The University of Dundee is one of the leading universities for Life Sciences research¹ and one of the world’s top 250 universities.² We’re located in Scotland’s fourth-largest city, Dundee, on the picturesque banks of the River Tay.

Our international reputation for excellence in both teaching and research attracts top-class students and academics from all over the world – over 145 countries are represented in our University community.

We’re a progressive, future-focused institution, where we aim to transform lives, locally and globally, through the creation, sharing and application of knowledge.

¹ Research Excellence Framework 2021
² Times Higher Education World University Rankings 2021
Welcome

At the School of Life Sciences we are proud of our international reputation as one of the leading research institutes in Europe. This reputation has been gained through our endeavours in three core areas: research, learning and teaching, and impact and translation.

There have been huge advances in Life Sciences over the last few decades. To adapt to these changes, we believe that it is crucial for our staff and students to be able to work fluidly across disciplinary boundaries. This philosophy is reflected in our structure, with all the basic biological disciplines housed together in our main research complex. To encourage interactions between all our staff and students, we promote a collegiate culture of working together. We value the diversity in our staff and students and are home to about 700 academics and scientists from more than 50 countries - it is these people who are essential to our success.

To support our staff and students so that they can work to the best of their ability we:
- provide outstanding laboratory and technology facilities
- actively encourage interdisciplinary and translational research
- are committed to instilling the highest standards of professional integrity
- support equality, diversity and inclusivity initiatives
- offer excellent career development opportunities

The success of our strategy can be demonstrated in many ways, but examples of how we have succeeded in our 3 key core areas are:
- Research: We are the top-rated University in the UK for the quality of our research in Biological Sciences, according to the most recent national research assessment exercise (Research Excellence Framework 2021).
- Learning and teaching: The University has been given a 5 Star rating - the highest possible - by Quacquarelli Symonds (QS) in 2022 across categories including teaching, employability and academic development.
- Impact and translation: We are the 6th in the UK and 1st in Scotland for the value of our spinouts over the last two decades (University Spinout Report 2021, GovGrant).

This brochure gives an overview of our School. Further information can be found on our website, lifesci.dundee.ac.uk, or by contacting us directly using the details on the back cover.
Research Excellence

6 Research in the School of Life Sciences
- Outstanding interdisciplinary research
- Collaboration is key
- High quality infrastructure
- Investment in our people

8 History of Life Sciences

10 Overview of our Centres, Divisions and Units
- Biological Chemistry and Drug Discovery
- Cell and Developmental Biology
- Cell Signalling and Immunology
- Computational Biology
- D’Arcy Thompson Unit
- Drug Discovery Unit
- Gene Regulation and Expression
- Geomicrobiology Group
- Medical Research Council Protein Phosphorylation and Ubiquitylation Unit
- Nucleic Acid Structure Research Group
- Molecular Microbiology
- Plant Sciences
- Targeted Protein Degradation
- Wellcome Centre for Anti-Infectives Research
Research in the School of Life Sciences

Our research involves studying the molecular and cellular mechanisms underlying human health and disease. This has global impact and has been recognised in metrics of scientific excellence that place the University of Dundee high in its rankings. To continue as a world leading institution, we focus on our research and teaching excellence, environment and people.

Outstanding interdisciplinary research

We support and promote outstanding life science research. Our expertise spans from drug discovery to plant sciences and gene regulation to computational biology. Interdisciplinarity and translation play key roles in our work, which has led to major clinical and environmental impact. Our research is strengthened by mutually beneficial partnerships with key funding agencies, industry and academic institutes in the UK and beyond.

Collaboration is key

To achieve research success, scientists working on similar topics are grouped together into our different centres, divisions and units. We actively encourage interactions between research groups within and across divisions. In addition to working together within the School and University, we also see our academic work as an international enterprise. We collaborate every day with colleagues at institutions around the world. Our view is that these collaborations work best bottom-up, driven by shared interests and then supported at institutional level.

High quality infrastructure

Excellent research requires high-quality facilities, services and physical infrastructure. We have invested substantially, and continue to do so, to maintain such an environment for our staff and students. This supports them to deliver significant progress in the translation of our research to address national and global health challenges.

Investment in our people

People are central to our success. The diversity in our staff and students enhances our environment and how we approach our work. To allow everyone in the School to work to the best of their ability, we are committed to the highest standards of professional integrity and strive to provide a supportive work environment. We uphold exemplary standards in recruitment and development of all categories of staff, underpinned by equality, diversity and inclusivity initiatives that align with the Athena SWAN charter. The School of Life Sciences is a proud recipient of an Athena SWAN Silver Award.
History of Life Sciences

1881
Mary Ann Baxter created University College, Dundee for ‘the education of persons of both sexes and the study of Science, Literature and the Fine Arts.’

1883
The Carnelley Building, the first purpose-built building on campus opens. It is named after the first Professor of Chemistry in Dundee, Thomas Carnelley.

1887
Grahame Hardie FRS defines the key cellular energy sensor called AMP-activated protein kinase (AMPK), for the first time. Pharma will later launch significant drug development campaigns in diabetes and cancer in relation to regulation of AMPK.

1917
Sir D’Arcy Thompson FRS, Dundee’s first Professor of Biology and pioneer of mathematical biology, published his seminal work ‘On Growth and Form.’

1967
University of Dundee becomes independent of St. Andrews.

1970s
+ Peter Garland CBE is appointed as the first Chair of Biochemistry.
+ New purpose-built facilities, Medical and Biological Sciences Institutes open.

1980s
Pioneering research by David Lilley FRS on the structure and folding of nucleic acids, including specialised branched structures of DNA, begins in Dundee and continues to this day.

1987
In the 1980s, Sir David Lane FRS moves to Dundee to continue work on p53. He is knighted for services to cancer research in 2000.

1990
The MRC Protein Phosphorylation and Ubiquitylation Unit was established by Sir Philip Cohen FRS as Director and continues today under the leadership of Dario Alessi FRSE. The Unit pioneered kinase profiling research that transformed the development of new therapeutic drugs. It continues to be at the forefront of protein phosphorylation and ubiquitylation research.

1998
+ The Division of Signal Transduction Therapy established by Sir Philip Cohen FRS and Sir Pete Downes OBE. It is one of the longest standing collaborations between the pharmaceutical industry and an academic institute.
+ The Wellcome Trust Building opens.

2000
Jason Swedlow embarks on a research programme developing an image-management system, Open Microscopy Environment, geared to the needs of quantitative microscopy. In 2011, he wins the BBSRC Innovator of the Year.

2006
+ The Drug Discovery Unit is formed by Sir Mike Ferguson CBE FRS and Alan Fairlamb CBE to fill the void in the discovery of drugs for tropical diseases (human African trypanosomiasis, leishmaniasis, Chagas’ disease and malaria).
+ Sir James Black Centre opens.

2014
The newest building of the Life Sciences complex opens. The Discovery Centre for Translational and Interdisciplinary Research brings together biology with chemistry, physics, and computer science.

2016
Welcome awards £13.6m to Dundee to establish the Centre for Anti-Infectives Research under the directorship of Paul Wyatt.

2018
First human clinical trials commence for the malaria compound that was discovered by Ian Gilbert and colleagues in the Drug Discovery Unit. This new compound has the potential to treat malaria patients in a single dose.

2021
+ Creation of Centre for Targeted Protein Degradation led by Alessio Ciulli
Overview of our Centres, Divisions and Units

→ Biological Chemistry and Drug Discovery

Our overarching theme is the discovery of chemical solutions to biological problems. Our purpose is to design new drugs through understanding the basic biology of the causative agents such as kinetoplastid parasites alongside determining mechanisms of drug resistance. Our researchers work closely with the Drug Discovery Unit and Wellcome Centre for Anti-Infectives Research, and share many of the same staff and resources.

