

**Marie Skłodowska-Curie Actions (MSCA)
Innovative Training Networks (ITN)
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**SPINe: Numerical and Experimental Repair Strategies
Management Meeting
Friday, 23rd October 2020**



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The University
Of Sheffield.

Establishing optimal substitution
degrees of hydroxyapatite with
magnesium and strontium using
experimental and statistical tools

ESR1: Denata Sylva



Aims

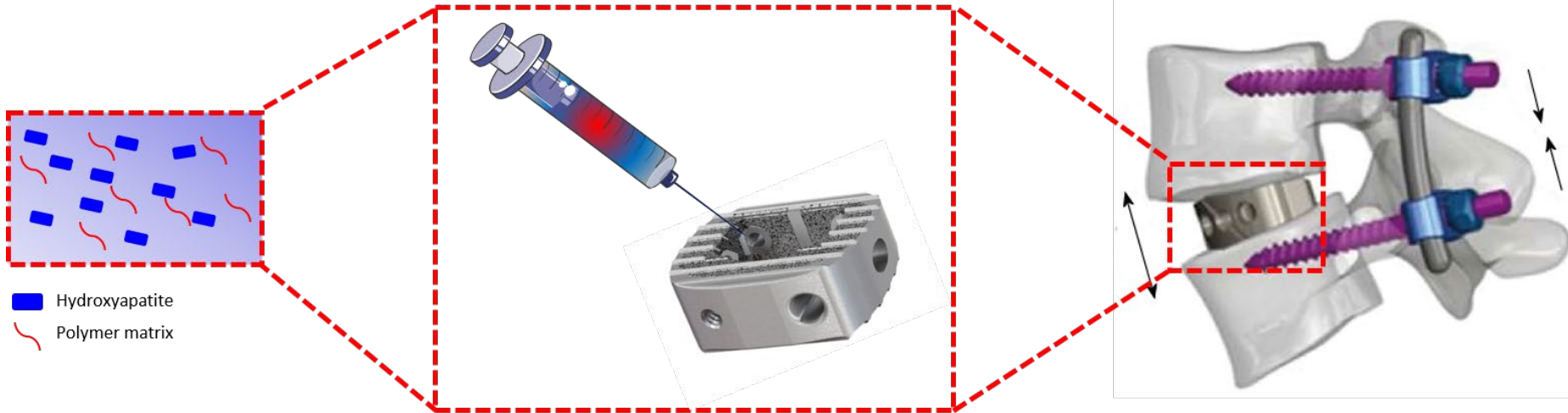
Development of a suitable synthesis method for the continuous synthesis of multi-substituted HAP

Identification of optimal substitution degrees for HAP

Identification of a suitable material to create mouldable scaffolds and the fabrication method necessary for the application of the material

