

deCode Iceland and genetic databanks: where ‘consent’ to genetic research means patenting a nation’s genes

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Abstract

The paper describes the Icelandic Health Sector Database and the issue of informed consent to the use of genetic personal data. The concept of community consent to the processing of personal data is discussed. The rules of the European Directive for the legal protection of databases are explained. deCODE, the company, which is the licensee of the database, also has filed for a number of gene patents, which perhaps serve different purposes from what the Icelandic people has been told. Finally, the paper presents some ideas on the future of very expensive genetic data research in terms of efficiency in finding cures and drugs.

Introduction

DeCODE, as Icelandic genomics company, contracted with the Icelandic government for the use of the nation’s genetic data for research. The paper explores the controversial issue of the Icelander’s assumed/presumed consent to the use of their data and the question of community consent. Patents granted to deCODE or filed and pending in its name are analyzed. The paper ends with the question whether such deals as deCODE’s with the Icelandic government can be justified in the name of medicine and benefits to humanity.

1. A deal for a nation’s genetic data

On December 17, 1998 the Icelandic Parliament voted for a statute (the Health Sector Database Act), which allows a certain licensee, a private company, access to Iceland’s medical records and genetic data. This law was not passed by unanimous votes; 36 members of parliament voted for the project, whereas 24 were against and 6 were absent. The contract with the State was subsequently awarded to deCODE Genetics Inc, a US (Delaware) company, with headquarters in Iceland’s capital. deCODE Inc. had already secured a capital of 12 million dollars to start its operation. The company’s aim was to combine Iceland’s genealogical information, perfectly kept by the Icelanders, with the country’s health records and the DNA information available and construct a huge human genetic database. deCODE therefore capitalized upon 85 years of data collection by the Icelanders (Potts, 2002).

Genetic data included in this database come from the total population, adult and children, mentally competent or not, of the living Icelandic people (around 270.000 people) but also from deceased Icelanders (total number: around 700.000 people). The database then would serve as a ‘giant’ research tool, to combat at some point in time, a very large number of human diseases, from strokes and schizophrenia to obesity. deCODE, therefore, belongs to the family of genomic companies, which strive to gain, at some point in the future, great profits initially from database subscriptions and increased-susceptibility-to-disease diagnostic tools and finally, perhaps, from the

development of therapeutic gene intervention.. The company's worth has been estimated as high as \$600 million dollars (Potts, 2002).

In many of its aspects, this statute legitimized a business deal: deCODE achieved access to medical/genetic information of all the above parties, whereas Iceland would receive an annual (though adjustable) fee (a little over \$700.000, which could end up being around \$500.000, if deCODE requested this in 2006) plus a small share to the company's profits-a 6% of its pretax profits, up to \$1,4 million dollars, if however there are profits (until today, deCODE has been sustaining great losses-deCODE: Report 2004). What Iceland expected as benefits from the above contract was not only the acquisition of new knowledge on health or disease and the improved quality of the health system but also the development of high-technology industry in Iceland and the employment for a highly educated sector of society and the potential to attract new business to Iceland, because of the database (Icelandic Parliament Notes to Bill: 1998-1999).

Interestingly, deCODE could license access to the database's data to *external* biomedical researchers. This rule cut both ways: researchers acting (at the sole judgment of deCODE) in commercial competition with deCODE could be denied this access and simultaneously, deCODE could allow access to any external researcher deCODE wished-and charge for it.

2. Presumed consent as a model-community consent?

The intense problems with the issue of consent to the transfer of genetic (and other) data in the Health Sector Database continue vigorously until today. The initial assumption (and the first draft of the bill) was that no consent *at all* was necessary, as the data to be transferred were considered anonymous. The situation could, in this sense, be compared to the case where, for example, census data such as a person's occupation enter other databases, for diverse purposes. The result of this first draft of this bill was an international outcry and in the end, the statute included an opt-out clause: people who objected to the transfer of their data into the database could fill a form, available at pharmacies, surgeries, hospitals etc, declaring their will. A pamphlet was sent to all households explaining this option, but the opting-out form was not sent with it and there are also some doubts whether this leaflet had in fact reached all households (Rose, 2001). By mid June 1999, 19 437 people had in fact opted out (Rose, 2001). After this time limit, data already entered into the database could not be withdrawn. By June 2003, the opt-out rate had already reached Mannvernd's (Icelandic society of physician's opposed to the database) target, counting 20 426 people opting out. Some days there were 15 – 20 people opting out; later on, as much as 100 persons per day filled the relevant forms.

