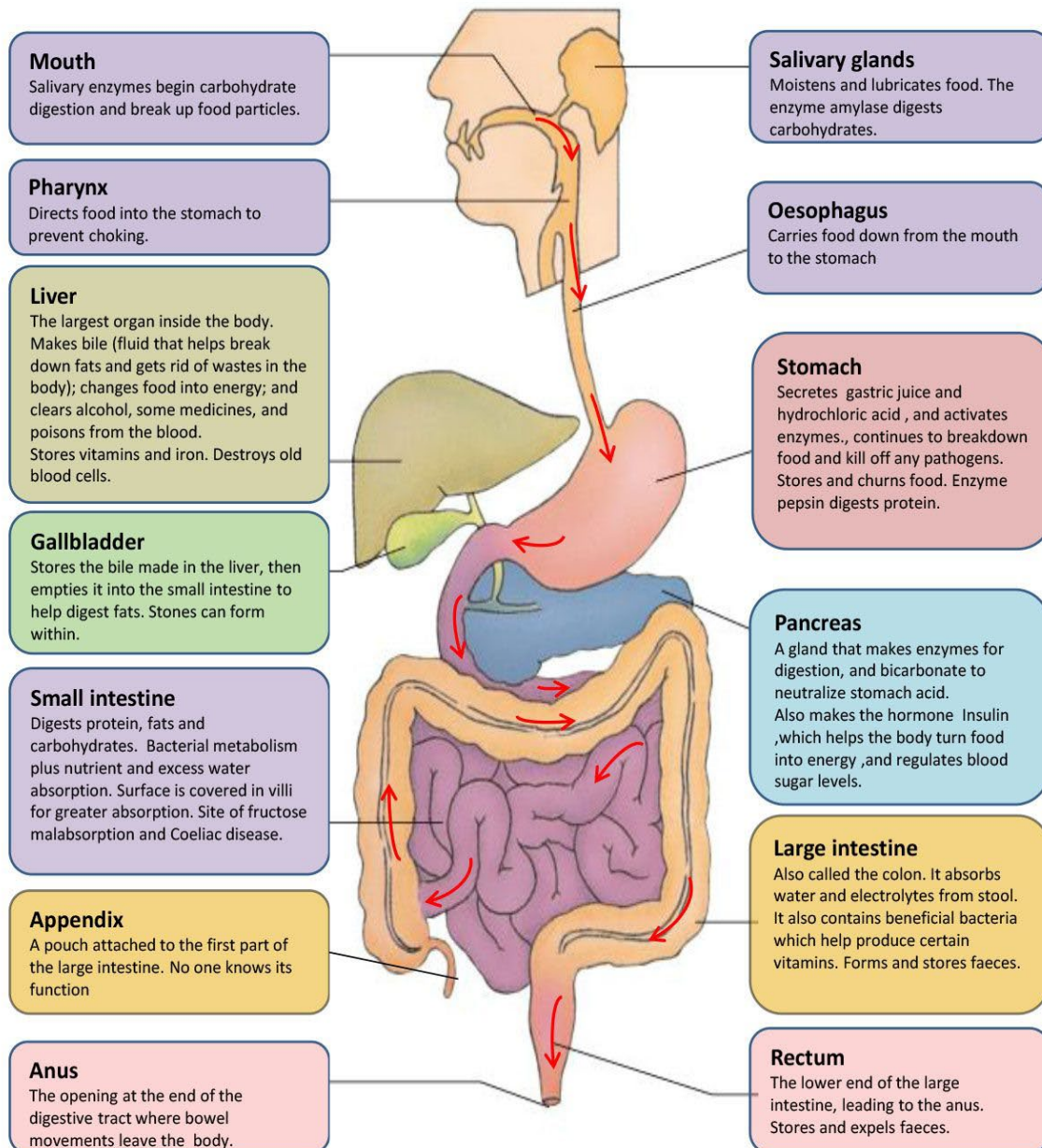
# Intact Nutrition (Intact Digest™ & Intact Endurance™) with Nutri-Mastic™:

## Effect of Chios Mastic Gum (Pistacia lentiscus) combined with Ionic Minerals on Cardiovascular Function

Rev.1a-27Feb-2025-ifus)

We begin with a consideration of the Human Digestive System and its Functions:

## Digestive System



### Reference

1. Osiecki, H & Meeke, F, MD, 2005. The Digestive and Renal Systems – Volume 2. Bio Concepts Publishing, Eagle Farm QLD Australia.
2. <http://teachers.concordiashanghai.org/lisahawkins/science-8-2/human-body-systems-2/digestive-system/>

What we eat. How we eat it. When we eat it. All three play a critical role in the digestion, and subsequent absorption...or the lack of digestion and absorption...of our intake, whether it be food or liquid.

