Whole Body Fluorescence Imaging in Humans

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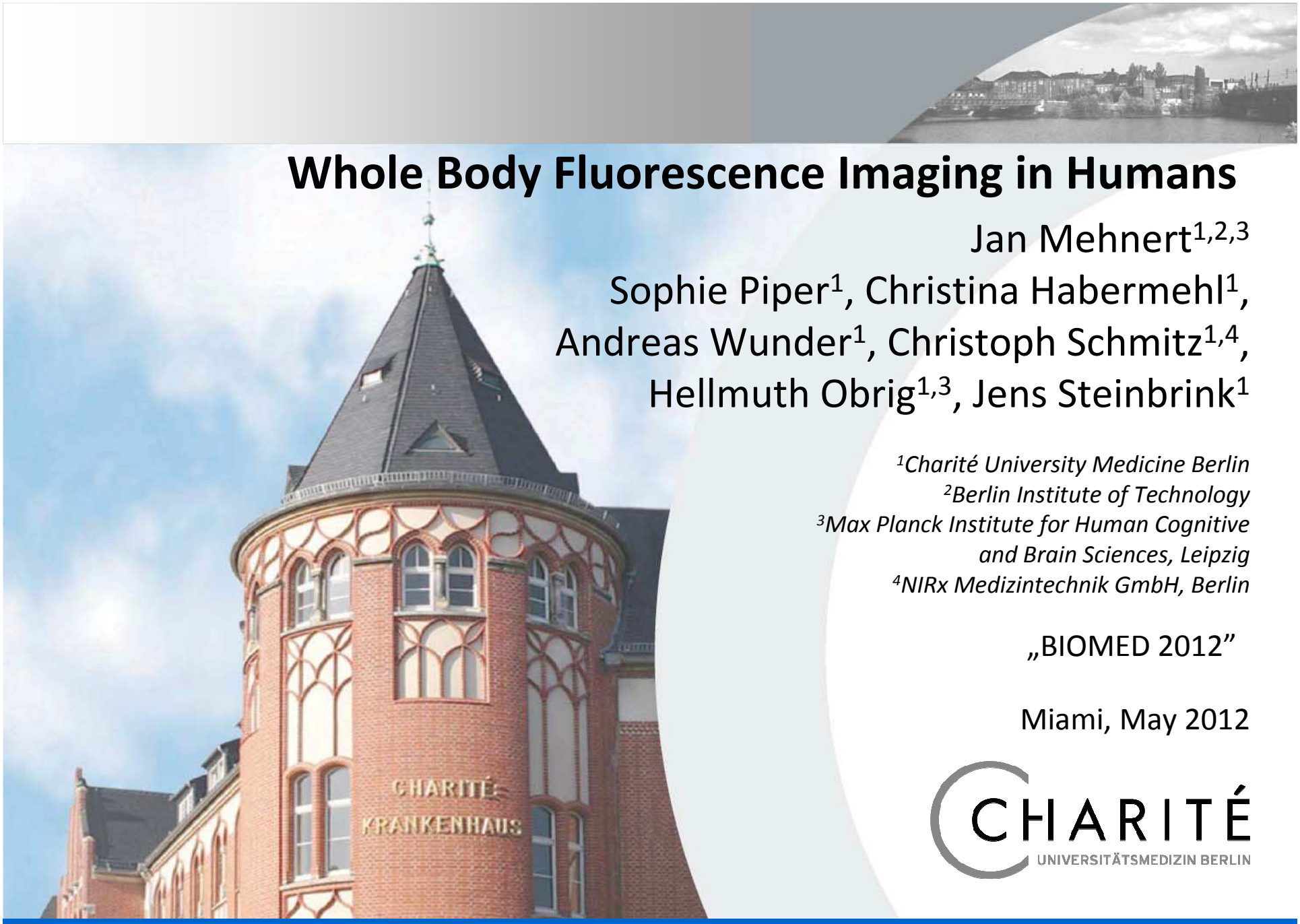

