



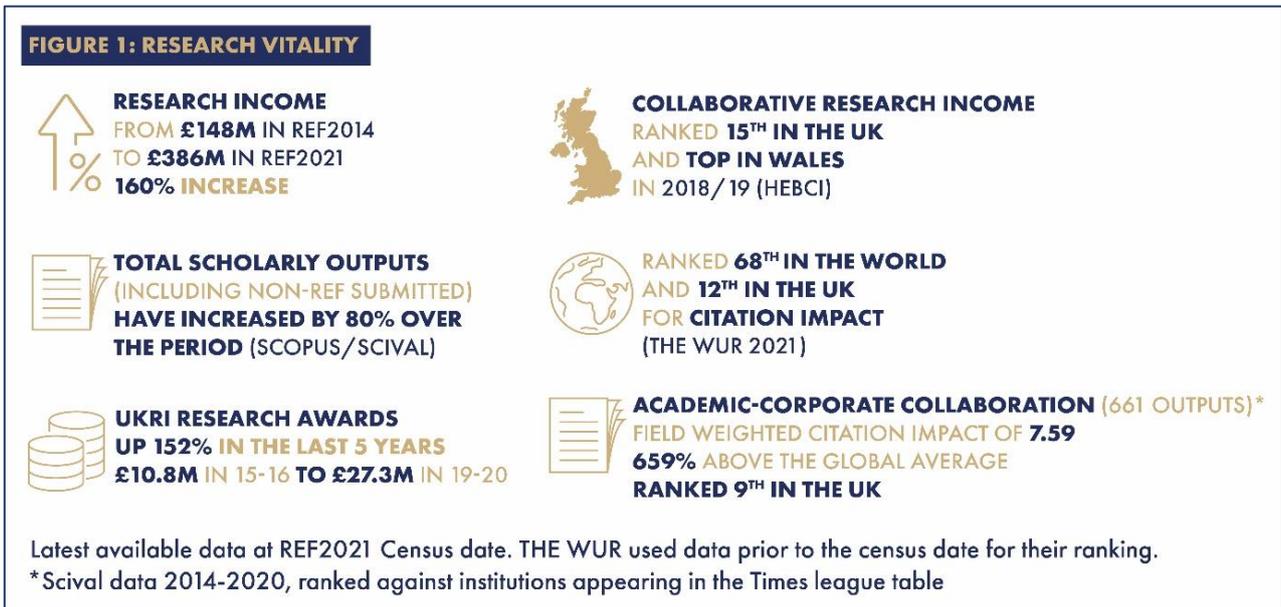
**Swansea University**  
**Prifysgol Abertawe**

## **REF5a - Institution Environment Statement**

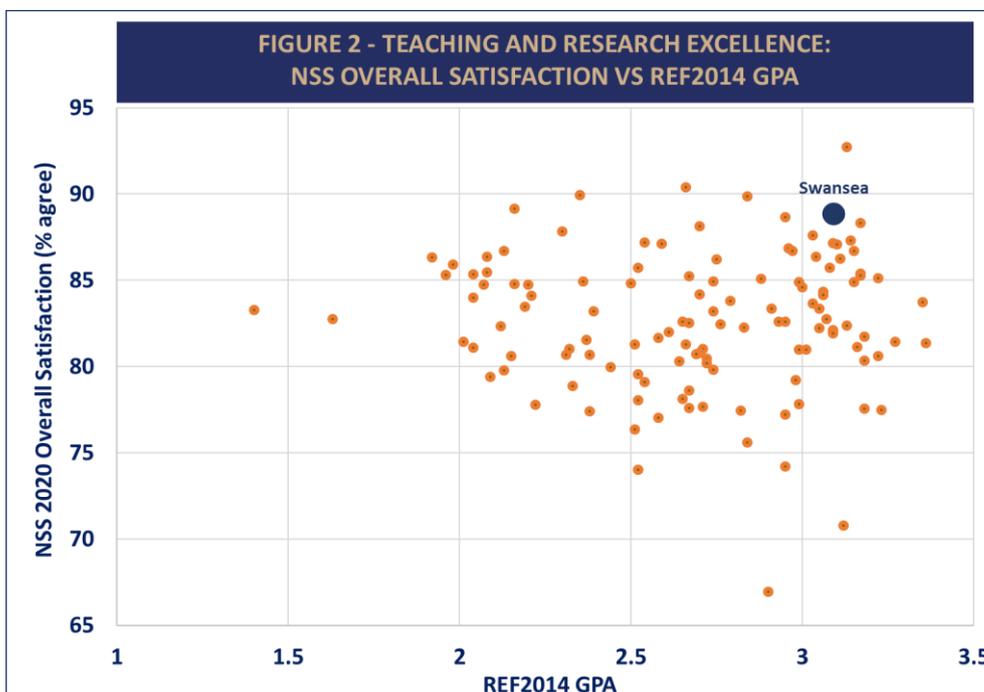
## 1. Context and Mission

Swansea University embraces the full spectrum of academic and cultural endeavour, leading thinking and delivering research outcomes for the benefit of all.

A research-intensive University located in one of the most deprived regions within Northern Europe (West Wales and the Valleys), we are an anchor university, creating economic, societal, cultural and health impact with global reach, remaining true to our 100+ year mission. Alongside discovery research, we foster ambitious collaborations, co-creating research and delivering transformative innovations with our partners. We are a community united in a common purpose; to make a difference for the better, to lives and futures, across society and borders. We promote and facilitate an exciting and thriving, collaborative research culture, enabling impact. Our enhanced vitality since REF2014 is exemplified in figure 1:

