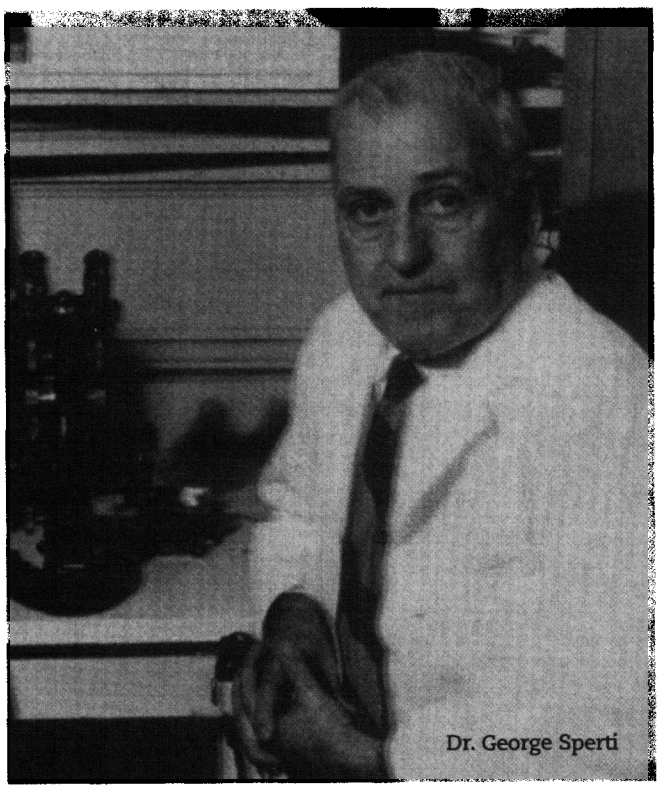
The Rise of Dr. Sperti

Discovering the wound-healing and skin-smoothing properties of the live yeast cell derivative was a major achievement. BY STEVE HERMAN

The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun.
–Ecclesiastes, 1:9

OXYGEN transport to cells, wound healing, renewable resources, bio-engineered ingredients, heat shock proteins—these are some catch phrases typical of modern cosmetic technology. But these contemporary subjects actually can be traced back 60 years to the work of Dr. George Sperti and his Institutum Divi Thomae.

Sperti made his first technological breakthrough as an undergraduate at the University of Cincinnati in 1921. Young George built a prototype on his mother's breadboard of the kilovolt ampere meter (kva meter) used to measure large quantitis of electricity. The meter was a commercial success. He declined lucrative offers from industry to stay at U.C. after graduation as a research assistant.

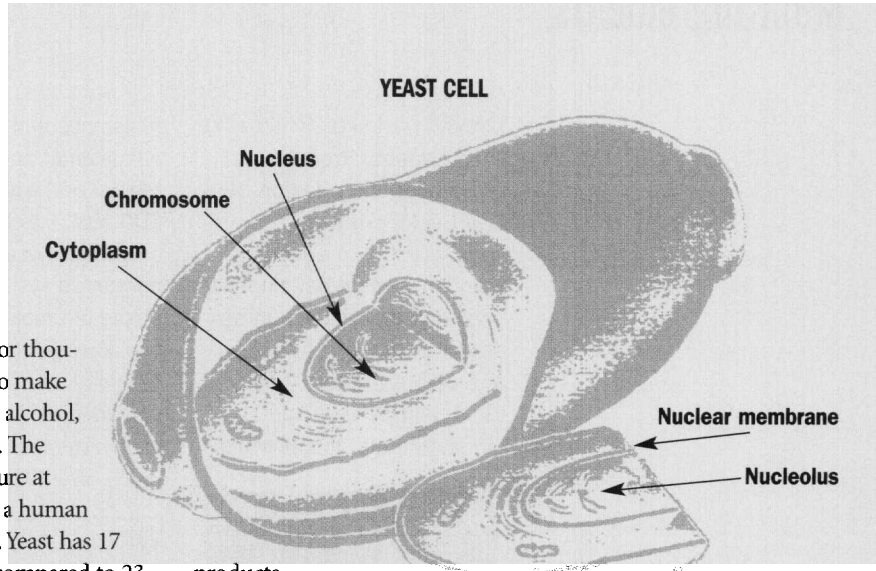

Dr. George Sperti

Sperti was allowed to create a laboratory of cooperative research in physics, chemistry, biology, and mathematics. The laboratory studied the irradiation of food, and it was found that wavelength, not intensity, was the key parameter. A host of inventions followed on the creation of vitamins, food preservation, and the destruction of harmful bacteria.

