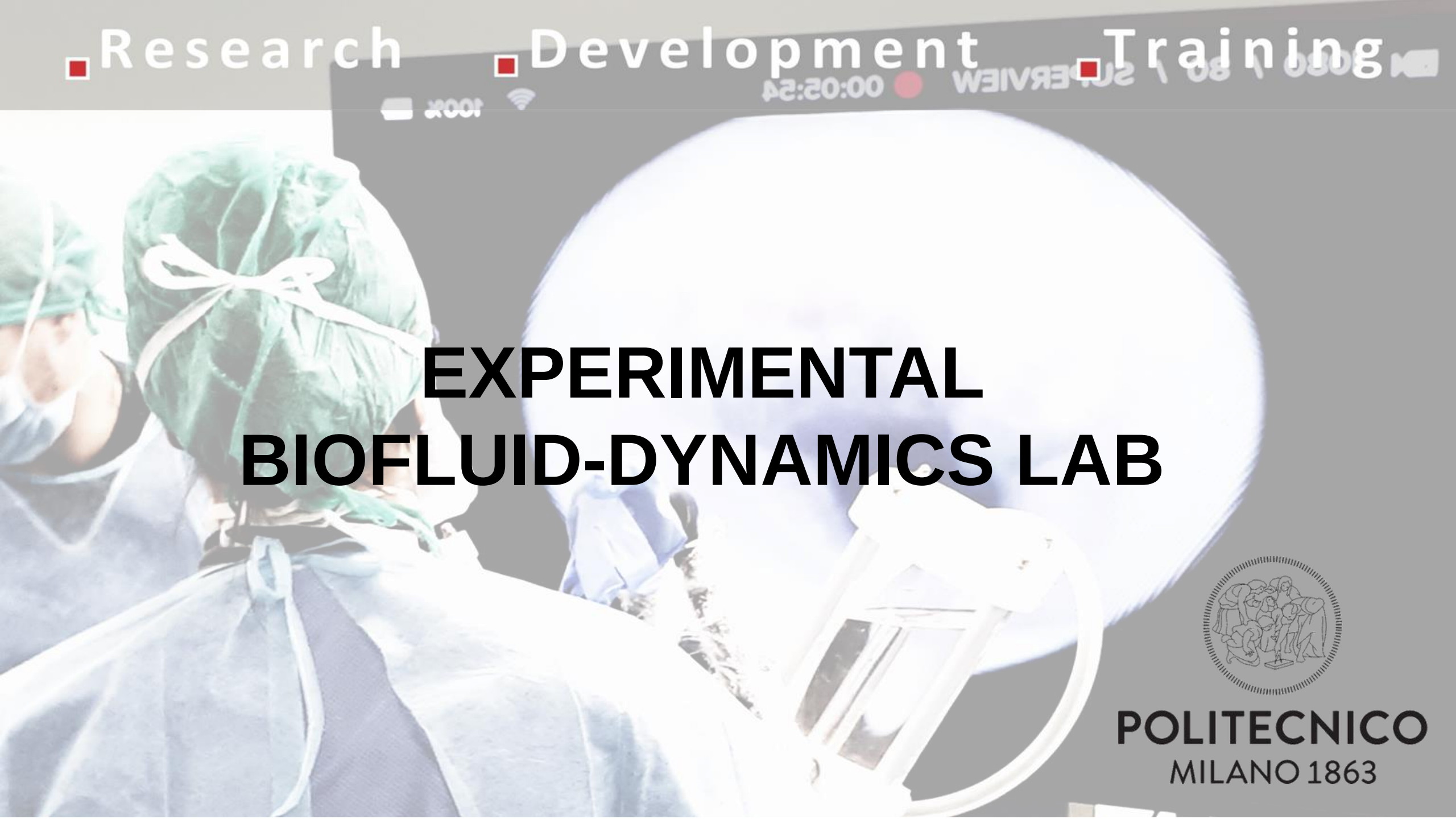
Research Development Training



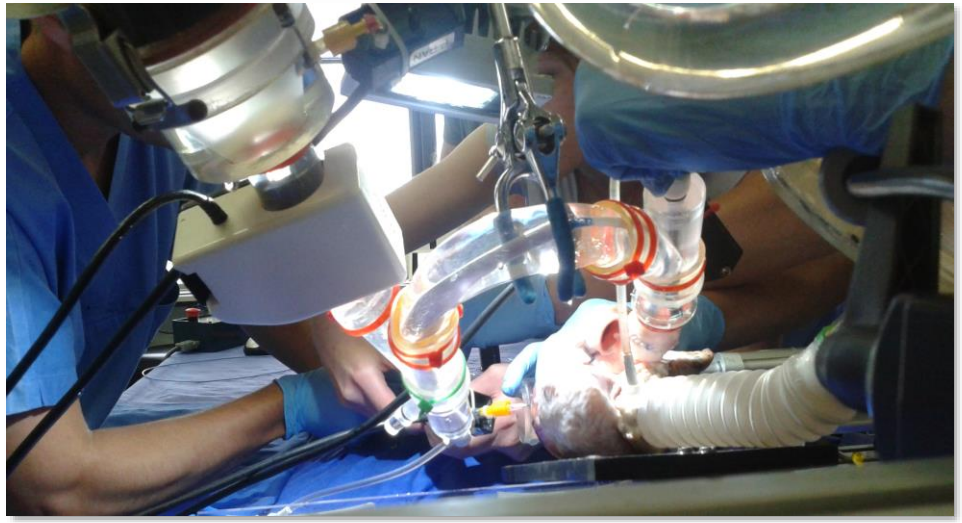
EXPERIMENTAL BIOFLUID-DYNAMICS LAB