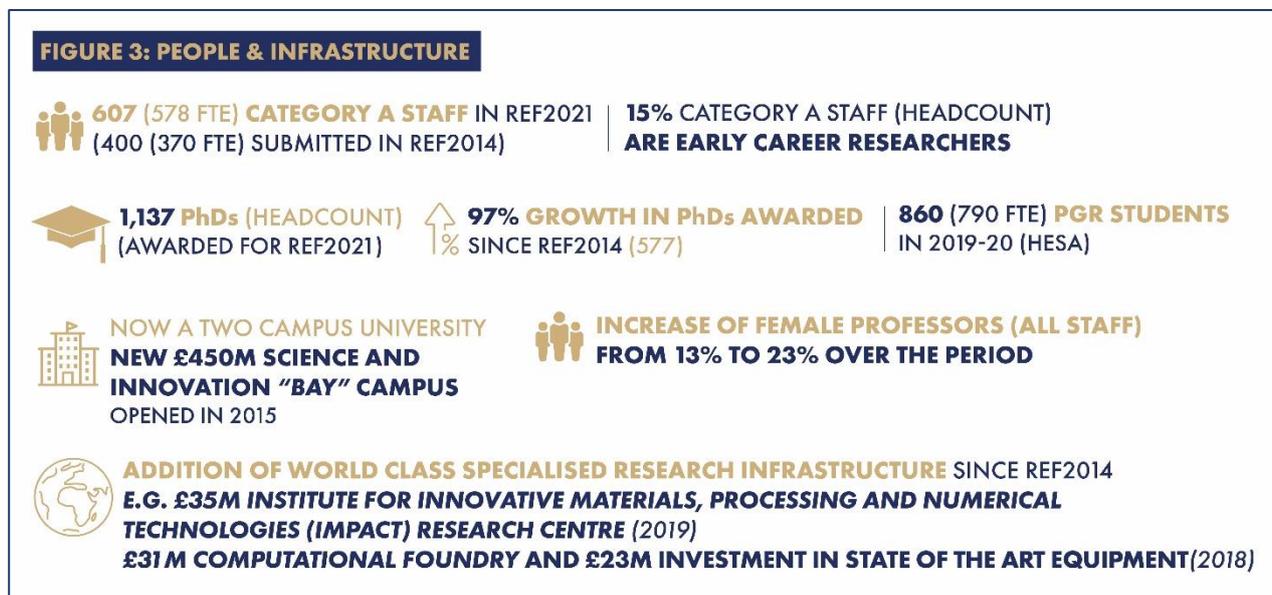


Swansea University is a diverse community of nearly 22,000 students and 3,500 staff. Our commitment to excellence in research and teaching is fully embedded. We are proud of our leading reputation for both research and teaching excellence as seen in figure 2.



Since REF2014, research has been undertaken in all seven Colleges/Schools, supported by eleven professional service directorates, with dedicated Research Hubs. Founded on STEM subjects in 1920, our academic breadth was swiftly enriched by addition of social sciences and humanities. More recently, our Medical School (ranked top 10 in three UK League Tables, 2020) was founded in 2004, with Education and Chemistry launched during the REF2021 period.

By investing in people and infrastructure, we ensure our research environment enhances our research units. Over the period from REF2014, we have grown in numbers (figure 3):



In REF2014, Swansea University was one of the most improved institutions climbing from 52<sup>nd</sup> to 26<sup>th</sup> in the UK, making the “*biggest leap among research-intensive institutions*”<sup>1</sup> (Times Higher Education).

Now in our second century, we are building on our significant successes, ambitious to make a difference to lives and futures through excellent, responsible research, and seeking to extend our global reach. From 2021, we will evolve into three faculties (from seven Colleges/Schools) - Science and Engineering, Humanities and Social Sciences, and Health and Life Sciences. We will simplify the way we work, build on our successes, improve our resilience, challenge the boundaries of knowledge and facilitate new opportunities for interdisciplinary research, education and impact (§2.2, §2.4). A key impetus for change is to achieve progress against the UN Sustainable Development Goals (SDGs).

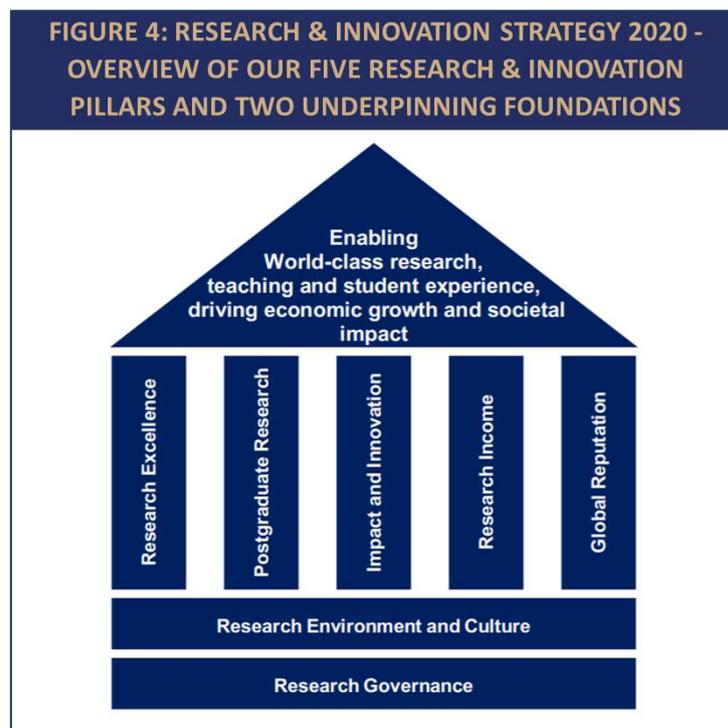
## 2. Institutional Research and Impact Strategy

Our evidenced, rapid rise in research intensity<sup>1</sup> laid a strong foundation for our follow-on Research and Innovation (R&I) Strategy 2020, further improving capability and capacity to deliver world-class research, teaching and student experience, and driving significant and far-reaching benefits (impact).

### 2.1 Achievement of strategic (R&I) goals 2020

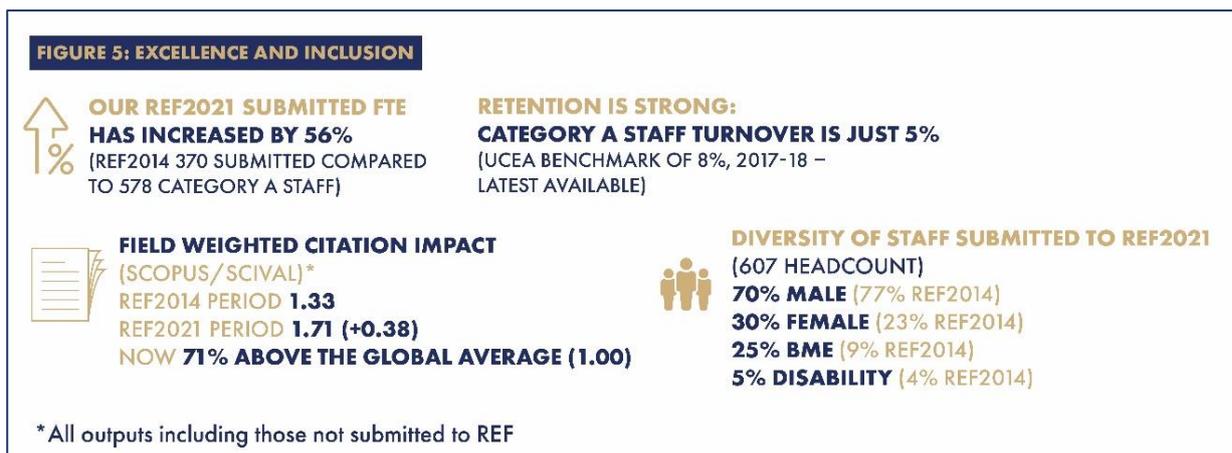
The **Committee for R&I Strategy, (CRIS)**, chaired by a PVC, with cross-College/School Directors of Research and professional service membership, has responsibility to Senate for the R&I Strategy (illustrated in figure 4).

<sup>1</sup> <https://www.timeshighereducation.com/news/ref-2014-winners-who-performed-best/2017591.article>



Key achievements **over the REF2021 period** are summarised below for each strategic pillar and cross-cutting theme:

- **Research Excellence:** through clear promotions criteria, recognition and reward, and support for developing leaders, we have retained talent (§3; figure 5). Through focussed Equality and Diversity actions we have improved researcher diversity (§3.1 & §3.5).