Sperti's group devoted great effort toward understanding tissue repair. When healthy tissue is injured, the surrounding cells begin reproducing themselves to create new tissue to replace the damaged section. Since cancer is essentially cell reproduction running rampant, the study of this process seemed a promising key to a cancer cure. When the dead tissue was filtered out of solution, a reproductive-stimulating substance remained, which was successfully concentrated. The cell derivative was named biodyne, from the Greek for life (bios) and force (dyne). Three biodynes were distinguished: those that stimulate growth and reproduction, those that stimulate cell respiration, and those that accelerate the cellular metabolism of sugar.

The benefits of biodynes were discovered after a flask of ether exploded in the lab, severely burning a nun's hand (Sperti was closely associated with the Archdiocese of Cincinnati). The nearest gunk to smear on her hand was a growth-stimulating biodyne ointment. The pain stopped immediately, and the wound healed quickly, leaving no scars.

The biodyne concoction that healed the nun became known commercially as Sperti Ointment. A patent relating to the wound-healing properties of the yeast derivative was issued in 1941. Another biodyne application was the hemorrhoid treatment, Preparation H, which was licensed to Whitehall Labs (now Whitehall-Robbins). This agreement poured millions of dollars into the Institute. A legend began to spread that movie stars used Preparation H under their eyes to prevent wrinkles. *Glamour* magazine reported that Miss USA contestants used the product to smooth their skin. E TV's *Behind the Scenes* at the Miss USA Pageant



reported contestants using it to reduce cellulite on their thighs.[2]

The live yeast cell derivative (LYCD), also known as skin respiratory factor (SRF), as used in Preparation H, was not cosmetically elegant, but a refined version was created by Brooks Industries (now Arch Personal Care) as Biodynes® TRF (INCI: water and phospholipids and live yeast cell derivative). Biologics International, a corporate descendent of Sperti Drug, recently began supplying LYCD to the cosmetic industry as BioFactor™ 2000, 4000, and 8000, after years of focus on the pharmaceutical market.

LYCD contains a complex cocktail of components, including amino acids, vitamins, and minerals. The chief claims (beyond wound healing) are the stimulation of elastin and collagen synthesis, skin smoothing, and internal moisturization. Several papers[3,4] explain how LYCD increases cellular oxygen utilization. Since wound healing is linked to oxygen consumption in and around the damaged tissue, a coherent biochemical picture is created for the value of LYCD. Analytical methods are available to quantitatively measure the respiratory effectiveness of a specific batch of LYCD, so a finished treatment cosmetic can yield consistent benefits.

At first glance, yeast doesn't seem a promising location for a high-tech chemical factory. It is a single-cell organism of the fungus family. One important variety, *saccharomyces cerevisae,* has been used for thousands of years to make cheese, ferment alcohol, and raise bread. The yeast cell structure at right resembles a human cell very closely. Yeast has 17 chromosomes compared to 23 for humans, but they act genetically much like the human version, yet with somewhat simplified mathematical permutations.

If a yeast cell is stressed by heat or UV light at 286 nm., it is prompted to produce an array of protective substances. Elevated temperature produces heat stress proteins, a category of intense biochemical interest. Protein in a cell can lose its three-dimensional structure when heat is applied, and the heat stress proteins are capable of restoring the original configuration. If the cell wall then is removed and the cellular protoplasm is concentrated, the LYCD results. It is also possible to obtain the active material without stressing the cell, since all the cellular components are always present, although in lesser quantities.

Other fractions of cosmetic value can be obtained from yeast, such as the pseudocollagenous protein reported by Brooks.[5] The proteins and sugars extracted from the intracellular cytoskeletal matrix of yeast were found to have similar cosmetic benefits to animal-derived collagen plus muccopolysaccharides. This pseudocollagen, and the LYCD discovered by Sperti, are but two examples of the endless products made by yeast.

George Sperti's achievements range far beyond the kva meter and Preparation H. The Sperti sun lamp was designed to manufacture vitamin D in the skin. During World War II, Sperti and his colleagues found a substitute for agar-agar when the American supply was cut off by Japan. He also provided research space for scientists who were forced to retire by mandatory age rules. GCI

References

Special thanks to Amy Miles, president of Biologics International, for providing the photo of Dr. Sperti, as well as valuable reference material.

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Dr. Sperti's achievements include the kva meter, Preparation H, the Sperti sun lamp, and a substitute for agar-agar.