

PP 25 - A Review on the Role of Molecular Biology in Medical Therapy: Trends and Challenges

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Background: Application of molecular biology techniques and principles have become more common in designing therapeutics.

Objectives: To identify the use of molecular biological techniques and principles in current and emerging therapeutics and their challenges.

Methodology: This is a comprehensive literature critique from the last five years of literature, searched through google scholar and PubMed search engines using keywords: molecular biology, techniques, principles, therapeutics, recombinant DNA.

Results and conclusions: Today recombinant DNA and cell hybridoma technologies are used to harvest mainstream protein drugs as therapeutics such as insulin. Also biofilm formation in the body via commensals is also in practice as a method of therapy. Novel aspect of these therapeutics are formation of biofilm or enhancement of an existing nonpathogenic biofilm forming commensal using a drug carrying novel bacteria. Also recombinant technology is used in many drug discovery studies and also in synthesis and extraction of medicinal extracts in biotechnology. Proto- oncogenes become cancerous due to genetic malfunctions such as mutation and deletion. Hence knocking out these genes using inference techniques such as retro viruses, CRISPR, Zn finger proteins are used as therapeutic methods in cancer treatments. Although, molecular biology assisted therapeutics are feasible in principle they face many challenges in progressing to the future and in becoming more accessible. As therapeutics or delivery systems, designing a bacterium with desired qualities without compensating safety and efficiency is a must yet challenging. The cost of some therapeutics is high due to limited technology available in production methods and also due to necessary quality control and analysis throughout batch productions. Hence design of better recombinant systems that includes desired post translational modifications is a future outlook. Furthermore inference techniques used in cancer therapy cause limitations such as complete and temporary knockdown of genes and these should be addressed. Hence though promising, molecular biology assisted therapeutics pose some challenges yet to overcome in future.

Keywords: drug discovery, genes, molecular biology, recombinant technology, therapeutics