Focus: Cardiovascular MRI in Pulmonary Hypertension

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…….

and many PhD students

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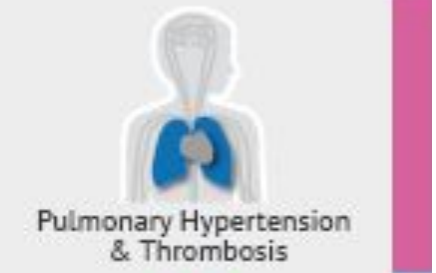
Current mission:

Use of cardiovascular MRI for

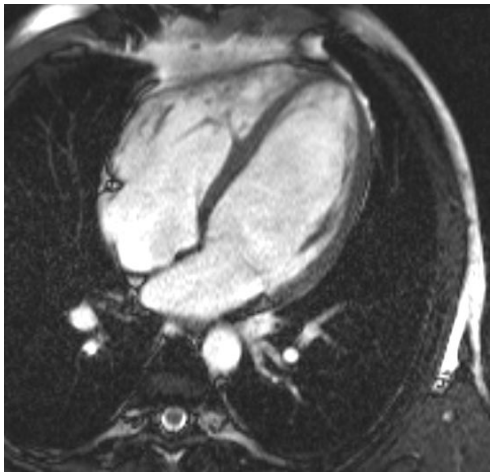
- **follow-up of pulmonary hypertension (PH) patients,**
- **improved understanding of pathophysiology in PH**



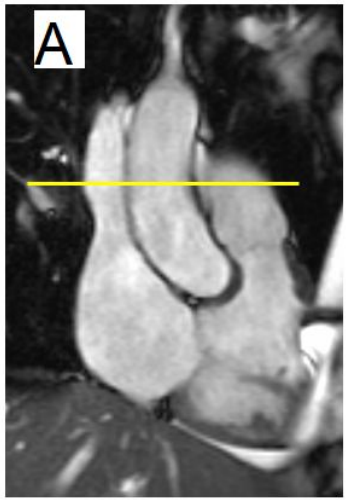
MRI in PH

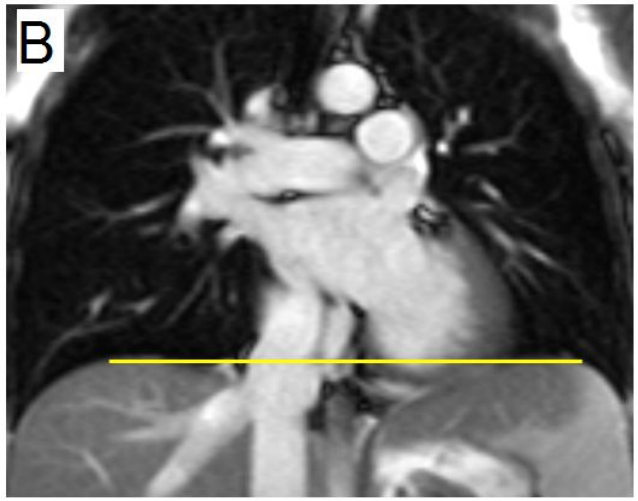
Current:

Search for early MRI imaging biomarkers of PH in carriers of associated gene mutations (bmpr2)

