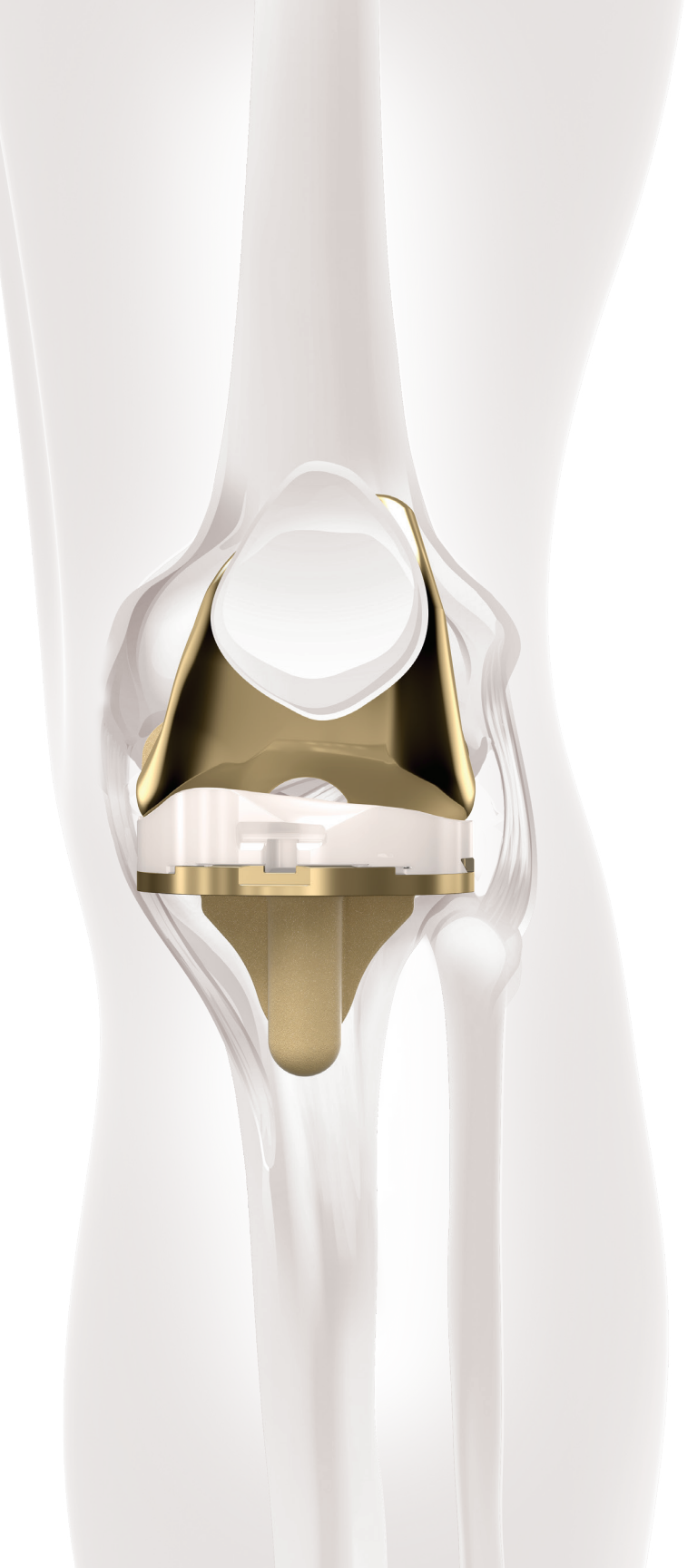
MicroPort®

Evolution®

MEDIAL-PIVOT KNEE SYSTEM

NitrX™

The medial-pivot knee shown in simulated walking testing to reduce the release of specific metal ions[1]



Introduction

The MicroPort Orthopedics medial-pivot knee system now stands on over 20 years of clinically demonstrated success with its novel medial-pivot design built on the evidence of the natural stability and kinematic motion of the knee.

The Evolution® NitrX™ medial-pivot knee features a titanium niobium nitride (TiNbN) coating that has been shown in bench testing to reduce the release of cobalt (Co), chromium (Cr), nickel (Ni), and molybdenum (Mb) ions common in standard CoCr implants.[1] The Evolution® NitrX™ knee maintains the kinematic benefits of the medial-pivot design[2], resulting in optimal stability.[5]

It has been clinically demonstrated that patients are more satisfied with the MicroPort Orthopedics medial-pivot knee design when compared to more traditional designs. This preference could be the result of the stability provided through the high tibiofemoral conformity in the medial compartment and motion provided in the lateral compartment.[2]

