

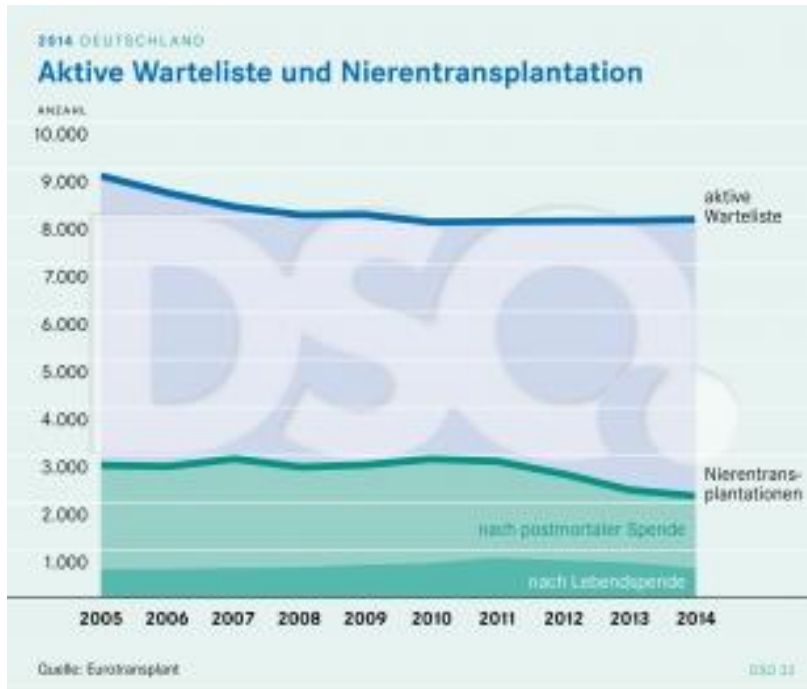
# Detection of Renal Autoregulation in a normothermic extracorporeal Perfusion System

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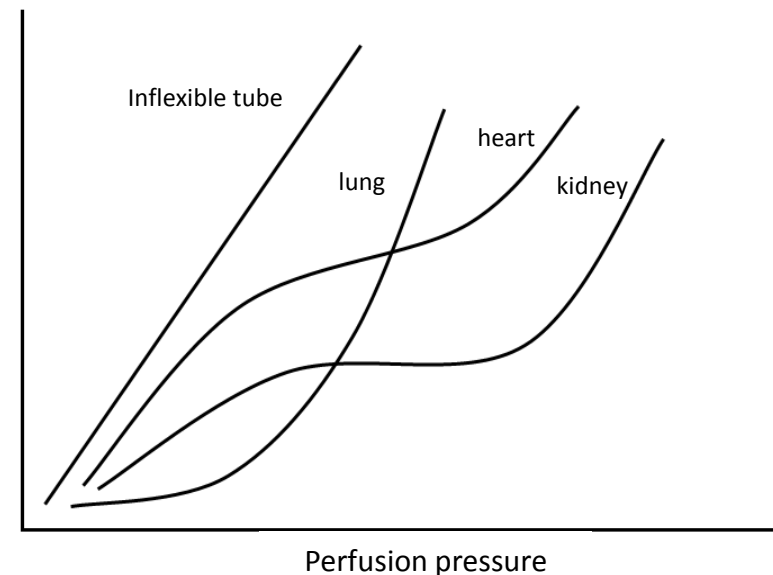
## Active waiting list in Germany:



## Renal function parameter: Autoregulation?

- Dependency between blood flow and perfusion pressure
- Different regulatory organs, like heart, lung and kidney
- Do extracorporeal perfused kidneys have an autoregulatory behaviour?
- Is Autoregulation a possible parameter for renal function?

