On new regulation of cell therapy and regenerative medicine in the Russian Federation

PAVEL I. MAKAREVICH, ZHANNA A. AKOPYAN & VSEVOLOD A. TKACHUK

Institute of Regenerative Medicine, Lomonosov Moscow State University, Moscow, Russia

Cell biology has benefited from numerous excellent discoveries by Russian scientists—from the introduction of hematopoiesis theory and the term stemness by Alexander Maximov [1] to the seminal works of Alexander Friedenstein, who pioneered to describe mesenchymal adult stromal cells [2]. Findings by Russian physicians and biologists working in the field of nuclear medicine and radiobiology advanced the application of bone marrow transplantation in practice [3,4]. However, recent decades have revealed a growing gap between the rate of advances of regenerative medicine in Russia and the rest of developed world, primarily due to the lack of a legal framework for scientists, physicians and industry working in the field.

Regenerative medicine and its branches of gene and cell therapy require a harmonized environment supported by the scientific community, government and industry to ensure development of safe, ethically sound, effective and innovative therapeutics. Recently most leading countries have adopted acts controlling all aspects of cell therapies and have rapidly made significant progress because legal clarity has provided patients with protection and developers with a regulatory pathway for their ideas.

January 1, 2017, was a turning point for all stakeholders in Russia because a new federal law (#180-FZ of June 23, 2016) took effect that established rules for handling of biomedical cell products (BMCPs). BMCPs has become a general analog of manipulated “HCT/P” (U.S. Food and Drug Administration) or “advanced therapy medicinal products” (European Medicines Agency) and includes a wide range of cell-based products for various medical applications.

General provisions enforced by the new law are in compliance with regulations existing in most leading countries and include the following [5]:

- ban on embryonic and/or fetal material for medicinal use, including deliberate generation of human embryo(s) for this objective;
- voluntary and gratuitous donation of cells/tissues and protection of donors’ rights;
- prohibition of biological and cellular material trafficking;
- obligatory preclinical evaluation of BMCPs before first-in-human use;
- obligatory Good Manufacturing Practice for BMCPs produced for human use in clinical trials, including autologous products;
- compliance with good clinical practice for BMCPs to ensure patient protection in clinical trials of these products; and
- assignment of a federal authority to oversee and control authorization and handling of BMCPs.

The law covers use of both autologous and allogeneic BMCPs, including products in which cells are combined with marketed drugs and/or medical devices or materials. Application of medical devices and their combination with cells allows further development of tissue engineering and artificial organs, which has become a growing field in recent years. Furthermore, handling of “combined” BMCPs that include cells from multiple donors is allowed, creating an opportunity for pooled cell cultures to be developed for clinical use.

However, the statute itself requires numerous executive regulations and rules that will regulate development, preclinical and clinical evaluation, manufacture, quality control and review to ensure a controlled life cycle of new BMCPs. Since 2016, Moscow University, together with a large consortium of leading Russian institutions, has been tasked with developing regulations for preclinical evaluation and clinical trials of BMCPs. Successful completion of this assignment in collaboration with federal authorities has resulted in drafting of crucial executive regulations that will take effect in late 2017–early 2018, unleashing the field’s potential. Our long-standing experience of successful basic and
applied research in gene and cell therapy has been used to elaborate internationally compliant and sound rules.

The new law covers handling products derived only from cultured cells, and thus there is still a gap in the legal field because tissue-based and minimally manipulated cell products are not covered by specific statutes in Russia. This issue has yet to be resolved by authorities to create versatile control over all possible medicinal applications of cell and tissue-derived material.

We focus on this crucial change in national legislation because it creates firm ground for the translation of numerous approaches developed by Russian scientists and, furthermore, for licensed application of cell-based products undergoing clinical trials in the United States, Europe and Asia. We look forward to progress in regenerative medicine within the new regulatory framework to create the precedents and legal practice required for rapid growth.

Safety of donors and patients has always been a priority for scientists, physicians and authorities, and the new legal conditions will provide security and minimize risks to drive further translation of cell-based products. Despite the adjustment period necessary to meet the new requirements, the scientific community and industry are expected to benefit from this federal law, which will provide an opportunity to help patients in need of innovative treatments. We expect these changes to boost development of cell therapies and allow Russian scientists and biotech to increase their contribution to the rapidly developing field of regenerative medicine.

Acknowledgements
The research was carried out within the state assignment of MSU.

Disclosure of interest: Vsevolod A. Tkachuk is president of the Russian Society of Regenerative Medicine and head of the Regenerative Medicine Section of the Russian Federation Ministry of Health’s Scientific Council. The other authors have no commercial, proprietary, or financial interest in the products or companies described in this article.

References