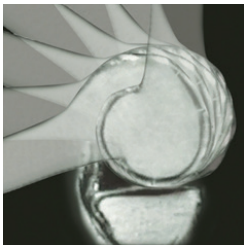
Metal sensitivity has been linked to metallic debris and metal ions, namely cobalt, chromium, and nickel. The Evolution® NitrX™ medial-pivot knee has been shown in simulated walking testing to reduce the release of these metal ions[1], and builds upon the same medial-pivot legacy of 95% patient satisfaction with 98.8% survivorship at 17 years.[3]

The medial-pivot knee system

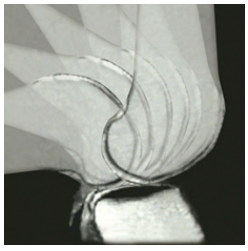
When first introduced, the medial-pivot knee proved to be a novel concept in the orthopedic community. Challenging the traditional axiom of knee kinematics, pioneers in the field, such as J. David Blaha, MD, Mr. Michael Freeman, MD, Richard Komistek, PhD, and Vera Pinskerova, PhD, provided kinematic and radiographic evidence that supported medial pivoting kinematics of the knee. This evidence demonstrated that the normal knee exhibits a fixed flexion-extension axis in the medial compartment and anterior-posterior translation in the lateral compartment during the gait cycle.

The medial-pivot knee provides a constant radius of curvature and utilizes a unique articular surface geometry to maintain medial stability throughout a greater range of motion, while allowing for the lateral condyle to move in a controlled arcuate path during flexion.

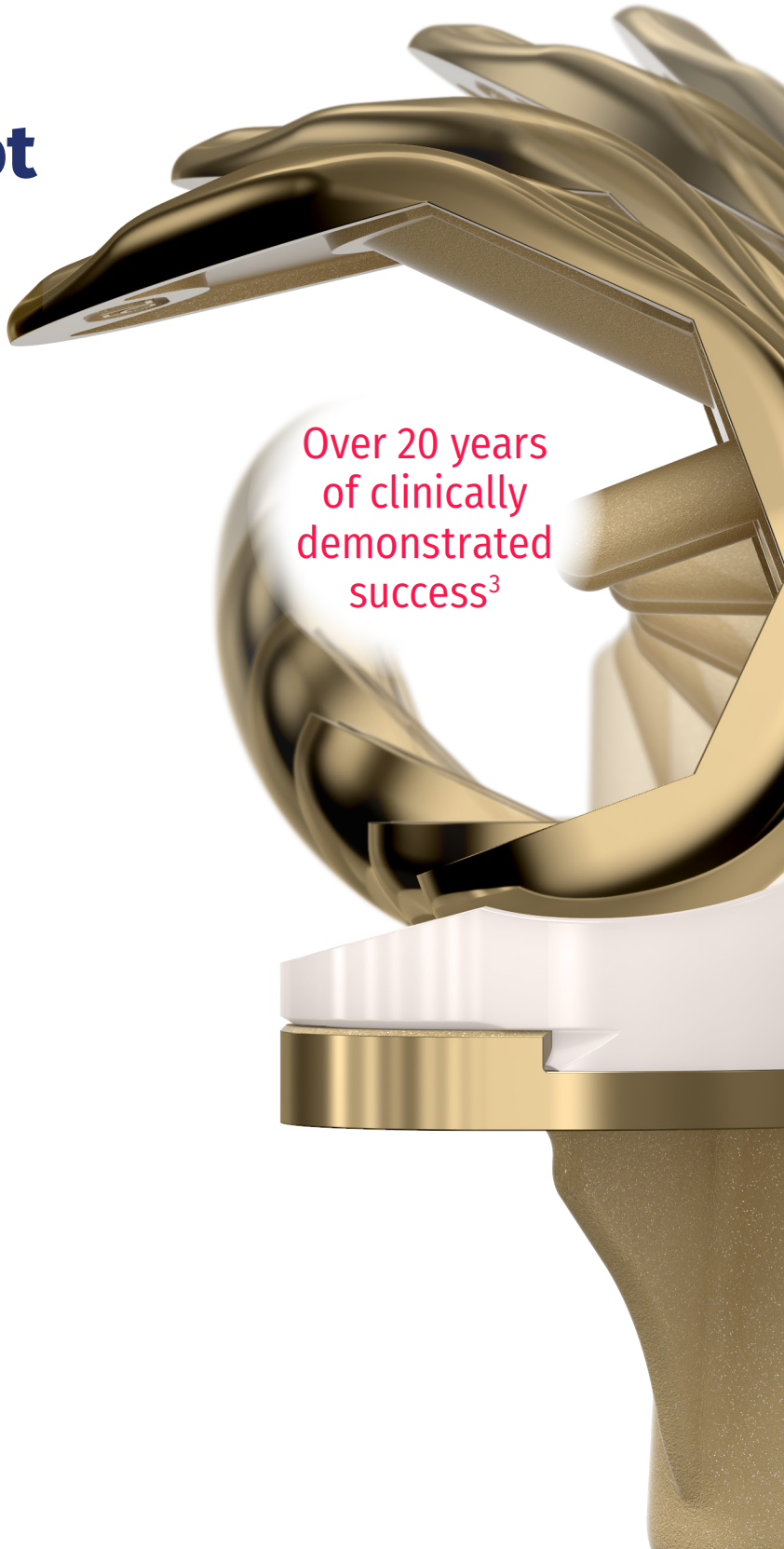
IMAGES OF THE NORMAL KNEE[5]

