Epigenetics & Opportunity

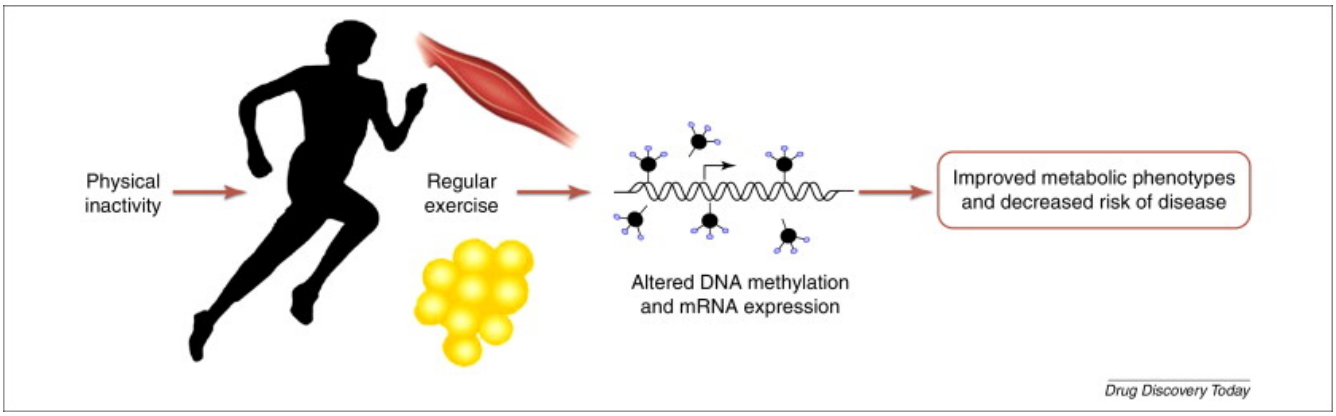
You cannot know what you're capable of until you try.

"You are the foods you consume AND the information that you digest."
— Tom Golway, chief technologist, Hewlett Packard

Epigenetics is the study of things that influence the actions of your genes without changing your genetic structure. Your genes are the protein pair sequence encoded in your DNA but how your body processes this information is epigenetic. These sequences are passed largely intact through generations. It now appears there is another possible route for inheritance. Changes in how your genes work,

independent from the genes themselves, which may also be passed on through generations (Zenk, et al., 2017).

As it turns out, what your body does is not everything your genes say, rather there are some genetic indications that are expressed while others, perhaps most others, are not. Things in our environment "turn on" or "turn off" our genes and this information is being passed down through generation. This is hypothesized to apply to all genetically-based life forms, but molecular mechanisms that control this are unknown. This is the story of epigenetics.



Our genes provide the template for the production of proteins. Proteins serve specific functions and form the building blocks of your body. There is much more than proteins to the blueprint of existence, and much more difference between each of us than can be explained by proteins alone, yet that is all we know about the function of our DNA: it provides instructions for the creation of proteins.

> "In our body we find more than 250 different cell types. They all contain the exact same DNA bases in exactly the same order; however, liver or nerve cells look very different and have different skills. What makes the difference is a process called epigenetics." (Zenk, et al., 2017)

Think of epigenetics as something in between the mechanical and the intentional. It relates to how changes that you make or experience trigger latent genetic traits. It means that you are not and you will not become everything you could be until certain things come to pass. It means, for example, that what your grandparents ate can affect your chances of developing diabetes.

This is a puzzle. It's not clear what you need to do in order to become more or less enabled. It works both ways: certain events and experiences could delay or remove abilities with which you were, are, or could be genetically endowed. It's not your genetic code that's changing, it's your body's access to it.

You are not born a blank slate, you are born as something like a puzzle box. Many of your intellectual, emotional, and physical abilities are doors that are not open, and they are not going to open of their own accord. They are triggered by events that we experience.

There are watershed events in life, things that seem to change your direction and your perception. We think of these either as matters of physical development over which we have little control or matters of

personal choice that are entirely under our control. Epigenetics now tells us that certain matters of personal choice may change us irrevocably and in unintentional ways.

There are the obvious things like health and nutrition. Your body grows and maintains itself only with your nutritional support. Growth involves genetics, but we see our body's ability to maintain itself as inborn. This is partly true as you stop maturing as an adult. To some extent, you make the choice between being lean or overweight, athletic or unfit, flexible or arthritic. These choices will feedback in enhancing or suppressing both environmental and genetic opportunities for mental change. But unlike your body, your mind has the potential to change throughout your life.

