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Translational medicine using clean green approach

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Abstract

Innovation is a key to finding affordable solution to pressing national needs in agriculture, health and energy. One must also stay competitive in the international market. In this context, a public-private partnership approach is unique in the sense that it permits a university, small business, or non-profit institution to elect to pursue ownership of an invention in preference to the government. On the one hand the developed nations tapped in nature's potential to unforeseen heights, and on the other, mother earth were vastly devastated as a result. So to echo the age old wisdom that with great power comes great responsibility, the onus is now on the scientist technocrat entrepreneurs to develop economically viable rapid turnaround customized technology which are biodegradable at the product level and eco-friendly at the process level. Green technology is thus the *mantra* of the day. Scientists working at the micro or macro level are thus guided by the twin principles of efficiency and nature-friendly work philosophy. Products to improve or replace the old order and process to maximally tap the potential of a system and an inter-disciplinary approach is what should drive any happening organization, be it in the public or the private sector and a marriage of the two if possible or at least some cross-talk, to best utilize available resources to their full potency.

Degenerative respiratory diseases such as Idiopathic Pulmonary Fibrosis, Pneumoconiosis and Asbestosis etc. are a major cause of mortality and morbidity worldwide and current treatments offer no prospect of cure or disease reversal. Human embryonic stem cell (hESC) provides a possible unlimited source of cells that could be differentiated into lung lineage specific cells for potential clinical use in pulmonary regenerative medicine. This study aims to tissue engineer pulmonary non-ciliated epithelial cells from hESC by guided endodermal differentiation in proprietorial specialized differentiation media supplemented with our own growth factor cocktail, mimicking the environment of lung development in embryo can be used for treatment of degenerative diseases of lung.