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ABOUT ACCE DTP

ACCE (Adapting to the Challenges of a Changing Environment) is a partnership between the Universities of Liverpool, Sheffield and York, the NERC’s Centre for Ecology and Hydrology (CEH) and the Natural History Museum (NHM), providing doctoral training in the biological components of the natural environment and related disciplines.

Our aim is to develop motivated, confident and multi-skilled PhD students, undertaking cutting edge research and tackling environmental science questions of global significance.

ACCE has a clear emphasis on the biological component of environmental research. This biological core, combined with the international standing of the partners in the biological and related fields, makes ACCE an ideal choice if you wish to undertake a PhD in biological research and related disciplines.

By including related disciplines beyond the biological sciences, ACCE is also able to provide a multidisciplinary environment to the benefit of our students, bringing together biologists, mathematicians, engineers, geoscientists, analytical chemists, archaeologists and policy experts.

Our PhD students will not only graduate as great scientists but will also graduate with skills much sought after in today's job market.

RESEARCH FOCI

Our world-class research activities are described within a structure defined by four foci. These foci link to NERC’s emerging research priorities and “Grand Challenges”. We have grouped our research strengths into these foci because they are central to future science innovation, providing novel topics for training early career researchers, as well as delivering essential skills and employability for the next generation of environmental scientists.

The foci are:

1. Securing ecosystems and their natural capital
2. Predicting and mitigating impacts of environmental change
3. Understanding the dynamics of biodiversity
4. Investigating mechanisms of evolutionary change: genes to communities

SECURING ECOSYSTEMS AND THEIR NATURAL CAPITAL

An area of strength across all ACCE institutions is our research into the fundamental understanding of ecosystem services and resources and how their long-term future can be secured.

Our work includes: (i) sustainability of natural and agricultural ecosystems and their service provision, (ii) linkages between biodiversity and ecosystem function, (iii) quantification of changes in, and threats to, ecosystem services in soils, freshwater, vegetation and marine ecosystems, (iv) securing production of agricultural crops through the management of plant pests, soil fertility and plant breeding, (v) sustainable water management, groundwater protection and restoration, and (vi) policy and management guidance.

Our work also aims to develop conceptual frameworks for the practical guidance needed for protection and restoration of multiple ecosystem services at the landscape scale.
PREDICTING AND MITIGATING IMPACTS OF ENVIRONMENTAL CHANGE

Our scientists study the impact of anthropogenic environmental change on individuals, populations, communities and ecosystems, with approaches ranging from physiological processes within leaves, through changes in species richness and distribution, to global carbon dynamics.

We are concerned with the impacts of a range of interacting global change drivers from global warming, precipitation change, extreme climatic events, temporal dynamics and seasonality, as well as non-climate changes such as land-use change and pollution of terrestrial, freshwater and marine ecosystems. Such initiatives are complemented by long-term research providing improved simulation and analyses of the current and future global carbon cycle and climate by developing comprehensive modelling tools that integrate biogeochemical, hydrological and vegetation processes.

Internationally-renowned research by ACCE institutes has contributed to the Intergovernmental Panel on Climate Change, including authorship of chapters, and other international scientific consensus reports.

UNDERSTANDING THE DYNAMICS OF BIODIVERSITY

Global biodiversity underpins ecosystem functioning but is in severe decline in response to the major drivers of invasive species, climate change and habitat degradation. ACCE research is at the forefront of addressing these key issues by understanding the dynamics of single-species, interacting species and communities using theoretical models, lab populations, experimental microcosms and real-world environments.

We place a strong emphasis on quantitative, analytical and computational techniques, such as epidemiological and metapopulation dynamic modelling, bioinformatics, and a range of ’omics technologies. For example, environmental microbiologists within ACCE use molecular techniques such as metagenomic sequencing technology to study bacteriophage and microbial community ecology across natural and managed environments. ACCE behavioural ecologists use proteomics and structural biology to understand chemical communication between mammals. The unique long-term species distribution and abundance databases at CEH underpin our investigations of the spatiotemporal drivers of biodiversity changes.

