



Office of Technology Management

Novel Orthopedic and Orthodontic Implant

Technology Reference

CX069

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Inventor

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Field

Dentistry orthopedics
Tissue engineering

Key Words

Tooth implant
Bone implant
Osteogenesis
Osteolysis prevention
Osseointegration

License Status

Seeking licensing partner

Patent Status

Provisional Patent Filed

Overview

Titanium implants are conventionally used in orthopedic medicine and dentistry to replace effective skeletal structures such as bone and teeth. The use of titanium to replace the lost skeletal function produces predictable results, however the area of immediate and long-term osseointegration still needs improvement. Current methods are focused mainly on repair over regeneration. Therefore, even implants that initially osseointegrate properly can fail years later because of osteolysis at the bone-implant interface. Because of these issues much research is currently being done to improve initial anchorage of titanium implants as well as to adequately preserve the strength of the bone-implant interface.

Technical Summary

UIC researcher has developed a new implant that will address the malfunction of those currently used for tooth and bone replacement. The structure of the implant expedites the healing process of bone tissue. The implant rapidly integrates into bone and remains secure and functional for an indefinite amount of time.

Benefits

- Shortened bone healing process by biological agents being released over a longer period of time
- Implant focused more on regeneration vs. simple repair
- Reduced failure rate as the hollow implant will have less stress shielding leading to less osteolysis at the bone-implant interface
- Relatively low cost

Areas of Application

- Bone formation
- Joint replacement
- Implantation
- Tooth replacement
- Applicable in dental implants as well as orthopedic implants (long bones)

Stage of Development

- In vitro tests completed
- In vivo tests on rabbit scheduled