Even if one could, somehow, downplay the issue of the automatic inclusion of data from deceased Icelanders, the children and the mentally incompetent, it is undisputed that the opt-out procedure clashes with a series of international informed consent instruments and all the known norms of medical practice. The World Medical Association revising the Declaration of Helsinki in 2000 stressed that informed consent in writing, preferably, and freely given is a standard condition of medical research and that people who cannot give informed consent should be included in research only in exceptional circumstances. Moreover, the fact that there would be

some date after which someone's data could not be withdrawn at her will also is in direct conflict to the Helsinki Declaration.

The above considerations may lay behind the decision of the Icelandic Supreme Court in 2003, which plainly declared the Health Sector Database statute unconstitutional. The mother of a minor asked the Medical Director of Health on her child's behalf that her deceased father's data be excluded from deCODE's database. The Director refused to comply with this request. The mother sought court relief and in the end, the Supreme Court of Iceland held that the child could exercise the right to refuse permission for the transfer of her father's data into the database, not as substitute of her father but because her own constitutional right to privacy had been violated, because information about her could be inferred from such data, relating to the hereditary characteristics of her father. The decision certainly forms a judicial precedent for living relatives to prevent the inclusion of data into the database; it also represents an example where privacy is proven as a relative and relational concept (Introna & Pouloudi, 1998). The ruling did not resolve the highly controversial question about the living Icelanders' presumed consent but certainly is an important blow to deCODE supporters.

Informed consent to medical research has been the subject of a constant criticism as *not enough* as a safeguard to protect people's interests in autonomy and self-determination. Obviously, its total absence signals a far more deep conflict with medical standards. One of the relevant considerations here could be whether the legalization of deCODE's project by a statute could in fact *replace* individual persons' consent. After all, the majority of the Icelandic Parliament (Alpingi) voted in favor of the database statute. Could this count as a form of *community consent*, at times where admittedly, the extraction of a written consent by every Icelander would present practical problems? The project is, as its supporters submit, in the public's best interest; from what they say, Iceland probably holds the keys to the cure of an incredibly large number of diseases. Is not the consent of the nation's leaders, voted to vote for public interest projects, sufficient? Is it not important that scientific evidence has showed us that in any case, people usually permit the use of their data for genetic research, when asked for their informed consent (Quillan et al., 2003).

But community consent is an entirely different concept. Community consent could apply only as an *additional* factor, legitimizing medical experimentation where individual informed consent has also been secured. The public interest aspect of the statute (is not every statute promulgated in the public interest?) cannot in itself legitimize the deCODE project, especially in terms of *replacing* informed consent with presumed consent plus community consent (Lewontin, 1999). Findings of DNA studies could lead to stigmatization and discrimination against individuals; patenting and commercialization of the database may lead to the loss of access to discoveries for research purposes (Chadwick & Berg, 2001). Moreover, the public debate preceding the statute cannot be considered as adequate for the purposes of fully and truly informing all Icelanders about the project and its details (Thorgeirsdottir, 2004).

Apart from this, the notion of community consent has been suspect within the bioethical circles as people may be inappropriately influenced by their leaders into agreeing with something they know little about. One has to recall what was called deCODE's incestuous relationship with the Icelandic government-Vigdis

Finnbogadottir, the former President of Iceland, who has been called ‘a useful sixth’, is a member of the executive board (Lewontin, 1999). The support from Iceland’s Prime Oddsson was constant; Kari Stefansson, the CEO of deCODE was treated by Icelanders ‘like God’ (Specter, 1999) when he left Harvard to form deCODE in Iceland. Even in relation to medical research in indigenous people, it has been supported that community consent may exist only as an additional safeguard, along with individual informed consent (Heath: 2005); moreover, irrespective of what community consent may mean, the nature of the information to be given to people must be the same as that found in individual consent and this, as extensively published, was not at all the case in Iceland (Zoeag & Andersen, 1999).

