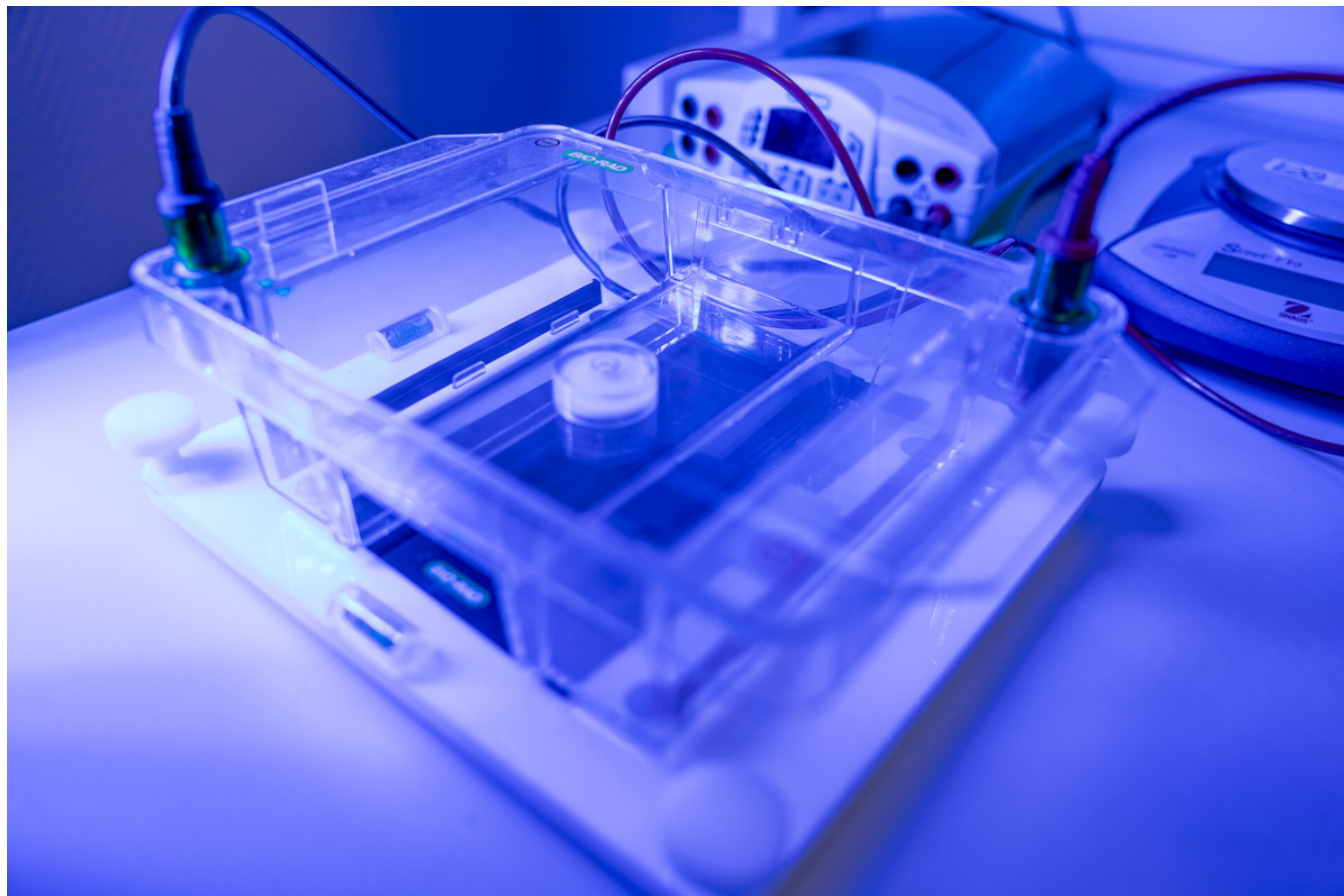


Anti-cancer breakthrough: original compound could change disease treatment

Scientists at SPbPU have developed a new chemical compound with enhanced anti-cancer activity and virtually zero toxicity.



