



# Towards a standardised and personalised in-vitro tool for 'functional' testing of 3D-printed (non)degradable orthopaedic implants

## Antleron



Recent innovations in orthopedics are enabling personalized implants that actively contribute to patient healing. This increased complexity of implant-patient interaction requires novel in vitro evaluation methods to assess not only cytotoxicity and biocompatibility but also implant functionality. By standardization and automation a fast-track to the patient is also possible through increasing the predictive power of the evaluation methods early in development and thus supporting sustainable clinical product pipeline development.

### Bioreactor-based

- Automated
- Standardized
- Controlled
- Monitored
- Stand-alone
- Multi-parametric

### In-vitro

- Early R&D read-out
- Reduced animal models
- Increased relevance in comparison to existing standards

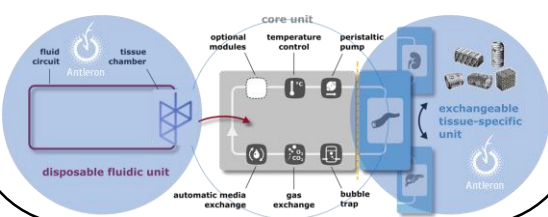
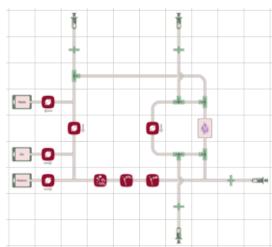
### Functional screening

- Custom (patient-specific) biology
- Physiologically relevant niche
- Bio-functional assessment

### 3D implants

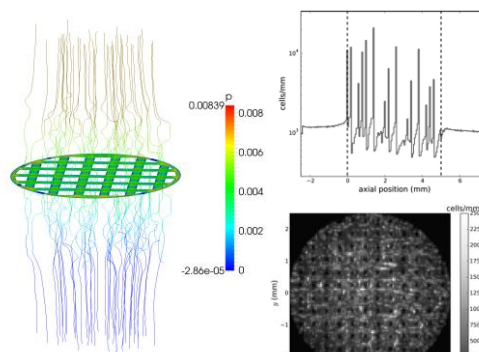
- From Meso-scale
- Surface properties
  - Bulk material
  - Geometry
- To clinically relevant size

### Bioreactor development



### Process development

Define & optimize process environment



Enable reference processes for relevant unit operations

- Cell seeding and attachment
- Proliferation
- ECM induction
- Mineralization

### Process monitoring

Develop & validate in-process read-outs

