MR (and PET) imaging at the arc lemanique

at the CIBM

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Fondation Jeantet

Fondation Leenards

www.cibm.ch

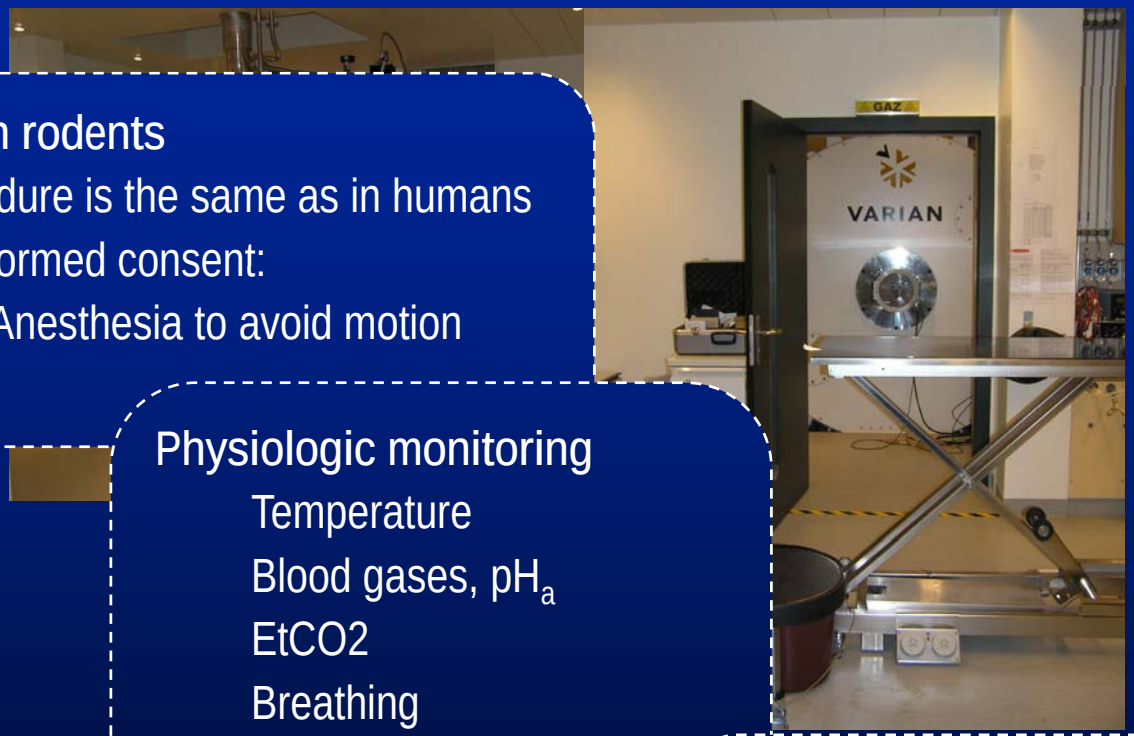
centre d'imagerie biomedicale

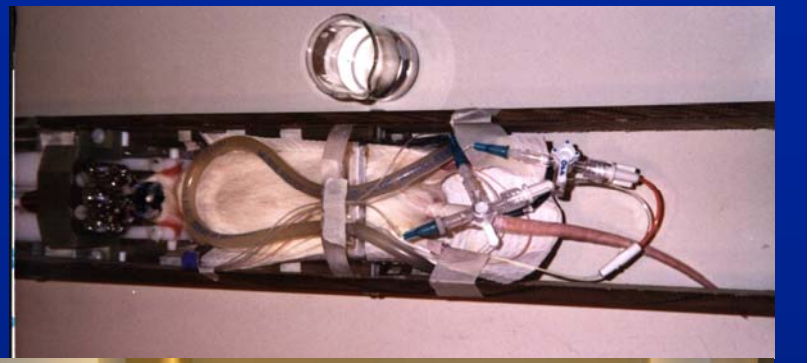
CIBM

CIBM: A brief synopsis

- Mission: Advance state-of-the art *functional* and *metabolic* imaging & address important biomedical problems using model systems ranging from transgenic animals to human patients ("from mouse to man")
- Disease Focus:
  - Neurosciences (Brain diseases)
  - Metabolic diseases (Diabetes)
  - Oncology
- Research Focus:
  - Mechanisms of disease;
  - Disease onset prior to damage
  - Treatment monitoring/planning

