



LEAF at Warwick

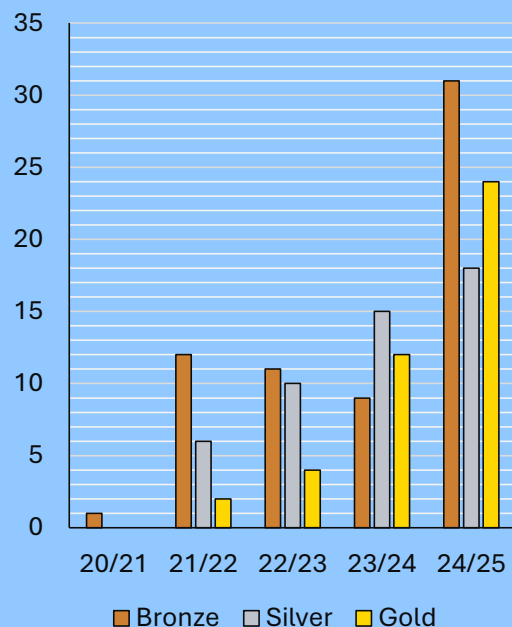
24/25 Impact Report

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Overview

Lab Participation



The Laboratory Efficiency Assessment Framework (LEAF) is administrated by the University College London (UCL). LEAF offers a three-stage self assessment framework that aims to embed efficiency, sustainability and awareness into laboratory workspaces.

Whilst LEAF is most well suited to wet labs (Life Sciences and Chemistry), it can be implemented into any working laboratory space, by laterally applying the principles to other types of laboratory.

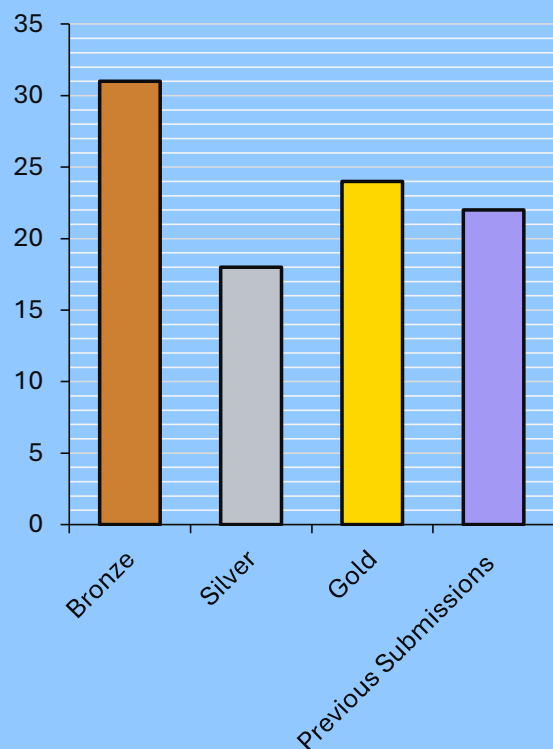
Warwick first implemented LEAF in 20/21. In the following five years, engagement has reached six schools, and ninety-five laboratory spaces.

The Research Technology Platforms embedded LEAF in 22/23 requiring all their spaces to achieve certification.

In 24/25 the first resource was dedicated to LEAF in the School of Life Sciences, with a 0.5 commitment from the school through Lesley Ward (Genomics). Lesley has been involved since the start, and coordinates LEAF within the School of Life Science and Warwick Medical School.

Overview

24/25



LEAF is funded by the Energy and Sustainability Team.

In April 2024, Warwick signed the Concordat for the Environmental Sustainability of Research and Innovation Practice. This agreement requires funding applications to evidence and ensure research and innovation is carried out in an environmentally sustainable way.

Of the recommended frameworks, Warwick participates in LEAF, and this was communicated via Heads of Departments and Research Impact Services to the academic community.

24/25 saw a tripling in lab spaces and working groups signing up to the framework and required an expanded team of auditors. By the end of the 24/25 year, 95 labs were registered with LEAF, and 73 labs had completed the audit process to achieve certification.

LEAF would not have been successful without the volunteer auditors – Nafiz Biswas (Chemistry), Ben Breeze (RTPs), Joanna Drozd (Chemistry), Muriel Erent (WMS), Anish Mistry (Chemistry), Sophie Pain (Engineering), Nicole Pereira (Life Science), Jeanette Selby (Life Sciences), Chris Waldron (RTPs), Lesley Ward (Life Sciences), Cleide Zampronio (RTPs).

