

International Society of Hair Restoration Surgery (ISHRS)
24th World Congress
September 28-October 1, 2016
Las Vegas, Nevada

Media Fact Sheet

Hair Loss and Hair Restoration

The International Society of Hair Restoration Surgery (ISHRS) was formed in 1993 to create a not-for-profit international forum for information exchange, continuing medical education, rapid diffusion of new and innovative surgical techniques and instrumentation technology, and dedication to ethical standards. The ISHRS reaches its members through its World Congress, a bi-monthly publication entitled, “The Hair Transplant Forum International,” (aka, “The Forum”), continuing medical education seminars and courses, and a regularly updated website. The website also provides authoritative, objective information to the public on the causes, diagnosis and treatment of hair loss. The ISHRS has more than 1,200 physician members from countries around the world, making it the largest such organization in the world.

Hair Loss and Hair Restoration Fact Sheet

Hair Count: Blondes Have the Most

From head to toe, the human body has about 5 million hair follicles. The human scalp—prior to any hair loss—has 100,000 to 150,000 hair follicles. Blondes have the greatest number of scalp hair follicles, then brunettes, then red-haired people who have the fewest number of scalp hair follicles.

Rate of Growth

Healthy scalp hair grows at a rate of about one-fourth to one-half inch per month. A man with a full complement of healthy scalp hair who wants to have a well-trimmed look will probably need a haircut about every two to four weeks.

The Hair Growth Cycle

Human scalp hair grows and sheds in a continuous cyclic pattern—the hair growth cycle. It is now recognized that the cycle has five phases:

- **Anagen**—growth phase, a period of 2 to 8 years when the follicle is active;
- **Catagen**—degradation phase, a period of 2 to 4 weeks when the cells of the follicle are almost completely degraded; and,
- **Telogen**—resting phase, a period of 2 to 4 months following catagen when the follicle is neither active nor degrading. At any given time, about 10% of scalp hair follicles are in telogen phase. A new burst of anagen restarts the cycle, and a new hair forms in the follicle. The hair from the preceding cycle is shed when the new hair shaft begins to emerge. About 50 to 100 scalp hairs are shed daily from a healthy scalp.
- **Exogen**—transient phase resulting in expulsion of the follicle
- **Kenogen**—brief phase when the follicle is ‘empty’

Testosterone, DHT and Hair Loss

The androgenic (“male”) hormone testosterone and its metabolite dihydrotestosterone (DHT) are principal actors in androgenetic alopecia (male pattern hair loss). Even though they are principal actors, they do not act unless the director is present. The director is the genetic tendency for androgenetic alopecia—a condition that does not occur unless the genetic tendency is present and active. The genetic tendency can be inherited from either parent.

The intertwined activities of testosterone, DHT and the gene for androgenetic alopecia are not as straight-forward as one might suppose:

- DHT is converted from testosterone by the action of the enzyme 5-alpha reductase.
- Neither testosterone nor DHT is necessary for the growth of scalp hair. Testosterone is necessary for the growth of axillary (underarm) and public hair; DHT is necessary for the growth of beard hair.

- DHT is necessary for the loss of scalp hair, if the genetic tendency for androgenetic alopecia is present and active. The genetically-associated activity makes the scalp hair follicle inordinately sensitive to the action of DHT, resulting in eventual shut-down of the hair follicle. The hair restoration drug finasteride is a DHT inhibitor.

Testosterone is identified as a “male” hormone. It is present also in women, but whether it has any significant role in female pattern hair loss is not known. The term “androgenetic alopecia” is no longer used in describing female pattern hair loss, since the mechanism of hair loss is largely unknown. The pattern of hair loss in women tends to be more diffuse than the pattern in men.

Historical Overview: 188 Years of Hair Restoration Surgery

The first written record of successful hair transplantation to treat baldness in humans was published in 1822 in Wurzburg, Germany—188 years ago. A medical student named Diffenbach described experimental surgery performed by himself and his surgeon mentor Professor Dom Unger in animals and in humans. They successfully transplanted hair from one area of a patient’s scalp to another area. Professor Unger was said to believe that hair transplantation would make baldness a rarity.

Few additional mentions of hair transplantation appeared in surgical literature over following decades, however, and few if any surgeons adapted Professor Unger’s technique to treat androgenetic alopecia (inherited pattern baldness). Surgical procedures using hair-bearing skin flaps and grafts were first adapted to the treatment of traumatic alopecia (baldness caused by burns or other physical injury) in the late 19th Century.