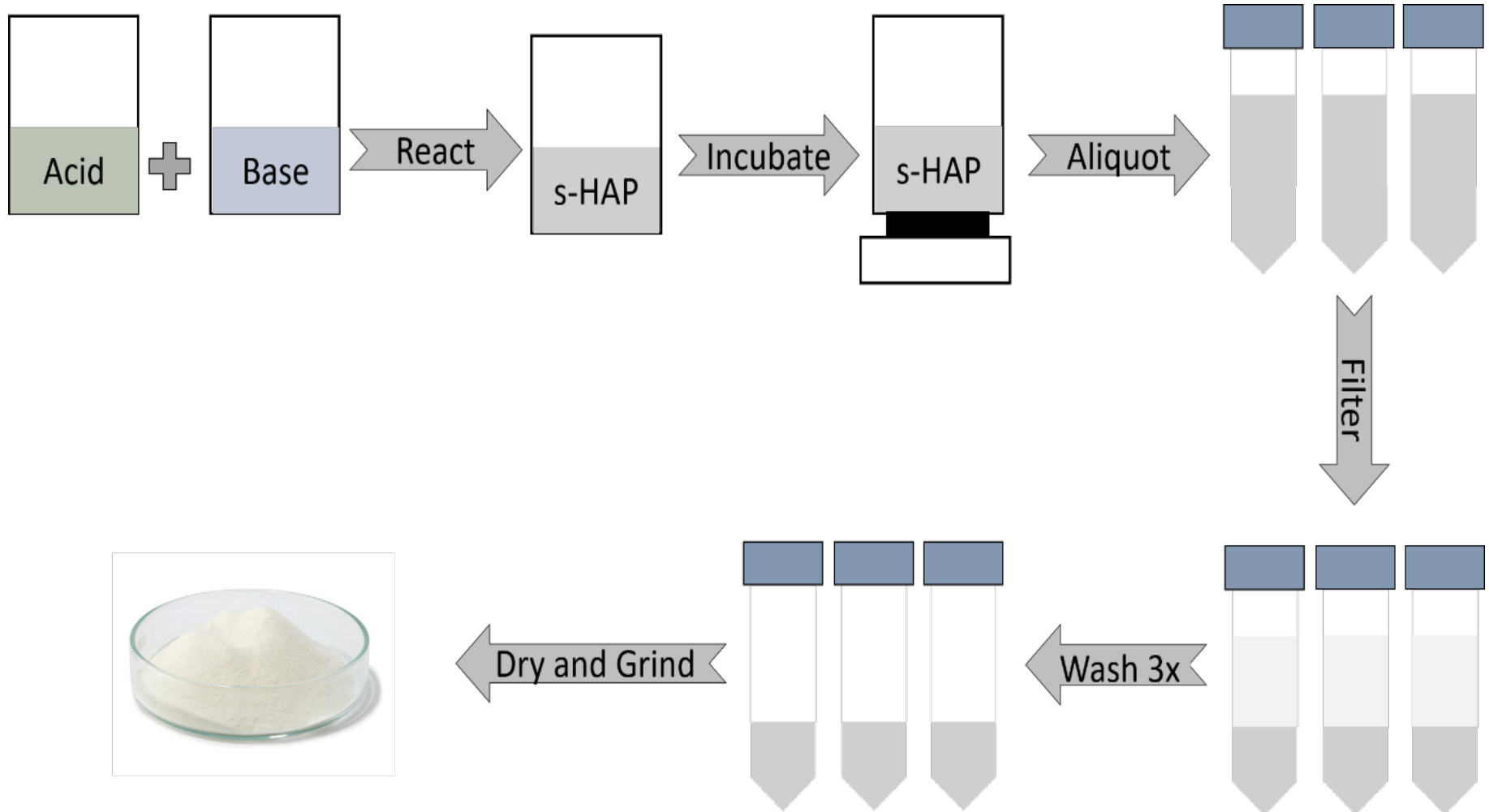


Overview





Methods: HAP Processing





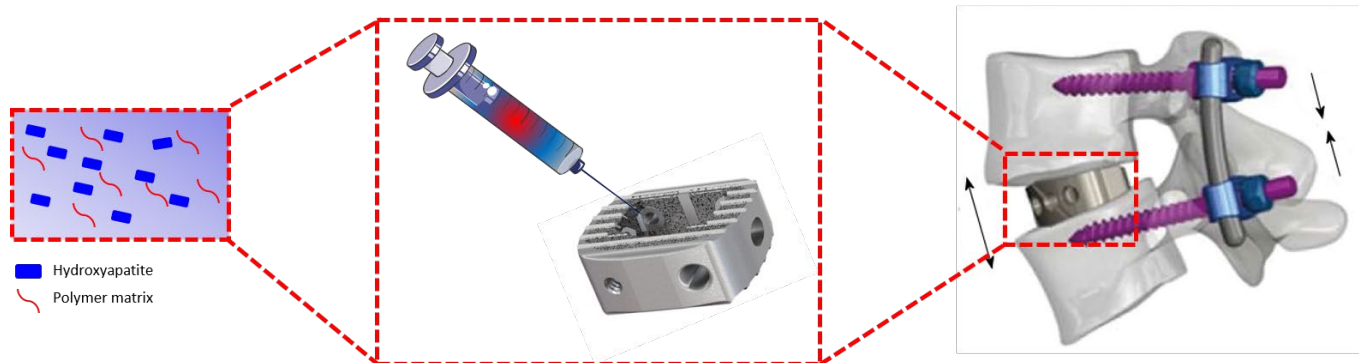
Conclusions

- Process of HAP synthesis is achieved
 - Several systems lead to the synthesis of HAP
 - Cell flow method showed good outcome BUT induces particle release
 - Laminar flow method showed the best outcome
 - Chemical precipitation as a standard method (by Jose)



Future Perspective

1. Establishment of a cell culture protocol **1-2 months**
2. In vitro testing of obtained s-HAP **1 month**
3. Further modification of substitution degrees **2 months**
4. Incorporation of s-HAP in suitable polymer **2 months**
5. Insertion of polymer-HAP-matrix in spinal fusion cage and mechanical testing **1 month**





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spinner
next generation spine experts

Questions?