



SCIENCE FOR THE BENEFIT OF HUMANITY

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Novel Methods to Modulate Hair Growth Mammals

RU 715 and 748

Technology Summary

Both men and women would appreciate the ability to control the amount of hair in specific areas on the body resulting in a huge market for products promising to either promote or prevent hair growth. It is obvious, however, that better and safer products will only be possible once there is a better understanding of how the cyclic regeneration of hair is controlled.

Dr. Elaine Fuchs and her research group have conducted studies to define distinct cell populations that are also in distinct locations in the hair follicle, and have also started to elucidate the various interactions between the cells and their environment during the hair cycle. In particular, our scientists are studying the stem cells in the hair follicle and the pathways involved in their differentiation. They have also identified a number of factors that play a role in the regulation of hair growth.

RU 715: Functional Hair and Skin Grafts Derived from Multipotent Adult Epithelial Stem Cells

Our researchers have developed methods to mark stem cells in vivo in the mammalian hair follicle, thus providing a powerful tool for stem cell lineage analysis, including the isolation of specific stem cells. The method of stem cell isolation allows for the identification of a stem cell population that can then be expanded and induced to differentiate in culture, potentially resulting in functional skin and hair grafts. The multipotent stem cells are isolated from adult regenerative cells, thus avoiding the political and ethical obstacles involved with embryonic stem cells.

Patent Information

US 7,829,336 issued Nov. 9, 2010.

References

- Tumber, *et al.* 2004. *Science*, 303:359-363
- Blanpain, *et al.* 2004. *Cell*, 118:635-648.

RU 748: Isolation of Dermal Papilla Cells and Methods of Use for Promoting Hair Growth

Our scientists have developed methods to isolate a population of dermal papilla cells by determining the assortment of markers expressed by those cells. These isolated dermal papilla cells can be pretreated with the signaling factor BMP6 and used to promote hair growth in skin.

Patent Information

U.S. Patent 8,227,244 issued July 24, 2012.

References

- Rendl, *et al.* 2005. *PLoS Biol*, 3(11):e331