PIPS Advert 2025

*Organisations Interested in hosting an EASTBIO-funded PhD student for a 3-month placement, are asked to fill in this form and send it to* [*placements@eastscotbiodtp.ac.uk*](mailto:placements@eastscotbiodtp.ac.uk)*. The EASTBIO team will advertise the internship opportunity directly to funded students who are between year 1 and 3 of their PhD study. Please make sure you visit our webpage* [*http://www.eastscotbiodtp.ac.uk/information-organisations*](http://www.eastscotbiodtp.ac.uk/information-organisations)*, or contact the EASTBIO DTP Manager at* [*Maria.Filippakopoulou@ed.ac.uk*](mailto:Maria.Filippakopoulou@ed.ac.uk) *for further information.*

*EASTBIO student interested in exploring this PIPS opportunity further, please follow the instructions within the posting and, if contacting the organisation, copy in* [*placements@eastscotbiodtp.ac.uk*](mailto:placements@eastscotbiodtp.ac.uk) *to keep the EASTBIO team informed of your application.*

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| Host Organisation Details | | | |
| Host Organisation Name | Rothamsted Research | | |
| Host Organisation Sector Type  Please select from list in [Appendix](#Appendix) | * Academia * Agriculture, Livestock breeding & Fishing (including production, animal welfare) * Science & Research | | |
| Please write a brief, plain description of what your organisation does (max 200 words) | Established in 1843, Rothamsted Research (RRes) is one of the UK's leading Research Institutes delivering world-class agricultural science. Farming has not always been blameless with regards biodiversity loss, pollution or carbon emissions. But RRes is working to help put that right by finding new ways to grow food in harmony with the environment, for example by tackling pests and diseases without the use of pesticides; by keeping yields up without the use of man-made fertilisers; and by recruiting allies, from trees to insects and microbes, to improve the ecology of our farming system. Healthier, more nutritious food crops and food security have also long been amongst RRes` key goals. This includes finding ways to increase beneficial components, such as high-fibre bread, or taking something harmful out, like removing acrylamide from wheat. Sometimes it means thinking outside the box, as with producing omega-3 fish oils in a land-loving plant. Regardless, it requires an unrivalled understanding of how nutrients get from the soil, via our food, to us (‘from the earth to the spoon’) and the complex biochemical pathways that underpin the natural world. | | |
| Postal address | West Common, Harpenden, AL5 2JQ | | |
| Website | https://www.rothamsted.ac.uk/ | | |
| Contact person name and role in the organisation  *Please confirm whether they will be different to the Student Mentor/Supervisor (details to be confirmed below).* | Jozsef Vuts, senior research scientist (same as student supervisor) | | |
| Contact person email and phone number | jozsef.vuts@rothamsted.ac.uk | | |
| Will your Organisation provide physical premises external to the University with professional staff who will support the development of an intern’s professional skills appropriate to PhD level?  *Please note that EASTBIO DTP may approve remote or hybrid placements as long as the PIPS project is suitable for this*. | Yes |  |  |
| Any other relevant information, for instance how the project is suited to a remote or hybrid placement: | | |

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| **PIPS Internship Details and Desired Outcomes** | |
| PIPS Project Title | How do insects use the smell of plants as a indicator for soil health? |
| Description of the internship project you are offering, which will be shared directly with eligible PhD students (max 500 words). | This project addresses one of Rothamsted`s key missions of understanding the biology of crop / pest interactions and using this knowledge to reduce pest pressures on crops.  Pest insects use their sense of smell (olfaction) to locate host plants for feeding and egg-laying through the detection of plant bouquets (odours) consisting of volatile organic compounds (VOCs). Soil health, i.e. the soil nutritional status of crop plants, can affect crop performance, but the impact of soil health on insect host location remains unclear.  In this multi-disciplinary project, the aim is to understand how soil nutritional status affects VOC bouquet production in plants, and how differences in VOC production affect insect host location. The project will test the following hypotheses:   * Soil nutritional composition is linked to plant health and distinct plant VOC profiles * Insect pests assess plant nutritional status using plant VOCs.   The plant-insect model system to be studied will comprise agriculturally relevant cereal varieties and cereal aphids, the latter being known as major transmitters of plant viruses that affect UK cereal production.  The successful candidate will culture plants in soil collected from field sites with known nutrient composition, as well as plants grown in zero-nutrient growth medium and sequentially add selected macro- and micronutrients. Behavioural studies will assess the ability of aphids to differentiate between host plants of distinct nutritional composition. Aphid behaviour will be studied using olfactometry, where the odour of plants growing under different nutrient regimes will be offered to the responding insects, which make a choice. Headspace extracts from the most attractive treatments will be collected and analysed for their volatile composition using gas chromatography (GC). Electrophysiology measurements using the aphid antenna as biosensor (GC-EAG) will locate bioactive components in headspace extracts, which will be identified by coupled GC-mass spectrometry (GC-MS).  This project will provide a student with an opportunity to work as part of 2 internationally acclaimed research groups (Chemical Ecology, Molecular Microbiology) at Rothamsted Research. The project will develop skills in insect behaviour and physiology, analytical chemistry and soil science to help agriculture confront the pest- and nutrient-management challenges necessary for sustainable food production. Full training, support and supervision will be given for the different tasks. By joining this team, the student will develop their skills around hypothesis formulation and testing, critical thinking, experimental design, working in a laboratory environment and dissemination of science to the academic community. They will also have a unique chance to influence future fertiliser optimisation practices to reduce the negative impact of pests on crop health, including supporting regenerative agricultural systems. |
| Option for inviting interested students to apply directly by CV to generate a tailored internship project with your Organisation | Yes |
| Geographic location of this internship?  AND/OR  Option for a remote or hybrid placement, and a rationale for a virtual internship (max 150 words) | Rothamsted Research, Harpenden, Herts, UK |
| What range of professionals will the PhD student work with during this internship? | Scientific technicians, PhD students, post-doctoral research assistants, research scientists, principal investigators |
| Based on the project’s objectives, what specific results do you want the PhD intern to achieve? | Insect behaviour data in response to volatiles from wheat plants grown under different soil nutrient regimes.  Depending on time, it would be desirable to also have:   * analytical chemistry dataset of wheat volatile composition (GC/GC-MS) * insect electrophysiology dataset (GC-EAG) |
| How do these outcomes fit with your wider business objectives? | Results will inform future fertiliser practices to reduce the negative impact of pest insects on crop health, including under reduced input and regenerative agricultural systems. |

