Looking forward: picotechnology

There is extremely little research on Picotechnology it seems although we have been doing it 20 years. I was able to find these conclusiions that might support each other!

Lastly, this paper will emphasize a new field, picotechnology, in which researchers are altering electron distributions around atoms to promote surface energy to achieve similar increased tissue growth, decreased inflammation, and inhibited infection without potential nanomaterial toxicity concerns.

A potentially less toxic method that is used to increase tissue growth and create the next generation of tissue engineering materials is to use Picotechnology. Picotechnology is a new term used to describe the control of electron distribution around atoms, so as to provide desirable properties. Having control over electron distribution may greatly change surface energy and, thus, the way that proteins adsorb onto a material. Therefore, through the excitement or rearrangement of electrons around atoms, one has the ability to influence many cellular functions including cell movement, intracellular transport to organelles, adhesion, growth, and ECM formation.

The promise of picotechnology.

Despite the promise of picotechnology, relatively little research has been conducted in this field. The control of cellular microtubules (MTs) through picotechnology is extremely interesting to consider. MTs s are cylindrical cellular formations 25 nm in diameter, and they are made out of tubulins. Dynamic instability due to MT plus end-binding proteins, also called “plus end-tracking proteins”, are able to “surf” the dynamic ends of MTs. According to recent reports, when tips are expressed as green fluorescent proteins, the fluorescence is the brightest at the MT and decreases in intensity toward the minus end of the MT, forming a comet tail. It is envisioned that one could use external stimulation to excite the MT and end-binding proteins to promote the movement of cells using picotechnology. This may be a less toxic manner through which to alter surface energy to increase tissue growth since electron distributions can be changed for numerous macro-, micro-, or nanomaterials.

Future strategies may also include the use of picotechnology instead of nanotechnology to reduce the toxicity since electrons can be excited in any macro-, micro-, or nanomaterials. The change in electron distribution, along with the associated charge redistribution, can alter surface energetics to change the adsorption of certain proteins (as well as cellular functions).

Conclusion 2 from 2nd paper!

The concept of pico scale of measurement in physics, environment, biology and chemistry is highlighted with examples of metal ions, climatic conditions, and bioassemblies. The integrated monitoring using picoscope and monitoring oscilloscope for use in proteins linked with metals in supramolecular macromolecules is described with potentials of picomolar science. The temperature, humidity and electricity and their regulatory factors play a significant role in biomedical, automotive actions of biomolecules in the environment. The proteins and their regulatory metal cofactors play a significant role in structural-functional actions of biomolecules in the body. Picodevices have paved the way to determine minute amounts of metabolites, hormones, nucleotides. Picochips and pico-inspired biological applications remain further attraction in future. Overall picotechnology remains to see as most powerful computation device in data simulation in physical, biological, engineering and environmental applications