



The Story Behind Warsaw Genomics' Automated RNAdvance Viral Extraction Workflow

Warsaw Genomics consists of talented scientists whose primary mission is to study errors in the human genome for cancer, metabolic, and rare diseases using modern genetic analysis tools.



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Before the global outbreak of SARS-CoV-2 in 2020, Warsaw Genomics focused on their primary mission to study the genomic errors responsible for cancer, metabolic, and rare diseases in humans. Their team of talented scientists uses modern tools of genetic analysis and advanced bioinformatics in this pursuit.

The pandemic, however, shifted their priorities. In March, Warsaw Genomics recognized the rapidly growing demand for viral testing in their home country of Poland and started to expand their capacity for RNA analysis. They approached Beckman Coulter Life Sciences for support, and the two groups worked together to build an extraction pipeline using **RNAdvance Viral chemistry and Biomek automation** in just a few weeks.



We interviewed

Dr. Monika Kolanowska, Scientist and Laboratory Team Leader at Warsaw Genomics, to discuss the collaboration with Beckman Coulter and how

they overcame the challenges associated with the accelerated scale-up. The first major challenge was throughput. At the beginning of the project, Dr. Kolanowska's lab set a goal of performing 2,000 extractions per day. Even with scientists working around the clock, it was impossible to achieve this target using a manual approach. An automated solution was necessary. Beckman Coulter recommended using the RNAdvance Viral extraction kit, bead-based chemistry that uses Solid Phase Reversible Immobilization (SPRI) technology. It showed significant agreement with positive and negative SARS-CoV-2 samples, and its methods can be readily automated.

Compared to an existing extraction kit used in the lab, RNAdvance Viral showed significantly higher detection sensitivity, with Ct values of 5 to 10 cycles lower in quantitative PCR assays.

Beckman Coulter also proposed using Biomek i5 liquid handlers to automate the extraction process. The resulting solution runs with minimal user interaction and takes about 1 hour to extract RNA from 192

samples. With the help of automation, the lab is able to “sustain the same time frame during the whole day and, as a consequence, lets (us) run more samples daily,” said Dr. Kolanowska. Thanks to this efficient pipeline, Warsaw Genomics recently announced the ability to process 3,500 SARS- CoV-2 viral RNA samples daily.

Another challenge that Dr. Kolanowska and her group faced was building an automated RNA extraction pipeline from scratch in a short time frame. The Beckman team shared the same urgency, and the RNAdvance Viral extraction kits and a Biomek liquid handler were delivered and installed in just a few days. The first round of extraction tests was successfully completed within three days after instrument installation.

The Beckman support team stays in touch with Warsaw Genomics so they can respond quickly whenever there is a need. Dr. Kolanowska says she “really appreciates all your help and support for us”

and believes that with an ongoing partnership with Beckman Coulter Life Sciences that “we’ll figure out all the obstacles we’re running into.”

From this experience, Dr. Kolanowska mentioned that her key learning is “to understand how we can use Biomek workstations for different purposes. Now, I understand very (clearly) the specifications of our Biomeks and know how to use them in the future for different goals.”

Beckman Coulter is honored to be a part of the scientific community that fights the current COVID-19 pandemic. We appreciate the opportunity to collaborate with Warsaw Genomics to deliver an outstanding automation RNA extraction solution.

If you are interested in knowing more about Warsaw Genomics, please visit warsawgenomics.pl/en/#/. And you can connect with their talented scientists at [linkedin.com/company/warsaw-genomics/](https://www.linkedin.com/company/warsaw-genomics/).

