

Press release

**A promising Swiss invention, now mature, stands to conquer the global market**

## **Innovative testing system speeds the development of antiparasitic drugs**

**Neuchâtel, 24 August 2021 – INVENesis, a Neuchâtel-based biotech firm founded by former Novartis employees, teamed up with INRAE and CSEM to develop a novel testing system for developing antiparasitic treatments. The research was funded in part by the Canton of Neuchâtel and Innosuisse. Several leading animal-health businesses have already expressed an interest in the technology. The new invention comes at a critical time, since a growing number of parasites are becoming resistant to existing drugs.**

Parasites – and especially nematodes (or roundworms) – are big threats to both livestock and pets. If left untreated, these organisms can proliferate rapidly and cause a variety of health problems including anemia, rapid weight loss and even death. Effective antiparasitic drugs do exist, but parasites are becoming increasingly resistant to them due in particular to patchy compliance with treatment protocols. Scientists are therefore working hard to develop new treatments.

At Saint Blaise, in the Canton of Neuchâtel, [INVENesis](#) has unveiled a new system that can speed the development of antiparasitic drugs. It teamed up with [INRAE](#) and [CSEM](#) to develop its device, which allows scientists to rapidly and accurately test the efficacy of different compounds directly on roundworms.

The system employs technology from INRAE that was initially intended for university research. It's the result of three years of joint R&D funded in part by Neuchâtel Canton's economic development agency and Innosuisse. INVENesis – a startup created by former Novartis employees (see box) – has already secured major contracts for its invention with key players in the animal health industry.

### **More precise and efficient**

The new system offers a unique approach to screening drug candidates, based on a highly selective design process that brings the results of *in vitro* experiments much closer to those of *in vivo* ones – marking a major step forward from existing procedures.

“Roundworms literally have to keep swimming to stay alive in animals’ digestive tracts,” says Lucien Rufener, CEO of INVENesis. “But with most methods currently used to develop dewormers, the roundworms are inactive and just sit at the bottom of the test plate.” The INVENesis system, on the other hand, prompts the worms to swim from one point to another. “That lets scientists observe how a drug candidate affects the way the parasite moves and immediately eliminate those that wouldn't be effective inside an animal.”

CSEM engineers developed a design for the system that would force the worms to swim in a single direction. “It was a real challenge to create a design that was both effective and compatible with

industrial manufacturing processes,” says Sarah Heub, a Senior R&D Engineer in Life Microtechnologies at CSEM. “We drew on our skills and experience in life science to help turn the initial idea into a market-ready product.”

In addition to speeding the discovery of new antiparasitics, the technology embedded in the new system also cuts drug development costs. Elodie Valazza Rufener, CFO of INVENesis, explains: “This innovation was made possible by leveraging the synergies among several different research partners and pooling their know-how to build a product that will be competitive in the global market.” Alexandre Vernudachi, the managing director of INVENesis France and head of field testing, adds: “We’re really excited about the potential of our system, which has already been tested successfully on different roundworm species. It has shown another promising advantage too, in that it can detect individual drug-resistant roundworms within a field sample.”

At CSEM, the research conducted for this project is part of the Tools for Life Sciences program, which involves teams at CSEM sites in Alpnach, Landquart, Muttenz, Neuchâtel and Zurich.

#### **Swiss-born innovation**

INVENesis Sàrl was founded in 2017 by former employees of Novartis’ animal-health R&D center in Saint Aubin, in the Canton of Fribourg, after it closed in 2015. They drew on their in-depth industry knowledge and solid address book to continue their research efforts, initially at the University of Neuchâtel’s School of Science and subsequently at NEODE, a startup incubator in Neuchâtel that’s now part of Microcity. This joint R&D project with CSEM received funding from Neuchâtel Canton’s economic development agency and subsequently from Innosuisse. The cantonal government was attracted in particular by the project’s two target industries – biotech and pharma – which are fast-growing, high-added-value, and strategic for the canton’s economy. INVENesis moved into its Saint Blaise offices in September 2020; today the firm has around a dozen employees, a subsidiary in France, and an international customer base that ranges from startups to multinationals and research institutes. The new system, developed in association with INRAE and CSEM, is now mature and stands to be a flagship product that will conquer the global animal health market.

Website: [www.invenesis.com](http://www.invenesis.com)



A robot dispenses roundworms on microplates for motility trap assays. The roundworms are directed through a set path while scientists use a viewing system and data-processing applications to evaluate how different compounds affect the worms’ motility – an important indicator of drug efficacy.

Each microplate measures 15 x 20 cm and contains 96 wells, for a total of 20,000 roundworms per plate.

Press kit (pictures): [INVENesis](#)

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