

# DIFFERENT PATHWAYS *of* REGENERATIVE MEDICINE



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## Clinical Trials as Measurement for Translational Potential

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### SUMMARY

The development of regenerative medicine is accompanied by several problems. One of these is the use of the term 'regenerative medicine'. Many biologists, physicians, geneticists and other theoretical and clinical researchers are building up an innovative field of medicine, yet it is unclear what exactly is meant by this term. There is neither a

technical definition nor a common use in practice. The aim of this study is to draw the line at the limits of regeneration and medicine in order to figure out a proper understanding of regenerative medicine. Furthermore, the analysis reveals a prospering future. It has shown that regenerative medicine technologies are used for a variety of therapeutic applications.

### METHODS

For getting insights and making clear how medicine can be regenerative, we systematically reviewed clinical studies. For this purpose we searched PubMed and included studies that met the following criteria: clinical trials, case reports, publication date from 1/1/2009 to 31/3/2015. All entries relating to regenerative medicine were filtered and analysed in respect of date, country, technology, therapeutic use, study design.

### RESULTS

(I) As a preliminary result, we assert that regenerative medicine is a complex medical field with blurred boundaries and could neither be defined by its technological nor therapeutic approaches. Though the term 'regenerative medicine' is commonly used in publications, there is a lack of use in clinical trials. That does not narrow the success of regenerative medicine since it is often circumscribed by its core technology (fig. 1).

(II) In order to see what might be possible in the future and to estimate the translational potential no clear cut definition is necessary. This study reveals the edges of regenerative medicine and an analysis of current trials, as it was initiated here, helps to figure out which technological approach could be used in different therapeutic areas (fig. 2).

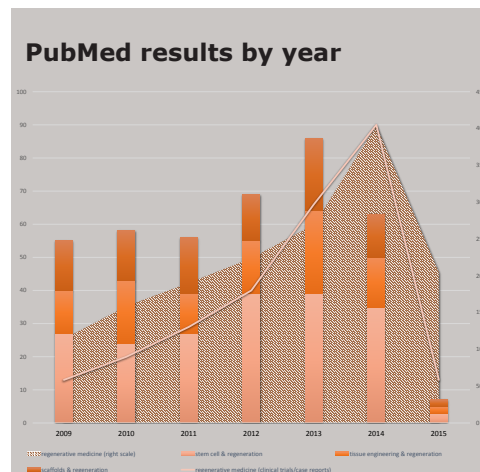


Fig. 1: The overall using in publications of the term regenerative medicine (right scale) is roughly 40x higher than in clinical trials (left scale). The data indicates that describing a particular technology tends to be replaced.

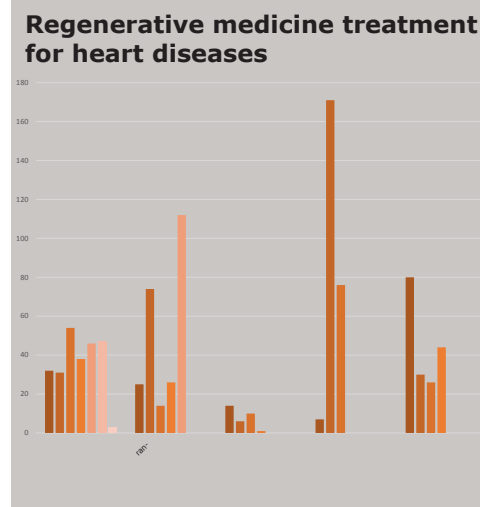
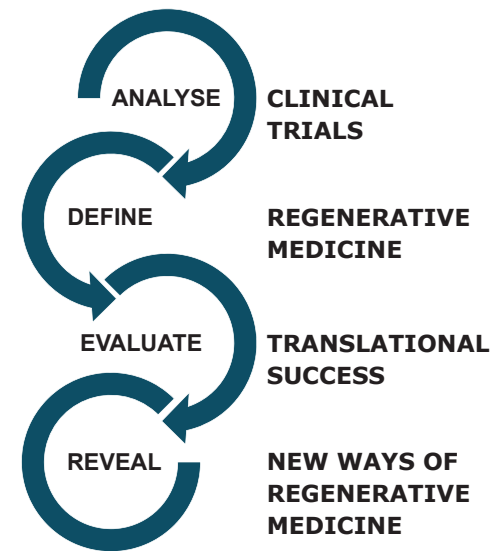


Fig. 2: Exemplary analysis of the last 5 years of regenerative medicine research clustered in respect of publication date, study design, technological approach, and most frequently diagnosis.

### AIMS



### DESIDERATA

A distinction on regeneration of function and of tissue should help to make translational goals clearer.

A further analysis of clinical trials in regenerative medicine is needed.

An open-ended database seems to be beneficial for translational knowledge and success.

To connect medicine, economics, and politics a clear cut definition of 'regenerative medicine' would be useful for transdisciplinary communication.

### FURTHER INFORMATION & CONTACT

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