- **Postgraduate Research:** our University-wide Postgraduate Research Office (PGRO) supported 1,137 (headcount) **PhD completions** (97% growth since REF2014).
- **Impact and innovation:** dedicated, strategic investment in infrastructure (§4.1) and activities (§2.2) has enabled impact and innovation successes. The UK Government-commissioned *Science & Innovation Audit (SIA) for Wales* recognised our strengths in: Steel Innovation, Smart Manufacturing and Health Innovation; and in pan-Wales thematic, Digital Technologies and Sustainable Energy. Our impact is evidenced in 59 submitted Case Studies.
- **Research Income:** with year-on-year growth, and as a major recipient of EU investment (£123M), we have diversified and grown income by 41% over the REF2021 period. UKRI awards increased by 152% in the latest five years, enabled by strategic investment in Research Hubs (§4.1).

- **Global Reputation:** our expanded academic/business partner networks now cover 127 countries. 54% of research outputs are internationally co-authored (with a Field-weighted Citation Impact of 2.8, Scival 2020), and enhanced by deep International Strategic Partnerships. Partnership with eight top Texas Universities (2014) has yielded 228 joint publications; and our Swansea-Grenoble Alpes University partnership (2016) has supported >30 joint PhDs and >50 joint grant applications.
- **Research Environment and Culture:** delivered a £450M science and innovation “Bay” campus in 2015. An additional >£100M building and infrastructure programme across both campuses houses world-leading research (§4.2). We invested a further £23M in state-of-the-art equipment. New laboratories have brought academia and stakeholders together e.g. with Natural Resources Wales (NRW) Analytical Services facilities (2017). Inclusive and open, we encourage public engagement activity, and inter-disciplinary working (§2.4).
- **Research Governance:** established a comprehensive research integrity policy framework for research ethics & governance (2015; §2.4), in accordance with UK Research Integrity Office’s (UKRIO) Code of Practice and the UK Policy Framework for Health & Social Care Research.

## Future plans

Delivering research and innovation of the highest quality, our ambitions are to achieve significant and far-reaching impact on SDGs and:

- (1) further grow our reputation as an open, research-intensive institution excelling in interdisciplinary and collaborative research;
- (2) further strengthen our national and international partnerships to broaden the depth, reach and impact of our research; and
- (3) fully engage the public and community in the design, conduct and dissemination of our research.

## We will:

- **continue to invest in exceptional researchers**, further promoting a culture of equality, respect and integrity, enabling researchers **at all career stages** to flourish and produce impactful and responsible research and innovation of the highest quality;
- **grow and diversify our research-income portfolio** to ensure sustainability; further enhancing the quality and scale of research across all our disciplines;
- establish the first Institute for Advanced Studies in Wales, the **Morgan Advanced Studies Institute (MASI)**, to drive **impactful, interdisciplinary and policy-relevant research**;
- **capitalise on our strategy at the forefront of knowledge exchange** to build and strengthen innovation capacity and impact;
- **intensify our partnership working** from South Wales to the world;
- **invest in new interdisciplinary infrastructure**, e.g. £30M Centre for Integrative Semiconductor Materials; and
- **deepen strategic collaborations with existing** (e.g. Rolls Royce, Tata Steel, Pfizer, Public Bodies, Health Boards, SMEs) **and new partners**; delivering transformational impact with local and global reach.

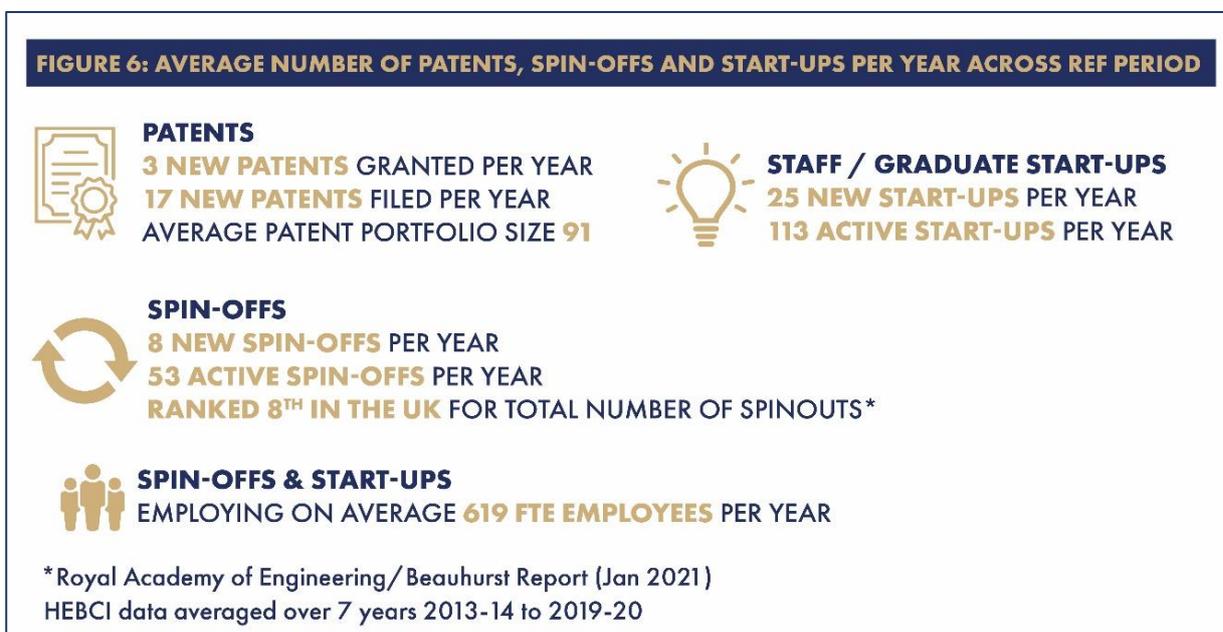
## 2.2 Enabling Impact

We facilitate impact through our **foundational, integrated strategy**, from a community/industry driven agenda enabled by **innovative, collaborative research**, and **knowledge exchange (KE)**.

Impact and Engagement Officers within our Research Engagement and Innovation Services (REIS) are embedded within Research Hubs, and they support the identification of and connectivity with target communities/industries (§4.1).

Examples of how we deliver impact include:

- **Developing productive partnerships with industry and the public sector**; e.g. our **LINC network** (a collaborative network enabling private, public and third-sector organisations to connect and access resources and expertise to support growth) has yielded KTPs, and Smart partnerships, leading to economic growth, productivity, and prosperity for the region and beyond; and **ARCH**, (A Regional Collaboration for Health), with Abertawe Bro Morgannwg and Hywel Dda University Health Boards, accelerating healthcare innovation.
- **Exploiting intellectual property (IP) and professional know-how**; e.g. **Agor IP** £13.1M EU-funded project (2016-2023), providing **IP support** to translate research into new products, processes, and services (figure 6).



- **Supporting researchers to embed impact in their research design** through peer mentoring, overseen by an Institutional Impact Leader. Tailored impact training and departmental Impact Away Days delivered by Research Hubs are funded by our **Impact Acceleration Account** (§4.1).
- **Purpose-built facilities** to foster new industries e.g. SPECIFIC, our UK Innovation and Knowledge Centre (UKRI), that pivoted to manufacture sanitisers during the COVID-19 pandemic.