From the moment a "substance" enters our mouths...and in some cases even before, as our sense of smell (or olfactory system) can trigger a reaction in the mouth that electrochemically ripples throughout the entire digestive system and even throughout our entire body...our Digestive System and its Functions are stimulated and prepared to go to work.

The question then becomes, do we optimize or sub-optimize the "Functionality" of each part of the "System" by what, how, and when we eat or drink. As a way of considering this, we explore "The Law of Requisite Variety", which suggests that in any system (whether human or machine), the element with the greatest "variability or choice" becomes the controlling element.

We take a step deeper into scientific thinking and explore the concept of "variety": "The term 'variety' was introduced by Dr. W. Ross Ashby, MD to extend his analysis of machines to their set of possible behaviors." [3]:121. As an aside the human body can be viewed as a very complex and integrated machine.

Dr. Ashby stated: "The word variety, in relation to a set of distinguishable elements, will be used to mean either (i) the number of distinct elements, or (ii) the logarithm to the base 2 of the number, the context indicating the sense used. [1]:126." For purposes of understanding, we can see the individual components of the Human Digestive System as "elements" (e.g., the Mouth, the Liver, the Large Intestine, etc.)

We find such information in treatises published by Dr. W.R. Ashby:

Ref. 1: Ashby, W. R. 1956, An Introduction to Cybernetics, Chapman & Hall, 1956, ISBN 0-416-68300-2 (also available in electronic form as a PDF Archived 17 May 2023 at the Wayback Machine from Principia Cybernetica)

Ref. 2: Ashby, W. R. 1958, Requisite Variety and its implications for the control of complex systems, Cybernetica (Namur) Vol. 1, No. 2, 1958.

Ref. 3: Ashby, W. R. 1960, Design for a brain; the origin of adaptive behavior, 2nd ed. (Electronic versions on Internet Archive).

Dr. Ashby further suggested that. "Laws of nature constrain the variety of phenomena by disallowing certain behavior. ([1]:130). Ashby made two observations he considered laws of

nature, the law of experience and the law of requisite variety. The law of experience holds that machines under input tend to lose information about their original state, and the law of requisite variety states a necessary, though not sufficient, condition for a regulator to exert anticipatory control by responding to its current input (rather than the previous output as in error-controlled regulation)."

Practically speaking, the effects of friction and gravity alone on any machine (of for that fact living organism) causes normal wear and tear. Over time, the wear and tear become for the machine (or living organism) a "new normal" or sorts, with the memory of the original state fading as new memory is created, thus becoming the *status quo* of the current state. Hence, at some level, a healthy state of existence can be replaced with a dis-eased state of existence if the latter becomes the "new normal."

One could argue that at any given time from conception to death of a living organism, the current state of memory affects the health and well-being of that living organism. Hence, if the organism moves into a state of dis-ease, then an intervention of some sort is required to create a "new memory" that realigns with health and well-being. It is scientifically plausible that this can be achieved or at the least assisted by healthy nutrition.

Furthermore, it is of note that if an individual is placed into the desert with all the food she or he can eat, but inadequate hydration, then that human will typically die within 2-4 days.

However, if that same human is placed into the desert with no food, but proper hydration, she or he can survive for at least three weeks and in some cases longer (all other things being equal).

Once can conclude from this the importance of hydration, especially hydration with a mineral balance (not to forget vitamins).

Hydration with minerals and vitamins are critical to the survival of any living organism. Consider the diagram of the component parts (elements) and functions of the Digestive System required for proper digestion (viewed at a deeper level as another set of "elements"). One could continue by looking at a "function", then further dissect it into another group of "elements" (these being ionic minerals, vitamins, hormones, phytochemicals, etc.)

