

IN THE SPOTLIGHT

P&G Beauty's Olay brand has entered into a holistic cooperation with Peking University First Hospital (PUFH) to establish three centers in China dedicated to the field of skin care. This joint program is of national and global significance and has been seen as an unprecedented level of cooperation in the field of cosmetic dermatology.



Olay and PUFH entered into the partnership with the same objective – to accelerate the development of cosmetic dermatology in China. Olay brings the respected reputation of P&G Beauty and Olay in the market and its scientific and technological advantage as a leading brand. PUFH is the top dermatology research organization in China and is affiliated with the most well-known university. The dermatology department of PUFH is known for its

long history and powerful capabilities. It is renowned in China and the world for its scientific research and education.

The work at the centers will be focused in three areas: product testing, co-research and product development, and education and training aimed at junior dermatologists, beauty consultants, editors and consumers.

These centers have not only set up a new level of collaboration between transnational businesses and domestic high-tech research organizations, but will also play a positive role in improving the development of cosmetic dermatology in China.

FAST FORWARD

From hair to makeup, P&G Beauty is constantly inspired by trends of the upcoming season and looking ahead to provide women with innovative products. By following recent runway styles, scientists at P&G Beauty have identified and developed products that can make catwalk looks a reality for any woman.

Contrasting the hard-edged fashion trends, hair and makeup styles of the 2005 autumn/winter season are effortless and feminine. Long hair is in, looking voluminous and styled. Innovative products from P&G Beauty enhance these attributes and help women to create runway hairstyles. The models from the 2005 season used light foundations and translucent powders, such as those developed by P&G Beauty, leaving pale and flawless looking skin. To achieve this look, pink and

red blusher applied to cheekbones gave models a long-lasting flush, highlighting the absence of dramatic makeup elsewhere and replacing the bronzing creams of last season. With P&G Beauty aware of timely trends and constant innovation, women can be confident that the latest hair and makeup looks can be achieved at home.



DID YOU KNOW?

According to a 2004 P&G Beauty consumer survey of more than 1,000 U.S. women, red is the most popular color shade among women in the representative population who color their hair. Among African-American respondents, red and dark brown tied as the most popular choice. Hispanic women preferred light brown.

P&G BEAUTY SCIENCE

P&G Beauty Science has more than 1,800 scientists and technical employees working at nine global technical centers with an unparalleled commitment to technology development. Company scientific efforts have resulted in over 3,500 active beauty care patents. This allows P&G to develop products uniquely suited for different types of hair and skin, and tailored to different cultures and climates. P&G scientists are constantly seeking new ways of turning inspiration into innovation.

P&G Beauty sells more than 130 different brands in over 180 countries worldwide that touch and improve lives daily. P&G Beauty had more than \$19 billion in global sales in fiscal year 2004/05, making it one of the world's largest beauty companies. The global leading beauty company at mass, P&G Beauty brands include: Pantene®, Head and Shoulders®, Olay®, Max Factor®, Cover Girl®, Always®, Joy®, Hugo Boss®, Wella®, Herbal Essences®, Clairol Nice 'n Easy® and SK-II®. Please visit www.pgbeauty.com for the latest news and in-depth information about P&G Beauty and its brands.

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BREAKTHROUGHS: SCIENCE NEWS FROM P&G BEAUTY

GLUCOSAMINE: A SIMPLE INGREDIENT FOR HEALTH AND SKIN CARE BENEFITS

In the world of science, it's no longer just a question of inventing new and wondrous ingredients. Rather, scientists are finding new applications and more potent forms of tried and tested remedies. Used clinically in Europe since the 1960s, glucosamine gained popularity in the U.S. in the mid-1990s as a treatment for joint and arthritis pain. However, recent research indicates that glucosamine may have a variety of other applications, including several dermatologic/cosmetic applications.

Glucosamine is a 6-carbon amino sugar occurring throughout nature, primarily as derivatives such as N-acetyl glucosamine. Polymers of N-acetyl glucosamine, or chitin, are found in a variety of organisms, from fungi to insects to marine invertebrates (for example crabs and shrimp), where it is a principle component of the exoskeleton (shell).

Chitin in its de-acetylated form has found utility in several chemical applications, such as water treatments, photographic emulsions and dye enhancers for synthetic fibers and fabrics. However, glucosamine, whether as a derivative such as chitin or as another polymer, is also widely used in biological applications.

Biological role and applications of glucosamine

Joint Pain

Glucosamine is a fundamental building block for important biopolymers such as hyaluronic acid. Such polymers serve critical functions in joints and skin. In joints, the biopolymers provide cushioning between adjoining bones in the hip, knee and ankle, as well as elasticity in the joint. Over time or with physical injury, there is potential damage to and loss of these polymers, which contributes to the pain and stiffness of joints many associate with age or arthritis.