Male-pattern baldness was not neglected in the 19th Century. It had the attention of “medicine men” who sold various concoctions and nostrums purported to be cures for baldness when rubbed on the scalp or sipped from the bottle. The “medicine man” famous in Western lore is the top-hatted snake-oil salesman who traveled from town to town in his painted wagon. Newspapers of the 19th Century carried advertising for nostrums claimed to do everything from curing cancer to putting hair back on the bald scalp.

The modern surgical techniques of hair transplantation were first developed in Japan in the 1930s and 1940s, but did not come to attention outside of Japan until after World War Two. In 1939, Dr. S. Okuda, a Japanese dermatologist, described the use of full-thickness grafts of hair-bearing skin from hair-bearing areas to hairless areas to correct hair loss on the scalp, eyebrows and upper lip. While most of the 200 patients he reported were treated for traumatic alopecia, his technique was almost identical to that first reported in the United States in 1959 to treat androgenetic alopecia. Other Japanese surgeons reported successful hair transplantation to areas of the body other than the scalp throughout the 1940s and 1950s; as with Dr. Okuda’s reports, these were written in Japanese and were not seen outside Japan for many years.

Hair transplantation as a treatment for androgenetic alopecia took its modern shape in 1959 with a paper from Norman Orentreich, MD. The paper presented a hair transplantation technique, but just as importantly it presented a physiologic basis for successful hair transplantation—the concept of “donor dominance” and “recipient dominance”. The donor dominance concept explained the contradictory results of many previous hair transplantation studies.

Dr. Orentreich showed that the success of hair transplants for androgenetic alopecia is dependent on donor dominance. Donor dominant transplants continue to show the hair-growing characteristics of hair from the donor site after transplantation to the recipient site. Research published in the 1950s and 1960s also confirmed that so-called “male-pattern baldness” is an inherited condition, treatable by hair transplantation. These findings put to rest other hypotheses regarding the cause of male-pattern baldness—among them, the theory that movement of the scalp muscles would, over a long period of time, incapacitate hair follicles and cause baldness.

Dr. Orentreich’s 1959 paper marks the beginning of modern hair transplantation. The science and art of hair transplantation have progressed together—the science developing techniques for harvesting and transplanting even single hair follicles, and the art following in the steps of science, refining the placement of minigrafts (3 to 5 hairs) and micrografts (1 to 3 hairs) to create an entirely natural look on the transplanted scalp.

Progressing side by side with hair transplantation were surgical techniques for treated baldness by:

- moving flaps of hair-bearing skin to cover bald areas;
- using tissue expanders to facilitate bald scalp reconstruction; and,
- using scalp reduction surgery to eliminate bald scalp and “pull up” hair-bearing scalp to replace it.

Common, Less Common and Rare Causes of Hair Loss

Looking at ourselves from our perspective of Year 2015, we might ask: “Why do we humans have hair? What function does it serve, except those esthetic and social-signing functions that we invent?”

Those are good questions that no one can answer authoritatively. We presume that our hair may be a reminder of our earlier history when hair provided some measure of thermal insulation, some measure of protection against physical injury, and some measure of camouflage. Since those functions are less important for us in 2015, the esthetics of hair moves to the top of the list of reasons why we care about our hair. The grooming and appearance of scalp hair remains important as a social sign in human inter-relationships.

Because the esthetics of scalp hair is important to us socially and culturally, we generally do not want to lose our scalp hair. Unfortunately for us, we do frequently lose it. There are many causes of scalp hair loss.

Androgenetic Alopecia (Male Pattern Hair Loss)

Androgenetic alopecia is the most common cause of hair loss in men. It is often called male pattern hair loss because of the familiar “monk’s tonsure”, “high forehead” and “cue ball” patterns of hair loss common to men. The typical diffuse pattern of hair loss seen in women does not have a “signature pattern” as it does in men, but even so it is often called “female pattern hair loss”.

The number of men and women affected by pattern hair loss in the U.S. is estimated at 35 million to 80 million. The wide difference in estimates is due partially to whether or not early thinning of hair is included in the figures.

Androgenetic alopecia is an inherited cause of scalp hair loss. The genetic tendency for hair loss can be passed on from either parent; so far, no specific gene for pattern hair loss in humans has been identified. The nature of the condition is reflected in its name: Andro = the androgenic hormones testosterone and dihydrotestosterone (DHT) that are principle actors in inherited hair loss; genetic = genetic inheritance; and, Alopecia = hair loss.