Infrastructure for preclinical imaging





MRI in rodents

Procedure is the same as in humans

No informed consent:

Anesthesia to avoid motion

Physiologic monitoring

Temperature

Blood gases, pH_a

EtCO2

Breathing

Blood pressure

Blood glucose, lactate

Blood sampling in the magnet

"Blind" anesthesia

Instrument monitoring

Problem of blood volume

Gruetter, Garibaldi 2007

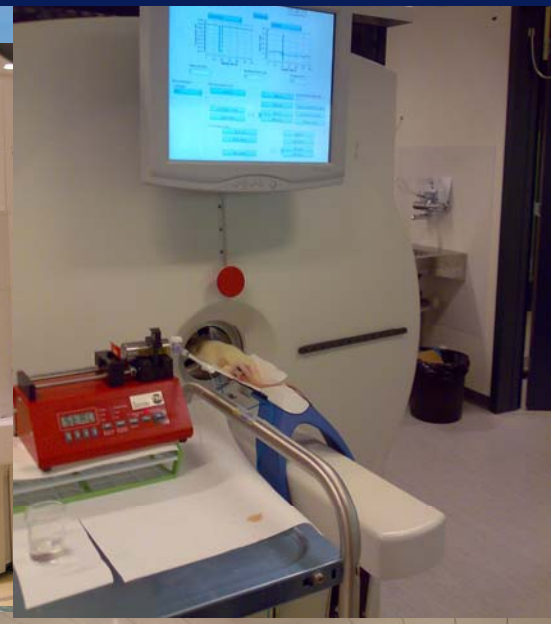
CIBM

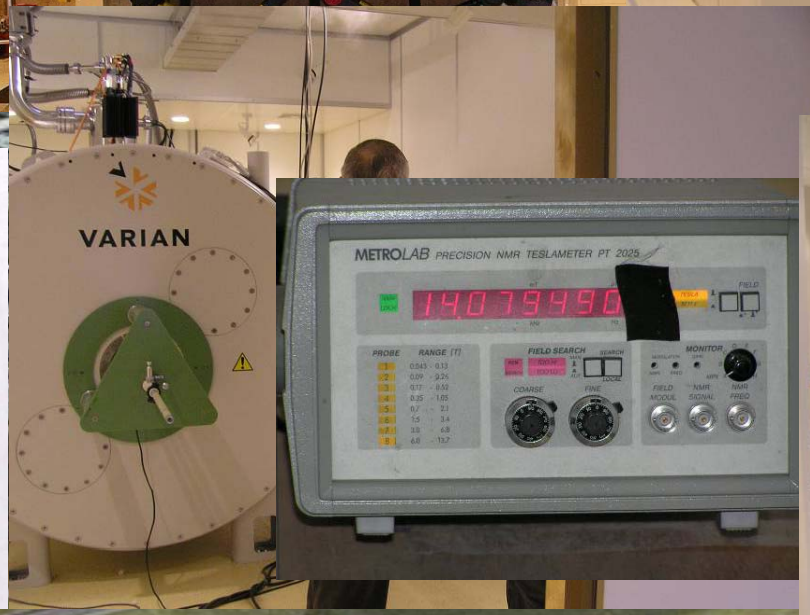
Equipment

plus 30+ full-time staff

1st 7 Tesla active-shield

APD-based animal PET





1st 14 Tesla/260 MRI

9.4 Tesla/310

Proposed activities for MRPET @ CIBM

- Design guidance (from the end-user)
- PET component testing
  - Availability of large-bore (26cm) 14.1 Tesla scanner (allows placing of PET components into magnet)
  - Susceptibility effects, etc.
- RF interactions
  - Large on-site RF lab with 3 full-time staff
  - Network analyzers, on-site component modifications possible
- PET Prototype testing
  - Humans at 7 Tesla (68cm)
  - Rodents at 14.1 Tesla