

4 Priority 4: Greater Innovation in the Economy

Priority 4: Greater innovation in the economy – a national culture of enterprise and innovation leading to a more productive and sustainable economy

Short overview of current activity: Our ambitions in Knowledge Exchange and Innovation build upon our wider goals around research excellence, as articulated in our University Strategy (Inspiring People, Changing the World) – by helping to drive scholarship by engagement. The economic impact of the University, its students and international visitors is already evident. We sustain £1.5bn of output, £800M in GVA and nearly 15,000 jobs across Scotland. Our new strategy outlines the University’s plans to build upon this activity to further enhance the global impact of our research whilst, at the same time, meeting Scottish and UK Government aspirations for entrepreneurship, business growth and economic prosperity.

SFC Guidance	Commitment, strategies and evidence of progress
<p>Institutions are asked to summarise their approach to sustaining a culture in which innovation can flourish, and their work with business, industry, and the public sector to find innovative solutions that support economic growth, and impact on our society and culture. Where appropriate statements should outline plans and/or strategies for:</p> <ul style="list-style-type: none"> • Engaging with the innovation landscape in Scotland including Innovation Centres, Interface, Innovation Vouchers, and the Scottish Government’s proposed innovation reforms. • Delivering the Innovation Scotland Action Plan. • Engaging with SFC and Innovation Centres on the recommendations of the Innovation Centre review. • Delivering the individual institution’s agreed contributions to the nationally agreed University Innovation Fund (UIF) outcomes. • Embedding enterprise and entrepreneurship training in its programmes. • Securing matched-funding from industry for SFC additional skills places. 	<p>The University of Glasgow is committed to enabling greater levels of innovation and enterprise. Key initiatives include:</p> <ul style="list-style-type: none"> • New Knowledge Exchange & Innovation Strategy (2017 to 2022) to grow engagement with industry, investors and entrepreneurs. Progress: Published Knowledge Exchange & Innovation Strategy in 11/17; Priorities Open for Business; Economic Impact through Entrepreneurship & Innovation; High Quality Policy and Practice in a Changing Landscape; and Inclusive Community & Public Engagement. • The University will continue to match-fund and utilise the UIF Platform Grant of £250k • Building strategic industry partnerships to enhance innovation and entrepreneurship. Progress: Drug discovery partnership with AZ; £27m QuantIC initiative; Extended Santander partnership to facilitate student entrepreneurship; Engagement with J&J, Siemens, Toshiba Medical, Apple, AstraZeneca, BioCon, Intel, Thermo Fisher; Work with SE, SDI, Glasgow Chamber, GCC to grow SME partnerships; Lead project with GCC and Region City Deal to develop life sciences industry cluster at QEUH campus; lead pan-Scottish BEIS Science & Innovation Audit in Precision Medicine; Glasgow Molecular Pathology Node collaborating with industry to develop new diagnostics; University/Industry 5G demonstrator test bed proposal pending to facilitate R&D projects and entrepreneurship. QuantIC (led by UofG) has approved 37 industry-led projects. Funded through the Partnership Resource Fund, this £3.7M investment has leveraged £2.3M of industrial contribution towards acceleration of our technology. QuantIC has also invested £525k in 11 industry-led studentships and leveraged £470k from industry. Building on the academic and industrial strengths highlighted in the Science & Innovation Audit for Enabling Technologies, a Strength in Places Fund (SIPF) bid was submitted for the establishment of the Clyde Waterfront Innovation Campus (CWIC) totaling £80m (£28M, SIPF, £28M UofG, £27.5M Glasgow City Region City Deal). CWIC will co-locate the University’s nano and quantum device fabrication facilities alongside industrial innovation space. The initiative will enable collaborative R&D, business co-location, employment, entrepreneurship and skills development. The campus was also included in the First Minister Program for Government and is aligned with the broader strategy around the creation of an Innovation District on the Clyde Waterfront, which is the subject of a memorandum of understanding between the University, Scottish Enterprise and the City Council; Funding from UKRI Innovate UK portfolio has grown 26% from FY 2017 and 150% since FY 2015; Led, for Scotland, the successful £16m Industrial Strategy Challenge Fund (ISCF) application for an Industrial Centre for AI Research in Digital Diagnostics (iCAIRD). UofG is a hub for the program of work on digital radiology and pathology with industry partners including Canon and Philips. Project comprises 17 partners from NHS, academia and industry and will focus on the application of AI to digital diagnostics for the benefit of the UK. AY2019/20; Continue to play a strategic role in the development of quantum technologies in the UK via a transition to phase 2 of the National Quantum Technology Programme on 01.12.19. Glasgow will contribute to all four QT Hubs under the National Programme. Building on industrial partnerships already developed over phase 1 of QuantIC circa £9.4M (cash and in-kind contributions) has been secured from industry for Phase II.; QuantIC Phase II will have a focus on developing strategic industry partnerships with companies that can play a