INVESTIGATING MECHANISMS OF EVOLUTIONARY CHANGE: GENES TO COMMUNITIES

All biological processes need to be understood in the context of evolution. ACCE researchers are international leaders in the field of evolutionary biology, investigating fundamental drivers of gene flow among populations, evolutionary responses of species to rapid environmental change, and the genetic basis of competition, co-evolution and cooperation between species and organisms.
We also use multi-disciplinary approaches to study evolution, for example, through pioneering systems biology approaches to understanding the mechanisms of adaptation of species in polluted environments. Our research is supported by state-of-the-art facilities, for instance in genomics (Centre for Genomic Research, Liverpool), molecular genetics (NERC Biomolecular Analysis Facility, Sheffield), and ancient DNA techniques (BioArch, York).

ACCE MANAGEMENT

Professor Andy Fenton (University of Liverpool) is the ACCE Director, and is supported by Carolyn O’Leary as the ACCE DTP Manager. The Management Board oversees management of ACCE, and consists of representatives from the three ACCE partner universities, CEH and NHM, and student representatives. This board is advised by an external Advisory Board (AB) and a Student Committee (SC).

RECRUITMENT PROCESS

APPLICATION PROCEDURE

Our PhD programme in ACCE DTP offers projects aligned with the grand challenges in environmental research under the four foci.

Each year we offer a number of competition funded PhD projects with lead supervisors based at the ACCE DTP partner universities, CEH and NHM. Applicants should identify a research project from those advertised. Applications for more than one ACCE project are possible. If shortlisted for more than one PhD project, ACCE may require the applicant to choose which PhD project they wish to be interviewed for.

Applications for all ACCE projects should be made online through the Universities of Liverpool, Sheffield or York admission systems. More information is available on the DTP website, details of which are to follow.

Applicants should look at the application guidelines for each University or Department hosting the PhD project as they may be different.

ACCE studentships are available to UK and EU applicants. Residency rules apply. Because of our flexible funding sources, EU applicants can be eligible for full awards covering stipend, tuition fees and Research Training Support Grant (RTSG), whether they are UK residents or not.

SELECTION CRITERIA

Students will be assessed by application and by interview performance.

Candidates are usually expected to be predicted or have achieved a first-class or strong upper second-class undergraduate degree (or equivalent international qualification) in environmental sciences, archaeology, ecology, biology, botany, chemistry, computing, geography, geology, mathematics, meteorology, physics, statistics, zoology and other related subjects.

Short-listed applicants are invited for an interview. The interview panel consists of three core members (one from each ACCE partner university) who sit on all three Universities’ interview panels, together with other members with project specific expertise.

ACCE BESPOKE TRAINING PROGRAMME

Some of the highlights of our training approach include:

- Whole-cohort training activities where ACCE students from all institutes come together;
- Cross-institutional postgraduate activities and committees, peer-to-peer training,
and online resources that foster an active postgraduate community;

- Training within a coherent multidisciplinary environment, such that students are exposed to disciplines in the environmental and biology subject areas with relevant and related fields in mathematics, engineering, geosciences, analytical chemistry, archaeology and policy;
- Opportunities for engagement with industry e.g. providing placements support;
- Bespoke and flexible training combined with compulsory activities to ensure each student has the most appropriate training according to their individual needs;
- Enhanced training opportunities in qualitative skills, ‘omics and field methods as well as enhanced professional skills such as policy, careers, and science media.

Our training and PhD research is well placed to address the environmental science skills gaps identified in NERC's skills review, and we have large numbers of staff with expertise in all of the ‘15 most wanted skills’ defined by NERC.

ACCE COMPULSORY CORE TRAINING EVENTS

These are compulsory whole cohort training events hosted by ACCE academic partners.

ACCE DTP will hold the training events in a different month each year (between March and June), so the students missing the one for their relevant cohort (e.g. due to field work commitments) will be able to attend the following year.

OTHER REQUIRED TRAINING ACTIVITIES

Training needs analysis is required for all ACCE students, but is provided by the hosting department and University.

ADVANCED STATISTICAL METHODS COURSE

ACCE expects that all students will undertake a statistical methods course. These are run by each host institution for their students.

