SATURN PROJECT:
a solid approach to MV transcatheter replacement

Paolo Denti MD
San Raffaele Hospital
Milan, Italy
Potential conflicts of interest

Paolo Denti is:

- Consultant for Valtech Cardio, Abbott, 4tech Cardio and InnovHeart
Saturn Technology: think mitral!

- An **annular structure** is positioned behind the leaflets, in contact with the annulus.

- The **valved central element** is expanded inside the mitral orifice, to lock the native leaflets in between.
Saturn Technology: think mitral!

Because of the need of appropriate anchorage and appropriate seal from a “two components system” to a “single piece / multifunctional parts”
Saturn Technology: think mitral!

Saturn Design – single piece / multifunctional parts

suitable for intracardiac reassembling of the prosthesis before final release
Saturn Technology: think mitral!

**Safe to the Target: based on Guidewires**

Implant procedure (including intra-cardiac reassembling) is led by GuideWires

connecting arms and annular segments are compatible with over-the-wire technics
Saturn Technology: TA - Implant Procedure

Three Steps Procedure

1) Placement of a pair of guidewires to embrace the native mitral valve

2) Over the wire introduction and positioning of the annular segments

3) Introduction of the central valve body, intracardiac reassembling and release
Saturn Technology: TA - Implant Procedure
Saturn Technology: TA - Implant Procedure

- Transapical procedure already validated in chronic animal models
- GLP in-vivo preclinical trial start Q1-2018

pig heart

sheep heart

ventricular view of explanted pig heart
Saturn Technology: TS Implant Procedure

Trans-femoral trans-septal procedure under development

**STEP 1**
Placement of a pair of guidewires to embrace the native mitral valve

**STEP 2**
Over the wire introduction and positioning of the annular segments
Saturn Technology: Strengths

PATIENTS SCREENING: TWO MAJOR LIMITING FACTORS

Native Annulus Size

Risk of LVOT Obstruction (direct and SAM)
Saturn Technology: Strengths

An Effective Solution to address Native Annulus Size Challenge

• Inverse Remodeling of the Mitral Annulus
  Size reduction – Annuloplasty-like

Additional benefits from small size prostheses

✓ BETTER CRIMPABILITY
  lower profile delivery systems

✓ LONGER DURABILITY
  less stress on the prosthesis (applied force increases with the square of the diameter)
Saturn Technology: Strengths

An Effective Solution to address Native Annulus Size Challenge

- Inverse Remodeling of the Mitral Annulus
  *Size reduction – Annuloplasty-like*

- Stabilization of the Mitral Annulus
  *Surgical-like anchoring to the annulus*
Saturn Technology: Strengths

An Effective Solution to address Risk of LVOT Obstruction

- **Low Profile Prosthesis**
  
  *Reduced risk of LVOT*
Saturn Technology: Strengths

An Effective Solution to address Risk of LVOT Obstruction

- Low Profile Prosthesis
  Reduced risk of LVOTO

- Anterior Leaflet gripped by Connecting Arm
  Reduced risk of SAM
Saturn Technology: Think Mitral!

- Simple and accurate implant, based on daily used cathlab GuideWires
- Surgical-like anchoring to the mitral annulus, structure stabilization
- Annular size reduction, immediate remodeling
- Low profile prosthesis, low LVOT Obstruction risk
- No SAM risk