

<b>Name of the Lecture</b>	Cell-Material Interaction
<b>Level of the Lecture</b>	Graduate
<b>Length of the Lecture</b>	<b>25 minutes</b>
<b>Type of the Lecture</b>	Online
<b>Lecturer</b>	Jenifer Olmos Buitrago
<b>Lecturer Email</b>	<a href="mailto:jolmos@uic.es">jolmos@uic.es</a>
<b>Aim of the Lecture</b>	The cells are able to respond to different physicochemical stimuli due to a complex molecular system that governs that response. In this chapter, we will briefly overview the basic concepts of cell interaction with ECM and other cells and how these cells interact similarly in contact with the surface of biomaterials.
<b>Content of the lecture</b>	<ol style="list-style-type: none"> <li>1. Introduction to cell interaction</li> <li>2. Types of receptor-ligand interaction (cell-ECM/ cell-cell) <ul style="list-style-type: none"> <li>• Types of cell contacts (desmosomes, hemidesmosomes..)</li> <li>• Types of membrane receptor and ligands (cadherins, integrins...)</li> </ul> </li> <li>3. Mechanisms of the cytoskeleton <ul style="list-style-type: none"> <li>• Cell adhesion to ECM and Biomaterials</li> <li>• Cell spreading</li> <li>• Cell migration</li> </ul> </li> <li>4. Basics of cell signaling and receptor types</li> <li>5. Cellular functions dependent on cell-environment interaction <ul style="list-style-type: none"> <li>• Cell survival</li> <li>• Cell proliferation</li> <li>• Cell differentiation</li> <li>• Protein synthesis</li> </ul> </li> <li>6. Immunological response to implanted biomaterials <ul style="list-style-type: none"> <li>• Acute inflammation</li> <li>• Macrophage response</li> <li>• Foreign body reaction</li> <li>• Formation of fibrotic capsule</li> <li>• Chronification of the inflammation</li> </ul> </li> </ol>
<b>Recommended Sources</b>	Alberts, B et al. Molecular Biology of the cell. 6 <sup>th</sup> Edition. GARLAND PUBLISHING, 2019

	<p>Lodish et al. Molecular Cell Biology. 8<sup>th</sup> Edition. Macmillan Learning. 2016</p> <p>Johnna S. Temenoff &amp; Antonios G. Mikos. Biomaterials: The intersection of Biology and Materials Science. Pearson, 2009</p>
<b>Language of the lecture</b>	English
<b>Learning Outputs</b>	To know the pathways in which tissue cells are able to communicate with other cells and with the outside
	To know cellular mechanisms that are involved in the response of external stimuli (cell-cell or cell-ECM / biomaterial)
	To know the immunological response processes to implanted biomaterials