→ Cell and Developmental Biology

Our researchers investigate the mechanisms of differentiation in developing organisms, stem cells and adult tissues and how these are corrupted in disease states. Classical embryology and genetic approaches are combined with multi-scale systems analyses to understand gene regulation and function, including super-resolution/long term cell and tissue imaging, genome-wide analyses and mathematical modelling.

→ Cell Signalling and Immunology

Our research is relevant to the pathologies associated with cancer, diabetes, infectious disease, autoimmunity and allergy. A common theme that links activities is a shared interest in the mechanisms that cells use to sense external and internal signals. Remarkably, the biochemical ‘wiring’ underlying these often diverse systems overlaps, providing unexpected opportunities for collaboration among the different groups.

→ Computational Biology

Computational Biology brings together scientists with skills in developing and applying computational, mathematical and biophysical techniques to questions in biological and medical research. Division members either have their own ‘wet-lab’ or collaborate closely with ‘wet-lab’ experimentalists or clinicians. Our aim is to extract maximum value from experimental data that informs the development of predictive algorithms and models that may be tested experimentally.

→ D’Arcy Thompson Unit

The D’Arcy Thompson Unit encompasses all School of Life Sciences staff who are based at the Carnelley Building, the home of undergraduate Biological and Biomedical Sciences teaching, on city campus. These staff focus on the learning and teaching activities involved in coordinating and delivering our degree programmes. In doing so, they work closely with academic staff in the School of Life Sciences research divisions and in the School of Medicine.

→ Drug Discovery Unit

The Drug Discovery Unit is a fully operational, fully integrated drug discovery group working across multiple disease areas. We collaborate with partners in industry and academia to translate world-class biology research into novel drug targets and candidate drugs. We have two areas of activity, diseases of the developing world and innovative targets portfolio (ITP) covering diseases such as Alzheimer’s disease, cancer and psoriasis. Building on the success in these areas we have developed an Antibacterial Drug Discovery Accelerator with the aim to discover new antimicrobial drugs.

→ Gene Regulation and Expression

Our research focusses on the molecular machines that regulate gene function which in many cases are inter-related. Areas of interest include DNA repair, DNA replication, chromosome segregation and chromatin biology. In addition, we study how environmental and developmental factors such as immune signalling, reproduction and starvation impact on gene expression. The interplay between these processes means that there is a lot of opportunity for synergy in our research. Looking forward, the aim is to apply expertise in gene regulation to further the understanding and treatment of diseases such as cancer.

→ Geomicrobiology Group

Our prime focus is on geomycology, the scientific study of the roles of fungi in processes of fundamental importance to geology. In particular, how fungi impact on metal-mineral transformations, bioweathering and bioremediation. Understanding these methods will allow us to harness the innate abilities of fungi. They may be used to clean up polluted waterways or extract rare metalloids required by the electronics industry, for example.
Medical Research Council Protein Phosphorylation and Ubiquitylation Unit

The Medical Research Council Protein Phosphorylation and Ubiquitylation Unit is a major research centre that focuses on the understanding of the biological roles of phosphorylation and ubiquitylation and how disruption of these processes causes human diseases such as neurodegeneration, cancer, hypertension and immune disorders. The ultimate goal of our research programmes is to help develop new improved strategies to treat disease. The Unit operates as an intersection between life scientists, pharmaceutical companies and clinicians to ensure that we make a critical contribution to medical research, together reaching a deeper understanding of disease.

Molecular Microbiology

Our division encompasses a spectrum of research that flows from fundamental science using model organisms to translational research on medically- and economically-significant species. Research on a broad platform of topics includes: molecular determinants of bacterial virulence; host responses to microbial pathogens; fundamental physiological processes in microbial cells, including transport and generation of the cell surface; inter-bacterial interactions; and identification of potential targets for antimicrobial intervention or biotechnological applications.

Plant Sciences

Plant Sciences is an internationally recognised centre for molecular plant science addressing the global challenges of food security, renewable energy, conservation and climate change. We investigate the genes and processes underpinning important plant traits such as yield, disease resistance, stress tolerance, developmental characteristics, and end-use quality. Our researchers are located at the James Hutton Institute on the outskirts of Dundee with whom we have a long-standing strategic partnership. This brings our plant researchers together with scientists with knowledge of applied research in crop species including front-line crop and pathogen genomics, genetics and cultivar production.

Targeted Protein Degradation

The Centre for Targeted Protein Degradation is pioneering an entirely new approach that is revolutionising drug discovery. By co-opting the cell’s natural disposal systems to remove disease-causing proteins, targeted protein degradation is making the treatment of diseases previously thought to be undruggable a reality. This work is applicable to diverse therapeutic areas including oncology, dermatology, immunology, neuroscience and respiratory diseases. We translate our fundamental science via two mechanisms: strategic partnerships with pharmaceutical companies, exemplified by ongoing PROTAC drug discovery collaborations with Almirall, Boehringer Ingelheim, and Eisai; and creation of spin-out companies, exemplified by the Dundee-born high-growth biotech company Amphista Therapeutics. These partnerships are accelerating the advances we are making in this field.

Wellcome Centre for Anti-infectives Research

The vision of the Centre is to help tackle the urgent unmet medical need and lack of drug discovery research for Neglected Tropical Diseases (NTDs). This will be achieved by creating a world-leading hub for NTD drug discovery and being the collaborator of choice for academics, Pharma and Product Development Partnerships in the translation of discovery science into drug candidates. The Centre also includes programmes in training scientists from disease endemic countries and public engagement activities aimed at enhancing public awareness of NTDs, understanding of the drug discovery process and why it is important.

“I lead a growing multi-disciplinary group of over 40 people and of well over 10 nationalities, that is part of our new Centre for Targeted Protein Degradation (CeTPD). You can really see how people benefit from mixing with such a diverse backgrounds, sharing knowledge and also learning from each other on the day-to-day human level. This kind of environment not only improves us as scientists but also as individuals.”

Professor Alessio Ciulli
Professor of Chemical and Structural Biology
Environment

16 Environment
- Research environment
- State-of-the-art facilities
- Outstanding in-house support
- Undergraduate teaching environment

18 Research technologies
- Dundee Imaging Facility
- Fingerprints Proteomics Facility
- Flow Cytometry and Cell Sorting Facility
- Human Pluripotent Stem Cell Facility
- X-ray Crystallography

19 Other technologies
- National Phenotypic Screening Centre
- High Performance Computing facilities
Environment

We provide a fast-paced, collegiate and supportive environment for our staff and students. With access to state-of-the-art technologies and collaborative opportunities, it is a setting that facilitates scientific innovation and discovery.

The School of Life Sciences research complex consists of four physically interlinked buildings with our undergraduate teaching, led by the D’Arcy Thompson Unit, based separately at the Carnelley Building. Both locations are based on city campus of the University. In addition, our Division of Plant Sciences is located at the James Hutton Institute in Invergowrie 20 minutes away.

Research environment

Our research complex has evolved over the past five decades to continually provide our researchers with a well-equipped and stimulating environment. It has been designed to maximise collaborative working by promoting interactions across different disciplines and research groups. This allows the best and most innovative research to take place.

An enclosed atrium ‘Street’ was created between our newest building, the Discovery Centre for Translational and Interdisciplinary Research and the existing research complex. This space is a place for meeting, collaboration and networking. It incorporates a café, informal break-out areas and a venue for public engagement. Our café and LifeSpace (Scotland’s first science-art research gallery created in partnership with the University’s Duncan of Jordanstone College of Art and Design) provide the perfect place for a break from the lab.

Sharing of latest research findings can take place in one of our lecture theatres, many meeting or seminar rooms. Our dynamic research environment is supported by a raft of different activities. These include our Annual Research Symposium that showcases the work taking place in the School and our prestigious named lecture series featuring world-leading scientists, many of whom are Nobel Prize winners. Each research Division runs its own seminar series that bring to Dundee international leaders in their respective fields. This provides opportunities for PhD students and postdocs to meet and discuss their work with these world experts.

