molecular pharmaceutics

editorial

Finding the "Magic"

The concept of the "Magic Bullet" has been with us for 100 years. Yet there has been little magic, by design, in drug and drug product development. The focus has been on "targets" rather than the "targeting". Targeting focuses on the artillery, the means to direct and deliver the magic bullet to the target. Recent advances in science and technology have now made targeting a realistic goal of drug discovery and development. This expands the view of "drug" from the focus on the pure chemical entity, the drug, to a focus on the drug and delivery, and the molecular mechanistic approaches to the most efficacious drug product.

Traditional scientific endeavors in drug delivery and drug product development have been rather phenomenological, more descriptive, and somewhat based on trial and error. That has been primarily due to a lack of tools and our limited understanding of the mechanisms involved at a cellular and molecular level. The rapid advances in the field of biological sciences, cell and molecular biology, and genomics and proteomics, in particular, have penetrated more than just the drug discovery phase of the pharmaceutical sciences. They are now rapidly changing the views and strategies in pharmaceutics and the pharmaceutical development sciences. While the impact is particularly evident in the membrane transporter and metabolism fields, advances in the physical and material sciences, in parallel, are altering the pharmaceutical properties of drug candidates and delivery systems in new and innovative ways. The computational tool of bioinformatics, molecular property, biopharmaceutical property, and metabolism estimation have advanced rapidly in the past decade and are now having a significant impact on drug discovery and drug development. Traditional pharmacokinetics did not have molecular tools for understanding membrane transport and metabolism, or the effect of genetic polymorphism. Prodrug design and synthesis could not readily consider where and what enzymes convert the prodrug to the active drug. Receptors were primarily investigated for designing new chemical entities until molecular pharmaceutical scientists recognized that ligand−receptor interactions could be used to target drug to the receptor-expressing cells. Moreover, traditional dosage forms have not had to deal with high-molecular weight "biopharmaceuticals", which generally have more complex pharmaceutical properties and sites of action hidden deep within the target cells.

The new journal *Molecular Pharmaceutics,* published by the American Chemical Society, will focus on these rapidly developing molecular and mechanistic fields impacting drug delivery and drug development. The publication of advances originating in these fields has been distributed widely to specialty journals, often not reaching the intended audience with the greatest interest or having the greatest impact. Mechanistic delivery research can impact drug efficacy in unintended ways and in any therapeutic area. *Molecular Pharmaceutics* will focus on the delivery mechanism, providing a publication of the highest scholarship and a forum for scientists focused on developing the most effective drug product.

Delivering the magic...

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