By first considering the anatomy and function of hips (ball and socket) and knees (rolling and sliding hinge); some concepts and history of selecting biomaterials (materials for implants) will be presented using known conditions of placing (surgical insertion), articulating (motions) and fixing (attachment to bone) existing devices.

A look at internet sites will show multiple surgical methods, products (designs) and biomaterials. Thus the central questions will be: how will we (engineers) improve on longevities (the 90% in-place and in-function at 10 years) for younger, more active and more obese patients? Is the answer preventing, regenerating (grow a new joint) or improving on current systems made from synthetic biomaterials? The discussion will concentrate on the perspectives of the presenter and the audience.