

iPROMEDAI: A National and European Initiative to Reduce the Risk of Implant Associated Infection

Reto Luginbuehl, RMS-Foundation, Bettlach, Switzerland

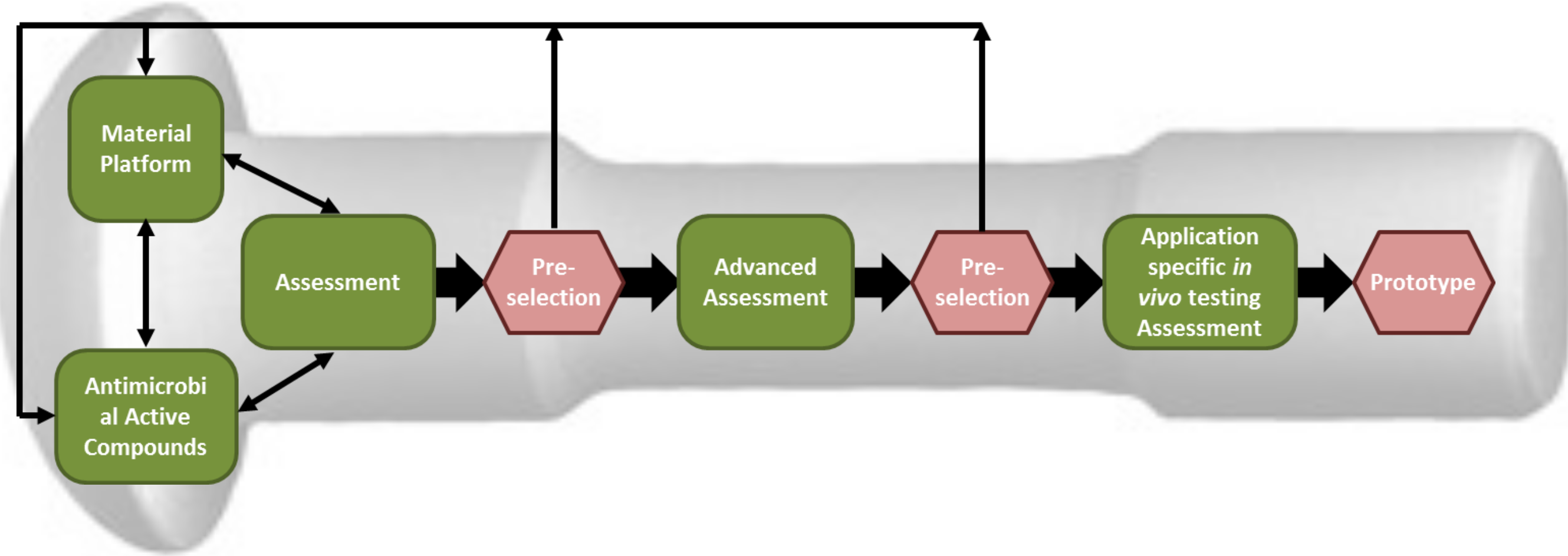
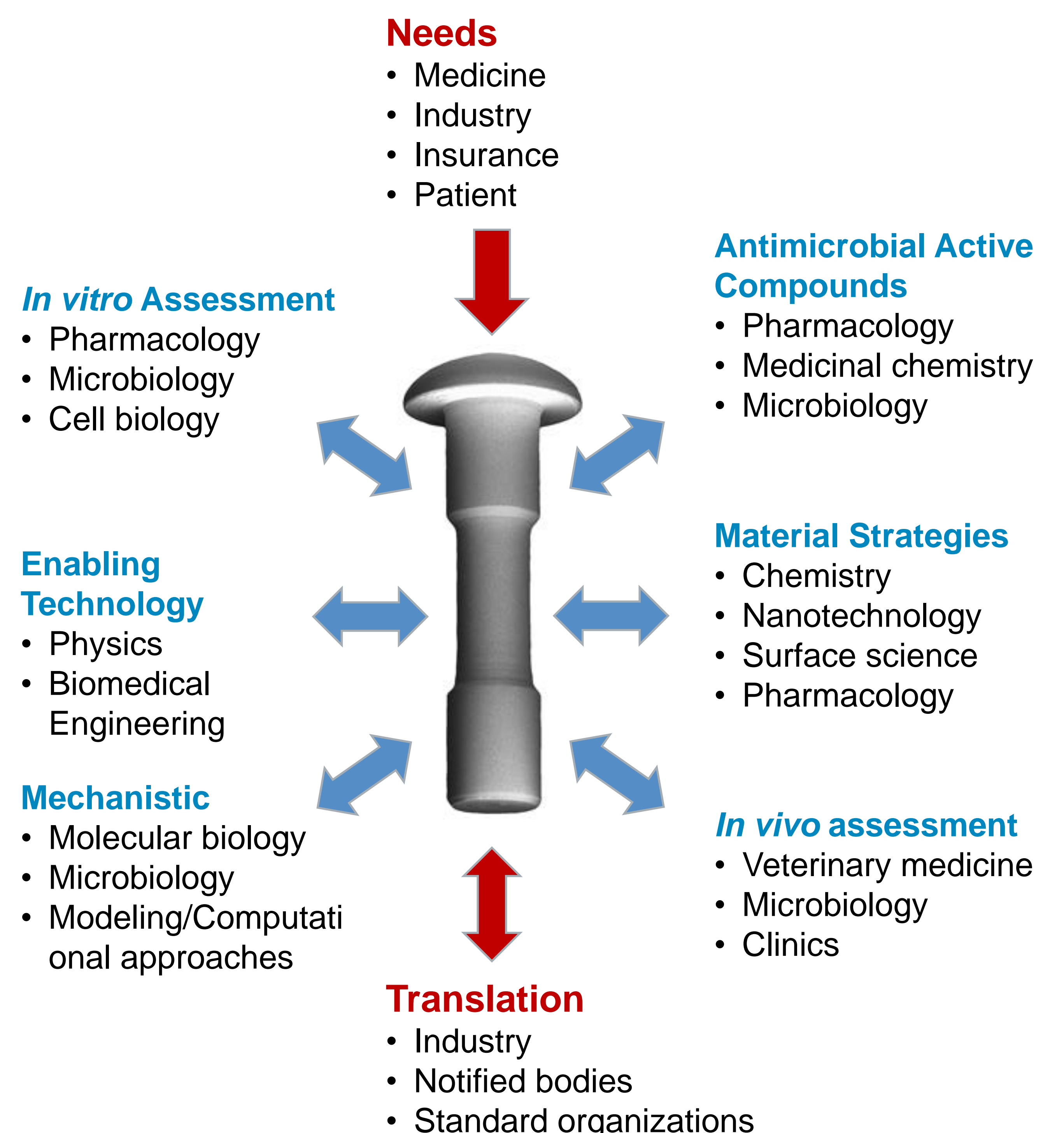
Judith Kikhney, Biofilmcenter German Heart Institute Berlin, Berlin, Germany