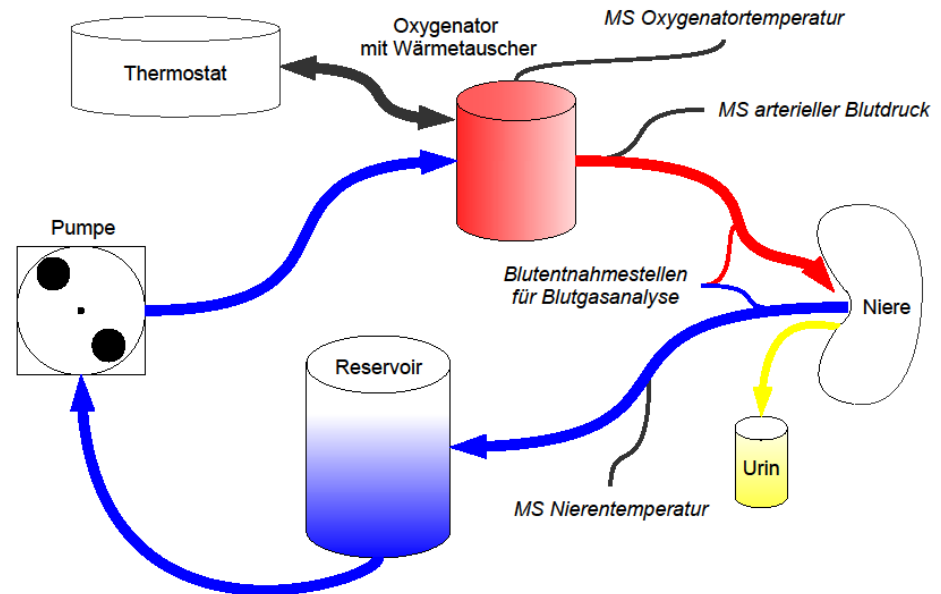
Blood flow



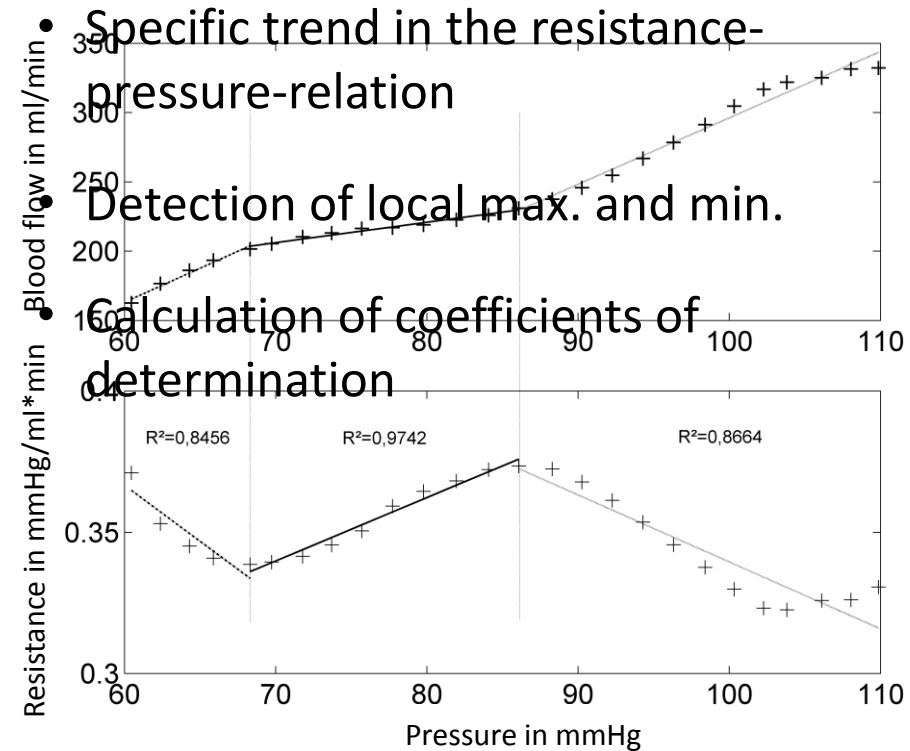
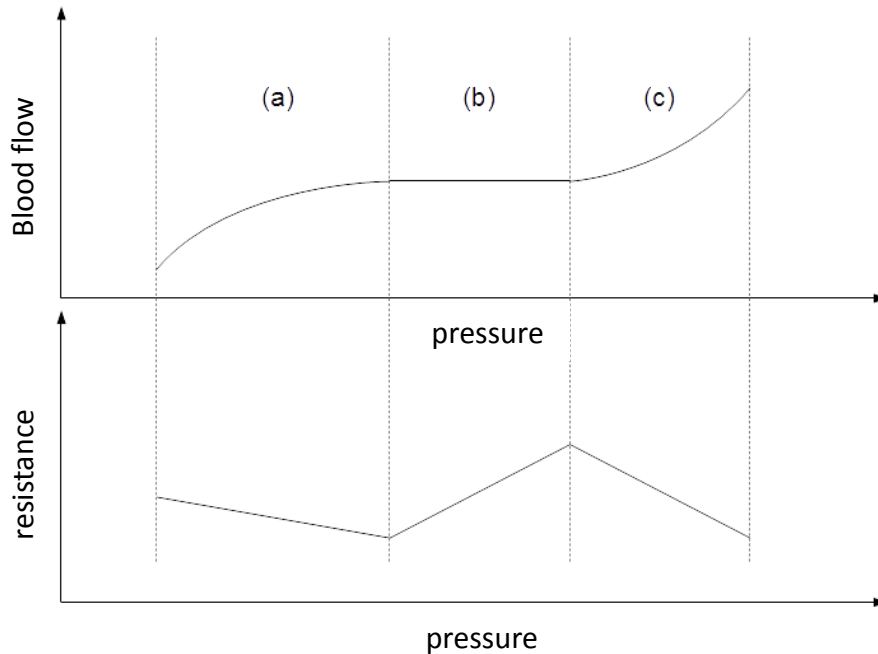
Thews, Mutschler, Vaupel: Anatomie, Physiologie, Pathophysiologie des Menschen, In: *Wissenschaftliche Verlagsgesellschaft mbH Stuttgart*, 1999