State-of-the-art facilities

All our laboratories in the research complex are open-plan, which encourages collaboration and interdisciplinary working. They are equipped with state-of-the-art facilities and equipment. These include:

- ‘wet’ laboratories for chemistry, biochemistry and microbiology
- tissue culture suites for categories 1, 2 and 3 level work and designated spaces for radioactivity
- rooms specially designed for working with various model organisms such as yeast, Drosophila, Xenopus laevis and C. elegans
- in-house research technologies and expertise (more details in technologies section)
- a high quality ‘dry’ laboratory for computational biology research
- cutting-edge plant science facilities located within our Division of Plant Sciences based at the James Hutton Institute.

Outstanding in-house support

A critical component of our research success is the quality of infrastructure and in-house support enjoyed by our scientists. These include our Central Technical Services (media services and wash up), health and safety, IT support, stores team, laboratory management and administrative support.

Undergraduate teaching environment

The Carnelley Building, our undergraduate teaching hub, is home to the D’Arcy Thompson Unit and associated staff who support the undergraduate teaching programmes. Lecture theatres and laboratories for undergraduate teaching are based here. City campus amenities such as the Dalhousie Building (a designated teaching facility that houses an array of lecture theatres, IT suites and general teaching spaces) and the Library and Learning Centre, further enhance our students learning experience.

The D’Arcy Thompson Zoology Museum is also located in the Carnelley Building. It houses many fascinating specimens from around the world. Most of them were collected by the celebrated Sir D’Arcy Wentworth Thompson, the first Professor of Biology at the University of Dundee.
Technologies

Our School is equipped with world-class research technologies and expertise led through our Centre for Advanced Scientific Technologies (CAST), which are available to all our staff and students.

The Centre for Advanced Scientific Technologies comprises of:

- **Dundee Imaging Facility**
  
  We exist to support the research ambitions of scientists across the University. Our facilities include: light microscopy, 3D structured illumination, tissue imaging, electron microscopy, image analysis and the physics and life science lab. We offer support across a broad range of imaging modalities and can advise on experimental design from sample preparation, through acquisition to analysis.

- **Fingerprints Proteomics Facility**

  We provide a state of the art proteomics and mass spectrometry capability to researchers at the University and to external academic and industrial clients across the globe. We have an excellent reputation for: expertise, reliability, efficiency, delivery of service, value for money, and confidentiality.

- **Flow Cytometry and Cell Sorting Facility**

  We provide high-quality training and on-going technical support in the use of flow cytometer analysers to enable researchers to perform independent sample analysis. Facility staff are able to provide sample and data analysis for urgent or small-scale experiments. We also perform all cell sorting applications and are on-hand to provide technical support for sample preparation and sort design.

- **Human Pluripotent Stem Cell Facility**

  We help researchers to integrate the use of human pluripotent stem cells (hPSCs) into their work. We provide our researchers with undifferentiated embryonic stem cells (hESCs) and hiPSCs, training in working with human pluripotent stem cells, and expertise in the development of cell-based assays. Our facility is jointly supported by the Schools of Life Sciences and Medicine.

- **X-ray Crystallography**

  Crystallography is the most powerful method for determining the atomic three dimensional structures of large biological molecules. We provide specialist equipment and expertise to link protein structure with function and rational drug design.

- **Other technologies**

- **National Phenotypic Screening Centre**

  Our centre applies advanced phenotypic approaches to identify new chemical biology tools, discover drugs or perform other high throughput biology experiments. We focus on the use of more predictive and patient-centric bioassays to increase the effectiveness of the pre-clinical drug discovery process, reducing the time and cost to translate basic research into a clinical outcome.

- **High Performance Computing facilities**

  We have facilities that allow for computational analysis, simulation and modelling of large quantities of data. We support a multi-Petabyte scalable, hierarchical data store based on IBM's Spectrum Scale (aka GPFS) filesystem. This provides high speed SSD storage close to the user. For robust data protection we also have daily backups to two locations.
Our Teaching and Training

23 Undergraduate
  ♦ Research-led teaching
  ♦ Degrees with a real-world focus
  ♦ Employable graduates
  ♦ Accreditation by the Royal Society of Biology
  ♦ Real research experience opportunities

24 Internationalisation

25 Postgraduate
  ♦ Research projects at the forefront of international science
  ♦ Research and professional skills
  ♦ Supportive and collegiate environment
  ♦ Career support
“The best thing about my course is that the teaching staff will go over and beyond to help their students in any way. I have been given so many opportunities since I started the course, from funded summer internships in the research labs of the University to an honours project that was organised for me based on my own interests.”

Margarita Kalamara
Biological Sciences MSci student from Greece

Our Teaching and Training

We consider training and nurturing of the next generation as a top priority. We are committed to training and supporting students and scientists at every stage of their careers through our undergraduate and postgraduate programmes.

Undergraduate

In the School of Life Sciences, undergraduate teaching is led by members of the D’Arcy Thompson Unit. Their work over recent years has seen our degree programmes rise rapidly up the rankings to consistently be listed in the top 15 universities in the UK for Biological or Biomedical Sciences (Complete University Guide 2022, Times Good University Guide 2022, Quacquarelli Symonds (QS) Subject Rankings 2022).

Research-led teaching

Our undergraduate degrees in Life Sciences provide innovative approaches to teaching and learning that are directly informed by the excellence of our research. In the latter years of our undergraduate courses, our internationally-acclaimed research staff design and deliver courses, ensuring our teaching is informed by our world-class research.

Degrees with a real-world focus

Our research collaborations with the world’s major pharmaceutical and biotechnology companies allow our students to explore real-world issues in the context of their studies.

Employable graduates

We understand the importance of preparing our graduates to shape the world in which they live, not simply fit into pre-defined roles using pre-defined skills. That’s why we emphasise the importance of collaboration and flexibility throughout our teaching, and why our graduates leave us prepared to take on the challenges of the modern world.

Accreditation by the Royal Society of Biology

Our undergraduate BSc Honours and integrated masters (MSci) degree programmes in Biological and Biomedical Sciences have full accreditation and advanced accreditation respectively from the Royal Society of Biology. This means our courses are recognised for their academic rigor and excellence. In addition, it acknowledges that we equip our graduates with solid academic foundations and the skills employers are looking for.

Real research experience opportunities

We offer a number of summer research internships for undergraduates, giving students invaluable experience of working in real research laboratories (outside term-time) during the summer months. The schemes are open to both University of Dundee students and those from elsewhere, including international students.
A British degree is highly respected and valued by employers across the globe. As a university, we have a long tradition of welcoming people from all over the world which provides an enriching environment for all. We not only welcome students from other countries here, but our students have the opportunity to study abroad during their degree. This can be for one semester or a full year. To make our postgraduate studies an exciting and rewarding experience, we do this by providing an intellectually exciting and supportive work environment. The University has strong links with Singapore, Malaysia and China, in particular in the area of Life Sciences. We have a joint undergraduate degree programme with our prestigious partner institution, the National University of Singapore, one of the top 15 universities in the world (QS World University Rankings 2022), and welcome students articulating from Central South University in China, from Taylor’s University in Malaysia and from the in Malaysia. We are also about to launch a double undergraduate degree with the Indonesian International Institute for Life Sciences i3L in Jakarta, Indonesia. We continue to build relationships with institutions in these countries and beyond so that we further enhance our teaching and research.

The University has a number of opportunities open to postgraduate students which aim to address their various interests and requirements. All our offerings are underpinned by the following:

**Research projects at the forefront of international science**

We train students in research methods and practice. We do this through outstanding, high-quality research projects at the forefront of international science in well-equipped laboratories. During their training, students learn the theory, practice, capabilities and limitations of modern techniques in life science research.

**Research and professional skills**

We train students in the generic skills of scientific research such as experimental design, data analysis, literature survey and communication skills. There is provision for on-going personal, professional and career development. This includes opportunities to participate in public engagement and training on topics such as enterprise and research funding.

