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## Breakout Labs -a New Model for Funding Science and Technology

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By Lindy Fishburne on April 17, 2012

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In 1964, a cover of *Popular Science* magazine asked “Who’ll Fly You at 2,000 m.p.h.?” It was a perfectly reasonable question in the context of centuries of accelerating travel speeds. After all, the trend had a Moore’s Law-like inevitability to it: people got around on ever-faster sailing

ships starting in the sixteenth century, then ever-faster railroads in the nineteenth, surpassed by ever-faster cars in the early twentieth. By 1969, less than 75 years after Kitty Hawk, mankind had left footprints on the moon.

But since 1972, we have not been back. The space shuttle program cost more and was less safe than the Apollo missions that preceded it. Meantime, closer to earth, we are all moving slower. In 2003, the Concorde was decommissioned, and private passengers haven't flown as fast since.

Innovation in medicine and biotechnology has fared somewhat better, but reduced expectations are the norm. In 1970, the U.S. Congress promised a victory over cancer in six years' time. In 2010, the *New York Times* ran the headline "A Decade Later, Genetic Map Yields Few New Cures."

Although recent fiscal restraint may cause scientists to disagree, there is still a great deal of money being invested into science and technology, both from governments and the private sector. However, much of it is channeled into well-trodden, intellectually conservative academic paths or into late stage risk-averse commercial development. Some may suppose that true innovation would be hard-pressed to survive under these institutional conditions.

In the meantime, opportunities are opening up for profound advances in science and technology to take place outside of large institutions. The advent of 3d-printers, the availability of lab equipment on eBay, and the varied opportunities for outsourced experiments from gene sequencing to mouse behavior mean that individuals and small teams of entrepreneurial scientists can now compete in the development of breakthrough technologies. Garage startups are no longer the exclusive domain of internet technologies; they are now beginning to host advances in nanotechnology, alternative energies, and biotechnology among many others.

The rise in opportunities for non-institutional science has not been paralleled by a shift in funding sources to support these endeavors. Instead, venture capital and angel investors – once the lifeblood of the early stage entrepreneur – are retreating to increasingly conservative investments. And, the sources of government funding for

entrepreneurial science (e.g. Small Business Innovation Research Grants in the United States) are few and far between.

That is why we launched Breakout Labs at the end of 2011. We want to help scientists who have the passion and creativity to strike out on their own and develop their big idea. Our grants of up to \$350,000 over a year or two will support scientist-entrepreneurs in reaching the next critical milestone of their research.

Today, we are excited to announce our first six recipients of Breakout Labs' funding:

**3Scan**, to develop 3-D digital reconstruction of brain tissue, using a novel, faster, less expensive microscope technology. Building a map of connections in the brain—the connectome—is a critical step to understanding what makes the human brain unique.

**Arigos Biomedical**, to develop methods of cooling organs for long-term storage. When combined with emerging advances in cryopreservation, tissue engineering, and stem cell therapies to eliminate graft rejection, this technology would make banked organs immediately available to anyone needing a transplant.

**Immusoft**, to re-program human immune cells to produce therapeutics in the body. This technology could dramatically improve the ability to treat a range of diseases, as well as enhance human health and longevity.

**Inspirotec**, to develop a universal system for collecting and identifying virtually any airborne agent. Our environment is increasingly subject to natural and man-

made toxins, and this technology would allow for their capture and identification in a simple, low cost handheld device.

**Longevity Biotech**, to develop an entirely new class of therapeutics via artificial protein technology (“Hybridtides”). Hybridtides are targeted biologic-like molecules which are highly-resistant to breakdown by natural digestive enzymes and tunable to very stable molecular structures. These features have demonstrated potent therapeutic activity with the possibility of oral biologic delivery.

**Positron Dynamics**, to enhance the production and collection of positrons, a class of elementary particles. Positrons have many near-term applications, for example, in medical imaging; in the long run, they may be a source of energy—antimatter propulsion—for space travel.

With a budget of \$5M for 2012, we expect to make a total of 15-20 grants. We accept applications on a rolling basis and will be awarding new projects as they make it successfully through our review process.

Breakout Labs had no pre-set ideology on the type of science we would fund. We don’t pretend to know in which field the next breakthrough is waiting to happen. However, we found that the majority of the proposals that matched our criteria for having a manageable project goal on the path to a much larger vision for technological progress were at the intersection of biology and technology.

Inherent in our desire to fund bold projects is a substantial risk that many will not succeed. Those that do will return a small percentage of any commercial success to Breakout Labs to help support the next generation of scientific innovation. Those that fail will still teach us something along the way.

Since we opened our doors, we have received inquiries from recent graduates, serial entrepreneurs, and retired professionals who are at last free to pursue their own scientific dreams. We have seen proposals ranging from the genetic engineering to the cleanup of space debris. The initial response to our program has signaled to us that we are addressing a critical gap in the support of early-stage science and technology taking place outside the traditional boundaries of universities and institutions. We look forward to receiving and funding more great proposals throughout the year.

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Lindy Fishburne is the Executive Director of Breakout Labs, the newest project of The Thiel Foundation. After years in the trenches with start-ups, non-profit management, and consulting for global technology companies she's never been more inspired than by the scientific innovation happening right now.

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