

Culture of human hair follicular cells and development of in vitro 3D hair growth model

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The recent development of methods for culturing hair follicles in vitro has been proved to be an important tool to investigate many aspects of hair biology and drug screening on the hair growth. Hair follicles develop as a result of epithelial-mesenchymal interactions between epidermal keratinocytes and dermal papilla cells. We isolated and cultured some cell components of the human hair follicle, using explantation and enzymatic digestion method from human scalp skin, such as outer root sheath (ORS) cells, dermal papilla (DP) cells, dermal sheath (DS) cells, matrix cells and melanocytes. To induce hair morphogenesis in vitro the follicle cells were 3-D cultured simulating the normal skin structures. Moreover, to develop the organ culture model of hair follicle, we applied them in the dermal equivalent (DE) to expand hair growth period of the culturing hair follicles.