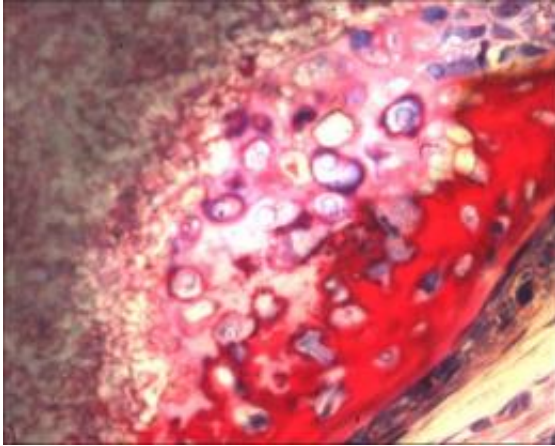


Bone formation from embryonic stem cells

October 22 2009



From left to right, you can see the carrier material (greyish in colour) and the cartilage tissue (light pink) on which bone (dark pink) is being formed.

Joanneke Jukes of the University of Twente, The Netherlands, has succeeded in growing bone tissue with the help of embryonic stem cells for the first time.

Initially, she had been looking for a suitable carrier material for the formation of cartilage. It thus came as a total surprise when the cartilage then developed into [bone](#). Jukes' doctoral defence took place on 22 October at the Faculty of Science and Technology.

It is difficult or impossible for damaged cartilage to repair itself. Joanneke Jukes of the University of Twente has carried out research into whether embryonic stem cells could be used to repair damaged

cartilage. It is known that stem cells can renew themselves and grow into different types of cells.

First of all, she successfully investigated whether embryonic stem cells could be made to form [cartilage tissue](#). In order to grow cartilage, cells are often combined with a carrier material. As well as experimenting with a newly developed carrier material, Jukes also used carrier materials which had already been used to grow cartilage and [bone tissue](#).

Cells were cultured on a ceramic material, among others, and made to develop into cartilage in the lab. The cartilage that was cultured was then implanted in [mice](#). To the amazement of the researcher, the cartilage tissue continued to develop into bone. This process mirrored the formation of new bone in embryos and young children, with the cartilage forming an intermediate step. This is a preliminary study in which bone was grown in vivo using [embryonic stem cells](#) under controlled, reproducible circumstances. This bone formation technique offers a promising new technique for repairing bone defects.

Provided by University of Twente ([news](#) : [web](#))

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