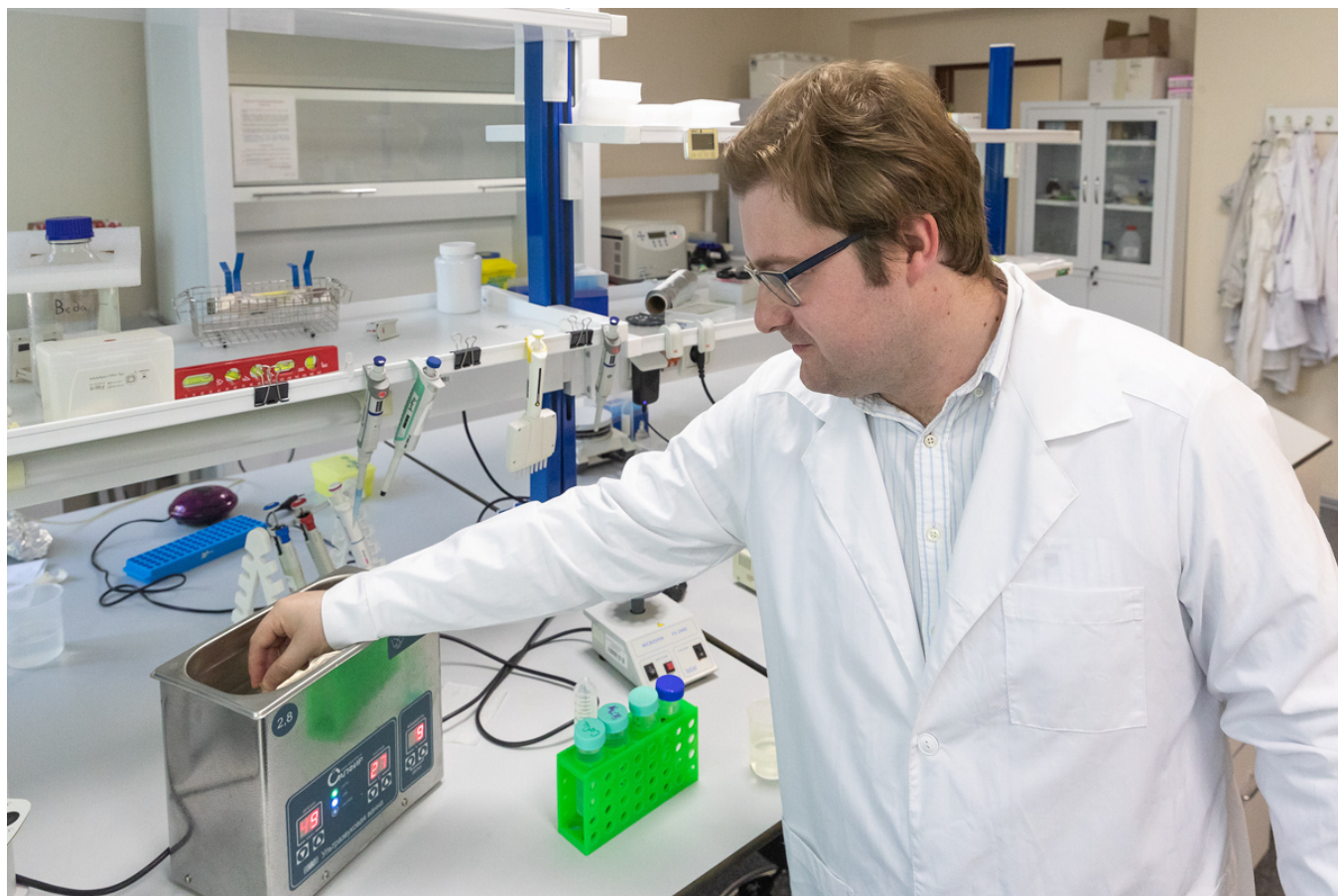
Malignant neoplasms are one of the most serious problems in modern healthcare. Worldwide, about 20 million new cases are registered annually, and global cancer mortality reaches 9-10 million people per year. In Russia, more than 640,000 new cases of cancer are detected annually. At the same time, about 40% of patients seek medical help when the disease has already reached stage III-IV, which significantly reduces the effectiveness of treatment and worsens survival rates. The most common types are breast cancer, lung cancer, and colorectal cancer.

The high incidence and significant proportion of late diagnoses require the introduction of new, effective, and affordable treatments, which scientists in all countries are working on. Over the past ten years, a breakthrough has been achieved in the treatment of malignant neoplasms following the approval of tyrosine kinase inhibitors and immune checkpoint inhibitors, which have significantly changed approaches to the treatment of patients with cancerous tumors.



A group of scientists from Peter the Great St. Petersburg Polytechnic University selected chemicals and invented a method for obtaining a new compound that not only has high anticancer activity but also low toxicity.

Standard tests using resazurin showed that the compound obtained is more than 50 times more effective against cancer than its FDA-approved counterpart. We determined the toxicity of the compound using G. N. Pershin's method on mice. The results of the experiments showed that, according to the current classification, the compound belongs to class V of virtually non-toxic drugs. The characteristics obtained make it possible to use this compound to create new targeted drugs with low toxicity to healthy tissues, said one of the authors of the invention, Alexander Timin, head of the Laboratory of Nano- and Microencapsulation of Biologically Active Substances at the IBS&B SPbPU.



The prospects of the drug for further production of anticancer drugs are highly appreciated by specialists participating in the testing of the new compound, in accordance with the agreement concluded between the N. N. Petrov National Medical Research Center for Oncology of the Ministry of Health of Russia and SPbPU.



Conducting preclinical studies and bringing the drug to market will be significantly cheaper because SPbPU scientists are using artificial intelligence technologies. They are conducting retrosynthetic analysis of large data sets (Big Data), establishing the relationship between the structure and biological activity of the compounds under study.

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