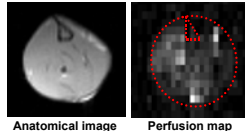
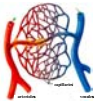


A miniaturized setup for combined measurement of perfusion and ATP production in exercising muscle of mice (C. Baligand's thesis)

Muscle metabolic and functional assessment with NMR

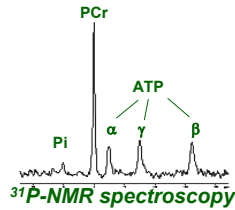
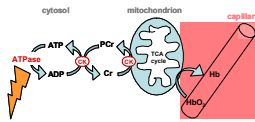
Muscle Perfusion:



¹H-NMR imaging combined with arterial spin labeling:

ASL-NMRI

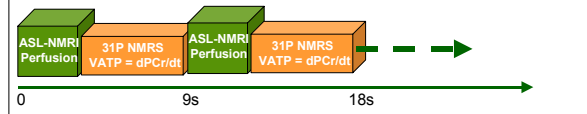
Bioenergetics:



Multi-Parametric Functional (MPF) imaging:

Our approach, interleaved acquisitions of...

1. Muscle Perfusion 2. Muscle Energetic Metabolism



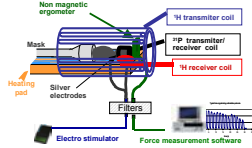
Correlation between blood supply and oxygen consumption is possible in exercising muscle

routinely used in humans in our lab

Duteil et al., Am J Physiol, 2004
Carlier et al, Magn Reson Med, 2005

Dynamic investigation in mice muscle *in vivo* : the challenges

1 Miniaturization of the experimental set-up



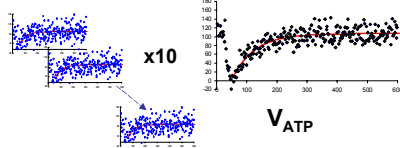
→ Specific coils
→ Non invasive stimulation
→ Amagnetic ergometer

2 Size of the animal

→ intrinsic lack of ³¹P SNR

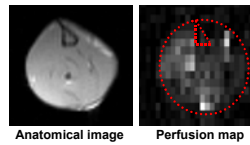
Our approach:

to sum the result of several consecutive bouts



Typical set of data

At exercise



Time course of perfusion after exercise

