

# Japan-Russia Collaborative Ties Pave Way to Future in Advanced Medicine

Aiming to Save Lives Through Application of Research Results

Since November 2010 Japan's RIKEN (Institute for Physical and Chemical Research), a comprehensive research institute in the field of natural sciences, has been conducting joint research with one of Russia's most prestigious universities, Kazan Federal University (KFU) in the Republic of Tatarstan. The joint work started in the field of low-temperature physics; later organic chemistry was added, and collaborative ties have steadily progressed. In October 2014 the Tatarstan Cancer Center also joined the cooperative arrangement; the three institutions are together conducting research in the field of medicine and genomics.

Dr. Yoshihide Hayashizaki of RIKEN, the program leader of this joint research, comments, "Russia possesses valuable sample materials that are hard to obtain in Japan, such as the results of tests carried out in space." Dr. Oleg Gusev of Russia, who is conducting research at RIKEN, explains the significance of the joint research, saying, "Russia is trying to strengthen efforts in the field of genomics. If we combine these efforts with RIKEN's world-class RNA analysis technology, we can hope for research results with high added value." By complementing one another's functions, the three parties are progressing with research in areas such as elucidating the genetic mechanisms relating to cancer.

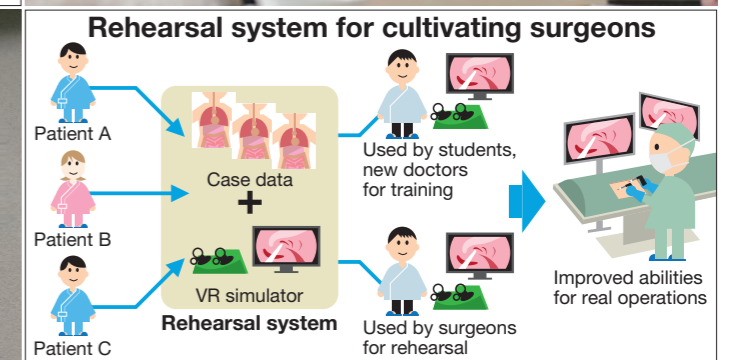
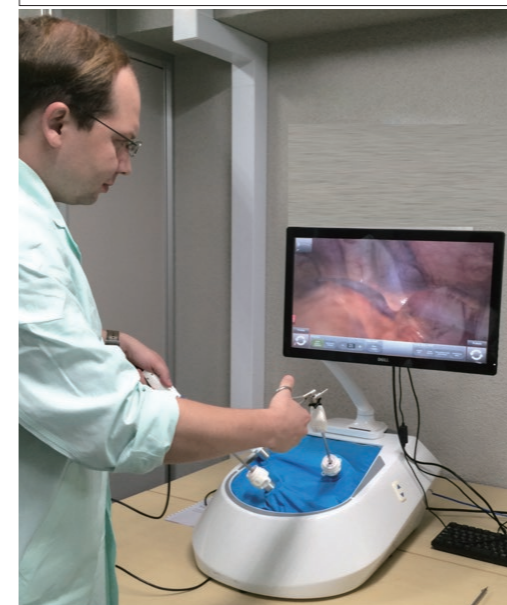
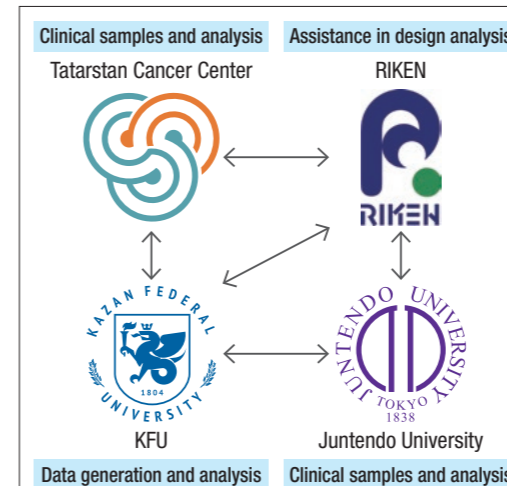
In October 2015 Juntendo University School of Medicine in Tokyo joined the circle of collaborative ties in order to move the research further forward into the clinical sphere. One of the results of the cooperative relationship is that Juntendo University has set up a training center equipped with a virtual reality (VR) simulator, robot simulator, and other state-of-the-art devices. These high-function simulators are manufactured by Eidos-Medicine, a start-up in Tatarstan, and are used in practical surgical training for students aspiring to be surgeons and for new doctors. Dr. Hayashizaki remarks, "Training with simulators has not been used very much before in Japan. Thanks to this training, we can expect an increase in the number of doctors in Japan who are skilled in difficult laparoscope operations."

At present RIKEN, Eidos-Medicine, and Dnaform, a Japanese company established through RIKEN's venture system, are jointly developing a device to easily and speedily identify infection from contagious diseases. This device is expected to be useful in preventing the spread of such diseases as HIV/AIDS, which is a serious problem in Russia. Dr. Hayashizaki says of the future prospects, "Joint research by Japan and Russia is making great strides and involves not only research institutes but also private companies. In the future collaborative ties are likely to spread to other fields as well."

Joint research by Japan and Russia benefits both countries, and the results of this research can have positive effects around the world.



Kazan Federal University (KFU) in Kazan, the capital of the Russian republic of Tatarstan, has a long history, originating from an institution founded in 1804. RIKEN and KFU established a joint research laboratory on KFU's Kazan campus (left) in January 2016 and another one on RIKEN's Yokohama campus (right) in August 2016.



1. RIKEN, KFU, the Tatarstan Cancer Center, and Juntendo University are supplementing each other's capabilities to conduct advanced research into cancer. 2. Dr. Yoshihide Hayashizaki, a researcher who also has experience as a clinician, has developed original RNA analysis technology, such as the CAGE (Cap Analysis of Gene Expression) method, and has contributed immensely to the development of RNA research globally. 3. The VR simulator at Juntendo University's Medical Technology & Simulation Center, manufactured by Eidos-Medicine, enables students to see and touch highly realistic models of internal organs and learn both the basics and the application of laparoscopy. 4. The rehearsal system combines a VR simulator with three-dimensional data compiled from the MRI scans of various cases. One idea under consideration is to sell this system for use in training surgeons.