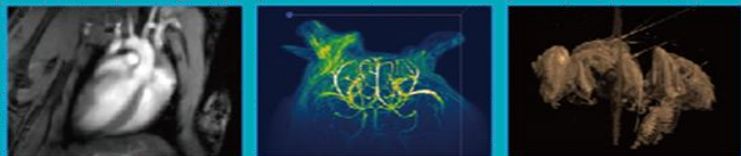


動物影像全方位一站式服務

ANIMAL IMAGING SOLUTIONS FOR
BIOMEDICAL APPLICATIONS



Facility Manger

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Animal Imaging Facility

動物影像設施

國家生技研究園區 / 台灣小鼠診所

Application-driven Research

Facilities

Bruker
Biospec 7 T MRI
(At NBRP)



Bruker
Parmascan 7 T MRI
(At IBMS)
(Will arrive in Feb. 2020)



Bruker
Parmascan 7 T MRI
(At IBMS)



Bruker
Skyscan 1276 μ CT
(At NBRP)

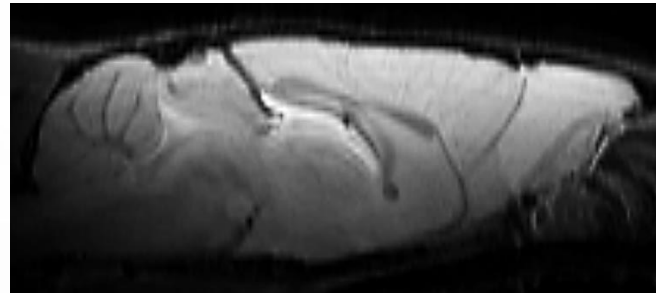


DELPet- μ CT
(At NBRP)

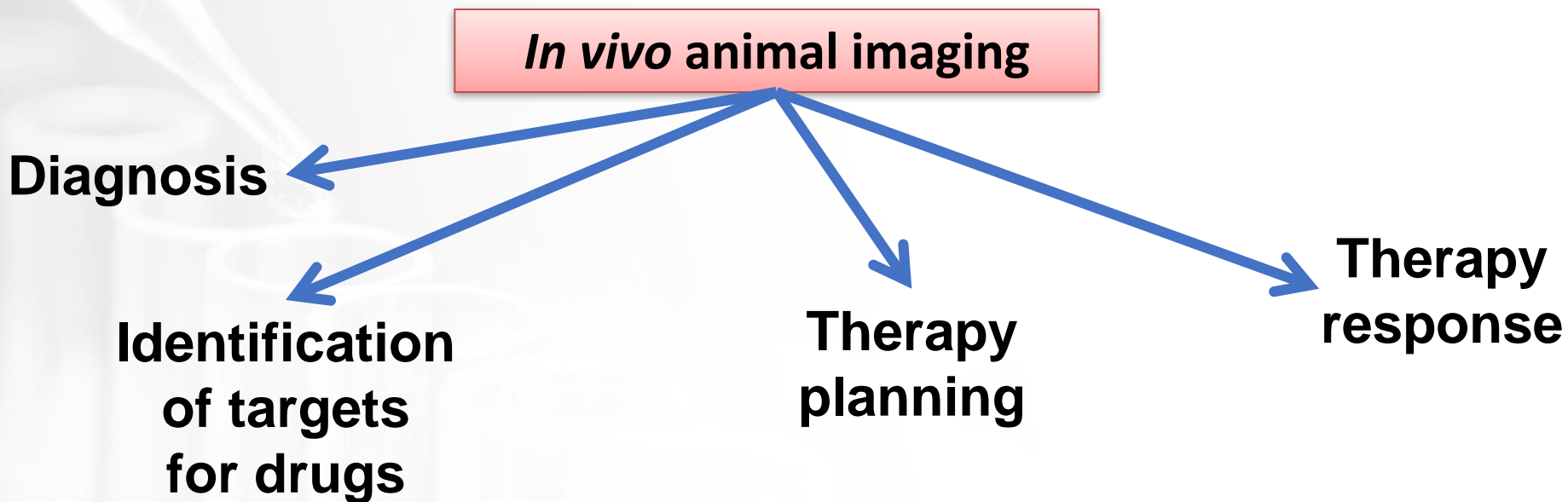


Service

- ◆ Customized *in/ex vivo* MRI / CT Imaging Services
- ◆ Professional image analysis and image post-processing services
- ◆ Provide comprehensive consultation on animal imaging experiments including animal models
- ◆ Customized protocol design



Why do we need animal imaging?



