SCHOOL OF NATURAL SCIENCES

RESEARCH STRATEGY

2025 – 2030

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

FOREWORD

Understanding the natural world, and people's interactions with and within it, have never been more important and urgent. The climate, water and biodiversity crises require a deep and broad understanding of our abiotic and biotic environment including anthropogenic threats and pressures, to inform solutions for sustainable development.

Research in Trinity's School of Natural Sciences, incorporating the Disciplines of Botany, Geography, Geology and Zoology, is uniquely placed for multi-, inter-, and trans-disciplinary approaches to analysis of deep time to the present as well as generation of future projections. Our work encompasses the origins and development of the physical environment of our planet together with the evolution of biodiversity, the ecology of contemporary ecosystems, developmental and physiological biology of living organisms, social systems and people's interactions with each other and the environment. This combination of physical, biological, and social sciences enables our community of researchers to engage with a diversity of research funders, generate a range of high-quality research outputs and contribute to meaningful impact across a wide variety of sectors.

This research strategy has emerged from analysis of the quality, quantity and impact of our recent research and our ambitions for the future. There has been strong engagement from researchers across career stages and disciplines. By identifying priority actions, this strategy can help to guide our activities and resources to those areas where it will be most effective.

Our research strategy will be reviewed on an annual basis to assess whether we are achieving our goals and whether additional or different actions are needed to overcome barriers. While the Head of School, Director of Research and Research Committee will play important roles in the implementation and review of the strategy, it is up to all of us to take actions where we can to achieve our research vision for the School.

Professor Yvonne Buckley, School of Natural Sciences Director of Research

Mary Kerrigan, School of Natural Sciences Research Programme Officer

School of Natural Sciences Research Committee: Professor Jenny McElwain, Professor Iris Möller, Professor Quentin Crowley, Professor Paula Murphy, Dr Wahaj Habib

OUR VISION

We are a national and global leader for advancing knowledge and driving innovation within and across natural and social sciences disciplines, contributing to a just, sustainable, and informed society within a healthy, valued and rapidly changing environment.

OUR MISSION

As a community of researchers, our mission is to advance knowledge and innovation by conducting research across the natural and social sciences, engaging with communities, policymakers, and industry partners to address pressing societal and environmental challenges, and equipping future leaders with the tools to foster a just, sustainable, and informed society.
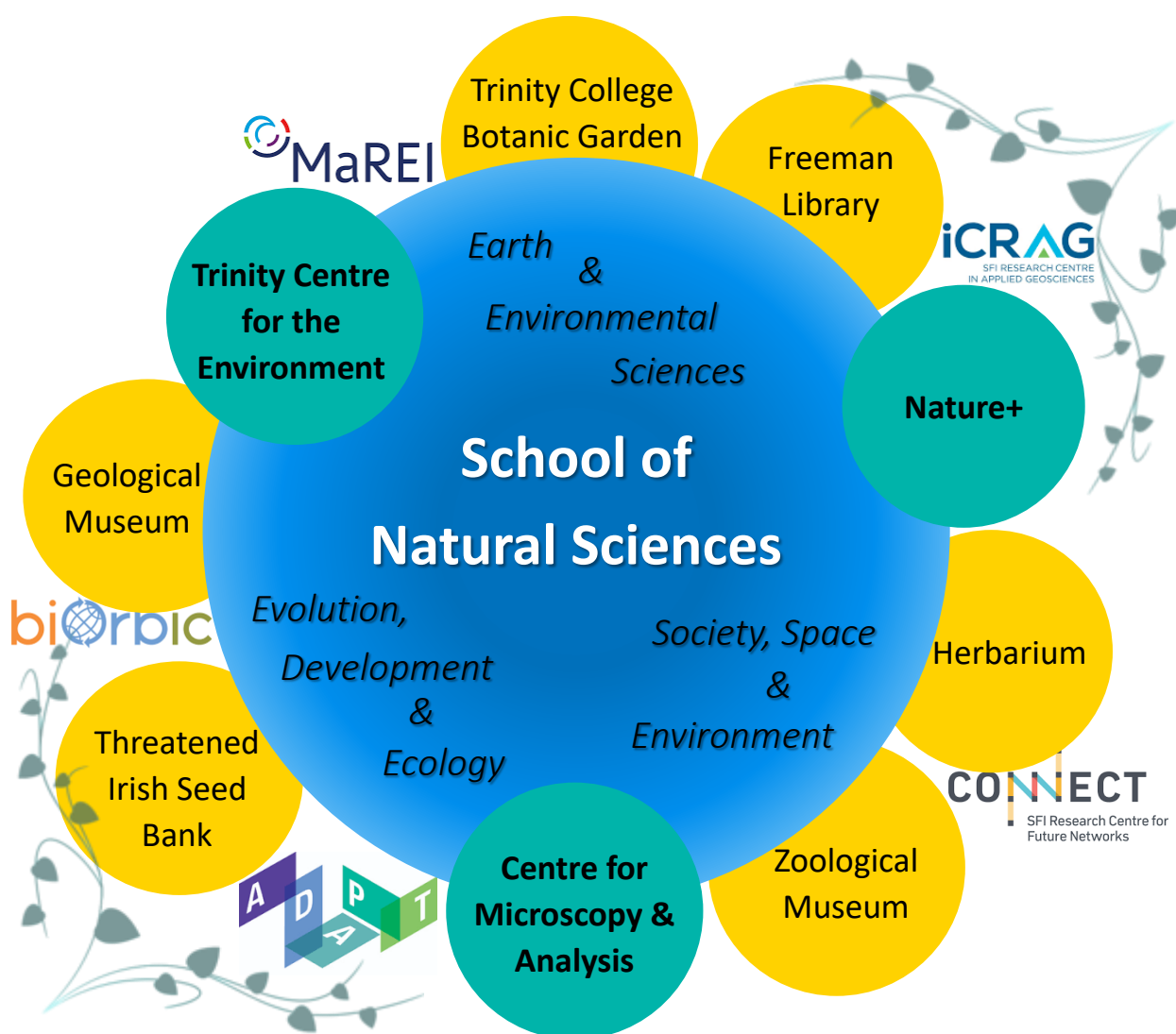
OUR VALUES

