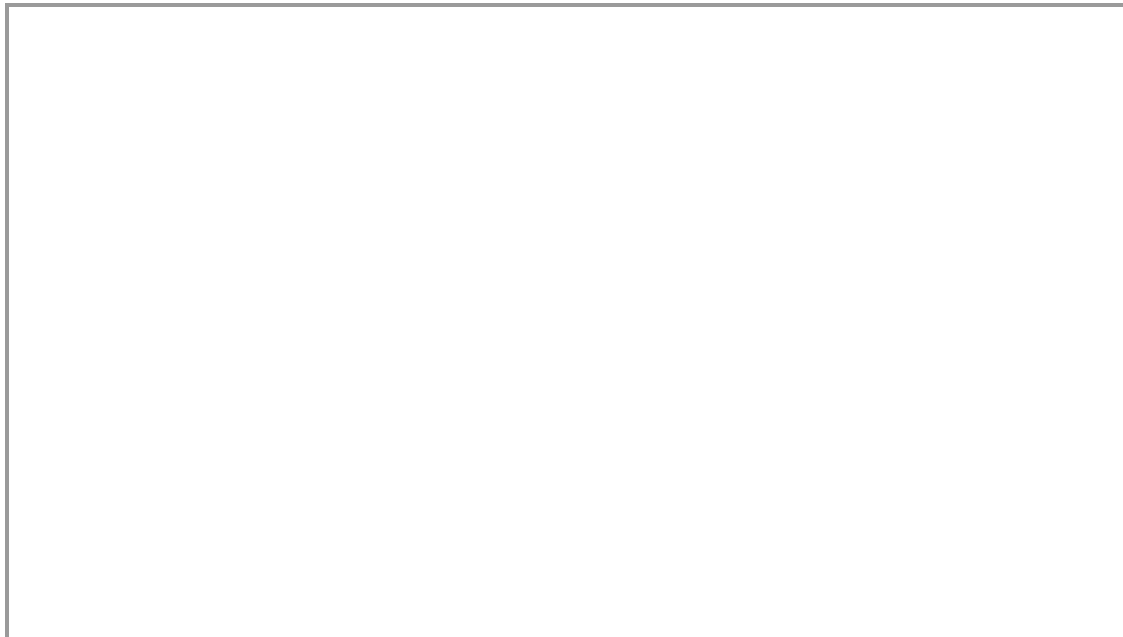


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Volition Solves Liquid Biopsy's "Needle in a Haystack" Problem; Achieves 180-fold (18,000%) Enrichment

HENDERSON, Nev., Dec. 11, 2025 /PRNewswire/ -- VolitionRx Limited (NYSE AMERICAN: VNRX) ("Volition"), a multi-national epigenetics company, announces preprint availability of a new manuscript entitled "[Direct analysis of transcription factor protected cfDNA in plasma by ChIP-seq: Measurement of altered CTCF binding in cancer is a novel biomarker for liquid biopsy](#)". This paper showcases both a new method, Capture-Seq™, and new biomarkers for the detection of cancer, holding the promise of accurate, low-cost tests for a wide range of cancers.



Physical enrichment of ultrashort DNA fragments bound to a transcription factor is a key breakthrough allowing for the quantification in blood of combinations of potentially hundreds of binding sites associated with cancer that represent a new class of ultrashort DNA biomarkers not available to previous DNA analysis methods^{1, 2}. Volition has achieved 180-fold enrichment (18,000%) through our unique focus on chromosome fragments – the form in which DNA actually exists in the blood. In contrast, current methods focus on the DNA itself after it has been chemically extracted from the blood, when its context within a chromosome has been lost.

Dr Jake Micallef, Chief Scientific Officer, Volition commented:

"This is, I believe, a world-first breakthrough – it is the first time that transcription factor-bound DNA has been physically separated from the massive amounts of background DNA in

the blood, and could, in my opinion, represent the biggest scientific breakthrough in cancer testing in recent years.

"There is excitement in the world of liquid biopsy cancer DNA testing around the recent discoveries of ultrashort DNA fragments in the blood (including transcription factor-bound DNA), which hold great promise not only for accurate low-cost early cancer detection and cancer management, but also potentially for identifying the type of cancer present³.

