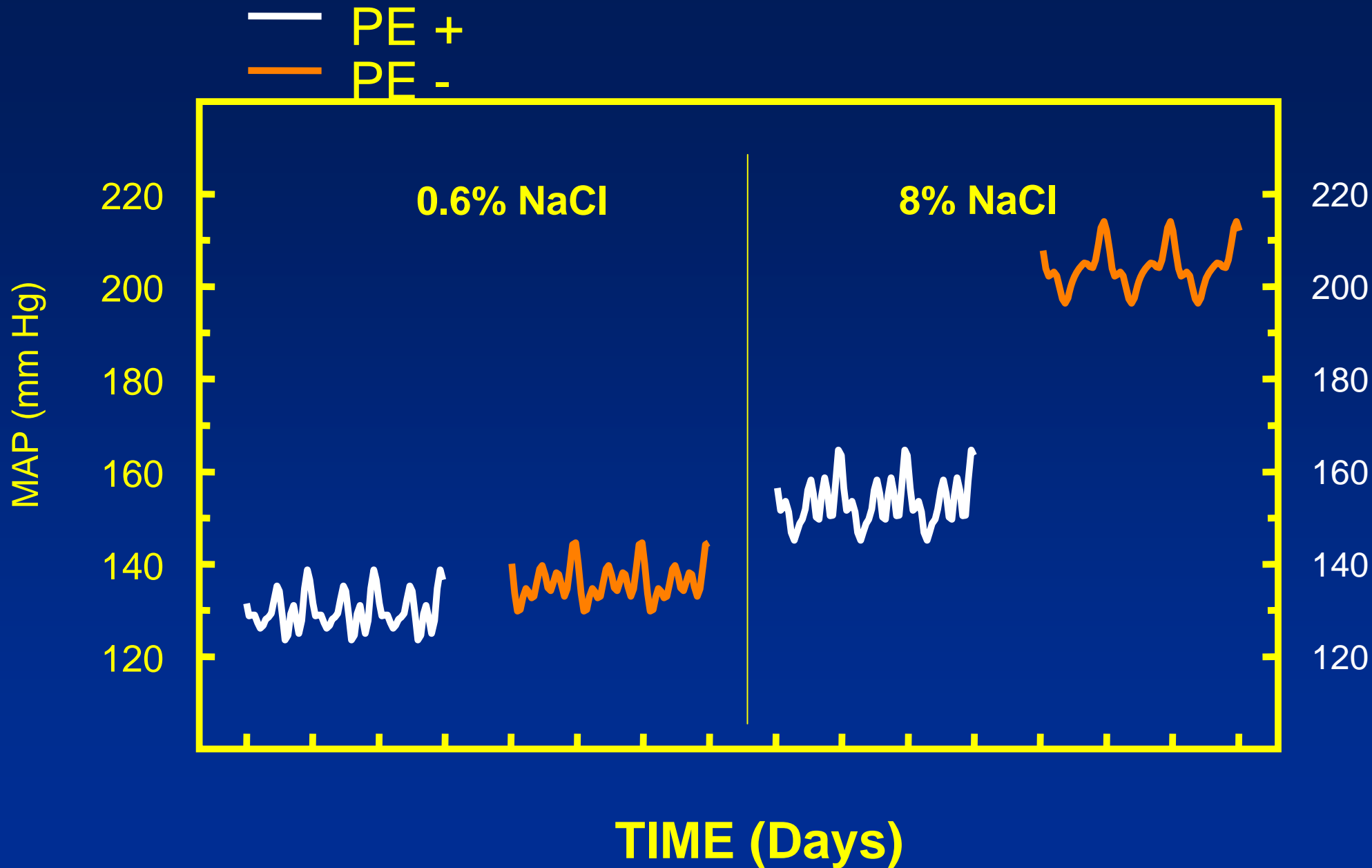
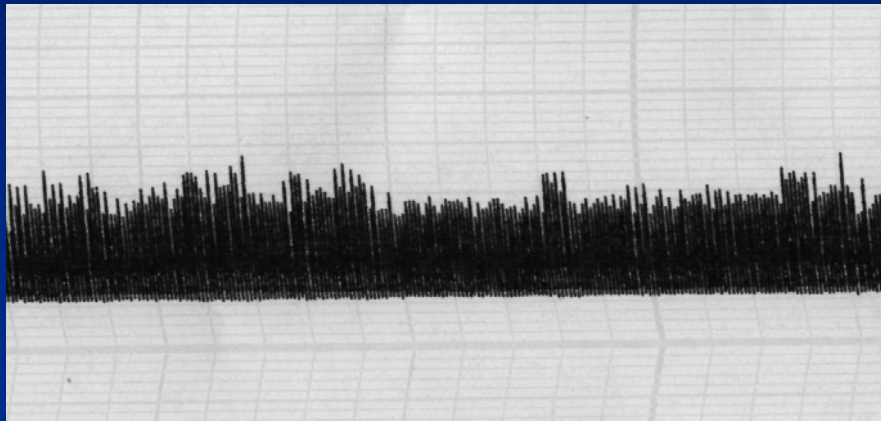