As Nature is filled with incredible "variety" of multiple elements at multiple levels, interrelated and interconnected Metabolic Pathways operate so as to manage "variety", and to create a particular or given outcome as illustrated below:

# Map of Metabolic Pathways

<http://www.genome.jp/kegg/pathway/map/map01100.html>

Generic Metabolic map  
Organism specific maps

Functional Enzyme  
Nomenclature  
Links to Sequence Databases

Genome => Transcriptome =>  
Proteome => Metabolome

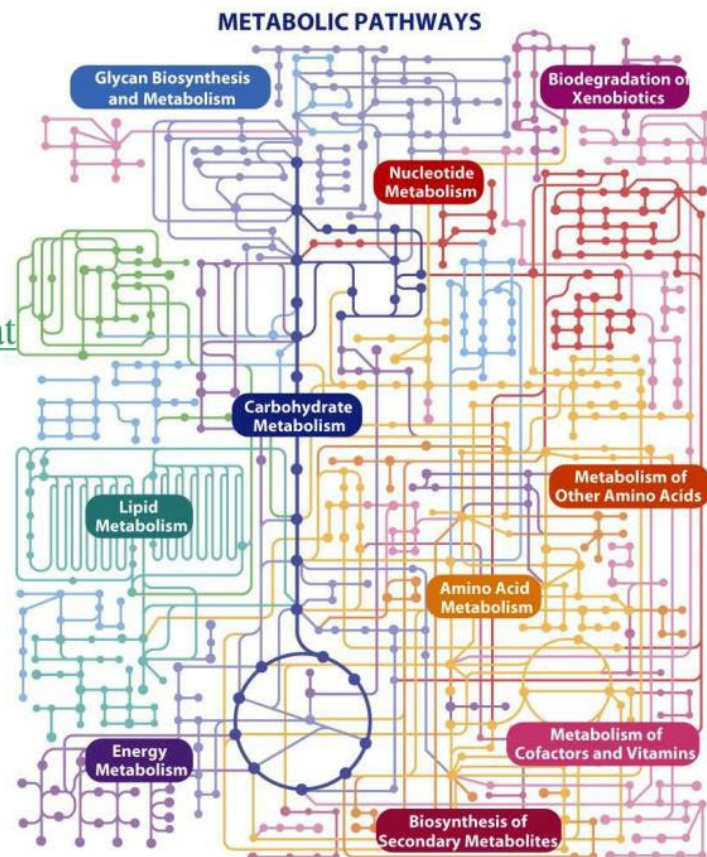
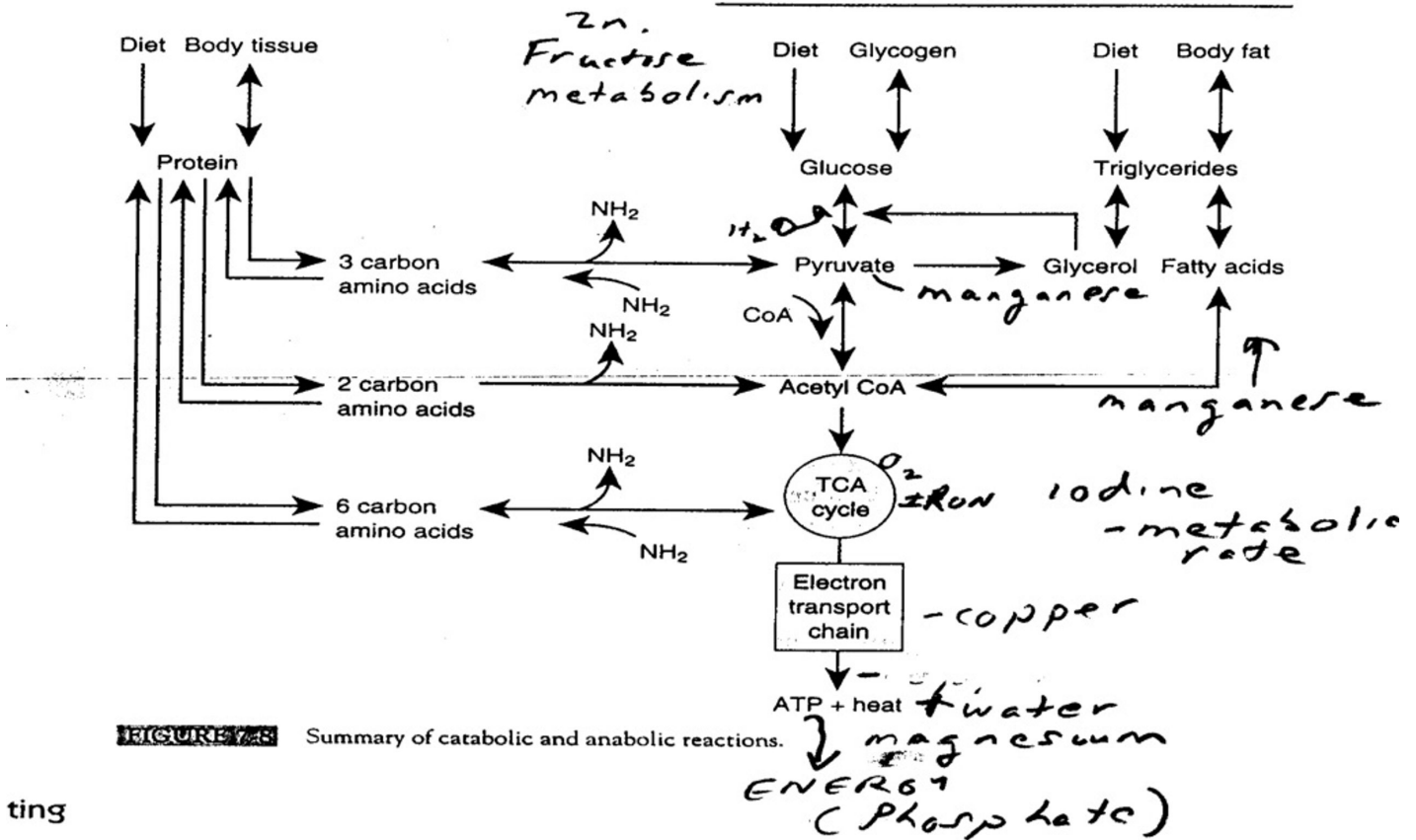


