33rd Annual Scientific Meeting of the European Society for Magnetic Resonance in Medicine and Biology, Vienna/AT - Teaching Session, Sept 29th 2016 08:00-09:00

Measurement of Renal Perfusion and Filtration

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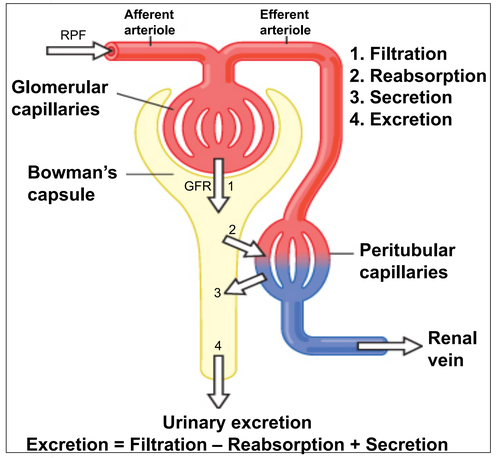
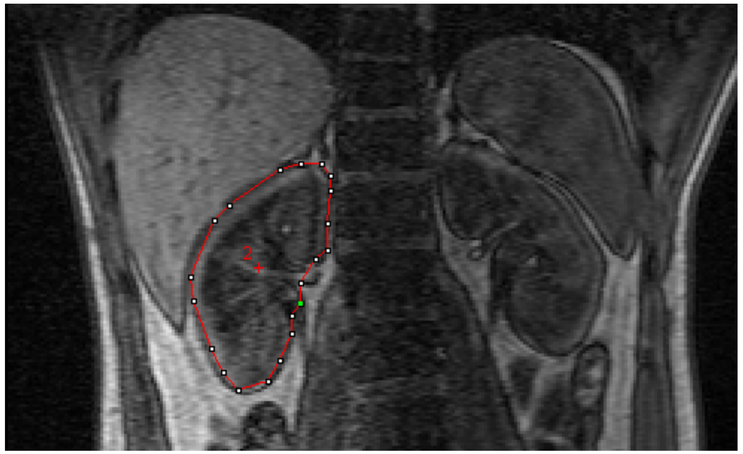
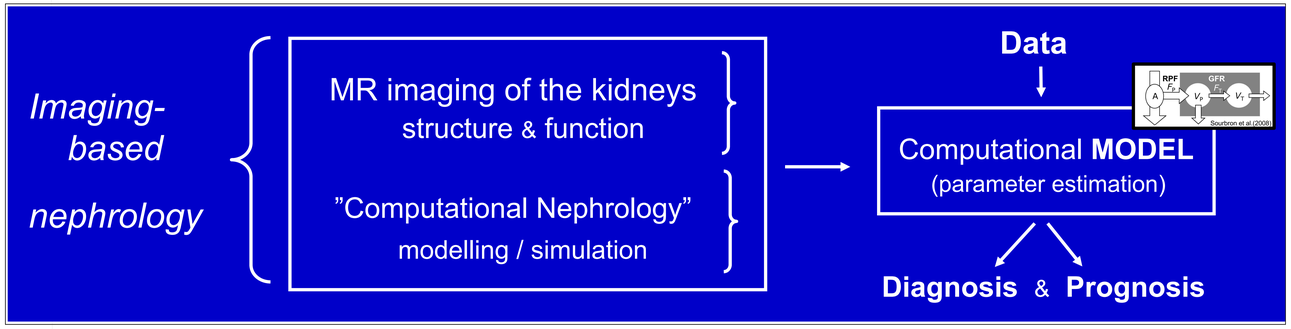
Summary

- Kidney **structure** and **function** – physiological parameters **RPF** and **GFR**
- "Mass balance" and **compartment models**
- The framework of **computational medicine** and **imaging biomarkers**
- **DCE-MRI** for measuring perfusion and filtration
- **Tracer kinetics** and **parameter estimation** (down to single voxels)
- **Motion correction** and **kidney segmentation**
- **Software** for model-based estimation of renal perfusion and filtration
- **Reproducibility** and **validation** ("open science" & "reproducible research")







References from **Syllabus** at https://github.com/arvidl/functional-kidney-imaging

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Sourbron SP, Michaely HJ, Reiser MF, Schoenberg SO. MRI-measurement of perfusion and glomerular filtration in the human kidney with a separable compartment model. *Invest Radiol* 2008;43:40–48. http://www.ncbi.nlm.nih.gov/pubmed/18097276

Zöllner FG, Sance R, Rogelj P, Ledesma-Carbayo MJ, Rørvik J, Santos A, Lundervold A. Assessment of 3D DCE-MRI of the kidneys using non-rigid image registration and segmentation of voxel time courses. *Comput Med Imaging Graph* 2009;33(3):171–181. http://www.ncbi.nlm.nih.gov/pubmed/19135861