

Targeted gene therapy for the treatment of heart failure

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Chronic heart failure is one of the leading causes of morbidity and mortality in Western countries and is a major financial burden to the health care system. Although progress in conventional treatments is making steady and incremental gains to decrease heart failure mortality, to improve survival and have offered significant improvements in patient quality of life, but they fall short of producing an authentic remedy. So there is a critical need to explore new therapeutic approaches. Gene therapy was initially applied in the clinical setting for inherited monogenic disorders. It is now apparent that gene therapy has a broader potential that also includes acquired polygenic diseases, such as congestive heart failure. Cardiac gene therapy involves the introduction of genetic material to the heart. Recent advances in understanding of the molecular basis of myocardial dysfunction, together with the evolution of increasingly efficient gene transfer technology, have placed heart failure within the reach of gene-based therapy. Calcium cycling proteins are prominent genes for targeting, as abnormalities in calcium handling are key determinants of heart failure. A major impediment, however, has been the development of a safe, yet efficient, delivery system. Initially nonviral vectors have been used, but they fail to produce significant gene expression. Viral vectors, especially adenoviral, on the other hand, can produce high levels of expression, at the expense of safety. Hence adeno-associated viral vectors have been used as myocardial gene delivery vehicles. They can sustain gene expression at a therapeutic level and maintain it over extended periods of time, even for years without a safety risk.

Biography

B. Shruthi had completed her B. Pharm with 77.1% from the Sarojini Naidu Vanitha College of Pharmacy and join into a postgraduate course (M. Pharm) of qualifying GPAT having all India rank 1314. She is currently pursuing her M. Pharm first year from G. Pulla Reddy College of Pharmacy. She participated and gave presentations in national seminar on "INNOVATIVE EMERGING APPROACHES IN DRUG DISCOVERY" held in the Vishnu Institute of Pharmaceutical Education and Research in March 2012 where she secured the best presentation award. Till date she has given 4 presentations in different educational institutions.

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Nanorobotics and its applications in the medical field

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Nanorobotics has strong potential to revolutionize healthcare, to treat diseases in future. It opens up new ways for vast and abundant research work. Nanorobots are theoretical microscopic devices measured on the scale of nanometers working at the atomic, molecular and cellular level to perform tasks in both the medical and industrial field. This study presents the construction, design and applications of nanorobots. The exterior of nanorobots is constructed of carbon atoms in diamondoid structure because of its inert properties and strength. Nanorobots are designed as biochips, nubots. They have wide applications in medical and pharma field. In nanodentistry, a field of dentistry nanorobot is used for major tooth repairs, tooth durability and appearance. They are efficient targeted drug delivery systems used in cancer detection and treatment and also used in treatment of diabetes. Nanorobots are also used in the field of cryostasis, gene therapy, surgery and in diagnosis. Apart from these several applications nanorobots have various disadvantages like high initial design cost, complicated design, and susceptibility of electrical nanorobots to electrical interference from external sources. Nanorobotics has a wide scope of changing the shape of industry, broadening product development and marketing interactions between Pharma, Biotech, Diagnostic and Healthcare industries.

Biography

P.Bala Bharathi is pursuing her postgraduation (M.Pharm, Pharmaceutics) from RBVRR Women's College of Pharmacy. Till date she gave 4 presentations in different educational institutions.

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