Hair loss due to androgenetic alopecia is not necessarily caused by an excess of androgenic hormone. Rather, scalp hair follicles are highly sensitive to the presence of DHT. When the genetic tendency is present, hair loss may begin at any time from the late ‘teens in men. The orally administered hair restoration drug finasteride (Propecia®) decreases the amount of DHT metabolized from testosterone by blocking the action of the DHT-converting enzyme. The exact mechanism of action of minoxidil (Rogaine®) is not known with certainty.

The action of DHT on scalp hair follicles does not cause hair to just fall out. It rather influences the phases of hair growth, causing the duration of the anagen (growth phase) and the percentage of hairs in anagen phase to diminish, leaving more hairs in telogen (resting) phase. Telogen-phase hair is more subject to loss from combing and washing. The shafts of individual hairs become progressively smaller in diameter and length (a condition called vellus hair), resulting in the “fuzzy” look of a balding scalp. Hair may also lose its pigmentation, adding to the appearance of thinning hair.

Women may be unpleasantly surprised when their hair begins to thin, because women are often less aware of the potential for hair loss. Female pattern hair loss is likely to appear as a diffuse thinning of hair; very rarely does it appear in a typical male pattern. Diffuse thinning of hair in a woman may also suggest other causes of hair loss such as post-pregnancy hair loss or hypothyroidism. The cause of hair loss in a woman should be diagnosed by a physician trained and experienced in the diagnosis and treatment of hair loss.

Androgenetic alopecia can be successfully treated by hair transplantation, other surgical procedures such as scalp reduction, by the use of hair restoration drugs approved for such use by the Food and Drug Administration (FDA), or by a combination of surgical and non-surgical treatments.

Alopecia Areata

Hair loss due to alopecia areata is typically in round or oval patches from the scalp and patchy loss of eyebrows. The cause of alopecia areata is not known, but it is believed to most likely have an autoimmune basis. Surgical treatment is not recommended. The topical hair restoration drug minoxidil has been used with success in some patients.

Cicatricial (Scarring) Alopecia

Cicatricial, or scarring, alopecias are classified as primary or secondary. In primary cicatricial alopecias, the hair follicle is the target of the destructive inflammatory process and can occur in otherwise healthy men and women of all ages. Primary cicatricial alopecias refer to a diverse group of rare disorders that destroy the hair follicle, replace it with scar tissue, and cause permanent hair loss. The clinical course is highly variable and unpredictable. Hair loss may be slowly progressive over many years, without symptoms, and unnoticed for long periods. Or the hair loss may be rapidly destructive within months and associated with severe itching, pain and burning. The inflammation that destroys the follicle is below the skin surface and there is usually no “scar” seen on the scalp. Affected areas of the scalp may show little signs of inflammation, or have redness, scaling, increased or decreased pigmentation, pustules, or draining sinuses. Several subtypes include: Lichen Planopilaris (LPP), Frontal Fibrosing Alopecia (FFA), Central Centrifugal Cicatricial Alopecia (CCCA), Folliculitis Decalvans, Discoid Lupus Erythematosus, and Dissecting Cellulitis. In secondary cicatricial alopecias, destruction of the hair follicle is incidental to a non-follicle-directed process or external injury, such as severe infections, burns, radiation, or tumors. (*Credit: Cicatricial Alopecia Research Foundation, www.carfintl.org*)

Trichotillomania

Trichotillomania means “hair pulling madness.” It causes hair loss when a person chronically and compulsively plucks hair from the scalp or other parts of the body. Over a period of months and years of compulsive hair-plucking, the scalp becomes scarred, hair follicles are destroyed, and patches of bald scalp become permanent. The condition may be more common in women than in men, but many confounding factors in survey data may skew the statistics and blur the true male:female incidence.

Some form of psychological/emotional dysfunction is believed to be the underlying cause of trichotillomania. There is disagreement as to whether the condition should be classified as a psychiatric illness or as an annoying habit. Whether illness or habit, the treatment of hair loss due to trichotillomania must first address the psychological factors.

Traction Alopecia

Chronic corn-rowing and tight braiding are common causes of traction alopecia—hair loss due to physical damage to hair follicles. Hair loss due to trichotillomania is a form of traction alopecia.