Clinical studies have shown the benefits of reduced joint pain and stiffness and increased joint flexibility. This has contributed to the

What's Inside

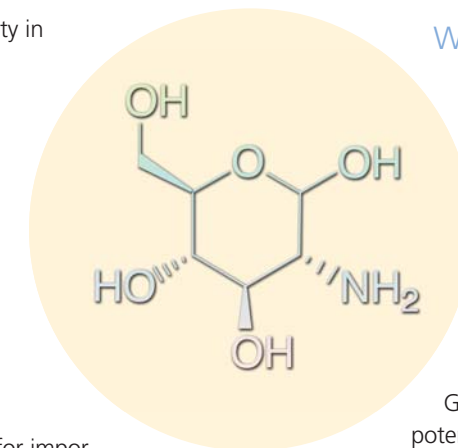
- Saving Lives by Handwashing With Soap
- Facial Moisturizer Helps in Managing Symptoms of Rosacea
- P&G Beauty Establishes Skin Care Centers in China

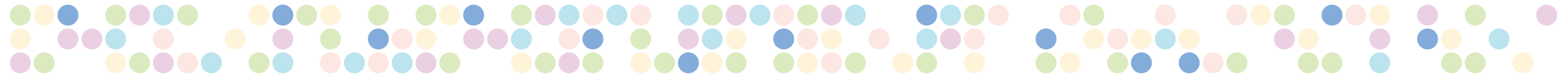
introduction of over-the-counter glucosamine supplements that many consumers use to reduce the pain they may feel from these conditions, or in order to maintain flexibility prior to any potential loss. Such oral supplements have also been widely used in veterinary medicine for aging household pets and for larger animals such as horses to extend their riding and jumping careers.

Wound Healing

Hyaluronic acid also serves as a water-binding polymer in the skin. By binding and retaining some moisture in a wound, repair such as re-epithelialization can proceed more quickly. This water-binding effect is also important for cosmetic uses of glucosamine. It can increase the skin's content of hyaluronic acid to increase moisturization, leading to enhanced skin barrier properties and reduced dryness.

Glucosamine has also been reported to have potential to inhibit skin melanin production. In *in vitro* melanocyte cell culture evaluation, glucosamine has been shown to inhibit glycosylation, the addition of polysaccharide units to proteins. Glycosylation is a required step in the conversion of certain inactive pro-enzymes to their active forms. Active tyrosinase, a key enzyme in the pathway for melanin production, is glycosylated. Thus, glucosamine inhibits the production of melanin in melanocytes.





Challenge for use of glucosamine in cosmetic products

Glucosamine has the potential to deliver important skin care benefits, such as barrier enhancement, moisturization and tone evenness. A challenge with this ingredient in emulsion formulation is its potential to easily oxidize, which results in yellow-brown products. Scientists are working to deal with this problem by defining a pH where oxidation is minimized, including antioxidants (not including oxygen) when creating product formulas and using oxygen impermeable packaging. Additionally, using stable – yet still skin-active – derivatives of glucosamine may offer a satisfactory solution.



Dr. Donald Bissett is a Research Fellow at P&G. His research focus is on the identification of topical materials to provide skin care benefits, resulting in the introduction of several technologies into P&G's skin care products.

SIMPLE HANDWASHING WITH SOAP SAVES CHILDREN'S LIVES

Don't forget to wash your hands! Something as simple as hand-washing with soap for 15 seconds can reduce the number of pneumonia-related infections in young children by more than 50 percent, according to a study published in the July issue of *The Lancet*. The research, conducted in Pakistan by the Centers for Disease Control and Prevention (CDC) and P&G Beauty, is the first field study to show that handwashing can help prevent pneumonia, the leading killer of children under age five worldwide.

Every year more than 3.5 million children under age five die from diarrhea and acute lower respiratory tract infection, making these two syndromes the largest causes of childhood deaths globally. In fact, in Southeast Asia and Africa, diarrhea is responsible for as much as 8.5 percent and 7.7 percent of all deaths, respectively.

"Handwashing with soap is a prevention strategy that is within the reach of hundreds of millions of at-risk families," said the study's lead investigator, Stephen Luby, MD, Medical Epidemiologist with the CDC. "This research can be used by families worldwide to improve the health, indeed to save the lives, of their children."

The study, titled "Effect of Intensive Handwashing Promotion on Childhood Diarrhea in High-Risk Communities in Pakistan: A Randomized Controlled Trial," was conducted over the course of one year in 900 households in Karachi, Pakistan. Karachi was selected for



the study as a city representative of living conditions in low-income, developing countries, where diarrhea can cause substantial morbidity and mortality.

