Modeling of the circadian regulation of downstream physiology in plants

Alexandra Pokhilko

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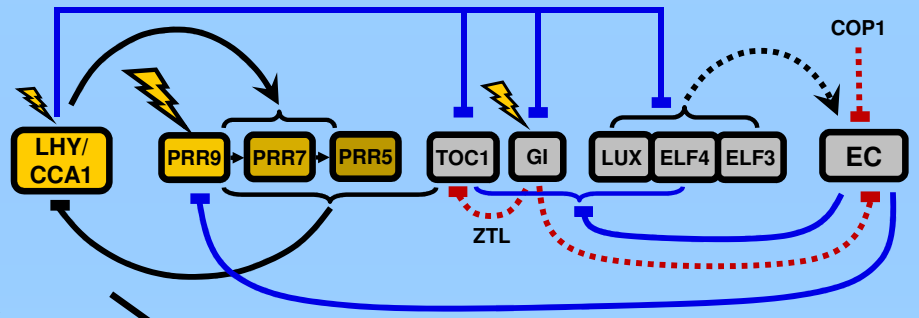
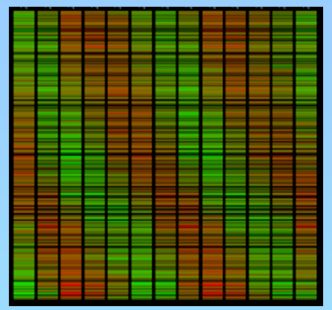


Pokhilko et al. Mol.Syst.Biol. 2012



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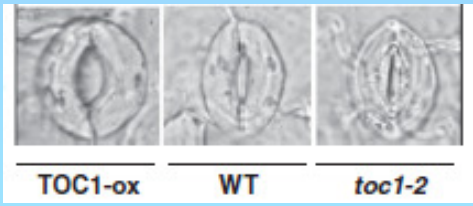
Diurnal changes in downstream processes

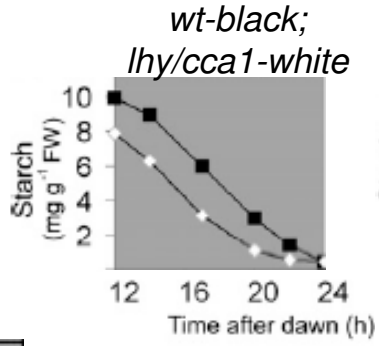


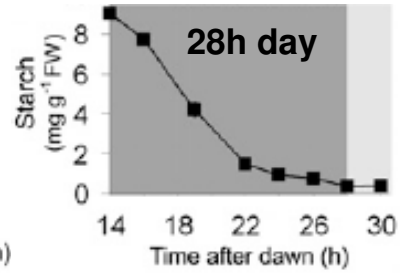
Legnaioli EMBO J 2009

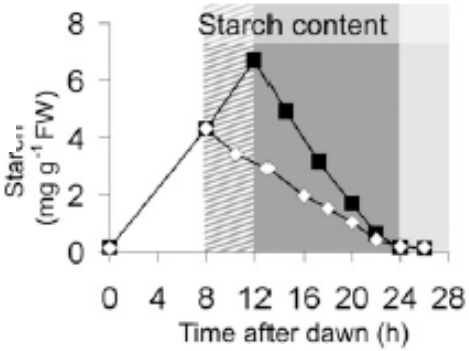
Diurnal changes in carbon metabolism are regulated by the clock

Starch is accumulated during the day and consumed at night is such a way that starvation is avoided

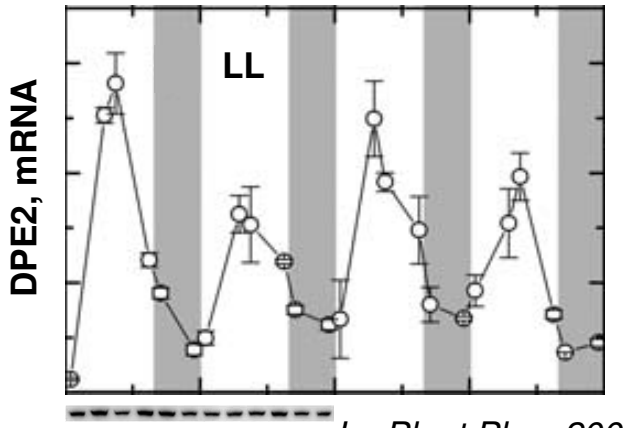
Clock is necessary for normal starch kinetics







Graf PNAS 2010

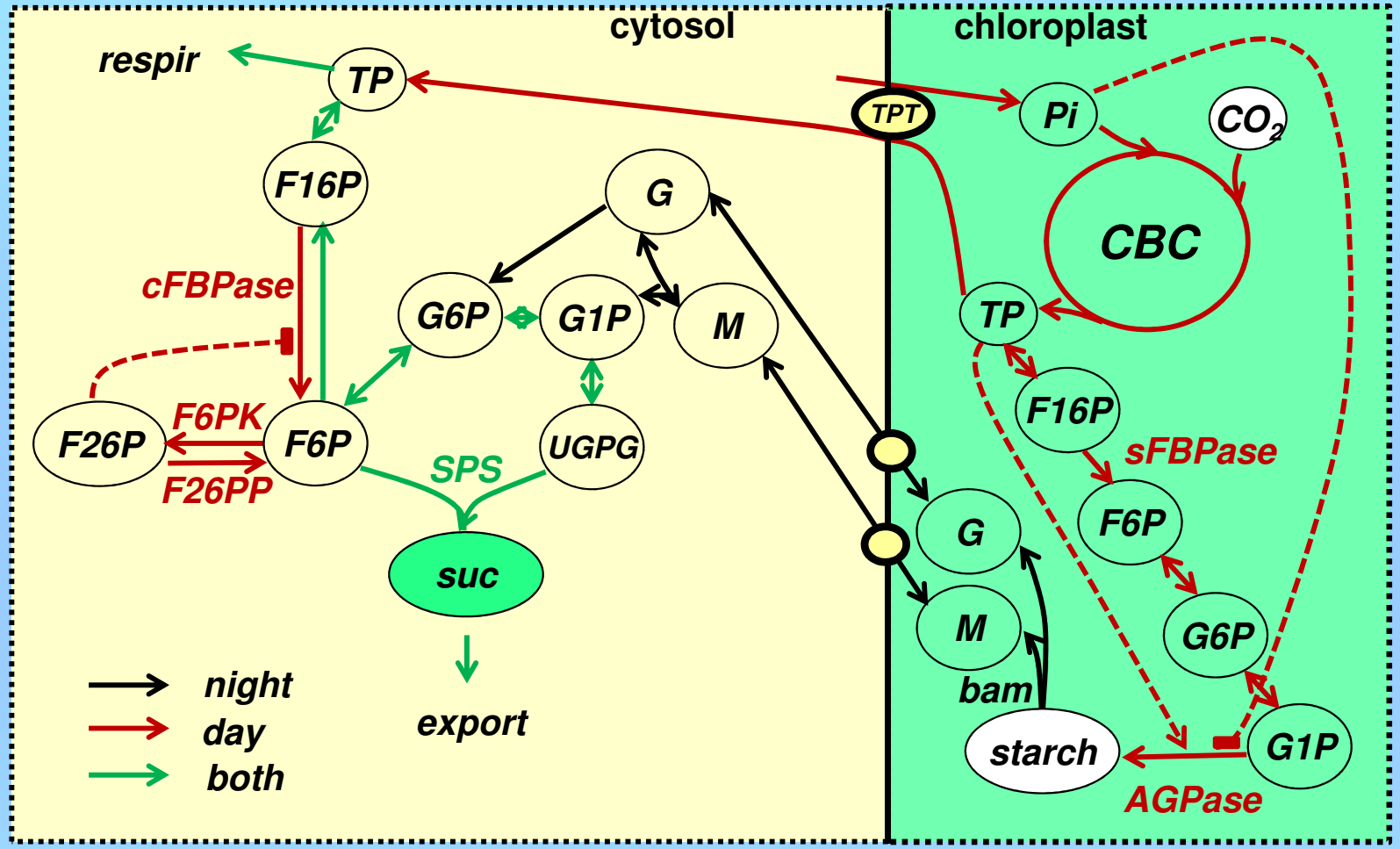


Lu Plant Phys 2005

Transcripts of many enzymes are regulated by the clock, but protein abundance does not

Enzyme activities – clock target?

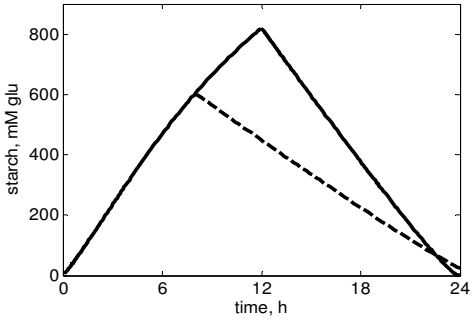
Modelling of diurnal kinetics of carbon metabolism

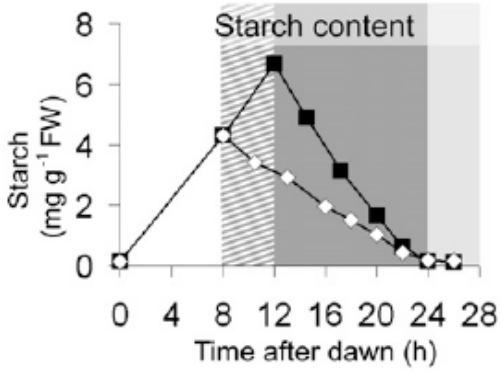


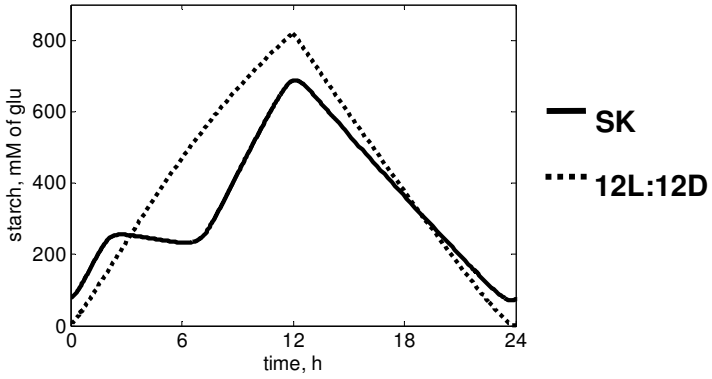
Partitioning of C between starch and sucrose during L/D in mature leaves

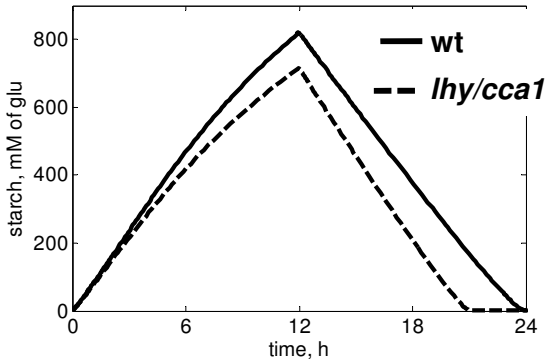
Regulation of starch timecourse

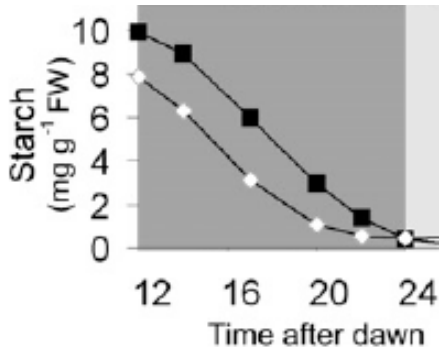
Predicted properties of the unknown regulators of starch synthesis and degradation?

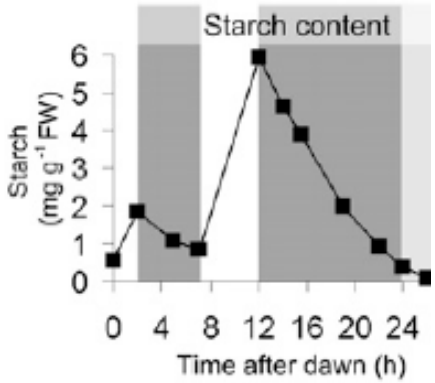












Acknowledgements

University of Edinburgh:
Daniel Seaton
Andrew Millar

University of Aberdeen:
Oliver Ebenhoeh

TiMet

http://timing-metabolism.eu/

Funding: BBSRC, EU