## Kidney perfusion system

- Perfusion system with oxygenator, reservoir, roller pump
- Measuring points: oxygenator temperature, arterial blood pressure, kidney temperature
- 18 kidneys extracted during slaughterhouse process
- 2 mmHg pressure steps every 5 min in range: 60 -110 mmHg



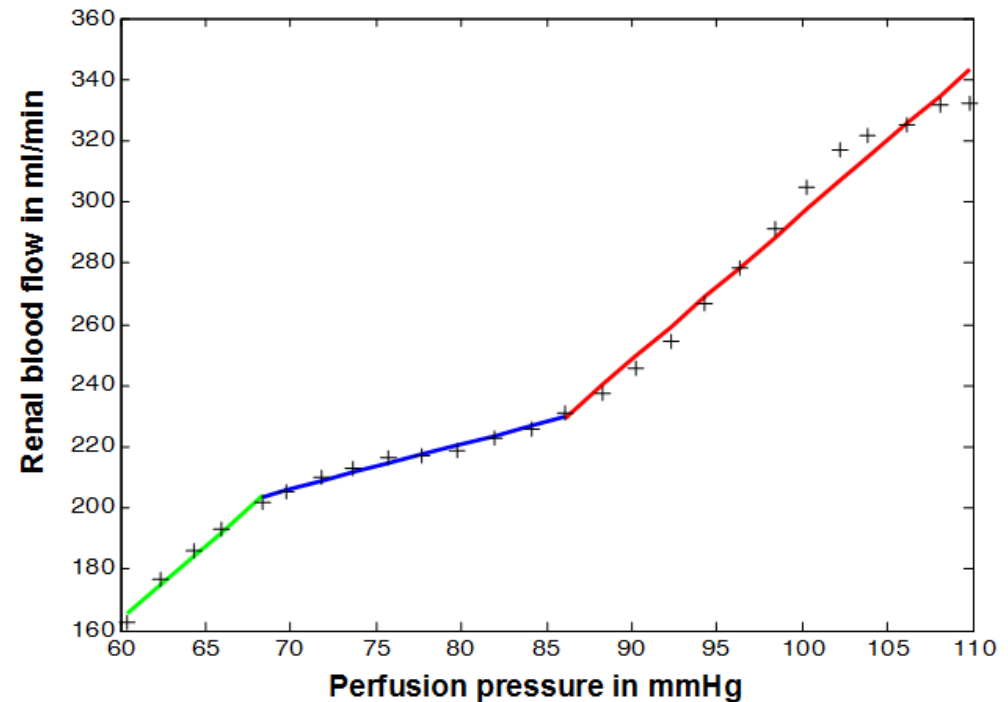
## Analysis of renal pressure-flow-relation