We value being able to do our research freely in a safe, supportive, cooperative, and well-resourced working environment, with the tools we need to leverage our creativity and the ability to shape and respond to research opportunities as they arise. We value the following attributes of our people, environment, and learning:

- *Our People – diverse, ethical, excellent, impactful, mutually respectful, collaborative, responsive*

- *Our Environment – healthy, diverse, productive, safe, supportive, sustainable*

- *Our Learning – research-led teaching, engagement with public, constantly updating our skills, lifelong learning.*

OUR RESEARCH STRENGTHS

The School of Natural Sciences conducts research on all aspects of the natural world and the intersections with society, including: planetary processes, environmental function, evolution and ecology of living organisms and the interaction of people with their wider environments. Research in the School is affiliated with three main research areas: Earth and Environmental Sciences; Evolution, Development, and Ecology; and Society, Space and Environment. Individual researcher affiliation to these research themes cuts across the Discipline structure of the School.

Members of the School secured funding of >€50M over the past five years, which represents a doubling of research income compared to the previous five years. Three core discipline areas for the School of Natural Sciences position Trinity in the top 100 institutions in the world: Ecology, Biological Sciences and Geography. In addition, Trinity is ranked 30th in the world for impact through the core School research area of sustainable cities and communities and 79th in the world for climate action. The School curates significant research collections which have important historical significance and are used for research, teaching and public outreach through the Zoological Museum, Geological Museum, Freeman Library, Herbarium, Trinity College Botanic Garden and Threatened Irish Seed Bank.

OUR RESEARCH STRENGTHS

Academics in the School have won prestigious national research awards in the past five years. These include the Irish Research Council Early Career Researcher of the Year and Researcher of the Year Awards (2 winners) and the Royal Irish Academy Gold Medal in Environmental Science and Geoscience.

The School of Natural Sciences conducts innovative and impactful research that makes a difference locally and globally. Working collaboratively with scholars from around the world, the School has contributed impactful research in urban food governance and sharing, environmental health, flood mitigation, agriculture, nature-based solutions for biodiversity, water quality and carbon capture, discovery of new species, micro-plastics in the environment, ecosystem stability, smart urbanism, and urban vacancy in the Global north and south. We have also supported partner institutions through knowledge transfer initiatives.

Examples of important studies include those that have shed new light on the formation of rare minerals that are used by green energy and technology industries, offered new insights into the resilience of coastal ecosystems to sea level rise, provided ages for the earliest Homo sapiens fossils in East Africa and demonstrated how altered movement in early development leads to congenital abnormalities of the spine, such as scoliosis.

The high quality of our research publications means that we continue to influence national and international policy. Research from the School has influenced IPBES reporting on the vulnerability of ecosystem services and our academics have played key roles in the UNEP Global Peatlands Assessment and provided advice to Climate Change Advisory Council on biodiversity consequences of climate action. Several of our early career researchers are skilled in delivering social impact through education and public engagement, including a recent winner of the iCRAG Education and Public Engagement award.