## 2.3 Open Research Approach

Swansea is committed to Open Research principles and practice, creating a future landscape built on transparency, sharing and collaboration. Our **Green Open Access (OA) Policy (2015)**, overseen

by CRIS, embraces UK policy on access to publicly funded research. Successful implementation is evidenced by **97.5% of REF2021 in-scope outputs being compliant**:

- Our **UKRI open-access block-grant funding** (£862K over the period) supported authors to publish gold open-access and full-text publications, deposited in our Research Information System (RIS) and made accessible via our public repository, Cronfa.
- We promote the highest standards in research data and records management and are working towards compliance with the **Concordat on Open Research Data**.
- Our policy on **research-data management** ensures datasets underpinning published research are available for scrutiny, appropriately archived, and researchers are strongly encouraged to make underpinning datasets and software open-access.
- Our **Local UK Reproducibility Network Leadership** ensures we advance robust research, researcher training and disseminate good practice.
- Our **Forum for Open Research and Scholarship** brings researchers together to explore challenges and strengthen research integrity.
- **Library** membership of the Welsh Libraries Forum, the Digital Preservation Centre, LIBER (European Research Libraries network), and Europeana (EU-wide cultural network), further **advances open research and scholarship**.
- Compliant with the 2020 Wellcome Trust guidance on the implementation of responsible and fair approaches for research assessment, we are a signatory of the **San Francisco Declaration on Research Assessment (2018)**. Our decision-making processes comply with the **UK Forum for Responsible Research Metrics'** six principles and are embedded in our REF2021 Code of Practice, Statements of Intent and our Statement on the Fair Assessment of Research and Use of Bibliometrics.

## 2.4 Supporting Research

### Interdisciplinarity

Since our success in REF2014, we have further promoted interdisciplinary research via Engineering and Physical Sciences Research Council (EPSRC) funded **Bridging the Gaps** and **Building Global Engagements in Research** programmes, and our EPSRC **Impact Acceleration Account** (IAA).

Our **Research Grant Enabler funding** (SURGE) pump primes interdisciplinary research with success, e.g. EU H2020 'PATROLS', a €12.7M global project for safer nano-materials.

We embrace and encourage interdisciplinarity e.g. through cross-cutting NanoHealth and Cyber Threats Research Centres. Our CHERISH Digital Economy Centre transcends four UoAs, and researchers from six disciplines lead our EPSRC CDT in Enhancing Human Interactions and Collaborations with Data and Intelligence-driven Systems.

### Integrity

The University has embedded a positive commitment to Research Integrity underpinning our research activity:

- Our Vice-Chancellor chairs **UUK's Research Integrity Forum** and we are a signatory to the **Concordat to Support Research Integrity**.
- We subscribe to **UKRIO** and are committed to research integrity outlined within our **Research Integrity Policy Framework**. Implementation is monitored by our **Research Ethics & Governance Committee (REGC)** chaired by an Academic Dean for Research Integrity and Ethics, reporting to CRIS.

- Our cross-disciplinary **Research Institute for Ethics & Law** supports our research integrity infrastructure.
- **Training in research integrity** ensures researchers are aware of their obligations, including to the reproducibility of research, through mandatory on-line training provided by Epigeum. Our researcher development programme extols Open Science.
- Our policy on **handling allegations of research misconduct** ensures any malpractice is robustly addressed and aligns with UKRIO best practice.
- Our **Research Integrity website** provides information on policies, governance and training initiatives, overseen by CRIS, to ensure these principles are central to research activities and fully embedded in our research culture.
- **College/Schools' Research Ethics Committees** oversee all relevant ethical approvals for staff and students, and report to REGC.
- The University is a signatory to the **Concordat on Openness on Animal Research**. Research involving animals is monitored by our **Animal Welfare & Ethical Review Board**, reporting to **REGC** and is fully compliant with the Animal (Scientific Procedures) Act 1986 (Amended 2012) and Code of Practice for the accommodation and care of animals.
- Our **Clinical Trials Unit** is UK Clinical Research Collaboration (UKCRC)-registered. We are compliant with the Human Tissue Act 2004, Human Tissue Authority (HTA) standards with robust quality management, and HTA codes of practice, including standard operating procedures, monitored by **REGC**.

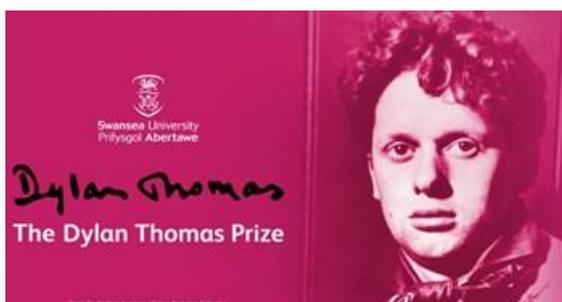
## Collaborations and Partnerships

The Academic Partnership Department facilitates development, growth, delivery and oversight of risk, quality and sustainability in partnerships. Partnerships with Grenoble-Alpes, Texas and Wuhan have delivered impactful collaborative research, PGR completions and student/staff mobility (§2.1).

## Engagement to inspire, educate, and demonstrate our research.

We contribute to our community through investment in our Taliesin Theatre, Great Hall and Egypt Centre, and deliver extensive outreach programmes promoting higher education and research. We hosted the **British Science Festival** in 2016 and since 2017 organise an annual, **Swansea Science Festival** with the National Waterfront Museum (~9,000 visitors/year).

Our **Research-as-Art** competition and our international Dylan Thomas Prize (pictured below) achieve global publicity. Research-as-Art entries have been exhibited in the Royal Institution, London, and by strategic partners in Texas.



Our commitment to public engagement is exemplified by our Oriel Science exhibitions (Impact Case Study UoA9), Soapbox Science, Technocamps (UoA11), Science for Schools Scheme (multiple UoAs), Swansea Law Clinic (UoA18); our research-led Health and Wellbeing Academy (UoA2) and regeneration of **Place**; "Copperopolis" (UoA28), together supporting economic and social prosperity and wellbeing of Swansea.

### 3. Staffing

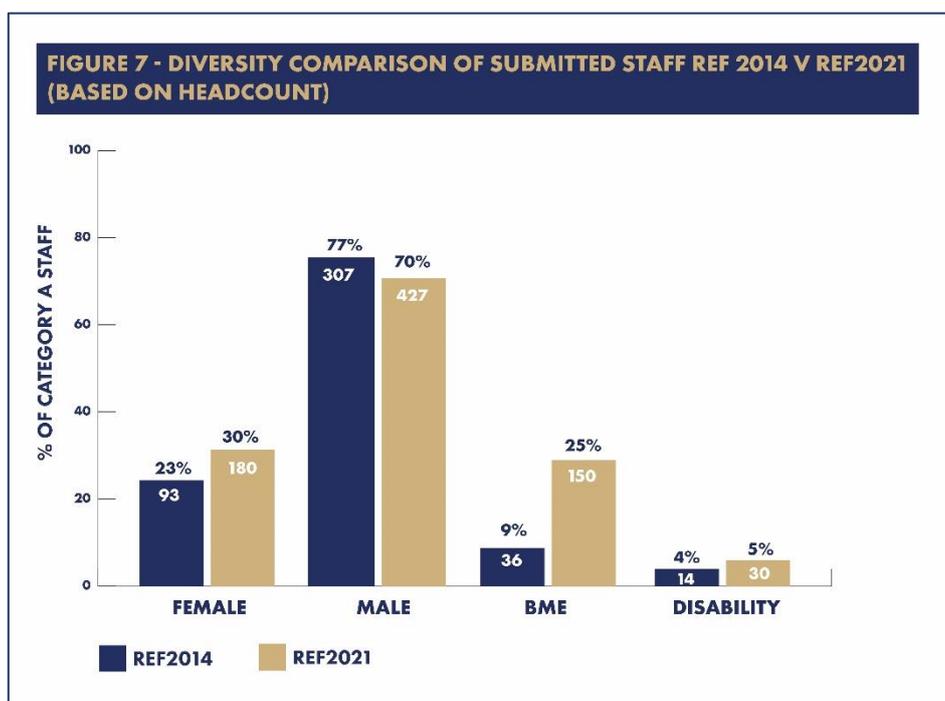
#### 3.1 Staffing Strategy and Staff Development

Our strategy is to recruit and retain exceptional researchers at all career stages and across different academic career pathways, investing in and supporting ambition and talent.