key role in the development of the technologies developed in the Hub to date ; Lead the development of an industry-led proposition to the Industrial Strategy Challenge Fund for a quantum technology innovation centre around the industrialisation of miniaturised quantum components. To this end, the Scottish Funding Council has provided £100k funding from its Strategic Funds to the University of Glasgow and the University of Strathclyde to support the establishment of a Quantum Technology Innovation Centre (QTIC); Launch BEIS Science & Innovation Audit (March 2019) in Precision Medicine and develop full £50M SIPF proposal for a ‘Living Laboratory’ at QEUH (Submission Sept 2019). This was highlighted as a ‘game-changing opportunity’ in the SIA. Industry partners include ThermoFischer, BioClavis, Siemens, Aridhia, MR CoilTech, Spiritus Partners. Support the establishment and roll-out of the iCAIRD amongst industry, health services, and academic partners; Continued support to develop the Imaging Centre of Excellence (ICE) to facilitate Scotland-wide access to 7T MRI, including development of ‘precision imaging’ opportunities amongst academic research, NHS, SMS-IC and industry.

- **Continued support for engagement with the SFC Innovation Centres in particular CENSIS and SMSIC. Progress:** co-location of SMS-IC at QEUH; Established Clinical Innovation Zone (CIZ) at QEUH to build corporate cluster alongside SMS-IC; Companies include: BioClavis, MR CoilTech, Clinnovate UK, Siemens, Aridhia, Causeway Therapeutics; CIZ offering flexible hot desk space encourage collaboration with researchers and NHS; Partnership with BioCity/ MediCity; Launch of £32M Imaging Centre of Excellence (ICE), a building designed to foster collaboration between industry, University and NHS; MSc on Precision Medicine; Supporting SMS-IC and CENSIS to develop business cases for funding renewal.; Led, for Scotland, a BEIS Science & Innovation Audit (SIA) in Precision Medicine which has been completed and is awaiting a launch by BEIS. The First Minister’s Precision Medicine Summit, held in Perth in September was early outcome of the SIA. Continue to Lead project with GCC and Region City Deal to develop life sciences industry cluster Clinical Innovation Zone (CIZ) at the QEUH. CIZ now hosts a co-location of 200 clinical academic researchers, 32 core business/specialist support staff and currently 10 tenant organisations includes Canon, Siemens, BioClavis, Spiritus Partners and MR Coiltech who employ over 43 FTEs on site. **AY2019/20** - UofG will continue to support the development of SMS-IC pending the outcome of the full business case submitted to SFC in November 2018; Continue to support CENSIS
- **Participate via RKEC /RCDG in the shaping UIF outcomes to meet national priorities; Delivering against plans submitted in January 2016. Progress** Via RCDG leading collaborative plan for National Outcome 1 ‘Demand Stimulation; See Annex B for progress against Priority Actions – AY2017/18; **AY2019/20** continue to provide leadership to a Scottish HEI initiative focused on Demand Stimulation for HEI services from ‘targeted’ multi-national companies. Participate in on-going collaborative activities to deliver National Outcomes including financial contribution to a Secondment post to co-ordinate ISCF applications amongst Scottish HEI
- **Task force to evaluate and drive change in the scale of the provision of entrepreneurship support provided to our students. Progress:** draft recommendations to enhance support; Grow new ventures e.g. MindMate Ltd (Converge Challenge Winner; 2016); Staels Design (Converge Challenge, Design and Creativity Winner; 2017); Continued support for under-graduate, post-graduate and graduate entrepreneurs which includes hosting of 2 Unlocking Ambition Fellowships; Business Start-up Workshop Program 2018 delivered to over 330 students / recent graduates. 30 student start-up companies receiving support; UofG only Scottish partner in the £5m Connecting Capability Fund project led by the London School of Economics (LSE) and including Oxford, Manchester, Sussex, Sheffield and Cardiff. The project aims to drive entrepreneurship and innovation from social science students and staff. Outputs include generation of scalable new ventures. **AY2019/20** continue to fund a team of student interns to develop and deliver entrepreneurship support initiatives to student entrepreneurs; Develop plans for a new fully serviced student incubator to be located in the new Research Hub building due for completion 2020/2; Identify/appoint a strategic lead to take forward the University’s vision