Stefansson lived for many years in the country where even the modest project for a database ‘Lotus: Households’, containing data such as people’s names, addresses and demographic information (nothing to do with sensitive data on e.g. a person’s inherited tendency to manic depression) was met with a huge public disapproval and was cancelled by Lotus itself (Garfinkel, 2000). Stefansson must have known that in the States, a similar expedition as the Icelandic HSD would be absolutely impossible; one can only wonder what American citizens would have to say about the argument that they have a moral *obligation* to donate their DNA samples to a private-for-profit company plus that afterwards, they would not be able to withdraw their data from the study (not to mention that they are not entitled to any real benefits).

3. deCODE’s database and database protection under the European Directive 96/9/EC

Something that has not yet attracted much attention by the commentators writing on the story of the Icelandic Health Sector Database is the issue of its protection under the terms of the European Directive on the legal protection of databases (96/9/EC). No doubt, this *sui generis* protection for databases, initially designed by the European Community as a tool against unfair competition, could not be the first danger one could see in the Icelandic genomic database cases, which was flooded with so many other serious considerations. Iceland is bound by both Directives on personal data and database protection because of the EEA agreement. Although in its decision of November 17, 2003 the Icelandic Supreme Court did not refer to the European Personal Data Directive as a legal source supporting its conclusion (unconstitutionality of the Health Sector Database Act as against the constitutional right to privacy), the legal status definitely recognizes the Directives as binding law in Iceland. Anyway, Stefansson must have known of this special *sui generis* protection for databases, otherwise the choice of the *exact* words on the definition of the Icelandic database as the definition of the European Directive can be attributed only to magic.

The final text of the Directive’s definition for a protected database is: ‘a collection of works, data or other independent material, arranged in a systematic or methodological way and individually accessible electronically or in other ways’ (Art. 1 sec. 2). The original intent of the European lawmaker was (as proved by Recital 17) to protect a wide range of databases such as literary, artistic, musical or other collections of works or collections of other material such as texts, sound, images, numbers, facts and data. Because of the far-reaching definition in Art. 1 (2), one could easily assume that the

proper construction of this article was to include, for example, genomic DNA databases, such as the Icelandic one. After all, a DNA sample is, of course, 'material'. But deCODE obviously did not want to rely on any interpretations at all and therefore, remain in a sort of doubt.

The statute-drafted by deCODE- therefore defines the Health Sector Database as 'a collection of data containing information on health and other related information, recorded in a standardized systematic fashion on a single centralized database intended for processing and as a source of information' (Act on a Health Sector Database, Dec. 17, 1998). Previous drafts (July 1997, April 1998, July 1998 and October 1998) followed the Directive's wording even more closely. In fact, all drafts (but the first one) and the final text proceeded *further* than the European Directive. DeCODE had obviously checked with the US views on the matter and the draft bills that were submitted over the Atlantic, as a response to the European Directive. The Directive contained a very impolite reciprocity clause, so that only nationals of countries, which did grant comparable to the Directive's protection to their databases, could claim the protection of the *sui generis* right. In these bills, none of which has until today become a statute because of a very strong opposition, we had seen an attempt to limit protection to databases, which had as their *purpose* to be a source of information. In an excellent prediction of what the future could bring to a database owner, when the database was not constructed in order to be a source of information but for other primary reasons (such as is, of course, the Icelandic database), deCODE secured in the text of the statute that no matter what: its database had as a purpose to be a source of information-and therefore, in any subsequent interpretations of the Directive's definition which could preclude, for example, from protection databases originally created for example to serve as medical research tools, Stefansson's database would be safe and sound, armed with the *sui generis* protection.

So much for the encouraging declarations by deCODE's CEO, that outside researchers could obtain access to the Icelandic database, as far as they do not work for a competing company. Not only this allegation has been met with great doubt (Lewontin, 1999) and besides, this great care in the drafting of the statute shows exactly the opposite will (how *not* to share), even if a scientist in fact tried to claim access to the database, the *sui generis* right of deCODE as the maker of the database would be a perfect barrier. In fact, the European Directive, when it comes to an exception to extract a substantial part of a protected database, allows a scientist for research purposes to extract this part, but it does *not* allow the re-utilization of the material taken (art. 9). It follows that even if an external scientist achieves somehow the access to the database, this access is in the end useless, as research necessarily involves the possibility to re-use data (process, change, study and publish the results).

