

BEAUTIFUL SKIN
AT ANY AGE
LYN ROSS, L.M.E.



770.454.7788
5589 Peachtree Rd.
Atlanta, GA 30341

idermed.com

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The largest growth area in cosmetic facial treatment is related to aging. People are living longer and healthier and want their appearance to reflect their vital state of mind and health. The aging process begins when we enter the world and the effects of aging are evident in our bodies throughout our lives. Looking forever young has never been as important as it is today and with role models from film, stage and music displaying everlasting young features, it is not surprising that women of all ages are becoming increasingly aware of society's perception of the perfect woman.

It is impossible to stop the natural aging process however it is possible to delay it. There are many options available to achieve this, including cosmetic surgery and medical treatments, nonetheless, the most popular and most cost efficient solution, other than eating well and exercising regularly, is the use of anti-aging products. These products can be for both internal and external cosmeceutical treatments.

Theories of Aging



The process of growing older includes changes in both biology and psychology. Biology refers to the way the body functions. Psychology describes how the mind functions. How people age has to do with genetics, environment, and lifestyle over a lifetime. The process of aging is complex and may derive from a variety of different mechanisms and exist for a variety of different reasons. Aging is a universal biological phenomenon, at least amongst eukaryotic organisms. Yet the average lifespan within and between species can vary greatly. This suggests that both genetic and environmental factors contribute to aging. Theories that explain aging can generally be divided between the programmed and error theories of aging.

Programmed theories imply that aging is regulated by biological clocks operating throughout the life span. This regulation would depend on changes in gene expression that affect the systems responsible for maintenance, repair and defense responses. Error theories blame environmental insults to living organisms that induce cumulative damage at various levels as the cause of aging (e.g., DNA damage, oxygen radicals, cross-linking).

The Free Radical Theory

This exciting development in anti-aging research was first introduced by R. Gerschman in 1954, but was developed by Dr. Denham Harman of the University of Nebraska, College of Medicine. "Free radical" is a term used to describe any molecule that differs from conventional molecules in that it possesses a free electron, a property that makes it react with other molecules in highly volatile and destructive ways. In a conventional molecule the electrical charge is balanced. Electrons come in pairs so that their electrical energies cancel each other out. The free radical has an extra negative charge. This unbalanced electrical energy tends to make the free radical attach itself to other molecules as it tries to steal a matching electron to attain electrical equilibrium. Some scientists speak of these free radicals as "promiscuous," breaking up the happy marriages of paired electrons in neighboring molecules in order to steal an electron "partner" for themselves. In doing so, they create free radicals and extensive bodily damage. Free radicals attack collagen and elastin, the substances that keep our skin moist, smooth, flexible and elastic. These vital tissues fray and break under the assaults of free radicals, a process particularly noticeable in the face, where folds of skin and deep-cut wrinkles are testaments to the long-term effect of free-radical damage.

The Wear and Tear Theory of Aging

The wear and tear theory of aging suggests that years of damage to cells, tissues and organs eventually wears them out, killing them and then the body. The damage begins at the level of molecules within our cells. The DNA that makes up our genes sustains repeated damage from toxins, radiation and ultraviolet light. Our bodies have the capacity to repair DNA damage, but not all of those repairs are accurate or complete. Thus the damage progressively accumulates.

The Cross-Thinking Theory of Aging

The cross-linking theory of aging is based on the observation that with age, our proteins, DNA and other structural molecules develop inappropriate attachments or cross-links to one another.

These unnecessary links or bonds decrease the mobility or elasticity of proteins and other molecules. Proteins that are damaged or no longer needed are normally broken down by enzymes called proteases, and the presence of cross-linkages inhibits the activity of proteases. These damaged and unneeded proteins, therefore, stick around and can cause problems. Cross-linking of the skin protein collagen has been shown to be at least partly responsible for wrinkling and other age-related changes in skin.

Skin Aging



The epidermis is the most superficial layer of the skin and provides the first barrier or protection from the invasion of foreign substances into the body. The principle cell of the epidermis is called a keratinocyte. The epidermis is subdivided into five layers, or strata, the stratum germinativum (SG), the stratum spinosum (SS), the stratum granulosum (SGR), the stratum lucidum (not seen in this photomicrograph) and the stratum corneum (SC) in which a keratinocyte gradually migrates to the surface and is sloughed off in a process called desquamation. The condition of the epidermis determines how "fresh" your skin looks and also how well your skin absorbs and holds moisture. Spots, pores, evenness, porphyrins, and UV spots all manifest themselves in our epidermis.