"Previous DNA liquid biopsy tests involve extraction of all DNA in the blood. A challenge faced by current technologies is that the overwhelming majority of DNA extracted from the blood is not cancer related but in fact "background" DNA. This background DNA interferes in DNA based liquid biopsy tests, especially tests for early-stage cancer. However, by isolating ultrashort DNA fragments bound to transcription factors using an antibody, Volition's technology removes 99% of background DNA before DNA extraction. Only ultrashort transcription factor-bound DNA is extracted and sequenced and the background DNA is washed away, solving the classic needle in a haystack problem. Moreover, this ultrashort transcription factor-bound DNA holds a great deal of additional information not available in the remaining 99% of DNA⁴.

"In this paper we report that we have successfully separated out ultrashort transcription factor-bound DNA from blood and removed the background DNA, allowing accurate analysis, by sequencing, of those genes which are epigenetically altered in cancer – and hence to identify patients with cancer - with a relatively simple low-cost blood test. Reducing the amount of DNA to be sequenced by ~99% is also likely to make testing significantly less costly.

"Volition has now developed not one, but two, different patent-pending technologies that can separate ultrashort DNA from background blood DNA. The first of these and its potential use for accurate detection of cancer is described in the paper.

"In a first small training cohort of 70 people, including 49 patients with breast, prostate lung or colorectal cancer, analysis of ultrashort transcription factor-bound DNA was able to detect all the patients with cancer (100% sensitivity), including those with early stage I or stage II disease, with no false positives (100% specificity). This initial result needs to be confirmed in larger independent validation studies but holds great promise for the technology."

Mr Gael Forterre, Chief Commercial Officer, Volition added:

"This scientific breakthrough has not only generated a lot of interest within Volition but also with potential licensing partners. This new technology expands our existing Nu.Q® portfolio of tests in canine cancer screening and human lung cancer management which we are currently commercializing.

"We feel that this technology could, with further development, become very widely used and are actively seeking large commercial partner/s to work with us to accelerate the integration and launch of this technology as soon as possible.

"We believe this represents a significant commercial opportunity with a Total Addressable Market on an annualised basis of approximately \$23 billion⁵."

1. Snyder et al, Cell 2016 Jan 14;164(1-2):57-68.
<https://doi.org/10.1016/j.cell.2015.11.050>
2. Hudecova et al, Genome Res. 2022 Feb;32(2):215-227. doi: [10.1101/gr.275691.121](https://doi.org/10.1101/gr.275691.121).
3. Fang et al, *Genome Biol* **21**, 247 (2020). <https://doi.org/10.1186/s13059-020-02152-7>
4. Mundade et al, Cell Cycle. 2014;13(18):2847-52.
<https://doi.org/10.4161/15384101.2014.949201>
5. Data on File : Volition TAM Model

About Volition

About Volition: Volition is a multi-national company focused on advancing the science of epigenetics. Volition is dedicated to saving lives and improving outcomes for people and animals with life-altering diseases through earlier detection, as well as disease and treatment monitoring.

Through its subsidiaries, Volition is developing and commercializing simple, easy to use, cost-effective blood tests to help detect and monitor a range of diseases, including some cancers and diseases associated with NETosis, such as sepsis. Early detection and monitoring have the potential not only to prolong the life of patients, but also to improve their quality of life.

Volition's research and development activities are centered in Belgium, with an innovation laboratory and office in the U.S. and an office in London.

The contents found at Volition's website address are not incorporated by reference into this document and should not be considered part of this document. Such website address is included in this document as an inactive textual reference only.

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agreements with third parties for its products, and Volition's expectations regarding the terms of such agreements. Volition's actual results may differ materially from those indicated in these forward-looking statements due to numerous risks and uncertainties, including, without limitation, results of studies testing the efficacy of its tests. For instance, if Volition fails to develop and commercialize diagnostic, prognostic or disease monitoring products, it may be unable to execute its plan of operations. Other risks and uncertainties include Volition's failure to obtain necessary regulatory clearances or approvals to distribute and market future products; a failure by the marketplace to accept the products in Volition's development pipeline or any other diagnostic, prognostic or disease monitoring products Volition might develop; Volition's failure to secure adequate intellectual property protection; Volition will face fierce competition and Volition's intended products may become obsolete due to the highly competitive nature of the diagnostics and disease monitoring market and its rapid technological change; downturns in domestic and foreign economies; and other risks, including those identified in Volition's most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q, as well as other documents that Volition files with the Securities and Exchange Commission. These statements are based on current expectations, estimates and projections about Volition's business based, in part, on assumptions made by management. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Forward-looking statements are made as of the date of this release, and, except as required by law, Volition does not undertake an obligation to update its forward-looking statements to reflect future events or circumstances.

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