RESEARCH STRATEGY DEVELOPMENT

The School of Natural Sciences Research Strategy 2025-2030 has been developed and agreed following comprehensive data collection and inclusive consultation processes undertaken in 2023 and 2024. The Director of Research, Professor Yvonne Buckley and the School Research Programme Officer, Mary Kerrigan, in partnership with the School of Natural Sciences Research Committee, oversaw the project. Throughout the development of the strategy, discussions within the School Research Committee and input from the wider School community has greatly helped to shape the scope and ambition of the document.

In 2023 a School Research Report was produced ahead of the School's Quality Review process. This report featured a thorough review of the School's research performance between 2018 and 2023 including amounts, sources, and distribution of research funding, number of publications per type and research area, and Trinity's international rankings in subjects related to the School's research activity. Academics in the School were also invited to submit narrative evaluations of the significance and impact of their top five research outputs from 2018-2023.

In May 2024 a School-wide survey was shared to gather input from faculty, professional staff, and postgraduate students on the current opportunities and challenges to their research activity in the School. Results from the research survey were presented back to the School and the detailed and constructive answers from the respondents have served as an important and valuable source of information and data to inform the strategy.

RESEARCH STRATEGY 2025 – 2030

Our research strategy is organised into three pillars. Each pillar includes goals with specific actions. Actions are detailed in below to facilitate annual reviews of progress by the Research Committee with reports to the School Executive.

Pillar 1	Pillar 2	Pillar 3
Enable research excellence and cutting-edge advances	**Enhance research impact and influence**	**Ensure long-term international research relevance**

Enable research excellence and cutting-edge advances

Goal 1.1: Allow and respect the time needed for top quality research

1. Ensure the freedom to explore new areas, including fundamental research and applications, for all researchers in the School

2. Review the School workload model to ensure the time needed for research activities is valued and adequately accounted for and to enable realistic assessment of the impact of administrative and teaching duties on the ability to be creative to produce high quality research

3. Develop a School-wide sabbatical/research leave policy for academic members of staff and a process for reallocation or restructuring of teaching to enable regular sabbatical leave

Goal 1.2: Amplify and value interdisciplinary research centres

1. Recognition for centre successes and researchers driving interdisciplinary work

2. Adequate resourcing of high impact School-led research centres through review of budget allocations and other resources for School-led research centre activities

3. Facilitate research communication, internal and external

4. Create opportunities through meetings and networking events to co-create research focus areas

Goal 1.3: Enhance research equipment

1. Generate a list of School research infrastructure, equipment, and natural history collections that is openly accessible with details of management of the asset, its location and process for sharing/access.

2. Facilitate sharing of physical resources, equipment, and infrastructure

3. Ensure our infrastructures, equipment, and natural history collections are discoverable/visible, well used, maintained, and regularly updated

4. Secure access to high priority external resources/infrastructure through central School payment of access fees or memberships

5. Support School labs to become Green Labs

6. Fully exploit current spaces at Trinity East and develop a research space needs strategy

7. Support the visibility, curation, and discoverability of our natural history collections through their digitization

8. Develop a plan for technical support of key analytical facilities

Goal 1.4: Enhance research supports

1. Develop training and mentoring for networking and research proposal writing to complement resources available in the Research Development Office

2. Develop a post-award support map for the School and College to facilitate researcher access to existing post-award resources and identify gaps

3. Create shared post-award support to fill identified gaps in existing support

4. Build shared resources for research ethics, data management, gender considerations in research, dissemination plans and impact.

Pillar 2
Enhance research impact and influence

Goal 2.1: Research-led teaching

1. Ensure fit-for-purpose field and laboratory facilities for research-led teaching with adequate technical staff support

2. Develop mechanisms and resourcing to enable research post-graduate students and post-doctoral researchers to gain teaching experience if desired. Ensure research seminars are promoted and accessible to undergraduates

3. Support dissertation research projects through adequate staff time and budgets

4. Ensure that research staff (post-doctoral researchers and research assistants) contributing to postgraduate research projects are recognised and acknowledged.