Wrinkles are formed from changes in the dermis. The dermis assumes the important functions of thermoregulation and supports the vascular network to supply the avascular epidermis with nutrients. The dermis is typically subdivided into two zones, a papillary layer and a reticular layer. The dermis contains mostly fibroblasts which are responsible for secreting collagen, elastin and ground substance that give the support and elasticity of the skin. Also present are immune cells that are involved in defense against foreign invaders passing through the epidermis.

The reticular layer of the dermis consists of dense irregular connective tissue. The reticular layer of the dermis is important in giving the skin its overall strength and elasticity, as well as housing other important epithelial derived structures such as glands and hair follicles. This reticular layer is our target for collagen production.

Collagen is a member of the connective tissues: cartilage, bone, tendons, fascia, ligaments and blood vessels. The character of any connective tissue is determined by the function of the specific cells that compromise that tissue. The major fibrous proteins are collagen and elastin. The predominant non-fibrous components are the complex carbohydrates mainly: Hyaluronic acid, the proteoglycans, and glycoproteins. Collagens are a class of proteins, members of which have chemical and structural features in common, but each is a product of a specific gene (hence, the specific connective tissue disorders). There are two major classes of collagen: interstitial and pericellular. Interstitial collagens are the major collagen of the skin and essentially exclusive type of bone (type I); articular cartilage and nucleus pulposus (type II); and the collagen present in the skin, blood vessel walls and the matrix of parenchymal organs (type III). Pericellular collagens are types of IV and V and predominate in basement membranes.

Cutaneous (skin) aging is a complex biological phenomenon. Disorders in aged skin are more the result of photoaging (UVR) than from chronological aging. There is gradual atrophy of the dermis and epidermis and a massive accumulation of abnormal elastic tissue with its associated microfibrils and proteoglycans. These elements replace the normal collagen rich dermal foundation, leading to a weakened and thinner dermal layer. As the dermal layer "sags" so then follows the epidermis, and wrinkles appear. This decrease in collagen results more from the increased deterioration (UVA) rather than from a significant decrease in production (age). The term solar elastosis is used to describe photo-damaged skin.

The thickness of the skin changes with age: young skin gradually gets thicker until the age of about 20 years, after which there is a gradual atrophy of the dermis. Depending on your age, skin type, genetic makeup, and sun exposure you may have begun to see the effects of skin damage including lines, wrinkles, and age spots. Other conditions that become more common with age include precancerous skin changes known as actinic keratosis. There has been significant progress in treating aging skin. Advances in skin care techniques have made it possible to minimize and, in certain cases, reverse some of the damage that time and the environment

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have caused. New cosmetic techniques and procedures offer the possibility of a rejuvenated, more youthful appearance. From chemical peels and Botox injections to powerful lasers that can vaporize wrinkles and discolored spots, physicians and skin estheticians have an array of tools in their arsenal to fight the signs of aging.

Beginning in our 20s, the signs of aging start to become noticeable. Genetically programmed chronologic aging causes changes in collagen and elastin, the connective tissues that supply firmness and elasticity to the skin. The genetic program of individuals is different, so the loss of skin firmness and elasticity occurs at different rates and different times in one individual as compared to another.

What lifestyle choices make a difference?



One of the key lifestyle tools for reducing cellulite is drinking 8 glasses of pure water daily. Water flushes away cellular toxins and even helps to increase fat metabolism. Cut down on sugar which promotes inflammation in the body. Of course exercise is very beneficial because it not only burns fat but also increases circulation. Dry brushing before you take your shower can increase lymphatic drainage which also helps to naturally exfoliate the skin. Exfoliation increases cell turnover which strengthens skin structures as well as helps with topical product penetration when using cellulite treatment creams.

Aging Skin Timeline



20s: Natural facial expressions like smiling, laughing and pondering all involve muscle contractions and in your 20s you might start to see some fine lines and creases related to facial movement – first around the brow and then in the form of “crow’s feet” around the eyes. You may also see lines around the eyes if you spent a lot of time in the sun as a child or if you squint at a computer screen for long hours.

30s: As you age, your skin’s collagen and elastin – which are proteins that keep your skin tight – break down faster than your body can rebuild them. As a result, your skin in your 30s may start to look tired and less radiant. As your skin loses elasticity, you may develop wrinkles including more noticeable crow’s feet, a pair of vertical lines between your brows, and a shadow in the triangular area between your nose and the corners of your mouth. In addition, you may start to notice brown spots caused by sun exposure, and you may see dilated blood vessels, particularly around the sides of your nose.

