

23andMe landing on their feet while Decode tumbles

Rearranging Personal Genomics

Exploiting genomic information might emerge as a profitable business, but not for everyone. While the Californian startup 23andMe received a last minute €19 million backing from its investors, the Icelandic competitor Decode Genetics declared bankruptcy after wasting €500 million.

Once again it has been proved that it's crucial to have the right backers: Personal genomics company 23andMe recently completed its second round of funding with contributions from Google, Google founder Sergey Brin (the husband of 23andMe founder Anne Wojcicki), Genentech and New Enterprise Associates. 23andMe offers low cost DNA analysis for people wanting to know which diseases they may have a predisposition for. In October last year, the company laid off an unspecified number of workers due to "the current economic environment" (see *Lab Times* 6-2009, page 45). The turn-of-the-year millions, however, should now suffice to reach the "Golden Age" of personal genomics that experts anticipate, at the earliest, in 2014.

Decode's evisceration

23andMe's competitor Decode Genetics may probably never reach this Golden Age. On the verge of Christmas, the Icelandic genomics company declared bankruptcy ("filed for chapter 11"), facing total assets of €49 million and a debt of €220 million. Decode disclosed that it intends to sell its core business, including the human genetics research, the population genetics resources and the personal genome scanning business ("DecodeMe"), to the US financier Saga Investments. In so doing, at least the main part of Decode Genetics' expertise won't vanish completely. How-



Decode Genetics' glamorous headquarters in Reykjavik, Iceland, was once a pipe-dream workplace for ambitious scientists. However, its future looks gloomily.

ever, it is uncertain how many of Decode's 480 employees will survive the financial massacre.

Lab Times tried to unveil the future of Decode's development programme, including three pharmaceutical compounds which are currently being investigated in clinical trials, but haven't yet received a reply. Has the responsible PR manager already received his pink slip? Decode's pipeline includes, as its leading develop-

mental compound, the potential heart attack preventive agent DG031. DG031 is a protein inhibitor that eliminates the activity of the leukotriene pathway, thereby decreasing the inflammatory activity in atherosclerotic plaques and thus reducing the risk of heart attack. In 2006, Decode initiated a phase 3 trial for DG031.

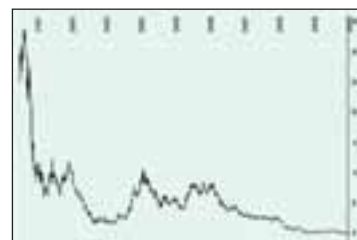
Passed up the chance

Decode Genetics, based in Reykjavik, was founded in 1996 by the unorthodox (and sometimes slightly ruthless) Kári Stefánsson, a former professor of Neuroscience at Harvard University. His Icelandic company soon emerged as a pioneer in the study of the human genome, seeking since its foundation to unlock the secrets about genetic illnesses as well as widespread diseases like cancer. Indeed, Stefánsson's team has identified dozens of genetic variations that affect common diseases.

The outcome, however, has been ambivalent. On one hand, Stefánsson's venture has proved to be an enormously successful research institute, with reams of scientific papers that were published in prestigious journals, such as *Nature Genetics* and *New England Journal of Medicine*. The commercial side, however, has always been a disaster. Within the 14 years of its existence, Decode wasted nearly €500 million, building pretentious and futuristic head offices at Sturlugata 8 in Reykjavik and in Woodbridge, Illinois, while failing to ever launch a lucrative product or to generate a single quarterly profit.

Shares lost 99,9 percent in value

Given the alarming proportions of the exsanguinous mother company's debts, it is highly unlikely that Decode's shareholders will retrieve more than a symbolical repayment for their assets. While a single Decode Genetics share (ISIN: US2435861040) was worth nearly €33 after the company's enthusiastic going public in 2000, the share price had dropped to something around €10 by 2004 and lost a further 75% by the beginning of 2008. In the last two years, the shares have become nearly worthless, finally crash-landing at €0,04 each. Altogether and over nine years, the shares



Decode Genetics' stock lost 99,9% in value since going public in 2000.

lost 99,88% of their value. In other words: If you bought a decent €5,000 stock of Decode Genetics in 2000, you can take these 151 shares now, each still being worth €0,04, and to swap them for a midium-sized tin of tuna.