Goal 2.2: Centralise communication of School research, events, and news

1. Organise regular interdisciplinary research seminars and workshops

2. Organise School outreach events e.g. European Researchers Night, Culture Night

3. Support for showcasing our research and its outputs, including collections, in Trinity, to the public

4. Keep the school website updated with research activities, highlighting national and international impacts, how our research in all disciplines relate to the UN SDGs etc

5. Develop opportunities for researchers to engage with media with support from Trinity Communication

Goal 2.3: Increasing our reach and influence

1. Dedicated staff member to pro-actively and equitably (for all career stages and disciplines) assist 'bridging' between researcher and external organisations who may benefit from the research (incl. Schools, NGOs, government, media)

2. Consolidate existing, and build new, strategic partnerships allowing us to address challenges more effectively and open opportunities for funding, knowledge transfer, and impact activities

3. Administrative support for opening research seminars to the public and targeted audiences of decision-makers

4. Develop connections with external organisations via research consultancy with support from CONSULT Trinity

5. Develop new micro-credential and continuous professional development programmes/resources targeted to key stakeholders e.g. decision-makers, industry collaborators etc.

6. Make our natural history collections available for international research and collaboration on international platforms through digitization

Goal 3.1: Attract top international talent

1. Consult with School Research Committee on School Recruitment strategy

2. Develop a promotional campaign to attract high calibre postdoctoral applicants to MSCA, ERC and other fellowship schemes

Goal 3.2: Leverage and expand international reach

1. Develop a School philanthropic research support strategy

2. Avail of opportunities/supports from Trinity's networks and partnerships, with support from Trinity Global

3. Strengthen connections to our alumni community with support from Trinity Development and Alumni office

4. Consolidate existing, and build new, strategic research links with international schools, centres, and laboratories that work on similar research themes

Goal 3.3: Garner international recognition in our areas of research

1. Facilitate memberships of international research networks and initiatives

2. Review and renewal of intra-School research networks via research Centres and hubs (e.g. CMA, Centre for the Environment, Nature+, Water Centre, AIB Trinity Climate Hub)

3. Support long-term monitoring schemes to maximise value of data

4. Fully utilise supports from Trinity's Research Development Office to coordinate and lead on large consortium funding applications

Goal 3.4: Embed Open Science practices into the core of our research

1. Secure budgets for, and disseminate information on, open access publications (e.g. IREL)

2. Administrative support for wider dissemination of research outputs

3. Facilitate corresponding authors within the School to archive papers, data, and code

4. Digitise and share research collections, living and non-living

IMPLEMENTATION PLAN

Pillar	Goal	Action	Responsible	Beneficiaries	Complete
1: Enable research excellence and cutting-edge advances	Allow and respect the time needed for top quality research	Freedom to explore new areas, including fundamental research & applications	School Exec	Researchers, School reputation	Ongoing
		Review workload model	School Exec	All staff	2025
		Review sabbatical/research leave policy & process for reallocation of teaching	School Exec, Teaching Programme Directors	School researchers	2025
	Amplify and value interdisciplinary research centres	Recognition for centre successes/staff driving interdisciplinary work	Research Committee	Centre researchers and associated staff	Ongoing
		Adequate resourcing of high impact School-led research centres through review of budget allocations and other resources for School-led research centre activities	School Exec	Centre Directors and associated staff	2025
		Facilitate research communication, internal and external	Comms Officer, Centre Directors	School researchers and external researchers	Ongoing
		Create opportunities through meetings and networking events to co-create research focus areas	Centre Directors	School researchers	Ongoing
	Enhance research equipment	Generate a list of School research infrastructure, equipment, and collections that is openly accessible with details of management of the asset, its location and process for sharing/access	Research committee, PIs, Tech staff	All staff	2025
		Facilitate sharing of physical resources, equipment, and infrastructure	Centre Directors, PIs	School researchers	Ongoing
		Ensure our infrastructures, equipment, and collections are discoverable/visible, well used, maintained, and regularly updated	Centre Directors, PIs, Tech staff	School researchers	Ongoing
		Secure access to high priority external resources/infrastructure through central School payment of access fees or memberships	Research committee, school exec	School researchers	Ongoing
		Support School labs to become Green Labs	Research committee	School researchers	Ongoing
		Fully exploit current spaces at Trinity East and develop a research space needs strategy	Research committee, school exec	All staff	2025
		Support the visibility, curation, and discoverability of our natural history collections through their digitization	Collection curators, research committee	School researchers, external researchers	Ongoing
		Develop a plan for technical support of key analytical facilities	Research committee, School exec	PIs	2025
		Develop training and mentoring for networking and research proposal writing	RPO, PIs	PIs, especially early career researchers	Ongoing

