MODULUS TLIF

Intelligently designed for fusion

Adhering to the principles of Advanced Materials Science, Modulus is intelligently designed for enhanced osseointegration,[1] biomechanical,[2] and imaging properties.

Modulus TLIF implants are porous titanium (Ti) thoracolumbar posterior interbodies designed to provide a favorable environment for bone in-growth[1] while enhancing visualization compared to traditional Ti interbody implants.

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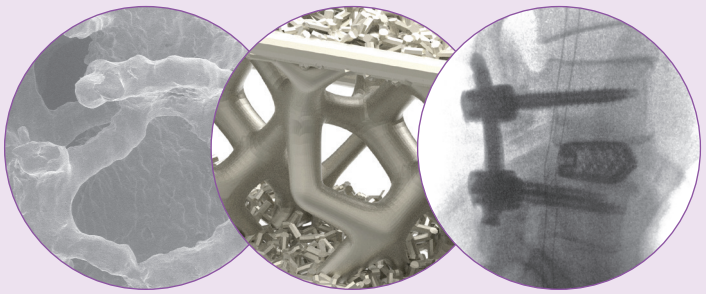
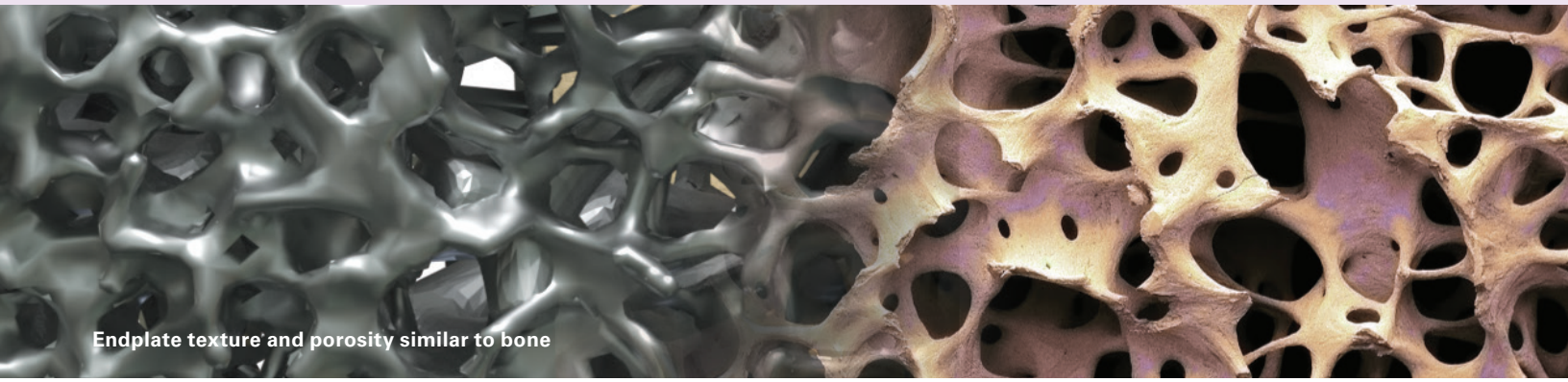
Advanced Materials Science

Traditional PEEK and Ti implants are limited by the materials from which they are created, often requiring surgeons to make compromises when selecting a spinal implant, sacrificing radiolucency for durability or favorable osteogenic properties for a desired stiffness similar to bone.

Adhering to the three core principles of Advanced Materials Science, surface, structure and imaging, NuVasive has pioneered design and manufacturing methods that combine the inherent benefits of porosity with the advantageous material properties of PEEK and Ti. The Advanced Materials Science portfolio represents the future of porous implant technologies that require no compromise.



Surface Structure Imaging



Endplate texture and porosity similar to bone

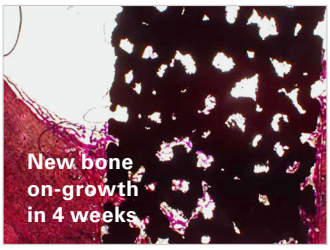
Surface

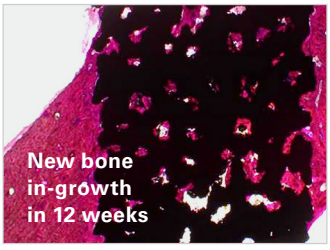
Modulus technology integrates endplate porosity with an optimized body lattice structure providing a fully porous architecture and favorable environment for bone in-growth.[1]

