Removing the Barriers for Translation of Skin Microbiome Science into Real World Applications

Thomas M. Hitchcock, Ph.D.
Chief Science Officer at Crown Laboratories, Inc. and
Adjunct Professor – Department of Biomedical Sciences at
ETSU James H. Quillen College of Medicine

The topic of the skin microbiome has captured the attention of the medical community, yet there has been minimal progress in translating all of the latest scientific knowledge of the subject into actionable therapeutic options. In my opinion as a skin scientist, this is because of a disconnect between the scientific, medical, and consumer communities on terminology, outdated philosophies, industry investment, and medical education.

1 Ambiguous Terminology

Though most of us have heard some of the terminology that is used when describing how the microbiome interacts with the human body, many indivduals are not able to accurately articulate what key terms like prebiotics, probiotics, and postbiotics are and what their relevance is to skin health. How can we have a proper dialogue if we are not all speaking the same language?

2 Outdated Microbiome Dogma

Scientists have shown that the overall effects of bacteria on the skin may not be universally attributed to any given species as a whole, but more so to specific *strains*, or *subspecies*. A prime example of this is with the species *Cutibacterium acnes*. The differences between strains of *C. acnes* have been so substantial, both genetically and phenotypically, that scientists have recently revised the naming convention and organization of strains within the species to reflect this. It has become extremely clear that while there are indeed pathogenic strains within this species, there are also *protective* strains that are essential for the health of the skin. Yet I still often observe scientific literature, medical lectures, and product advertising that completely ignore this nuance. How can we have a proper dialogue if we are not considering all of the facts?

3 Lack of Investment in Skin-Relevant Infrastructure

Many strains currently used in skincare, whether live strains or the ferments or lysates of those strains, are taken from the dairy or gut probiotics industry. Those industries have been around for many years and have a robust infrastructure in place that provides copious amounts of relatively cheap gut probiotics, ferments, or lysates as ingredients for skincare products. The real question is whether those strains can truly impact the skin, as they are not native to the skin.

Manufacturing of arguably more relevant strains, such as the protective strains of *C. acnes* or *S. hominus* (which has been suggested to help with atopic dermatitis), lacks significant infrastructure needed for mass production and would require much more time and resources to produce. How can we have a proper dialogue and move the industry forward if the major players are unwilling to take risks and invest? And how can we, as consumers, expect them to if we don't demand better?

4 A Lack of Up-to-Date Scientific/Medical Education

As a scientist who has spent the better part of two decades studying genetics, microbiology and dermatology, I have learned that when trying to convey a complicated scientific thought — to paraphrase Einstein — one should make everything as simple as possible, but not simpler. This rings true for the emerging science behind the skin microbiome and how we might harness it to create healthier and more beautiful skin. The current science is neither straightforward nor completely understood, so to make it simple without being reductive is indeed a necessary challenge.

5 Addressing the Disconnects

Crown has taken the leap to change the status quo and has been building an infrastructure in research, development, education, **and** manufacturing that will deliver true skin microbiome technologies to the market.

To bring better education to this emerging category, Crown has produced a video series titled "Beauty and the Bacteria," which addresses many of the disconnects mentioned above. The free series can be viewed at www.beautyandthebacteria.com. Anyone who is interested in the topic is invited to watch and share your thoughts and ideas on how to move the science forward.

I believe that for the medical community to truly be a resource for patients on this fascinating topic, we must take a step back, refresh on some of the fundamentals of microbiology, and relearn the skin microbiome science, which continues to progress year over year. Doing so will help us understand that some of the fundamental knowledge of skin microbiome science has evolved, and our understanding should also evolve in order to bring legitimate, whole-biome care to the market.

Any questions or comments?
Follow Dr. Hitchcock on social media at:
@dr.t.hitchcock
tmhitchcock

Sponsored by Crown Laboratories, Inc.

CROWN
SKIN SCIENCE FOR LIFE