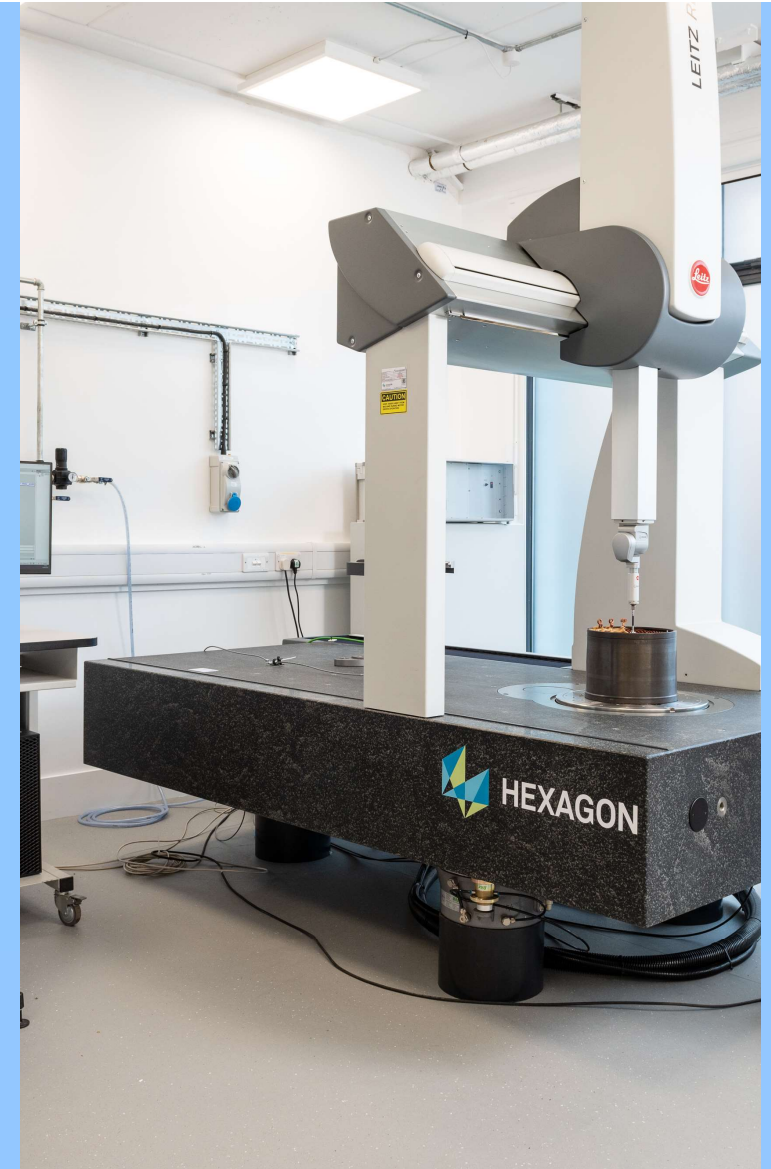
The Framework is administered by Sam Shaw (Sustainability Officer, Estates).



Departmental Summary

24/25

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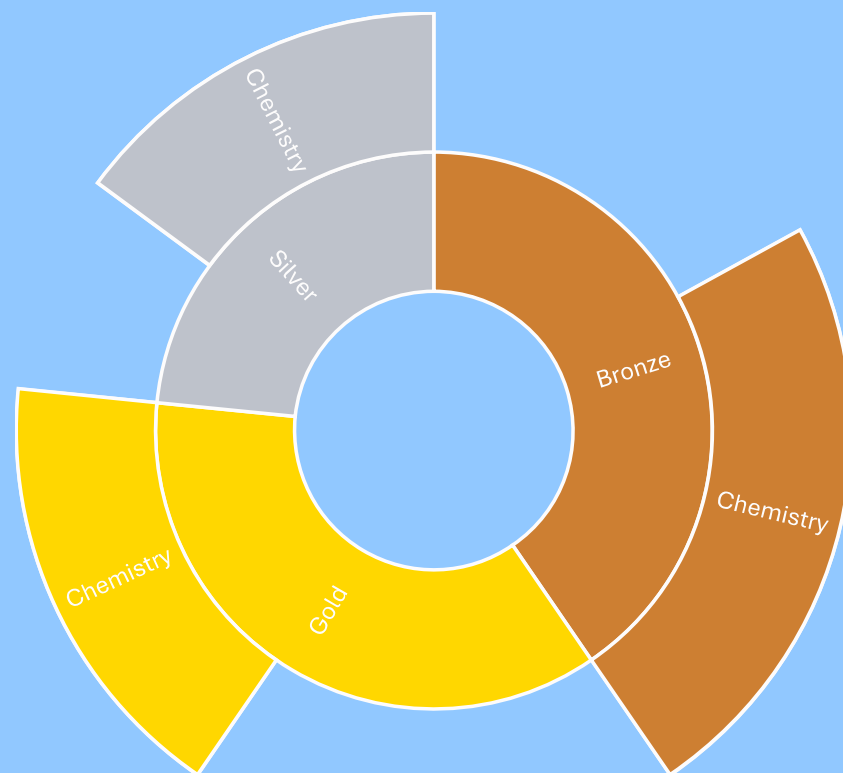
Chemistry