Animal imaging gives you more detail.

Bruker SkyScan 1276

DELPet μ CT 100

X-ray source	20-100kV, 20W, $5\mu\text{m}$ spot size at 4W	40-90kV, 50W, $15\mu\text{m}$ spot size at 6W
X-ray detector	Cooled CCD, 4032 x 2688 pixels, 14-bit	CMOS, 1536 x 1944 pixels, 14-bit
Spatial resolution	$2.8\mu\text{m}$ smallest pixel size, $5.6\mu\text{m}$ details resolved with more than 10% contrast	44.9, 22.5, 15.0, $9.0\mu\text{m}$
Scanning space	80mm in diameter, >300mm in length	80mm in diameter, 200mm in length

Scan Parameters

FOV Mode

- Rat (44.9 μ m)
- Mouse (22.5 μ m)
- Ex vivo (15 μ m)
- Ultra-High Resolution (9 μ m)

Application

- Bone
- Soft Tissue
- Lung
- Metal
- Fast
-

Tube

Tube Voltage kV

Detector

- 1 x 1
- 2 x 2
- 4 x 4

Filter

- None
- 0.5 mm Al
- 1 mm Al
- 1.5 mm Al
- 0.2 mm Cu

Acquisition Mode

- Half Scan
- Continuous
- Step and Shoot

Scan Condition

- Auto Bed Out

Projection Num.


Path

Animal Bed

Type

Positioning

Display



The UI is friendly
Make DIY possible

← ← Bed Pos. mm → →

Live Status

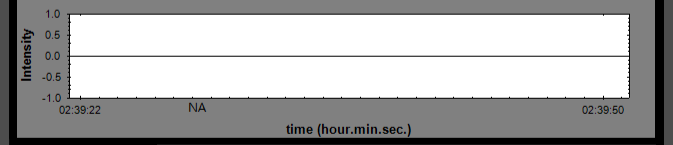
Tube Value

kV μ A Warm Up Residual Time

Heater

- On / Off
- INTERLOCK
- PREHEAT
- WARM UP
- ERROR
- OVERLOAD

Camera

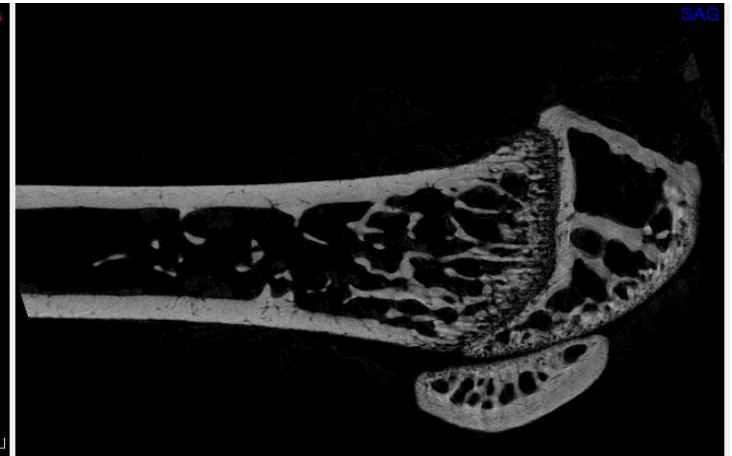
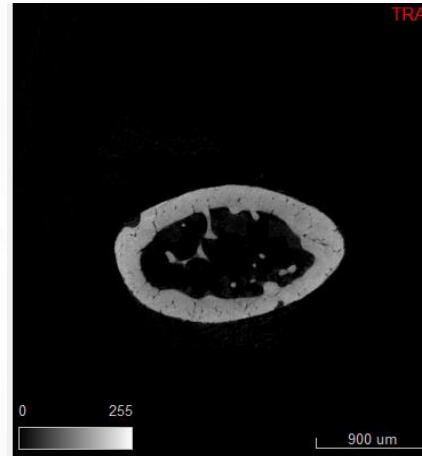



