Reviewer's report

Title: Type II Collagen and Glycosaminoglycan expression induction in primary human chondrocyte by TGF-beta1

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Reviewer: Michaela Endres

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Title: "Type II Collagen and Glycosaminoglycan expression induction in primary human chondrocyte by TGF-beta1"

The authors report a study were the effect of genetically modified TGF-B1 from transfected human chondrocytes on human chondrocytes (wild type) was compared. Therefore, TGFβ1 bioactivity of genetically modified TGF-B1 was verified and compared to rhTGFβ1. Redifferentiation potential of human chondrocytes was verified using rhTGFβ1. In a second step, micromass cultures made of hum. chondrocytes or a mixture of hum. chondrocytes and transfected human chondrocytes were analysed concerning gene expression of collagen type II. Soluble GAG was measured in the supernatant using a GAG Assay. Additionally, cell attachment of a mixture of hum. chondrocytes and transfected human chondrocytes into cartilage defects in rabbit knee joints ex vivo was evaluated.

1. Major Compulsory Revisions

1.1 Background, second paragraph: "Mature chondrocytes are the only cell type which exists in cartilage..."


1.2 Discussion part: No Limitations of the study are mentioned e.g. cell adherence experiments in a dry environment without any fluid movement. Please give limitations in the discussion or in a separate chapter.

1.3 Results: No statistical analysis of results available. Please provide statistical analysis of data
2. Minor Essential Revisions

2.1 Methods: Cell culture: Please give generation time, population doubling or passage number of chondrocytes (together with initial seeding rate), which were used for further experiments.

2.2 Methods: Cell culture and in vitro cartilage formation: Please describe how many micro mass pellets did you use for each experiment.

2.3 Methods: Histological staining, first paragraph: "pellets were cut into 3 µm thick slices using cytotome..." I suppose a cryostat was used.

2.4 Discussion: fifth paragraph, line 369 and following: "Therefore, the successful regeneration of cartilage with TG370C can be surmised to be due to the matrix-like effect of type II collagen and GAG produced by 371 TG-C mixture." Is this a conclusion based on results obtained in this particular study?

2.5 Conclusion: Please draw conclusions from this particular study without referring to previous data from other studies. This should be part of the discussion.

2.6 Figure 1C: Please correct label of the y-axis

2.7 Figure 2A and B: Scale bars are missing

2.8 Figure 2 C,D and E: Please give statistical significance and significance level. If not possible please use the term "trend or tendencies" in the text to present results.

3 Discretionary Revisions

none.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

Dr. Michaela Endres is employee of the company TransTissue Technologies GmbH. The company is activ in the field of research and development of cartilage regeneration.