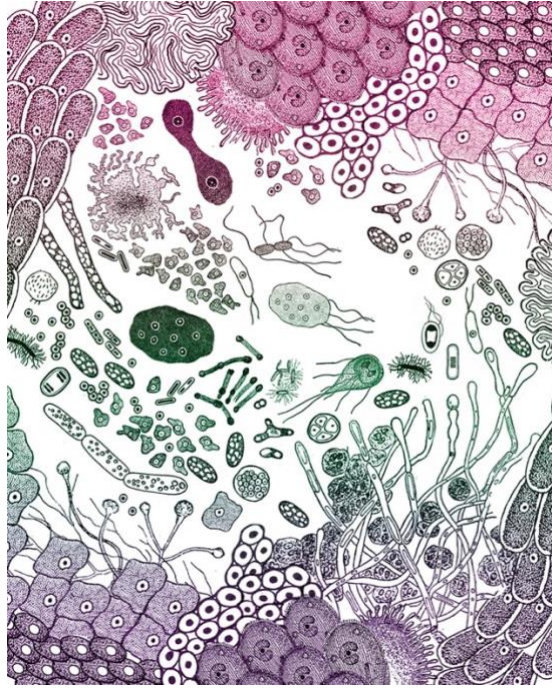


CLINICAL PEARLS



Source: [Microbiome](#) by Casie Wilson

SYMBIOSIS, MICROBIOTA, AND THE FULLNESS OF LIFE

Reference: *The Theory of Endobiogeny*, volume 2, chapter 5: [Symbiosis](#)

SUMMARY: This conversation discusses symbiosis and dysbiosis. The starting point is volume 2 of *The Theory of Endobiogeny*, chapters 5 and 6. Drs. Augusto Fronza and Kamyar M. Hedayat explore the concept of intelligence, symbiosis and the possible role of mitochondria in intelligence. Clinical exam findings, biology of functions indexes, and simple treatment options are discussed: medicinal plants and diet. The discussion is free-ranging, addresses microbial endocrinology, what causes the light of the eyes to dim as we age, and the optimal duration of breast feeding.

LIFE REQUIRES SYMBIOTIC RELATIONSHIPS: MITOCHONDRIA AND EUKARYOTES

AF: How well established is the proposition that the microbiota are an [essential aspect](#) of the human development? Is it really necessary to have such a [great number of microbial organisms](#) in us?

KMH: Well, from an evolutionary perspective, the organismic expression of life—just the material

existence of complex eukaryotic life required some type of symbiotic relationship early on in the development of unicellular beings. It took a woman ([Lynn Margulis](#)) to really understand this hypothesis and prove it, because the life of the woman is about symbiosis owing to child bearing capabilities. The mitochondria were a separate type of being, creating symbiosis with unicellular organisms.

AF: Right, but wouldn't the baby inside the mother be more like a parasite than (a symbiotic being)?

KMH: It has a parasitic existence for a short period of time. And the mother's immune system develops a tolerance to the presence of this organism. But symbiosis has a mutual benefit, because from a purely organismic perspective, the mutual benefit is the ability of the mother, and by extension her male partner, to pass on their genetic material. The continuity of the material existence is benefited through the being which is gestating in the mother's pool. But to the point of eukaryotic organisms, the mitochondria, as I mentioned, were separate organisms, which fused and continue to develop early in eukaryotic existence. So, at the most fundamental level of cellular conglomeration, we "ourselves" as the human being, are constantly in a symbiotic state. The contribution of the mitochondria is that they're extremely efficient producers of ATP. How much ATP does an individual cell produce through glycolysis before cellular respiration? Two. The rest of the ATP is all produced by the mitochondria.

And the fact that mitochondria have their own genetic material, that they have their own distinct lifestyle, and they have the ability to influence the functioning of the eukaryotic cell is evidence that they are a separate organism living within the eukaryotic cell. I have a theory of cellular endocrinology where the mitochondria play the role of the manager and what would be the equivalent of the endocrine system in whole human being. But that's a discussion for another time...

