



**BBSRC iCASE Studentship**  
**Royal Holloway University of London**  
**Academic Supervisors: Prof Paul Fraser**  
**and Dr Genny Enfissi**



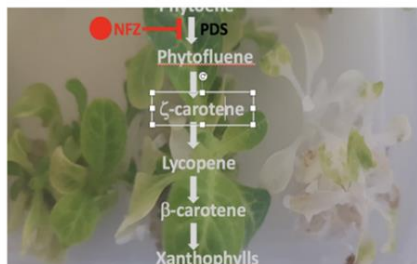
**CONTACT US**

Don't hesitate to contact the programme if you have any questions about applying or if you are interested in exploring ways you can engage with LIDO and our students

**GET IN TOUCH**

THE DEVELOPMENT OF TOOLS AND RESOURCES FOR  
THE IDENTIFICATION OF INHIBITORS OF PIGMENT  
BIOSYNTHETIC PATHWAYS IN THE CHLOROPLAST

**Closing date 8<sup>th</sup> August  
2021**



The global population is projected to increase by 30% to 9.2 billion in 2050. In order to feed this population a 70% increase in food production is required. This increased production must occur with less land availability, less water, less energy input, fertilizers and chemicals. Although environmental concerns surround the use of herbicides and there are moves towards the use of biologicals, herbicides will remain an essential component of integrated pesticide management practices; if food production is to meet demand. No new herbicides have been commercialised with a novel mode of action for over 30 years now. The carotenogenic enzyme phytoene desaturase is responsible for the desaturation of 15-*cis* phytoene to *cis*-ζ-carotene via phytofluene, its the predominant target for bleaching herbicides. The proposed studentship programme will develop enabling technologies/procedures to ensure the identification of carotenoid biosynthesis inhibitors, while confirming and characterising inhibition at the enzyme level. This academic/Syngenta alliance will establish a pipeline of procedures for the unambiguous identification of inhibitors affecting the carotenoid biosynthetic pathway components. To achieve this goal: Robust HPLC/UPLC methodologies enabling, the differentiation of inhibitors affecting carotenoid formation from other pathways leading to bleaching will be established and *in vitro* characterisation of recombinant phytoene desaturase enzymes for different species.

Prof Fraser's group well equipped and funded with dedicated analytical apparatus, plant growth facilities include glasshouses, controlled tissue culture room, chambers and polytunnels and access to state of the art analytical complementary MS platforms; 2x LC-accurate mass Q-TOF-MS/MS (Agilent IM-6560, Agilent iFunnel 6550), serving both metabolomic and proteomic applications and LC-QQQ-MS (Agilent 6470).

Dr Christian Noble will be the industrial supervisor for Syngenta, the Industrial partner. Syngenta is one of the world's leading Agri-businesses with a history of commercialising new crop protection and seed products.

Application can be made by sending a CV containing the contact details of two referees directly to Prof Fraser, E-Mail [p.fraser@rhul.ac.uk](mailto:p.fraser@rhul.ac.uk) or telephone 01784 443555 or 01784 443894. Alternative through the LIDO website ([www.lido-dtp.ac.uk/apply/apply-icase-studentship/development-tools-and-resources-identification-inhibitors-pigment](http://www.lido-dtp.ac.uk/apply/apply-icase-studentship/development-tools-and-resources-identification-inhibitors-pigment)). The deadline will be the 8<sup>th</sup> August 2021 (17.00 hours) however if a suitable candidate is found then the position will be closed earlier.