Figure 15-1  
*Lehninger Principles of Biochemistry, Fifth Edition*  
© 2008 W.H. Freeman and Company

This complex array of chemical, physical, and electrical circuitry shown above is managed and regulated by any number of chemicals to include ionic minerals. For example, hormonal regulation (i.e., chemicals inside the body) along with said minerals act, interact, and relate to healthy tissue, cells, organs, and the like. If health is to be achieved, then these individual components and the systems that require their support **MUST** work as optimized individual entities, such that the respective actions, interactions, and relationships of each are also optimized. This results in the health and well-being of the human being in mind and body; i.e., an intact human being.

Consider for a moment just one small slice of the complex array of Metabolic Pathways, where Zinc (Zn), Manganese (Mn), Iodine (I), Copper (Cu), Magnesium (Mg), and Phosphorus (P) in the form of Phosphate, work in cooperation to support Metabolic Function.

# METABOLISM IN GENERAL AND MINERALS IN METABOLISM



**FIGURE 7.3** Summary of catabolic and anabolic reactions.

ting

Source: Mayra J Turner, Essential Water and Minerals in Human Health, Aug 09, 2024

If we flip the script, then the same can be said with "controlling elements" that are allowed to trigger, then operate in unhealthy ways; i.e., too much of a good thing, a group of bad things, the absence of something, and/or the imbalance of something. When this occurs, then a downward spiral of the human being can be found in both the mind and the body (i.e., a human being that is at dis-ease).

If we consider for a moment "The Law of Experience", science suggests that cells have a form

of memory. The questions become:

(1) Is cellular memory producing healthy outcomes for a human?

OR

(2) Has cellular memory been corrupted to produce outcomes filled with dis-ease for a human?

AND

(3) Can cells that have been programmed to be unhealthy be re-programmed through nutrition and supplementation to once more become healthy?

The latter question is of great interest as the Weizman Institute of Science tells us: "In the final tally, around 330 billion cells die and roughly the same number of new ones are born every day. By numbers, red and white blood cells – which live between one day and several months – are by far the largest portion, accounting for some 90%, of that turnover. Blood cells are quite light, so by mass, the daily total comes out to something a bit less than a hundred grams. Thus, roughly every 80 days our bodies produce a number of new cells roughly equal to the total number in the body." (Ref. 1 & 2)

Ref.1: "Mapping cellular turnover sheds light on the balance between renewal and stability in our bodies" / <https://wis-wander.weizmann.ac.il/life-sciences/cell-replacement-numbers>

Ref. 2: Sender, R., Milo, R. The distribution of cellular turnover in the human body. *Nat Med* 27, 45–48 (2021). <https://doi.org/10.1038/s41591-020-01182-9>

Hence, one could plausibly presuppose that enabling the body at the cellular level to reprogram itself into health would be at some level possible.