Triangular Alopecia

Hair loss due to triangular alopecia begins around the temples in infancy. The cause is unknown. With correct diagnosis, the hair loss can be successfully treated by a physician hair restoration specialist.

Telogen Effluvium

Telogen effluvium is a relatively common cause of hair loss characterized by the shifting of a large percentage of scalp hairs into telogen (resting) phase. The underlying cause may be nutritional, hormonal, drug-associated or stress-associated. The condition should be correctly diagnosed before treatment is initiated.

Loose-Anagen Syndrome

Fair-haired people, especially, are likely to experience loose-anagen syndrome. Hairs are unusually “loose” in hair follicles and are easily pulled out by ordinary combing or washing. The condition may appear in childhood, and may improve as the person ages.

The cause of hair loss should never be presumed. Successful treatment is founded upon correct diagnosis.

Surgical Treatments for Hair Loss

Hair Transplantation

Surgical transplantation of scalp hair evolved from the observation that hair on the back of the head and neck is not affected by androgenetic alopecia. Hair at those sites is seldom lost in androgenetic alopecia; it is a non-balding reservoir that can furnish hair for transplantation to areas of hair loss. The transplanted follicles continue to function and produce hair as they did at their original sites as explained by the principle of donor dominance—hair follicles from the donor site will continue to grow hair at the recipient site.

Even though hair at the back of the head and neck is almost never completely lost, the hair loss at these sites varies from person to person. Hair loss at the donor site must be assessed by the physician hair restoration specialist to assure that the site will furnish (1) enough donor hair follicles to complete a transplant that satisfies the patient, and (2) enough donor hair follicles in reserve to meet future needs if the patient's hair loss continues. Newer techniques of harvesting and transplanting hair follicles make transplantation possible for most persons who opt for it.

The surgical technique of transplantation must be selected on the basis of medical examination, scalp examination, and the wishes of the patient for cosmetic outcome. Emphasis today is on the naturalness of appearance, and this is usually accomplished by using follicular unit (FU) grafting (naturally growing bundles of 2, 3, 4 or rarely more follicles). The plug graft of 10 to 20 or more hairs used many years ago tended to create a "row of corn" appearance; plug grafts have been largely abandoned.

Transplantation is accomplished in one to several sessions, depending on many factors such as the number of follicles needed to be transplanted, cost, and the outcome desired.

Side effects of hair transplantation surgery are typically mild pain after the operation, temporary swelling of the operated area, and scab formation over the grafts. Side effects usually last about a week.

Scalp Reduction

Scalp reduction may be an option for patients who choose not to have hair transplantation, patients who are not good candidates for transplantation for some reason, or as an adjunct to hair transplantation. The procedure is simply the surgical removal of bald scalp and subsequent stretching of hair-bearing scalp to cover the areas of bald scalp removal. A good supply of donor hair should be available for coverage of excised areas. As an adjunct to hair transplantation, scalp reduction can reduce the scalp area to be transplanted. Scalp reduction is an operation that requires a well trained and experienced physician hair restoration specialist.

Scalp Flaps

Flap procedures are carried out in both cosmetic and reconstructive surgery. As indicated by its name, a flap of skin and underlying tissue is moved from one area to another to accomplish a cosmetic or reconstructive purpose. A flap may be raised from a nearby donor site and rotated to the recipient site along with its blood supply. So-called free flaps are removed from the donor site and transferred to the recipient site. Use of scalp flaps for scalp hair restoration can be especially valuable (1) for immediate reconstruction of a dense hairline, (2) for immediate treatment of baldness confined to the front of the scalp, (3) as an adjunct to hair transplantation, and (4) for restoration of hair to a scalp scarred by burns or other physical injury, when hair transplantation is not an option.

Side effects and complications of scalp flap surgery are potentially longer lasting than those associated with hair transplantation and scalp reduction. Scalp flap surgery requires a skilled and experienced physician hair restoration specialist.

Non-Surgical Treatments for Hair Loss

Non-surgical treatments for hair loss fall into three categories:

- pharmaceutical hair restoration agents,
- low level light therapy devices, and
- hair additions or replacements that give the appearance of natural growth.

