



We are Medicago

- A biopharmaceutical company and pioneer of plant-based technology.
- Founded in 1999 with the belief that through rigorous research and persistent innovation, we can use our technology to provide unique solutions to difficult problems.
- Headquartered: Quebec City, Canada
- Employees: 450+
- Locations: Quebec, Canada & Durham, North Carolina, USA



Our vision for a world prepared to face any disease

Medicago’s mission is to improve health outcomes by using its innovative plant-based technologies for rapid responses to emerging global health challenges. Diseases know no boundaries – that’s why Medicago is working tirelessly to develop vaccines to help prevent disease and to develop therapies to help treat those diseases.

Our proprietary plant-based technology is changing the game

Medicago uses proprietary plant-based technology to develop protein-based vaccines and therapeutics. Our technology is different than many other technologies currently used. It uses Virus-Like Particles (VLPs) that mimic the shape and dimensions of a virus, which allows the body to recognize them and create an immune response in a non-infectious way.

Our proprietary technology is extremely versatile. As soon as the genetic sequence of a virus becomes available, Medicago can develop a clinical-grade vaccine candidate in only a few weeks. Our recombinant technology allows the production of a vaccine that has a high likelihood to precisely match the circulating strains, such as in the case of seasonal influenza as it can be developed with a very short lead time before flu season begins. The technology is also scalable, allowing us to increase the volume of production by simply increasing the number of plants used.



Medicago’s proven plant-based discovery and development platform is scalable and versatile, allowing us to build a robust and extensive product pipeline. Medicago is currently focused on vaccines for coronavirus (COVID-19/SARS-CoV-2) as well as influenza and has initiated the early development of vaccines for rotavirus and norovirus.

Our production platform: Why we use plants

Plants are highly efficient at producing proteins of varying complexity, serving as bioreactors - or mini factories - for our vaccines, protein-based vaccines and therapeutics. Medicago’s plant-based production platform demonstrates agility and accuracy by helping to eliminate the risk of mutation and contamination during production. This has previously allowed us to deliver research grade vaccine doses in just 19 days, and clinical grade in 6-8 weeks.

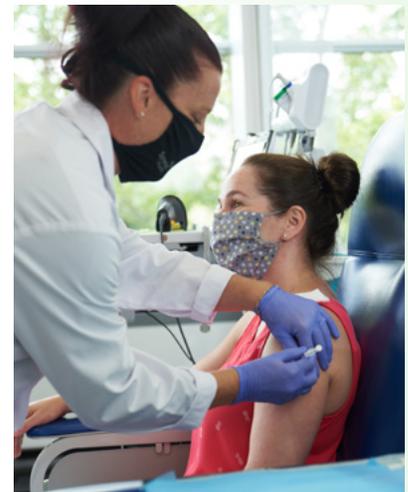


Virus-Like Particle (VLP)

Medicago's plant-based VLP technology is an exciting approach to vaccine development. VLPs mimic the native structure of viruses, helping them to be easily recognized by the immune system. However, they lack core genetic material which makes them non-infectious and unable to replicate. In other words, they are designed to induce an immune response close to a natural infection, but without the challenges associated with it. VLPs can also be engineered to have antigens attached for use in vaccines or other immunotherapies.

Proficia® technology

- Proficia® technology, developed by Medicago, is a proprietary alternative to traditional egg-based production systems.
- Traditional licensed influenza vaccines, for example, are prepared from fertilized chicken eggs, and able to grow strain of the virus, usually enough for a single dose per egg.
- With living plants as hosts, Proficia® technology temporarily introduces new genes into the leaves resulting in the rapid production of specific and complex proteins. This technology creates a flexible and highly scalable system for producing effective vaccines and therapeutics.
- This technology platform is very versatile and to date has been able to produce a wide range of protein-based product candidates. Proficia® can be applied to the production of vaccines, including VLPs, and therapeutic proteins.



Our track record

At Medicago, we have demonstrated we have the capability to be a first responder in a flu pandemic. Our first vaccine candidate, a seasonal recombinant quadrivalent VLP vaccine against influenza, is currently under review by Health Canada following the completion of a robust safety and efficacy clinical program involving over 25,000 subjects.

Our COVID-19 Vaccine Candidate

In July 2020, Medicago began Phase 1 clinical trials for its plant-derived COVID-19 vaccine candidate, administering the first doses in healthy volunteers. Phase 1 trials are now complete, with promising antibody responses in 100 per cent of the 180 volunteers who participated in the study. Phase 2 trial started on November 12th, 2020 and enrolled 900 subjects in Canada and in the US. Based on the interim results of Phase 2 and the approval of Health Authorities, Phase 3 trial will start first quarter of 2021.

For more information, please visit www.medicago.com

References:

- [1] Wong & Webby. 2013. Traditional and New Influenza Vaccines. *Clin Microbiol Rev.* 26(3): 476–492.
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- [3] Cision. 2012. Medicago Announces 2012 Fourth Quarter and Year-End Financial Results. Available at: <https://www.prnewswire.com/news-releases/medicago-announces-2012-fourth-quarter-and-year-end-financial-results-200501751.html>. Last accessed: August 2020.