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Drug delivery systems.

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Introduction

The process of finding and developing novel pharmaceutical medications to treat illnesses and enhance human health is called drug discovery and development. It is an essential component of contemporary medicine and has sparked the creation of numerous treatments that can save and improve lives. The first step in the approach is to identify and validate particular biological targets that are essential to the disease's underlying mechanisms [1].

These targets may be nucleic acids, proteins, or enzymes implicated in disease pathways. In this phase, scientists look for chemicals or substances that may interact with the determined target. These molecules-often referred to as "hits"-are typically discovered *via* a variety of techniques, including high-throughput screening, virtual screening, or the extraction of natural products [2].

Medicinal chemists focus on chemical structure optimisation once promising hits are found in order to improve potency, selectivity, and pharmacokinetic features. Making strikes into "lead compounds" with increased action against the target is the aim. The drug developer submits a New Drug Application (NDA) or Marketing Authorization Application (MAA) to regulatory organisations like the FDA in the United States or the EMA in Europe following the successful conclusion of clinical trials [3].

The organisation evaluates all relevant information to assess whether the drug's advantages outweigh its disadvantages, which could result in approval for marketing and commercial distribution. Drug development requires a lot of time and resources, and many prospective candidates fall short at different points along the way. Successful drug development, however, can have a tremendous impact on public health and offer new alternatives for treating a range of medical disorders. The success of this difficult project depends on cooperation between researchers, pharmaceutical companies, regulatory bodies, and healthcare practitioners [4].

The main findings and significant outcomes from the drug research and development process are briefly summarised in the conclusion. It might rephrase the study's original goals and research questions. The prospective uses of the discovered medicine or therapeutic candidate, as well as how it can address unmet medical needs or enhance patient outcomes, could be highlighted in the conclusion. In other instances, the conclusion might assess the effectiveness, safety, and other pertinent aspects of the newly discovered medicine in comparison to currently available treatments. The conclusion may cover the regulatory approval process and probable obstacles to getting regulatory clearance, depending on the stage of development. A summary of the study's overall significance and its contributions to the field of drug discovery and development usually concludes the conclusion [5].

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