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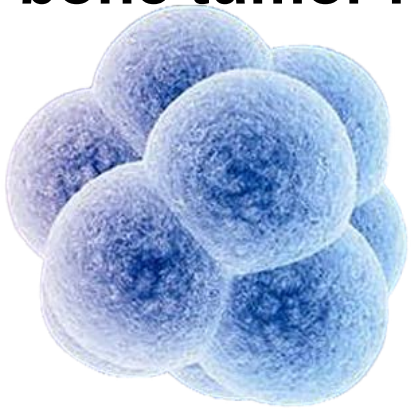
From 2D to 3D: transforming malignant bone tumor research with advanced culture models

Key words: Three-dimensional (3D) culture; Disease model; Osteosarcoma; Chondrosarcoma; Ewing sarcoma

Research Summary

This review thoroughly discusses the evolution of 3D-cultured tumor models and their profound implications for the realm of bone tumor research in the following aspects:



- **Malignant bone tumor**
- **Methods for 3D-cultured bone tumor models**
- **Tumor microenvironment**
- **Drug discovery**

Innovation points

- **Introduction** of the construction of 3D culture models of the three most prominent malignant bone tumors

- **Summaries** of the advantages of 3D culture models over 2D culture models and animal models

- **Emphasis on** the use of 3D-cultured tumor models in clinical treatment strategies.

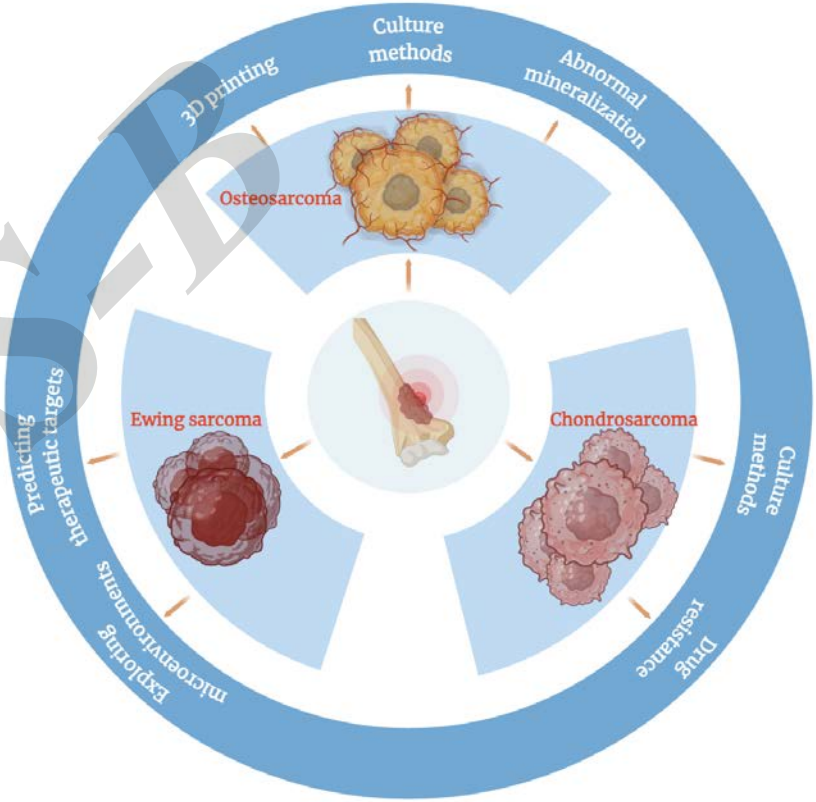


Figure 1

Innovation points

Two comprehensive tables were generated. 1: Comparison among 2D and 3D culture and animal model. 2: Comparison of different methods for 3D malignant bone tumor modeling.

Table 1 | The advantages and disadvantages of 2D culture, animal model and 3D culture were summarized

Table 2 | The advantages and disadvantages of Hanging drop method , Ultra-Low Attachment method, Scaffold-based method and 3D printing were summarized