

Engineering micro for repairing macro

Citation for published version (APA):

Galvan Chacon, V. P. (2022). *Engineering micro for repairing macro: a materials-driven quest for bone regeneration*. [Doctoral Thesis, Maastricht University]. Gildeprint Drukkerijen. <https://doi.org/10.26481/dis.20220531vg>

Document status and date:

Published: 01/01/2022

DOI:

[10.26481/dis.20220531vg](https://doi.org/10.26481/dis.20220531vg)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Propositions

Engineering Micro for Repairing Macro: A Materials-Driven Quest for Bone Regeneration

1. Understanding the role of individual material properties in the biological response to a calcium phosphate bone graft substitute is imperative for improving its clinical performance. (*This thesis*)
2. The physico-chemical and structural properties of calcium phosphates are largely intertwined; therefore, to understand their contribution to the biological performance of a calcium phosphate, strategies to deconvolute the individual properties are needed. (*This thesis*)
3. (Droplet) microfluidics is a valuable tool to produce calcium phosphate particles with controlled structural and chemical properties. (*This thesis*)
4. On-chip bone models must incorporate aspects of the physico-chemical stimuli present in the natural bone microenvironment in order to be physiologically relevant. (*This thesis*)
5. "The whole is greater than the sum of parts". (*Aristotle*)
Organ-on-chip technologies should not aim to reproduce all organ functions, they just need to recapitulate the key ones.
6. Computational methods have catapulted Biology to new frontiers, and they hold the potential to do the same for (Bio)materials Science.
7. The role of biomedical engineers is not to know everything about either biomedical sciences or engineering, but to understand the language of these disciplines and facilitate the communication between them.
8. Research in regenerative medicine should not aim for the most advanced solutions, but for those that are socially responsible and affordable for everyone.
9. Wealth was an inferior object, but what glory would attend the discovery if I could banish disease from the human frame and render man invulnerable to any but a violent death! (*Mary Shelley, Frankenstein; or, The Modern Prometheus*)
10. I've spent more time than many will believe [making microscopic observations], but I've done them with joy, and I've taken no notice those who have said why take so much trouble and what good is it? (*Antonie van Leeuwenhoek*)