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## Scar Minimization Treatment: Fibrotic to Fat Cell Conversion

Tech ID: 29173 / UC Case 2017-423-0

### BRIEF DESCRIPTION

Clinical treatment for scar-less wound healing remains a highly desired, yet unmet need. UCI researchers have developed a method to minimize scarring during wound healing through cellular reprogramming that encourages formation of new skin fat cells. This novel therapy is non-surgical and applicable to multiple types of scars and aging skin.

### SUGGESTED USES

- » Treating keloids, hypertrophic or atrophic scars: Adaptation of natural wound healing processes to encourage skin regeneration, rather than scarring
- » Skin anti-aging: prevent permanent skin fat loss resulting in deep wrinkles formation

### FEATURES/BENEFITS

- Applicable to multiple scar types
- Non-surgical method for scar reduction
- Cosmetic and therapeutic indications

### FULL DESCRIPTION

Skin wound healing is a multi-step process that culminates with the formation of scar tissue. Sometimes, wound repair pathways can go awry, resulting in benign overgrowths, called keloids. No single therapy is available for reducing keloids, and surgery to remove them comes with a chance of regression and further undesirable scarring.

To address this issue, UCI researchers considered what was missing from typical skin scars: fat cells, aka adipocytes. Proposing that adipocytes may have a larger role in healing, they developed a unique composition of signaling factors to supplement healing wounds and promote regeneration of new skin adipose tissue. Applying this treatment to myofibroblasts, a major cellular component of scars, can alter their fate to become adipocytes; consequently, these reprogrammed cells decrease pathologic scarring and leave the skin surface smoother and more attractive. This novel discovery of how to reprogram scar-forming cells into new healthy skin cell types paves the way for scar-less wound healing and scar reduction. This non-surgical treatment is applicable not only to keloids, but other wound healing abnormalities, such as hypertrophic and atrophic scars, as well as skin aging.

### STATE OF DEVELOPMENT

Proof-of-concept studies completed on mouse and human cells. Myofibroblasts from human keloids were treated with cell culture media containing bone morphogenetic proteins (BMP) 2, 4, or 7 or with pure

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### INVENTORS

- » Plikus, Maksim V.

### OTHER INFORMATION

### CATEGORIZED AS

- » **Materials & Chemicals**
  - » Biological
- » **Medical**
  - » Disease: Autoimmune and Inflammation
  - » Disease: Dermatology
  - » Rehabilitation
  - » Therapeutics
- » **Research Tools**
  - » Reagents

recombinant BMP proteins. Treated cells exhibited formation of lipid vacuoles, activation of adipocyte transcription factors and the BMP signaling pathway, indicating successful reprogramming of myofibroblasts to adipocytes.

## RELATED CASES

2017-423-0

## PATENT STATUS

Patent Pending

## RELATED MATERIALS

» [Regeneration of fat cells from myofibroblasts during wound healing. - 01/05/2017](#)

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

► [Biomaterial For Wound Healing](#)

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