

20 November 2008

P R E S S R E L E A S E

## Contesting the monopoly of Myriad Genetics on testing for predisposition to breast and ovarian cancer

# A shift in position at the European Patent Office

Following the appeals procedures of 12 to 19 November 2008, the European Patent Office (Munich) has partly gone back on its previous decision, by granting the University of Utah, now owner of the patents of Myriad Genetics, a patent for a certain type of mutation. The University of Utah now in theory “owns” more than half of the identified mutations in the BRCA1 gene.

The Institut Curie, the AP-HP (Paris Public Hospitals), and the Institut Gustave-Roussy (IGR), supported by the Institut National du Cancer (INCa), as well as other European institutions, have since 2001 been contesting the monopoly imposed by the wide-ranging claims of Myriad Genetics, the sole license holder of these patents. Although the two patents re-examined have been reduced in scope, these institutions remain worried by the potential consequences of such a decision on the feasibility of genetic testing for predisposition to breast and ovarian cancers. If Myriad Genetics were to go to court in France to uphold their patent rights, how would French justice interpret these two patents?

Following the appeals procedures of 12 to 19 November 2008, the University of Utah, now owner of the patents of Myriad Genetics, was granted a patent for the gene predisposing to breast and ovarian cancers, BRCA1. This patent is wider ranging than expected after the opposition notices filed with the European Patent Office since 2001 by the Institut Curie, the IGR, the AP-HP, and various European genetic companies.

### Sword of Damocles hanging over public health

**The patent now covers certain types of mutations of this gene predisposing to breast and ovarian cancer and the methods for their detection.** Dominique Stoppa-Lyonnet, professor at the Université Paris Descartes and head of the Genetics Department of the Institut Curie, points out that *“in its more limited form, the patent nonetheless remains a threat to our conception of public health and we must continue to be vigilant.”*

This decision by the European Patent Office can have various consequences. **Myriad Genetics can sue laboratories that perform the tests for patent infringement.** *“The interpretation of this complex patent will then be in the hands of French justice”* concludes Jacques Warcoï, an industrial property consultant in the firm Cabinet Regimbeau. **The University of Utah and Myriad Genetics can also decide to negotiate with laboratories,** or even to abandon the patent in view of the difficulties linked to its enforcement.

*“The patent as validated is therefore a Sword of Damocles,”* according to Professor Gilbert Lenoir, Research Director at the Institut Gustave-Roussy, and *“institutions opposing it must remain on the alert.”*

The patents granted by the European Patent Office to the University of Utah are of more limited scope than originally requested by Myriad Genetics, but still constitute a **threat because of uncertainty surrounding their interpretation.**

At present, over **15 000 genetic tests** are performed each year in France in women of at-risk families. **4000 tests screen for a first mutation in the genes BRCA1 and BRCA2,** and 15% of known mutations can be used in genetic screening.

These patents seem, however, **difficult to apply in French law**, since the definition of the invention is based on the result of the screening for mutations and not on the screening itself. Be that as it may, if these patents were to be deemed valid by French law, the **system of *ex officio* licenses could be used as a defense**. This French legislation can be used to override a patent with public health implications by means of *ex officio* licenses, if the financial consequences of the patent run counter to public health interests. Since 2004, thanks to the mobilization of French institutions, this measure has been extended to all patents related to public health, and notably to methods of genetic screening. In France, this measure could persuade Myriad Genetics to negotiate rather than seek confrontation.

This **decision is a change of stance** by the European Patent Office, which previously considered that the mutations claimed by Myriad Genetics were not patentable according to the European patent convention. Moreover, the Board of Appeal of the European Patent Office refuses to refer the case to the Enlarged Board of Appeal. For European geneticists, this unclear decision by the European Patent Office is a nonsense and laboratories should continue their activities.

## Half measures by the European Patent Office

In 2001, Myriad Genetics was granted three European patents relating to the sequence of the BRCA1 gene and mutations usable for diagnosis of predisposition to breast and ovarian cancer. Opposition notices were then filed with the European Patent Office by the Institut Curie, the IGR, the AP-HP, and various European genetics companies. The opposition related to each of the patents, in particular arguing lack of novelty and of inventiveness in view of the publications available when the patent applications were filed. **The opposition divisions decided in two of the three cases to maintain the patents in a much restricted form compared with the patents granted, and in the third case to revoke the patent completely.**

The patent holder filed appeals against each of these decisions. The decision concerning patent EP 705 902 confirmed the limitation of the patent to one probe – and no longer to the whole gene – in October 2007. As for the procedures concerning the patents EP 699 754 and 705 903, the outcome is a partial reversal of the European Patent Office's previous decision.