Delivery of this strategy has led to recognition by the European Commission **HR Excellence in Research Award** for our commitment to support the career development of research staff (renewed June 2019).



Illustrating **improvement in our diversity profile**, our 607 (578 FTE) Category A submitted staff include 30% (180) female; 15% (92) ECR; 25% (150) BAME; and 5% (30) declared a disability (figure 7).

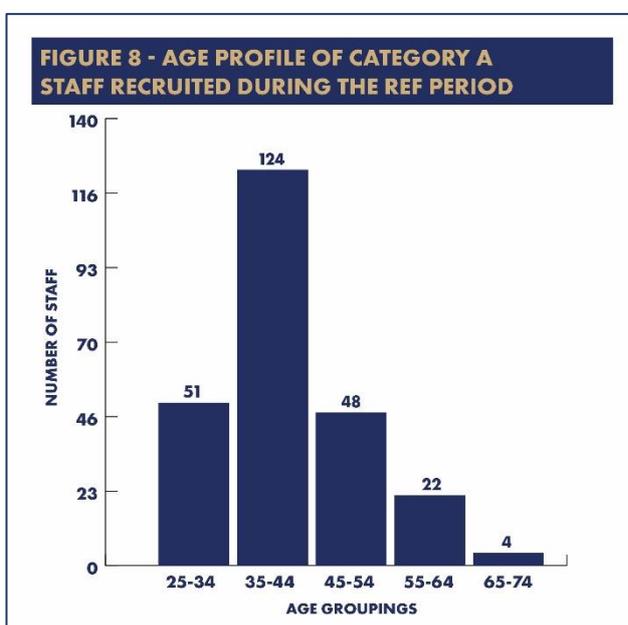


Since REF2014, we have **recruited 249 new Category A submitted staff** (headcount) and figure 8 illustrates their age profile.

We attract researchers using fair and transparent recruitment processes. Clearly defined, objective criteria are used in our decision making, role descriptions, and person specifications, working to consistent indicative performance levels.

Job advertisements include positive-action statements appropriate to the current gender balance of the discipline.

We appoint academic staff to one of three **Academic Career Pathways (ACP)** across core areas of our mission:



- **enhanced Research** (Category A submitted staff);
- **enhanced Teaching**; and
- **enhanced Innovation and Engagement** (supporting partnerships and impact).

ACPs define performance expectations for each grade, from probationary lecturers through to senior professors, adjusted for part-time staff, individual circumstances and protected characteristics. ACPs are embedded in all academic people-processes, including probation, professional development reviews (PDR), promotion, and the expected contribution of Category A staff to the pool of submittable outputs.

### Progression and recognition

We are sector-leading in ensuring 99% of non-probationary staff benefit from **an annual PDR**, enabling staff to reflect on their performance and contribution to the UoA, and the profession. PDRs enable line managers to evaluate progress, recognise achievement, and explore career-development opportunities. We provide comprehensive **development support for researchers** at all career stages, including mentoring schemes, skills workshops, wellbeing provision, and >40 training courses mapped against the Vitae Researcher Development Framework.

We promote **leadership programmes** run by Advance HE (Aurora for female colleagues, with 79 participants in the period; Diversifying Leadership for 3 BAME colleagues) and LGBT Leadership Programme for 2 colleagues (run by Stonewall). Current and future leaders have access to our Leadership Development Programme.

All staff below Professor-level receive annual salary increments until reaching the maximum for the grade. At Professorial level, our Remuneration Committee awards salary increments based on performance against the ACP criteria. All Research Fellows/Officers, Lecturers, Senior Lecturers and Associate Professors are entitled to apply for promotion each year.

Colleagues are supported by mentors through the promotion process. Figure 9 shows the **improving outcomes of the Academic Promotion Committee** over the latest 5-year period (2020 process incomplete at census date).



Each College/School has a fair and transparent **sabbatical policy** tailored to meet the specific needs of its disciplines and communities, e.g. staff may apply for extended leave to work on research outputs, grant applications, impact initiatives or further professional development. Recognition for researchers who are delivering significant and far-reaching impact is provided through time allocation and recognised in academic promotion pathways.

We became the first Welsh HEI to join **Employers for Carers** (2019) providing a source of support and advice for staff with caring responsibilities and our flexible-working policy, including remote working, applies to all staff.

Our commitment to equality and diversity informs all policies and procedures. We have developed a **Health and Wellbeing strategy** providing comprehensive wellbeing services including counselling

integrated within our **Wellbeing Service** and research-led **Health & Wellbeing Academy**. Investment in these increased by 134% since 2014 (+£265K).

### 3.2 Concordat to Support Researcher Career Development

We recognise the crucial contribution research staff make to our internationally excellent and world-leading research. Consequently, we are committed to providing a genuinely supportive environment and culture, where researchers can thrive both professionally and personally. Our **Research Staff Working Group** (RSWG) places researcher voices at the forefront in CRIS. CRIS oversees delivery against the Concordat to Support the Career Development of Research Staff action plan and supports the development of research staff aligned to the Researcher Development Framework, our Strategic Plan and our Strategic Equality Plan (SEP).

**Support and training for researchers and their managers is coordinated by HR, supported by REIS, the PGRO and Library.** Training for Principal Investigators and Research Leaders (PIRL) has enhanced confidence in providing career advice to researchers including those on fixed-term contracts (our PIRL Survey data 2019: 88% confident; versus 71% nationally).

### 3.3 Early Career Researchers (ECRs)

ECRs strengthen the vitality of our research community. Our outstanding ECRs undertake an induction programme, guided by their line manager and mentor through a three-year **probationary period**. This equips them with the necessary skills to achieve required performance levels while instilling the ambition to reach the next performance level to achieve promotion. Since 2015, 94 Category A staff have completed our **PGCertHE**, a probationary requirement for those with limited HE-teaching experience. The qualification secures Fellowship of Advance HE.

We fund future research leader participation in the **Welsh Crucible** programme. The Crucible works with 30 promising researchers annually to foster innovation, cross-disciplinary collaboration, and links with Welsh Government and the media. During the REF2021 period, 44 ECRs (52% female, 19% BAME) successfully participated in the scheme (24% of available places).