## Detection of renal Autoregulation

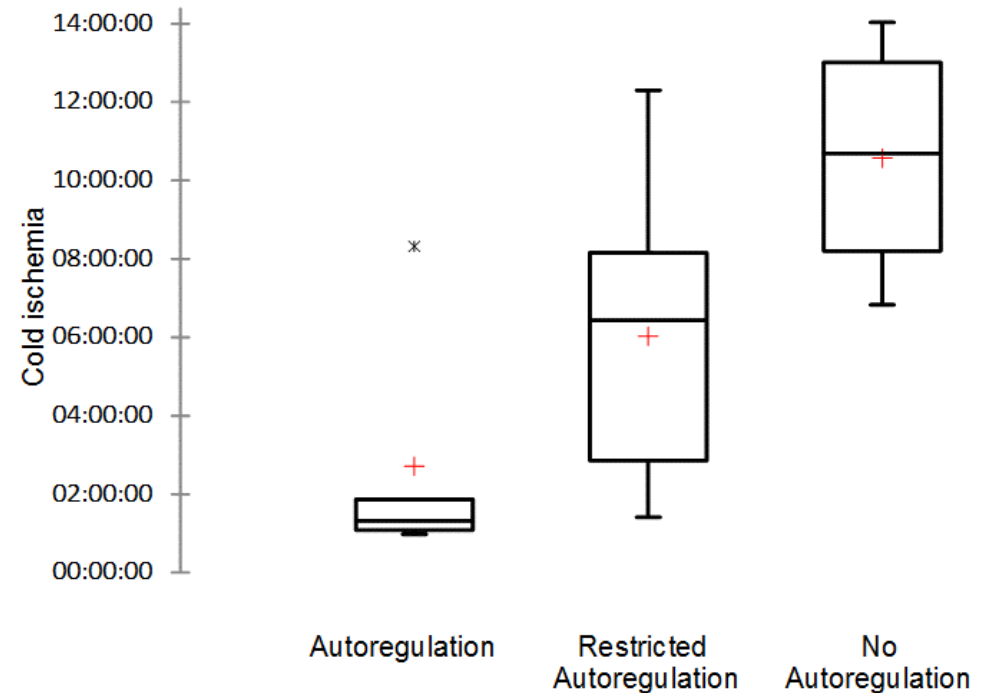
- 3 different kinds of autoregulatory behaviour detected:
  - No autoregulation (n=5)
  - Restricted autoregulation (n=6)
  - Autoregulation (n=7)

**Autoregulation**



## Cold Ischemia Dependency of Renal Autoregulation

- Strong correlation between cold ischemia and renal autoregulation
- The longer cold ischemia is lasting, the less autoregulation is measured



## Summary

- Extracorporeal perfused kidneys do have an autoregulatory behaviour
- There are three different flow characteristics
- Autoregulation characteristic is a potential hemodynamic marker
- Correlation of Autoregulation and other functional parameters of kidney function like Clearance





Thank you!