
Preface

In the May 22, 2000 issue of the popular *Time* magazine, it was predicted that tissue engineers would have the hottest job in the new millennium, with drug designers coming in third. Indeed, the 21st century has opened a new era for the production of artificial organs by means of tissue engineering and regenerative medicine (TERM) to repair or replace damaged/diseased tissues and organs. With an increase in the average age of the population as well as in the incidence of age-related “wear-and-tear” conditions and traumatic injuries/diseases, the shortage of healthy donor organs has led to the emergence of TERM.

To reconstruct a new tissue by tissue engineering, triad components are needed: (1) cells, (2) biomaterials, and (3) bioactive molecules. Of these three components, scaffolds play a critical role in the reorganisation of neotissues and neo-organs. Scaffold matrices can be used to achieve cell delivery with high loading and efficiency to specific sites. The manufacturing methods are very important for the specific organs because the physicochemical properties of scaffold matrices — such as porosity, pore diameter, and specific area — are determined by the manufacturing methods. This book focuses on 21 different types of manufacturing protocols for tissue-engineered scaffolds that are adapted for the undergraduate and graduate student level.

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