Our flagship **Florence Mockeridge Fellowship** programme supports aspiring researchers through a specialist programme of mentoring and training, encouraging ECRs to attain external research funding. Since 2018, 23 researchers (13 female) from all Colleges/Schools have been selected for the Fellowship, with 17 (72%) applying for UKRI grants with 40% success rate.

### 3.4 Research Students (PGRs)

Our outstanding PGRs pursue open, interdisciplinary research and achieve academic, personal and professional successes, supported through cross-disciplinary supervisory panels. In this assessment period, we supervised **1,137 PhD students** (headcount) to completion, compared to **577** in REF2014 (97% growth).

In 2015, PGR support was professionalised and coordinated, streamlining administration, facilitating greater collaboration, and placing the doctoral researcher at its heart. As a result, the **Postgraduate Research Office (PGRO)** was established in 2016, with a Dean for Postgraduate Research, a PGR Committee (with College/School PGR Directors), a PGR Administrators' Forum, and a PGR Student Forum.

We focus on the vitality, sustainability and excellence of our PGR community. We initiated University-wide PGR working groups to shape our new successful **Postgraduate Research Training Framework** (launched in 2016/17), as detailed below. Including training courses for students (81) and supervisors (5), the PGRO works with Colleges/Schools to ensure complementarity and targeted

delivery of doctoral research training with supervisor training embedded at all academic career levels.

Our PGR students are encouraged in **public engagement**. In the period, 138 PGRs entered our **Three Minute Thesis** competitions, with one student reaching the UK final (2018). Sixty students participated in the **FameLab** Swansea heat, with 29 reaching the All-Wales regional finals, three progressing to the UK finals, and one runner-up in the international final (2020).

We introduced prizes and awards to recognise and celebrate success, including James Callaghan Doctoral Scholars; James Callaghan Thesis prize, and our own **Research & Innovation Awards** (pictured) honouring **Rising Stars (PGR)** and **Outstanding Research Supervision**.



**Cohort-based doctoral opportunities have increased.** In 2016/17, we refocused our studentship scheme and have funded 52 scholarships (13 co-funded with our international partners). In 2017/18, we introduced a new **strategy for doctoral training programmes** yielding a 150% increase in the number of competitively won Centres for Doctoral Training (CDTs) and Doctoral Training Partnerships (DTPs) in areas of outstanding research strength. We lead four CDTs funded by EPSRC and UKRI, and are part of the Science and Technology Facilities Council (STFC) CDT in Data Intensive Science, the Biotechnology and Biological Sciences Research Council South West Biosciences DTP and the Economic and Social Research Council Wales DTP.

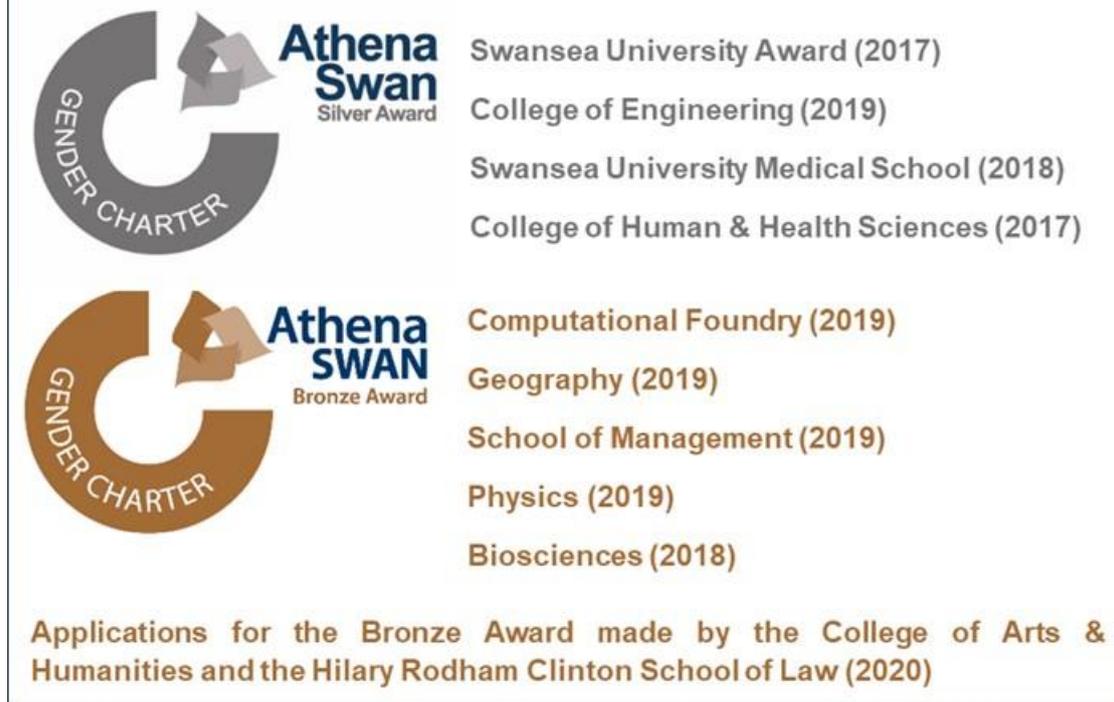
We also hold algorithmically allocated EPSRC and STFC DTP studentships; our EPSRC 2020 allocation has increased by 123% since 2018. Approximately 60% of these scholarships are co-funded by collaborative research partners, e.g. Airbus, Microsoft, and Rolls Royce iCASE awards. Our PGR-funding sources have also diversified, e.g. AXA, Natural Environment Research Council, National Centre for the Replacement Refinement & Reduction of Animals in Research (NC3R) and KE Skills Scholarships.

### 3.5 Equality and Diversity (E&D)

We promote equality of opportunity and welcome diversity. This is evidenced in our policies/procedures and **Strategic Equality Plan (SEP)**, and reported annually. We pursue an open and transparent approach to recruitment and selection and monitor against all protected characteristics as required by the Public Sector Equality Duty in Wales.

All Academic Colleges/Schools proactively engage with the **Athena SWAN Charter** and our commitment to E&D is exemplified by our **9 Advance HE accreditations** (figure 10).

**FIGURE 10 – ATHENA SWAN AWARDS**



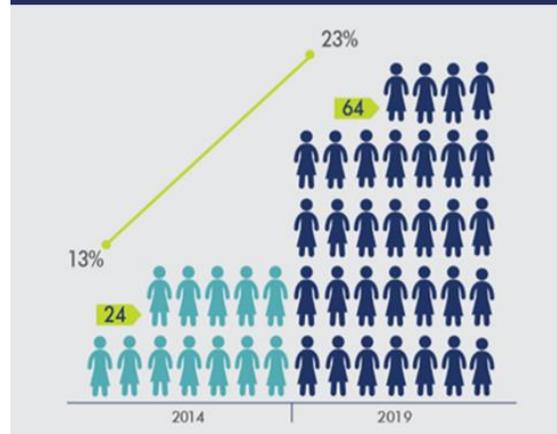
The **proportion of female colleagues within our professorial community** has increased from 13% in 2014 to 23% in 2019 (figure 11).

This considerable improvement brings us closer to the sector average (28% HESA 19-20) but we are fully committed to making further progress.