HUMAN INTELLIGENCE AND MITOCHONDRIA

AF: It's quite interesting. I was reading recently an article about intelligence which says that it all comes down to the [mitochondria](#). If it's working properly, you'll be able to create thoughts and be intelligent. In a sense it's a correlation, a very big one in, in his case.

KMH: Well, I think that that observation is partially true. It's very reductionist to reduce thoughts to the material transmission of electrical impulses. Yeah. What I would say is that consciousness is a type of emergent property, which is not localizable to any specific material unit of biological function. But the conscious ability to think in a coherent way is greatly aided by the efficiency of mitochondrial function, by the osmolar flux within neurons and the electromagnetic coherence and organization of the brain. Because if you have mitochondria in the brain which are competent, but you have electromagnetic disturbance, from say, traumatic brain injury or a stroke or alcoholism, you're still not going to have efficient mental processes. So, the mitochondria are necessary, but not sufficient for efficient processes.

The other thing is that the emphasis of current scientists on the quality of thought, rather than the quality of feeling or the quality of social intelligence or emotional intelligence, is a very distinct bias towards the supremacy of mind and rational thinking as the pinnacle of the human experience. That's why in scientific literature, the brain is considered to be the most important organ, the essential organ; however, as I point out in our writings, and from my experience as an intensive care doctor, a person can be brain dead with hemorrhage or infarction of the neocortex. But as long as the brain stem and the basic regulation of cardiopulmonary activity is preserved, you can still be alive in a vegetative state. But you cannot be heart dead and brain alive. So clearly the heart, the brain is not the most important organ. Its role is to be an organizer, to be a unit of information exchange and hierarchization of principles.

And that brings us back to the notion of the microbiome, because the microbiota have their own priority and their own endobiogenic equilibrium that they seek to maintain for their own existence properly stated. They have the ability to produce these various neuroendocrine and neurotransmitter factors and excrete them through the intestinal wall or probably other areas and

influence central nervous system prioritization of the hierarchy of importance of conducting a certain type of activity, be it mating or eating or resting or whatever the case may be.

MICROBIAL NEUROENDOCRINOLOGY

AF: Kamyar, do you happen to know if all bacteria, doesn't matter the strain, do they all create serotonin and dopamine? Or, does it depend on the species?

KMH: I'm not sure what the state of bacterial endocrinology is. But I'll tell you that it is actually a developed discipline. Dr. Pejman Katiraei actually gifted me his copy of a book called [Bacterial Endocrinology](#). They were able to establish how the microbiome have their own endocrine system and how they can influence our endocrinology.

So that's why we really need to see them, as I argue in our books ([The Theory of Endobiogeny, volume 2](#), chapter 5: [Symbiosis](#)) as communal organisms, which means literally "sharing the same table," sitting at the same table, sharing life, sharing nutrients, sharing the prioritization of how the meta-organism of human being and microbiota survive together and thrive together.

AF: Yeah, I totally agree. That's why I went from the opposite side and tried to see if there was any exception to the case. I wasn't able to find an exception in mammals. They all have a specific microbiota. In lesser developed animals, they don't seem to have the same dependence on microorganisms. Ants, I found in an articles, had way less microorganisms in their bodies. They weren't sure why that was a case, but it was quite interesting.

INTELLIGENCE: HUMANS VS. OTHER LIVING SYSTEMS

KMH: I'm not sure why either, but let me share a hypothesis that others have put forward. The size of the human brain and the energy demand it requires

for its level of complex functioning, and the three layers of the brain are so energy intensive and resource intensive that the human being could never have developed to that level of complexity without having [a large number of symbiotic organisms](#) that could assist in nutrient extraction, in the production of essential material for life, such as B vitamin, for example.

AF: I was listening to your lesson on dysbiosis. Do you know if there is more bacteria inside omnivores like us or herbivores like a cow, and if there's a difference due to diet?