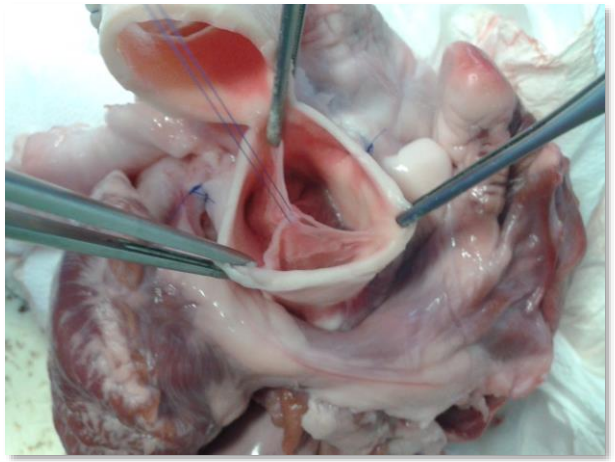
POLITECNICO
MILANO 1863

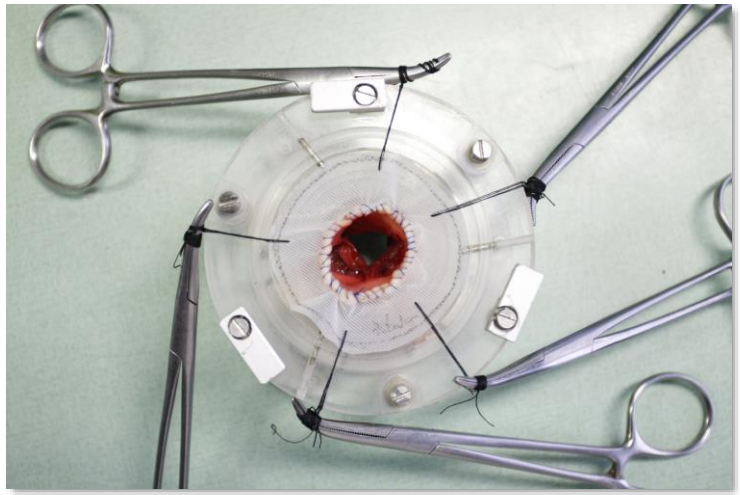
Experimental cardiovascular fluid dynamics: Study of new devices