Additionally, in communities like that of Neuro-Linguistic Programming, we find concepts like that of "The Prime Directive of Human Survival." We find further supporting evidence of this Prime Directive in publications listed below (1,2,3)

Ref. 1: Piantadosi, Claude A, *The Biology of Human Survival: Life and Death in Extreme Environments* (New York, NY, 2003; online edn, Oxford Academic, 31 Oct. 2023), <https://doi.org/10.1093/oso/9780195165012.001.0001>, accessed 10 Feb. 2026.

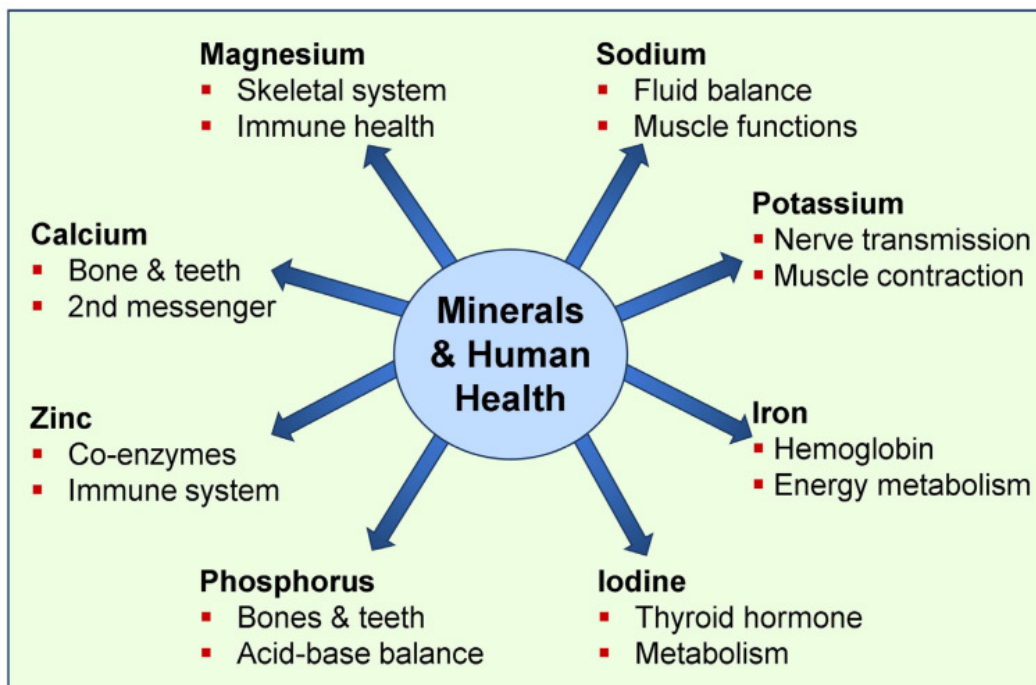
Ref. 2: Chatterjee D and Rai R (2021) Choosing Death Over Survival: A Need to Identify Evolutionary Mechanisms Underlying Human Suicide. *Front. Psychol.* 12:689022. doi: 10.3389/fpsyg.2021.689022

Ref. 3: Sharma, D.S.K. Creation, humanity, science and sustainability for human survival. *Health Technol.* 10, 1337–1341 (2020). <https://doi.org/10.1007/s12553-020-00487-6>

It is suggested the Prime Directive of Human Survival encompasses a range of principles that guide our actions and interactions," the most basic is said to be that of "Survival and Reproduction" so as to "ensure the continuation of the species. This includes seeking food and shelter, protecting oneself and others, and passing on genes to the next generation."

