




Arianna B. Lovati

## ANNAFIB

**Antimicrobial Nano-Functionalization of Peptide-enriched Silk Fibroin matrices to prevent bone infections and to enhance implant osseointegration in orthopaedics and dentistry**


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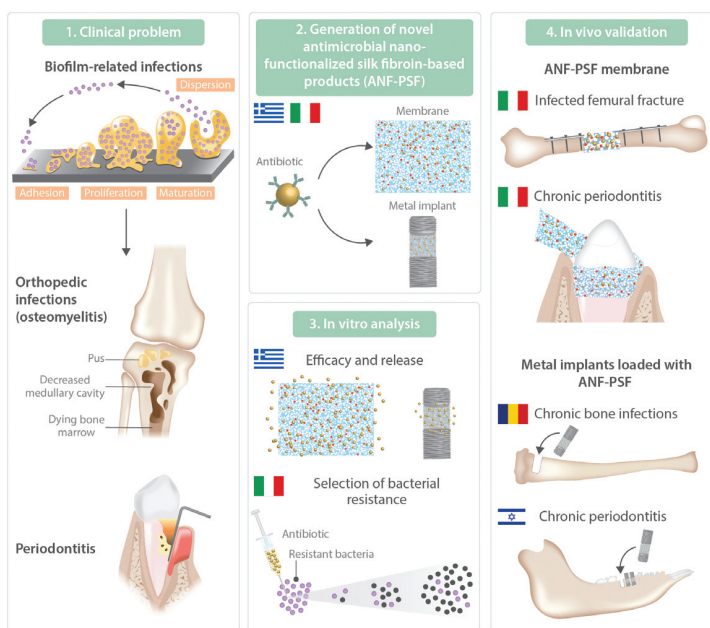
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Bacterial biofilm is a leading cause of infections in orthopaedics and dental implantology. Current antibiotic prophylaxis or therapy is inadequate to prevent biofilm formation and generates antibiotic resistance. The multidisciplinary approach of ANNAFIB combines tissue engineering and antimicrobial strategies to develop new products based on antimicrobial nano-functionalized silk fibroin-based scaffolds (ANF-PSF) to treat bone and/or periodontal infections.

The ANF-PSF local delivery of antibiotics with controlled release profiles and the modification of implant devices with osteoinductive properties represent an innovative and synergistic approach to promote the bone deposition and to impede the biofilm formation in a one-step surgery. The ANNAFIB strategy will be validated through a translational approach in preclinical models.



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The ANNAFIB products are expected to enhance bone and periprosthetic tissue regeneration together with antibacterial activities, as a novel therapeutic tool for biofilm-related infections in orthopaedics (osteomyelitis and prosthetic joint infections) and dentistry (chronic periodontitis and septic implant loosening).