



## Power a City with Tornados? Latest Grants Announced by Thiel Foundation's Breakout Labs Includes an Unusual Twist

*Canadian company, AVEtec, plans proof-of-concept test to extract energy from a man-made, controlled tornado*

San Francisco - December 13, 2012 - [The Thiel Foundation](#) announced today three new grants awarded through [Breakout Labs](#), its revolutionary revolving fund to promote innovation in science and technology. The most recent award takes the program into clean energy, with a bold new proposal to harness the power of atmospheric vortexes.

[AVEtec](#) is the brainchild of Canadian engineer, Louis Michaud. His Atmospheric Vortex Engine (AVE) harnesses the physics of tornados to produce extremely cheap and clean energy. In his design, warm or humid air is introduced into a circular station, where it takes the form of a rising vortex, i.e. a controlled tornado. The temperature difference between this heated air and the atmosphere above it supports the vortex and drives multiple turbines. The vortex can be shut down at any time by turning off the source of warm air.

Among its advantages over other sources of energy, AVE power generation neither produces carbon emissions nor needs energy storage. AVEtec projects that the cost of the energy it generates could be as low as 3 cents per kilowatt hour, making it one of the least expensive forms of energy production. An AVE power station could have a diameter of 100 meters and generate 200 megawatts of electrical power, the same order of magnitude as conventional coal power stations.

"The power in a tornado is undisputed," said Louis Michaud. "My work has established the principles by which we can control and exploit that power to provide clean energy on an unprecedented scale. With the funding from Breakout Labs, we are building a prototype in partnership with Lambton College to demonstrate the feasibility and the safety of the atmospheric vortex engine."

Additional Breakout Labs grants were also recently awarded to General Genomics and Siva Therapeutics. General Genomics uses ancestral DNA sequence reconstruction to radically improve the efficiency with which protein- and peptide-based therapeutics, as well as industrially-relevant enzymes, can be developed. Siva Therapeutics is developing therapies with the potential to be more effective, safer, less expensive, and less invasive by exploiting the biophysical properties of gold nanorods engineered to capture infrared light and emit heat that destroys diseased tissue.

"Our three newest grant recipients-AVEtec, General Genomics, and Siva Therapeutics-are vastly different in their technologies, company strategies, and goals," said Breakout Labs Executive Director, Lindy Fishburne. "What unites them is ground-breaking science coupled with the passion, vision, and creativity of their founders. We are delighted to bring them into the Breakout Labs community."

Launched in November 2011, Breakout Labs provides early-stage companies with the means to pursue their most radical goals in science and technology. To date Breakout Labs has awarded a total of twelve grants of up to \$350,000 each. Breakout Labs accepts and funds proposals on a rolling basis.

Previous grants, announced earlier in the year, have been awarded to companies working on cultured meat, biomarker detection, brain reconstruction, reversible cryopreservation, human cell re-engineering, universal airborne contaminant detection, artificial protein therapeutics, and antimatter-based fuel. A summary of the 2012 Breakout Labs grant recipients is available at: <https://www.breakoutlabs.org/recipients.html>

"The world faces enormous challenges-resource scarcity, aging populations, economic mismanagement-and we need more visionary scientists and engineers like those at Breakout Labs

### OTHER NEWS & EVENTS

#### CytoVale: Squeezing out sepsis

BioCentury December 23, 2013  
By Lev Osherovich

"CytoVale Inc. is developing a microfluidic platform to detect early signs of systemic inflammation before the onset of full-blown... [more](#)

#### Peter Thiel's Breakout Labs Announces First Successful Acquisition from the Program

December 2, 2013 -- San Francisco -- Breakout Labs, the Thiel Foundation's newest program to support scientific innovation, announced today that its portfolio company SkyPhrase has been acquired by... [more](#)

#### Yahoo Bought A Company That Lets You Talk To Computers As If They Were Humans

Business Insider December 2, 2013  
By: Jillian D'Onfro

"Yahoo just announced that it's adding a company called SkyPhrase to its healthy roster of recent acquisitions. SkyPhrase, a... [more](#)

#### Yahoo Buys Startup SkyPhrase to Improve Web Searches

Mashable December 2, 2013  
By: Samantha Murphy Kelly

"Yahoo announced on Monday it acquired startup SkyPhrase to make finding what you want online easier, without using disjointed... [more](#)

#### Yahoo Acquires Natural Language Processing Company SkyPhrase To Help Drive Intent Identification

Techcrunch December 2, 2013  
By: Darrell Etherington

"Yahoo has acquired SkyPhrase, a startup that builds natural language processing technology, the company revealed today in a blog... [more](#)

#### SkyPhrase, Yahoo's latest buy, has 'Siri competitor' written all

making authentic discoveries and bringing world-changing products to market," said Thiel Foundation president Jonathan Cain. "We hope Breakout Labs inspires more investors to fund real innovation; more young people to pursue technology and entrepreneurship; and more nonprofits to foster risky, radical ideas."