Surgeons + Bioengineers

Experimental study of the hydrodynamics and biomechanics of the cardiovascular system

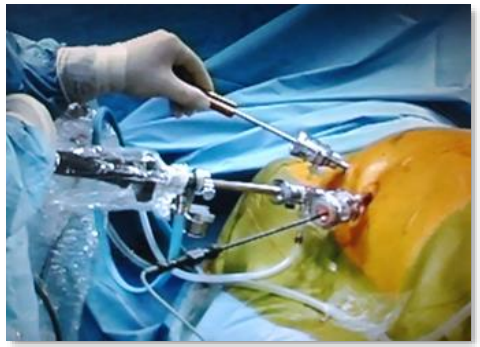


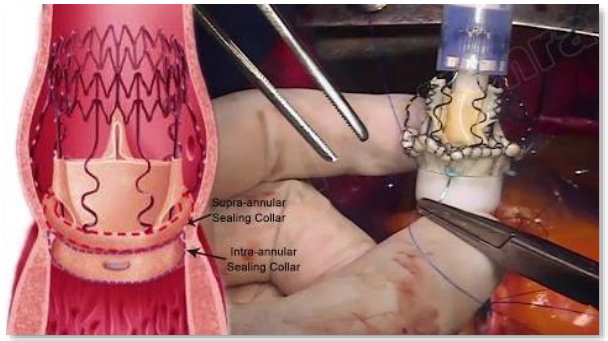




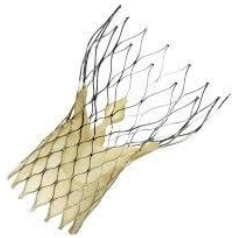
Experimental cardiovascular fluid dynamics
New therapeutic approaches for cardiovascular disease

New surgical approaches and devices





Transcatheter/minimally invasive cardiac treatments



CoreValve ER (Medtronic)

Sapien (Edwards Lifesciences)

Direct Flow (Direct Flow Medical)

Melody (Medtronic)

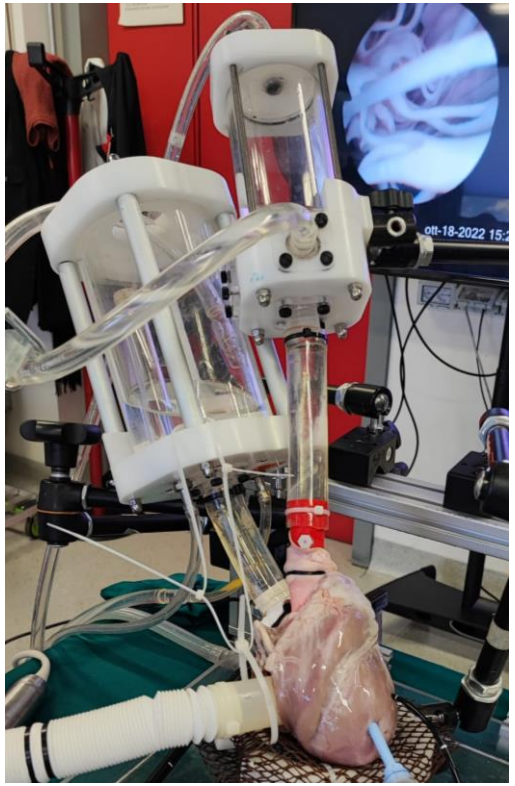
Lotus Valve (Boston Scientific)

Mitra/TriClip (Abbott Vascular)

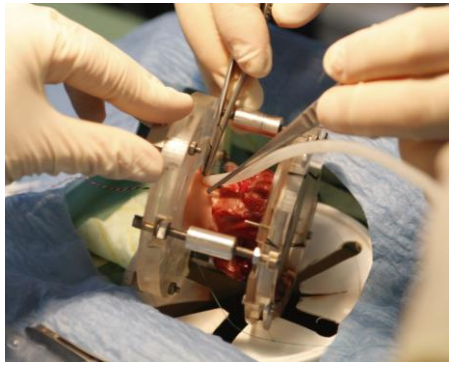
Prototipal devices (Startups)

