DNA Repair Drugs: Focus on PARP Inhibitors, 2016-2026

Description:

The ‘DNA Repair Drugs: Focus on PARP Inhibitors, 2016-2026’report is an elaborate study of drugs targeting DNA damage and repair systems, particularly, the enzyme PARP. DNA, the repository of genetic information, is susceptible to damage caused by several environmental and synthetic agents.

DNA damage leads to the incorporation of defects and aberrations in the genome that often result in functional mutations. When these mutations occur in genes coding for vital proteins and/or enzymes, it leads to the development of genetic diseases. However, our biological system is equipped with a robust repair mechanism capable of correcting damaged DNA sequences. PARP inhibitors and other similar therapeutics are designed to augment the body's innate DNA repair mechanism and aid in the treatment of diseases associated with genetic aberrations.

So far, this emerging class of drugs has only been evaluated across a niche population segment. This has led to increased efforts in the development of therapeutics targeting cells that harbor defects in their repair systems. There are several targets, other than PARP, that are also under clinical evaluation.

The PARP inhibitors market consists of a thin but promising pipeline of products targeting various indications. Since its serendipitous discovery, the developmental history of these candidate therapeutics has been full of ups and downs. The recalling of the late stage molecule, iniparib, and the termination of several other candidate therapeutics significantly impacted the growth of this segment of the industry. However, it has picked up pace after the commercialization of LynparzaTM (olaparib), the only marketed PARP inhibitor till date.

It is important to highlight the role of companion diagnostics, which have significantly contributed to growth in this segment. These molecular tools enabled therapy developers to accurately identify eligible patient groups. Encouraging clinical results demonstrating prolonged PFS and overall survival rates have also accelerated the progress of this drug class.

One of the key objectives of this study was to review and quantify the opportunities laid by the academia/industry players involved in this space. Considering the success of olaparib and clinical data from other active late stage development programs, we have presented an opinion on the anticipated success of PARP inhibitors. Amongst other elements, the report elaborates upon the following key areas:

- The current state of the market with respect to key players, developmental status of pipeline products (both clinical/preclinical) and target indications
- The role of innovative companion diagnostics that have contributed significantly in the development of PARP inhibitors
- An overview of the competitive landscape, elaborating upon other drug classes that explicitly use the DNA repair system as a therapeutic tool
- An in-depth analysis of all peer-reviewed literature that is available on the key late stage molecules, published in the past few years
- Development and sales potential of PARP inhibitors based on target consumer segments, likely adoption rate and expected pricing

The analysis in the report is backed by a deep understanding of key drivers behind the market's growth. With an intent to add comprehensiveness to the market projections, we have provided three market forecast scenarios; the base, optimistic and conservative scenarios represent the likely trends of the future evolution of the market. All actual figures have been sourced and analyzed from publicly available information. The financial figures mentioned in this report are in USD, unless otherwise specified.

Example Highlights

- Overall, we have identified 11 unique PARP inhibitors under clinical/preclinical development; of these, eight (73%) are being developed for oncological indications, two (18%) are under development for stroke and one (9%) is being developed for smoke inhalation injury and primary graft dysfunction.
- Four drugs are in late phase (phase III) of development; veliparib (AbbVie), talazoparib (Medivation), niraparib (Tesaro) and rucaparib (Clovis Oncology).
Myriad Genetics and Foundation Medicine have emerged as the major diagnostic developers to actively join hands with PARP inhibitor developers. A companion diagnostic kit called BRACAnalysis CDx®, developed by Myriad Genetics, has been approved to be used with olaparib to detect mutations in the BRCA genes.

We anticipate the PARP inhibitors market to grow aggressively at a healthy annual growth rate of 42% between 2016 and 2026. In the longer term, we expect the market to continue to rise steadily with high adoption rates of marketed drugs and approval of new drugs and indications.

The overall opportunity will certainly face credible competition from several other classes of DNA repair inhibitors that are currently under development. Some prominent examples include APE inhibitors, nucleotide excision repair (NER) pathway inhibitors, O(6)-methylguanine-DNA methyltransferase (MGMT) inhibitors, DNA-protein kinase (DNA-PK) inhibitors, histone deacetylase (HDAC) inhibitors, cyclin dependent kinase (CDK) inhibitors and checkpoint kinase (CHK1) inhibitors.
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