

### CORPORATE PROFILE

# Spinomix Automates Lab-Bench Sample Prep

## Company Puts Existing Processes and Technologies in Play to Increase Efficiency

*Gail Dutton*

Spinomix is developing sample processing technologies that combine industry-standard technologies into new, automated platforms that promise to increase efficiency for bench scientists and diagnostics labs.

“Samples like blood, urine, and swabs can be highly heterogeneous and difficult to get meaningful results from,” says Nasri G. Nahas, CEO. Current extraction methods, he says, are time-consuming, labor-intensive, and insufficiently sensitive.

To address that demand, Spinomix was formed in 2005. Based at the Ecole Polytechnique Fédérale de Lausanne, it is developing MagPhase™ and FibroTrap™ for sample collection and purification. With these processing technologies, Nahas points out, “Spinomix didn’t invent new chemical processes, but innovations in the way existing processes and technologies are put to practice.” The chief benefits, he says, are automation (which promotes speed and reproducibility), cost effectiveness, and enhanced sensitivity.

### **MagPhase Cartridge-Based System**

“MagPhase combines microfluidics and the industry-standard magnetic

beads technology,” Nahas explains. The result is an automated analytical platform that allows all existing magnetic beads applications to be transferred onto a disposable cartridges-based system. The system processes different types of samples simultaneously, in volumes ranging from 1 to 10 mL, for random access modularity.

In tests involving food safety, Nahas says detection thresholds are as low as a few colony forming units (CFU) per 10 mL sample. This enhanced sensitivity decreases the limit of detection or, alternatively, allows the use of smaller sample sizes.” In tests to detect food-borne pathogen, this improved detection limit made it possible to eliminate the culture step and, therefore, reduce the sample-to-answer time to 3 hours rather than the 12 to 15 hours required otherwise.

“MagPhase has achieved proof of principal and is being produced internally for testing. We have collaborations in place with major lab equipment developers to validate the technology. Our goal is to develop these collaborations into strategic commercial partnerships to license our products,” Nahas adds.

FibroTrap, Spinomix’ second sample processing technology, selectively sepa-

## Vital Signs

### Spinomix

#### Location

Innovation Square EPFL PSE-A  
1015 Lausanne Switzerland

#### Phone

41 21 693 92 50

#### Website

www.spinomix.com

#### Principal

**Nasri G. Nahas**  
CEO

#### Number of Employees

10

#### Focus

Spinomix develops tools for sample preparation based on microfluidics and automation. Its primary focus is on critical applications for human disease. Animal health and food safety also are of interest.

rates and concentrates target molecules (including bacteria, viruses, and tumor cells) from numerous samples like blood, urine, swabs, and food based upon their affinity to fibrinogen within a routine sample collection tube. “This greatly simplifies the sample processing workflow, improves sensitivity, and significantly shortens the time required to go from sample collection to results analysis, thus enabling more efficient diagnostics,” Nahas says. Assays currently are available for MRSA and *Chlamydia trachomatis* and *Neisseria gonorrhoea* (CT/NG) detection.

