Most of our epigenetic modeling based on the foundation of quantum mechanics is theoretical physics due to the scale and lack of validation studies.

Physical chemists understand and apply relationships between elements; i.e. agonistic (binding), antagonistic (opposing) and transitional (modulating in terms of "ground" discovered by Nikola Tesla in alternating current). With that said, the lack of validation of these interactions between elements has been basically non-existent; e.g. except for 2009 research for sodium - potassium.

Despite these facts, our findings for elements as the foundation for cytokines, has enabled us to use "theoretical chemistry" in our work.

Refer to the following for discussion purposes:

http://www.mcfip.net/upload/Cell%20Surface%20Signaling%20Molecule%20Formation%207-2017.pdf

The results speak for themselves; i.e. proof-of-concept as outlined in the tabs for Discoveries and Examples and Modeling in Progress on the website www.MCFIP.net. In essence, we have the ability to identify the near certain primary causes of chronic diseases; a feat not replicated elsewhere. That being said, the lack of validation for interactions between elements has forced us to wait for studies to emerge slowly. To adjust for this pitfall, the MCFIP website uses hyperlinks that can be added to provide interested parties with immediate access to studies that convert our theoretical modeling to fact-based reality.

We assert that the agonistic process of binding of elements will form a compound and the binding of amino acids will form kinases or plaques. In terms of compounds, common examples would include calcium and phosphorus, fluoride and calcium, lead and calcium; etc. Optogenetics is proving that light energy can "deconstruct" molecules that have "fused."

The discovery outlined in the following article "breaks the rules" because it validated agonistic relationships between elements that can form compounds. In terms of cellar activity, if calcium and phosphorus "bind" the hybrid molecule can enter cells and displace magnesium; making the cell "calcified."

Any cellular biologist can use bioinformatic search to identify the vascular implications of "hardening of the arteries."

Albeit highly technical, in our opinion, the weight of the elements is unlikely to prevent the interactions that can occur within cells or they cell surface counterparts that include amino acids for on-off-transitional activities. These cell surface "transcription" molecules can enter cells as needed to maintain DNA repair through the mechanism of endocytosis. The following is provided for discussion purposes relative to this cellular mechanism.
http://www.mcfip.net/upload/Endocytosis%20Modeling%204-30-17.pdf

https://phys.org/news/2017-10-heavy-chemical-elements-theory-quantum.html

Breaking the rules: Heavy chemical elements alter theory of quantum mechanics

October 3, 2017 by Kathleen Haughney

A series of complicated experiments involving one of the least understood elements of the Periodic Table has turned some long-held tenets of the scientific world upside down. Florida State University researchers found that the theory of quantum mechanics does not adequately explain how the heaviest and rarest elements found at the end of the table function. Instead, another well-known scientific theory—Albert Einstein's famous

Theory of Relativity—helps govern the behavior of the last 21 elements of the Periodic Table.
Note: Einstein had two major theories; the Theory of Relativity and the Theory for Photoelectric Effect. The difference can be discussed with interested parties but the second one is related to physical chemistry based on the Theory of Relativity where light passing through matter can change molecular structure. The interaction of these two theories is the foundation for optogenetics and, using natural light absorbing substances such as opsins in place of LEDs, it is photopharmacology.

This new research is published in the *Journal of the American Chemical Society*. Quantum mechanics are essentially the rules that govern how atoms behave and fully explain the chemical behavior of most of the elements on the table. But, Thomas Albrecht-Schmitt, the Gregory R. Choppin Professor of Chemistry at FSU, found that these rules are somewhat overridden by Einstein's Theory of Relativity when it comes to the heavier, lesser known elements of the Periodic Table.

"It's almost like being in an alternate universe because you're seeing chemistry you simply don't see in everyday elements," Albrecht-Schmitt said.

The study, which took more than three years to complete, involved the element berkelium, or Bk on the Periodic Table. Through experiments involving almost two dozen researchers across the FSU campus and the FSU-headquartered National High Magnetic Field Laboratory, Albrecht-Schmitt made compounds out of berkelium that started exhibiting unusual chemistry.

They weren't following the normal rules of quantum mechanics.

Specifically, electrons were not arranging themselves around the berkelium atoms the way that they organize around lighter elements like oxygen, zinc or silver. Typically, scientists would expect to see electrons line up so that they all face the same direction. This controls how iron acts as a magnet, for instance.

However, these simple rules do not apply when it comes to elements from berkelium and beyond because some of the electrons line up opposite of the way scientists have long predicted.

Albrecht-Schmitt and his team realized that Einstein's Theory of Relativity actually explained what they saw in the berkelium compounds. Under the Theory of Relativity, the faster anything with mass moves, the heavier it gets.

Because the nucleus of these heavy atoms is highly charged, the electrons start to move at significant fractions of the speed of light. This causes them to become heavier than normal, and the rules that typically apply to electron behavior start to break down. Albrecht-Schmitt said it was "exhilarating" when he and his team began to observe the chemistry.

"When you see this interesting phenomenon, you start asking yourself all these questions like how can you make it stronger or shut it down," Albrecht-Schmitt said. "A few years ago, no one even thought you could make a berkelium compound."

Berkelium has been mostly used to help scientists synthesize new elements such as element 117 Tennessine, which was added to the table last year. But little has been done to understand what the element—or several of its neighbors on the tables—alone can do and how it functions.

The Department of Energy gave Albrecht-Schmitt 13 milligrams of berkelium, roughly 1,000 times more than anyone else has used for major research studies. To do these experiments, he and his team had to move exceptionally fast. The element reduces to half the amount in 320 days, at which point it is not stable enough experiments.

Explore further: **Chemists explore outer regions of periodic table**

More information: Mark A. Silver et al. Electronic Structure and Properties of Berkelium Iodates, *Journal of the American Chemical Society* (2017). **DOI: 10.1021/jacs.7b05569**

Journal reference: Journal of the American Chemical Society