

Portal and Regeneron Publish PRIME® Needle-Free Innovation Study, Informing Next-Generation Platform Development

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CAMBRIDGE, MA, UNITED STATES, October 16, 2025 /EINPresswire.com/ -- [Portal](#) Instruments and Regeneron Publish Study Demonstrating [PRIME®](#) Needle-Free Drug Delivery Innovation — Directly Informing the New [PRIME NEXUS™](#) Needle-Assisted Platform



Next Generation Platform: The PRIME NEXUS™ System consists of a reusable smart autoinjector unit and single-use disposable cassettes that are compatible with standard drug containers.

□ Portal Instruments and Regeneron publish new data demonstrating Portal's PRIME® needle-free injection technology for large volume injections — engineering insights that directly informed the design of the latest PRIME NEXUS™ needle-assisted platform.

□ PRIME NEXUS™ leverages Portal's decade-long experience of reusable needle-free expertise to deliver high-viscosity biologics with tailored injection depth, volume flexibility, and reduced development risk.

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Patrick Anquetil, CEO Portal

Portal Instruments, a leader in advanced drug delivery technology, today announced the publication of a collaborative study with Regeneron Pharmaceuticals in Bioengineering & Translational Medicine. The study highlights the capabilities of Portal's proprietary needle-free, high-pressure auto injection platform, PRIME®, to deliver challenging biologics with precision, speed, and patient comfort — foundational expertise that has directly informed the company's newest product, the PRIME

NEXUS™ needle-assisted reusable autoinjector platform.

The study demonstrates that Portal's novel, computer-controlled, needle-free injector can safely and effectively deliver high-viscosity (>50 cP, 2 mL) monoclonal antibody formulations subcutaneously, achieving bioavailability, pharmacokinetics, and product integrity comparable to conventional needle-and-syringe injections. These findings underscore the potential of Portal's platform technology as a patient-friendly and scalable solution for the delivery of complex biologics.

For over a decade, Portal has been at the forefront of needle-free injection science, developing unparalleled expertise in the physics of drug delivery physics — from fluid dynamics and viscosity management to injection depth control. This know-how is now powering a new generation of drug delivery systems. While PRIME NEXUS™ is a needle-assisted autoinjector, it builds directly on Portal's deep engineering legacy to optimize performance for high-viscosity biologics, variable fill volumes, and complex injection profiles.

"This work builds on our deep expertise with our proprietary linear actuator platform and directly informs our PRIME NEXUS™ product, as both devices leverage the same core technology," said Dr. Patrick Anquetil, CEO at Portal Instruments. "This shared engineering foundation enables us to accelerate innovation, reduce development risk, and bring to market a highly differentiated platform for high-viscosity biologics and other challenging therapies."

"Regeneron's expertise in developing high-concentration monoclonal antibodies made them the ideal partner to rigorously challenge our needle-free PRIME® platform," said Marc Pelletier, Senior Director, System Research & Design at Portal Instruments. "Together, we demonstrated that PRIME® could generate the pressure and control needed to consistently deliver high-viscosity formulations subcutaneously, producing PK profiles comparable to those of needle-and-syringe (N&S). The collaboration also provided critical insights into the dynamics of large-volume, high-viscosity subcutaneous delivery through a N&S system, which we directly applied to advance our PRIME NEXUS™ needle-assisted platform toward a more streamlined, consistent patient experience."

With PRIME NEXUS™, pharmaceutical partners can expect:

- Tailored performance — precisely optimized for viscosity, injection depth, and volume.
- Streamlined development — reduced technical risk through proven platform continuity.
- Enhanced patient experience — drawing on Portal's human-factor insights from over a decade of experience in reusable needle-free injection technologies.

The recently published Regeneron study underscores the engineering rigor and cross-platform design strategy behind both PRIME® and PRIME NEXUS™, highlighting Portal's ability to rapidly advance reusable injection solutions for the next wave of complex biologic therapies.

For more information about PRIME® or PRIME NEXUS™ and Portal's advanced injection technologies, visit www.portalinstruments.com.

The peer-reviewed publication is available at:

<https://aiche.onlinelibrary.wiley.com/doi/10.1002/btm2.70063>

About Portal Instruments

Portal Instruments is a privately held medical device company focused on developing and commercializing innovative drug delivery platform technologies that transform the administration of injectable medications. Portal's mission is to improve patient experience, adherence, and outcomes through advanced, user-centric delivery solutions.

Portal Instruments will showcase PRIME NEXUS™ and its expanding delivery solutions at upcoming industry events, including PDA, PODD, CPhI.

Contact us to learn more and schedule a time to connect at these events

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