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Keynote talk

Cartilage, Contacts and Catheters.

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Our everyday lives involve the articulation of many joints in our bodies, and for the most part, these vital components last for many decades without need of repair. Great progress has been made in the replacement of load-bearing joints by engineering materials, but ultimately better solutions would be either the growth of new, living sliding materials identical to the cartilage that has worn out, or replacement of diseased and worn sliding components with artificial materials with very similar properties to the natural cartilage. We are working on the early stages of the latter approach, using what is known about the behaviour and properties of living cartilage and attempting to imitate it by constructing systems consisting of hydrogels covered by polymer brushes. The knowledge gained from these efforts will hopefully lead eventually to novel implant materials, but in the meantime it will help us to test current theories of joint function, and to develop lubricious polymeric systems that could have applications in other biomedical applications such as contact lenses, intraocular insertion devices, and catheters.