	Enhance research supports	Develop a post-award support map to facilitate researcher access to existing post-award resources and identify gaps	RPO	PIs	2025
		Create shared post-award support for post contract award	HoS and Faculty Dean	PIs	2025
		Build shared resources for research ethics, data management, gender considerations in research, dissemination plans, impact etc	RPO, Research Committee	PIs	Ongoing
2: Enhance research impact and influence	Research led teaching	Ensure fit-for purpose teaching and laboratory facilities with technical staff support	School exec	School researchers, students	Ongoing
		Develop mechanisms and resourcing to enable research post-graduate students and post-doctoral researchers to gain teaching experience if desired. Ensure research seminars are promoted and accessible to undergraduates	School exec	Undergraduates, postgraduates, post-doctoral researchers	Ongoing
		Support dissertation research projects through adequate staff time and budgets	PIs	Postgraduates	Ongoing
		Ensure that research staff (post-doctoral researchers and research assistants) contributing to postgraduate research projects are recognised and acknowledged.	PIs	Post-doctoral researchers, Research assistants	Ongoing
	Centralise communication of School research, events, and news	Organise regular interdisciplinary research seminars and workshops	PIs, RPO	School/College researchers, external researchers	Ongoing
		Organise School outreach events e.g. European Researchers Night, Culture Night	Research Committee, PIs, Comms Officer	General public	Ongoing
		Support for showcasing our research and its outputs, including collections, in Trinity, to the public	Centres, PIs, Comms Officer	General public	Ongoing
		Keep the school website updated with research activities, highlighting national and international impacts, how our research in all disciplines relate to the UN SDGs etc	PIs, RPO, Comms Officer	External researchers, general public	Ongoing
		Develop opportunities for researchers to engage with media with support from Trinity Communication	Comms Officer	School researchers, general public	2025
	Increasing our reach and influence	Dedicated staff member to pro-actively and equitably assist 'bridging' between researcher and external organisations who may benefit from the research	School Exec	School researchers, external orgs	2025
		Consolidate existing and build new strategic partnerships allowing us to address challenges more effectively and open up opportunities for funding, knowledge transfer, and impact activities	Research committee, PIs	School researchers	Ongoing
		Administrative support for opening research seminars to the public and targeted audiences of decision-makers	Comms Officer	General public, external stakeholders	Ongoing
		Develop connections with external organisations via research consultancy with support from CONSULT Trinity	PIs	PIs	Ongoing

		Develop new micro-credential and continuous professional development programmes/resources targeted to e.g. decision-makers	Research committee, PIs	External stakeholders	2025
		Make our natural history collections available for international research and collaboration on international platforms through digitization	Collections curators, research committee	Researchers, external collaborators	Ongoing
3: Ensure long-term international research relevance	Attract top talent	Recruitment strategy with input from research cttee	Research committee, School exec	Faculty Dean, College	2025
		Develop a promotional campaign to attract high calibre postdoctoral applicants to MSCA, ERC and other fellowship schemes	Research committee, Comms Officer	School researchers	2025
	Leverage and expand international reach	Develop a School philanthropy strategy	Research committee	All staff	2025
		Avail of opportunities/supports from Trinity's networks and partnerships, with support from Trinity Global	Research committee, RPO, PIs	School researchers	Ongoing
		Strengthen connections to our alumni community with support from Trinity Alumni	Research committee	School researchers, alumni	Ongoing
		Consolidate existing and build new strategic research links with international schools, centres, and laboratories that work on similar research themes	Research committee, Centre directors, PIs	School researchers	Ongoing
	Garner international recognition in our areas of research	Facilitate memberships of international networks and initiatives	Research committee, school exec	School researchers	Ongoing
		Review and renewal of intra-School research networks via research Centres and hubs (e.g. CMA, Centre for the Environment, Nature+, AIB Trinity Climate Hub)	Centre directors, research committee	Centre researchers, school researchers	2025
		Support long-term monitoring schemes to maximise value of data	PIs	School researchers, external researchers	Ongoing
		Fully utilise supports from Trinity's Research Office to coordinate and lead on large consortium funding applications	RPO, PIs	PIs	Ongoing
	Embed Open Science practices into the core of our research	Secure budgets for open access publications (e.g. IREL)	Research committee, school exec	PIs	Ongoing
		Administrative support for wider dissemination of research outputs	Research committee, Comms Officer	PIs	Ongoing
		Facilitate corresponding authors within the School to archive papers, data, and code	Research committee, PIs	External researchers and stakeholders	Ongoing
		Digitising and sharing research collections, living and non-living	Collection curators and associated staff, Comms officer	External researchers, general public, alumni	Ongoing