**Supportive and collegiate environment**

We aim to make our postgraduate studies an exciting and rewarding experience. We do this by providing an intellectually exciting and supportive work environment. The School and University have excellent support services, looking after students from fresher’s week to graduation.

**Career support**

We endeavour to provide our postgraduates with diverse skills sets so they are capable of making leading contributions in careers in science, business and policy over the next decades. We assist our students to obtain appropriate employment upon completion of their studies.

**Postgraduate**

**Postgraduate Research**

We offer a suite of taught MSc courses in Biomedical and Molecular Sciences, which include the option of studying business-related modules such as entrepreneurship and marketing. These courses focus on areas of major current interest in the biopharmaceutical sector, to arm students with the particular knowledge and skills that biotech and pharmaceutical companies as well as research facilities in academia are looking for.

**Taught Postgraduate**

We also offer opportunities to carry out a research project through our Masters by Research or our PhD programmes. Our PhD programmes offer studentships and scholarships to UK, EU and overseas applicants through a variety of funding mechanisms and from the University itself. These include 4-year doctoral training programmes from Wellcome and the Biotechnology and Biological Sciences Research Council, through our EASTBIO and BARITONE partnerships. A number of specific opportunities for international students such as the China Scholarship Council Programme are also available.

Further details can be found on our PhD pages on our website or please contact sls-phdadmin@dundee.ac.uk for any enquires.
Impact and Translation

28  Translation, collaboration with industry and commercialisation
29  Innovation through interdisciplinary research
30  Commercialisation and company generation
Translation, collaboration with industry and commercialisation

Whilst discovery science is at the heart of what we do, we also strive to translate our work, as appropriate, to solve “real world” problems. Our School has some sophisticated mechanisms to facilitate translation, collaboration and innovation.

Our Drug Discovery Unit (DDU) bridges the gap between academic scientific research and charitable and commercial drug discovery and development. Since opening in 2006, the DDU has grown to over 130 FTEs covering target screening and validation, computational and medicinal chemistry, pharmacokinetics and drug metabolism and mode-of-action. It is one of the largest academic drug discovery facilities in the world.

Their work is supported by funding from several sources including Wellcome, the Bill & Melinda Gates Foundation, UKRI, Medicines for Malaria Venture, and through partnerships with pharmaceutical companies such as GlaxoSmithKline and Takeda Pharmaceuticals. Exciting advances currently in clinical trials include the development of a single exposure treatment for malaria, the creation of two new therapeutics for the treatment of people with visceral leishmaniasis and a cancer therapeutic.

Our new Centre for Targeted Protein Degradation (CetPFD) is leading in this entirely new drug discovery approach. By co-opting the cell’s natural disposal system to remove disease-causing proteins, diseases that were previously thought to be undruggable are becoming tractable. Led by Director Professor Alessio Ciulli, a pioneer and leader in this thought to be undruggable area, the Centre has significant drug discovery partnerships with pharmaceutical companies such as Boehringer Ingelheim (BI) and Almirall.

We also house the Division of Signal Transduction Therapy (DSTT), founded in 1998, which is the world’s longest running collaboration between academic research laboratories and the pharmaceutical industry. Based within the Medical Research Council Protein Phosphorylation and Ubiquitylation Unit (MRC-PPU) the consortium with the pharmaceutical industry, including Boehringer Ingelheim, GlaxoSmithKline and Merck, has attracted £65 million in funding since its inception. The DSTT is widely regarded as a model for how academia and industry can interact productively. The funding enables our scientists to continue their fundamental research in multiple therapeutic areas, including cancer, arthritis, lupus, hypertension and Parkinson’s disease.

In the latter research area, Professor Dario Alessi and colleagues within the MRC-PPU uncovered the first physiological targets of LRRK2, an important target enzyme in Parkinson’s disease. Their research, assays and reagents for measuring LRRK2 activity are being used by several pharmaceutical companies to allow the preclinical development of selective LRRK2 inhibitors and for the adoption of LRRK2 clinical biomarkers in the first clinical trials to test the effectiveness of new drugs to treat people with Parkinson’s. Moreover, the MRC-PPU is heavily involved in patient stratification for participation in Parkinson’s disease clinical trials and has benefitted significantly from bilateral engagement with Cardiff’s LabPark. New partnerships with people with Parkinson’s disease through the Dundee Parkinson’s Archive project.

The School also houses the Laboratory for Quantitative Proteomics, one of the world’s largest research facilities for quantitative proteomics and data analytics. This facility has allowed the laboratory, led by Professor Angus Lamond, to create solutions for performing large-scale, high-throughput proteomics projects. The research team has developed integrated innovative proteomics, molecular biology and computational approaches to study gene expression and disease mechanisms in humans and model organisms.

Innovation through interdisciplinary research

To maximise our research impact, we place innovation and interdisciplinary research at the centre of our work. Bringing together expertise across disciplines allows us to address complex biological questions using the latest technology and knowledge in an effective manner.

Jalview, an open source software programme created and maintained by the team of Professor Geoff Barton, integrates large collection of biological sequences, such as DNA, RNA and protein with information about their function and role in disease. It is the de-facto standard software for multiple sequence alignment and analysis. This helps scientists working on genetic disease make sense of their data and improve the prediction of the effect of mutations in the human genome on disease.

The Open Microscopy Environment (OME) software team headed by Professor Jason Swedlow produce open tools to manage, analyse and understand large sets of image data. OME seeks to build specifications and software that allow scientists open, flexible, scalable access to their imaging data. OME’s work and projects are undertaken as collaborations with academic, industrial or commercial partners, so that the development of new tools and capabilities is always tied to real world, scientific use. In collaboration with scientists in Bristol, Cambridge and the European Bioinformatics Institute, the team in Dundee built the first general biological image repository that stores and integrates data from multiple modalities and laboratories. Image Data Resource (IDR) is a public database that collects and integrates imaging data related to experiments published in leading scientific journals. This allows wider accessibility to this data plus new research connections from separate projects have been discovered. IDR resources will continue to be run by OME as part of the wider EMBL-EBI BioImage Archive project.

The School also houses the Laboratory for Quantitative Proteomics, one of the world’s large research facilities for quantitative proteomics and data analytics. This facility has allowed the laboratory, led by Professor Angus Lamond, to create solutions for performing large-scale, high-throughput proteomics projects. The research team has developed integrated innovative proteomics, molecular biology and computational approaches to study gene expression and disease mechanisms in humans and model organisms.
The University of Dundee has an international reputation in Life Sciences innovation and translation. It has a unique infrastructure for professional drug discovery and enjoys exemplary partnerships between industry and academia. The University has a track record of sustainable spin-outs from its intellectual property. In 2021, the University of Dundee was ranked 5th in the UK by Octopus Ventures for its record of turning research into world-changing companies, and 4th in the UK by Parkwalk-Beauhurst for the volume of equity secured by its spin-outs (£251M).

Examples of School of Life Sciences spin-outs and spin-ins include:

- **Amphista Therapeutics:** Developing drugs using groundbreaking targeted protein degradation technology from the laboratory of Professor Alessio Ciulli. Amphista received £38M of series-B investment in 2021 and was Scrip Awards Financing Deal of the Year.

- **Exscientia:** Based on the work of Professor Andrew Hopkins, Exscientia develops and applies pioneering artificial intelligence (AI) drug design methodologies that enhance the efficacy and the efficiency of drug discovery for the pharmaceutical industry. Exscientia collaborates with leading pharmaceutical companies and underwent Europe’s largest IPO on the NASDAQ in 2021. With a market capitalisation of over £2bn, it is now one of the UK’s largest Biotech companies.

- **Glencoe Software:** Design and production of software and data storage solutions for biological imaging. Glencoe Software is the commercial arm of the Open Microscopy Environment, a community-led, open-source data specification and software development consortium.

- **InDerm:** Specialises in the discovery of drugs, which are safe and effective, for the treatment of skin diseases including eczema, non-melanoma skin cancers and orphan skin diseases.

