BME 695 Engineering Nanomedical Systems
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Lecture 4: Cell Targeting and its Evaluation

4.1 Overview: targeting nanosystems to cells
- 4.1.1 antibody targeting
- 4.1.2 peptide targeting
- 4.1.3 aptamer targeting
- 4.1.4 ligand-receptor targeting

4.2 Antibodies – polyclonal and monoclonal
- 4.2.1 Where do antibodies come from – in nature?
- 4.2.2. How do we make them in the laboratory?
- 4.2.3 Monoclonal antibodies – some details you need to know!
- 4.2.4 Labeling strategies
- 4.2.5 Therapy problems with mouse monoclonal antibodies
- 4.2.6 "Humanizing" monoclonal antibodies to reduce adverse host immune reactions
- 4.2.7 Why antibodies may not be a good overall choices for targeting nanosystems to cells

4.3. Peptide targeting
- 4.3.1 How does a peptide target?
- 4.3.2 Examples of peptide targeting
- 4.3.3 Creating new peptides by random peptide phage display libraries
- 4.3.4 High-throughput screening of those peptide libraries
- 4.3.5 Advantages and disadvantages of peptide targeting

4.4 Aptamer targeting
- 4.4.1 What are aptamers and how do they target?
- 4.4.2 Some different types of aptamers
- 4.4.3 How do you make aptamers?
- 4.4.4 How do you screen for useful aptamers?

4.5. Ligand-receptor targeting
- 4.5.1 What are ligands?
- 4.5.2 What are their advantages/disadvantages?
- 4.5.3 Example – folate receptors

4.6 How do we quantitatively evaluate targeting?
- 4.6.1 Technologies for evaluating targeting
  - 4.6.1.1 Flow cytometry
  - 4.6.1.2 Scanning image cytometry
- 4.6.2 Evaluating targeting specificity
- 4.6.3 Evaluating targeting sensitivity

Lecture 4 References

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