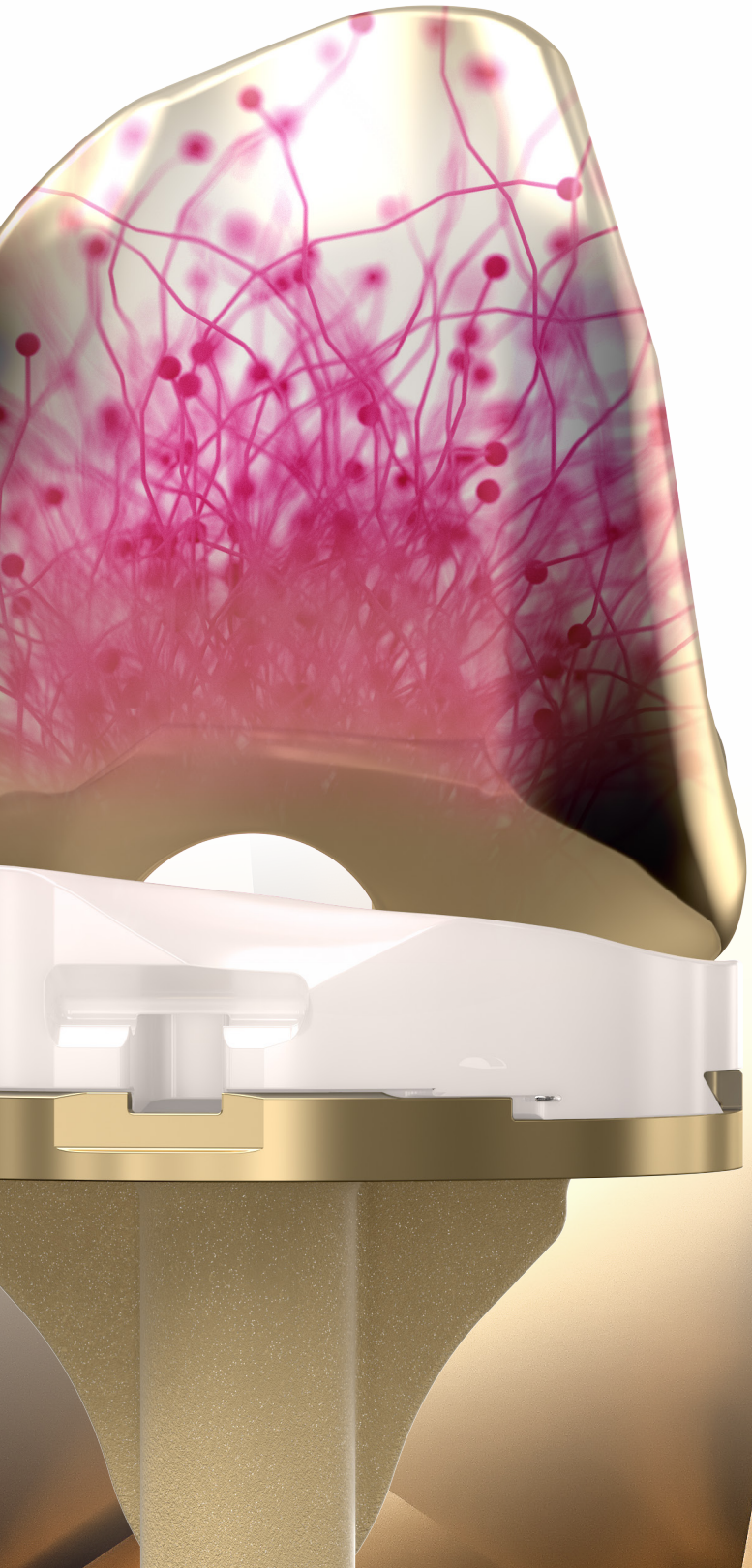


Stable medial compartment



Mobile lateral compartment





Reduce the release of specific metal ions while promoting natural kinematics[1,2]