Physiology

BPM : None Temperature : None

Status : None Battery : None

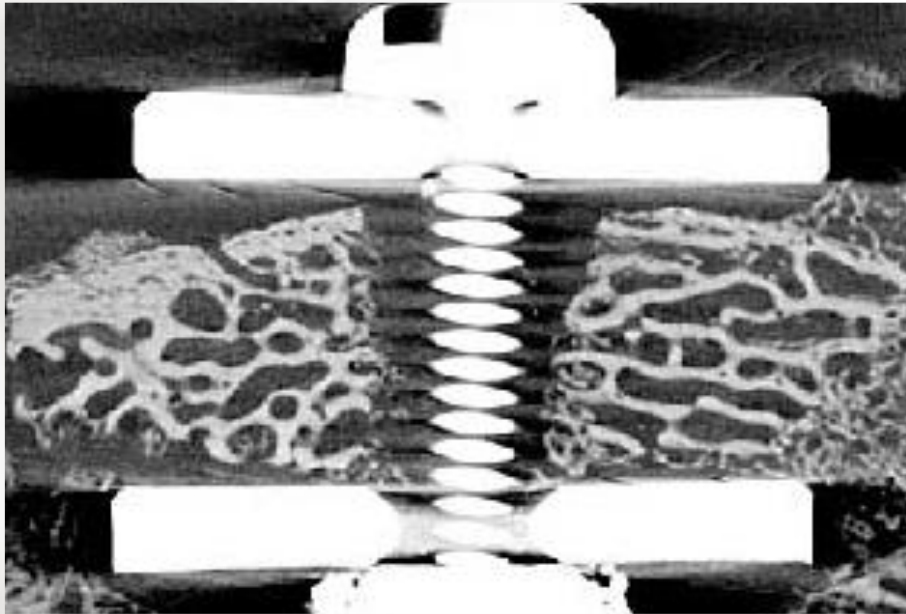
High resolution mice femur



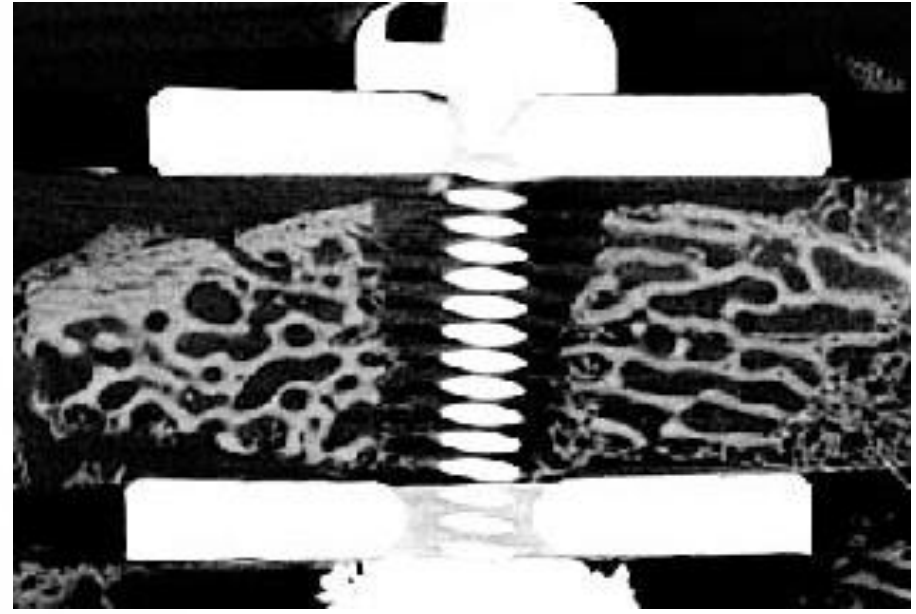
High resolution mice femur



Circular scanning

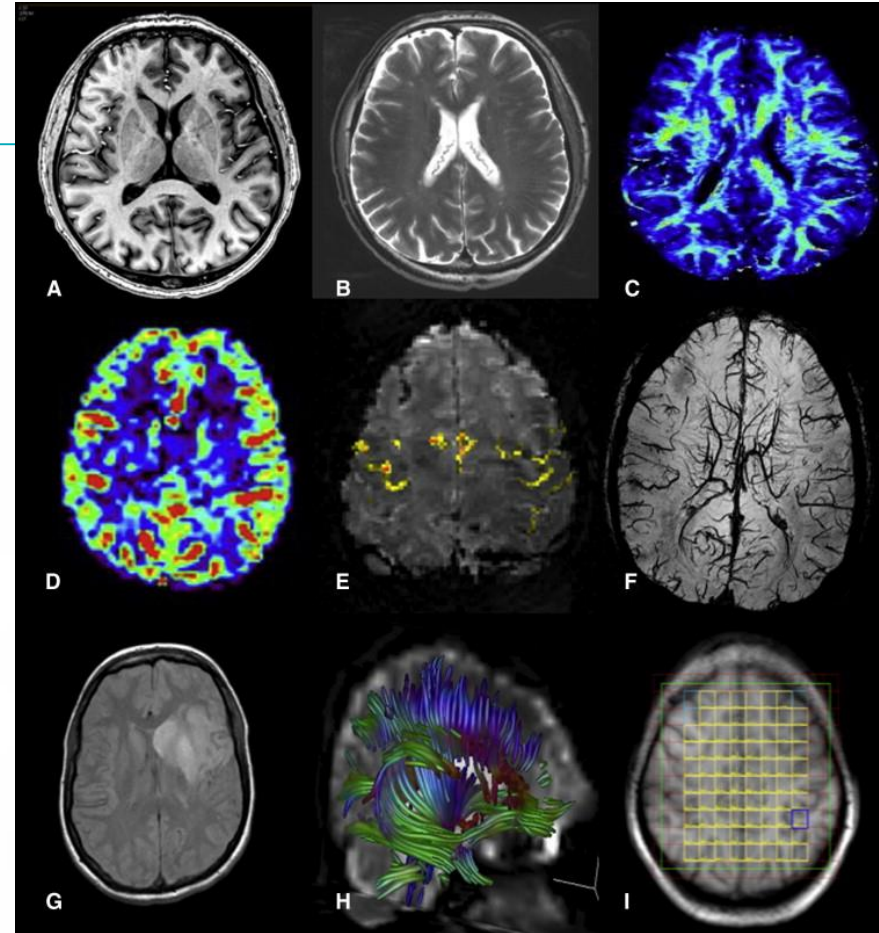


Spiral (helical) scanning

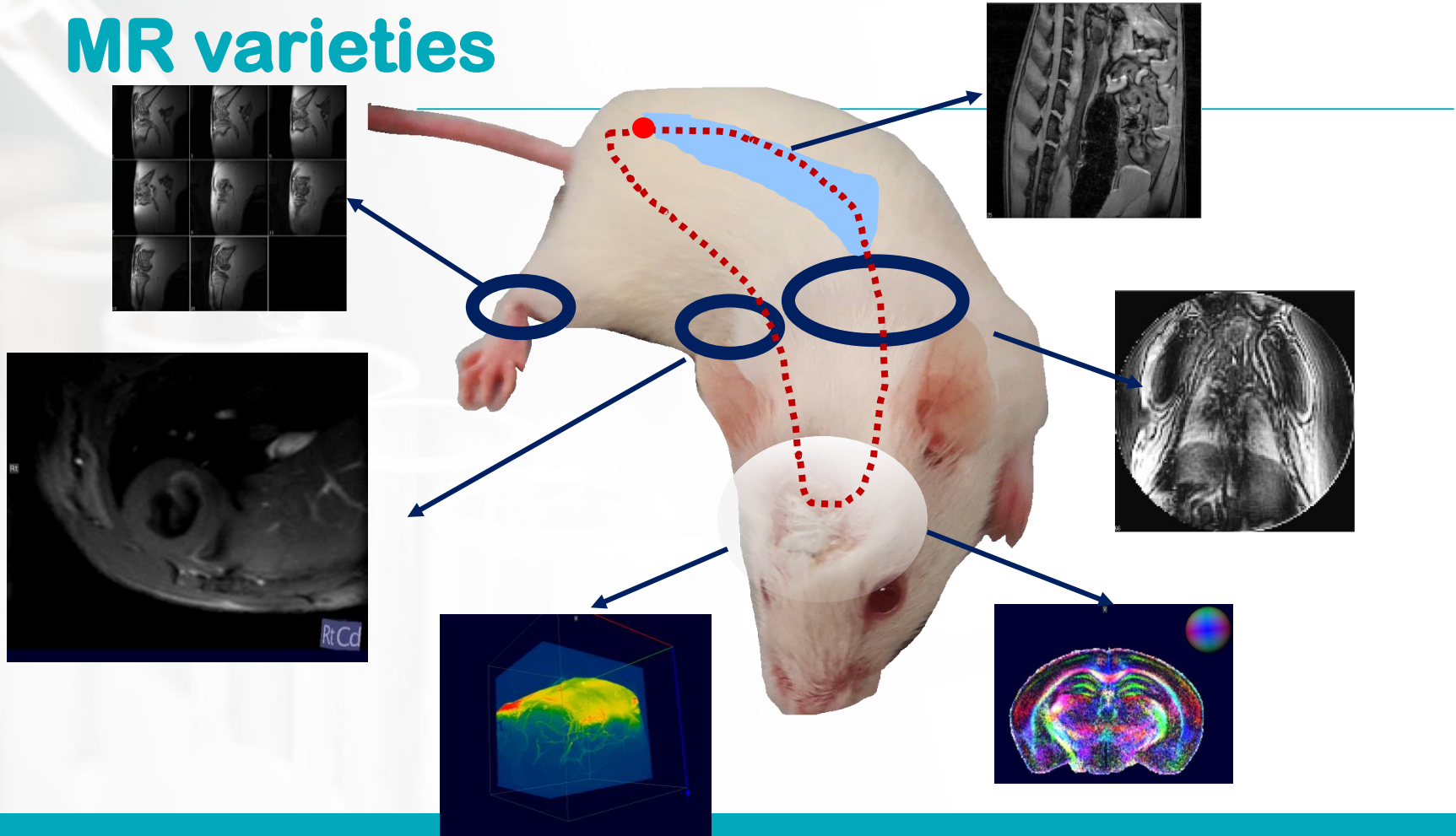


MR varieties

