Helping vertical farming stack up

Supervisory team:
Main supervisor: Dr Antony Dodd (University of Bristol)
Second supervisor: Prof Keara Franklin (University of Bristol)
Non-academic supervisor: Mr Jack Farmer (LettUs Grow)
Dr Helen Harper (University of Bristol)

Collaborators: Prof Hirokazu Fukuda (Osaka Prefectural University)

Host institution: University of Bristol
CASE partner: LettUs Grow

Project description:
Circadian rhythms in plants influence a variety of traits that are crucial for optimum crop performance. Circadian rhythms regulate traits such as photosynthesis, biomass accumulation, seed production, water use, starch accumulation, and the season of flowering. Circadian rhythms are also important for the performance of crops growing in vertical agriculture, which is the cultivation of crops in stacked systems that are often indoors, highly controlled and within urban areas. This project will combine the expertise of Antony Dodd and Kerry Franklin in circadian rhythms and photobiology with that of Bristol-based vertical agricultural engineering company LettUs Grow in order to enhance the productivity of plant factories. By combining model-system based fundamental science with studies using aeroponic technology and species relevant to vertical agriculture, the project will develop approaches to optimize the efficiency and profitability of plant factories. The research will involve training in a variety of plant physiology and molecular biology techniques such as qRT-PCR, general molecular biology approaches, bioluminescence imaging and modulated chlorophyll fluorescence, along with advanced approaches to data processing. This PhD will also provide valuable experience of the bidirectional interactions between science and industry.