**Protein in Drug Discovery**

**Proteomics,** the study of protein structures and their expressions under various conditions, has become significant in drug discovery. Primarily, proteins were known as potential drug components, but research has revealed their broader potential. Proteomics now helps identify proteins as drug targets, understand disease mechanisms, and assess drug responses in tissues and organs. This comprehensive approach enables more effective drug development and personalized medicine.

**A) Proteomes for Drug Design:**First off, Structural proteins and their expressions can serve as great drug designing potentials by combining computer-aided technology and using the data from crystallography, X-ray and many more. It helps to understand the 3D probe protein structural binding affinity by docking small biomolecules. Docking up to 106 by scoring into and implicit-solvent force field can help to identify micromolar protein binders by using rigid protein targets (Sledz et al., 2006). A study centering covid-outbreak in 2020 has also outlined the targeted protein SARS-CoV-2 protein spike which further helped to create covid vaccines (Walls et al., 2020).   
  
**B) Structural proteins for Drug Target:**

Additionally, Structural protein is primarily regarded as a protein 3D probe to create a compound-protein interface. Using unique 3D structures of such protein compounds can address specific functions of the motif to identify novel drug agents. For instance, Dxr2-017 is a potent compound protein which enhance cell apoptosis in the human melanoma NCI-60 cell line, hence accumulating greater applications and efficacies to inhibit growth against human prostate, breast, lung and melanoma cancer (Qiao et al., 2024). Another study shows that G protein-coupled receptors, primarily small molecules and peptides and being the largest family of membrane receptors, account for at least 700 drug targets with enormous drug molecule approvals (Sriram, Insel., 2018).

**C) Protein modification for Drug Delivery:**

Also, As protein already shows numerous possibilities of potential drug impacts, exosomes as a nanovesicle can be substantially engineered and incorporated as targeted drug delivery by inducing therapeutic measures and lower toxicity levels ( Liang et al., 2021). Proteins such as monoclonal and conventional antibodies which are regarded as the largest and fastest media as protein therapeutics, can be modified into recombinant entities for cancer and autoimmune disease based drug delivery (Carter, 2011)

To conclude, Modern medication and therapeutics now prefer using computer-based protein structure development to underline their potency, efficacy, and establishment by using previous data and opting for creating protein-based assays and pathways with high throughput. Proteomics has been advancing drug discovery for more than two decades now and aspires to bring greater prospects in future.

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