This is confusing so don't expect it to make complete sense at this point. There are genes, and genes determine proteins that play a role in your body's structure. There are experiences, mostly experiences of some kind of stress, to which your body responds. These responses are weight your genetic options. Through a process of compromise, opportunity, and exploration, your body has one genetically determined response or another. Small stresses combined with big opportunities can result in big changes. It's not a change in your genetics—which is a possibility through other means—it's a change in the expression of your genetics.

Not all of your genetic possibilities are always available. Once certain choices are made they cannot be easily unmade, or unmade at all. Your "free will,"—whatever that means—will influence the mechanics of your body and mind.

Behavior

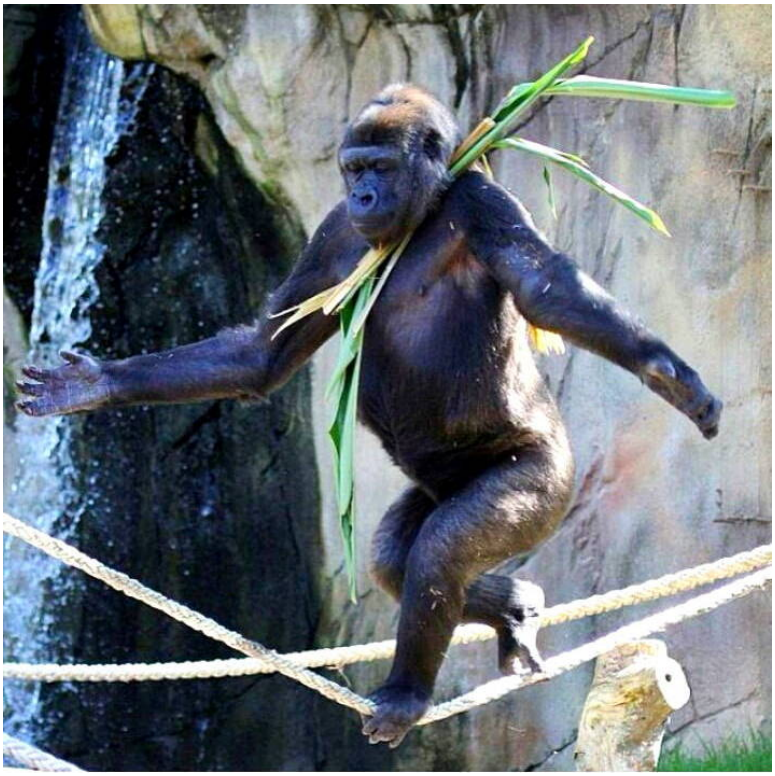
The review article “Epigenetics, Behaviour, and Health” describes epigenetic changes this way:

> “The genome has to be programmed to express its unique patterns of gene expression. Different cell types execute distinctive plans of gene expression, which are highly responsive to... environmental cues… [and] bring about a change in gene function without changing gene sequence.” (Syzf & Meaney, 2008)

Getting a suntan is an epigenetic change. Aside from certain rewards, getting a suntan doesn’t change your behavior, and it’s not passed down to your children. In the same way, sun exposure elevates your levels of vitamin D which optimizes immune function. Your levels of vitamin D are not passed on to your children, but your level of health will affect them.

Myelin is the insulating coating that facilitates the movement of nerve impulses. How nerve cells myelinate determines how your brain functions. Myelination is epigenetic. That is, it’s partly controlled by your DNA, partly by your intention, and partly by your environment. These changes are not passed to your descendants through your DNA, but they may be passed down epigenetically through as-yet unknown means. In addition, some of your behaviors will affect the DNA of your descendants, such as your choice of mate. Your choices are part of evolution.

Myelination is intimately connected with brain function and this goes both ways. That is, enhancing your brain’s function also enhances your ability to myelinate your nerves. As with exercise, practice enhances performance and performance enhances practice. You get more by having more. This is a long-term effect.



Epiphany

> “An accident left Derek Amato with a severe concussion and a surprising ability to play the piano. One theory is that his brain reorganized, making accessible existing memories of music. Another is that his brain no longer filters sensory input, enabling him to hear individual notes rather than melodies.” (Piore, 2013)

Whatever the explanation, Acquired Savant Syndrome (Treffert, 2019) involves the growth of the nervous system in an unusually organized way. Given the complexity of the system and the specificity of the result, this process cannot be entirely random. It must rely on some blueprint.

Most cases of Acquired Savant Syndrome follow head trauma. The therapist David Quigley claims his spontaneously acquired ability to play the piano was the result of his retrieving past life memories. Regardless of what that really means, there are many stories of hypnosis resulting in changes that are both psychological and somatic, as in the remission of disease, mental regulation, and restored metabolic function. Miraculous as these might be, they are, most likely, enduring physical changes mediated by changes in perception and awareness. They may not be epigenetic in origin, but they lead to metabolic changes that are maintained at a genetic level and might be passed on to some extent.