Full Department Sign Up!

In 24/25 the Chemistry department became the first academic department to require LEAF from all its academic groups, and the teaching labs.

The department offered their newly signed up labs with hands on support from their gold laboratory Technicians, and their auditing team comprised of academics and technicians.

Chemistry has been the department with strongest academic and student support, with neighbouring labs collaborating and information sharing to support their Gold LEAF awards.



Life Sciences

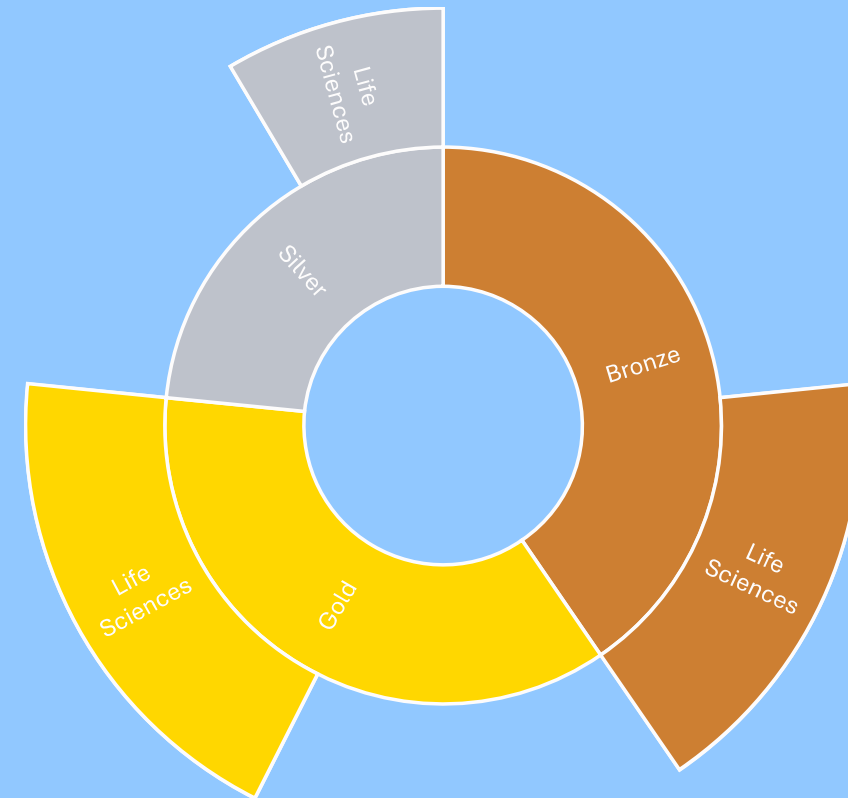
Most registered Lab Members!

In 23/24 the School of Life Sciences achieved eight certifications, including their first Gold award (Genomics) and continues to be supported by the first gold RTP (22/23, Proteomics).

In 24/25, SLS doubled their number of submissions, saw all the Bio-Analytical Shared Resource Laboratories (BioSRLs) achieving Gold awards, and the Stratford Innovation campus achieved multiple Gold awards for the Crop Centre and the IRU.

SLS have adopted an approach that is centred around the spaces, rather than specific research groups. This is an efficient way of embracing collaboration and minimising repetition.

SLS have the most registered labs with 35 spaces and groups registered on the tool. Whilst not all of these submitted in 24/25, the awareness is a key and the intergration into the day-to-day expectations is a positive indicator.