40s: As loosening skin and sun exposure continue to take their toll; your skin may appear less smooth or glowing. Lines may form around your eyes, mouth and forehead; your lips may get smaller; some skin may start to sag; and the corners of your mouth may turn down – so you look like you’re frowning when you’re not.

50s: After a half-century’s worth of aging and sun exposure, the breakdown of collagen and elastin that started in your 30s is now in full force, causing your skin to sag. This condition can get worse in your 60s and beyond, resulting in deep wrinkles and a crepe-like look. Your skin may also start to look thinner and more translucent, which can make blood vessels more visible – causing your skin to look discolored. Fine lines may appear on your cheeks, lines from your nose to mouth may become deeper, and marionette lines – those lines extending downward from the corners of the mouth – may also become more pronounced. You may see age spots/sunspots, and if you are fair-skinned, you may experience a creamy yellow discoloration. If you’re a woman, the drop in estrogen during your 50s may cause your skin to look and feel drier, which can make lines and wrinkles even more prominent.

Levels of Treatment for Aging Skin



The best way to keep looking good and loving your skin is with a three dimensional skin rejuvenation treatment approach. A 3D skin rejuvenation treatment combines different clinical applications to attend to your skin's every need. First it increases collagen production then tightens saggy skin and improves skin texture and tone plus it continues to improve the skin even after the full duration of the treatment. Areas that are targeted by 3D skin rejuvenation are the "nasolabial" folds (lines that extend from the end of the nose to the end of the lips), wrinkles on cheeks, double chin, "marionette lines" (lines from the corners of the mouth to the jaw line) and crepe-like skin on the neck. The treatment is usually performed over three months however after every treatment session the skin looks better than before. The treatment can be performed on all skin types, but the skin care professional must adjust the treatment intensity to produce fresh, younger looking tissue and lasting results. The 3D combination skin therapy includes the following in classified levels:

TYPE I THERAPY is directed at the epidermis (microdermabrasion/ chemical peels/LED/IPL).

TYPE II THERAPY is directed at the dermis (radio frequency, laser/ chemical peels/ microcurrent).

TYPE III THERAPY is surgical or injectable (cosmetic surgery, botox, fillers).

Product Ingredients for Aging Skin



There are also ways to regain healthy, smooth skin with active ingredients in skin care products. After many years of research, scientists, dermatologists and plastic surgeons have discovered that a variety of natural ingredients and vitamin extracts significantly help slow down and even reverse the signs of aging skin. These ingredients are now found in many physician developed and physician recommended anti-aging skin care products, which are specified below.

VITAMIN A (RETINOL): Topical vitamin A has been suggested to help build collagen fibers within the skin in addition to its more superficial exfoliating property. This is the basis for its use in minimizing the appearance of fine wrinkle lines.

VITAMIN C: Ascorbic acid, also known as vitamin C, acts as an antioxidant and is considered vital in wound healing because it aids in stabilizing collagen. When applied topically, vitamin C can reduce fine lines and wrinkles and may lessen the severity of sunburns.

VITAMIN E: Another antioxidant that is known to have anti-inflammatory effects on the skin is vitamin E. When applied topically, vitamin E has been shown to improve moisturization, softness and smoothness, and it also provides modest photo protection.

ALPHA HYDROXY ACIDS (AHAS): AHAs are designed to smooth fine lines and surface wrinkles, to improve skin texture and tone, to

unblock and cleanse pores, to improve oily skin or acne, and to improve skin condition in general.

GLYCOLIC ACID: Glycolic acid is the most active and beneficial of the AHAs in skin care. Once inside the cells, the acid triggers new formations of collagen to plump cells and the ground substances in the skin to reduce wrinkles on the skin's surface. Glycolic acid is proven to be very effective in the treatment of acne as well as in cosmetic uses.

N-6 FURFURYLADENINE (KINETIN, A PLANT HORMONE): The nature-identical plant growth factor, furfuryladenine, retards the aging of plant cells as well as in vitro human skin fibroblasts. This natural, anti-aging ingredient has been proven to reduce wrinkles and fine lines.

COPPER PEPTIDES: Copper Peptides are the latest scientific breakthrough in skin rejuvenation. Copper has been found to naturally firm the skin, enhance elasticity, and reduce fine lines and wrinkles.