	<p>for student enterprise; Work with the University's student bodies to ensure that there is good support in place for student-led enterprise activities</p> <ul style="list-style-type: none"> <p>£1bn campus re- development plan for the former Western Hospital site includes a commitment to creating space within new buildings to foster industry collaboration and entrepreneurship. Progress: collaboration with SE and GCC to develop an Innovation District from the West End to QEUH to foster economic growth with international reach.; University has signed a MOU with Glasgow City Council and Scottish Enterprise in relation to the development of an innovation district linked to the University's £1bn campus investment program and initiatives (e.g. Clinical Innovation Zone) at the Queen Elizabeth University Hospital and the proposed Clyde Waterfront Innovation Campus. The University is also engaging with Scottish Government, the Glasgow Chamber of Commerce and key business stakeholders to stimulate new partnerships that will build on its own investments, the Glasgow city deal and the business opportunities that are emerging to deliver the economic benefits being created for the West End and Waterfront area of the city.</p> <p>AY2019/20 Develop SIPP applications for Living Laboratory and Quantum Technologies Innovation Centre to be located in GOVAN near to the QEUH</p> <p>Continued commitment to the creation of scalable new ventures with public (e.g. SE) and private partners (e.g. IP Group plc; Epidarex Capital). Scalable companies include: Caldan Therapeutics (£4.5m); DeepMatter plc (£5m); Anacail (£3m) ; Clyde Biosciences (£2m); Lynkeos Technologies Ltd (£1.5m) , Causeway Therapeutics Ltd (£2m), Kvatchii Ltd (£0.15m); Semiwise (£0.05m) and SAW Dx (£1.8m); Gold Standard Simulations Ltd acquired by Synopsys and growing Glasgow base to 30 + graduate/PhD jobs; Building relationships with Angel investors including Archangels; EquityGap; Examples of new deals Portage Glasgow Ltd (joint venture drug development company located in Glasgow with Canadian based Portage Pharmaceuticals Ltd); Glasgow/Tel Aviv University researchers team have secured funding from FutuRX (http://www.futurx.co.il/) which is Israel's leading biotechnology innovation accelerator. Developed new relationships with investors including Advent Life Sciences; Medicxi Ventures and Juvenescence; Secured ~£4m in EPSRC, MRC, ESRC and EPSRC Impact Acceleration Account funding to support entrepreneurship, commercialization and industry engagement. AY2019/20 – continue to support the creation of scalable new ventures to exploit academic-led innovations (current pipeline of 15 projects) and to license/transfer technologies to entrepreneurs and existing companies (in Scotland and beyond); increase investor/corporate engagement with academic and research staff; Deploy UKRI IAA, UofG KE, MRC CiC and UIF funds to ' bridge the gap ' between academic innovations and the required readiness for investor and / or corporate engagement; Deepen relationships with the UK Catapult network and develop partnerships to accelerate commercialization and industry engagement.</p>
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Annex B: University Innovation Fund