- (A) T1 weighted,
- (B) T2 weighted,
- (C) A map of quantitative magnetization transfer pool ratio,
- (D) blood perfusion,
- (E) a blood oxygen level dependent (BOLD) map of activation,
- (F) a venogram,
- (G) diffusion weighted,
- (H) a diffusion tensor image (DTI) of white matter tracts
- (I) multivoxel high-resolution MR spectra.

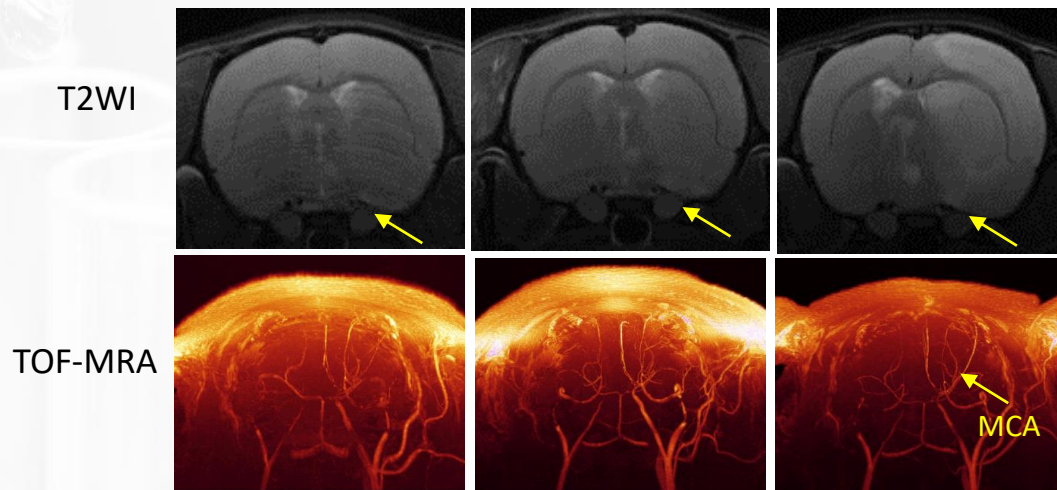


MR varieties



動物模型	大鼠	小鼠	說明
腫瘤	C6神經膠質腫瘤模型	C6神經膠質腫瘤模型 、U87膠質母細胞瘤模型	量測腫瘤體積生長變化、量測血管密度與體積
		肝癌、膀胱癌	量測腫瘤體積生長變化
腦中風	大腦中動脈梗塞、出血性中風、創傷性腦損傷		量測中風梗塞區域體積變化
關節炎	痛風性關節炎、退化性關節炎		
心臟		心室肥大	心臟功能評估
神經退化性疾病	帕金森氏症	亨丁頓舞蹈症、阿茲海默症、帕金森氏症、小腦萎縮症	量測腦部體積及各區域結構生長變化、量測血管密度與體積變化
異體移植		皮下植入黑色素瘤	量測腫瘤體積生長變化
顯影劑測試			量測顯影劑之R1/R2
Other (例: 離體樣品、種子...等)			量測不同烘乾方式時種子內的水分變化

