Articular cartilage is the thin layer of tissue that covers the surfaces of bones and facilitates pain-free and frictionless motion. Unfortunately, the regenerative potential of cartilage is limited. The consequence is that most people will suffer from painful and disabling joint wear that is difficult to treat when they age.

Cartilage damage is irreversible?
William Hunter, a British surgeon, already stated in 1743: “From Hippocrates to the present age, it is universally allowed that ulcerated cartilage is a troublesome thing and that, once destroyed, is not repaired”. It is only in the last decade that we have started to understand that the cartilage is able to elicit significant repair activity under particular conditions. We require further fundamental understanding in order to ultimately elicit a controlled repair response in regenerative treatments.

Repair response in damaged cartilage
The present work characterizes the earliest response of cartilage to mechanically induced damage using an in vitro explant model (figure 1). Cartilage-bone explants were obtained from the slaughterhouse. Cartilage was damaged by mechanical indentation, which resulted in an initial degenerative response (figure 2). After 24 hours, the chondrocytes (the only cell type in cartilage) which survived the overloading initiated a healing process at the gene expression level. However, this did not result in repair of the cartilage tissue within a nine-day period, probably because of the reduced cell viability.

**Articular cartilage**

**Cartilage damage is irreversible?**

**Repair response in damaged cartilage**