

Some of the topics related to proteins include: 1) relating surface chemistry to protein adsorption or specific binding and 2) studying the activation or inactivation of protein function at interfaces, including complement activation. Cell topics include: 1) the response of cells to differing chemistries and microstructures (roughness or porosity), 2) the evaluation of multiple cell and tissue response parameters (attachment, growth, migration, differentiation, inflammation, fibrosis), 3) the role of surface receptors in cell responses, and 4) all relevant cell types including bacteria. The group organizes workshops, symposia, and sessions at the annual meeting.

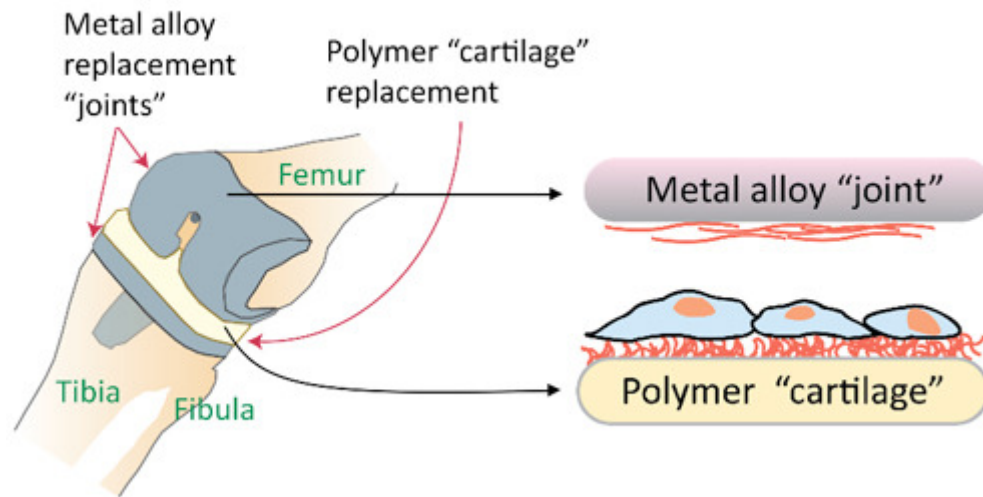
Biomaterial-Tissue Interfaces

The interaction of proteins and cells with biomedical implants critically impacts implant success by:

- Influencing tissue integration; preventing fibrous encapsulation and inflammation
- Directing cell response and native cell infiltration

Example: Total Knee Replacement

Each year, 600,000 total knee replacements are performed in the US. Replacement knees are composed of several materials each of which must interact favorably with the body. With multiple materials interfacing with multiple tissues, a large array of protein-material and cell-material interactions collectively contribute to implant success.



Above left: Illustration of knee implant made with polymer at the joint interface that mimics cartilage and metal for the joint, which mimics bone. **Right:** Proteins (red) adsorb differently to the different materials and are depicted as elongated on metal and globular on polymer. Cells (blue) interact with the materials via the adsorbed proteins and conformation of the adsorbed proteins dictates how the cells will respond (adhere, proliferate, differentiate, etc.).