Pharmaceutical Agents

Two agents are currently approved by the U.S. Food and Drug Administration (FDA) for use as hair restoration medications:

- Minoxidil is a topical medication available over-the-counter as the brand name product in the U.S. called Rogaine® or as generic preparations. It is available in 2% and 5% solution; only the 2% solution is approved for marketing to women. The effect of minoxidil on hair follicles was observed when the drug was being developed in the 1980s as an oral medication to lower blood pressure. The effect was maintained when minoxidil was prepared in topical solution. Minoxidil's mode of action on hair follicles is not fully understood; investigators have suggested that it may act as a nonspecific biologic response modifier. The response rate to minoxidil is about 30% to 35% in both men and women. Women are slightly more responsive to minoxidil than men. The response rate is slightly higher for 5% than for 2% solution in both men and women. Topical minoxidil is most effective in persons with recent onset of hair loss due to androgenetic alopecia, and relatively small areas of hair loss. It may be used adjunctively with hair transplantation to fill in areas of the scalp.
- Finasteride in 1 milligram formulation (Propecia® in the U.S.) is an orally administered agent available only by prescription. It influences hair growth by inhibiting the conversion of DHT from testosterone, thus decreasing the level of DHT in the body. The drug should not be used by women who are pregnant or who may become pregnant while using the drug. In a 5 milligram formulation (Proscar®), finasteride is prescribed to treat prostate enlargement. The strengths of finasteride are different for treatment of hair loss and prostate enlargement, and should not be substituted one for the other. In large, randomized Phase III clinical trials comparing finasteride to placebo, finasteride was shown to produce long-term improvement in scalp hair growth and to slow scalp hair loss in a majority of men with androgenetic alopecia.

Low Level Laser Therapy

Low Level Laser Therapy (LLLT), also known as cold laser therapy, laser biostimulation or phototherapy, technically consists of low-powered laser diodes (class 3R) with wavelengths in the region 630-670nm and power densities (5-50 mW/cm²). It can be continuous or pulsed.

The chief difference between various devices is in how they are constructed: hood like a hairdryer, laser comb or brush, and a cap with embedded laser diodes. There are currently no controlled blinded studies in use in hair loss and most clinics are using it in combination therapy with, for example, minoxidil.

Low level light probably induces a photo-biochemical reaction via cytochrome c oxidase, the last enzyme in the electron transport chain of mitochondria. Transcription factors are activated leading to changes (both up and down) in gene expression levels. The longer-term effects are increased cell survival and decreased apoptosis (cell death), increased proliferation and migration, reduction of inflammation and stimulation of tissue repair.

Optimum treatment duration remains to be established, as there is a possibility that the biphasic dose response (a little light is good but more light is less good or even bad) that has been established in other LLLT applications could also apply in hair regrowth.

Hair Additions and Replacements

Hair additions and replacements range from partial scalp coverage to fill in an area of hair loss to full scalp coverage for persons who are permanently unable to grow hair and are not candidates for surgical or medical hair restoration. Partial coverage can be achieved with hair weaving, hair extensions, hair fusions or hair pieces. Full coverage can be achieved with hair prostheses and wigs. Whether partial or full coverage, a non-surgical hair addition or replacement should be esthetically pleasing and accomplish the cosmetic purpose desired by the patient.

Miracle Cures from Snake Oil Salesman to the Internet

No one knows when a scam artist made the first claim of a miracle cure for hair loss and sold a useless nostrum to a balding customer. In U.S. popular mythology of the Old West, the typical salesman of miracle cures for everything from hair loss to heart trouble was a stovepipe-hatted charlatan who traveled from town to town in a painted wagon.

While you will not likely find a medicine man traveling from town to town today, he hasn't disappeared. You will find him on the World Wide Web and in countless newspaper and magazine ads.

Claims for the basis of the "miracle" in "miracle cure" are today more likely to have some window-dressing of science to make the product seem equivalent to drugs that have been tested and proven effective in clinical trials approved by the FDA. Of course, a hallmark of so-called miracle cures is that none of them has been tested for safety and efficacy in FDA-approved clinical trials.

The willing buyer of so-called miracle cures is almost always a person who is willing to suspend doubts in the hope of finding relief from an unacceptable or intolerable condition. The most tragic cases are those involving a potentially fatal disease such as cancer.

One of the most lucrative markets for so-called miracle cures in the U.S. is the 35 million to 80 million people who have lost hair, or are losing hair. The offer of a one-shot cure for baldness is one that many people find too attractive to pass up.

