Biologic treatment for early intervention and cartilage repair.
DeNovo NT Graft – Advancing the Science of Cartilage Repair.

*DeNovo* NT Natural Tissue Graft is a juvenile cartilaginous allograft tissue intended to provide surgeons with an early-intervention option for the repair of articular cartilage in a wide range of anatomic focal cartilage defects. It offers a single-stage procedure with fibrin fixation that eliminates the need for harvesting a periosteal flap. With *DeNovo* NT Graft, Zimmer demonstrates its commitment to leadership in providing surgeons – and their patients – with a complete continuum of joint care.

**Juvenile Cartilage Tissue**

*DeNovo* NT Graft consists of scaffold-free living articular cartilage, displaying biochemical properties similar to those of articular cartilage found in young, healthy joints.

**Cartilage Injury and Treatment**

- Adult articular cartilage has limited capacity for self-repair.¹
- Untreated focal defects begin a cycle of cartilage breakdown, arthritic degeneration and ultimately, the need for joint replacement.

*DeNovo* NT Graft offers a simple alternative to focal cartilage defect treatment.
Clinical Experience

- Human clinical experience to date includes 2 years of implant history
- **DeNovo NT Graft** has been used to treat focal articular defects in a wide range of anatomical applications, including:
  - Knee (i.e., condyle, trochlea, patella, tibial plateau)
  - Foot and Ankle (i.e., talus, MPJ)
  - Elbow
  - Shoulder (i.e., humeral head, glenoid)
  - Hip (i.e., acetabulum, femoral head)

Pre-Clinical Evidence*

**Demonstrated in Equine Trochlea Model at 6 Months Explantation:**

- **DeNovo NT Graft** provided for full-thickness, continuous layer of cartilage repair tissue.
- **DeNovo NT Graft** resulted in minimal subchondral bone resorption.
- Repair tissue integrated into subchondral bone.

Single-stage Procedure with Fibrin Adhesive

- Simplified surgical technique, unlike ACI.
- No need to harvest and sew a periosteal flap.
- No donor site morbidity, unlike autologous osteochondral transplant.

*Animal Study results are not necessarily predictive of human results.*
### Comparison of Cartilage Treatment Alternatives

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<tr>
<th>Cartilage Defect Treatment Options</th>
<th>Surgery</th>
<th>Treatment of Defect Area</th>
<th>Tissue Characteristics</th>
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<tbody>
<tr>
<td><strong>DeNovo NT Graft</strong></td>
<td>Single stage</td>
<td>Up to 5cm² (and greater at surgeon’s discretion)</td>
<td>Juvenile hyaline cartilage implanted (up to 13 yrs old)</td>
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<tr>
<td><strong>ACI</strong></td>
<td>Two-stage</td>
<td>Routinely 5-10cm²</td>
<td>Adult chondrocytes implanted Equivalent clinical outcome to microfracture³</td>
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<tr>
<td><strong>OATS</strong></td>
<td>Single stage</td>
<td>Limited; 1-3cm²</td>
<td>NOT juvenile cartilage donor site morbidity</td>
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<tr>
<td><strong>Microfracture</strong></td>
<td>Single stage</td>
<td>Limited; 1-2cm²</td>
<td>No tissue implanted Fibrous repair tissue⁴</td>
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<tr>
<td><strong>Debridement</strong></td>
<td>Single stage</td>
<td>Variable</td>
<td>No tissue implanted</td>
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<tr>
<td><strong>Osteochondral Allograft</strong></td>
<td>Single stage</td>
<td>Typically 5-10cm²</td>
<td>NOT juvenile cartilage Limited Supply</td>
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### References: