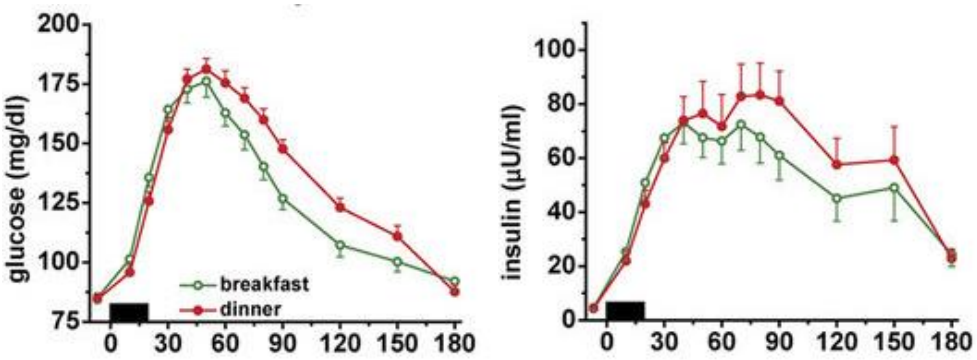
Introductory and extension resources – Circadian rhythms

Exercise

Below is a data analysis and interpretation exercise on the topic; we will be discussing it during the session, but even better if you have time to have a look and note down your thoughts in advance

The graphs below come from a study[1] in which blood glucose (left graph) and insulin levels (right graph) of healthy individuals were measured after identical meals were eaten at breakfast time and at dinner time. On the x-axis, time is in minutes; the black bar represents the 20-min test meal; the data is average of 8 individuals.



Interpret the graph and answer the following questions. For questions 1 and 4, it may be helpful to use the internet or a textbook.

1. What is insulin and what does it do?
2. What is happening with blood glucose and insulin after a meal?
3. What similarities and differences between breakfast and dinner are observed?
4. Why are blood glucose level important? What diseases is it linked to?

[1]Morris, C., Yang, J., Garcia, J., Myers, S., Bozzi, I., Wang, W., Buxton, O., Shea, S. and Scheer, F., 2015. Endogenous circadian system and circadian misalignment impact glucose tolerance via separate mechanisms in humans. *Proceedings of the National Academy of Sciences* 112, E2225-E2234.