The long awaited interpretation of the Directive by the Court of the European Communities in November 9, 2004 did not fundamentally help with the database definition problem; the Court did exempt from protection databases with 'synthetic' data, made by the maker, such as program listings and fixture lists, but left open the question whether a protected database must have a 'purpose' *to be a source of information* (and not something else). Nevertheless, deCODE is safe: the stated purpose of the database as a source of information has been, as stated above, cleverly incorporated in the statute itself.

It probably takes a very brave judge to rule that, even so, deCODE's database is *not* primarily a source of information, it is not a database such as LEXIS-NEXIS or MEDLINE, it is a database which would be constructed *anyway* for the real reason, also in the statute, to process genetic information, and therefore, it does not merit the *sui generis* right's protection. Since deCODE's database must be constantly updated and checked, this protection is also never lapses (Art. 15 of the Directive). So much, again, for the wonderful statement in the statute, that 'all information transferred to the database is and shall remain the common property of the Icelandic nation' under the protection and rule of the Minister of Health and Social Security. On top of this, it seems that the 12 years license to exploit the database for profit, so heavily criticized, was in the end, unnecessary; deCODE's lawyers could never protect it as much as the European lawmaker had already done, two years before the statute was enacted.

4. deCODE and patents

Gene patents have been in the center of a legal controversy for quite some time. Since *Diamond v. Chakrabarty*, the doubt of the legitimacy of so-called life patents has been steady, both in the United States and in Europe, even if, in Europe, things have not been as easy for the granting of life patents as in the United States. What deCODE has done, in line with practically all similar genomics biotechnology companies, is to file for a great number of patents in its name, for genes sequences etc. In a quite different tone from the one used when deCODE was 'speaking' to the Icelandic people about the goals of its research, the text of deCODE's annual report (2004) on patents is truly blunt: 'patents and other proprietary rights protections are an essential element of our *business* (italics mine)...we actively seek patent protection in the US and other jurisdictions to protect technology, inventions and improvements to inventions that are commercially important to the development of our *business*. These include, among other things, the compounds that we invent and will develop as potential drugs, the genes *we discover* (italics mine); mutations and variants of genes related processes and inventions; technologies which may be used to discover and characterize genes; therapeutic or diagnostic processes and other inventions based on these genes...'. deCODE then lays down the numbers: at the end of 2004, it had 27 US patents and 11 patents granted in non US jurisdictions, it also had 63 pending patent applications in the US and 93 pending patents in non-US jurisdictions. Others support however that deCODE has been applying for more than 350 patents (Albright: 2004).

These numbers show an important number of patents and patents pending for deCODE. What genomic companies *do* with their patents has not been entirely clear, because many patents have been reported as issued not because they represent a true invention, in the Jeffersonian at least sense (patent for an invention, for something new, subject to technological application etc), but so as to be used as commercial sort of paper-like stock. If I have the patent on this gene, then no one has it but me; I license its use to anyone else interested. An obvious point is that whoever claims that one *has a patent because one discovered* a gene (as deCODE claims, *verbatim*, in this report), so this discovery must count *as an invention* to be patented, one must be at least congratulated, for impressive god-like powers. Another question is why deCODE, while appearing so 'cool' in this Report as a business, failed to transmit the same impression upon Icelanders, when it 'marketed' its plan through their minds and aimed at persuading them to recognize that their consent was perfectly valid as

presumed. Whereas it would possibly not make real business sense to tell the Icelandic people 'look, we are a business, we aim at profit and we will patent your Nation's genes for profit, if only you give your tissues to us', the charismatic figure of Stefansson would probably be able to let people surpass even this consideration.

But perhaps not; the latest case on patent-plans disclosure to research subjects, as an essential part of the informed consent to medical research has led us to some very interesting results. In *Greenberg v. Miami Children's Hospital Research Institute* (2003), the duty to disclose financial interests hid in a medical research plan was brought to a very wide attention. Parents here sued researchers, claiming that they never knew that this research, based on their tissues, would have as an end a patent granted in 1997 in favor of the hospital and that this would, in effect, increase the cost of gene testing for the Canavan disease, decrease the places where this testing could take place and limit the researchers able to use knowledge acquired through their genetic information towards better testing and cure (the patent expressly granted the hospital the right to restrict any activity related to the Canavan disease gene and research involving the gene and its mutation). A series of causes of action (breach of fiduciary duty, lack of informed consent, fraudulent concealment, conversion, misappropriation of trade secrets) were filed; all were dismissed but one stood as valid to litigate (the one for unjust enrichment) and then the parties settled.

