



Gene Patents and their Effect on Innovation in Alzheimer's Genetic Testing

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DESCRIPTION

The issue of gene patents and licensing practices has increasingly become a topic of concern, particularly in the realm of genetic testing for Alzheimer's disease. Alzheimer's disease, a neurodegenerative condition that affects millions of people worldwide, is characterized by a gradual decline in cognitive function and memory. As research into its genetic foundation advances, genetic testing has proven as a potential tool for diagnosing, predicting and potentially preventing the onset of the disease. However, the complex environment of gene patents and the commercialization of genetic tests has raised important questions regarding access to these tests and the major implications for public health.

Gene patents, which grant exclusive rights to the use of specific genes or genetic sequences, have become a significant part of the biotechnology industry. These patents often cover genes that are believed to be associated with particular diseases, including Alzheimer's disease. For example, genes such as *APP*, *PSEN1* and *PSEN2*, which are linked to familial Alzheimer's, have been the subject of patents by various research institutions and biotech companies. While these patents were initially intended to incentivize research and innovation in genetic testing and therapy development, they have raised concerns about their impact on accessibility, affordability and the broader ethical implications of owning human genetic material.

One of the key concerns surrounding gene patents is that they can limit access to genetic testing by restricting who can perform these tests and at what cost. When a company or institution holds a patent on a gene associated with Alzheimer's disease, they can control the distribution of tests that detect mutations in that gene. This exclusivity can lead to high costs for genetic testing, as patients are forced to pay for tests conducted by the patent-holder, who may charge premium prices due to the lack of competition. The resulting financial barriers can prevent many individuals, particularly those in lower socioeconomic groups or in countries with limited healthcare resources, from accessing potentially life-saving or life-enhancing genetic testing.

In addition to high costs, gene patents and exclusive licensing agreements can also stifle innovation in genetic testing. When a single company holds exclusive rights to a gene or genetic test, other researchers or diagnostic companies are often prevented from developing alternative or improved versions of the test. This lack of competition can slow the development of new diagnostic tools, which is particularly problematic for diseases like Alzheimer's, where early detection is critical for effective management and treatment. As the science of Alzheimer's genetics continues to evolve, it is essential that genetic testing be widely available, accurate and adaptable to new discoveries. Overly restrictive patenting practices could obstruct progress in these areas and delay access to the latest advancements in genetic testing.

The impact of gene patents is not just a matter of accessibility, but also raises ethical concerns. Genetic testing for Alzheimer's disease, especially for early-onset or familial forms of the disease, can carry significant emotional and psychological implications. Individuals who test positive for a gene associated with Alzheimer's may experience anxiety, fear, or uncertainty about their future health, particularly given the current lack of effective treatments to prevent or delay the progression of the disease. These emotional factors must be carefully considered when discussing access to genetic tests, as patients need to be fully informed about the potential consequences of testing. The commercialization of genetic tests through patenting can also lead to concerns about the privacy of genetic data and the potential for discrimination based on genetic information. This is particularly concerning in light of growing use of genetic information in insurance underwriting and employment decisions.

In conclusion, gene patents and licensing practices have a significant impact on access to genetic testing for Alzheimer's disease, influencing the affordability, availability and innovation of these tests. While patents can provide incentives for research and development, they also present challenges related to cost, competition and ethical considerations. To ensure that genetic testing for Alzheimer's remains accessible to all individuals who

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may benefit from it, it is essential that we adopt fair and transparent licensing practices, promote open access to genetic data and prioritize the public good in the development of diagnostic tools. The future of Alzheimer's care depends on the

equitable distribution of knowledge and resources and addressing the issues surrounding gene patents is a critical step toward achieving that goal.