MACO model



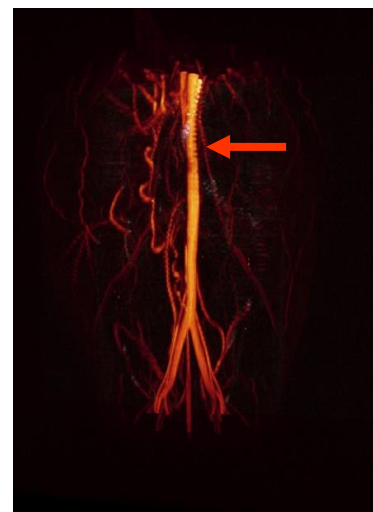
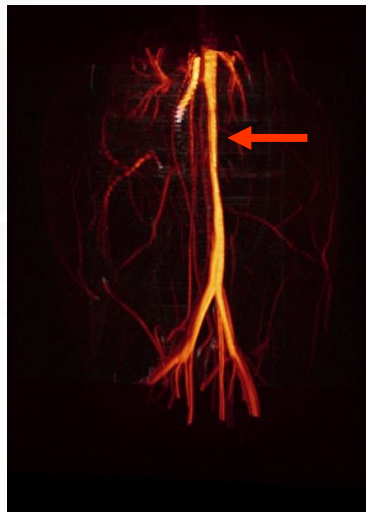
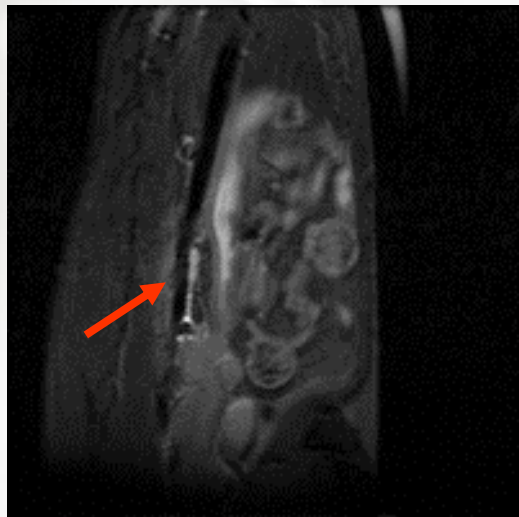
Velocity map