- 1. Outcome (Demand Stimulation):** working with Scotland's enterprise agencies, Scottish Government, business networks, Interface, and others, Scottish HEIs will have helped to increase the demand and quality of engagement from businesses and the public sector for university services.
- University has signed a MOU with Glasgow City Council and Scottish Enterprise aimed at developing an innovation district linked to its £1Bn campus investment and its role in taking forward clinical and scientific excellence at the £800 M Queen Elizabeth University Hospital. Also the University is engaging Scottish Government, the Glasgow Chamber of Commerce and key business stakeholders in the innovation district to develop new partnerships to maximize the economic benefits of its own investments, the Glasgow city deal and the business opportunities that are emerging as a result of the regeneration of the West End and Waterfront area of the city.
 - Building on the Science & Innovation Enabling Technologies Audit a Strength in Places Fund (SIPF) bid was submitted for the Clyde Waterfront Innovation Campus totalling £80m (£28M, SIPF, £28M UofG, £27.5M Glasgow City Region City Deal) to co-locate, in a single building, the Universities nano and quantum device fabrication facilities alongside industrial innovation space (outcome pending). The initiative will enable collaborative R&D, business co-location, employment, entrepreneurship and skills development.
 - Established a consortium of partners including University of Glasgow, NHSGG&C, Glasgow City Council and six industry partners (multinationals and SMEs) to submit an Expression of Interest to the Strength in Places Fund to implement the 'Living Lab' concept (outcome pending). The Living Lab will translate science and innovation excellence into a real world clinical setting. By implementing and evaluating novel precision medicine approaches at the campus, industry will be able to stimulate and evidence market demand, thus accelerating precision medicine adoption and the growth of the local life sciences cluster.
 - University led, for Scotland, a BEIS Science & Innovation Audit (SIA) in Precision Medicine. The report is due to be published by BEIS before the end of the year. It sets out how precision medicine will improve patient outcomes; deliver £bn savings to the NHS and create economic growth /jobs in Scotland. The First Minister's Precision Medicine Summit, held in Perth in September was early outcome of the SIA. It also was key to stimulating SIA the Strength in Places Fund application referenced above
 - Examples of industry/public sector engagement initiatives include: Biomedical Engineering Industry day held May 2018 engaging with ~40 companies; SofTMech (Multiscale Soft Tissue Mechanics) held industry engagement workshops which have resulted in new partnerships and funding from industry; Rankine Chair of Energy Engineering joined the Oil & Gas Technology Centre Academic Panel to strengthen our engagement with the Centre; establishing the Promoting Partnerships network which brings together academics, clinicians and industry (~20 companies) to support the development of diagnostics (molecular and imaging); MVLS Collaboration for Innovation Industry day held in June 2018 engaged with 42 companies; Glasgow Molecular Pathology Node annual symposium held in September 2018 engaged with 28 companies.
 - University's success in the BBSRC Excellence with Impact competition, has led to the University developing the first Massive Open Online Course (MOOC) on delivering research Impact. The three-week on-line course is aimed at those working in the Higher Education sector, including all academic and non-academic research professionals as well as postgraduate students.
 - Developed and delivered workshop/training to improve academic/research staff skills in industry engagement. This has been delivered to College of Science & Engineering (CoSE) and College of Medical, Veterinary & Life Sciences (MVLS) and a similar program will be delivered to the College of Arts (CoA) and College of Social Sciences (CoSS) in late autumn. Held College KTP workshop August 2018 to raise profile of the scheme - ~30 academic staff attended.