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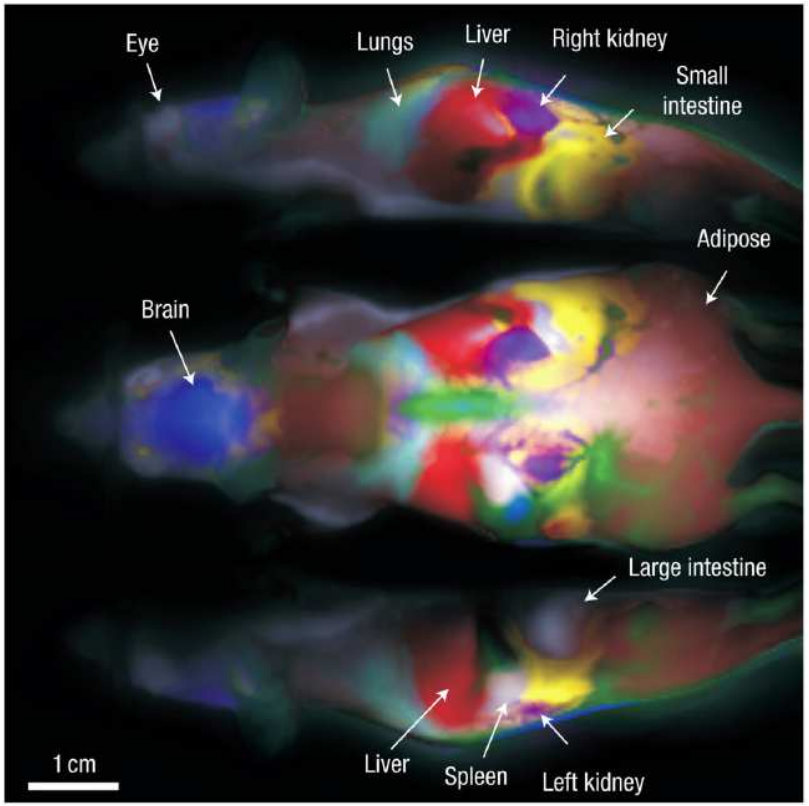
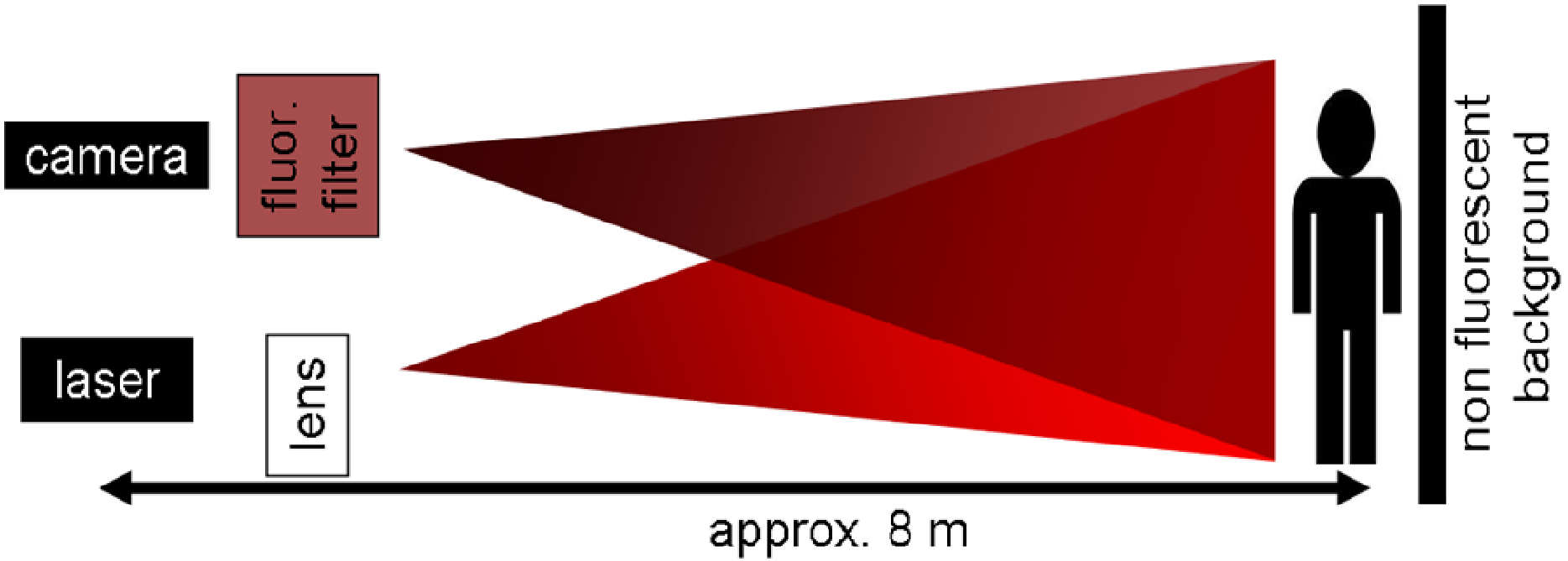
Introduction