Medical School

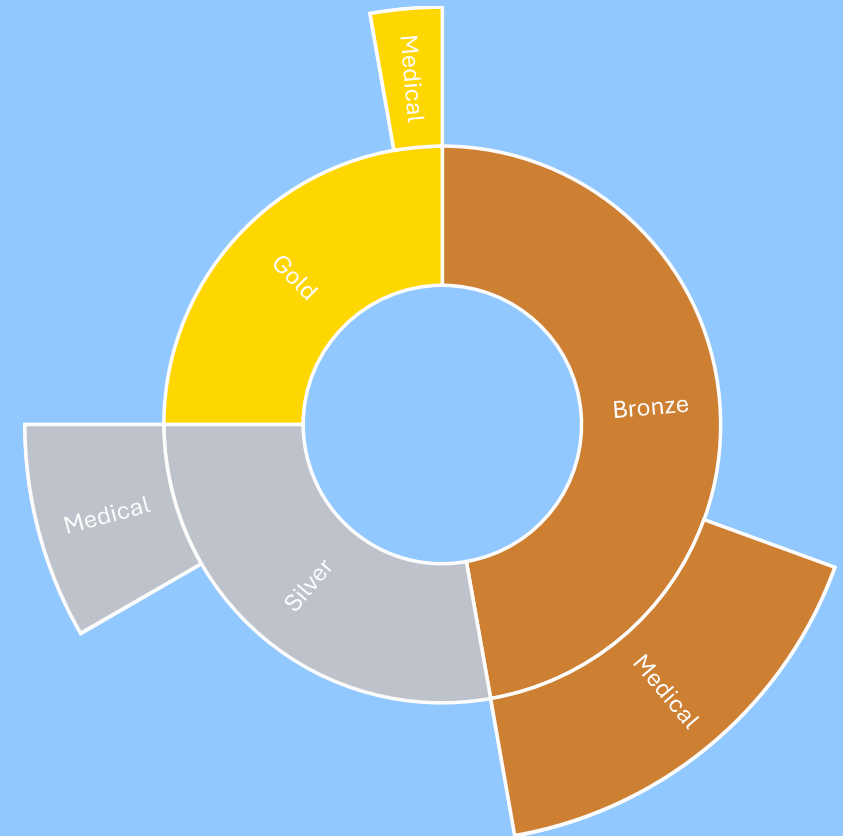
Renewed Commitment & Shared Spaces

In 23/24 no Medical School Labs applied for LEAF certification, in 24/25 the uptake of the framework within the IBRB was driven in collaboration with the School of Life Sciences.

The WMS was the area with the greatest new percentage participation, of the 15 registered laboratories participation, only one was a returning lab.

Ten labs achieved their certification, and key outcomes of the audit discussions included the efficiencies required of the shared working spaces.

Student requirements, including the Planetary Health card, demonstrated the across-school requirement and the mix between clinical spaces and laboratory spaces generated conversations that will continue into the next year.



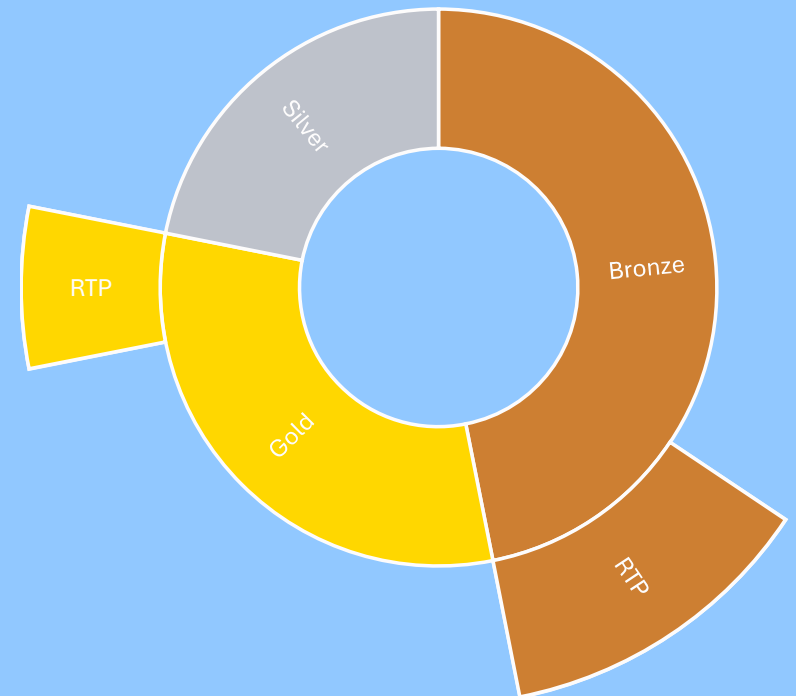
Research Technology Platforms

Technician Led, Efficient Spaces

In the RTPs tenth year, they have continued to show a strong commitment to LEAF, with many of the labs participating for four years.

