

Establishment of Baltic Biomaterials Centre of Excellence

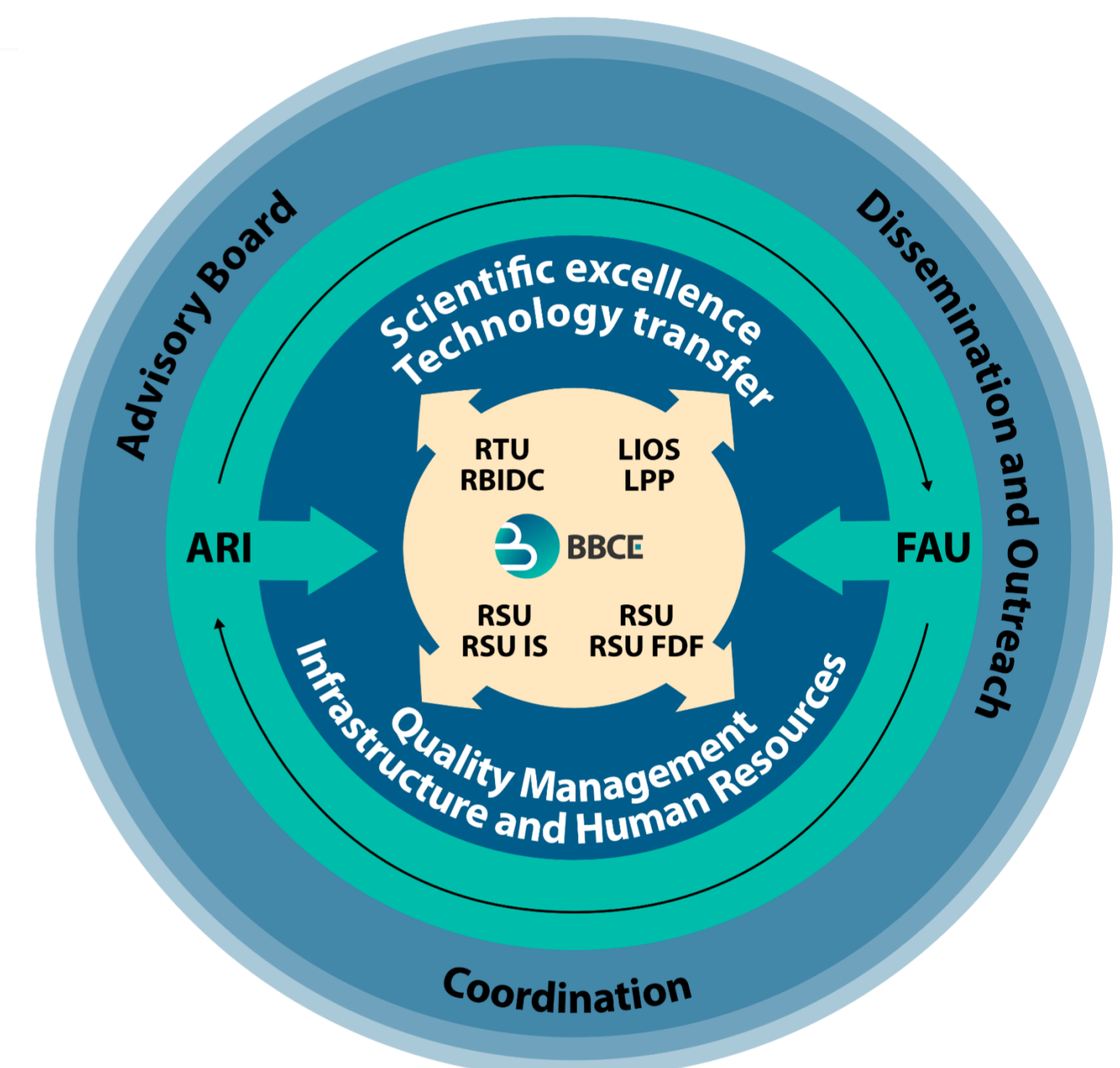
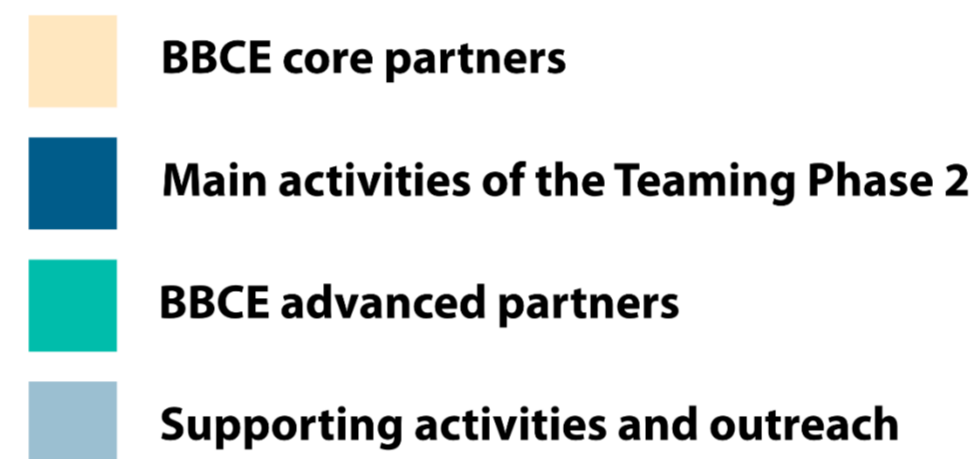
Arita Dubnika^{1,7}, Dagnija Loca^{1,7}, Maija Dambrova^{2,7}, Ilze Salma^{3,7}, Konstantins Logviss^{4,7}, Mauro Alini⁵, Aldo R. Boccaccini⁶, Janis Locs^{1,7}