Enhanced osseointegration

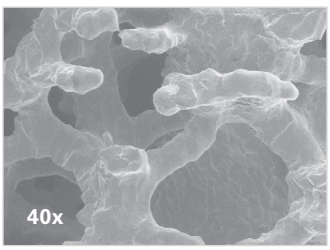
- Porous Ti implants demonstrated the greatest integration strength by 12 weeks, compared to alternative implant materials.[1]
- Microporous endplate surface technology promotes new bone on-growth at 4 weeks in a sheep model.[1]
- Modulus surface topography and porous design facilitate fluid uptake and retention compared to traditional smooth implants.
- Microporous endplate architecture maximizes bone-to-implant contact, increasing expulsion resistance.[4]

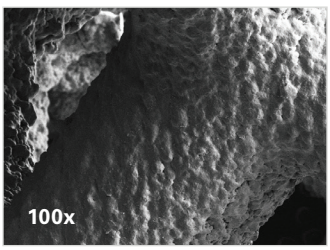
New bone on-growth and in-growth to microporous implant architecture in a sheep model[1]





Surface topography under SEM imaging



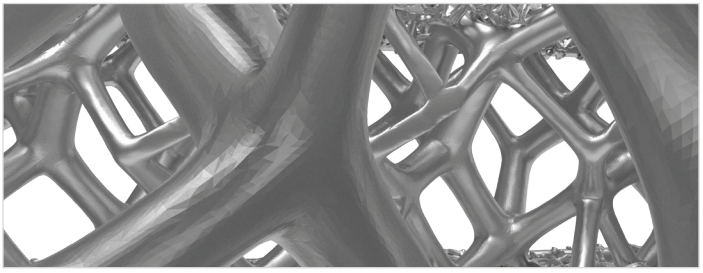


Structure

Modulus implants implement a proprietary design optimization methodology, generating a unique internal architecture for a desired stiffness that is similar to bone.

Optimized for performance

- Unique implant design allows for a reduction in material and optimized stiffness providing a greater resistance to subsidence compared to other implant material as demonstrated in in vitro studies.[6]
- Central graft aperture provides favorable environment for graft containment and bone through-growth.



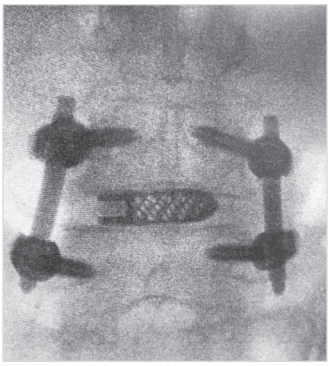
Lattice architecture individually optimized to each implant geometry

Imaging

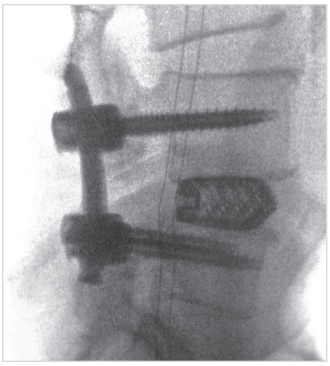
Created with imaging clarity in mind, the implant design allows for enhanced visualization on a variety of imaging modalities.

Enhanced visualization

- Open implant architecture reduces material, compared to solid Ti, to provide optimized imaging clarity.



Modulus TLIF-A
A/P fluoro



Modulus TLIF-O
lateral fluoro

Modulus TLIF-O

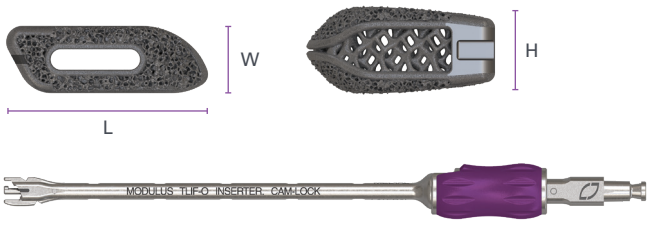
Lordosis in the oblique plane maintains coronal alignment while restoring sagittal balance

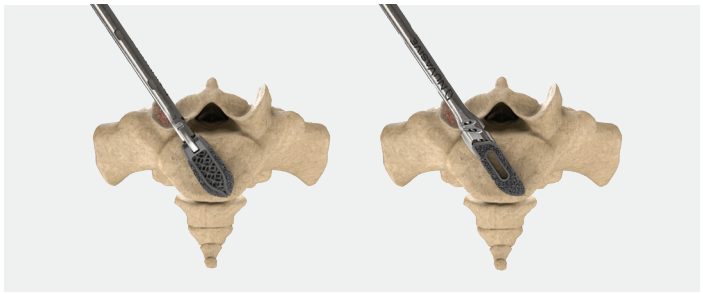
Footprint options (mm): 10x25, 10x30, 10x35, 14x30

Height options (mm): 7–14

Lordotic options: 4°, 8°, 12°

Quick connect Modulus TLIF-O inserter designed for straight impaction or insert and rotate technique.





