OPINION ARTICLE

The Innovative Approach for Analysing Patients from the Standpoint of Drug Development

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DESCRIPTION

Patents play an important part in the drug finding process by offering legal protection for discoveries and incentivizing investment in R&D. The study can gain insight into the pharmaceutical and biotechnology sectors' market trends and priorities by finding patterns in patent data resources, as well as provide additional perspectives on more basic aspects such as the emergence of possible new drug targets. The patent enrichment tool, PEMT, was used in this study to extract, combine, and evaluate patent material for Rare Diseases (RD) and Alzheimer's Disease (AD). Following that, a comprehensive examination of the underlying patent landscape is conducted to identify patterns and applications in patents for these illnesses. To accomplish this, will examine notable drug discovery organisations. This enables us to comprehend the significance of AD and RD from particular organisational (pharmaceutical or academic) viewpoints. Analyze the historical emphasis of patents in connection to individual therapeutic targets and correlate it with market situations to identify notable disease targets. Finally, using patents, found medication repurposing actions within the two illnesses. As a consequence, known repurposed drugs and new possible therapeutic approaches relevant to the indication regions were identified. The study shows how patent papers can be used for more than just legal purposes, such as drug discovery, design, and research, making them a useful resource for future drug discovery efforts. Furthermore, this study is an effort towards recognising the significance of data underpinning patent papers and highlighting the need for prepping the data for machine learning-based applications. Patent papers are important assets in the drug development realm because they grant the inventor rights to an innovation for a period of 20 years after filing. These innovations in the biomedical realm could include data on drug formulation, dose, or effectiveness, as well as data on the medicinal chemistry characteristics of leads or pre-clinical prospects. Furthermore, the legal worth of intellectual property in patent papers, as well as their distinguishing function in comparison to scientific literature, makes patents critical landmarks in drug discovery and development. Despite this, patent papers have been largely underutilised as a source of information to aid in scientific finding and are now used in the latter aspects of drug development to help investors in writing new patents for their invention or extending existing patents in the case of "me-too" medicines. Furthermore, the use of legal phraseology within patent papers necessitates the evaluation and comprehension of the underlying content by specialists in both patent drafting and patent analysis. As a consequence, patent literature mining has evolved into a specialist field closely related to chemoinformatic analysis and business assessment, implying that the emergence of patent-sourced information in openly accessible scientific data resources is less prevalent. In this case, the term "patent" refers to both patent applications and awarded inventions. PEMT, a patent enrichment tool that enables pharmaceutically relevant data extraction, was launched in 2022 targets and chemicals of interest from patent papers are examples of pertinent entities. Rather than giving a summary of the patents' applicability in drug development, this tool annotates modulators with patent information. This manuscript intends to walk readers through the tool's application while also emphasising the role patent literature can play in driving choices during the drug development process. As a vehicle for showing the usefulness of analyses, The Knowledge Graphs (KGs), which are graphical datasets made of combined literature and experimental data. OrphaNet was used for uncommon illnesses, while Human Brain Pharmacome was used for Alzheimer's disease. By using these KGs Data from the previous two decades of chemical patent space was pulled, and patent landscaping, which involved the detection of patterns within patent papers, was done. Following that, were conducted a retrospective review of targeted proteins from patent papers to determine their significance in the drug development process at different times. In addition, investigated the effect clinical studies had on target prioritisation. Finally, were looked at drug repurposing in pre-clinical and clinical stage drugs, emphasising possible novel illness therapy choices. Overall, this patent landscaping method emphasises the significance of patent analysis and its utility in making choices during drug development efforts.

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