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| **PIPS Internship Timing / Duration / Management** | | | | |
| Timing of the Internship  *If provisional dates at this stage, please mark on the form* | PIPS start date (01/09/25) | | PIPS end date (30/11/25) | |
| Format of the Internship, e.g.  3-month block or a number of shorter blocks | 3-month block | | | |
| Internship anticipated time of work (e.g. full-time, 35 hours/week; part-time option, etc.) | full-time, 35 hours/week | | | |
| Name of person who will act as the PhD student supervisor/mentor (line manager) during this internship (if different to the contact mentioned above) | Jozsef Vuts | | | |
| Supervisor position in the host organisation | Senior research scientist | | | |
| Supervisor Contact email and phone number | jozsef.vuts@rothamsted.ac.uk | | | |
| Is the Organisation willing to make a contribution towards intern’s travel or accommodation costs?  *Please note that the student will be in receipt of their PhD stipend during the placement and they are also able to apply to EASTBIO for limited funds towards their travel and/or accommodation. If the student lives more than 50 miles from the Organisation’s location, we encourage a contribution from the PIPS host towards their travel or accommodation costs; this is optional. The only financial expectation from the PIPS host is to cover all costs associated with the PIPS project (consumables).* |  | No | |  |
| Any other information relevant to the intern’s financial support from your organisation? | All costs associated with research consumables will be covered by Rothamsted. | | | |

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| **Person Specification**  *Please give details of what is required for this internship – skills, experiences and personal qualities, whether essential or desirable.* | |
| What skills does the PhD student need to complete this internship project? | * general laboratory experience * insect handling * plant handling * analytical chemistry (GC, GC-MS, GC-EAG) experience is not essential, but desirable |
| What soft attributes do they need to fit in/contribute? | * excellent attention to detail * thorough experimental planning * availability for regular catchup with supervisor * good team player |

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| **Application Details** | | |
| I wish this internship to be advertised open ended to PhD students? | Yes |  |
| If ‘No’, please specify a closing date for receiving CVs from interested students? |  | |
| Name and contact details for PhD students to submit their CV applications to | Jozsef Vuts, jozsef.vuts@rothamsted.ac.uk | |
| Would you expect further support from EASTBIO regarding this advertised opportunity? | | |
| Any other relevant information: | | |
| Please provide, below, any further comments about his opportunity not covered in the sections above. | | |

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| **Completed & Signed by:** | |
| PIPS Host Organisation Name & Date |  |
| Date Advert submitted to EASTBIO |  |
| Date Advert circulated by EASTBIO |  |

*Thank you for your support of the UKRI BBSRC PIPS Scheme.*

**APPENDIX - PIPS Organisations - Sector List**

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| Academia | Fire, Police & Security |
| Advertising, Marketing & Public Relations | Food & Beverage |
| Aerospace & Defence | Government & Civil Service (including public service administration) |
| Agriculture, Livestock breeding & Fishing (including production, animal welfare) | Health & Social Care |
| Biotechnology, Medical & Pharmaceuticals | Hospitality, Leisure, Travel, Tourism and Sports |
| Business and Management (including business intelligence & market research) | IT & Telecommunications (Hardware & Software) |
| Chemicals | Law (including legal services) |
| Clothing, Footwear & Fashion | Logistics, Transport, Purchasing & Supply |
| Consultancy | Media, Communication, Journalism & Publishing |
| Charities & Voluntary work (non-profit / third sector) | Metals & Construction Materials |
| Creative arts, Design and Culture | Product Manufacturing |
| Education & Training (including teaching) | Real Estate & Renting |
| Energy & Utilities (including renewable energy and energy conservation) | Recruitment & Human Resources |
| Engineering (civil and mechanical) | Retail, Buying & Merchandising |
| Environment (including recycling, environmental services, conservationism and industries) | Science & Research |
| Financial services (including accounting, auditing & banking) | Other |