- Whole body fluorescence imaging is used to study vascular diseases in small animals
- Bolus kinetics of the injected dye holds important information
- May this technique be directly transfered to humans?



Hillmann et al. (2007) in Nature Photonics

Setup



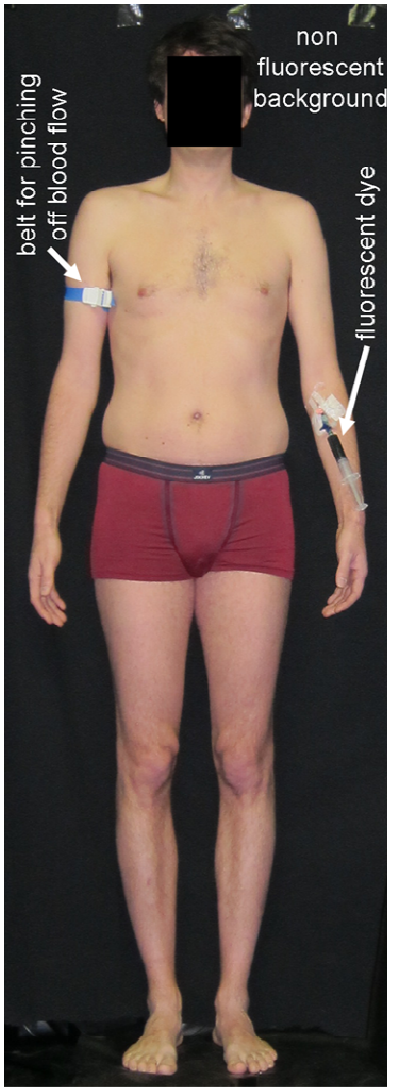
- Darkened, non-fluorescent room
- Illumination by 760 nm laser (Intense Ltd.)
- Sensitive and fast CCD camera (Evolve 512)
- 3 x 820 nm interference filters

Setup

- 2 subjects
- Injection of a 25 mg ICG bolus (up to 12/day max)
- 700 images, 5 images / second -> 140 seconds recording time

Additional bolus for subject 2:

- Venous occlusion of right arm



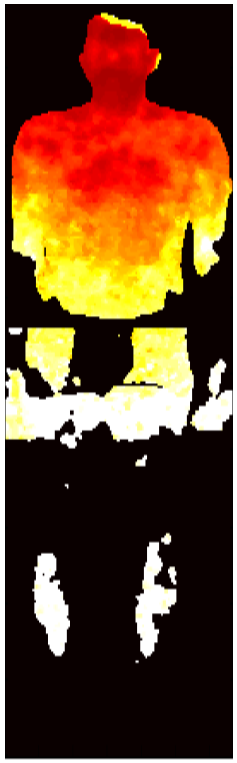
Video recording

Video recording

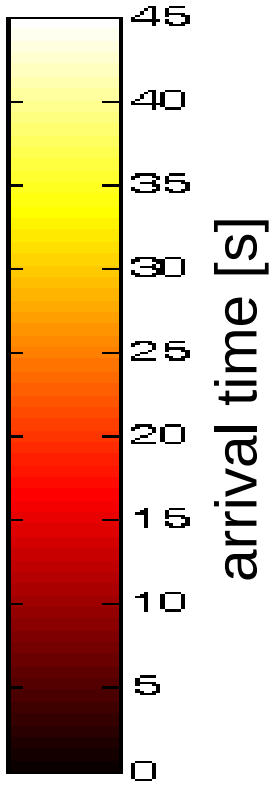
Transit time of ICG

Subject 1

Subject 2



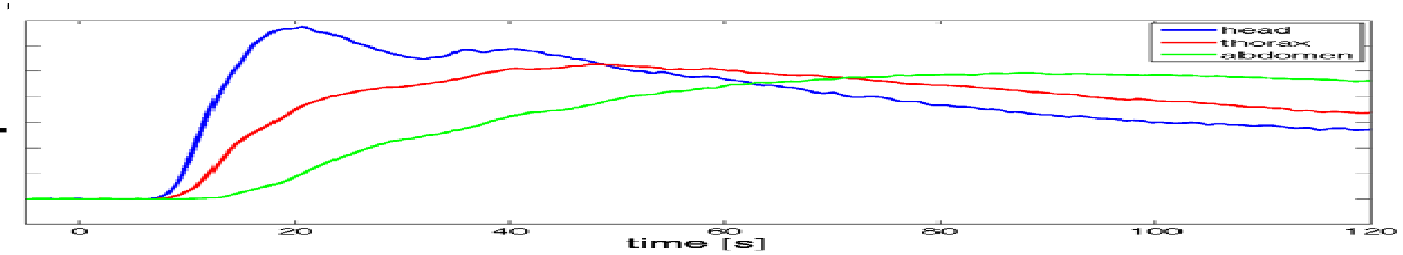
Subject 2, 2nd bolus



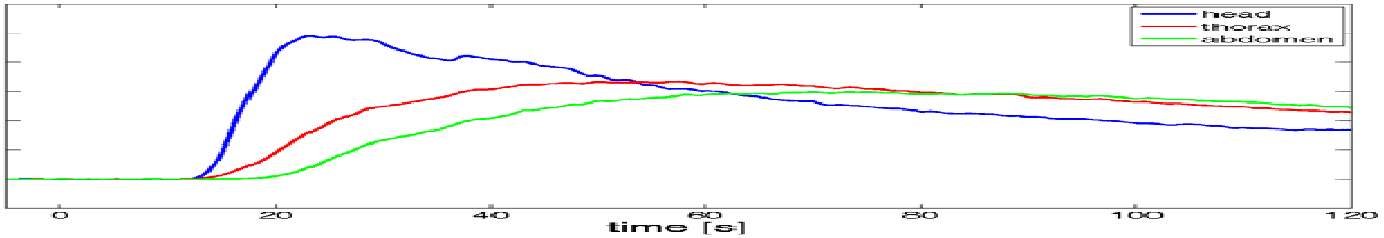
- Head first then periphy

Time courses

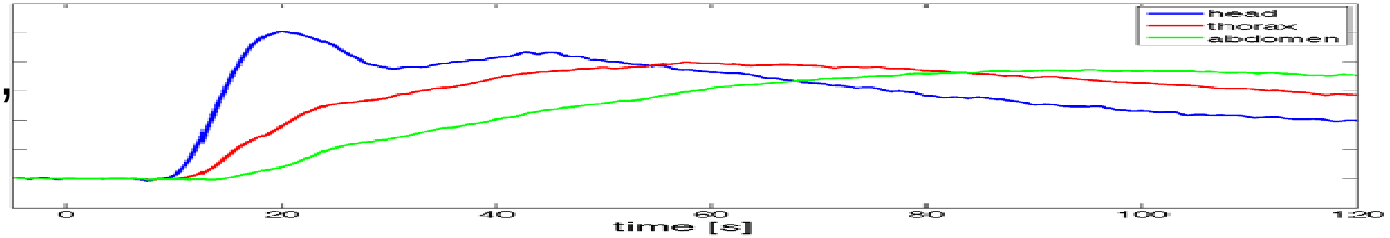
Subject 1



Subject 2

