

## FUTURE PERSPECTIVE OF VASCULARIZED BONE ALLOTRANSPLANTATION

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### Introduction

Medical engineering, at the moment, is a step with a huge impact on organ transplantation. Promising the development of obtaining and using of extracellular matrices (ECM) can give a possibility to replace each organ or segment less-functional.

### Keywords

Allograft, decellularization, extracellular matrix (ECM).

### Purpose

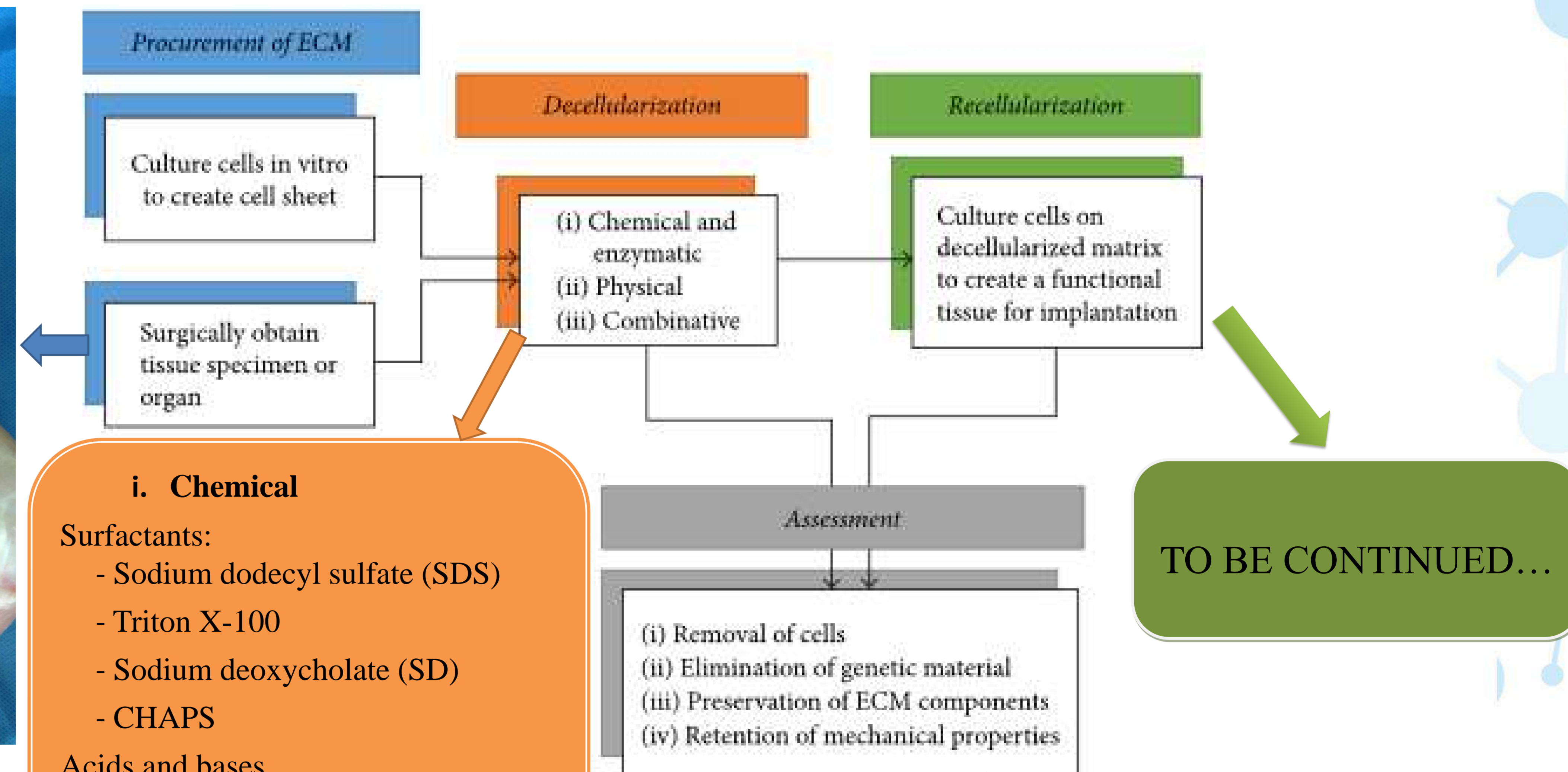
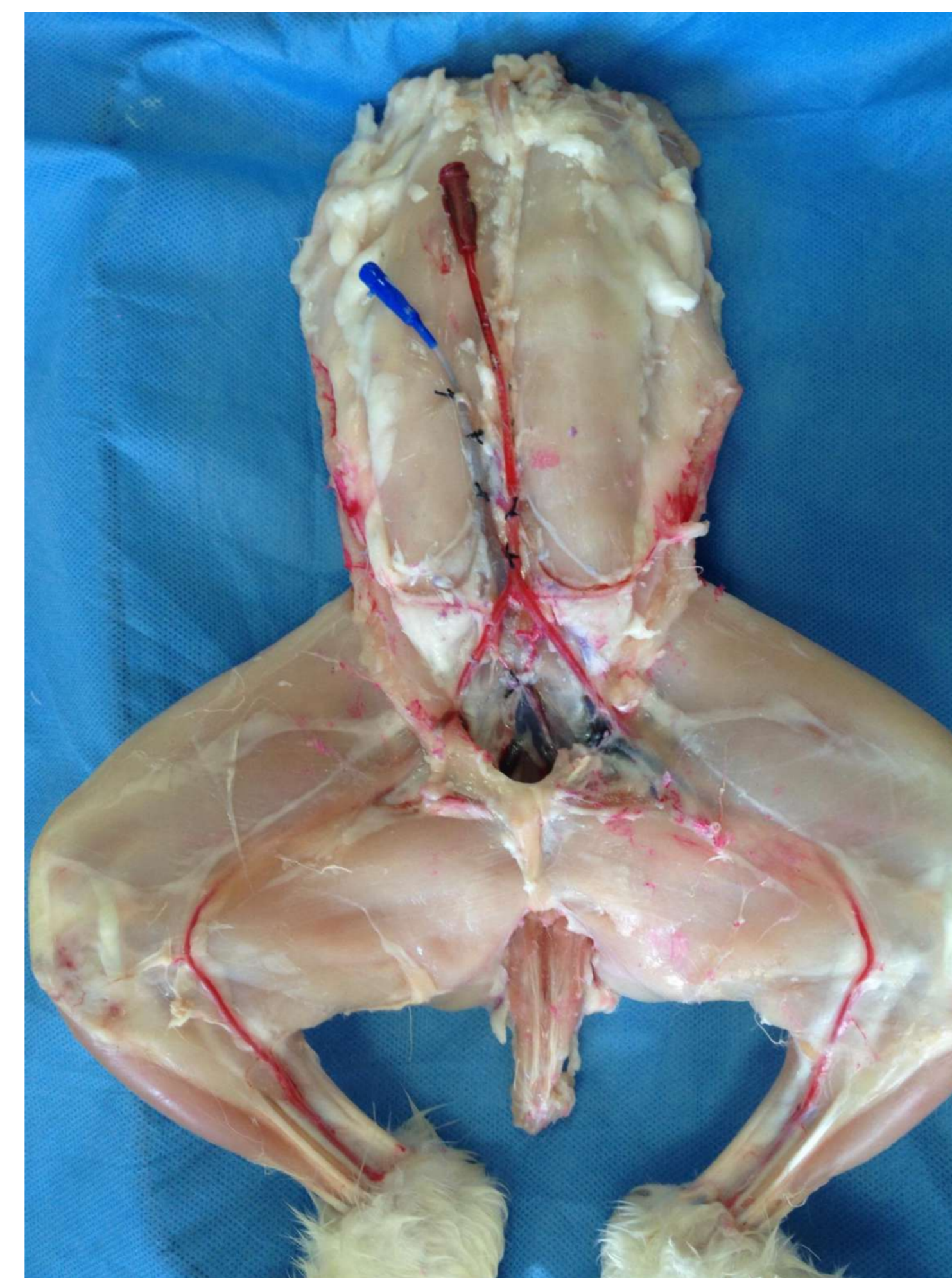
To review the data from the literature to determine and analyse protocols and methods for obtaining a functional ECM.

### Material and methods

The review included 170 published materials. The software Paperpile was used for the selection of articles, with the keywords: bone allograft, extracellular matrix, decellularization protocol, and medical bioengineering.

### Results

Following our laboratory study based on **obtaining a vascularized** bone allograft, we divided all articles into categories thus obtaining clear pictures of the working direction. In this way, we obtained information about dispositive and protocols that has been helped us to start elaboration of our protocols for decellularization.



- i. Chemical**
  - Surfactants:
    - Sodium dodecyl sulfate (SDS)
    - Triton X-100
    - Sodium deoxycholate (SD)
    - CHAPS
  - Acids and bases
    - Peracetic acid
    - Ethylenediaminetetraacetic acid (EDTA)
    - Reversible alkaline swelling

- ii. Enzymes**
  - Trypsin
  - Deoxyribonuclease (DNase)
  - Ribonuclease (RNase)

- iii. Mechanical**
  - High hydrostatic pressure (HHP)
  - Supercritical carbon dioxide
  - Freeze-thaw

### Conclusions

The vascularized bone allograft is an intensely studied topic at the moment, but the methods for obtaining and conservation of composite bone graft's extracellular matrix are not elucidated until the end.