- **Platinum Informatics:** Developing powerful new software solutions for managing complex informatics and multidimensional proteomics scientific datasets in a wide range of laboratory and industrial environments.

- **Ten Bio Ltd:** An exciting new biotech spin out company offering innovative human skin explant technology that allows superior retention of in vivo physiological characteristics for testing of pharmaceuticals and cosmetics products, reducing the need for testing in animal models.

- **Ubiquigent:** Enables and supports ubiquitin system focused drug discovery by developing novel compounds targeted towards ubiquitin system proteins as well providing access to a suite of comprehensive research services and reagents.

“Exscientia has demonstrated that AI in molecular design is here today. With the global pharmaceutical industry acknowledging the importance of incorporating AI-driven R&D approaches into their drug discovery processes, we see a huge growth opportunity ahead. We believe Exscientia is set to become a global leader in AI-driven drug discovery.”

Dr Rupert Vessey
President of Research and Early Development at Celgene
Public Engagement with Research

35 Engagement and sharing of knowledge
35 Schools Outreach
35 Partnerships
Public Engagement with Research

To us, public engagement is by definition a two-way process, involving interaction and listening, with the aim of sharing for mutual benefit. It is an integral part of our role as scientists. By engaging with each other we hope to learn as much from you as you do about us – we believe that this is the best way forward for true social and scientific progress.

Engagement and sharing of knowledge

Our projects aspire to create a culture of knowledge sharing and communication with the widest possible audience. Using a variety of technological and artistic media we aim to deliver our research novel and stimulating ways.

Our staff and students contribute to a wide range of public engagement activities including local festivals, events held within the University and at venues across the city.

Schools Outreach

We have a strong outreach programme that aims to support Scotland’s schools with their delivery of outcomes and aims around science, topical and ethical issues, careers, and interdisciplinary learning. Activities include festivals, curriculum-linked activities, and our Summer Work Experience Week for S5-6 pupils.

Partnerships

Our vision is to build collaborative and creative partnerships to deliver high quality, innovative engagement programmes that inspire participation in science and makes science relevant for everyone. We work with the wider expertise of staff from across the University, external partners and culture organisations in Dundee and beyond to achieve this goal. Examples include:

→ Animating Science is a partnership project with Dundee Contemporary Arts that aims to develop stop motion animation skills with school pupils and teachers and support them in creating animated films about Life Science concepts and processes

→ Working with Dundee Science Centre to create resources and content that reflect the research taking place in Dundee. Material has appeared as part of the Centre’s Home Learning Programme, Science @ Home kits, STEM Clubs and their Microbe Zone exhibit

→ Collaborating with patient groups to create better and more meaningful dialogues between people living with the diseases we study and the scientists researching them

→ Art Science collaborations. These range from artist residencies, working with teachers to create curriculum linked workshops for secondary pupils and exhibitions at LifeSpace Science Art Research Gallery with Duncan of Jordanstone College of Art and Design

→ The Wellcome Centre for Anti-Infectives Research has had busy partnerships with both GirlGuiding Dundee and the Stobswell Forum, leading to outputs such as a nationwide ‘Virtual Sleepover’ and a 7-storey outdoor mural respectively

Public Engagement leaders

Our public engagement team push forward the boundaries in the field of public engagement. They work at the institutional and national level to share their learning and best practice.

“The work we do in the School of Life Sciences has a significant impact on people’s health, our shared economy and environment. Today, making our science accessible through public engagement is part of the responsibility and remit of being a scientist.”

Professor Nicola Stanley-Wall
Professor of Molecular Microbiology and Academic Lead for Public Engagement
Overview of our people in the School of Life Sciences

38 Biological Chemistry and Drug Discovery
   Centre for Targeted Protein Degradation
   Drug Discovery Unit
   Wellcome Centre for Anti-Infectives Research
41 Cell and Developmental Biology
42 Cell Signalling and Immunology
43 Computational Biology
46 D’Arcy Thompson Unit
47 Gene Regulation and Expression
48 Geomicrobiology
49 Medical Research Council Protein Phosphorylation and Ubiquitylation Unit
51 Molecular Microbiology
51 Nucleic Acid Structure Research Group
52 Plant Sciences
Professor Alessio Ciulli FRSC
is the Director of the Centre for Targeted Protein Degradation and is part of Biological Chemistry and Drug Discovery. The Ciulli laboratory focuses on dissecting and targeting protein-protein interactions within the ubiquitin and chromatin systems. His expertise spans the fields of Chemical Biology and Structural Biology and he is specifically concerned with studies of druggability of protein-protein interactions to small molecule modulators.
dundee.ac.uk/people/alessio-ciulli

Dr William Famaby
is in the Centre for Targeted Protein Degradation. Utilising his expertise in medicinal chemistry and chemical biology, his research investigates the use of small molecules to induce gain-of-function on target proteins to cause changes to cellular signalling. His work has a particular focus on Central Nervous System diseases where there is high unmet medical need.
dundee.ac.uk/people/william-famaby

Professor Mark Field CBiol FRSB
is a Wellcome Trust Investigator and is part of Biological Chemistry and Drug Discovery and the Wellcome Centre for Anti-Infectives Research. His laboratory studies fundamental aspects of parasite biology to identify new therapeutic targets for clinical intervention, focusing on the African trypanosome, Trypanosoma brucei (the causal agent of sleeping sickness in humans and livestock in sub-Saharan Africa).
dundee.ac.uk/people/mark-field

Professor Ian Gilbert FMedSci FRSE
is Head of Chemistry in the Drug Discovery Unit focusing on tackling unmet medical need through small molecule drug discovery. He is also Head of Biological Chemistry and Drug Discovery, which is a multi-disciplinary and highly collaborative research division, encompassing both fundamental and translational research. He is also a member of the Wellcome Centre for Anti-Infectives Research.
dundee.ac.uk/people/ian-gilbert

Dr Mattie Pawlowic
is a Sir Henry Dale Fellow. She is in Biological Chemistry and Drug Discovery for Anti-Infectives Research. The Pawlowic lab studies Cryptosporidium parasites. Research concentrates in two main areas: understanding the basic biology and biochemistry of Cryptosporidium, and drug discovery. Developing new genetic tools to work with the parasite will help both aims.
dundee.ac.uk/people/mattie-pawlowic

Professor David Horn FRSE
is a Wellcome Trust Investigator. He acts as Deputy Head of Biological Chemistry and Drug Discovery and the Wellcome Centre for Anti-Infectives Research. His research focuses on antigenic variation, drug action and resistance and the application of genetic screens to the African trypanosome, Trypanosoma brucei.
dundee.ac.uk/people/david-horn

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dundee.ac.uk/people/ian-gilbert

Professor David Gray BEM
is Head of Biology in the Drug Discovery Unit. He has responsibility for the quality of output of the compound screening campaigns and underpinning biological characterisation of the hit molecules including the integrated compound and data management functions. He is also part of Biological Chemistry and Drug Discovery and the Wellcome Centre for Anti-Infectives Research.
dundee.ac.uk/people/david-gray

Professor Bill Hunter FRSE FMedsoc FRSE
is in Biological Chemistry and Drug Discovery. His research involves elucidation of the relationships that link protein structure to biological function or chemical catalysis. The broad objectives are to determine the mechanisms whereby enzymes catalyze specific, sometimes unusual biosynthetic reactions or where protein architecture regulates the transport of materials or signals across a membrane.
dundee.ac.uk/people/bill-hunter

Professor Kevin Read
is Head of Drug Metabolism and Pharmacokinetics in the Drug Discovery Unit. His passion is to successfully drive lead optimisation forward, working closely with the medicinal chemists to deliver high quality candidate molecules for entry into formal preclinical development. He is also part of Biological Chemistry and Drug Discovery and the Wellcome Centre for Anti-Infectives Research.
dundee.ac.uk/people/kevin-read