In the 900 participating households, 600 households received a regular supply of soap and 300 households served as the control group. Field workers visited households weekly for one year to encourage handwashing by residents in soap households and to record disease symptoms in all households. Teaching proper handwashing and bathing techniques to study participants was a critical part of the research.

"Parents should encourage children to wash their hands with soap and water as long as it takes them to sing their A-B-C's," said Tim Long, PhD, a principal scientist with P&G Beauty, which provided the soap used in the study.



STRANGELY BEAUTIFUL

Did you know mineral deposits and oil secreted by the scalp can dull and change the appearance of hair color? Blonde hair is especially susceptible since minerals like chlorine, iron and copper become clearly visible. To investigate this, P&G Beauty scientists treated blonde hair samples with water containing iron, copper and chlorine. Treated hair was measured for mineral uptake, then washed with an advanced pro-vitamin formula shampoo with prismatic shine enhancers and measured again to quantify mineral removal. The minerals caused noticeable green discoloration, but much of the discoloration was removed after treatment with advanced pro-vitamin formula shampoo.



Images, from left to right: 1) untreated blonde hair 2) same hair after exposure to water containing minerals 3) hair after washing with an advanced pro-vitamin shampoo to remove mineral build up.

MYTHS AND FACTS

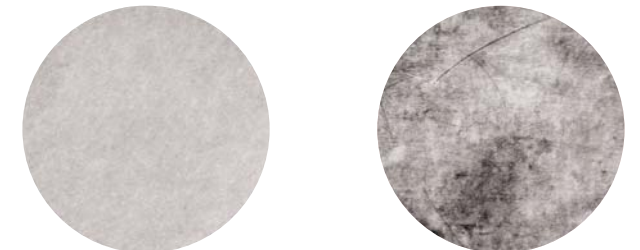
- **Oily skin occurs more frequently among women of color.** *MYTH – Women of color have a broad range of skin types – dry, oily, combination – just like Caucasian women. However, facial oil, or sebum, on a darker skin background can make the skin surface look shinier and oilier than it might on a lighter skin background. Facial skin may appear oilier due to the type of hair grooming products used and how frequently a person shampoos.*
- **People of color can have skin that hyperpigments (dark spots or patchy areas appear).** *FACT – Post-inflammatory hyperpigmentation (PIH) is one of the most troubling skin attributes among people with darker skin tones. Acne is frequently the initial cause of PIH. A single acne lesion can leave a melanin pigment "reminder" which can last from months to years.*

CLOSE-UP

Chromophore Mapping

A new imaging technology co-developed by P&G scientists is allowing researchers for the first time to understand why – and how – the human eye perceives a person to have a "youthful glow." The device,

called a SIAscope (Spectrophotometric Intracutaneous Analysis), uses visible and infra-red light to create maps which show how light-reflecting molecules in the skin, called chromophores, change with age. These maps are helping researchers better understand that it's actually variances in chromophores that the human eye perceives as "old-looking" – not just wrinkles. As a next step, researchers will look to develop products that can mask or manipulate these chromophores to a more youthful level to "trick" the human eye into seeing what it would normally see in a person 10 or 20 years younger.



Young Skin

Old Skin

The above SIAscope images show the differences in the distribution of collagen – one type of chromophore – in old versus young skin. By "mapping" the different concentrations of chromophores in skin, scientists can estimate the age of the person.

LAB NOTES

P&G Beauty recently published data in *Cutis* regarding the role of facial moisturizers in managing rosacea. This common skin disorder causes redness, dryness and sensitivity. While incurable, treatments include medications and avoiding lifestyle triggers. In a recent study, rosacea patients used a generic facial moisturizer twice a day for two weeks, followed by a facial moisturizer containing niacinamide for four weeks. At the study's conclusion, the dermatologist investigator's assessments and patients' self-assessments showed improvement in the rosacea condition from the niacinamide course. The improvement may be linked to the moisturizer, which increases the moisture of the outer layer of skin and the skin's ability to maintain moisture, improving the dryness and redness associated with rosacea.

GLOBAL BEAUTY

More and more people are seeking treatment advice from their dermatologists to help relieve discomfort caused by dry skin. According to a survey conducted by P&G Beauty in 2004, global dermatologists consider "bathing or showering frequency" the most likely factor to induce dry skin (67.6 percent). These results emphasize the growing need for the creation of moisture-enriched body washes and bar soaps to help battle dry skin on the hands, face and legs – all areas where the survey indicated dryness is most prevalent. In recognition of this emergent issue, P&G Beauty is committed to researching the improvement of beauty products designed to combat this uncomfortable problem.