

# START-UP SPOTLIGHT

By Laurie Bedord, Advanced Technology Editor



ExpresSeed developed a handheld device that quickly identifies preprogrammed genetic markers. It dramatically simplifies testing and significantly reduces testing costs.

## IT'S IN THE GENES

IOWA ENTREPRENEURS DEVELOP A MOBILE SYSTEM TO QUICKLY DETECT GENETIC MARKERS IN SEED THAT IS APPLICABLE TO HERD MANAGEMENT AND OTHER USES.

Traditional genetic testing of seed has relied on enzyme-based DNA methods, which requires a lab, user expertise, and a lengthy turnaround time for results. With the introduction of ExpresSeed, an Iowa start-up is looking to simplify and speed up the process. “For less than \$10 per sample, the platform offers a low-cost, point-of-use device that detects the presence of preprogrammed genetic markers in under 10 minutes using a solution containing nanostructures,” says Derek Lyons, a chemistry professor at Simpson College in Indianola, Iowa. “This technology dramatically improves mobility, simplifies testing with a yes or no answer, and significantly reduces testing costs.”

Iowa-based DNP123 Company and ExpresSeed are asking the agriculture industry to offer insight for applying their core technology as well as ways to commercialize their genetic testing products.

### HOW IT WORKS

Genetic material from the seed is applied to the disposable sample card and inserted into the device. The information collected will be automatically uploaded to a cloud-based data analytics platform, which tracks testing locations and


results, providing immediate cost-saving insights.

Lyons, along with physicist Aaron Santos, are the founders of DNP123 Company, which focuses on nanotechnology research and development. The pair adapted their patent-pending nanotechnology to power the ExpresSeed device.

Similar to the way Legos are connected, the innovation uses tiny cubes to assemble microscopic structures. The cubes self-assemble so manufacturing is as simple as mixing the cubes together.

“It binds to the chains causing them to assemble arrays of straight parallel lines,

which are detectable by the device,” explains Santos.

By coupling the genetic testing results to historical weather, soil, and other publicly available data, the technology will be able to predict, for example, how many bushels a producer will have to sell at harvest. “Using an automated data science system, ExpresSeed provides accurate, predictive forecasting that is accessible through an intuitive web-based interface,” he says. 

## ABOUT THE COMPANY

**Company:** ExpresSeed, LLC  
**Founders:** Derek Lyons and Aaron Santos of DNP123 Company and The Emerge Foundation  
**Headquarters:** Indianola, Iowa  
**Background:** ExpresSeed was born out of The Emerge Foundation, which is hosted at Simpson College, and utilizes DNP123 Company's patent-pending nanotechnology.

“ExpresSeed is the first of several planned companies to use this revolutionary technology,” explains Todd Kielkopf, executive director of The Emerge Foundation.

The foundation is providing commercialization pathways to deploy the technology developed by Lyons and Santos as well as other external enterprises with high commercialization potential who are affiliated with private and community colleges. It is also developing a \$5 million Seed Capital Fund to be a lead investor for college-affiliated ventures.

Both DNP123 and ExpresSeed are seeking ag industry input for applying their core technology and to commercialize genetic testing products. Contact Kielkopf at 515/681-1297 or [todd.kielkopf@simpson.edu](mailto:todd.kielkopf@simpson.edu) to learn more. 