KMH: I'm not sure about the quantity, but I think in, in when we speak about symbiosis and relationships, it's the qualitative aspect of the relationship, which is important. This is in line with Dr. Adam Johnson's [article](#) about the qualitative nature of relationships. And this is absolutely true here. It doesn't really matter. The size of the brain itself is not evidence of intelligence. We need to understand intelligence beyond rational thinking or simple production of tools. Right? Because you say in a sense, we could say, organisms which produce tools maybe are so weak that they need the assistance of tools. Maybe it's not a sign of strength, but a sign of weakness. Is it really such a positive thing that we need to live in some type of shelter? A baboon or orangutan or chimpanzee or a bird, they don't need to build a home. Birds build nests, but they don't put roofs on the top of their nests.

So, are we superior because we're able to construct these housing units? Or, are we inferior because our organism is so vulnerable to death or wasting or the elements, that we need to have these so shelters or housing? So, the size of the brain is not even appropriate question. Think about something like an octopus, just the whole idea of where the brain is. And it has a distributed nervous system. Yeah. It has a distributed brain because every one of its tentacles is a type brain. Right? And the feeling that it has and its ability to perceive multiple streams of information far exceeds ours.

Or you look at a tree. A tree doesn't have a nervous system in the way that we think of ours, but they have sensing mechanisms and they're much more interconnected in what they now call the, "[wood wide web](#)." It's the way that the subterranean branching of their [roots creates a type of neural network](#), which is shared amongst other trees, even of different species. And we can't do that as human beings. We generally lack the ability to link up telepathically. We can't externalize our nerves and physically sew them together.

So, what does it mean to be inferior or superior? What does the size of the brain represent at the end of the day? Different organisms are adapted to different types of consciousness, different types of activities, different types of ways of expressing life. And they simply need to have the proper endobiogenic fit of the microbiome in order to successfully partner together to express life.

AF: I can see what you're saying. It very...hmm...

EVALUATING RESEARCH ON THE MICROBIOME

AF: How does one evaluate an article that comes to a conclusion that the microbiome can be beneficial or detrimental to us when the methods follow the ordinary methodology of research and not endobiogenic thinking?

KMH: A lot of the research, especially that done in the last 20 years, still continue to follow the [pharmaceutical model](#) of looking at an individual strain of microorganism and trying to use it in a pharmacological way, to "cure a disease" or resolve some type of I balance. And, my observation has been that the results in published literature have been mixed. They've been largely biased by small sample size. And my empirical observation in clinical practice is that using a mono strategy of a single strain of bacteria, or a fungus like *Sacharromyces boulardii*, works [some of the time](#), but [not as often](#) as one would anticipate that it should.

From an Endobiogenic perspective, we would say that supplying a certain type of microorganism is

neither necessary nor sufficient in most cases. When you supplement with microbial organisms they pass through. They don't stay in the GI tract for more than 24 to 36 hours. They have a very short half-life, if you will, of activity. The other thing is that the intestinal tract, for example, or any other tissue is submitted to the global priorities that the organism manages through the endocrine system. So, unless you have some type of very clear local demonstration of disease, most people's disorders have both a local level of tissue dysfunction and systemic dysfunction. But let's say somebody has recurrent urinary cystitis. There, there may be some anatomical issues, such as kinking of the urethra, or, hygienic issues. Or, there could genetic polymorphisms where the mucosal defense system is not as efficient in that area. But more often, in addition to that, there's the influence of a pro-inflammatory diet. There's the harmful influence of pelvic congestion and stasis of nutrients, which allows bacteria to overgrow, right? There's the influence of the neuroendocrine terrain and pro-inflammatory mediators. There is the quality of renal emunctory function and the amount of acidic waste products that are presented to and that dwell within the bladder. So, there's all these other factors that need to be taken into consideration. And it's only some of the time that simply changing the microbiome is both necessary and sufficient.

In conclusion, I would say that reading the articles or performing research in this field can be helpful if it's part of a larger construction of a worldview of a multifactorial approach where microbial organisms are one tool, amongst many others, that when combined synergistically according to the endobiogenic terrain of the individual.

