

Future Directions for Regenerative Dentistry

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Regenerative dentistry is originally based on the use of biomaterials; however, they are not always effective, particularly in challenging periodontal tissue defects. Solutions to overcome these limitations may include stem cell-based regenerative medicine. We have successfully fabricated osteoinductive bioengineered bone grafts using stem cells, which possess high bone regeneration capacity even as a freeze-dried material. We also found that

titanium implants with nano-modified surfaces, mimicking properties of tooth cementum, generated periodontal ligament around the implant, which would provide a future alternative to current osseointegrated implants. In this presentation, I will talk about our innovation strategy toward the next generation regenerative dentistry, with an emphasis on cutting-edge research approaches using stem cells and nanotechnologies.