ADDITIONAL TRAINING OPTIONS

In addition to the compulsory training, there are many opportunities available to ACCE students to enhance their broader skills and employability. For example:

CAREER DEVELOPMENT

- Career management skills e.g. networking, career exploration, self-awareness, career decisions, proactive skills development, etc.;
- Teaching qualifications and workshops e.g. undertake university teaching workshops
or external opportunities such as the Brilliant Club;
- Business and management skills - training, experience and qualifications on various aspects of HR and leadership and development (L&D) - leadership, management, business skills and personal effectiveness. This training could include careers development through professional experience – e.g. internships/placements; volunteer work; attendance at competitions e.g. Young Entrepreneurs Scheme, Vitae GRAD schools, or Leadership in Action;
- Innovation and commercialisation - this could include training or activities which could help translate research ideas into innovative solutions and start up a business venture.

MEDIA AND COMMUNICATION

- Events management, media photography, music industries, new social media, blogging, public relations, television production, radio, etc.;
- Science and policy, e.g. participation in debates, organising talks, blogging, writing public articles, etc.;
- Public engagement of science - ways to engage the public with research e.g. Science Week; Science festivals e.g. Cheltenham science festival or Royal Society Science Exhibition;
- Outreach activities – e.g. STEM Ambassadors or Scouse Science Alliance.

STUDENT-LED ACTIVITIES

ACCE STUDENTS AWAY DAY
The Away Days will be organised and led by ACCE students. Students will select the location and activities/topics. ACCE will facilitate these.

ACCE ‘COFFEE & CAREERS’ SERIES
ACCE students convene a series of informal events, hosting external speakers from a different career area to talk about their career path, and giving students an insider’s view of their job. Potential speakers will be drawn from our panel of external end-user partners, past ACCE students, and elsewhere. Students will be responsible for all aspects of the organisation of these events, including identifying and inviting speakers.

STUDENTS’ INVOLVEMENT AND REPRESENTATION
Students can get involved by being elected as members of the ACCE Student Committee (SC). The SC will meet at least twice per year and a minimum of five student representatives (at least one from each partner institution) will sit on the ACCE Management Board.

ACCE SUPPORT SCHEMES

ACCE PLACEMENT SUPPORT
Each student will be given an opportunity to undertake a placement for one to (max) three months during the time of their studentship. Placements through ‘ACCE placement support’ will be awarded competitively to students who can demonstrate that the experience will benefit them professionally. Placement should be a training or experiential learning opportunity which offers significant added value to the doctoral programme (it should not be a continuation of their PhD research project). Placements should ideally be discrete projects and they must be well planned and managed. Therefore, students seeking placement support from ACCE DTP should think about which organisations to approach, and also consider:
- Their career aspirations;
- The skills they want to develop;
To formally apply for ‘ACCE placement support’ students will need to fill in an application form. The ACCE Placement support application form, together with guidelines for completion, as well as guidelines to potential placement providers hosting a student through the DTP, are available from the ACCE DTP manager. The ACCE Placement support application will be evaluated by the ACCE Management Board by agreed criteria. Placement opportunities should be mutually beneficial (to the student, the placement provider and to the host University). The following are some of the expected benefits that might accrue from placements facilitated by ACCE:

- Seed new relationships with external partners that might then progress into larger/longer term engagement for the University/academic supervisor and benefit for the partner;
- Improve engagement with the city/region/community;

- Embed the culture of Knowledge Exchange (KE)/engagement with external partners, students and supervisors;
- Improve the students’ employability and, hence, levels of recruitment to the partner organisations;
- Benefit for/impact at the external partner.

ACCE students are eligible to apply for placement support between 12 and 36 months of their PhD studentship. As a condition of receiving ACCE Placement support, students will need to provide a post-placement report. More information is available on the ACCE website (website details to follow).

PHD STIPEND EXTENSION

Students are typically awarded a stipend for 3.5 years in the first instance. They will be given an opportunity to apply for up to 3 months stipend extension by presenting clear plans for paper publication, running potentially high impact but risky experiments, or if severe unforeseen circumstances have disrupted their work. These cases will be evaluated on an individual basis by the ACCE Management Board. Students will need to formally apply for an extension by filling in an application form, available from the ACCE DTP manager.

OTHER SUPPORT SCHEMES

‘LAB BUDDIES’

A ‘lab buddy’ is a PhD student at another ACCE host (not necessarily an ACCE student; though one usually in the lab of the “away from host” second supervisor or assessor) who will act as a contact point for the ACCE student visiting the partner institution, and provide support and local knowledge.

This scheme aims to utilise local knowledge and expertise to help new students, and to facilitate
communication and integration into the research group/projects/community.