Our average institutional **gender pay gap** has reduced from 23% in 2015-16 to 19.43% in 2019-20 (mean), and from 19% to 13.68% (median).

We are addressing these imbalances by encouraging the recruitment and promotion of women to senior roles.

**FIGURE 11 – FEMALE PROFESSORS**



We are also a member of Advance HE's **Race Equality Charter**. Our University **SEP** details ambitious objectives, key drivers and planned actions for monitoring progress towards Silver Athena SWAN renewal by 2022, and a successful Race Equality Charter application by 2024.

Our **Equality Committee** oversees work related to the Athena SWAN Charter, Race Equality Charter, and Stonewall Workplace Equality Index.



We are consistently featured in **Stonewall's annual list of the UK's 'Top 100 Employers'** for workplace inclusivity (2016-date):

Ranked 47<sup>th</sup> overall in 2020, 6th among participating universities.

Stonewall highly commended our **LGBT+ Staff Network (2017, 2018)**, we received the highest possible score for creating a trans-inclusive workplace (2019).

Abiding by the University's Code of Practice, the identification of staff with significant responsibility for research, and determining their independence reflects our unwavering commitment to E&D. The University's Equality and Diversity Sub-Group considered all self-reported individual staff circumstances for REF2021, made recommendations on reductions to an individual's expected contribution to the output pool, and all recommendations have been respected.

#### 4. Income, Infrastructure, and Facilities

As a research-intensive Welsh HEI, we contribute to **Welsh Government's** "twin priorities of delivering social justice and supporting a buoyant economy"<sup>2</sup> and the **Wellbeing of Future Generations (Wales) Act (2015)**, addressing the long-term impact of decisions.

##### 4.1 Institutional Strategies and Activities for Generating Research Income

Through our strategic engagement with the Welsh Government National Framework Strategy Group, the University performs a key role in influencing and framing the regional priorities underpinning research and innovation investment in Wales. As the anchor University in South West Wales we have led the engagement with the UK Government on behalf of the region when shaping the Swansea City Deal investment portfolio. Beyond Wales, we encourage and support representation on national and international strategic advisory and funding panels.

Targets over the REF2021 period have included:

- **UKRI priorities**, achieved strategic partner status with EPSRC with award success rate of 30% worth £92M;
- **UK Government** Industrial Strategy Challenge Fund, e.g. winning the (£9M) Active Building Centre developing cutting-edge materials which generate electricity;
- **Welsh Government**, establishing Administrative Data Research Wales to develop evidence for the Welsh "Prosperity for All" strategy.
- **West Wales and the Valleys European Regional Development Framework Operational Programme**; our £35M IMPACT facility (§4.2) co-locating industry and academia.
- **Swansea Bay City Deal**; awarded £10M for an **RD&I hub**, we are developing, demonstrating, and accelerating the uptake of disruptive, smart-manufacturing technologies. This hub encompasses our **ASTUTE 2020, Factory of the Future**, and **Active & Intelligent Digital Twin Institute** initiatives.

**REIS** provide critical, underpinning operational support in delivery of the R&I Strategy and ambition for research income growth, adding value and fostering the quality of impact. REIS comprises of

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<sup>2</sup> WG Policy Statement on HE 2013

centrally-based teams and four **Research Hubs**, embedded across Colleges/Schools, were introduced as part of our strategy to facilitate all aspects of the grant application process from opportunity evaluation, through grant submission, contracts, impact support and post-award financial claims.

Each **Research Hub** comprises:

- Hub Manager;
- Research Development Officer;
- Bid Writer;
- Impact and Engagement Officer;
- Research Support Advisor.

REIS staff complement College/School-led research development working with researchers to support high-quality funding applications. The Hubs promote opportunities for interdisciplinary collaboration, deliver research-development training sessions and themed events, and coordinate visits to and from funders, including UKRI.

REIS delivers entrepreneurial skills development for researchers, supporting and growing IP provision. We focus on exploiting a pipeline of commercialisation and licensing opportunities from our IP portfolio, and attracting inward investment from global companies.

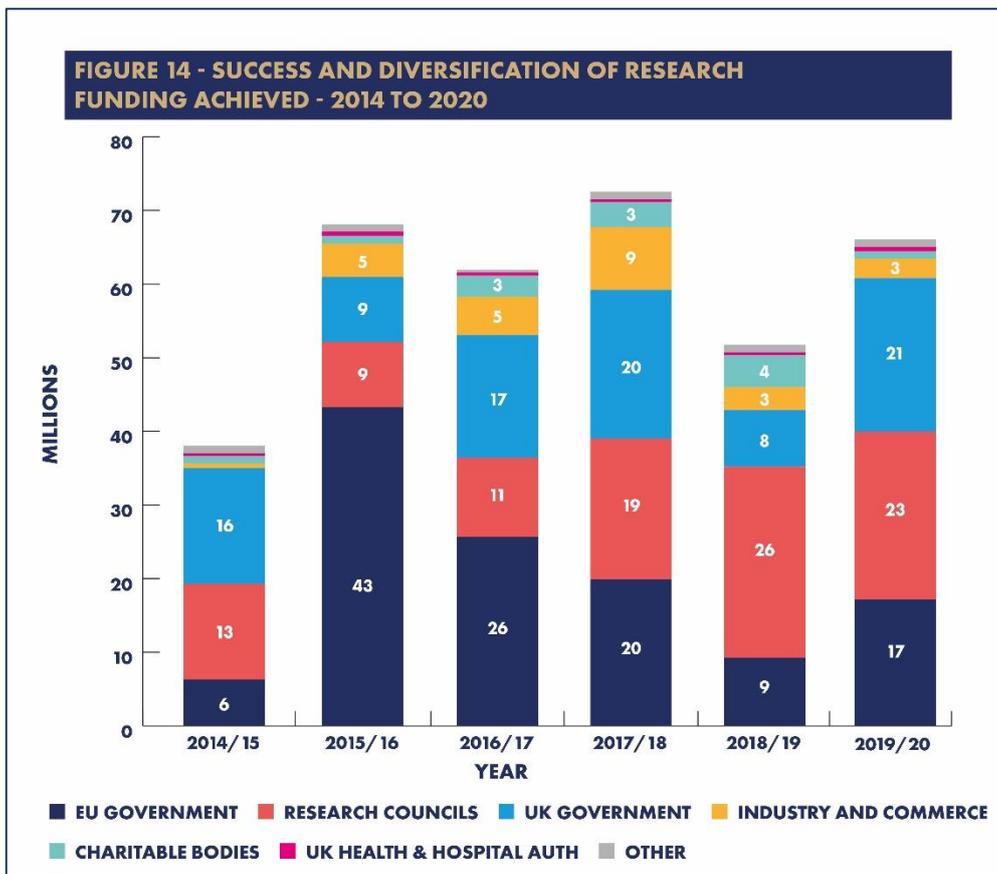
To facilitate R&I bid development, staff are encouraged to apply for **internal seed-corn funding**, e.g. through our global challenges QR allocation, our EPSRC-funded CHERISH Digital Economy Centre and (since 2012) an **EPSRC IAA** (figure 12).



