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**Stem cell growth and differentiation factors from zebrafish embryo and their role as epigenetic regulators in hair regeneration: Results after their transdermal administration by cryopass laser treatment**

**Biava P M**

Istituto di Ricovero e Cura a Carattere Scientifico Multimedita Milano, Italy

**Introduction:** Previous studies, conducted over many years in our laboratories on zebrafish embryos, allowed the identification of precise moments of stem cell differentiation in which a lot of genes switch on and off, a sign that the genome is undergoing substantial changes in gene expression. The factors of the early developmental stage of zebrafish embryo were able to regulate the stem cell expression of multipotency, enhancing the stemness genes Oct-4, Sox-2 and c-Myc. In addition to affecting stemness genes which maintain stem cell identity, these factors taken in a primarily multiplicative stage also elicited transcriptional activation of two major mechanisms capable of opposing stem cell senescence, including the gene expression of TERT, the catalytic subunit of telomerase and the transcription of Bmi1, a Trithorax family of repressors which act as essential factors for self-renewal of adult stem cells and as key telomerase-independent repressors of cell aging.

On the contrary, the molecules taken during differentiation events are able to reprogramming pathological stem cells. On the basis of the researches about stem cell rejuvenation ad differentiation many studies were made. In the present study we present the clinical results on twenty men aged between 46 and 67 (average age 57) with androgenetic alopecia. They were treated with stem cell growth and differentiation factors from zebrafish embryo using cryopass-laser treatment for the transdermal administration. The materials and methods to prepare the zebrafish extracts and about the use of cryopass laser were already described.

**Results:** All the patients demonstrated an initial regeneration of hair in the form of a soft fleece after the first treatment. This regeneration was consolidated with subsequent treatments and after about 10 treatments the hair took on a consistency of adult and pigmented hair. The treatment did not have any adverse effect and was very well accepted by patients who were satisfied with the obtained results.

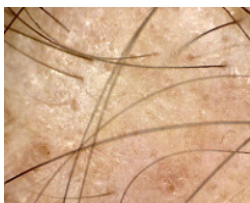


Figure 1. A patient before the treatment with stem cell growth and differentiation factors



Figure 2. The same patient after the treatment

**Biography**

Biava PM is author of many scientific publication and 8 books about reprogramming pathological and normal stem cell.

biava@tiscali.it