

FIBROBLAST

SIDE EFFECTS AND INTERFERENCE WITH MEDICATION

- ▶ As well as not interfering with any medication in any way, there are also no known side effects.
- ▶ Testing on usage during pregnancy and breast feeding has not been carried out.
- ▶ Patients taking blood thinning medications such as aspirin, Coumarin or Plavix are advised to discontinue medication one day prior to treatment.
- ▶ For a period of 48 hours after the procedure, patients should not use any skin creams apart from simple moisturizers, and should avoid direct exposure to sunlight.

STORING FIBROBLASTS

The fibroblasts are frozen and stored in liquid nitrogen tanks at -196 degrees centigrade for use in subsequent sessions. They are then thawed under scientifically controlled conditions when required and transplanted into the patient using the correct medical procedures.

SOURCES:

Weiss RA, Weiss MA, Beasley KL, Munavalli G. Autologous cultured fibroblast injection for facial contour deformities: a prospective, placebo-controlled, Phase III clinical trial. *Dermatol Surg.* 2007 Mar;33(3):263-8.
Fisher GJ, Varani J, and Voorhee JJ. Looking older: Fibroblast Collapse and Therapeutic Implications. *Arch Dermatol.* 2008 May ; 144(5): 666-672. Weiss RA, Autologous cell therapy: Will it replace dermal fillers? *Fac. Plast. Surg. Clin. N. Am.* 2013, 21: 299-304.

CAN IT BE APPLIED TO EVERYONE?

- ▶ Since the procedure involves cultivation of the patient's own cells, there are no side effects. In addition, the procedure can be safely administered to patients with cancerous lesions.
- ▶ It is non-toxic, with lasting long-term effectiveness. It is non-allergenic. There is no risk of developing any animal-origin disease. It is sufficiently elastic.
- ▶ It cannot spread beyond the injected areas.

This is a Liv Hospital briefing brochure intended for internal use only.

liv MedCell

Liv Hospital, Center for Regenerative Medicine and Stem Cell Production Center

FIBROBLAST

*Cell treatment
for flawless, youthful skin*

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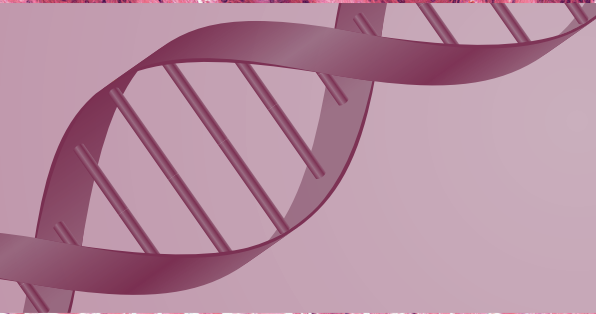
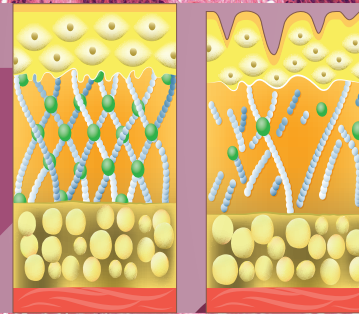
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- Injections are carried out using classic mesotherapy techniques in 3 or 4 sessions over a period of 15 to 30 days.
- No anesthetic is used. Cells may be used in combination with different filling agents on your doctor's demand.

FIBROBLAST

WHAT ARE FIBROBLASTS?

