

**From:** george church <[REDACTED]>  
**To:** "jeffrey E." <jeevacation@gmail.com>  
**Subject:** Re: value  
**Date:** Fri, 11 Jul 2014 21:04:58 +0000

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Jeffrey,

Many thanks for your very encouraging words yesterday morning. This is already a super interesting experiment (even with \$0 spent), since I am looking at my whole ecosystem of companies and unassigned inventions totally differently. Eye-opening to see how accustomed one can become to the assumptions, whims and rules of VCs. For example, investors starting Helicos took Eric's advice over mine in 2003 (even though he had zero sequencing technology invention experience and I had 26 years) -- so rather than a large founder's share in a new company (Helicos), my technology dribbled into an established company (CGI) from 2006-2012. CGI was sold for \$117M in 2012, while Helicos went bankrupt.

Below is a first pass list of potential investments for the \$10M. This may be more information than you wanted at this point (especially given the trade-off between jargon and brevity), but I'm having so much fun, I just wanted to share it. I'm also recording a few extra thoughts, in case they provide "teaching moment" or post-mortem at some point.

\$200,000	[REDACTED]
\$1,500,000	[REDACTED]
\$1,000,000	Sensor-Selectors
\$1,000,000	Protein stability & virus resistance
\$1,000,000	Pest control
\$800,000	Aging reversal
\$1,550,000	Next generation pathology
\$250,000	Space Genetics
\$200,000	Cold-resistant elephants
\$2,500,000	2nd tranche
\$10,000,000	Total

- 1) [REDACTED] Thirty genomes collected so far on a small budget by James Clement. \$200K would get 8% ownership of the company and allow another 30 genomes to be collected, sequenced and therapies patented.
- 2) [REDACTED]: Using CRISPR to engineer animals for resistance to infectious diseases and to act as transplantation donors for major organs (initially kidneys) to humans. Co-founded with Prashant Mali and Luhan Yang. Already has a couple of contracts and a some rented lab space.
- 3) Sensor-selector technology for optimizing commercial production of (bio)chemicals. Lead by Vatsan Raman.
- 4) New redox-insensitive protein cross linking based on radically recoded bacterial genomes and/or Multi-virus-resistant organisms. We just published papers and patents on this. Lead by Dan Mandell.

- 5) Eliminating ecosystem pests and invasive species. Lead by Kevin Esvelt. This will probably be in the news on July 17. Business model similar to the relationship between Amyris and the Gates Foundation for manufacturing anti-malaria drugs.
- 6) Making human genetic disease models in organoids and aging reversal using CRISPR and other epigenetic reprogramming factors. Lead by Bobby Dhadwar and Eswar Iyer. Possibly mergeable with [REDACTED]
- 7) A new sequencing method capable of displacing part of the medical pathology imaging market and filling in the large gaps in most plant and animal genome sequences. Lead by Rich Terry.
- 8) Genome engineering of humans for space. Seed money for patent fees, some lab tests and education efforts via pgEd. Lead by Ting Wu.
- 9) Making cold-resistant elephants via CRISPR, focusing on blood, subcutaneous fat and wool/hair (based on what is know about cold-resistant animals, Mammoth DNA, and human mutations). Economics could be like the American Bison which recently grew from a hundred to 500,000 as a source of low cholesterol meat. Lead by Margo Monroe and Justin Quinn. Possibly mergeable with EgenesisBio.
- 10) The rest would be set aside as a second tranche for whichever of the above efforts makes best progress first.

--George

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**From:** "jeffrey E." <[jeevacation@gmail.com](mailto:jeevacation@gmail.com)>

**Date:** Thursday, July 10, 2014 at 8:07 AM

**To:** george church <[REDACTED]>

**Subject:** Re: value

I have a great idea. lets speak today if possible  
please note

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