Variation happens: use it to your advantage

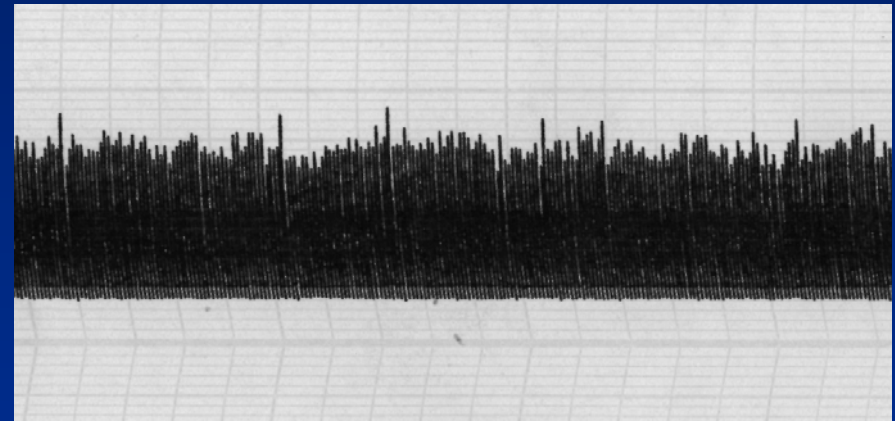
- Rhythms to consider
 - Circadian
 - Seasonal
 - Temperature at point of shipping and receiving
 - Seasonal changes in diets



Circadian rhythm of sympathetic nervous system activity

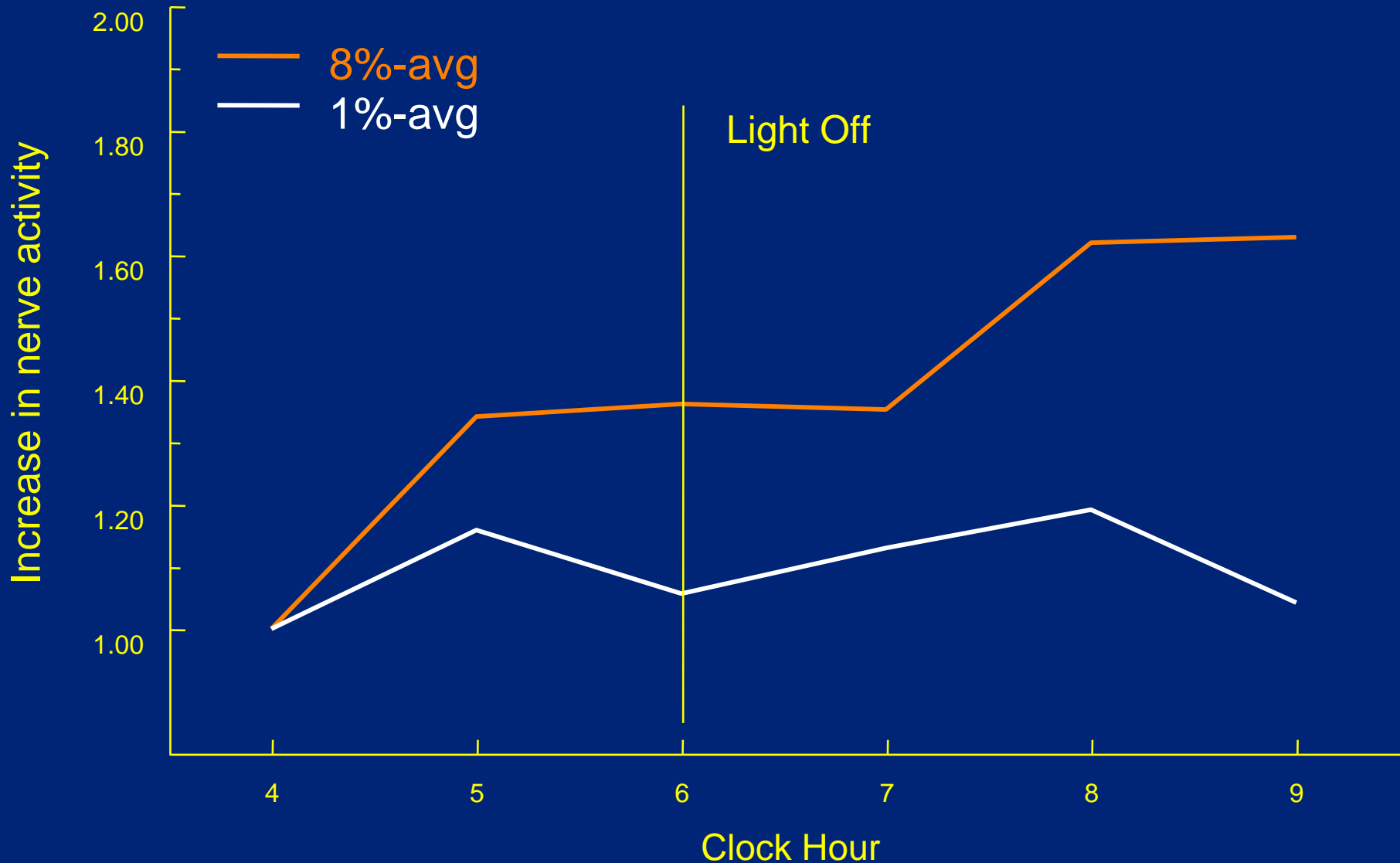


16:00 h



19:00 h

Circadian rhythm of sympathetic nervous system activity at time of awakening



How to sample: the most sophisticated method is not necessarily the best

- Blood: Tail clip; jugular vein puncture; indwelling catheter
- For glucose tolerance test, the “least sophisticated” may be most reliable

Know when to sample and how often

- Rhythms to consider
- Hormonal rhythms
 - NE
 - Vasopressin
 - Insulin
- Activity
- Feeding

- Take 100 μ l blood from a rat every hour; hematocrit will decrease 15-20%

- For urine collection; catheter vs. metabolic cage
- Bladder catheter more precise, but risk of infection and non-patency high
 - Thus for long term studies, metabolic cages may be best
 - But you need to consider the expected group difference, to know if your method can resolve it

Time frame of interest

- Will an acute experiment provide data you need
- Is the expected event regulated at the gene or protein level?
- Can you average over hours/days/weeks, i.e., how transient are the events of interest