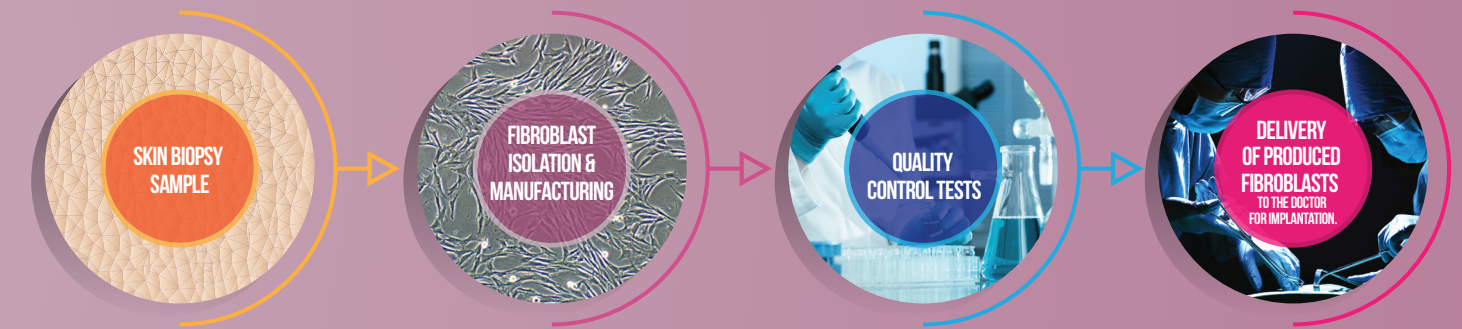
- Fibroblasts are cells located predominantly in connective tissue that serve a number of functions in the skin.
- They are responsible for the intracellular synthesis of matrix proteins.
- In addition, the cytokines and growth factors they secrete, play a role in a number of physiological processes in the tissue and organ stroma in which they are found.
- Crucial for the structure and integrity of the skin, fibroblasts have a renewing and regenerative effect.
- Because of the unique physical structure of collagen, the most abundant protein in the skin, it plays a key role in maintaining the integrity of the skin.
- If there is a reduction in the collagen and elastin synthesized by fibroblasts and an increase in collagen-destroying enzyme levels, the structure of the skin deteriorates and visible signs of ageing emerge.

APPLICATION AREAS

- Fibroblasts, which have a strong influence in achieving and maintaining the cellular structure of the skin in wound healing, are currently frequently used in skin rejuvenation and overcoming skin damage.
- Persistent chronic wounds.
- The treatment of the pitted skin scarring that can occur as a result of acne or chicken pox.
- The treatment of burn-related, trauma-related or post-operative cavities and scars.
- The filling of lips.
- Anti-wrinkle treatments.

SKIN REJUVENATION

- Autologous (obtained from the person him or herself) fibroblast injections are used to treat age-related issues such as wrinkles, blemishes, and dulling of the skin.
- Fibroblast cells injected into the skin are activated in the area where they are transplanted, correctly regulating the protein make-up that has caused the structure of the skin to deteriorate by triggering the production of collagen and elastin. In this way, a strong anti-ageing impact is achieved by means of removing the signs of ageing on the skin.



ACNE TREATMENT

- Acne scarring can be a significant cosmetic issue, especially on the face.
- Fillers have been used for a long time in dermato-cosmetology in treating acne scars. But this form of therapy needs to be repeated as the fillers decay. Moreover, possible side effects mean that this form of treatment is less frequently used today.
- Autologous fibroblast injections can be used in the treatment of acne scars, either on their own or in combination with applications such as dermaroller or laser treatment.
- Analysis of skin biopsies taken from treated patients indicates no incidence of thickening of the dermis or increased fibroblast volume-related inflammation.

PATIENT-SPECIFIC FIBROBLAST PRODUCTION

- A 3mm punch biopsy sample is obtained from behind the patient's ear or an area that is not exposed to sunlight. This is used for the production of Liv MedCell Fibroblast cells.
- Blood sample is also obtained from the patient as well as biopsy material in order to facilitate person-specific product.
- The biopsy material in a sterile solution and the blood sample that has been taken from the patient, are sent to our laboratory.
- First of all, the fibroblast cells are isolated from the biopsy material in our laboratories, which are licensed by the Ministry of Health and operated in line with international standards (cGMP conditions). Then the lab progresses to the fibroblast cultivation stage of the process, under sterile conditions.
- The cultivation process lasts an average of 4 to 6 weeks, at the end of which a sufficient volume of fibroblast cells has been produced to be able to transplant into the patient.
- The final product is placed into a vial under scientifically controlled conditions, ready to transplant into the patient after the quality control and characterization processes have been completed.