Introduction

The European medical device industry accounts for more than 11'000 companies with combined annual sales of €72 billion, representing 33% of the world market. The majority of such devices serve its purpose in restoring/replacing diseased/ damaged body function. Millions of patients worldwide benefit from permanent medical implants such as prosthetic joints, dental implants, stents, vascular grafts, and pacemakers, or from temporary inserted devices such as intravascular and urinary catheters. However, a non-negligible fraction of **devices fail in practice due to Device-Associated Infections (DAI)**, often with severe consequences for the patient as revision surgeries are required leading to a substantial increase in socioeconomical costs.

The COST Action iPROMEDAI

The transdomain **COST Action Improved Protection of Medical Devices Against Infection (iPROMEDAI, TD 1305)** identified device applications with a range of established rates of incidence including cardiovascular, orthopedics, trauma, urinary incontinence and catheters as critical application areas as they account for half of the medical device market. It is the objective of the Action to establish a **network of leading European academic and clinical research groups, and industry** with the aim of providing a scientifically sound, clinically relevant, industrially feasible and timely contribution to these socioeconomic most relevant topics. The issues and problems addressed in the Action are those that are considered to be key for the overall goal of reducing the number of DAIs in general and specifically in the device applications identified together with industry.



COST (European Cooperation in S & T):

- Intergovernmental framework for European Cooperation in Science and Technology
- Coordination of nationally-funded research on a European level
- Bottom-up science and technology networks open to researchers and stakeholders (universities, public and private research institutions, NGOs, industry incl. SMEs)

The COST Action aims at

1. Investigating clinical issues which have been identified as the key challenges in addressing the problem of DAI;
2. Finding solutions for the **unmet needs** in the translational process to applications;
3. Engineering novel designed biomaterials/ surfaces with enhanced **antimicrobial device functionality** and **improved long-term stability**;
4. Documentation of **comprehensive sets of standard and novel test methods** with appropriate reference materials allowing for comparison of outcomes;
5. Establishment of **structure/property/ function relationships** and correlations between *in vitro* and *in vivo* data;
6. Yielding at least **two comprehensively tested devices** relevant for either cardiovascular, orthopedics, trauma, urinary incontinence or catheter applications;
7. Providing dedicated and **integrated training programs across the technical disciplines**;
8. **Establishment of European and National Networks** of academic and industrial partners.