**PEER MENTORING**

Each ACCE student will have a PhD mentor assigned. Mentors are more experienced PhD students at the host institute. Mentoring will be organised by the hosting institution.

**ACCE ACTIVITIES RECORD FORM**

ACCE students are required to maintain a register of all the activities undertaken during their studentship.

The ACCE Activities Record Form is an online form that allows students to maintain a log of all training and other professional activities undertaken during their ACCE PhD studentship. The form needs to be completed once per year (usually at the end of July).

It will help both the students and ACCE DTP management to:

- Formally record personal development and activities to meet the requirements in the ACCE training programme;
- Create a list of relevant activities for inclusion in a future CV;
- Help ACCE assess the skills gained during the research degree;
- Help plan your further professional development.

Note that this online tool should be used to record all activities within ACCE but will not be a substitute for the formal recording systems at each host institute.

**FUNDING AND COSTS**

ACCE studentship covers standard student stipend (as set by UKRI) and tuition fees paid directly to each relevant university by NERC.

**RESEARCH TRAINING SUPPORT GRANT (RTSG)**

**Eligible costs for the RTSG**

- Standard class rail travel*
- Mileage claimed at local institution rate*
- Economy flights*
- Bus fares*
- Taxis*
- Accommodation at local rates when on PhD business
- Consumables related to the project (incl. software)
- Small portable equipment
- Conference fees and attendance
- Training courses fees and participation charges
- Publishing
- Any research related costs

* When on PhD business (not commuting to work)

**IMPORTANT! Note, that only in exceptional circumstances should a laptop or other computer equipment be bought from the RTSG. The purchase should be justified based on the nature of the research and as being essential for the successful completion of the PhD. A statement of support from the student's supervisor will be required before any purchase of such equipment.**

Each ACCE student will receive an RTSG (Research Training Support Grant), set by the Management Board. The grant is a contribution towards costs incurred in training research students e.g. the provision of consumables, small equipment, travel, accommodation, etc., which can be used by students to attend ACCE training events and annual meetings. Funding towards fieldwork expenses and "exceptional consumables" are
incorporated into the RTSG, and further funding cannot be requested from NERC. The RTSG can be used to fund conference, workshop, short course and other training sessions’ attendance. The RTSG will be provided to the students by the ACCE hosting academic partner.

**ENHANCED MAINTENANCE SCHOLARSHIP FOR PROJECTS WITH A CASE PARTNER**

ACCE is committed to a minimum of 40% of PhD studentships to be CASE studentships. The Cooperative Awards in Science and Engineering (CASE) scheme aims to promote partnerships between Higher Education Institutions (HEIs) and other bodies, which will enhance the training received by the PhD student and will help the student to gain first-hand experience of work outside a purely academic environment. The ACCE DTP provides doctoral students with a first-rate, challenging research training experience, within the context of a mutually beneficial research collaboration between academic and CASE partner organisations in the private, public and civil society sectors.

The CASE studentship will provide an additional supplement to the research grant of the student by a minimum of £1,000 p.a. for a minimum of three years (min £3,000 additional support for three years).

The CASE partner must host the student for between three and eighteen months during their PhD when they will undertake work outside the academic environment. This placement does not need to occur in one single period. CASE partners are expected to meet the extra expenses incurred by the student when visiting and working within their establishment.

**ACCE PARTNER UNIVERSITIES AND DEPARTMENTS**

**THE UNIVERSITY OF LIVERPOOL**
- INSTITUTE OF INTEGRATIVE BIOLOGY
- INSTITUTE OF AGEING AND CHRONIC DISEASE
- INSTITUTE OF INFECTION AND GLOBAL HEALTH
- SCHOOL OF ENVIRONMENTAL SCIENCES

**UNIVERSITY OF SHEFFIELD**
- ANIMAL AND PLANT SCIENCES
- GEOGRAPHY
- MATHEMATICS AND STATISTICS
- ARCHAEOLOGY
- CIVIL & STRUCTURAL ENGINEERING
- BIOENGINEERING

**THE UNIVERSITY OF YORK**
- BIOLOGY
- ENVIRONMENT
- ARCHAEOLOGY
- CHEMISTRY

**CENTRE FOR HYDROLOGY AND ECOLOGY**

**NATURAL HISTORY MUSEUM**
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