L: 8.439cm/s
R: N/A

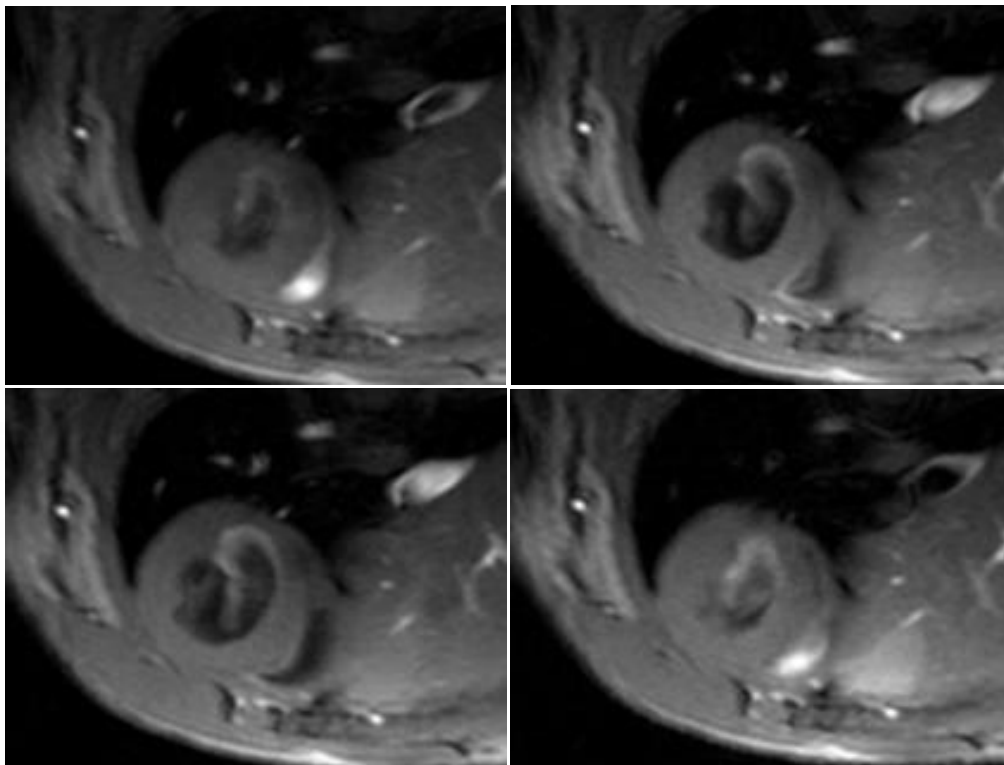
L: 5.43 cm/s
R: N/A

L: 8.86 cm/s
R: 14.55 cm/s

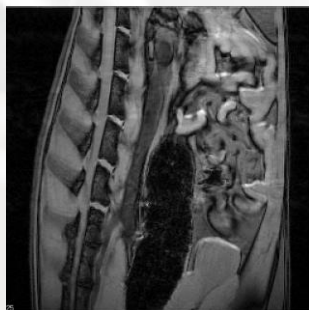
Angiography



Cardiac imaging



MACO model



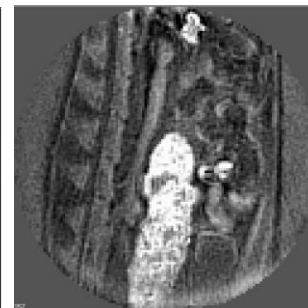
T_2^* map UTE



TE = 0.008 ms

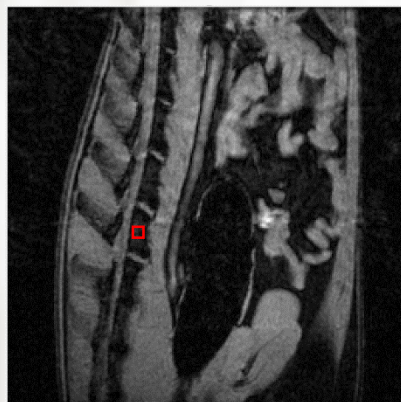


TE = 0.8 ms

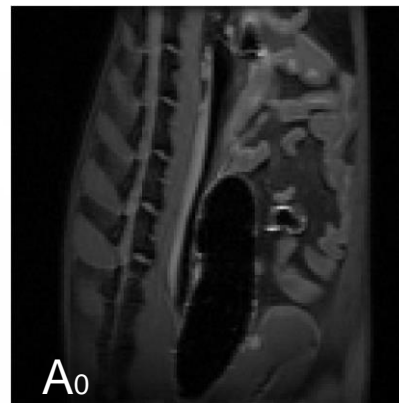
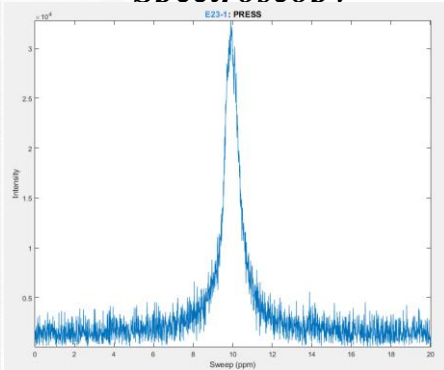


Subtraction image

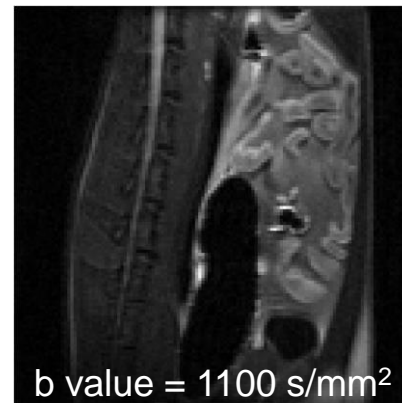
DWI



Spectroscopy



A₀



b value = 1100 s/mm²