Miracle cures and other nostrums have some identifying features that usually make them stand out from legitimate products:

- Claims use words such as "miraculous", "amazing", "sensational", "scientific breakthrough", and "developed by a world-famous doctor".
- Claims of effectiveness are anecdotal, often quote-marked phrases from supposedly satisfied users ("I had a new head of hair in 30 days").
- No references are cited for clinical trials reported in papers published in peer-reviewed scientific and medical journals.
- No claim is made that the product has been approved for use by the Food and Drug Administration. (Such a claim would be fraudulent and could lead to prosecution).
- No mention is made of side effects or complications potentially associated with the product's use. Thorough testing of a product for safety and efficacy usually identified some side effects of which users should be aware.
- No mention is made of risk factors that would make the product potentially harmful to some persons—for example, psoriasis, atopic dermatitis, other skin allergy.
- Claims of "hair restoration" may be less than honest if the product is really a hair thickener. Some products can make temporary chemical changes in hair that cause hair to thicken in diameter and thus create a temporary appearance of a "fuller head of hair".

Future Developments in Hair Restoration

Hair Follicle Cloning

Hair follicle cloning stands at the top of the list in discussions of future developments in hair restoration. To be accurate in these discussions, however, the term "cloning" should be restricted to the actual process of cloning—a process of genetic engineering. In most discussions involving hair restoration, the process is tissue engineering rather than genetic engineering.

In the process of cloning, a single gene or an entire genome is inserted into a cell to replicate in a "daughter" cell the DNA structure of the "mother" cell from which the DNA is taken. Single-gene cloning may be done to treat a disease linked to a single gene. Whole genome cloning may be done to create a duplicate of the entire "mother" organism, as was done to create the cloned ewe Dolly.

Tissue engineering of hair follicle cells is a process of cell culture. Nothing is done to manipulate DNA inside the cells. Healthy hair follicle cells are harvested and grown in a tissue-culture medium where they will increase in number. Cells can then be harvested from the culture medium and placed into the bald scalp to restore active hair growth.

A number of investigators are pursuing tissue engineering as an approach to hair restoration, and some have reported promising results. Tissue engineering is still an investigational procedure that is probably a number of years away from clinical application.

Growth and Other Factors

The concept here relies on stimulating existing dormant cells rather than creating new ones. There are many known intrinsic factors that exert either positive or negative influences on hair growth. One of the key challenges of current hair research is determining the molecular signals that control the follicle's transit between the hair follicle cycle stages. The ultimate goal is to enhance the growth phase (anagen) and/or suppress Catagen.

Stem Cell Therapy

There is evidence supporting the multi-potentiality of hair stem cells. Apart from different hair layers, stem cells may also be able to give rise to epidermal cells and sebaceous glands. Studies have shown that bulge stem cells expanded in culture can grow hair in animal model. There are current studies investigating applying this in the human model.

Hair Genetics

AGA (androgenetic alopecia) is a polygenic (multiple genes) disorder. The androgen receptor (AR) gene seems to be the major susceptibility gene for AGA and has been found to be located on the X chromosome. More genes showing the strongest effects have also been identified. Discovering and detecting the causative variant(s) of the AR gene would provide the best prediction of the later development of AGA. In 2008, a new susceptibility locus on the short arm of chromosome 20 was identified that showed strong association with AGA (second strongest signal after the AR gene). However, the causative gene is again unknown. Currently, available tests are only based on the association findings around the AR gene. Its predictive power is limited and may not be very meaningful. This predictive power will steadily improve in the future with the identification of more loci, such as the one on chromosome 20.

2015-2016 ISHRS Officers & Congress Chair

President

Kuniyoshi Yagyu, MD, FISHRS – Tokyo, Japan

Vice President

Ken Washenik, MD, PhD, FISHRS – Beverly Hills, CA, USA

Secretary

Sungjoo (Tommy) Hwang, MD, PhD, FISHRS – Seoul, South Korea

Treasurer

Arthur Tykocinski, MD, FISHRS – Sao Paulo, Brazil

Immediate Past President

Sharon A. Keene, MD, FISHRS – Tucson, AZ, USA

2016 World Congress Scientific Program Chair

Marcelo Pitchon, MD – Belo Horizonte, Brazil

Media/Press Registration

Karen Sideris

PR Consultant

International Society of Hair Restoration Surgery

303 West State Street

Geneva, IL 60134 USA

TEL: 1-630-262-5399

FAX: 1-630-262-1520

E-mail: kmssgs@msn.com

www.ISHRS.org