Schmidt S., Schmid R., Arkudas A., Kengelbach-Weigand A., Bosserhoff A. 2019. Tumor cells develop defined cellular phenotypes after 3D-bioprinting in different bioinks. Cells. V. 8. P. 1295. https://doi.org/10.3390/cells8101295

Shain A.H., Bastian B.C. 2016. From melanocytes to melanomas. Nat. Rev. Cancer. V. 16. P. 345.

Suvarna K., Layton C., Bancroft J. 2018. Bancroft's theory and practice of histological techniques e-book. Philadelphia: Elsevier.

Vörsmann H., Groeber F., Walles H., Busch S., Beissert S., Walczak H., Kulms D. 2013. Development of a human three-dimensional organotypic skin-melanoma spheroid model for in vitro drug testing. Cell Death Disease. V. 4. e719. https://doi.org/10.1038/cddis.2013.249

Wegert J., Zauter L., Appenzeller S., Otto C., Bausenwein S., Vokuhl C., Ernestus K., Furtwängler R., Graf N., Gessler M. 2019. High-risk blastemal Wilms tumor can be modeled by 3D spheroid cultures in vitro. Oncogene. V. 39. P. 849.

Xiaohong W., Jukka T., Antti A., Kaija-Stiina M., Jouni Partanen P., Yliperttula M. 2003. The integrations of biomaterials and rapid prototyping techniques for intelligent manufacturing of complex organs. In: Advances in biomaterials science and biomedical applications. IntechOpen. https://doi.org/10.5772/53114

CULTIVATION MELANOMA CELLS *IN VITRO* ON A 3D SCAFFOLD PREPARED ON THE BASIS OF GELATIN

A. A. Yatsenko[a, b, *], V. A. Kushnarev[b, c], E. M. Ustinov[a], D. V. Leonov[a], V. M. Kislitskiy[a], S. S. Tseluyko [a], and A. S. Artemeva[c]

[a] *Amur Student Medical Academy Ministry of Health of the Russian Federation, Blagoveshchensk, 675006 Russia*

[b] *Limited Liability Company "IQ Biofabric", Moscow, Skolkovo, 121205 Russia*

[c] *N.N. Petrov National Medical Research Center of Oncology, St. Petersburg, 191124 Russia*

**e-mail: mdyatsenko@gmail.com*

Organotypic cultivation of melanoma cells in a 3D matrix that mimics the dermis, as well as co-cultivation with other types of cells, is one of the promising directions for tumor modeling. The purpose of our work was to study the morphological and immunohistochemical characteristics of melanoma cells, during 35 days of 3D cultivation on a gelatin porous matrix. Melanoma cells were obtained as a result of an excision biopsy. After 35 days of cultivation we conducted light-optical morphological and immunohistochemical analysis of scaffolds with antibodies to the melanocytic antigens S100, SOX10, and the membrane antigen CD44. After 35 days of 3D culturing of primary melanoma culture cells on porous gelatin scaffolds we demonstrated expression of melanocyte antigens and membrane antigen CD44. Melanoma cells were adhered to the surface and destroyed the scaffold matrix. Scaffolds were obtained by leaching. We have developed the component and quantitative composition of a three-dimensional gelatin scaffold, which provide adhesion and proliferation of cells of the primary melanoma culture while maintaining the expression of melanocytic antigens and CD44 protein.

Keywords: *in vitro* melanoma model, 3D cultivation, scaffolds