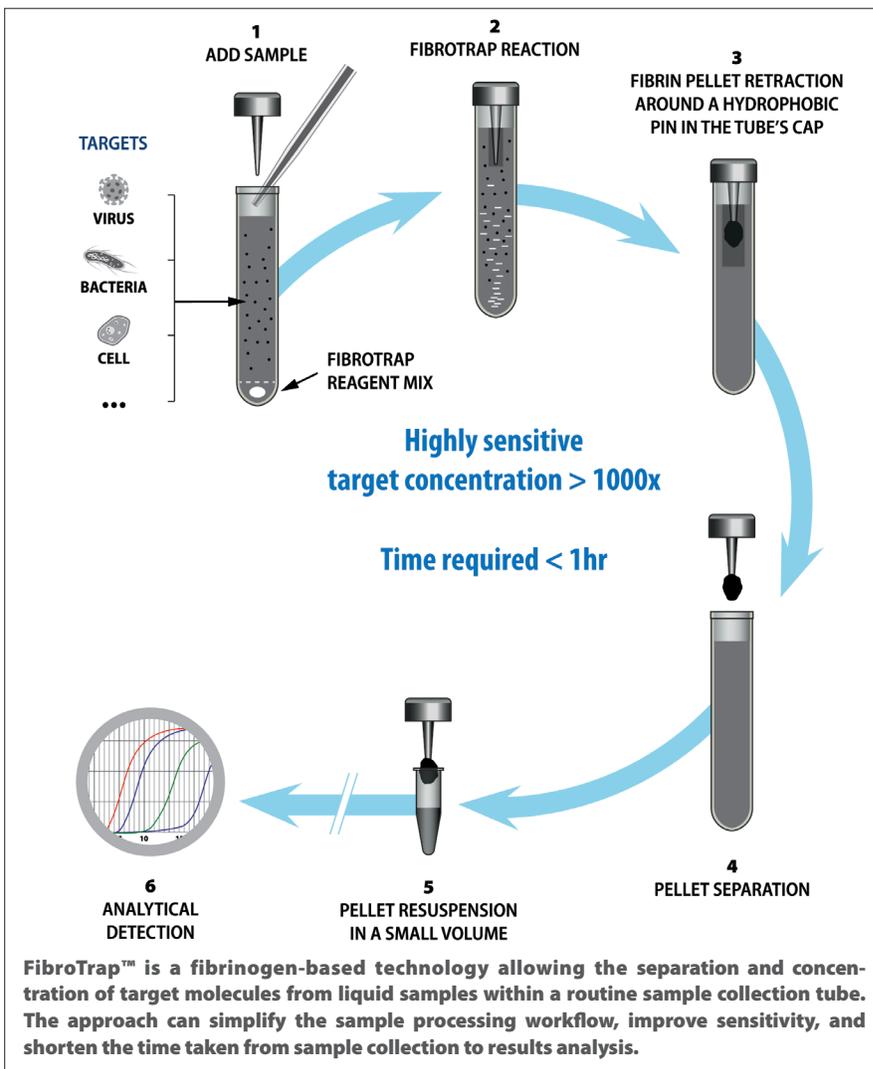
As Nahas explains, the FibroTrap collection tube contains the clotting agent fibrinogen and all needed chemistry in a lyophilized form. “Clotting is an immune system reaction that captures bacteria. We use both natural and induced affinities to selectively separate molecules.” Once captured, the molecules migrate to the tube’s special cap, forming concentrated pellets in about 30 minutes. This concentrated pellet then can be used in any downstream identification workflow like PCR or genome sequencing.

“The sample is concentrated hundreds of times in less than one hour,” he points out. This enables targeted treatments (like those for sepsis, which typically take two days to produce results) to be administered sooner. “For example, CT/NG assays with FibroTrap show a 20- to 40-fold increase in efficiency when compared to other methods,” Nahas says.

### Business Model

Commercializing the MagPhase and FibroTrap will require relationships with experienced partners for downstream steps like product validation, approval, or manufacturing. “Our focus—the value we add—is innovation and product and business development. We’re not experts in manufacturing and distribution, for example. This is why our strategy is to liaise with selected partners to bring our products to market,” Nahas says.

The initial goal is to out-license Spinomix’ technologies or internally developed assays for further validation



and commercialization. The company also is interested in co-development partnerships to create additional assays. Nahas says he considers both MagPhase and FibroTrap as platform technologies.

For example, Nahas explains, because MagPhase automates sample preparation at the bench, “We also can imagine adding detectors, like isothermal PCR, to it.” He says it targets a multibillion sample processing research market. Likewise, FibroTrap is designed for the diagnostic market but also can be used for research purposes allowing, for example, microbiologists to extract bacteria faster.

Nahas says he hopes to close some of the first out-licensing or partnering deals this winter and to launch the first MagPhase applications onto the market by early 2016.

FibroTrap will launch later. “We’re getting proof of principle through collaborations with our partners. With fair winds, we expect to have the first FibroTrap assays on the market in the second half of 2016,” Nahas adds.

The company, so far, has raised CHF 5.5 million (about \$6 million) in equity finance. “We can’t do it all at once, however,” Nahas reports. Therefore, the company is raising capital from corporate funds and high-net-worth individuals to increase its business development and marketing efforts and to expand the breadth and coverage of both its platforms. He says he expects the current fund to close around the end of 2014.

“We will, however, maintain controlled and focused growth to be small in size but big in reach,” Nahas says.

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