### Patent 1 EP 699 754 “Method for diagnosing a predisposition for breast and ovarian cancer associated with the BRCA1 gene”

After the appeals procedure of 18 and 19 November 2008 in Munich, the patent was restricted to certain mutations of the BRCA1 gene and to diagnostic methods for their identification. The patent therefore no longer covers screening for all the BRCA1 gene mutations, the claim being the subject of the first revocation because of too many inadequacies in the sequence cited by Myriad Genetics. The Board of Appeal considered that the essence of the invention was not the reference sequence of this gene, but the reading frame.

**The patent now covers something over one half of the mutations identified to date in the gene predisposing to breast and ovarian cancer, and the methods permitting their detection.** This patent can no longer be contested on a European scale, but can be called into question by individual national tribunals, which alone are able to make judgments about European patents.

### Patent 2 EP 705 903 “Mutations of the BRCA1 gene linked to a predisposition for breast and ovarian cancer”

Following the appeals procedure of 12 to 14 November 2008 in Munich, the patent holder obtained claims broader in scope than the original. The claims finally accepted relate to **methods for identifying the mutation 185delAG, a deletion of two nucleotides**, whereas the opposition procedure had limited this patent to the use of a single probe of 15 to 30 nucleotides flanking the mutation 185delAG. This mutation is frequent, particularly in the North American Ashkenazi Jewish population. This patent was therefore granted in a more restricted form than in the original claims of Myriad Genetics.

## Milestones:

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- **In February 2002, opposition notices were filed with the European Patent Office against the European patent EP 705 903** entitled "Mutations of the BRCA1 gene linked to a predisposition to breast cancer and ovarian cancer" and granted in May 2001.  
The French opponents: Institut Curie, AP-HP and IGR, supported by the National Federation of French Cancer Centers and the Hospital Federation of France.  
The other opponents: Belgian Ministries of Health, Social Affairs, and Scientific Research - Dutch Ministry of Health - Belgian and Dutch human genetics centers – German Cancer League - Greenpeace Germany.
- **In August 2002, opposition notices were filed with the European Patent Office against European patent EP 705 902** entitled "17q-linked breast and ovarian cancer susceptibility gene" and granted in November 2001.  
The French opponents: Institut Curie, AP-HP and IGR, supported by National Federation of French Cancer Centers and the Hospital Federation of France, the French Ministries of Health and Research, and the European Parliament.  
The other opponents: Belgian Human Genetics Society, covering Belgian and Dutch human genetics centers, the German, Danish, Czech, Swiss, Austrian, Italian, Finnish and British genetics societies, the Greek National Center for Scientific Research, the Swiss Institute for Experimental Cancer Research, and two patient groups (Belgium and Holland) - Dutch Ministry of Health – Austrian Ministry of Health – Swiss Social Democratic Party - Greenpeace Germany - Dr Wihelms (Germany).
- **In May 2004, the opposition division of the European Patent Office revoked the European patent EP 699 754** held by Myriad Genetics and relating to "method for diagnosing a predisposition for breast and ovarian cancer". The large number of inadequacies revealed, notably in the sequence of the gene, led the opposition division to reject the patent and its numerous claims for lack of inventiveness (article 56).
- **In November 2004, Myriad Genetics ceded all its rights over the patents concerning the BRCA1 and BRCA2 genes to the University of Utah Research Foundation**, which was already part-owner of the patents relating to BRCA1. Myriad Genetics is now no longer the owner of the said patents, but retains exclusive licenses for their use.
- **In January 2005, the University of Utah Research Foundation and the United States of America, now sole owners of patent EP 699 754, appealed against the decision of May 2004** that revoked patent EP 699 754, in a second appeal filed with the Technical Board of Appeal of the European Patent Office
- **In October 2007, the European Patent Office Board of Appeal rejected the appeal of Myriad Genetics/University of Utah and maintained the partial revocation of patent EP 705 902 relating to the BRCA1 gene and its applications.**  
This patent claimed the isolated BRCA1 gene (chemical molecule), the corresponding protein and the foreseeable therapeutic applications (gene therapy, drug screening, transgenic animals...), and diagnostic kits (use of probes or primers specific to certain mutations).

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All documents can be found at: [www.curie.fr](http://www.curie.fr) (section "press and publications")

McGill University study: <http://www.theinnovationpartnership.org/>

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