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Korea to develop AI-based diagnostic reagents for high-risk pathogens

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Attoplex and KAIST sign MoU to develop AI-based PCR primer design platform

Attoplex Inc., a South Korea-based startup specialising in in vitro diagnostic (IVD) medical devices, has signed a Memorandum of Understanding (MoU) with Professor Minsu Kim's research team from the School of Computing at Korea Advanced Institute of Science and Technology (KAIST) for the joint development of artificial intelligence (AI)-based diagnostic reagents for high-risk pathogens."

The MoU aims to develop diagnostic reagents that maintain high sensitivity and specificity, even for rapidly mutating pathogens such as RNA viruses. The collaboration will focus on commercialising "VPrimer", an automated primer-probe design algorithm developed by Professor Kim's team.

VPrimer is an algorithm that analyses thousands of variant sequences from high-risk RNA viruses — such as SARS-CoV-2, MERS, Zika, and Ebola — and automatically designs high-precision primer-probe sets with at least 95% mutation coverage.

Compared to designs from globally recognised WHO-affiliated institutions, including the CDC in North America and the University of Berlin in Germany, VPrimer has demonstrated fewer undetected variants and higher specificity (with no cross-reactivity to non-target viruses), with its technological excellence validated internationally.

The collaboration will center around "VPrimer," a proprietary technology developed by the research team of Professor Minsu Kim at KAIST's School of Computing, which enables high-precision primer design based on real-time viral mutation data. The goal is to enhance early diagnostic accuracy and accelerate the global deployment of molecular diagnostic kits during pandemics.

Through this MoU, KAIST will enhance the VPrimer-based algorithm and provide the AI-powered analytical platform, while Attoplex will take the lead in developing, manufacturing, certifying, and commercialising high-sensitivity, high-specificity diagnostic reagents based on these technologies.