

Emerging Company Profile

Diagnoplex: Simplifying colon screening

By Stephen Hansen
Staff Writer

The gold standard for colorectal cancer diagnostics is colonoscopy, yet the invasive nature of the test consistently leads to poor compliance among the at-risk population. **Diagnoplex S.a.r.l.** believes its non-invasive test will not only improve compliance, but also be able to detect colorectal cancer at earlier stages than other non-invasive testing methods, and perform comparably to colonoscopy.

CEO Stavros Therianos noted that most patients perceive colonoscopy to be uncomfortable. "If you take the population at risk worldwide, it's around 200 million people, and at maximum 20% of the people at risk actually consult for colon cancer screening," he told BioCentury.

Noninvasive tests performed using feces or blood — such as the fecal occult blood test (FOBT) or a variety of tests that look for gene mutations in samples — do not have to break through this psychological barrier. But Therianos said they lack sensitivity and specificity in the earlier stages of the disease.

"All these tests have some sensitivity and specificity for later stages of colon cancer; whether they are DNA methylation or FOBTs, if you have an advanced stage, like stage III or IV, there they get good sensitivity and specificity. On the other hand, it is at a stage where it is already an overt disease and the chances of survival are very low," he said. "Right now, on the market, I'm not aware of any test that would have an acceptable sensitivity and specificity at very early stages or pre-cancerous stages of the disease."

According to Therianos, the problem is that such tests look for circulating tumor cells or metastases to identify signals that arise from the tumor. However, no such circulating tumor cells exist in the very early stages of the cancer, which he noted develops slowly over the course of 10 years in the majority of cases.

Rather than attempt to detect signals from the tumor, Diagnoplex's Colox diagnostic examines the host response.

"The path we are working on is not to look at the signal arising from the

Diagnoplex S.a.r.l.

Epalinges, Switzerland

Technology: Colox blood-based diagnostic test for colorectal cancer

Disease focus: Cancer

Clinical status: Pilot

Founded: 2005 by Stavros Therianos, Jacques Essinger, Jean-Pierre Rosat, Novartis Venture Fund

University collaborators: Swiss Institute for Experimental Cancer Research (ISREC), Centre Hospitalier Universitaire Vaudois (CHUV)

Corporate partners: N/A

Number of employees: 3

Funds raised: CHF700,000 (\$670,000)

Investors: Novartis Venture Fund

Patents: 2 issued covering Colox

tumor, but instead to look at the host response, the systemic response," Therianos said. "We look at how the body will answer to very early stages of tumor development."

The approach involves a molecular platform called single channel quantitative multiplex RT-PCR, which was developed by Therianos. The process allows for simultaneous quantification of up to 50 biomarkers from a very small blood sample.

Colox combines this platform with a set of biomarkers that detect changes in expression of genes involved in processes ranging from inflammation to angiogenesis. Therianos said the combination of biomarkers allows the test to detect both the early stage cancer and pre-cancerous adenomas that a colonoscopy would be able to determine.

In a 60-patient pilot study, Colox had 86% sensitivity and 95% specificity in early stage colorectal cancer, with 82% sensitivity and 91% specificity for pre-cancerous adenomas. Therianos said an 86% sensitivity would be more than enough to allow patients to skip a colonoscopy. He said the industry expectation is around 70%.

Last year, **OncoMethylome Sciences S.A.** reported data showing its blood-based colorectal cancer diagnostic had 70% sensitivity for early stage

colorectal cancer and 10% sensitivity for pre-cancerous adenomas.

The company also reported data for its stool-based colorectal cancer diagnostic, which showed 86% sensitivity in all-stage CRC and 12% sensitivity in adenomas. OncoMethylome did note that in the all-stage carcinomas, 82% were stage I-III colorectal cancer.

Both products are in clinical development.

Therianos noted that while the OncoMethylome stool-based test has similar sensitivity for early stage cancer, Colox is able to detect adenomas.

Therianos also noted the Colox test uses peripheral blood samples that can be taken by a physician during an annual checkup when testing for cholesterol and other normal blood work. He said stool-based tests generally have a poorer patient compliance due to the difficulty of obtaining the samples.

The company has about 130 patients enrolled in a pilot study of Colox and is in the process of raising a series A round. The cash will be used to move Colox into a pivotal trial in 600-1,000 patients. Final data for the pilot study are expected in 2H08.

Therianos said the company has had preliminary discussions with FDA, but until further talks are held it's unclear whether the agency will require a PMA or 510(k) submission package. He said that until the regulatory path is known, the company will prepare for a PMA submission.

Therianos said the company may take on a partner to market the tests or perform some direct sales itself to a select number of medical labs.

Therianos also noted that the platform is applicable to other types of cancer, as well as other diseases. The company's goal is to carve out a niche in the early cancer diagnostic space.

Diagnoplex expects to close a CHF9 million (\$8.8 million) series A round next quarter.

COMPANIES AND INSTITUTIONS MENTIONED

Diagnoplex S.a.r.l., Epalinges, Switzerland
OncoMethylome Sciences S.A.
(Euronext:ONCOB), Liege, Belgium