**Essay #3 Prompt – Nature, Nurture and Freedom**

So, one of the big takeaways from our study of epigenetics is that there isn’t such a big divide between the forces of nature (genetics, in this case) and those of nurture (environment). In fact, they are completely inter-tangled. We learned and saw, over and over again, just how profoundly the environment and the experiences one has in a lifetime can influence the expression of one’s genes, epigenetically. So, for me, the question of freedom comes up. If my cells have a “program” that is influenced by my surroundings and everything I do or encounter effects the way my genes are expressed and therefore, my phenotype, what does that mean for consciousness? Does consciousness work the same way? Are my thoughts, my identity, my ability to reason, to think creatively or abstractly all simply the manifestation of this interplay between genome and environment? How much of me, if any, is independent from this dynamic relationship? Consider the quote I read in class:

“It's a puzzle — the deepest puzzle I know. The question is: What are we?

One [answer](http://nautil.us/issue/16/nothingness/my-own-personal-nothingness), from physicist-novelist [Alan Lightman](http://cmsw.mit.edu/profile/alan-lightman), is we are stuff. Just stuff.

‘Let me explain. A highly unpleasant idea, but one that has been accepted by scientists over the last couple of centuries, is that we human beings, and all living beings, are *completely* material. That is, we are made of material atoms, and only material atoms. To be precise, the average human being consists of about 7 x 10^27 atoms (7,000 trillion trillion atoms) — 65 percent oxygen, 18 percent carbon, 10 percent hydrogen, 3 percent nitrogen, 1.4 percent calcium, 1.1 percent phosphorous, and traces of 54 other chemical elements. The totality of our tissues and muscles and organs and brain cells is composed of these atoms. And there is nothing else. To a vast cosmic being, each of us would appear to be an assemblage of atoms. To be sure, it is a special assemblage. A rock does not behave like a person. But the mental sensations we experience as consciousness and thought are purely material consequences of the purely material electrical and chemical interactions between neurons, which in turn are simply assemblages of atoms. And when we die, this special assemblage disassembles. The total number of atoms in our body at our last breath remains constant. Each atom could be tagged and tracked as it subsequently mingled with air and water and soil. The material would remain, scattered about. Each of us is a temporary assemblage of atoms, not more and not less. We are all on the verge of material disassemblage and dissolution.’

OK. But poet-writer [Diane Ackerman](http://www.dianeackerman.com/about-diane-ackerman) wonders, how do atoms, inert spinning clumps of matter, produce the feeling, the deep feeling of being ... me?

‘After all, the mind is such an odd predicament for matter to get into. I often marvel how something like hydrogen, the simplest atom, forged in some early chaos of the universe, could lead to us to the gorgeous fever we call consciousness. If a mind is just a few pounds of blood, dream and electric, how does it manage to contemplate itself, worry about its soul, do time-and-motion studies, admire the shy hooves of a goat, know that it will die, enjoy all the grand and lesser mayhems of the heart? What is mind, that one can be *out of one's?* How can a neuron feel compassion? What is self? Why did automatic hand-me-down mammals like our ancestors somehow evolve brains with the ability to consider, imagine, compare, abstract, think of the future? If our experience of mind is really just the simmering of an easily alterable chemical stew, then what does it mean to *know*something, to *want* something, to *be?* How do you begin with hydrogen and end up with prom dresses, jealousy, chamber music?’

Yes, how do you? There is no deeper puzzle.”

So…I guess what I’m wondering is…if there is more to you than jus the whirring of atoms, the interplay of the “forces” previously described…how do you know? Can you prove it? What is that’s you that isn’t just matter or the manifestation of matter and environment interacting? Are we free human beings? Can we make a decision that isn’t the reaction, the impulse or consequence of matter interacting? Or, is there nothing ascribable to an individual outside the realm of matter and it’s interactions? Is there a way to separate who we are, materially from who we really are, our sense of self, the soul, whatever you want to call it? Could the soul be produced by matter? Could it our sense of self somehow be intricately linked with the material world?

Anyway, these are the questions that arise for me when I study this stuff. I’d like you all to take some time to reflect on this block and relate to your ideas around what I’ve just discussed. Feel free to deviate, see where this process of reflection takes you, this is an open piece.

AND, what questions about genetics remain for you? In relationship to what we’ve covered, what would you like to study further?