MEDICINAL PLANTS FOR CORRECTION OF THE FLORA: AN ENDOBIOGENIC REFLECTION

AF: Right. Like when we use, for example, *Mentha piperita* or *Plantago major*, that tends to equilibrate the flora, how long should one way to see like effects or to see the decrease on symptoms associated with these issues?

KMH: Well, that depends on how well selected the plants or plants are. For example, in some people, a plant like [Juglans regia](#) is more efficient re-equilibrator than [Plantago major](#). That would be the case in somebody who has pancreatic insufficiency, exocrine and endocrine, where there's insufficient breakdown of nutrients from the diet. The excess exposure of the nutrients further down the small intestines is playing a role in bacterial overgrowth. So, in that case Walnut, which is very as stringent and has these antimicrobial properties and is a dual pancreatope, will prove to be more efficient than *Plantago major*.

But assuming that you have selected the right plant or plants for the individual patients, the more acute the microbial imbalance is, the less time you use them. So, let's say somebody has acute food poisoning, you could use the plants for three or four days to resolve the issue. If it's subacute, maybe use it for two to four weeks. If it's chronic or chronic recurrent, you may need to make it part of a six month strategy along with dietary changes to allow for pancreatic rest or pancreas sparing diet for a prolonged period of time, until you resolve the imbalance in the terrain.

DYSBIOSIS: PHYSICAL EXAM FINDINGS

AF: What indexes or clinical findings would be related to addressing the terrain of dysbiosis?

KMH: The clinical history and exam are still the best way to determine the presence of some type of microbial imbalance in the digestive tract. Determination of where the imbalance is in the digestive tract can be simply determined by the onset of symptoms. For example, as we talk about [in our books](#) (*The Theory of Endobiogeny*, [volume 3](#) and [volume 4](#)), if bloating or gas occurs within the first 20 minutes of eating: it's in the proximal small intestine. If it happens within an hour, then it's it further along in the small intestines. If it's occurring three or more hours after even the meal it's at the ileocecal junction, or, beyond, in colon.

Intestinal dysbiosis can be ascertained through pain on deep palpation of the dysbiosis point in the paraumbilical region, and, a white coating on the tongue. Raised red papules on the tip of the tongue is a sign of small intestinal inflammation. This could support a suspicion of intestinal permeability—what the Chinese call, “excess heart fire.”

AF: Who came up with these examination findings, like tenderness around umbilicus?

KMH: Well, as far as I know, Dr. Durauffourd made these associations.

DYSBIOSIS: BIOLOGY OF FUNCTIONS INDEXES

AF: In your experience, do you find it to be very precise?

KMH: Yes. But remember, bacterial overgrowth is not equivalent to symptoms. If symptoms are present, and there are signs of bacterial overgrowth, then you have, uh, the evidence you need to address the endogenic equilibrium within the intestinal tract, focusing with emphasis on the microbiome. Having said that, when considering, what should be the point of emphasis, there are certain indexes that can help. So, as you mentioned, the somatostatin index (c.f. the lecture *Indexes of the Somatotrophic Axis*, [part 1](#) and [part 2](#)) can be used to look at pancreatic insufficiency. The corrected apoptosis index (c.f. the lecture *Indexes of the Somatotrophic Axis*, [part 1](#) and [part 2](#)) when it's elevated in my interpretation based on Dr. Durauffourd's discussion of this index would be suggestive of a chronic low-grade infection, or some type of problem where the organism keeps using apoptosis, which by the way, can be stimulated by the mitochondria to kill off the cell because it's been infected. So, when I'm considering some type of low-grade infection, I'll look at the, the corrected apoptosis index. And actually, one of the plants I like to use when that index is elevated is from your country—Uña de Gato, Cat's claw (*Uncaria tomentosa*). It's very efficient in these types of cases.

