

## **The Center For Modeling Optimal Outcomes® LLC**

*“The Think Tank for Creativity & Innovation”®*

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# **Understanding the Epigenetic Model for Homeostasis (EMH)**

*Explaining why genes “turn on and off”*

Because the Epigenetic Model for Homeostasis (EMH) is transformational with regard to the assessment of correlating relationships between substances in the body, the concept and terminology may be somewhat confusing. This is important as it pertains to people who are familiar with conventional biology and DNA research.

To overcome misunderstandings with regard to how the EMH will impact research and personalized medicine, we have prepared the following metaphors applied to the navigation systems of NASA’s Space Shuttle:

### **Establishing & Maintaining “Balance”**

After NASA launches the Space Shuttle into orbit, from time to time, imbalances or disruptions occur which result in alterations of the desired flight path (orbital positioning / balance). These disruptions can be caused by a variety of factors (internal or external to the Shuttle’s functionality). To compensate for these imbalances, on-board computers known as the [Internal Measurement Unit \(IMU\)](#) signal the firing of thrusters to compensate and restore the Shuttle to its desired (balanced) orbital position.

In the EMH, the desired levels in the body (orbital position) are the homeostatic relationships between genes and all of the body’s compositional substances. The “thruster” is what the EMH refers to as a modulator. Simply, the science of epigenetics identifies “genes” turning “on and off” but had not identified the explicit reasons for that process.

The EMH has enabled The Center’s Life Sciences group to identify the compositional components of many of the function-specific signaling molecules that engage the “thrusters” (modulators) to activate. Medical research has already identified outcomes where signaling should occur but does not as well as the consequences that result when signaling remains “on” beyond its desired length of activity (i.e. over expression).

### **Determining the correct “orbital position” (The Center’s Modulated Pairs (MPs))**

In order to measure, monitor and correct deviations from a desired “orbital position,” one must first establish that position. To determine the correct positioning NASA uses [Star Trackers](#). Star Trackers analyze the location of the Shuttle based on a fixed calculated architecture (mapping) of specific stars. Star Trackers identifies the location of the shuttle in comparison to specific [pairs](#) of the “mapped” stars to determine deviations from the desired orbital position. These deviations

are communicated (signaled) to the IMU which commands the thrusters to correct (modulate) the Shuttle's position. An essential component of The Center's EMH utilizes an analogues model to establish, and monitor levels of essential substances in the body; Modulated Pairs (MPs).

Modulated Pairs (MPs) are the cornerstone and architecture of the Epigenetic Model for Homeostasis (EMH). The principles of the EMH state that the substances within a MP must be "in balance" in order to maintain "wellness" within the body.

MPs are a specific configuration of substances in the body which include minerals, proteins, peptides, enzymes, hormones, lipids (e.g. fatty acids), carbohydrates, amino acids, vitamins and neurotransmitters.

The establishment of MPs has enabled the EMH to be applied to specific illness and disease states through its application to third party, verifiable, published scientific studies. This research correlates the disruptions between specific substances (found in MPs) to involvement in a particular disease or illness. As a means of explaining these findings, we have prepared detailed "briefs" that can be shared.

While far more complex than the Star Mapping of NASA (due to the interrelation of many MPs), over 50 MPs have been defined, documented and incorporated as an integral part of The Center's portfolio of intellectual property.

### **Pathway to Personalized Medicine (Epigenetics, Theranostics & EMH)**

Epigenetics has evolved as the future for medical research because DNA does not address all of the compositional substances in the body (e.g. carbohydrates and minerals). Accordingly, while DNA will play a role in future research, the full potential for the identification of causal paths of illnesses and diseases will be involve epigenetics.

The evolution of personalized medicine will be driven by what is known today as epigenetics, [theranostics](#) and a third component used to assess the correlational aspects between all of the body's compositional substances; the Epigenetic Model for Homeostasis (EMH).

Coupled with the use of computational biology to assess MPs, the universal applicability of the EMH will enable mapping and testing of essential substances in the body, a critical process for the evolution of personalized medicine.