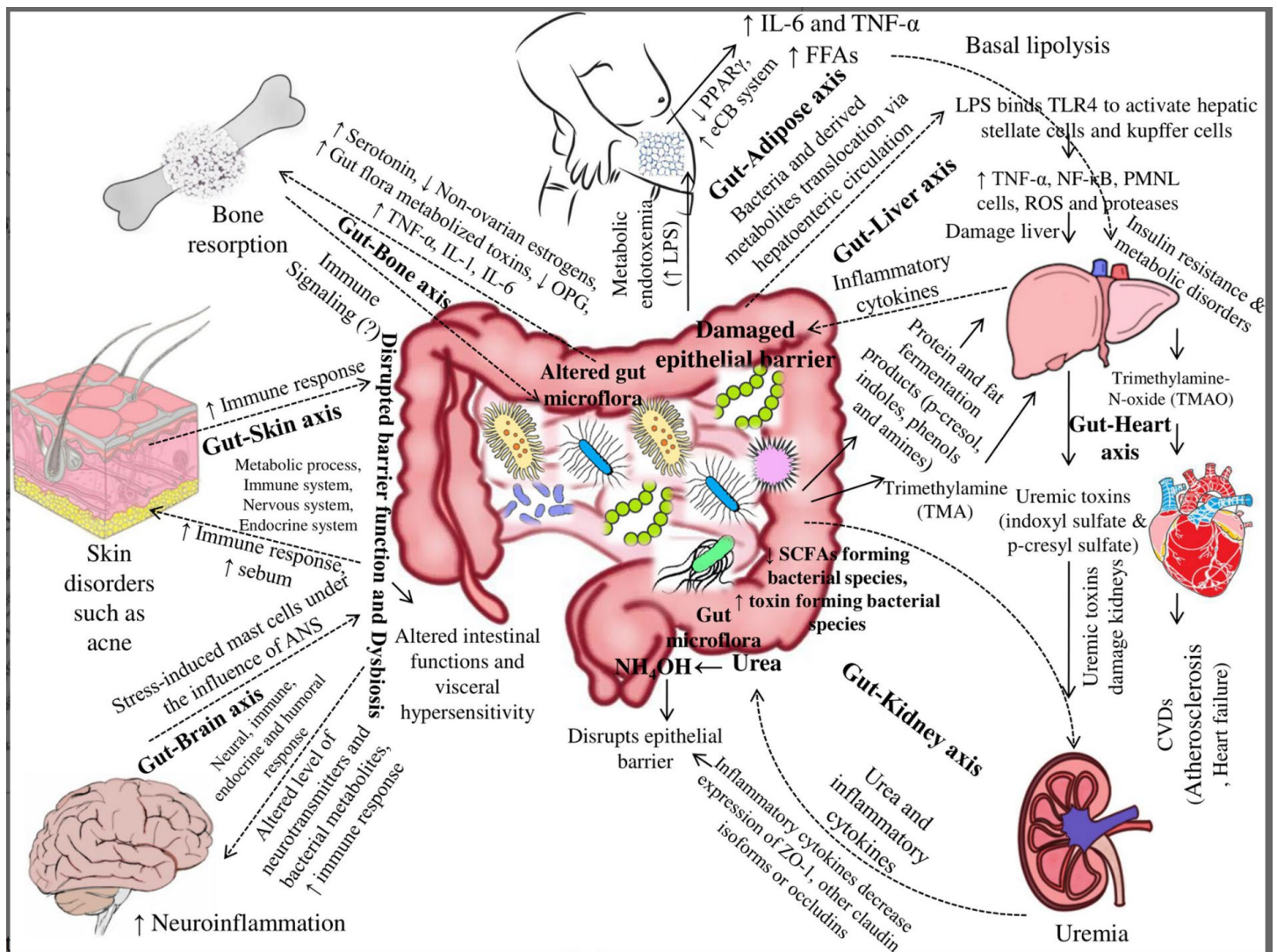
History would suggest to us that humanity has innate needs to first survive, and then thrive. Health in mind and body seem to be pre-requisites, with cellular rejuvenation being the mechanism that drives both. And, if cells are to rejuvenate, one could entertain that nutrition is at basis.

So, in a sense the age-old adage holds true: "You are what you eat." Hence, we are shown in the figure below by Razzaque MS, et.al., "Minerals and Human Health: From Deficiency to Toxicity." (*Nutrients.* 2025 Jan 26;17(3):454. doi: 10.3390/nu17030454. PMID: 39940312; PMCID: PMC11820417.)



