

**2.785J/BEH.411J/3.97J/HST523J  
Spring 2004**

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**CELL-MATRIX MECHANICS**

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**Homework #2**

1. A company has begun to market a fibronectin-coated cell culture dish. You are considering the purchase of culture dishes for your *in vitro* study of a cell type for which you have relatively little information. You have been able to determine, however, that the cell has the  $\alpha_6\beta_1$  integrin. Would you expect there to be any benefit to using the fibronectin-coated dish? Explain.
  
2. Another company provides you with their new culture dish (not the fibronectin-coated dish above). You culture fibroblasts on conventional dishes (without any additional protein coating) and on the new dishes. You find that the cells stick to the conventional dish but not to the new dish. Explain these findings.
  
3. A transgenic strain of mice is missing a particular type of cell adhesion molecule. The pups survive only a few days after birth, but you are able to make the following observations. The dermis is abnormal and does not heal by contraction as it does normally. The epidermis is normal and regenerates normally when injured.
  - a) What is the likely missing cell adhesion molecule? Explain.
  
  - b) Name 2 other tissues that you would expect to be abnormal and 2 other tissues that you would anticipate would be normal? Explain.