

clinical trial results by pharmaceutical companies will occur. However, the pending legislation would establish initial registration and then dissemination of clinical trial results in a more uniform and enforceable fashion. The legislation that has stimulated much-needed pediatric research thus has had an unintended consequence. In addition to information about the safe and effective use in children of specific drugs, the future looks promising for our ability to access this same information for adults as well. The question is no longer “if” or “when” but “how.”^{3, 7}

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BRCA Gene Patents and the European Patent Office

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Gene patents usually cover the clinical applications of mutation analysis, as well as the use of the gene sequences for the development of therapies. Under both European and U.S. patent law, naturally occurring substances can be patented if their isolation from their natural environment involves an inventive step.¹

In the mid 1990s, Myriad Genetics, a private biotechnology company located in Salt Lake City, isolated the BRCA1 and BRCA2 genes linked to breast cancer. Myriad obtained patents in several countries, including a patent on the gene itself and a patent for use of the gene for diagnostic and therapeutic purposes. The breadth of the patents and the effect they were likely to have on medical research and patient care, caused widespread criticism.² Concern about gene patenting was especially prevalent in Europe where oppo-

nents found some support in ethical guidelines from major ethics organizations, such as the European Society of Human Genetics and the Nuffield Council on Bioethics.

After a lengthy opposition procedure that began in October 2001, and following a hearing held on May 18, 2004, the European Patent Office (EPO) Opposition Division revoked Myriad Genetics' patent relating to the breast cancer gene BRCA1.³ This landmark ruling came only three months after the rejection of Myriad's BRCA2 patent by the EPO and the assignment of the patent to the London-based charity Cancer Research UK (which offers free licenses to use the patent to all public laboratories throughout Europe).⁴

The revoked patent, EP 0699745 B1, covered a method for diagnosing a predisposition for breast and ovarian cancer. It includes determining whether there is a germline alteration in the sequence of this BRCA1 gene or a BRCA1 regulatory sequence.⁵ Myriad Genetics can appeal this decision within two months from reception of the EPO's written statement of grounds.

The main motive behind the EPO's decision was that Myriad's BRCA1 patent did not

involve an inventive step (nonobviousness criteria in the U.S.). In fact, the gene sequence originally reported in the 1994 U.S. patent contained small errors (discrepancies of about 10 DNA letters)⁶ and they were not corrected until a 1995 amendment to the filing. Thus, the date of that amendment (March 24, 1995) was established as the filing date of the patent. The Opposition Division then considered a *Science* article by Miki et al. already published in 1994,⁷ a reading of which revealed that the invention would have been obvious at the time of the newly determined filing date to a person skilled in the art.

Although not mentioned in the EPO's statement of grounds, a second "moral" or "ethical" motive may also have influenced the decision. It is related to the impact Myriad's effective monopoly on BRCA1 had on the development of research and the identification of new tests.⁸ Moreover, Myriad Genetics has two other patents covering BRCA1 and its mutations, and opposition hearings for them have been scheduled for January 2005.⁹

The European Patent Office's decision demonstrates both differences and similarities

The BRCA case demonstrates that the European patent system has adjusted to the new challenges raised by biotechnology patenting, mainly by using a restrictive interpretation of the basic patenting criteria.

between European and U.S. patent law. The change of the priority date from August 1994 to March 1995 was the determining factor in EPO's decision to revoke Myriad's patent, and is representative of the recent European trend regarding gene related patent applications. This judgment, along with the EPO's 1995 decision in *t-PA/Genentech*,¹⁰ suggest that the EPO will now require strict accuracy of information and that European patent examiners will continue to be very cautious in their approach to gene related patent applications. It could be argued that Europeans are not alone in favoring a rigid application of patent laws to gene related inventions. The revised version of the Utility Examination Guidelines along with the recent

judgement of the Superior Court in *Bayer v. Housey Pharmaceuticals*¹¹ could signal changes to come in the future application of U.S. patent law to gene patent applications.

A noticeable difference that remains between European and U.S. approaches is the moral exception to patenting present in both the European Patent Convention (art. 53) and the Biotechnology Directive (art. 6). According to both these texts, "patents shall not be granted in respect of inventions the publication or exploitation of which would be contrary to 'ordre public' or morality[...]" This "ethical" exception to patenting was invoked by one of Myriad's opponents in the BRCA1 opposition procedure. It was claimed that Myriad's monopoly over BRCA1 was unethical because it allowed the company to prevent all diagnosis using mutation analysis of the human genome and to force Europeans to send their tissues abroad. It was also claimed that "genetic information is a unique and personal description" and therefore all Europeans should be able to have this inherited information read and interpreted by the organization of his or her choice.¹² Yet, the impact of Myriad's monopoly of BRCA1 on the development of research and the identification of new tests was not contested on the ground of art. 53 of the EPC.

This omission, along with the absence of "moral" or "ethical" arguments in the EPO's written decision demonstrates that Europeans are still somewhat reluctant to utilize the "moral" safeguard present in their law to solve gene patenting disputes. Another under-used tool in this debate is the compulsory licensing system present in European law. This traditional safeguard against excesses in licensing has not yet been invoked in the context of a patent on gene-based diagnostics.¹³

The BRCA case demonstrates that the European patent system has adjusted to the new challenges raised by biotechnology patenting, mainly by using a restrictive interpretation of the basic patenting criteria. This novel cautionary approach towards biotechnology patenting may soon be emerging in the U.S., where broad patents on gene based diagnostic methods and research tools have come under some intense criticism.¹⁴

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Calling for a "Lifeline"— Charity, Media and Organ Transplantation

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Todd Krampitz was very sick, and he knew it. The thirty-two year old newlywed was diagnosed in May with liver cancer and two months later his doctors told him that only a transplant could save his life. With his wife Julie and other family members, they mounted an extensive media campaign including two billboards along Houston freeways, a Web site that raised awareness about both organ donation and his personal plight, and gave national media interviews. In early August, Todd Krampitz received a new liver from an anonymous, out of town donor whose family was made aware of his need through the media efforts.

Personal media appeals are an understandable phenomenon of our times, but they raise important issues in medical ethics and societal

justice. More than fifty years ago, medical care related organizations began to realize the potential of utilizing the media for broad-reaching appeals. For example, the Mothers March on Polio and the later highly successful and sophisticated Muscular Dystrophy Association were the forerunners, with literally hundreds of additional groups active today. Personal media appeals are more recent, but have the added advantage of presenting a real, identifiable person who can generate one-on-one empathy with

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a reader or viewer, as opposed to an appeal by a large, faceless organization. Increasingly, the Internet also offers immediate, convenient, nationwide communication at a low price. But there are obvious limits to this kind of appeal. First, they depend upon originality and uniqueness. Occasionally seeing a person in need on