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Opinion

Diverse Strategies in Drug Discovery and Development

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Conservative strategies in chemistry are combined with structure and ligand-based drug design plans to discover the enormous chemical and biological space in the process of hit to lead production, lead optimization and new chemical entity finding [1]. Research and development (R&D) requires improvement to break out of an emergency by identifying and bringing new discoveries to the market. The low R&D capability is not sustainable, and many models are adopted to proceed output in a cost-efficient way. Many companies are adopting innovative quick win, fast fail strategies to reach the decision on clinical molecules [2]. Increased investment in R&D, the novel therapies and improvements to human health are designed by the growth in life expectation has steady for sixty years [3]. 1990 to 2000 is measured as a fair era in the pharmaceutical industry that yielded several best-seller drugs and taken the pharmaceutical sector to highest ranks [4]. The assessment of clinical abrasion trends indicates that the major constituent of drug failure was improper pharmacokinetics report in humans [5]. A variety of companies are establishing alert centers of quality and hard to run each unit as a self-governing entrepreneur center [6]. National Institute of Health (USA) is started in joint venture with industry associates to search for patented or discontinued drugs from pharma partners for screening and identification of drugs with probable efficacy in exceptional, stray or ignored diseases [7]. Rheumatoid arthritis drugs have an elevated cost of growth and more successful in the market [8]. Modern view in the making of drug leads to the perception of achieving high molecular range within the limits of a rational drug like properties [9]. Natural product libraries have a broader distribution of different properties are molecular mass, octanol-water partition coefficient and variety of ring systems compared with combinatorial and synthetic counterparts [10]. The idea of hard drugs was proposed by Ariens [11] and Bodor have predictable the soft drugs which are pharmacologically dynamic, and they undergo a conventional and convenient metabolism to inactive and nontoxic metabolites [12]. The selection of drug contact studies is based on the therapeutic index and co administration of drugs [13]. Changes in gastric emptying influence the rate of absorption but it will not affect the amount of drug absorbed until the drug is associated with first-pass metabolism or unstable in the stomach [14]. A tremendous correlation between drug absorption rate constants in the human Caco-2 model and in a rat intestinal in situ model was obtained for beta-blocking agents [15]. Biomarkers are indicators of biological or pathogenic processes, which can contain small molecular entities, proteins and genetic materials [16]. Metabolomics is involving the study and characterization of metabolites and metabolism in biological systems using an integrated approach which generates unique chemical fingerprints for specific cellular processes [17]. Pharmaceutical and biomedical sciences will mix out candidate biomarkers with exciting potential to improve the value. The balance between these forces will determine the success or failure of the drug development project [18]. Rockefeller University discovered an animal model, now known as Experimental Allergic Encephalomyelitis [19]. Bayesian predictive probabilities are helpful in monitoring clinical trials [20]. In the actual trial, the adaptive assignment algorithm was a great success, but the drug was not. The algorithm searched among the fifteen positive doses and found nothing, at last focusing on assignments to the maximum dose and placebo [21]. The emerging technology of organ and body on a chip promises to open new opportunities in drug discovery with respect to target identification and validation, target-based screening and phenotype screening [22]. Active pharmaceutical ingredients are processed together with excipients which will necessitate new approaches to tightly integrated processing technologies [23]. The FDA issued draft guidance regarding a pathway for demonstrating bio similarity, clearly identifying a stepwise approach [24]. Research and development costs from price to health care systems are a major challenge particularly with respect to reduction of disease burden in the developing world [25].

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