GREEN TEA EXTRACT: Green tea's anti-inflammatory and anti-growth qualities are found in many skin care products designed to reduce the appearance of puffiness, wrinkles, fine lines and large pores.

HYDROQUINONE: Repeated exposure to UV radiation from the sun causes premature skin aging. This photo-aging is characterized by wrinkles, mottled pigmentation, dry and rough skin, and loss of skin tone. A deficiency of superficial dermal collagen is one cause of photoaging. In one study, the degradation of endogenous type I collagen fibrils was increased by 58 percent in irradiated skin, as compared with non-irradiated skin. Collagenase and gelatinase activity remained maximally elevated (4.4 and 2.3 times, respectively) for seven days with four exposures to ultraviolet irradiation, delivered at two-day intervals, as compared with base-line levels. Multiple exposures to ultraviolet irradiation lead to sustained elevations of matrix metalloproteinases that degrade skin collagen and may contribute to photoaging. Treatment with topical hydroquinone inhibits irradiation-induced proteinases but not their endogenous inhibitor.

PHYTO-HORMONES: Estrogen deficiency is a skin-aging factor in peri and post-menopausal women. Estrogen treatment with estradiol and the estriol for six months improved elasticity and firmness of the skin and the wrinkle depth and pore sizes had decreased up to 100 percent. Skin moisture increased along with significant increases in the numbers of collagen fibers at the end of the treatment period.

RETINOLS: Vitamin A analogues have many effects on skin growth and some have been used to reduce wrinkling. Retin-A was the first popular agent intended for acne treatment, but widely sought as a cosmetic agent. The alpha hydroxy acids came next - these are acids common in many plants that peel the surface layers of the skin.

Vitamin C, collagen, beta hydroxy acids, vitamin E, elastin and liposome have appeared in numerous skin products with claims that are not readily substantiated. The net effect of most surface treatment with agents of any type is that little or nothing changes. The rejuvenating cream has not yet been discovered. Vitamin C and E have great promise for long-term anti-aging effects, but they are best taken orally rather than applied to the surface, although there is room for both to be added to sunscreen lotions to reduce photo-damage.

Ten Anti-Aging Tips



- 1.** Experts on aging agree there are positive steps you can take to be healthier as you age. The single best thing you can do for your health and longevity is quit smoking. Smoking has been indicted for a laundry list of ills from heart disease to lung disorders, all of which can foil your longevity plans.
- 2.** Drink only in moderation. Alcohol infuses every cell, damaging genes and inflaming your liver. A glass of wine a day for women and maybe two for men, but no more, may be mildly beneficial.
- 3.** Get your Zzzz's your body needs down time to repair cells and rest your heart and your mind needs dreaming to stay sane.
- 4.** Cut saturated fat and increase omega-3 fats. It is gospel by now: eat less or no red meat; lose the cake and ice cream; consume more complex carbs, such as whole grains, fruits, and vegetables; and get plenty of fatty fish. The healthy fats in salmon, mackerel, and sardines help keep oxygen free-radical molecules from damaging your cells.
- 5.** Consider moderating your total food intake. Studies in rats show that a 30 percent calorie restriction means longer life (no, it doesn't just seem longer!). Studies in rhesus monkeys have shown a gain in years from a reduction in food. Obviously, losing excess pounds means less strain on your system.
- 6.** Supplement, supplement, supplement. Most of us suffer from "overconsumption malnutrition" – too much of the wrong things. Even the cautious American Medical Association recently endorsed taking a daily multivitamin. In addition to the effective antioxidant vitamin C, you should supplement with CoQ10, vitamin E, alpha lipoic acid (another antioxidant), and perhaps some of those "mental acuity" mixtures in the health-food store should be in your medicine cabinet too.
- 7.** Reprogram your vision of old age. A study at Yale recently showed that those with a positive view of growing older lived seven years longer than those who griped about it.
- 8.** Kick guilt out of your life! Be future-minded. Guilt and regrets are part of the past. Evolving and changing is how we stay young.
- 9.** Don't be afraid to make a big change. It is never too late to move, join the Peace Corps, change careers, get married, or get a divorce. Do not say you are too old. Sometimes [earlier] decisions need to be changed. Plastic surgery can also be life-enhancing if you do it to look and feel better, not to change your life overnight.
- 10.** Never retire. Retirement is a contagious, debilitating disease. Take some time off for a vacation and smell the roses, but do not get so intoxicated by the roses that you do not come back and do something useful. Those roses could turn into daisies, as in pushing up daisies.