

## MODELLING OF CELL-MEDIATED SELF-ASSEMBLED COLLOIDAL SCAFFOLDS

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**Summary:** A critical step in tissue engineering is the design and synthesis of 3D biocompatible matrices (scaffolds) to support and guide the proliferation of cells and tissue growth. Most existing techniques rely on the processing of scaffolds under controlled conditions and then implanting them *in vivo*, with questions related to biocompatibility and the implantation process that are still challenging. As an alternative, it was proposed to assemble the scaffolds *in loco* through the self-organization of colloidal particles mediated by cells. In this study, we combine experiments, particle-based simulations, and mean-field calculations to show that, in general, the size of the self-assembled scaffold scales with the cell-to-particle ratio. However, we found an optimal value of this ratio, for which the size of the scaffold is maximal when cell-cell adhesion is suppressed. These results suggest that the size and structure of the self-assembled scaffolds may be designed by tuning the adhesion between cells in the colloidal suspension [1,2,3].

### References

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