DYSBIOSIS: DECOCTIONS, TISANES AND TINCTURES AND EFFICIENCY OF TREATMENT

AF: All right, cool. Yeah. I'll start using it more often. Here there are some plants that are easier to find and less expensive (than others for treating intestinal dysbiosis). For example, *Juglans regia* is 50% less expensive than *Plantago major*.

KMH: Especially when you have somatostatin index high or low, and the apoptosis corrected index is elevated, if you make a decoction of the hull of the walnut and the bark of Uña de Gato you have an extremely effective treatment regimen which costs very little money. Of course, the leaf *Juglans regia* is also effective. And, of course, using it as a tincture is also very effective, but it costs more.

AF: But in case of a decoction, does it take longer to treat the patient?

KMH: No, just the opposite. If I'm treating primarily an intestinal disturbance, I prefer to use a tisane or decoction, unless the patient says otherwise, say, because they travel, or they don't have time to prepare it on a daily basis. But I encourage my patients to make a day's worth of the decoction, either the night before, or, in the morning, and to use it throughout the day in three or four divided doses. The total dose is 1 liter, taken before meals and before bed. It is very efficient.

AF: All right. Okay. I thought there was a difference in efficacy using a decoction, as compared to a mother tincture or dry extract.

KMH: Well, the decoction is less concentrated, but you're taking one liter per day, as opposed to 10 or 15 milliliters per day (in divided doses).

DYSBIOSIS: DISEASES OF AGING AND A DULLNESS IN THE EYES

AF: That makes sense. There is a [graph](#), in *The Theory of Endobiogeny*, Volume 2, in the chapter on dysbiosis. It shows the evolution of the microbiota from when you're a baby to old age, and the onset

of diseases. And as we grow older, the diseases come as well. Of course, there's like all this entanglement. That's why I wonder if you could change the microbiota to be more like that of a pattern of a younger person, would you have a healthier person as well?

KMH: I don't suspect it. The infant, evolutionarily speaking, was evolved to exclusively consume human breast milk. And so, the microbiota develop based on exposure to different factors: first exposure to amniotic fluid, then passage through the vaginal tract, then subsisting exclusively on human breast milk, then purée or overcooked food that's easy to digest before they have fully developed digestive capabilities. So, as we age, we need different microbiota to extract and produce different nutrients. Some of the changes, of course, are pathologic. That's due to stress and non-rhythmic living and the bad choices we make in terms of alcohol consumption, the types of foods we eat, *et cetera*.

I like the way you characterize old people as becoming dull and toddlers as enthusiastic and having bliss within them. A lot of what you described in the toddlers, we would ascribe to a very strong level of thyrotropic activity: the brightness in the eyes, the bliss, the joy, the curiosity, the delight in the eyes are ascribed to a strong influenced by TRH and the general functioning of the thyrotropic axis of the child. The dulling of the eyes and the spirit of life in the elderly is, no doubt, partly due to dysbiosis, but it's also due to declining mitochondrial function—coming back to our earlier discussion—and to reduce circulatory capability, either arteriosclerosis, atherosclerosis, increasing systemic vascular resistance, or diminishing cardiac function. And then there's of course the mental and emotional life of the adult as they age, facing, as Shakespeare would say, “the outrageous slings and arrows of misfortune” over the years, all their troubles, their woes, the griefs that affects the functioning of the brain and which dulls the brightness in the eyes. In the Old Testament (Proverbs 14:30), it speaks of how envy

rots the bones and sorrow “crushes the spirit” (Proverbs 15:13)—it brings dullness to the eyes.

AF: Yeah. It's something that I can see, with my grandparents. My grandmother, for example, is a hypochondriac. She's very concerned about her health and she's always complaining. If you ask her “How are you?” It's the wrong question. She doesn't have the feeling of being glad of being alive. And that's something that I often see.

KMH: Well, I would say that the human being receives two great gifts: the first is life, and the second is death. If that becomes a great relief.