What the plaintiff families with the children with Canavan disease reported, *inter alia*, was a complete breach of *trust*. They thought the hospital was trying in good faith to find in the end a cure for the disease, which had killed their kids. Instead it seemed like the hospital was trying solely to earn, as a beginning and also a possible end, of the research, through patenting. Iceland was also 'asked' to participate in the deCODE endeavor, so that disease could be fought. But do the Icelanders know how many patents deCODE has already secured and how this may, as reported and as it has happened in the Greenberg case, in fact *not push research forward, but instead, stall it*? How many Icelanders are aware that there exists a clash between the right of intellectual freedom of researchers and the rights to intellectual property, such as rights to patents (Britz & Zyl, 1998)?

Presumed consent, meaning the Icelanders were *not even asked* to donate tissue, means no information of *any* kind was to be given to them; legalization of this project by the Act on the database surely cannot stand this sort of attack. But what kind of *trust* could bind the Icelandic people with deCODE, when deCODE's stock, which had been aggressively sold to the nation, soon suffered a severe losses? What kind of *trust* could there be, when they realize that perhaps what is going on is exactly the opposite of what they have been told? And if there is no trust, which is then the ethical basis of deCODE's research? How can deCODE justify this research on justice, respect for persons and beneficence, major principles of research ethics, when the subjects cannot trust the researcher? And even if, as has been suggested (Oberdorfer, 2004), tissue-donor organizations start forming their own banks, negotiating with researchers and asking for a standard benefit - sharing of future royalties, does this not alter the very essence of medical research of human tissue? Is this not like everyone admitting that no one is engaging in these projects for altruistic purposes? Perhaps this change in attitude signals a deeper social 'illness'-a world where the ideal of science and scientific truth has become a balance in favor of material and not moral success. Instead of looking into ways to *stop* this purely profit-

seeking science, we propose to make *all* interested parties accessories to the same crime.

5. Scientific skepticism and genetic research

The worse problem with the deCODE case is not, as it may seem, the severe deviations from standard medical research practice and the patents' issues. The major concern with this type of research is whether it holds any promise *at all*. Again, if we look into deCODE's report for 2004, one must become severely distressed (especially if one has bought deCODE shares): according to its own statements, there is a great number of risk factors, all affecting deCODE's future success (at present, it suffers great losses), and these include: that the company may not be able to develop useful products because deCODE's assumption about the role of the disease may be wrong; that the outcome of the clinical trials for the product candidates is uncertain. 'Scientists generally have a limited understanding of the role of genes in diseases and few products based on gene discoveries have been developed...it will be years, if ever, before we will recognize significant revenue from the development of therapeutic or diagnostic procedures...'.

Some commentators have deplored the low quality of deCODE's scientific contributions until now. In JAMA 2004, a highly respected and visible forum, deCODE announced that an inherited predisposition may be an important factor in the susceptibility to lung carcinoma but it is tobacco that plays the dominant role in this disease. This seems like a sentence *too* heavy with 'may', 'predisposition', 'susceptibility', words, which have been used as examples of a science not so scientific after all, for what is the meaning for a layman of the JAMA result? How can anyone explain that even if years and years (and millions of dollars) after researching genetic diseases such as cystic fibrosis, and years and years (and millions of dollars) after its gene has been discovered, mapped, cloned etc, no further progress has been possible? What are the chances of a cure through genetic research of illnesses, which are multigenic (most of them, that is)?

At the same time, the world's major killer is poverty. People have been increasingly suggesting whether it is a better idea to cover actual needs, such as drugs for AIDS, or injections for kids against also a major killer in the developing world, measles, instead of funding dubious research proposals, even if they involve the very mapping of the Human Genome. In light of these thoughts and among many other examples, the multiple problems with deCODE's project signal, perhaps, a new age of (very much needed) scientific skepticism.

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