In addition, it is unlikely that a significant number of Decode's almost 500 employees will be retained, even if the company's diagnostics business, especially the DecodeMe services ("Calculate your genetic risk"; "Discover your ancestral roots") are to be continued as mentioned above.

Even more contenders on the floor

Recovered 23andMe and struggling Decode Genetics aren't the only players that hope to succeed in the consumer genomics game. Companies like Navigenics (based in Foster City, California), Bioresolve (Ottawa, Canada), DNA Tribes (Arlington, Virginia) and others offer similar genetic services.

Since September last year, there's even one more: Californian Pathway Genomics, freshly founded by James Plante, an experienced entrepreneur from the electronics industry. Plante says he was, "attracted to personal genetics after making inquiries about my own genetic predisposition after my father underwent a kidney transplant and died in his early 50s".

In San Diego, Pathway Genomics meanwhile runs a custom-designed, 10,000-square-foot lab that houses impressive genotyping platforms, designed by the genomic industry's big names (Illumina, Affymetrix, Sequenom et al.).

Pathway's extensive direct-to-consumer genotyping service is operated by a disease-focused custom chip, supplying information on complex diseases, carrier status for rare diseases and pharmacogenetic markers.

Puerile procedure, pathetic results

However, there's a problem with personal genomics: To make use of this kind of personal DNA testing, that is mainly based upon genome association studies, is highly questionable due to a scientific basis which is still insufficient. Serious geneticists therefore take no stock in such tea leaf reading that cost an equivalent of €174 (for Pathway's health test) and €139 (for the ancestry test). In addition, and I'm sorry to say this!, the health results' delivery appears pretty childish. Pathway communicates them via a series of colour-coded bins depending on their potential significance to the respective customer. Green means below average risk, beige average risk, yellow and orange signify above average risk and red denotes "immediate attention".

Wow, how impressive is that?

However, what is a customer supposed to do if he gets a worrying red alert, warning him of a hereditary disease or of an increased predisposition for, say, Alzheimer's disease or diabetes? What does "immediate attention" mean? Should he or she run to the doctor immediately?

It's probably better to throw away the result and to forget it. Hereditary diseases and Alzheimer's cannot be cured, and when it comes to preventing type 2 diabetes; to put on one's sneakers and exercise could be more effective than genetic testing.

WINFRIED KOEPELLE

Genetic Privacy

Data Misused by Venture Capitalists?

Decode's insolvency frightens customers

The bankruptcy of a company like Decode Genetics, which is notorious for its collecting mania when concerning genetic data, makes one shiver. All these myriads of private genetic information on ten thousands of people can now be easily accessed by a US venture capital group – and we all know that such groups aren't generally headed by idealistic philanthropists, nor are the USA well-known as the home of data protection.

Who would have paid Decode Genetics up to €700 in recent years to learn something about his cancer risk or about his family background, if he had known that all his sensitive genetic records would soon belong to a venture capital group like Saga Investments? Will all the sceptics that gave vivid warnings of careless genetic testing be right after all?

Maybe. It is not that far-fetched that a company like Saga wants to maximise the returns on its Icelandic investment and will therefore do displeasing things with genetic data that weren't originally destined for wider use. A possible and lucrative application could be, for example, to sell data to academic and pharmaceutical researchers. It is, in fact, more than probable that Saga Investments will try this because Decode's customer agreements are ambiguously worded and contradictory in places.

In an attempt to mollify its customers, Karí Stefánsson recently wrote to them that, "we have no access to [the genetic data of our customers] for anything except doing analysis for our customers. We are not selling genetic data, we will not do that."

Well, Stefánsson probably won't do that, but does that mean that Saga Investments won't either?

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Pathway's Jim Plante is to enter the consumer genomics game after a personal blow of fate.



Karí Stefánsson stakes on the privacy of customers' data. Will Saga investments, too?