- EPSRC Impact Acceleration Account (managed by the University) funded 3 Knowledge Exchange Associates in: semiconductor photonics, 5G technologies, industrial biotechnology and medical engineering to work with research staff to increase industry engagement and entrepreneurship activity; supported 17 researchers to participate in industry focused events including: Aeronautical Technology Institute Annual Conference; Materials Research Exchange 2018; Automotive Council Lightweight Technology Roadmap / Preparing for the Grand Challenge events; International Conference on Raman Spectroscopy 2018.
- 11 Centre for Doctoral Training (CDT) bids with over 60 Scottish companies/organisations participating who have all committed to support student training and engage in collaborative activities.
- Led £16.5m AHRC Doctoral Training Partnership (2019-2023). Up to 20% of studentships will be Collaborative Doctoral Awards (industrial PhDs). UofG secured 2 x industrial doctoral studentships in AI; 3 x doctoral graduate NPIF Placements at National Theatre of Scotland, Think Where and Auchendrain Museum; Applications for 2 x Creative Economies Fellowships at UofG pending – outcome announced end Oct.
- Co-funded Research Development Manager post with Glasgow Life (GL) to work across GL and CoA to identify and develop strategic areas of collaboration.
- Relaunch of ‘The Gaitherin’ (bi-monthly academic-business informal networking event) to align with Clyde Waterfront Innovation Campus initiative. This has been done in partnership with Govan based incubator partners Rookie Oven; Meet Up membership grown to over 280.
- ESRC Impact Acceleration Account Business Boost funding won. This is being used to build capacity to grow engagement between business and the social sciences: a program of social science specific business engagement training for 2018/19 agreed; 6 new social science business collaborative projects have received funding; sector-specified ‘Discovery Day’ events with business are planned for early 2019.
- School of Engineering has committed to and participated in activities to develop the National Manufacturing Institute through the Scottish Research Partnership in Engineering.
- University and NHS Greater Glasgow and Clyde have signed an MOU to form the Glasgow Health Sciences Partnership (GHSP). The aim of the GHSP is to better integrate world-leading research, top quality education and expertise in clinical practice between the university and NHSGGC.
- University is supporting the development of the city region’s economic strategy and its inclusive growth thinking via the Glasgow Commission for Economic Growth chaired by the University’s Principal. Glasgow academics have also made significant inputs to both Scottish Government and Scottish Parliament. Consideration of City Deals and inclusive growth and to the work of third sector partners such as the Joseph Rowntree Foundation and Carnegie UK;
- The Clinical Innovation Zone (CIZ) at the QEUH now hosts a co-location of 200 clinical academic researchers, 32 core business/specialist support staff and currently 10 organisations employing over 43 FTEs. This includes several international companies Canon, Siemens, BioClavis, Spiritus Partners and MR Coiltech. The benefits of co-location for enabling University collaboration are growing, for example, Siemens is holding a national training event at ICE on the 28th – 30th November and Spiritus Partners have attracted an international conference on Blockchain, Internet of Medical Things and Clinical Trials/Research to be held in ICE on 13-15th November 2018, with between 80 - 120 delegates.
- On behalf of Scotland, led the Industrial Strategy Challenge Fund application for an Industrial Centre for AI Research in Digital Diagnostics (iCAIRD) application which comprises 17 partners from NHS, academia and industry and will focus on the application of AI to digital diagnostics for the benefit of the UK. Results currently embargoed and will be announced in November 2018.

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- Continue to lead a Scottish HEI initiative focused on Demand Stimulation from 'targeted' multi-national companies for Scottish HEI capability and participate in the other collaborative HEI activities to deliver National Outcomes
- In partnership with Govan based tech-incubator Rookie Oven continue to deliver the business networking event series called 'the Gaitherin' which aims to broker University collaboration with a wide cross-section of businesses.
- Leverage the University participation in the Connecting Capability Funded ASPECT program to promote Glasgow's social science expertise to the private sector to establish new collaborations and contracts.
- Continue to lead the AHRC Doctoral Training Partnership (2019-2023) where up to 20% of studentships will be Collaborative Industrial PhDs. To date Glasgow has secured 2 x industrial PhD's in AI; 3 x doctoral NPIF Placements at National Theatre of Scotland, Think Where and Auchendrain Museum; 2 x Creative Economies Fellowships working with industry partners Shetland Museums and Edinburgh World Heritage
- Continued support for the Innovate UK funded collaboration between the University and Sublime (<https://www.sublime.cc/>) to deliver Project Mobius which is aimed at establishing the most ambitious virtual reality (VR) teaching platform in the world (<https://www.sublime.cc/projectmobius>)
- Support a program of industry engagement (~150 industry partners) with the Centres for Doctoral Training (CDT) led by Glasgow, and in which UofG is a partner. The CDTs are in the fields of Ultrasonic technologies, Artificial Social Intelligence and Non-Animal Technologies for drug screening, toxicology testing and regenerative medicine. In response to strong industry engagement from the Glasgow Doctoral School in Emerging Technologies
- Continue to support 3 x Knowledge Exchange Associates covering the 5G, Healthcare/Industrial Biotechnology and Semiconductor Electronics sectors to develop industry engagement in these areas.
- Deliver a series of events during 2019/20 which are designed to foster a greater culture of innovation and connectivity between the CIZ, UoG campus locations and external industry partners. This will include a CIZ ecosystem launch to showcase organisations and encourage initiation of further collaborative discussions with a subsequent series of more focussed meetings to facilitate the development of collaborations,
- Assessment of the barriers to growth for Precision Medicine focused SMEs and start-ups and initiatives to address these. Included will be (i) assessment of the scale/nature of demand from these SMEs and start-ups for proposed new Health Innovation Hub capabilities and (ii) requirements of to attract inward investors to the Clinical Innovation Zone at the QEUH campus and SIPP "Living Lab" proposition
- Deploy UIF to engage dedicated resource to grow Glasgow's Innovate UK Knowledge Transfer Partnership (KTP) portfolio to in excess of 10 partnerships over the next 24 months

2. Outcome (Simplification/Commercialisation): in partnership with the Enterprise Agencies (EAs) and Interface, Scottish HEIs as a sector will have demonstrably simplified business access to the knowledge and expertise in Scottish universities.

