

---

## Preface

Synthetic mRNA is an attractive tool for mammalian cell reprogramming that can be used in basic research as well as in clinical applications.

Present mRNA in vitro synthesis is a rather simple procedure, which delivers a high yield of quality product. Various modifications may be introduced into the mRNA by changing the sequence of the DNA template, by modifying the reaction of transcription or by posttranscriptional modification.

mRNA, as a transfection agent, has several advantages over DNA. mRNA expression is not dependent on nuclear entry and occurs directly in the cytosol. More than 90% of the cell population may uniformly express individual or multiple RNAs, just a few hours after transfection. Because of its cytoplasmic location, and in the absence of rare reverse transcription events, mRNA transfer does not affect the integrity of the host genome.

In spite of the obvious advantages of mRNA-mediated reprogramming, some important technical problems still exist and have to be addressed. These are mRNA instability, immune response to mRNA transfection, and inefficient mRNA delivery in some primary cells and tissues.

Topics selected for this volume cover the main methods used, including mRNA synthesis, modifications, and delivery. Examples of cell reprogramming and analysis in the fields of immunotherapy and stem cell research are also included.

This will be of interest to researchers, clinicians, and biotech companies interested in mRNA-mediated cell reprogramming.

*New Haven, CT, USA*

*Peter M. Rabinovich*

Synthetic Messenger RNA and Cell Metabolism  
Modulation

Methods and Protocols

Rabinovich, P.M. (Ed.)

2013, XI, 323 p., Hardcover

ISBN: 978-1-62703-259-9

A product of Humana Press