UNDERSTANDING THE SCIENCE OF GOOD GENES COULD LEAD TO BETTER SKIN CARE PRODUCTS, RECOMMENDATIONS

*Dermatologists at the forefront of cutting-edge research in skin genomics*

SAN DIEGO (March 16, 2012) – Ever wonder why two people who are the same age may look years apart? While extrinsic factors such as sun exposure and smoking can contribute to skin aging, intrinsic factors – namely the genes inherited from our parents – can have an even greater influence on how our skin ages. Now, dermatologists are leading the way in studying the role genes play in skin aging and how this new knowledge could translate to improved skin care treatments.

Speaking today at the 70th Annual Meeting of the American Academy of Dermatology (Academy), dermatologist Zoe D. Draelos, MD, FAAD, consulting professor at Duke University School of Medicine, Durham, N.C., discussed the science of genomics (the study of genes) and why it may hold the key to improved skin care in the future.

“There is groundbreaking research underway to determine the differences between old and young genes,” said Dr. Draelos. “The hope is that by understanding how to make old genes act younger and how to keep young genes from getting old, we can better advise our patients on caring for their skin.”

**Key Findings from Genomic Testing**

With genomic testing, Dr. Draelos explained that researchers currently are looking at differences in how genes are expressed in older and younger skin and how certain ingredients may affect those genes. Dermatologists also are gleaning important information from research in the field of epigenetics, which is the study of how genes are expressed. For example, Dr. Draelos explained that one study found that the type of diet fed to pregnant mice affected the hair color of their offspring. Specifically, mice that were fed a poor diet lacking in folic acid during pregnancy changed the expression of the gene responsible for hair color of their offspring permanently – in this case from “blackish” hair to “blondish” hair – for all future generations of mice.

“This study demonstrated, quite remarkably, how some genes are turned on and off by what you eat,” said Dr. Draelos. “By studying epigenetics and the genomics of skin aging, we are trying to determine how certain ingredients can affect and produce changes in the skin over a period of time.”

**How Epigenetics Influences the Skin**

In studying how genes are expressed, Dr. Draelos explained that every cell contains DNA from both parents, but the body can only follow one DNA “recipe” at a time. Before a person is born, the body decides whether it will follow the mom or dad’s recipe for skin. For this reason, one sibling might have fair skin that is dry (like their mom’s skin) and another sibling might have olive skin that is oily (like their dad’s skin).
Methyl groups, which turn genes on and off, attach to DNA and are responsible for determining what “recipe” the body will follow. One source of methyl groups is folic acid. Dr. Draelos noted that folic acid contains raw materials for the body to cover up damaged DNA or DNA it doesn’t want to use. A deficiency of folic acid during pregnancy, for example, can cause neural tube defects. That’s why women considering pregnancy are encouraged to take folic acid to avoid birth defects.

“Antioxidants prevent DNA damage, which is why they are added to cosmeceuticals,” said Dr. Draelos. “Since it is impossible to track the results of one cosmeceutical on the skin 20 years later to determine its effectiveness, this epigenetic research will help us better understand how diet and certain ingredients affect skin health on a cellular level – providing insight into what are the best formulations and combination of ingredients for skin care products.”

What’s Old is New Again
Aquaporins, proteins in the cell membrane that regulate the flow of water, are currently being studied to understand how cosmeceutical ingredients can benefit the skin. Dr. Draelos explained that aquaporins line the walls of the cells and allow water to flow in and out of the cell – much like a water spout.

Glycerin, which is a long-standing compound used for decades in skin care products for its ability to add moisture to the skin, is now better understood in terms of how it works as a skin care ingredient through the study of its interaction with aquaporins. In fact, glycerin-based moisturizers are becoming increasingly popular, and Dr. Draelos noted that this time-tested ingredient is being researched for its potential in improving cosmeceuticals that are used today.

“As dermatologists, we’re constantly asked by our patients ‘what should I use on my skin to make it look better’,” said Dr. Draelos. “This next generation of genomic-based research is helping us determine not only what ingredients may work best for specific skin types, but how what we eat now and throughout our life can affect our skin as well. Science holds the key to helping us make better recommendations based on this newfound knowledge.”

To learn more about skin care, visit the Academy’s website at www.aad.org and AgingSkinNet at www.skincarephysicians.com.