Book review

Stem cells in the respiratory system

Editor Mauricio Rojas. Published by Humana Press, New York, USA. ISBN 978-1-60761-774-7 \$139.00

Over the past few years stem cells have captured the attention of both the scientific and lay media offering promise of organ repair and regeneration. Organizations such as the Centre for Drug Evaluation and Research of the Food and Drug Administration now highlight restoration of lung structure as a primary target in the development of novel therapies for destructive lung diseases including COPD. The challenge for scientists and investigators is to determine how this ambitious goal might be achieved. Two broad approaches have been proposed including stimulation of endogenous lung progenitor or lung stem cells using genes or small molecules and provision of exogenous cells, usually stem cells or stem cell-derived cells, to induce regeneration and restore lost tissue.

In this book, a number of leading investigators review the varied responses of different stem cell populations following physiological stress and lung injury. The first chapter is an authoritative review describing the contribution of endogenous progenitor cell populations during airway epithelial development and repair; a tractable hierarchy model is proposed. In the second, the remarkable properties of circulating mesenchymal stem cells (MSCs) are described including the intriguing ability of MSCs to home to diseased tissue and cancer. The third chapter considers haematoapoetic stem cells (HSCs) and evidence suggesting that bone marrow derived progenitor cells, including endothelial progenitor cells (EPCs), may influence prognosis of some lung diseases. The fourth reviews contributions of another bone marrow derived cell, the circulating fibrocyte, in airway remodelling and lung fibrosis. The fifth chapter considers the critical role of the extracellular matrix and its roles directing the biology of various stem cell populations. The sixth reviews the concept that stem cell mobilization is influenced by physical activity. The seventh chapter provides a summary of bone marrow derived MSCs in acute lung injury. The final chapter considers the potential roles of MSC therapy in a variety of lung diseases.

The book is aimed at researchers and will be invaluable for graduate students or established scientists to dip into as required. Each chapter is well written, logical and serves as a stand alone review though there is a degree of repetition between chapters. There is important discussion around the lack of engraftment and differentiation following MSC therapy which suggests the reported beneficial effects may be due to paracrine actions on endogenous lung progenitor cells rather than exogenous stem cells acting as a source of novel tissue. I enjoyed this book. The authors should be congratulated for producing an excellent book that reviews a difficult, fast moving and controversial area of biology.

Competing Interests

There are no competing interests to declare.

RECEIVED

20 May 2011

ACCEPTED

20 May 2011

ACCEPTED ARTICLE

27 May 2011

CORRESPONDENCE

Dr Matthew Hind, Royal Brompton Hospital, London SW3 6NP, UK.

E-mail: M.Hind@rbht.nhs.uk