Most of the Past Life Regression sessions I facilitate explore some familiar element in an unfamiliar context. The unfamiliar context is critical because familiarity breeds limitation. This is true of hypnosis in general, and is more true in hypnosis than other forms of psychotherapy. The result is not new personalities but new opportunities. What’s crucial is that these are self-sustaining changes. You do not

need to change your behavior, remember your decisions, or recite your mantra, you are changed physiologically. Recovery proceeds automatically, at a cellular level. That is to say, genetically or epigenetically.

> “Some authors have traced the effect of meditation on such effector molecules back to expression changes of the corresponding genes and, more recently, to specific mechanisms that regulate gene expression (Buric et al., 2017; Kaliman, 2019). The above observations raise the intriguing idea that mindful practices influence the body by means of epigenetics. However, at present, because of the relative novelty of the field, a unifying view of the molecular pathways underlying the benefits conveyed by meditation and a direct correlation between inner silence and specific epigenetic signatures is still lacking.” (Venditti, et al., 2020)

I do not find a strong connection between awareness and epigenetics, but I expect an indirect connection. Candice Pert (1999) connected emotions, hormones, and metabolism, but are these changes maintained epigenetically or intentionally? Is there really a difference, or are these the same things said in different ways?

My Mind, Your Mind

I believe our species has an evolving “group mind.” Imagine that our group mind develops epigenetically. This would mean that what we’re capable of as a species gets “unlocked” by the choices we make individually and collectively. If it’s possible to unlock species behavior, then what individual changes are necessary, and how many individuals need to be unlocked before these changes are remembered?

Most of us have an affinity for family and many of us, though fewer in number, aspire to be part of a community. Many of my friends are interested in creating communities and feel that if the right community is created, the people will come.

I think this is putting the cart before the horse. I think one first enables the right people, and then the community creates itself. I feel, and I feel more strongly over time, that there is no such thing as "the right community" except as a collection of minds, and that whatever community might exist will not follow a pre-established model but rather an interactive need. This feels more properly organic.

Just as your plans "make god laugh," your notion of community will also make god laugh. Both are concepts that change as they grow. No preexisting plan is right for your mind or for your community, just as your future potential lies beyond your present understanding of yourself. That's the way it should be. Where the genetic blueprint adopts to the past, the "epigenetic blueprint"—whatever it is—predicts the future.

Epigenetics is all about the way a system accommodates change, not the preexisting blueprint for it. Novelty cannot be brought into being by thought alone; disorganization and your responsive to it must be included. This is where I focus: dreams, the subconscious, imagination, and the unknown.

References

Buric, I., Faria, M., Jong, J., Mee, C., and Brazil, I. A. (2017). What is the molecular signature of mind-body interventions? A systematic review of gene expression changes induced by meditation and related practices. *Front. Immunol. 8*:art670. https://doi.org/10.3389/fimmu.2017.00670

Kaliman, P. (2019). Epigenetics and meditation. *Curr. Opin. Psychol. 28*, 76–80. https://doi.org/10.1016/j.copsyc.2018.11.010

Pert, C. B. (1999). *Molecules of Emotion: The Science Behind Mind-Body Medicine*, Scribner.

Piore, A. (2013, Feb. 19). When Brain Damage Unlocks The Genius Within, *Popular Science*. Retrieved from: https://www.popsci.com/science/article/2013-02/when-brain-damage-unlocks-genius-within/

Syzf, M., Meaney, M. J. (2008, Spring). Epigenetics, Behaviour, and Health, *Allergy, Asthma, and Clinical Immunology 4*(1), http://dx.doi.org/10.1186/1710-1492-4-1-37

Treffert, D. A. (2018, July 25). Brain Gain: A Person Can Instantly Blossom into a Savant--and No One Knows Why, *Scientific American*. Retrieved from: https://blogs.scientificamerican.com/observations/brain-gain-a-person-can-instantly-blossom-into-a-savant-and-no-one-knows-why/

Sabrina Venditti, S., Verdone, L., Reale, A., Vetriani, V., Caserta, M., & Zampieri, M. (2020, August). Molecules of Silence: Effects of Meditation on Gene Expression and Epigenetics, *Front. Psychol. 11*. https://doi.org/10.3389/fpsyg.2020.01767

Zenk F, Loeser E, Schiavo R, Kilpert F, Bogdanovic O, Iovino N. (2017, July 14). Germ line-inherited H3K27me3 restricts enhancer function during maternal-to-zygotic transition. *Science*, *357*(6347), 212-216. https://science.sciencemag.org/content/357/6347/212

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