**ABOUT BREAKOUT LABS** Breakout Labs, the newest program of the Thiel Foundation, does not make typical foundation grants-it is a revolutionary, revolving funding model through which successful projects fund the next generation of daring scientific exploration. Breakout Labs is reshaping the way early-stage science is funded, by providing support for young companies to advance their most radical ideas. Successful grantees will return a modest royalty and warrant stake to Breakout Labs and in this way, contribute to the next generation of scientific innovation. For more information, see [www.BreakoutLabs.org](http://www.BreakoutLabs.org).

#### ABOUT THE THIEL FOUNDATION

The Thiel Foundation defends and promotes freedom in all its dimensions: political, personal, and economic. The Thiel Foundation supports innovative scientific research and new technologies that empower people to improve their lives, champions organizations and individuals who expose human rights abuses and authoritarianism in all its guises, and encourages the exploration of new ideas and new spaces where people can be less reliant on government and where freedom can flourish. For more information, see [www.ThielFoundation.org](http://www.ThielFoundation.org).



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## over it

Venturebeat December 2, 2013  
By: Ricardo Bilton

"Yahoo's acquisition train is showing no signs of slowing down. The company announced today that it has acquired SkyPhrase, a natural... [more](#)

## A research-focused Yahoo gets smarter, buys NLP startup SkyPhrase

Gigaom December 2, 2013  
By: Derrick Harris

"Yahoo has acquired SkyPhrase and will incorporate the team into Yahoo Labs. SkyPhrase had built a natural-language processing platform that... [more](#)

## Thiel's Breakout Labs Backs Cell-Based Platforms As It Turns Two

Xconomy.com November 26, 2013  
By: Bernadette Tansey

"Scientists have noticed for years that when they poke cells under a microscope, cancer cells are more easily deformed than... [more](#)

## Peter Thiel's Breakout Labs Funds Cellular Diagnostics and Synthetic Biology

*Bay Area startups CytoVale and Pareto Biotechnologies are the newest additions to the Thiel Foundation's portfolio of early-stage, groundbreaking scientific companies.*

San... [more](#)

## Startup help that money can't buy

San Francisco Business Times November 1, 2013  
By: Ron Leuty "With new partnerships, deep insight — and a pitch to a Nobel winner — GE Ventures is redefining corporate VC. General... [more](#)

## Google unveils Calico: the target for disruption is death

Science September 19th, 2013  
By: Mic Wright

"There's one thing in life that Silicon Valley's elite cannot "disrupt" right now and it drives them crazy. No matter how... [more](#)

## Siri 2.0? Skyphrase Wants To Make Data More Accessible With Natural Language, Starting With Analytics & Fantasy Sports

Tech Crunch October 2, 2013

Rip Empson

"With an increasing number of commercial applications relying on its technology, natural language processing (NLP) has started to come into... [more](#)

## Billionaire Peter Thiel funds Positron Dynamics who are developing a 10 microgram per week antimatter factory

nextbigfuture.com August 30, 2013

"Positron Dynamics has seed funding from Paypal billionaire Peter Thiel's Breakout Labs. Initial simulations show that as much as 10 micrograms of... [more](#)

## Fantasy football is apparently the killer app for data science

Gigaom September 30, 2013

By: Derrick Harris

"Fantasy football is a big business that thrives on data, making it a great way to prove out a new technology and possibly earn a few... [more](#)

## Mini drug factory churns out drugs from inside bone

New Scientist September, 20 2013

By: Linda Geddes

"IMAGINE never having to take a pill again. Instead, mini drug factories hidden inside your bones, and made from your own immune... [more](#)

## Breakout Labs' Grant Recipient, Modern Meadow, presented samples of biofabricated leather at TEDGlobal 2013

TED

September 2013

**Andras Forgacs:** Leather and meat without killing animals.  
Watch the presentation: [more](#)

## Sergey Brin isn't the only tech entrepreneur investing in artificial meat

The Washington Post

By Andrea Peterson

"The taste-testers of Google founder Sergey Brin's lab-grown burger called it cake-like and "very close to meat" — perhaps not the most... [more](#)

## Siva Therapeutics has completed its first animal efficacy study with very encouraging results.

BOULDER, COLORADO July 10, 2013  
Siva Therapeutics The study demonstrated  
reduction in tumor volume and increased  
survival in an aggressive murine melanoma  
model. For more information, see the... [more](#)

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