supports for neural integration in therapy and our personal lives. Now we have a new window into the even deeper foundation of what enables us to create and transform our individual existence.

Epigenetics is one of the ways that the body writes down and memorizes our ongoing life experience. What we do, when we do it, and how we feel about it while we are doing it contribute to the way experience utilizes the building materials in our DNA to construct the person that we see in the bathroom mirror and in the mirror of our friends, family, and loved ones. As the wise old acupuncturist said to the mystified Westerner as he inserted needles for headache into the hand and for kidney problems into the feet, "What? You crazy? Look! All connected!"

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Gene Plasticity and Making Memories

Memory formation and consolidation require us to create new synaptic connections and even new neurons in what we now call "neuroplasticity." Research from Miller and Sweatt (2007), from the University of Birmingham, shows that there is also a dynamic, activity-dependent plasticity at the genetic level. In experiments with rats (humans are so difficult when it comes to electric shocks and vivisection), they found that the *PP1* gene that *inhibits* memory formation is generally set to the ON or epigenetically unmethylated state. An essential gene for memory formation and consolidation, *reelin*, is generally set to the methylated OFF state. We can't be remembering everything at once or our brains would explode! Memory formation was turned on when the rats were remembering context and location when given electric foot-shock. *PP1* was silenced by methylation, and *reelin* was unmethylated, allowing its gene expression. Within a period of 24 hours, both genes returned to their baseline methylation state. This shows that epigenetic changes can occur dynamically, in response to activity (stimulus), and that as conditions evolve, the epigenetic change is reversible.

When we ask a client, "What's been happening?", through both behavior and words, they "speak" about the things they remember. What they offer tells us what they consider to be contextually relevant in their lives. We are listening to the verbal, physical, and gestural representation of their mental state—both explicit and implicit. Since explicit and implicit memories are formed using the same processes of neuroplasticity, the determining factors are which cells and where in the brain memory-forming gene expression and epigenetic plasticity is expressed. Also amazing is that this is happening at a single-cell level, so some parts of our brain can be remembering and others not, depending on need, stimulus, and other factors. Exactly what this all means only time and research will tell. I hope that you are as keen as I am to stick around and find out!

Miller, A. M., & Sweatt, J. D. (2007). Covalent modifications of DNA regulates memory foundation. *Neuron, 53,* 857-869.