Dr Melissa D’Ascenzio
is a part of Biological Chemistry and Drug Discovery, a key member of the Wellcome Centre for Anti-Infectives Research and is the Head of the Mode of Action Group. Her group is focused primarily on determining the molecular targets of compounds capable of killing the parasites that cause Neglected Tropical Diseases (NTDs). The insights that these studies provide play a vital role in drug discovery for NTDs and Susan’s group works closely with Drug Discovery Unit.
dundee.ac.uk/people/susan-wyllie

Dr Arthur Crossman
Professor Jason Swedlow CBE FRSE
Dr Melissa D’Ascenzo FRSE
Dr Stephen Kelley FHEA FBPhS

Our people
dundee.ac.uk/people
Our people

Cell and Developmental Biology

Professor Kim Dale FRSB
is Associate Dean, International and Assistant Vice-Principal (International). The broad interest of her laboratory is to further understanding of how several genetic interactions come into play at the earliest stages of development to build the developing embryo. More specifically, her research analyses primitive streak stem cells and the role of Notch in regulating cell fate choice within these multipotent progenitor pools.
dundee.ac.uk/people/kim-dale

Professor Carol MacKintosh FRSB
is Head of Postgraduate studies in Life Sciences. Her laboratory is discovering how 14-3-3 protein sets regulate a constellation of intracellular processes by docking onto specific pairs of phosphorylated serine/threonine residues, masking functional domains and inducing conformational changes. This data is then used to construct regulatory networks that target this pathway could have therapeutic potential in neurological disease. Her group takes an interdisciplinary approach that combines Drosophila genetics together with cultured mammalian cells and neurons with in vitro biochemical techniques.
dundee.ac.uk/people/carol-mackintosh

Dr Jens Januschke
is a Sir Henry Dale Fellow and Deputy Head of Cell and Developmental Biology. He leads a research group to examine the mechanisms controlling stem cell polarity in consecutive divisions in the developing Drosophila central nervous system. In particular, he is using life-cell imaging approaches to study the dynamics of cell polarisation in asymmetric division.
dundee.ac.uk/people/jens-januschke

Dr Leanne McGurk
Her research is focused on understanding how the post-translational modification called PARylation impacts aging of the brain. Her work aims toward a broad understanding of how PARylation is involved in brain function and to determine whether pharmacological strategies that target this pathway could have therapeutic potential in neurological disease. Her group takes an interdisciplinary approach that combines Drosophila genetics together with cultured mammalian cells and neurons with in vitro biochemical techniques.
dundee.ac.uk/people/leanne-mcgurk

Professor Inke Näthke FRSE FRSB
is Associate Dean for Professional Culture. The aim of her research in her laboratory is to identify the earliest changes in cancer of the intestinal tract by determining the molecular mechanisms that govern the functions of the APC protein, the major tumour suppressor in this tissue. For her work she combines biochemical and cell biological approaches with multi-dimensional imaging to understand how stem cell behavior shapes the dynamics of healthy and diseased tissue.
dundee.ac.uk/people/inke-nathke

Professor Pauline Schaap FRSE
Her research interests lie in using a Dictyostelid cell model to investigate the signalling pathways of encapsulation and explore whether crucial regulatory proteins in these pathways might be suitable targets for the design of drugs to inhibit encystation.
dundee.ac.uk/people/pauline-schaap

Professor Kees Weijer FRSE
is a Sir Henry Dale Fellow. His group aims to understand the basic molecular mechanisms in the formation of subcellular structures, such as those of polarity and migration. These structures and their proper regulation are critical to human health. The group takes an interdisciplinary approach bridging membrane biophysical methods to state-of-the-art protein biochemistry, imaging, and cell biology.
dundee.ac.uk/people/kees-weijer

Professor Kate Storey FRS (MedSci) FRSE FRSB
is Head of Cell and Developmental Biology. She investigates the cellular and molecular mechanisms that direct neurogenesis, and has recently discovered a new form of cell sub-division, apical abscission, which regulates neuronal differentiation.
dundee.ac.uk/people/kate-storey

Dr Gabriele Schweikert
Dr Christina Schilde
Dr Marios Stravidis
Dr Greg Findlay

Dr David H. Murray
is a Sir Henry Dale Fellow. His group aims to understand the basic molecular mechanisms in the formation of subcellular structures, such as those of polarity and migration. These structures and their proper regulation are critical to human health. The group takes an interdisciplinary approach bridging membrane biophysical methods to state-of-the-art protein biochemistry, imaging, and cell biology.
dundee.ac.uk/people/david-murray

Dr Philip Murray
is a Senior Lecturer in Mathematics in the School of Science and Engineering and an associate of Cell and Developmental Biology. He works on biologically-motivated modelling problems. Areas of interest include developmental patterning, hair follicle growth patterns, DNA repair mechanisms, HIV virus transcriptional dynamics and single cell motion.
dundee.ac.uk/people/philip-murray

• Dr Greg Findlay
• Dr Marlos Stravidis AFHEA FRSB
• Dr Christina Schilde FHEA
• Dr Gabriele Schweikert

Associates

• Dr Leanne McGurk
• Dr David H. Murray
• Dr Kim Dale
• Dr Carol MacKintosh

Presented by the Dundee Laboratory for Experimental Cell Biology (Fly Lab) in Cell and Developmental Biology.
Cell Signalling and Immunology

Professor Simon Arthur
FHSSE FRSB
Professor Simon Arthur is Head of Cell Signalling and Immunology. His laboratory is primarily interested in the roles that cells of the innate immune system play in coordinating inflammation and how they contribute to activation of adaptive immunity via the production of cytokines. Understanding how these pathways act to control immunity and how their dysregulation may contribute to disease is the major focus of research in his group.
dundee.ac.uk/people/simon-arthur

Professor Hadi Hardie
FHSSE FRSB
Professor Grahame Hardie is joint Deputy Head of Cell Signalling and Immunology, Academic Regional Lead for South Asia and University Race Equality Charter Lead. His current research is focussed on uncovering non-canonical pathways for regulation of AMP-activated protein kinase cascade. This research has provided insights into the treatment of diabetes, obesity and cancer. He is a visiting Professor at Fudan University in China.
dundee.ac.uk/people/grahame-hardie

Professor Gabriele Schweikert

Dr David Booth
FRSE FRSB
Dr David Booth is a Senior Lecturer. He conducts computational research to explain and predict the functioning of protein complexes that are important in key biological processes, such as cellular energy conversion, molecular transport, and enzyme catalysis. To tackle these challenging problems, he employs a range of computational methods, extensively using supercomputers, and works in close collaboration with experimental groups. He is a joint appointment between the Schools of Life Sciences and Science and Engineering.
dundee.ac.uk/people/david-booth

Computational Biology

Professor Geoff Barton
FRSE FRSB
Professor Geoff Barton is Head of Computational Biology and an associate of Gene Regulation and Expression. His research centres on the development and application of computational methods for the analysis of biological data. Several of his tools such as Jalview (www.jalview.org) and Jpred (www.compbio.dundee.ac.uk/www-jpred) are used by tens of thousands of scientists worldwide.
dundee.ac.uk/people/geoffrey-barton

Professor Ulrich Zachariae

Dr Rastko Sknepnek

Dr Andrei Pisliakov

Professor Jason Swedlow
OBIE FRSE

Dr David Booth
FRSE

Associates

+ Dr Mahima Swamy
+ Professor Jenny Woot
+ Dr Sharon Matthews
+ Dr Alan Prescott
+ Dr Tony Ly

Computational Biology
Dr Graham Christie FHEA FPhysiol
is a Senior Lecturer, University Academic Lead for International activity in South East Asia and Programme Lead for the Joint Degree Programme with the National University of Singapore. He teaches on several modules and programmes offered by the Schools of Life Sciences, Medicine and Dentistry.
dundee.ac.uk/people/graham-christie

Dr David Booth
is a Senior Lecturer and has a research background in population and evolutionary genetics. David teaches on undergraduate modules associated with these themes.
dundee.ac.uk/people/david-booth