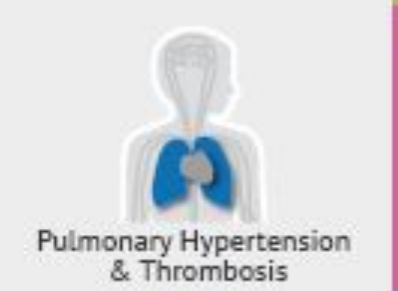


RV diastolic function,
Vena cava flow
superior, inferior





Yellow lines indicate imaging planes for flow measurement



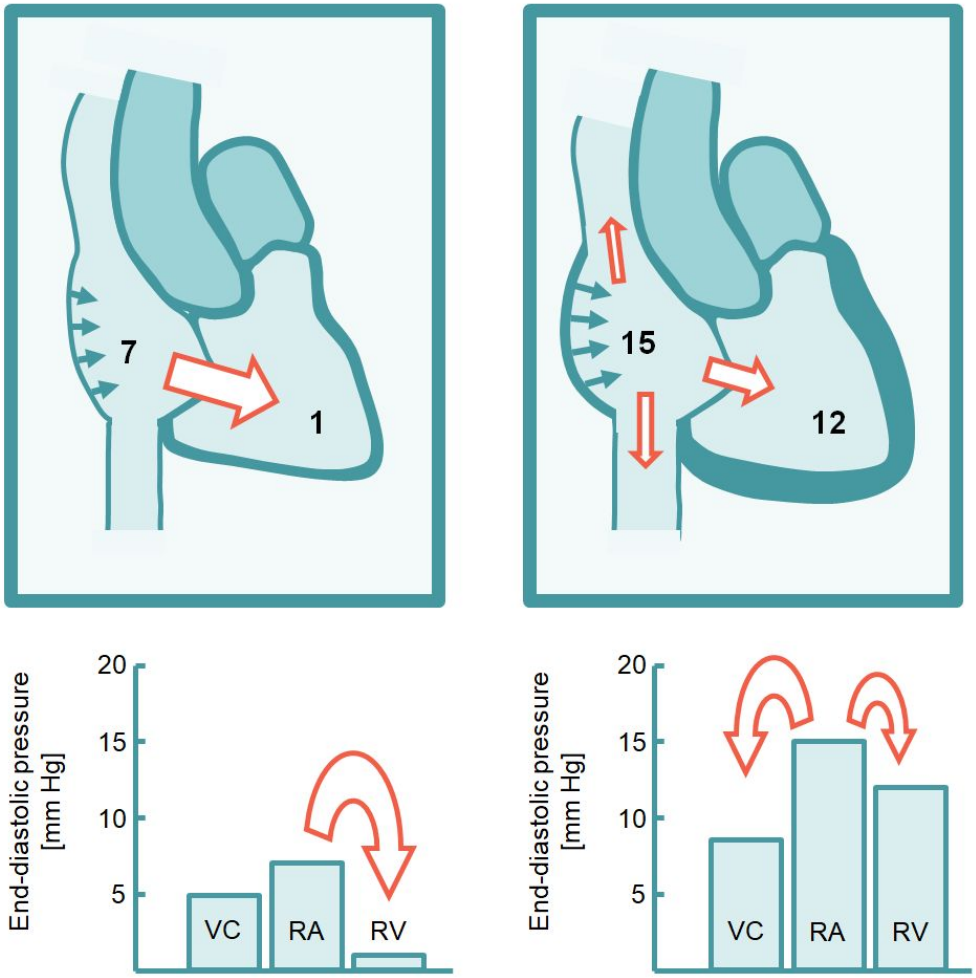
MRI in PH

Current:

Focus on RV diastolic function, right atrial function and vena cava flow.
With pressures from right heart catheterisation.

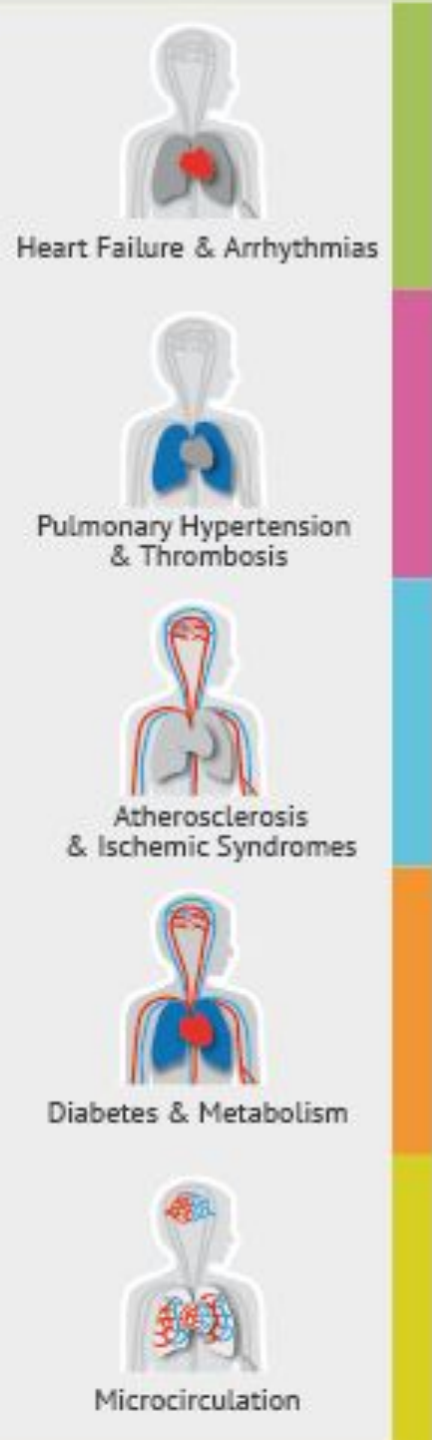
Numbers are pressures in mmHg

Right heart during atrial contraction



Normal: compliant RV

PH: stiff RV, backflow



Future plans

Short term (1-2 year) plan

Implementing advanced MRI techniques in Pulmonary Hypertension:

- Improved imaging of the Right Ventricle, high spatial resolution, …
- 3-dimensional flow over time (4D flow) in the RV and pulmonary arteries

Machine learning applied on MRI images of the RV.
Aim: early recognition of PH signs in mutation carriers, versus healthy controls.

Necessary infrastructure, MRI scanners (2019):
Siemens Magnetom 1.5T Sola
2x Siemens Magnetom 3T Vida
+ pulse programming environment
+ phased array coils

Collaboration in ACS: MRI physics and postprocessing