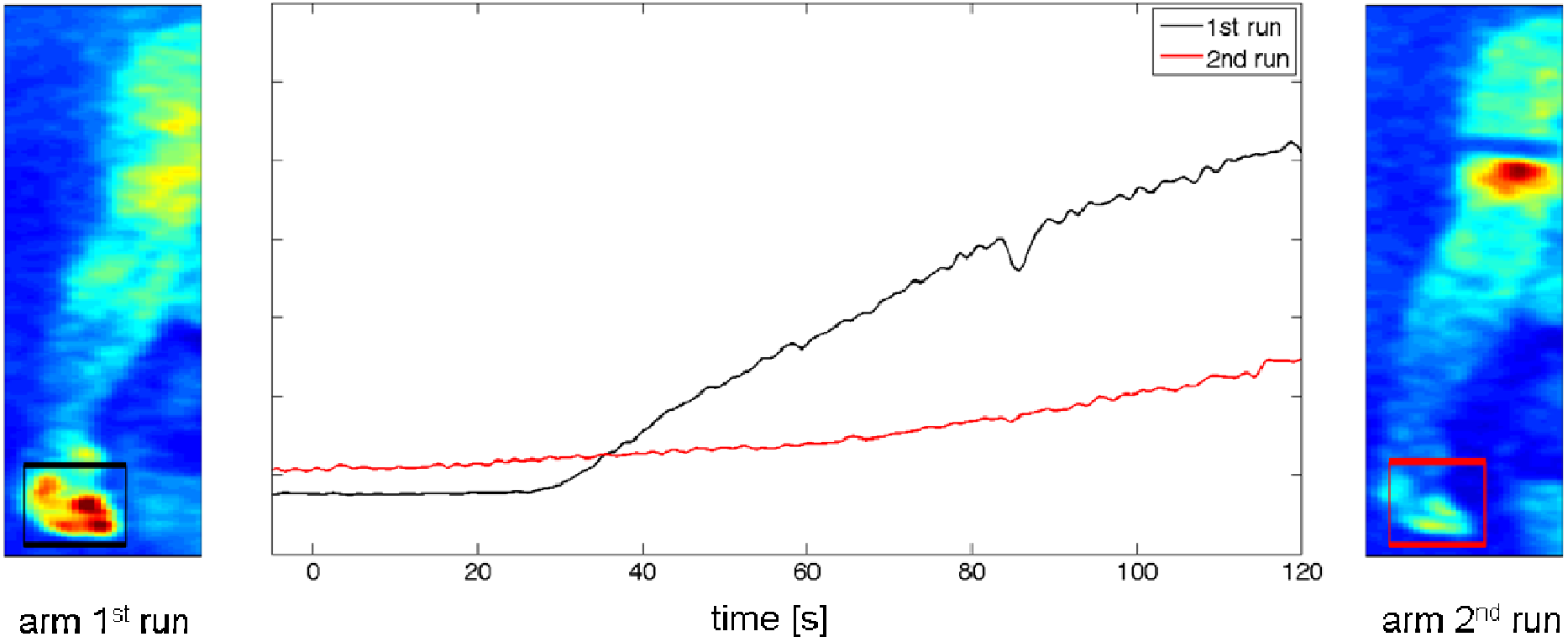


Subject 2, 2nd bolus



- Reproducible time courses
- Second arrival of the bolus in the head

Venous Occlusion



- 2nd run: baseline from first run
- Venous occlusion prevents arrival of ICG in the right hand

Conclusion

- Whole body fluorescence imaging is feasible for humans
- With high spatial and temporal resolution
- Screening tool for peripheral vascular diseases

Thanks for your attention!