Across the ten working labs, technicians have worked to embed efficiency into the shared resource platforms across the six schools.

The RTPs have three auditors and two gold award laboratories. The success stories out of the RTP spaces include significant cost savings through lighting interventions, cross-institution equipment sharing, and increases in positive student experience.



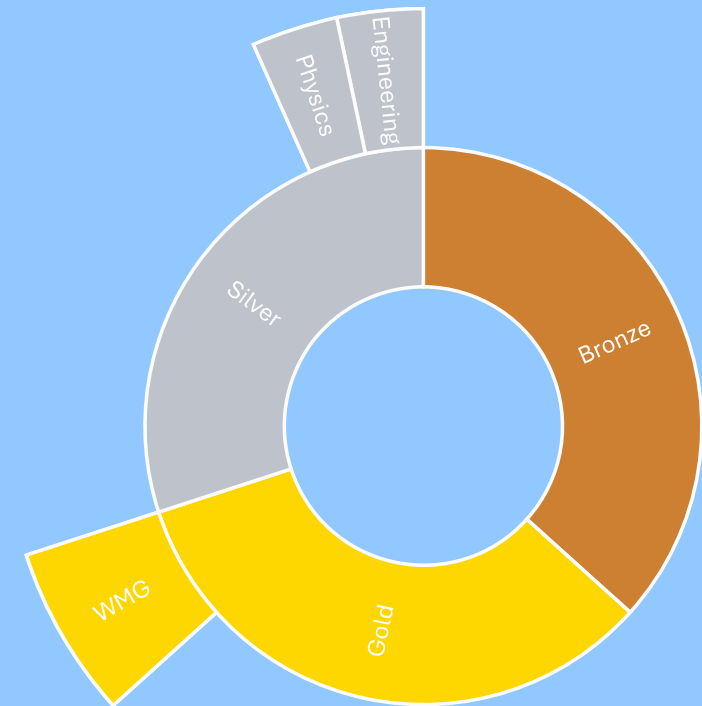
Physics, Engineering and WMG

Using the Framework more laterally

Spaces that have less chemical requirement, and no fume cupboards are recognised to less closely align with LEAF, however it is known that considering the Framework can be laterally applied.

The uptake within WMG has directly supported funding applications and highlighted energy efficiency within the spaces, where high intensity experimentation is balanced with strong process controls.

The RTPs have been able to act as models for these departments, as their cross-faculty-functionality demonstrates where efficiencies and process changes can be applied to the Framework to have a demonstrable difference.



Forward Look

25/26

- Further intergration into Physics, Engineering and WMG
- Encourage use of the calculators for Gold labs
- Shared resources through LabCup – chemicals and small equipment
- Departmentally contained and run audit processes
- Student intergration for Undergrad lab and teaching spaces



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Gold Labs' Best Practice

24/25

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Energy Efficiency

Water, Gas or Electricity Interventions

Chemistry

“When not in use, the glass baffle of the fume hood is always kept at its lowest position to reduce energy consumption.” **Bon**

“The autoclave is a shared resource that is run twice daily, when possible, the cycle length is reduced and temperature lowered.” **CBRF**

“When purchasing new equipment with light LEDs will be considered over alternative light bulbs.” **Fox**

“Several members of the Perrier group conduct photo-mediated polymerisations using light reactors which are all LED based. The Lumidox reactor system for instance is completely comprised of LEDs.” **Perrier**

“We have ordered more air condensers which are being used more than the water condensers as the information of cutting down water usage in the lab is being passed through our lab members.” **Scott**

Life Sciences / WMS

“Our confocal microscopes use LED lasers for safety, energy efficiency and longevity.” **Balasubramanian**

“Laminar hoods and BC cabinets are recirculating and switched off when not in use. All are serviced annually by technical services and parts replaced where necessary to maintain optimal working conditions.” **Balasubramanian**

Circular Economy

Reducing Waste through Reuse

Chemistry

“We have introduced the systematic reuse of solvent wash bottles and polymer sample vials. After use, vials that contained non-hazardous samples are thoroughly cleaned following a protocol involving solvent rinsing and drying under vacuum. These vials are returned to circulation, significantly reducing single-use plastic waste.” **Haddleton & Wilson**

“All the large glass jars, glass test tubes and NMR tubes are force-cleaned and reused. Hundreds of tubes are saved by doing that every year.” **Bon**

