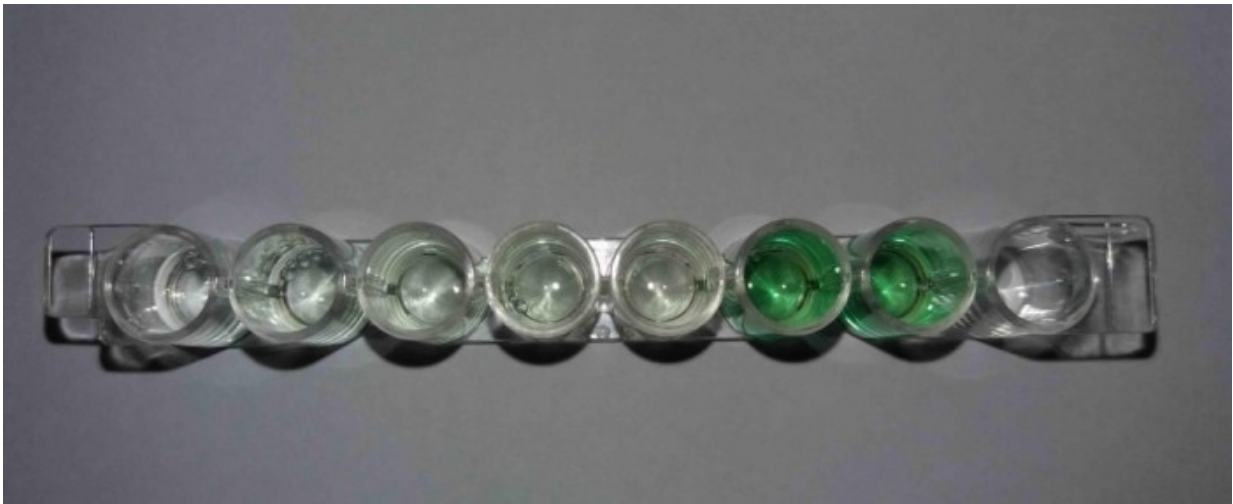


Testing kit identifies genetic variations without need for lab analysis

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Tests will identify genetic alterations that can be used to measure meat quality, characteristics of seedlings and plants, or pesticide resistance of disease-transmitting mosquitoes. Credit: Scheme Lab

Scheme Lab, a biotech startup incubated at the Center for Innovation, Entrepreneurship & Technology (CIETEC), in São Paulo, Brazil, is developing genetic tests that can be used anywhere—in factories, on farms, or even at home—without the need for analysis by specialized laboratories.

These "point-of-care" tests will identify genetic alterations that can be

used to measure meat quality, the characteristics of seedlings and plants, or the resistance of disease-transmitting mosquitoes such as *Aedes aegypti* to pesticides used against them.

"We're at the prototype stage," says biologist John Katz. From the start, Scheme Lab aimed at the development of a new diagnostic device that could rapidly and simply detect [single nucleotide polymorphisms](#) (SNPs), a type of DNA sequence variation that accounts for over 90 percent of genetic variation in humans, Katz explained. SNP detection tests can be used in people, animals and plants to identify diseases, physical traits and even individuals.

In the first phase of the [project](#), Scheme Lab focused on developing a prototype for diagnostic purposes, aimed at supplanting complex devices like PCR thermocyclers, DNA sequencers and microarrays, which only clinical laboratories are capable of maintaining and operating.

Scheme Lab's prototype comprises a simple portable kit that uses saliva to produce a colored result visible to the naked eye for detecting DNA sequences associated with eye color (blue, brown or both). The prototype was optimized, and the main technology plus enhancements were dubbed Simple SNP.

Having tested the technology and its application, the firm sought other markets. "The test platform can be used for any kind of genetic sequencing," says Katz. "We decided to switch focus to the corporate sector and invest in custom tests."

In [phase 2](#) of PIPE, which adopted this new market perspective, Scheme Lab developed two new versions of the prototype, one in collaboration with a leading Brazilian agribusiness firm. "This firm produces plants and seeks varieties with superior physical characteristics, many of which are associated with SNP-type DNA sequences. The test will help identify

plants on the client's own production premises," Katz explains.

In [phase 3](#) of PIPE, currently in progress, the firm is developing [prototypes](#) to produce a genetic [test](#) for use in agriculture and food. "One of our targets is the meat market, and the focus is on livestock breeders or meat packers," Katz says.

"Point-of-care" molecular diagnosis is a new market. "We're looking for partners and we've already talked to about 12 potential clients interested in having custom tests to diagnose genetic traits in agriculture, food, and healthcare, among others," Katz says.

Before settling himself as an entrepreneur in Brazil, where he is established since 2004, Katz consulted his network of contacts in the US. "Their view was that every country has its advantages and that Brazil had significant potential in biotech, as well as offering resources to support startups," he adds.

Provided by FAPESP

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