



# Multiscale optimization of acetabular implants for large bone defects

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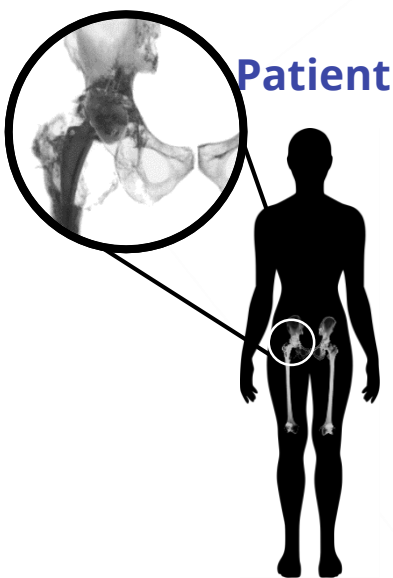
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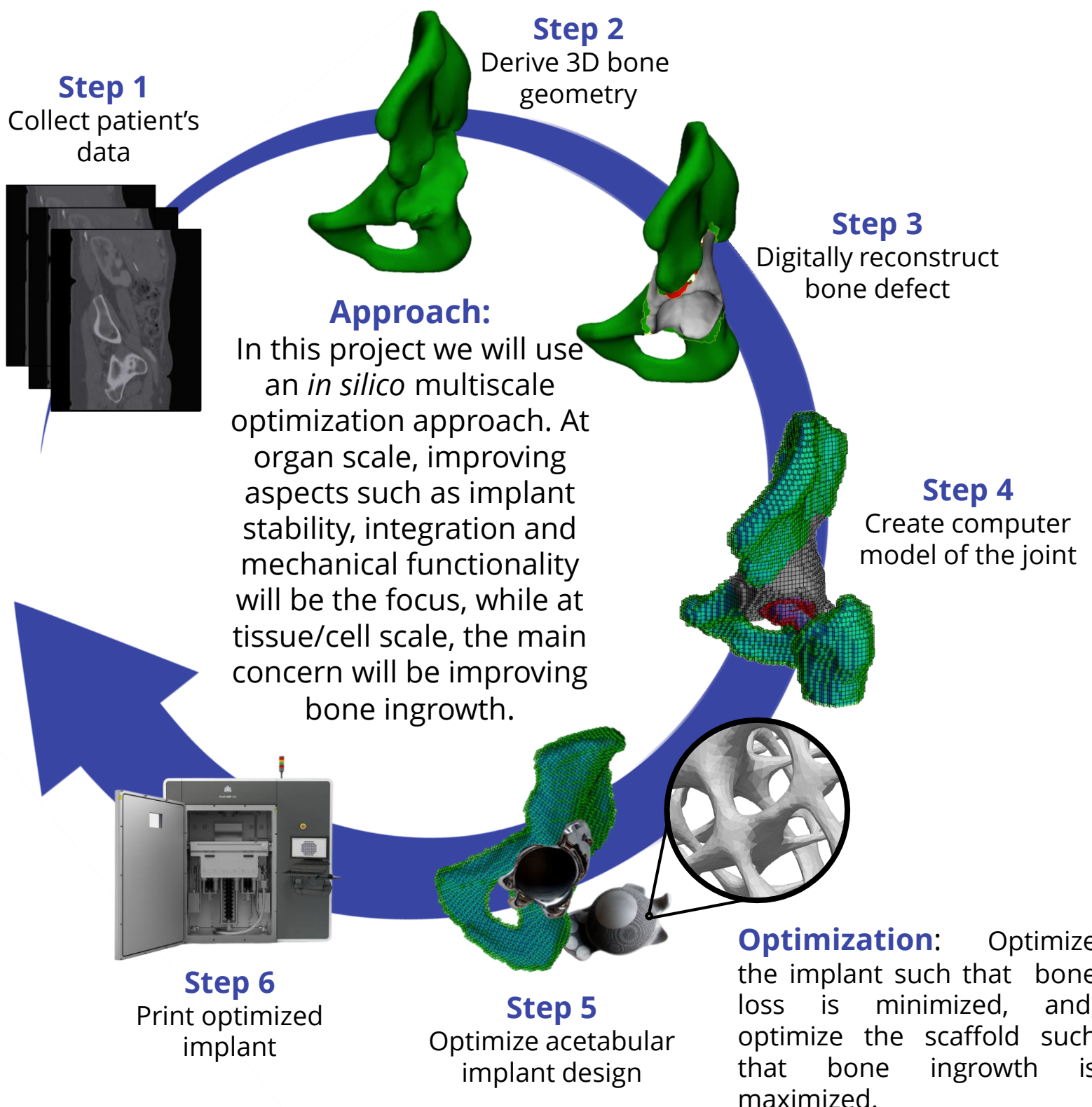
**Current reality:** 20 years after undergoing a primary hip replacement surgery, revision rates vary from 15% for patients aged 60-74 to 40% for patients under 50 [1].

**Goal:** Design personalized acetabular implants for large bone defects that maximize long term implant stability by reducing the likelihood of implant loosening, which is the main cause of implant failure.

**Problem:** Failure of the bond between implant and bone is result of the mismatch between the bone and the implant stiffness.



**Solution:** personalized acetabular implants that not only restore function in case of bigger defects, but also improve implant integration and lifetime



[1] C. Pabinger, et al., *Projections of hip arthroplasty in OECD countries up to 2050*, Hip. Int 28(5), 2018

