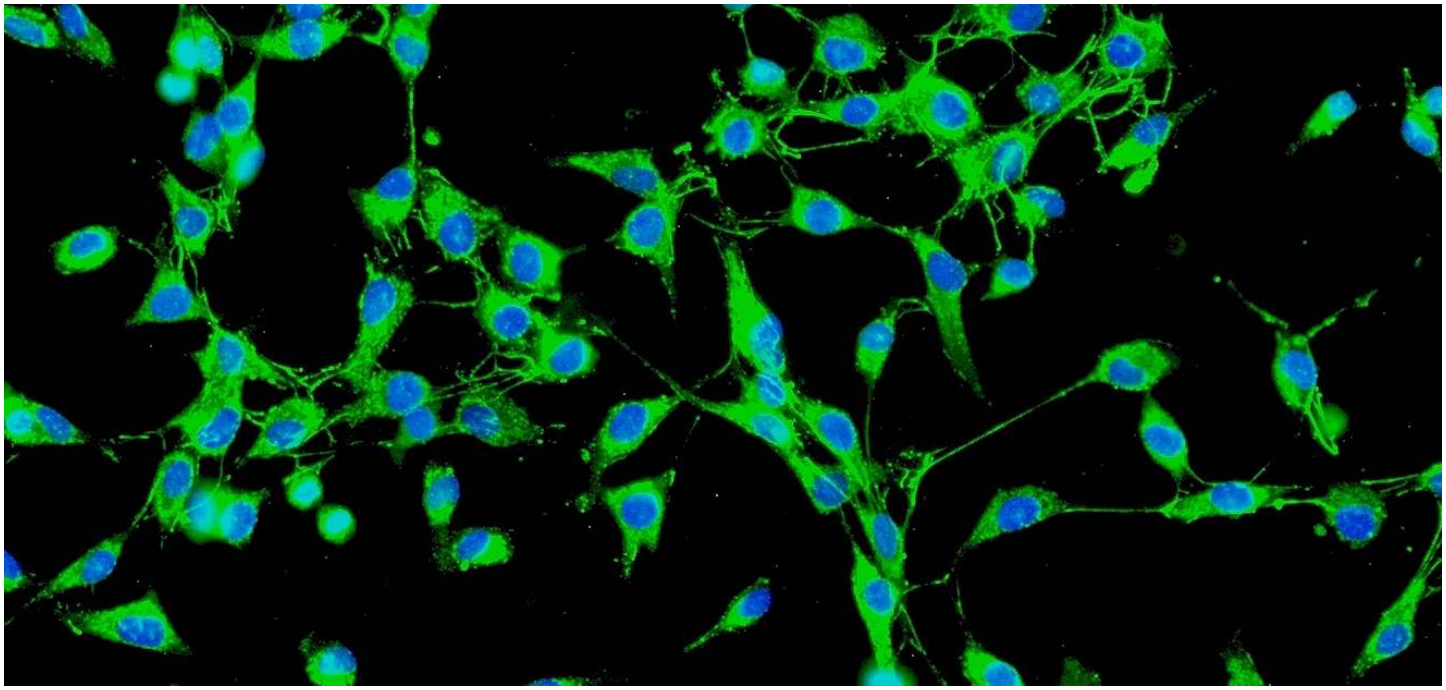
AJER ASIAN JOURNAL OF EMERGING RESEARCH
eISSN:2664-5211 | pISSN:2663-4988



## Research Highlight

# HOW DO KELOIDAL CELLS RESPOND WHEN CULTURED ON TOPOGRAPHY?

**Sehrish Naz**
*Department of Chemistry,*
*University of Agriculture, Faisalabad, 38000, Pakistan*

**Key words:**
Keloid scars | fibroblasts | biological pathways | morphometic analysis | prosthesis | physiological conditions | tissue culture

Keloids are dermal scars consisting of excessive fibroblast proliferation and matrix accumulation. A keloid scar is not contagious and is benign in nature. There is a possibility to grow mammalian cells *in vitro* and they act like independent organisms with the shelf life of approximately 24 h. It is reliable and economical way to study cells in tissue culture as compared to study in an intact animal[1].

Investigation of keloid scars through tissue culture or cell culture involves the two steps, i.e., Firstly fibroblasts isolated from keloid tissue and then these fibroblasts propagates in the laboratory on exogenous nutrients and growth media[2]. This procedure helps to understand the individual biological pathways and processes.

However, isolating the cells from their environment may also have some restrictions as well. Ideal conditions that are sorely needed for the propagation of cells include a high amount of nutrients, perfect pH, temperature as well as gases. Accordingly, in most of the keloid scar tissue culture models, the serum is employed. Yet, the wound environment that gives rise to keloid scars is exposed to the biological factors contained[3].

Moreover, biological cells are also strongly affected by the topography of the surface on which they reside. They are guided along micron sized grooves and alter their shape to become more elongated[4]. Consequently, these effects can be utilized for cellular engineering to evaluate the behavior of cells and in particular to generate prosthesis for medical purposes[5].

However, this situation urged scientists to conduct a new study in order to investigate the *in vitro* behaviors of keloidal and hypertrophic cells by applying morphometric study as well as tissue engineering procedures. In case of successful accomplishment of these techniques, a novel alternative way in keloid management can be developed[6].

For this purpose, scientists obtained the human keloid samples from patients that were employed as raw materials to isolate human fibroblasts from keloid as well as normal skin. However, the normal human specimens (human skin fibroblasts) were obtained from King Abdul Aziz University Hospital, Saudi Arabia after circumcision operations.

During this study, the tissue engineering outcomes determine that there is significant amplification in the cell length when cultured on topography. On the other hand, morphometric examination shows that keloidal cells are shorter as compared to normal fibroblasts

eISSN:2664-5211 | pISSN:2663-4988

whereas, keloidal cells adhere to grooved topography found to be longer in comparison with normal fibroblasts. Conclusively, this study revealed that topography affect the keloidal cell morphology and keloidal cell's response to topography by aligned and increase in length.

## REFERENCES


1. Khorshid, F.A., S.S. Mushref and N.T. Heffny, 2005. An ideal selective anti-cancer agent *in vitro* I-tissue culture study of human lung cancer cells A549. *J. King Abdulaziz Univ.-Med. Sci., 12: 3-19*
2. Cohen, I.K. and B.A. Mast, 1990. Models of wound healing. *J. Trauma, 30: S149-S155*
3. Brunette, D.M., 1986. Fibroblasts on micromachined substrata orient hierarchically to grooves of different dimensions. *Exp. Cell Res., 164: 11-26*
4. Clark, P., P. Connolly, A.S. Curtis, J.A. Dow and C.D. Wilkinson, 1991. Cell guidance by ultrafine topography *in vitro. J. Cell Sci., 99: 73-77*
5. Wilkinson, A.H.F. and F. Schut, 1998. Digital Images Analysis of Microbes, Imaging Morphometry Fluorometry and Motility Techniques and Applications. John Wiley and Sons, UK., *pp: 3-89.*
6. Khorsid, F.A., 2007. Morphometery and tissue engineering studies of Keloidal cells. *Asian J. Cell Biol., 2: 54-64*