



## Digging Deeper: Q & A with Medical Pioneers

### Facilitator

Erica Orange, Executive Vice President & Chief Operating Officer, The Future Hunters, U.S.

### The Brain Skin Connection

Claudia Aguirre, PhD, Neuroscientist and Mind-Body Expert, U.S.

### The Latest with Stem Cells

Dr. Abraham Franklin, Founder, The Franklin Group, Mexico

### The Brain-Skin Connection: Claudia Aguirre, PhD

Stress can cause chronic inflammation which manifests itself in the skin, and can: Increase oil production; inhibit barrier repair; stimulate histamine release; make skin more sensitive; and lead to brittle, peeling nails, and hair loss. Underlying much of this, too, is the brain-skin-gut connection. Modern medicine has had a history of compartmentalizing the body into disconnected body parts. But now, some of the long-dismissed beliefs about how the body and mind work together bear closer reexamination. This scientific holistic approach, including reading the skin for cues to internal health, can be a new key to health and beauty.

This is leading to the emerging field of *psychodermatology* (psychiatry + dermatology) - a new medical subspecialty that couples our understanding of the mind and our understanding of the skin, to better understand and treat skin disorders. Psychiatry treats mental processes manifested internally, while dermatology treats skin diseases manifested externally. Psychodermatology is broken out into three main categories:

- *Psychophysiologic* Disorders (e.g., eczema, acne)
- *Primary Psychiatric* which refers to problems arising in the mind, and resulting on the skin (e.g., delusions of parasitosis; trichotillomania; skin lesions).
- *Secondary Psychiatric* which refers to diseases of the skin that cause so much distress, that they can trigger significant psychological problems (e.g., cystic acne; psoriasis; vitiligo; alopecia).

Lastly, humans have a deep emotional connection to touch, which is housed in the brain. Skin is a “social organ.” Much of today’s society is touch-deprived. Through touch, we can create a more connected and compassionate world, beyond the immediate effects of reducing individual stress.

### **The Latest with Stem Cells: Dr. Abraham Franklin**

Transhumanism, longevity and stem cells were the central themes of this discussion. Many physical ailments arise out of aging, and interventions to slow, stop, or even reverse aging will be aimed at maintaining health. The transhumanist movement is dedicated to stretching our notion of basic health beyond its traditional limits. The cutting-edge biotechnology and regenerative medicine company, INDEBIOC, based in Mexico, is doing a lot of groundbreaking work in this area.

The 2012 Nobel Prize for Medicine was jointly awarded to Sir John B. Gurdon and Shinya Yamanaka for the discovery that “mature cells can be reprogrammed to be pluripotent” (which means that cells can be capable of giving rise to several different cell types). Much of this is guiding current-day stem cell research. For instance, there have been tests done on paralyzed patients to help them walk again using stem cells. Stem cell differentiation is also a key aspect of this work. Referred to as the “fountain of youth,” stem cells can help reduce inflammation, which is considered a major factor in aging.

There is also a lot of work being done around Dental Pulp Stem Cells (DPSCs) – stem cells that have the potential to differentiate into a variety of cell types. Tests at INDEBIOC have indicated that these cells could aid in treating spinal cord injuries, macular degeneration, diabetes, Parkinson’s, Alzheimer’s, ALS, periodontal disease, and brain strokes. Stem cells will also be used to treat skin-related issues (e.g., breast augmentation, scar remodeling, soft tissue regeneration).

In the future, we will see:

- Tissue reengineering and transplantation from donor tissue.
- Growth factor serums created for the skin using stem cells (e.g., collagen and elastin fibroblast production).
- Stem cell storage: With the idea being that more people will store their cells in a bank.
- Bioprinting: Using 3D printing techniques to print skin, kidneys, blood vessels, cartilage, bone, cornea, muscle, etc.

### **Fast Forward: What This Will Mean in the Future?**

The rapidly evolving field of synthetic biology (synbio) is rampant with competing definitions. Some think of it as the design and construction of new biological entities; others prefer a more vast definition that includes the redesign of existing biological organisms. But what it boils down to is a growing effort to make biology easier to manufacture, manipulate and reprogram through a convergence of advances in biology, engineering, chemistry, robotics and computer science. In many ways, we ourselves are entering a new era of modular biology. Humans of tomorrow (it’s

already happening today) will be able to mix and match their own biology, not only to suit them (e.g., cosmetic augmentation, enhancement) but also to save them. We are approaching new and exciting frontiers in implantation, transplantation, genetics, neurology and medicine – the likes of which we’ve never seen before.

And much of this will be individualized – for example, 3D-printed organs and bioengineered probiotic therapeutics. It’s also designed to potentially help people avoid disease and/or live longer. But how long are we really meant to live? It’s a philosophical question that can’t be easily answered. Researchers like biomedical gerontologist Aubrey de Grey are actively pursuing “immortality”...or at least a gradual cessation of the aging process. If people live for closer to 150 years, as an example, where will we literally keep everyone? We are already overcrowding our cities, and that will only become a bigger issue by mid-century. It may also usher in the need for more wellness-focused communities across a very wide age spectrum.

**Submitted by:**

Name: Erica Orange

Company: The Future Hunters

Website: [www.thefuturehunters.com](http://www.thefuturehunters.com)