Our strategy and support structure delivered a substantial increase in **research awards** over the REF2021 period (figure 13):



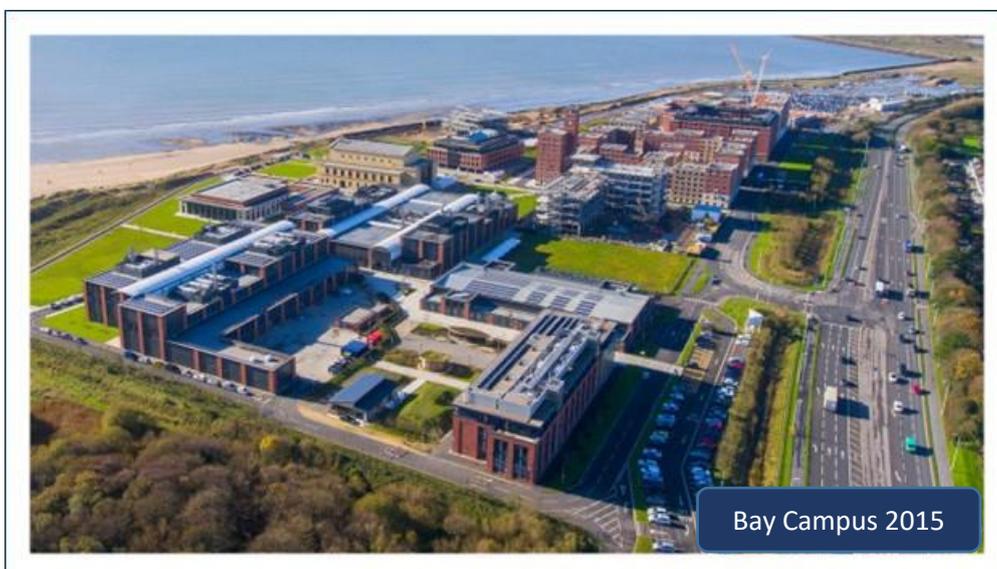
We have also **successfully diversified our portfolio** from European Social funds since 2016 (figure 14) and are deepening European collaborations that are foundational for our future Horizon Europe aspiration.



#### 4.2 Infrastructure and Facilities Supporting Reproducible Research and Enabling Impact

Over the REF period, our environment has transformed to strengthen and power our research and impact delivery. With support from Welsh Government, the Welsh European Funding Office, the European Investment Bank (EIB), and commercial and public sector funders, we have made significant infrastructure investments to support innovation and impact.

Our £450M science and innovation **Bay Campus** (pictured) opened in 2015 as “*one of the top five knowledge-economy projects in Europe*”<sup>3</sup> and a major RD&I asset for Wales.



<sup>3</sup> European Investment Bank

We have co-located with industrial partners, e.g. Rolls Royce in our University Technology Centre on the Bay Campus delivering a mix of academic research and commercial activities in the Institute of Structural Materials (ISM), housing substantial mechanical test laboratories – SMaRT is an exemplar of the academia-industry knowledge transfer model at the heart of the Bay development.

We have also developed our **Singleton Campus** (pictured) with the strategic objective to co-locate industry and for knowledge generation, grow our Life Science cluster (e.g. Data Science Building, and Health and Wellbeing Academy), Environmental Science cluster (e.g. Natural Resources Wales Analytic Services), and Social Sciences (e.g. expanding the Law School, and creating new space for our Centre for Innovative Ageing).



Additional significant investments on our two campuses in the period include:

- **Computational Foundry** (2019, £32.5M), houses Computer Science and Mathematics and home to the EPSRC-funded Cherish Digital Economy Research Centre (2015, £7.6M), with >200 UK-based and 40 international partners;
- **Institute for Innovative Materials, Processing & Numerical Technologies – IMPACT** (2019, £35M), providing hub space for 150 researchers. Three companies have now established their R&D base in the building;
- **Legal Innovation Lab Wales** (2019, £5.6M), supporting interdisciplinary research at the intersection of Law and technology;
- **Energy Safety Research Institute – ESRI** (2015, £12M), enabling research across energy and energy safety related disciplines;
- **Data Science Building** (2015, £8M), housing SAIL, our research on patient and population health and Informatics, eHealth, and administrative data, we are curating and interrogating billions of person-based records to uncover new knowledge about health and disease;
- **Steel and Metals Institute - SaMI** (2018), with donation of research equipment (£5.2M) from Tata Steel and the Welsh Government (£3.8M) supporting innovation in the steel and metals industry in Wales;
- **Institute of Creative Ageing Industries** (2019, £2.5M), a living lab addressing the challenges affecting an ageing population; and
- **Health and Wellbeing Academy** (2017, in collaboration with ARCH), working with the NHS to improve the health of people in South West Wales.

These investments complement the **Institute of Life Science (ILS)**, a purpose-built medical research and business incubation facility housing our **Joint Clinical Research Facility**, **Clinical Imaging Facility**, and >10 businesses. ILS also houses the **Centre for NanoHealth**, an open-access, interdisciplinary R&D facility.

Our **Centre for Sustainable Aquatic Research (CSAR)** remains a state-of-the-art, controlled environment for aquatic research and technological development. In 2019, our marine biologists procured a £1.3M, purpose-built, 18-metre **marine research vessel** that is acquiring new knowledge of life below water.

The University is home to one of two **Supercomputing Wales Hubs**, which were upgraded in 2018 to deliver a petaflop of computing power. As a partner in the £16M **pan-Wales** initiative, we have supported £16M further collaborative, cross-disciplinary R&I awards.

**Our Library** provides access to over 30,000 on-line journals and 850,000 physical items, as well as special collections and archives, the most notable relate to **Richard Burton** and **Dylan Thomas**, the **South Wales Coalfields and Miners' Library**, the Welsh Writers in English collections, and the largest Egyptology collection and museum in Wales. A Memorandum of Understanding with the National Library of Wales underpins research collaboration on digital workflows and platforms, enabling joint digital and open-scholarship activities.

Our Local **UK Reproducibility Network Leadership** ensures we continue to advance reproducible research (§2.4) and is underpinned by our commitment to invest in well-managed infrastructure and facilities, e.g. Swansea Materials Research & Testing Ltd (SMaRT), which is a UKAS accredited, mechanical testing laboratory and wholly owned subsidiary based on the University's leading capability in Materials.

### 4.3 Addressing Equality and Diversity

All researchers, regardless of gender, disability or other protected characteristics, are encouraged and supported to apply for research funding and to make use of the facilities available to them.

The University runs Equality & Diversity and Unconscious Bias training for all staff and we have made guidance available on Decolonisation of Research and inclusivity as part of the grant application process, embedding the principles of E&D into the research and innovation lifecycle.

Our Swansea Academy of Inclusivity and Learner Success enables access and support so student researchers, irrespective of protected characteristics, have the opportunity and support to progress. Our dedicated Transcription Centre (SUTC) provides accessible print resources and working with the Disability Office, SUTC coordinators provide accessible formats for materials e.g. electronic text, large print, braille, audio, tactile diagrams.

We have invested through our R&I Strategy 2020 and delivered discovery-led impacts within an inclusive, open environment, firmly establishing our forward-looking ambition to achieve significant and far-reaching impact on SDGs.