Dr Nick Brewer FHEA FRSB MScC
is a Reader, Programme Lead for Widening Access programmes, University Lead for FE College Articulation and the University Academic Lead for the International College Dundee. His teaching specialism is in chemistry and physics as applied to biology.
dundee.ac.uk/people/nick-brewer

Dr Arthur Crossman
is a Lecturer in teaching and scholarship. Arthur has a research background in synthetic organic chemistry, chemical biology and associated analytical chemistry. His teaching specialism is organic synthesis alongside laboratory and research skills.
dundee.ac.uk/people/arthur-crossman

Professor David Coates
is a Chancellor’s Award Fellow and has a research background in plant molecular biology. David has a particular interest in quality assurance and accreditation, and is chair of the Royal Society of Biology’s Degree Accreditation Committee.
dundee.ac.uk/people/david-coates

Dr Melissa D’Ascenzio FHEA
is a Lecturer in Pharmaceutical Chemistry. Melissa has a research background and teaching specialism in organic and biological chemistry. Her particular focus is on those students who choose our Biological Chemistry and Drug Discovery degree pathway. She is co-Chair of the SLS Athena SWAN committee.
dundee.ac.uk/people/melissa-dascenzio

Dr Sheriar Hormuzdi FHEA
is a Senior Lecturer with a research background in population and evolutionary genetics. Sheriar teaches on undergraduate modules within degrees spanning years 1-4 within the areas of biochemistry, cell signalling and immunology. She contributes to a range of undergraduate modules within degrees spanning years 1-4, within the areas of microbiology and developmental biology.
dundee.ac.uk/people/sheriar-hormuzdi

Dr Sharon Matthews
is a Lecturer with a research background in immunology. Sharon contributes to a range of undergraduate modules within degrees spanning years 1-4, within the areas of biochemistry, cell signalling and immunology.
dundee.ac.uk/people/sharon-matthews

Dr Stephen Land CScTeach FRSB FTPS
is a Reader, Chancellor’s Award Fellow and University Academic Regional Lead for Middle East and North Africa. Stephen has a research background in respiratory physiology and teaches in areas related to molecular physiology, development, epithelial disease, and exercise.
dundee.ac.uk/people/stephen-land

Dr David Martin FHEA FRSB
is a Senior Lecturer in Bioinformatics and Programme Lead for the Core Curriculum and Degree Programme Lead for the Biological Sciences degree programme. Stephen has a research background and teaching specialism in pharmacology. Alongside teaching Life Sciences undergraduates, Stephen also teaches first and second year physiology and pharmacology to medical students on the MBC8B Programme.
dundee.ac.uk/people/david-martin

Professor Kim Dale FRSB
is Associate Dean International and Admissions Tutor for the School. She is also University Assistant Vice-Principal (International). Her role is to develop the International Strategy for the School which involves developing key international partnerships with Institutions in a wide variety of geographies and overseeing the recruitment of international students to Life Sciences teaching programmes. Kim’s role is also provides and actively promotes opportunities for our undergraduates to study abroad during their time with us. She is a visiting Professor at Taylor’s University. Her research focuses on understanding the molecular regulation of body plan formation at early stages of embryogenesis.
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Dr Claire Hepburn FHEA
is a Lecturer in teaching and scholarship. Claire has a research background in cardiovascular physiology and pharmacology and teaches broadly across the undergraduate curriculum.
Dr Constance Alabert is a Cancer Research UK Senior Research Fellow. Her research focuses on DNA replication in the context of chromatin and its implications for human diseases such as cancer.
dundee.ac.uk/people/constance-alabert

Dr Tony Ly is a Sir Henry Dale Fellow. His group are interested in developing and applying new mass-spectrometry (MS)-based approaches to identify the proteomic changes that accompany and control cell state transitions during cell growth and division in human cells.
dundee.ac.uk/people/tony-ly

Professor Angus Lamond FRS FRSE FMedSci is Director of the laboratory for Quantitative Proteomics. He has pioneered seminal work on the structure and functional organisation of the nucleus of mammalian cells and leads an interdisciplinary team to develop data analysis and warehousing software for proteomics.
dundee.ac.uk/people/angus-lamond

Professor Ron Hay FRS FRSE FMedSci is a Wellcome Trust Investigator. His research interest has focussed on the role of ubiquitin and ubiquitin-like proteins in transcriptional regulation. He is currently employing quantitative high-resolution mass spectrometry to carry out quantitative temporal analysis of the Small Ubiquitin-like Modifier (SUMO) proteome as cells respond to various challenges.
dundee.ac.uk/people/ronald-hay

Professor Tom Owen-Hughes FRSE is Head of Gene Regulation and Expression. He leads a research group investigating how chromatin structure contributes to gene regulation. He is best known for his contributions to the understanding of how ATP-dependent molecular motors remodel nucleosomes.
dundee.ac.uk/people/tom-owen-hughes

Professor Jason Swedlow OBE FRSE is Programme Director of Delta Tissue. His lab focuses on studies of mitotic chromosome structure and dynamics and has published numerous leading papers in the field. He is co-founder of the Open Microscopy Environment (OME), a community-led open source software project that develops specifications and tools for biological imaging. He is an associate of Computational Biology.
dundee.ac.uk/people/jason-swedlow
Geomicrobiology Group

Professor Geoffrey Gadd
FRS FRSB FLS FLow
His research interest is in the geoactive properties of microorganisms and their importance in key biogeochemical processes. The prime focus is on metal-mineral transformations and understanding physiological and morphological responses to toxic metals and mineral substrates, mechanisms of mineral dissolution, and the formation of novel mycogenic biominerals. He is an associate of Molecular Microbiology.
dundee.ac.uk/people/geoffrey-gadd

Professor Tomo Tanaka
FRS
is a Wellcome Trust Investigator and Deputy Head of Gene Regulation and Expression. His research is focused on dissecting the mechanism involved in regulating the kinesin-1 microtubule interaction in mitosis. Tomo is also Academic Lead for the Dundee Imaging Facility.
dundee.ac.uk/people/tomoyuki-tanaka

Dr Kasper Rasmussen
is a Cancer Research UK Career Development Fellow. His research focuses on dissecting epigenetic mechanisms in gene regulation that control self-renewal and differentiation of hematopoietic stem and progenitor cells. In particular, he is studying the proteins regulating the DNA methylation landscape using in vitro and in vivo models of hematopoiesis.
dundee.ac.uk/people/kasper-rasmussen

Medical Research Council Protein Phosphorylation and Ubiquitylation Unit

Professor Dario Alessi
FRS FRSB FMedSci
is Director of the MRC Protein Phosphorylation and Ubiquitylation Unit and the Division of Signal Transduction Therapy Unit. His laboratory has carried out landmark work in cell signalling, in which he has pioneered research on kinases and their role in inherited diseases providing exciting new insights into conditions such as Parkinson’s disease, cancer and hypertension.
dundee.ac.uk/people/dario-alessi

Dr Greg Findlay
is a Sir Henry Dale Fellow and an associate of Cell and Developmental Biology. His laboratory is interested in the role of phosphorylation and ubiquitylation networks in embryonic stem cell fate determination, with the aim of understanding how stem cells can be manipulated or applied to treat human disease.
dundee.ac.uk/people/greg-findlay

Dr Virginia De Cesare
is a UKRI Future Leaders Fellow. Her research identifies and characterizes the ubiquitin enzymes responsible for non-canonical ubiquitylation events. In addition, her lab develops a series of robust mass spectrometry tools for the identification of non-canonical ubiquitylation on a proteomic scale.
dundee.ac.uk/people/virginia-de-cesare

Dr Yogesh Kulathu
The research goal of his lab is to understand how cellular signal transduction is regulated by the combined influences of ubiquitylation and phosphorylation. His research aims to characterise the structural and mechanistic principles underlying allosteric regulation of enzymes by ubiquitylation.
dundee.ac.uk/people/yogesh-kulathu

