Lecture 10: Nanodelivery of therapeutic genes & molecular biosensor feedback control systems

10.1 Introduction and overview
   10.1.1 Some of the advantages of therapeutic genes
   10.1.2 Some of the advantages of molecular biosensor feedback control systems
   10.1.3 Why a nanodelivery approach is appropriate

10.2 The therapeutic gene approach
   10.2.1 What constitutes a "therapeutic gene"?
   10.2.2 Transient versus stable expression modes

10.3 Molecular feedback control systems
   10.3.1 Drug delivery has traditionally not used feedback controls
   10.3.2 Why feedback control might be a very good idea!
   10.3.3 Positive or negative feedback?

10.4 Molecular Biosensors as a component of a nanomedicine feedback control system
   10.4.1 What is a molecular biosensor?
   10.4.2 How a molecular biosensor functions as a therapeutic gene switch

10.5 Building integrated molecular biosensor/gene delivery systems –some examples
   10.5.1 Example of a ribozyme/antivirus system
   10.5.2 Example of an ARE biosensor/DNA repair system
   10.5.3 Example of a feedback-controlled system for treatment of retinopathies

References