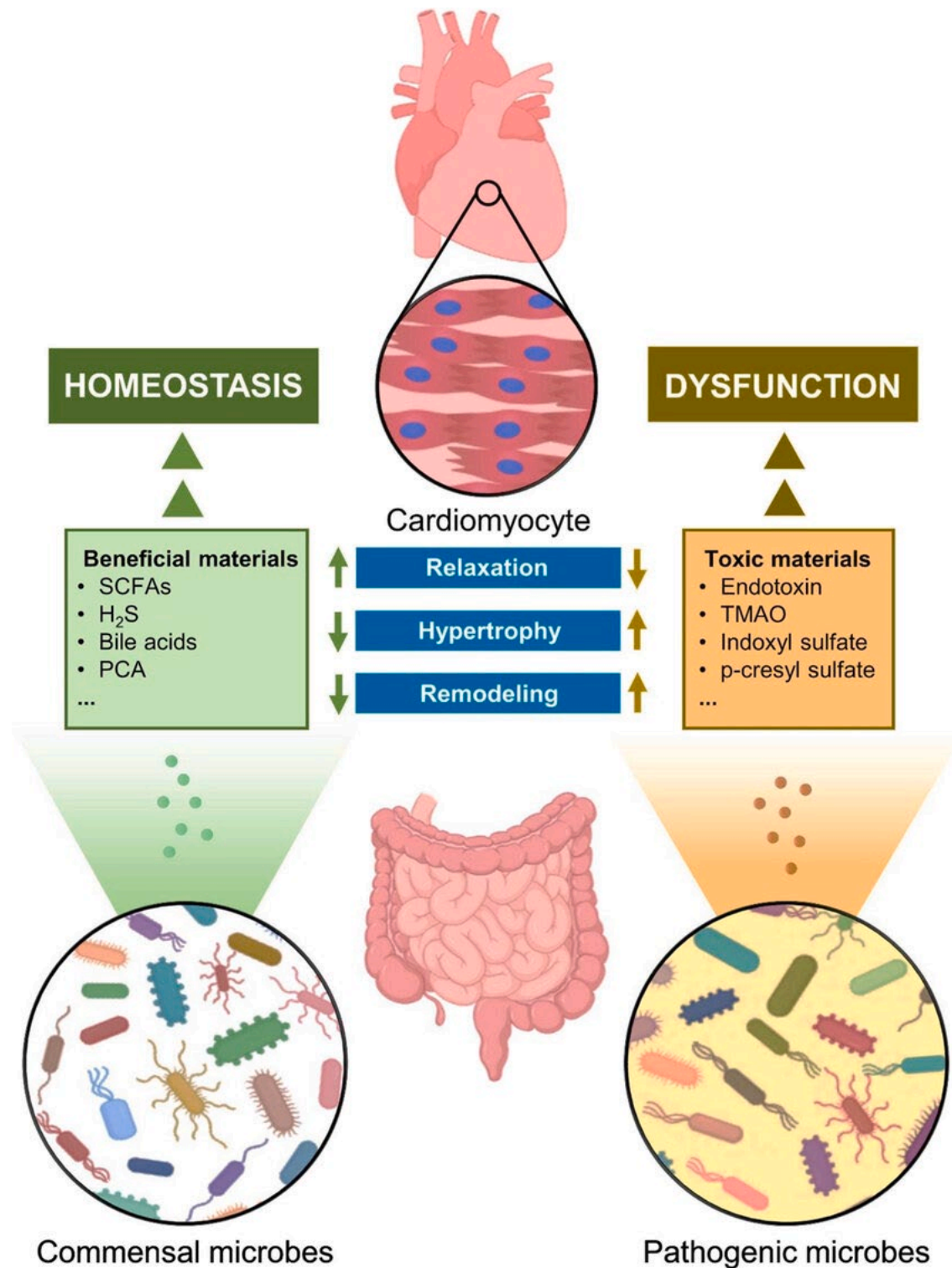
Many scientists believe that if you Fix the Gut... you Fix the human...through the multiple interconnections of various "axis" like that shown in Figure 1:

Figure 1: Representation of a bi- or multidirectional communication link or 'axis' between gut, associated microbiota and various organs. [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



Ahlawat, S., Asha, & Sharma, K. K. (2021, June 1). Gut–organ axis: a microbial outreach and networking. *Letters in Applied Microbiology*. John Wiley and Sons Inc. <https://doi.org/10.1111/lam.13333>

Hence, we begin our journey in this White Paper (Part 1: Intact Nutrition™ (Intact Digest™ & Intact Endurance™) with Nutri-Mastic: Effect of Chios Mastic Gum (*Pistacia lentiscus*) combined with Ionic Minerals on Cardiovascular Function) with a focus on the Gut-Heart Axis:



From the illustration above, the authors tell us: "Gut-heart axis and cardiomyocyte homeostasis. Commensal and pathogenic microbes resident in the intestine can generate both beneficial and toxic substances and release them into the circulation. The beneficial substances sustain cardiomyocyte homeostasis, while the toxic agents promote cardiomyocyte dysfunction. H<sub>2</sub>S: hydrogen sulfide; PCA: protocatechuic acid; SCFAs: short-chain fatty acids; TMAO: trimethylamine N-oxide."

Ref. 1: Chak Kwong Cheng, et. al, "The gut-cardiovascular connection: new era for cardiovascular therapy" October 2021 Medical Review 1(1):000010151520210002  
DOI:10.1515/mr-2021-0002

In this White Paper we will explore emerging science that is suggesting (and in many cases beginning to prove) the effect of phytochemically active substances (like Chios Mastic Gum and ionic minerals) on the general health and well-being of humans...in mind and body.