¹ Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre, Faculty of Materials Science and Applied Chemistry, Riga Technical University, Latvia; ² Laboratory of Pharmaceutical Pharmacology, Latvian Institute of Organic Synthesis, Latvia; ³ Institute of Stomatology, Riga Stradins University Latvia; ⁴ Finished Dosage Form Laboratory, Faculty of Pharmacy, Riga Stradins University Latvia; ⁵ AO Research Institute Davos, Switzerland; ⁶ Institute of Biomaterials, Friedrich-Alexander University of Erlangen-Nuremberg, Germany; ⁷ Baltic Biomaterials Centre of Excellence, Headquarters at Riga Technical University, Riga, Latvia

INTRODUCTION

The establishment of the Baltic Biomaterials Centre of Excellence (BBCE) under the frame of Horizon 2020 Teaming Phase 2 will provide an opportunity to combine the expertise and infrastructure of internationally recognized Research Teams from Latvia, Germany and Switzerland, ensuring the platform for excellence in the development of biomaterials for bone regeneration and new solutions for creative biomedical applications.

The overall objective of the BBCE is to develop a joint Centre of Excellence for advanced biomaterial development based on the long-term strategic cooperation between Riga Technical University (RTU), Latvian Institute of Organic Synthesis (LIOS), Riga Stradins University (RSU) and LLC RSU Institute of Stomatology (RSU IS), on the one part, and AO Research Institute Davos, Switzerland (ARI) and Friedrich-Alexander University of Erlangen-Nuremberg, Germany (FAU), on the other part.



BBCE RESEARCH AREA

The strategic direction of the BBCE is research and development of patient-specific personalized solutions for bone regeneration in 3 levels:

- Biomaterial composition;
- Biomaterial geometry;
- Bioactive compound delivery.



RTU RBIDC: Biomaterials development, synthesis of calcium phosphates with tailored properties or compositions, development of bioactive and biodegradable ceramics, bone cements, composites and smart drug delivery systems.

RSU FDF: Expertise from the field of pharmaceutical technology and gradually expand research area from oral solid pharmaceutical dosage forms to biomaterials as drug delivery systems.

LIOS LPP: Preclinical studies of biomaterials developed by the RTU RBIDC using *in vitro* toxicity tests for biocompatibility and safety assessment and the *in vivo* evaluation of tissue compatibility, safety, biological response and tissue regeneration properties to assess potential clinical applications.

RSU IS: Clinical studies on the use of biomaterials developed by RTU RBIDC in various fields of maxillofacial surgery - bioceramic granules in oral surgery, in preprosthetic surgery - to augment bone before dental implant insertion, in periodontology - to promote periodontal regeneration, in orthognathic surgery - fill the defect site, ensure the structural and volumetric stability.

CONCLUSIONS

BBCE will ensure the sustainable quality of the research and technology transfer potential in the field of biomaterials for medical applications, mainly focusing on areas possessing the best available scientific and research capacities – in particular on research of biomaterials, advanced materials, nanotechnology, biomedicine and biopharmacy.

What are we looking for:

- Cooperation with other institutions
- Cooperation with industry
- New project partners
- New incoming competences