Experimental cardiovascular fluid dynamics: Experimental platform

*We need **versatile experimental platforms***



Frankenstein right/left heart



ARFU

Left ventricle

Aortic valve

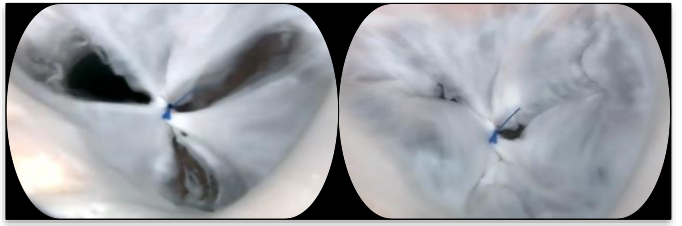
Aortic arch

Typical workflow:
- The need
- Ideas to address it
- Design
- Prototyping
- In-lab tests

Experimental cardiovascular fluid dynamics: Study of new devices

*We need to assess the efficacy of **new treatments***

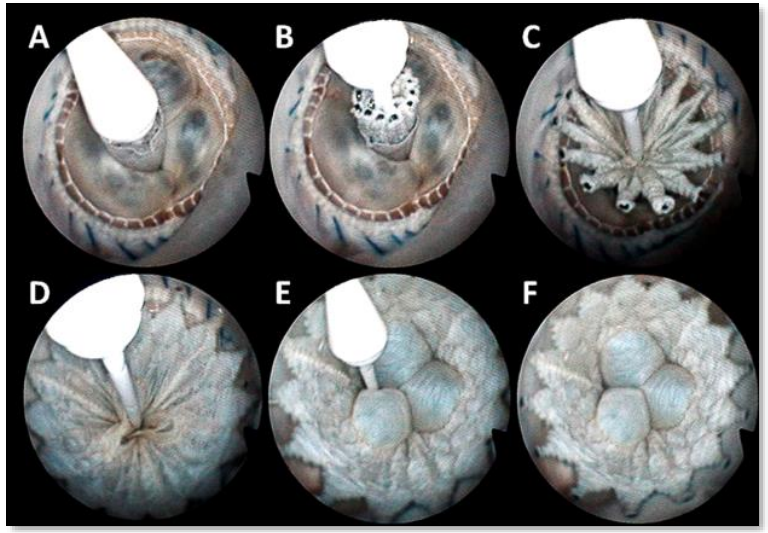
MitraClip in Tricuspid



TV Clover technique

Typical workflow:

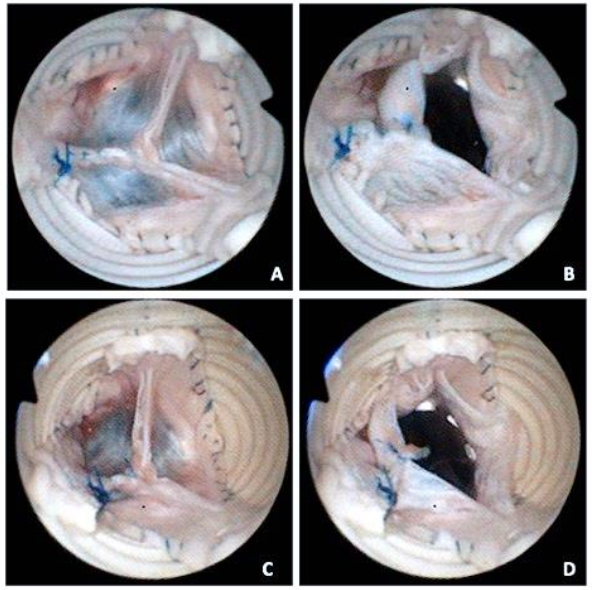
- The need/the idea
- Experimental protocol
- Ad-hoc designed devices/apparatuses
- In-lab tests
- Results analysis



Transcatheter AV replacement

120

180



AV bicuspidization