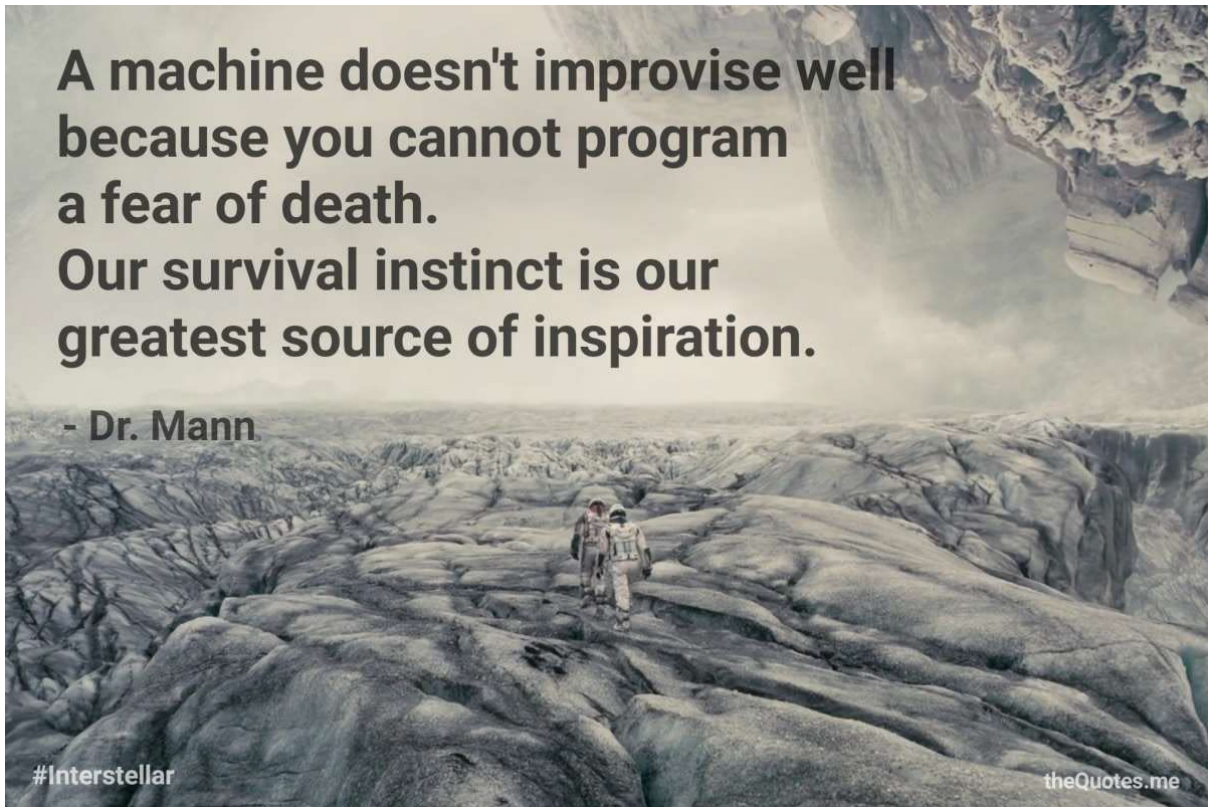
Studies like that shown above are focusing ever-more on the microbial biome of the human gut and body...and the influences these exert on human health in mind and body. This is being linked to what we eat, when we eat it, and how we eat it...as well as supplementation to ensure our "intake" of fluid and liquid is as optimized as possible...and from natural sources.

Emerging science suggests that man-made manipulation of foods and liquids is beginning to be connected to sources of human disease. Hence, the search for more natural alternatives is gaining focus...and that includes the soil, the plant, the animal, and the human.

Yet, for now we focus on the Human Cardiovascular System and a deeper exploration into the notion of Fix the Gut so we can Fix the Human.

As a learned colleague (who uses and supports others in the application of the Intact Digest™ line) recently shared with us, "So I will say that grandmas would tell the women in the family the way to a man's heart is his stomach. So, your science in the email provided is that ideology and thesis statement!" And, with that we add that maybe what Grandma meant was, "The way to a man's heart-health is through his gut!"

However, before we proceed, let us be reminded of a notion from a work of fiction (Interstellar-2014) that reinforces The Prime Directive of Human Survival:



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