Dr Jin Rui (Amos) Liang
His group identifies and characterises novel factors that regulate endoplasmic reticulum-specific autophagy, or ERphagy. He also explores the physiological roles of ERphagy and investigate how it may be disrupted in pathologies such as neurodevelopmental defects, pancreatic stress, and cancer metastasis.
dundee.ac.uk/people/jin-liang

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FRS
is a Wellcome Trust Investigator and Deputy Head of Gene Regulation and Expression. His research is focused on dissecting the mechanism involved in regulating the kinesin-1 microtubule interaction in mitosis. Tomo is also Academic Lead for the Dundee Imaging Facility.
dundee.ac.uk/people/tomoyuki-tanaka

Dr Kasper Rasmussen
is a Cancer Research UK Career Development Fellow. His research focuses on dissecting epigenetic mechanisms in gene regulation that control self-renewal and differentiation of hematopoietic stem and progenitor cells. In particular, he is studying the proteins regulating the DNA methylation landscape using in vitro and in vivo models of hematopoiesis.
dundee.ac.uk/people/kasper-rasmussen

Professor Geoff Barton
FRS FRSB

Dr Gabriele Schweikert

Professor Gordon Simpson
FRSB

Dr Joost Zomerdijk
FRSB

Professor Anton Gartner

Dr Stephen Land
CSciTeach FRSB FTPS
The goal of the lab is to visualize the ISG15 system in the antiviral state. The long-term goal of the lab is to unravel how signalling pathways control proteasomal degradation, especially how phosphorylation regulates protein degradation to meet the cell's requirements.

dundee.ac.uk/people/miratali-muqit

He investigates the role played by the ubiquitin-like protein ISG15 in key immune responses that prevent active growth. Understanding these non-growing, antibiotic-tolerant bacteria could give us new insight into strategies to treat chronic infection and combat the rise of antibiotic resistance.

dundee.ac.uk/people/esther-sammler

dundee.ac.uk/people/megan-bergkessel

dundee.ac.uk/people/david-lilley

Our people
Dr Edgar Huitema is a Senior Lecturer. His research is focussed on examining the mechanisms of virulence acquisition during Phytophthora-host associations. His laboratory aims to harness both new understanding about the role of effector proteins during disease, and the availability of P. capsici genome sequences, to study and perturb the pathways that control effector delivery and their activities.

dundee.ac.uk/people/edgar-huitema

Professor Gordon Simpson FRSB is Deputy Head of Plant Sciences and an associate of Gene Regulation and Expression. His research focuses on the role of RNA and RNA processing in controlling development using Arabidopsis thaliana as a model system. His research is anchored in unbiased approaches involving molecular genetics and genome-wide analyses of gene expression using third generation true single molecule sequencing.

dundee.ac.uk/people/gordon-simpson

Dr Martin Balcerowicz is a Royal Society University Fellow. His research focuses on how temperature affects gene expression in plants, and how such changes are translated into growth responses. He wants to understand these effects at the molecular level and to find ways to breed climate-resilient plants that can cope with the challenging temperature environment of the future.

dundee.ac.uk/people/martin-balcerowicz

Professor Paul Birch FRSE is Head of Plant Sciences. His group studies effector proteins from the potato late blight pathogen, Phytophthora infestans. This eukaryotic pathogen develops haustoria – finger-like cell structures that form an intimate interaction with the host plasma membrane during the early stages of disease. His laboratory has shown that haustoria are a major site of delivery of a class of proteins called KULR effectors.

dundee.ac.uk/people/paul-birch

Dr Jorunn Bos Her group aims to elucidate how aphids and plants interact with each other at the molecular level during both compatible and incompatible interactions. Research is focussed on identifying and characterising biochemical, metabolic and signalling pathways that aphids target and how this impacts aphid host range.

dundee.ac.uk/people/jorunn-bos

Dr Davide Bulgarelli His research deploys a combination of metagenomics, cellular biology, molecular microbiology and computational biology tools to further understand the structure, function and host control of the microbiota thriving at the root-soil interface.

dundee.ac.uk/people/davide-bulgarelli

Professor Claire Halpin FRSE FRSB is an Associate Dean, Research. Her research group focuses on two main areas, lignin biosynthesis and meiotic recombination. They use barley and Arabidopsis in this work to manipulate lignin and discover new genes related to lignin biosynthesis. Meiotic recombination also focuses on barley with aim of improve crop breeding.

dundee.ac.uk/people/claire-halpin

Professor Ingo Hein FRSB is a Reader. His work connects the disciplines of plant pathology and potato genetics. His research is aimed at the fundamental and applied aspects of crop and pathogen genomics as well as genetics to deliver crop protection against biotic threats.

dundee.ac.uk/people/ingo-hein

Dr Piers Hemsley SFHEA FRSE His group aims to understand how protein S-acylation (palmitoylation) acts to control protein function, with particular emphasis on its role in stress responses and development in plants.

dundee.ac.uk/people/piers-hemsley

Dr Sarah McKim Her research is focussed on the developmental biology of plant architecture. Her laboratory is examining the transcription factors controlling stage-specific morphologies and architectures in barley and Arabidopsis and the role of mRNA regulation in this process.

dundee.ac.uk/people/sarah-mckim

Professor Robbie Waugh FRSE is Director of International Barley Hub. His work has concentrated on three major research elements (i) assembling and utilising germplasm suited to high resolution genetic analysis (ii) developing molecular tools and approaches that facilitate gene identification and validation and (iii) contributing to international efforts to derive a reference barley genome sequence.

dundee.ac.uk/people/robbie-waugh

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dundee.ac.uk/people/gordon-simpson

Dr Graham Christie FHEA FPhysiol

Dr David Martin FRSB FHEA

Associates

- Dr Graham Christie FHEA FPhysiol
- Dr David Martin FRSB FHEA
Our Location

Being at the heart of Scotland’s road and rail network puts spectacular scenery, skiing, championship golf, mountain climbing and sailing within easy reach. The major cities of Edinburgh and Glasgow are a short trip away. Scotland’s four main international airports all operate national airlines, such as British Airways, and low cost airlines. This makes it easy to get to all the major centres of the UK and Europe.
dundee.ac.uk/travel

Dundee to...

- Edinburgh - 1 hour 10 mins
- Glasgow - 1 hour 30 mins
- Manchester - 5 hours
- Birmingham - 5 hours 20 mins
- London - 6 hours

Scottish airport flights to:

- Amsterdam Schiphol Airport - 1 hour 25 minutes
- Paris CDG Airport - 1 hour 45 minutes
- London Airports - 1 hour
Our achievements at a glance

**TOP 15 in the UK**
- Ranked Top 15 in the UK for Biological or Biomedical Sciences courses in 2022 by University Guides (Sunday Times and Complete University)

**World Top 250**
- We are one of Times Higher Education’s world top 250 (Times Higher Education World University Rankings 2021)

**1st university in Scotland**
- First university in Scotland to be awarded a Gold Engagement Watermark by National Co-ordinating Centre for Public Engagement 2020

**TOP 10 in the UK**
- Ranked 6th in the UK and 1st in Scotland for the value of our spinouts over the last two decades (University Spinout Report 2021, GovGrant)

**World Top 30**
- Ranked 2nd in the UK, 5th in Europe and 28th in the World as judged by ‘citations-per-paper’ (QS World University Rankings in Biological Sciences 2022)

**5***** star rating**
- Awarded a 5 Star rating, the highest possible by Quacquarelli Symonds (QS) in 2022 across categories including teaching, employability and academic development

**NO. 5 in Europe**
- Ranked 5th in Europe for impact of scientific research (CWTS Leiden Rankings 2021)

“We are one of the strongest research centres in Europe but it isn’t just about producing world-class results in our science and research – we also strive to be world-class in how we work together as people. It is a great place to be because we are big enough to include great diversity among our people and ideas, but small enough to know each other. The same applies to the city, where the people are great supporters of the work of the University.”

Inke Nåthke
Associate Dean for Professional Culture and Professor of Epithelial Biology

*Stats were correct at time of printing, May 2022*