“Plastic petri dishes, gloves, and pipette tips are reused when possible without affecting health and safety or the validity of the experiment (e.g. reuse pipette tips for measuring large volumes of 0.1 M KCl).” **Macpherson**

Life Sciences/ WMS

“We reuse plasticware whenever possible for example first use to store sterile non-hazardous salt solution and second use to store non-sterile salt solutions. We have also implemented more glassware usage in general and developed protocols which usually would normally require plasticware into glassware-friendly protocol.” **C123 Lab**

Responsible Sourcing

Equipment Sharing

Chemistry

“Equipment shared between labs as well, e.g. water purification system, UV lamp.” **Becer**

“UV-vis and instrument room shared with other groups” Ward
“Uni green scheme is used for old equipment, and the Warwick Swap is used for office furniture” **CBRF**

“As a communal facility, our equipment is open-access instruments for trained users to use” **Mass Spec. Facility**

“Start up of the 'connect and collab' system where equipment is advertised to the department that people can come and use for measurements to stop duplicate purchases e.g. UV-Vis”
Pike

Life Sciences / WMS

“The BioSRLs are part of Warwick Scientific Services and the ITSS Technologies Capabilities Showcase, to enable equipment sharing outside of Warwick.” **BioSRLs CL1, CL2, Genomics**

“A 'swap-shelf' has been created in the lab so that excess/unused lab consumables (plastic sterile bijoux tubes, PCR tubes, eppendorfs etc.) are made available to others. This provides an opportunity for all lab members to utilise the items before disposal.” **Crop Centre**

“We use UniGreen scheme to try and sell on older equipment knowing these will be recycled responsibly if no further use is found. Rather than buying new, we were able to have a second hand Blue Pippin in our lab. We donated our Array scanner to Chemistry.” **Genomics**

Responsible Sourcing

Resource Reduction

Chemistry

“Our online GPC system was built using old, unused HPLC pumps, as we aim to repurpose equipment whenever possible.”

Haddleton & Wilson

“Where large amounts of single solvents are to be evaporated, a rotary evaporator is used and the solvent retained for use as a wash solvent.” **Becer**

“The old GPC and HPLC equipment that was in storage for over 20 years is now being refurbished for use in the development of continuous flow platforms, which has given new life to the equipment at minimal cost to the department and the environment.” **Perrier**

Life Sciences / WMS

“Labscope prohibits glove recycling, instead users are encouraged to be conservative with their glove use. This includes taking off gloves in a way that they can be used again during the same session, when it is safe to do this.” **BioSRL**

CL1

“Where possible, muslin/cotton wool bungs are used instead of foam bungs, and are autoclaved, dried and re-used. Where large pots are required for related glasshouse pathogen trials, these are also disinfected, washed and reused.” **Crop Centre**

“We no longer sterile tips and tip boxes, instead we buy in nuclease free refills to reduce autoclaving for sterilisation.”

Balasubramanian

Travel

Commuting, Academic Study, & Conference Travel

Chemistry

“Academic travel within the UK requires public transportation.”
Bon

“Some lab members car-share to work. Others have adopted the cycle-to-work scheme.” **Ward**

“When attending scientific events, preference is given to train or carpooling as modes of transport.” **CBRF**

“We have arranged a bus for the upcoming YRM meeting so that we can travel together instead of going individually.” **Haddleton & Wilson**

“Cars (hired through the university) are shared or trains used when travelling for conferences etc.” **Macpherson**

Life Sciences / WMS

“For meetings with other Universities, tele-conferencing is typically used. Or in-person meetings are combined with other in-person meetings to save on travel e.g. TSN” **BioSRLs**

“When attending a conference in Switzerland, the team went train. To go on an away day the team car pools. Car-sharing is always organised for larger team outings.” **C126 Lab**

“Where small daily tasks are required e.g. watering plants, duties are shared amongst IRU users reducing the need for all IRU users to travel into work everyday.” **IRU**

Digital

Coding, Storage and Devices

Chemistry

“The commonly used experimental analysis code is saved on GitHub, so members who are not familiar with the code can also use the latest optimized code, thus reducing the consumption of computing resources.” **Bon**

“Most people in our lab are currently working on automation systems, which has helped optimize computational processes and reduce energy inefficiencies. The benchtop NMR is equipped with a Python code that simplifies everyone's work.”

Haddleton & Wilson

Life Sciences / WMS

“Code is regularly updated to attempt to optimise bioinformatics work. Group servers are encouraged to be used over individual machines for overall optimisation.” **C126 Lab**