Modulus TLIF-A

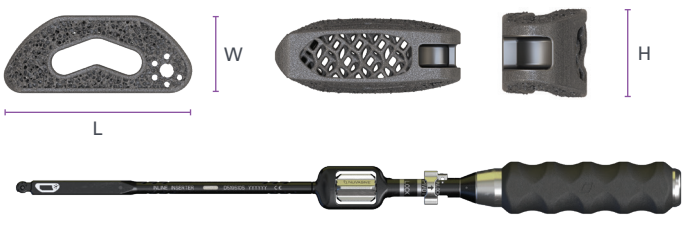
Designed for anterior column support for maximized sagittal alignment correction

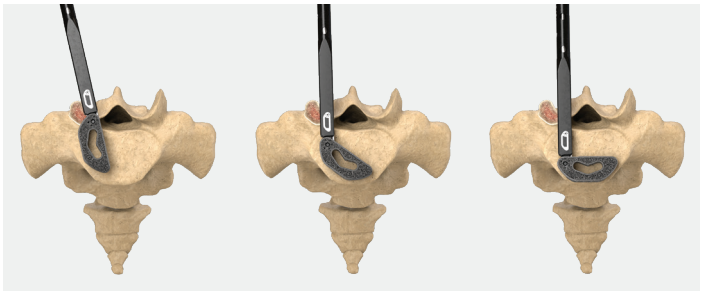
Footprint options (mm): 9x30, 11x30, 11x34, 11x40, 14x30, 14x34, 14x40

Height options (mm): 7–14

Lordotic options: 8°, 15°

Intuitive zero profile articulating inserter for facilitated Modulus TLIF-A implant insertion and positioning.



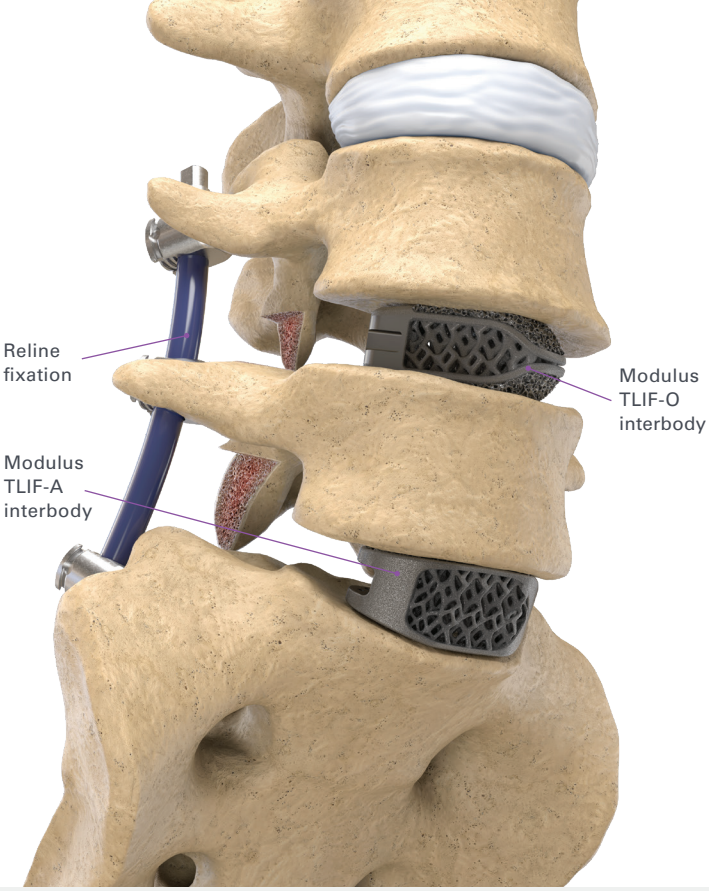


Thoracolumbar posterior procedural solution

Powered by Surgical Intelligence technologies

Pulse integrated
OR platform

Cios Spin integrated
3D mobile C-arm



Surgical planning | **Positioning the patient** | **Accessing the spine** | **Discectomy and trialing** | **Biologics** | **Implant placement** | **Fixation**

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References

1. Preclinical data on file; data may not be representative of clinical results. TR 9604787
2. Preclinical data on file; data may not be representative of clinical results. TR 9604781
3. Preclinical data on file; data may not be representative of clinical results. TR 9604787.
4. Preclinical data on file; data may not be representative of clinical results. TR 9603905.
5. Chatham LS, Patel VV, Yakacki CM, et al. Interbody spacer material properties and design conformity for reducing subsidence during lumbar interbody fusion. *J Biomech Eng* 2017;139(5):051005.
6. Preclinical data on file; data may not be representative of clinical results. TR 9603972.

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