TISSUE ACIDITY AND DEGENERATION

KMH: Well, let me mention one other thing, which is not mentioned enough in our endobiogenic teachings: the general acidification of tissue as we age. The general level of acidity of tissue, be it in local pockets or more distributed, decreases the general functioning: the binding of hormones and neurotransmitters to their receptors. There's a general reduction in the efficiency of management of the terrain because of acidity.

Let me share an extreme example. When I was a pediatric intensivist, when managing a “code blue”, resuscitation of a child with cardiopulmonary arrest, there were algorithms of what medications to give and in what order, published by professional societies. But I found, despite the consensus recommendations, that one of the most important medications in resuscitating a child was sodium bicarbonate for the immediate and dramatic reversal of severe tissue acidity. It made all the difference in my personal experience. Adrenaline cannot properly bind to its receptors, cortisol cannot properly bind to receptor when there's increasing levels of acidity; and, reversing that acidity improves the ability of these key elements of the immediate adaptation syndrome to instantaneously regulate the most essential functions of cardiopulmonary function. In a less dramatic and less extreme way, subtle variations in

tissue pH are going to have this effect of gradual decrepitude and degeneration of function. Hence the dullness in the eyes as well. So, correcting acidity using less aggressive methods, such as an alkaline diet helps. Avoiding red meat, fried foods, cheese and alcohol help reverse issue acidity.

AF: I tried. It wasn't easy.

KMH: When you are young, at first, the alkaline diet saps your spirit, because you feel like you're not “living” if you're not having alcohol, meat, cheese and dessert. But then you break through to a feeling of clarity and lightness when organism is functioning in a much more efficient way.

AF: It was confusing, the alkaline diet in the book (*The Theory of Endobiogeny: [A bedside handbook](#)*) because it says it's six green apples and I wasn't sure because it's a lot six green apples on the same juice.

KMH: Well, that's one option. You can substitute green apples with other green vegetables, especially parsley, cilantro, and celery. It's one option, but you can simply do it through a dietary change.

AF: Yeah. I stopped drinking alcohol even though I didn't drink that much. I reduced my intake of red meat a lot because of what was indicated in my biology of functions, which told me to eat more, um, more grains and more. Then, I went to do the grape cure diet with my friend. I lasted three days because I started to feel very lethargic, with no energy and headaches. The next day I ate some meat. I felt incredible again.

NUTRITION THROUGHOUT LIFE

KMH: I would say that probably 80% of people need [some animal flesh](#), some of the time. Meat is an efficient form of nutrients, especially when the animals are raised in a humane way, according to the old methods, pasture raised, grass fed, and slaughtered humanely. It's a totally different meat than what we're actually eating these days. Let's conclude soon.

AF: How long do you recommend infants to be exclusively breast fed?

KMH: Well, according to the studies I read, three months confers a great amount of benefit. [Six months is better](#) than three months, but six months seems almost equivalent with one year. But in an optimal case, I would recommend infants be breastfed until around two years of age, but not beyond that.

AF: Not beyond that?

KMH: [Not beyond two years](#). But of course, around four to six months, breast milk ceases to become the primary source of nutrition. It becomes an ongoing source of supplemental nutrition beyond six months. By two years, the pancreas has

developed its full digestive capacity. The digestive capacities of the child, locomotor capabilities, the size of teeth and strength of suck and bite really make breast milk no longer a truly supplemental or necessary or even beneficial source of (exclusive) nutrition. It really becomes a type of emotional comfort.

AF: I have a patient with this kind of problem at the moment. She has a three year old boy and he wakes her up every two hours during the night. She wakes up almost like five times during the night to breastfed.

KMH: There's also that problem (of continued sleep disruption). I recommend the mother start weaning between 18 and 20 months and for the child to be fully weaned on or before two years of age. *

About the Interviewer

Augusto Barbosa Fronza, born and raised in Brazil, still a bit young in age, and a great proponent of the use and spread of endobiogenic teachings, began studying and applying endobiogeny in his daily practices about a year and a half ago. Now any new case that comes his way becomes an investigative tale which has made daily practice much more fun and interesting to have.