The Evolution® NitrX™ knee features a titanium niobium nitride (TiNbN) coating, which creates a barrier against the potential release of metal ions common in cobalt chrome (CoCr) implants.[1] Since metal sensitivity in patients is linked to metallic debris and metal ions, namely cobalt, chromium and nickel, preventing that debris from interacting with soft tissue may have a benefit of reducing the incidence of tissue reactions.[6,7]

Excellent wear properties[4]

Long term wear is one reason for revision in the long term. The Evolution® NitrX™ titanium niobium nitride (TiNbN) coating demonstrated the same excellent wear characteristics as a CoCr prosthesis.[1]

Hardness of different types of surface treatments in GPa

Oxinium 12.1[15]

CoCr 3[15]

Excellent biocompatibility[1,4]

High corrosion resistance[8-11]

Increased hardness and wettability[1,4]

Evolution® NitrX™'s TiNbN coating is 4 to 5 times harder than conventional CoCr[4,15] and is twice as hard as Smith and Nephew's OXINIUM™.[4,15]

Patients feel the difference

Patients in a peer-reviewed study that examined patient satisfaction among patients who underwent bilateral staged total knee replacement with different prostheses preferred the MicroPort Orthopedics medial-pivot design equally to an ACL/PCL retaining prosthesis and more than all other designs (CR, PS, and Mobile-Bearing).[12]

Focus on rapid recovery

Surgeons utilizing the medial-pivot knee system have stated that their patients recover faster and are back to activities of daily life sooner than traditional knee replacements.[13]

IMPROVED STABILITY

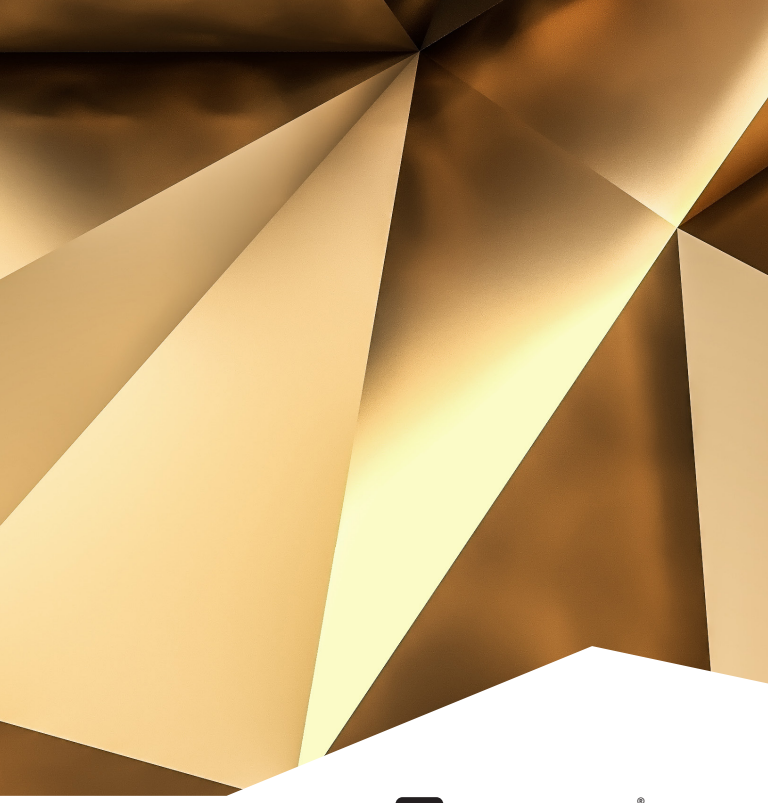
Designed with a single radius in all planes, and a medial "socket" on the insert, the Evolution® medial-pivot knee system provides stability throughout all phases of flexion. Additionally, the medial anterior lip acts to replace the PCL and minimize anterior femoral sliding while the posterior lip replaces the ACL in an effort to stop posterior slide.

PROMOTES NATURAL KINEMATICS

The unique design of the Evolution® tibial insert substitutes for both the ACL and PCL, as well as the natural contours of the knee to promote normal kinematics.[16]

EXCELLENT OUTCOMES

The Evolution® medial-pivot knee system is built upon a legacy of 95% patient satisfaction with 98.8% survivorship at 17 years[3], and features a design that enhances quadriceps efficiency, allowing for improved proprioception.[16]



The CE-Marking of Conformity is applied per catalog number and appears on the outer package label, if applicable.

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References

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