- Continued to participate in Universities Scotland RCDG Contracts Sub-Group (Strathclyde Led) to develop and test simplified standard contracts (with Interface) to be made available on a central website. This initiative arose from the original Universities Scotland Innovation Action Plan. The Group is now working to pilot the suite of template agreements with representative business groups.
- Continued to deepen the operational relationship with Interface. This includes the implementation of a new process with Interface to enable more focused and relevant business enquiries to be targeted to our academics
- The university continues to refocus its approach to industry engagement for example in a formal industry visitor and referral triage system has been developed and deployed by MVLS for the Clinical Innovation Zone at the QEUH.

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- Selection of businesses (including Gaitherin attendees) will be brought together via bespoke Discovery Days. These events will be designed to enable curated sets of business staff and Glasgow researchers to engage in tackling challenges of common interest and ideate new collaborative project ideas.
- Continue to develop within Colleges visible and effective points of entry for industry who want to engage with the academic expertise and identify new ideas, discoveries and inventions arising from research.
- Build on an opportunity audit program amongst academic researchers to identify knowledge exchange and translational opportunities with investor and / or corporate engagement potential. This initiative was initiated by MVLS during 2017/18 and has been successful in finding new opportunities and driving engagement.

3. Outcome (Simplification/Greater Innovation): in partnership with the EAs and Interface, Scottish HEIs will, at a national level, have made strategic use of their sectoral knowledge to promote greater innovation in the economy (including beyond non-STEM).

- QuantIC (led by UofG) has (i) funded 33 industry-led (with £2.5m contribution) technology development projects, all collaborative with Scottish universities, using its £3m Partnership Resource Fund (PRF); (ii) partnered (to date) in over 50 externally funded collaborations (EPSRC, Innovate UK, CDE etc.) with industry totalling over £22.5M; (iii) worked with several Scottish-based businesses including Leonardo, Thales, M Squared Lasers, Kelvin Nanotechnology, Clyde Space, Chromacity, PYXL and Photon Force.
- University trading subsidiary company, Kelvin Nanotechnology (KNT) Ltd, has continued to build industry engagement/utilisation of the James Watt Nano-fabrication Centre (JWNC). KNT has achieved its ambitious £m's turnover target for FY17/18 and employs 15 people. £2M has been secured from EPSRC to invest in new tools that significantly enhance the capabilities of JWNC and consequent attractiveness to industry.
- UofG is a partner in the new Policy and Evidence Centre (PEC) which is an AHRC funded consortium set up as part of their Creative Economy Program. The PEC is led by NESTA, with university partners across the U. PEC will develop evidence to inform the policy and growth in the UK creative industries
- CCPR Professor Philip Schlesinger chaired RSE's response to the government's Culture Strategy. CCPR gave evidence on the use of data and statistics in the Screen Sector in Scotland at the Scottish Parliament's Culture, Tourism, Europe and External Relations Committee.
- Imaging Centre of Excellence is now fully operational for research purposes. Annual research income of ICE group in 2018 is on track to exceed 2017 by over 30%. The ICE programme has successfully completed a major review of project trajectory and wider benefits realisation plans, reviewed by both Glasgow City Region City Deal and Independent Commission for Economic Growth.

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- The experience gained from participation in the Connecting Capability funded ASPECT project on the commercialisation of the social sciences will be shared amongst Scottish HEI. This is likely to include dissemination of new models for the commercialisation of social science ideas, new approaches to communicating the value of social science research to business, and new training interventions to upskill social science researchers to engage with business
- Developed the business case for Phase II funding of SMS-IC (led by UofG) to ensure Scotland's HEIs are supported to work with NHS Scotland and industry, to position Scotland as a global PM leader, that can attract and support growth of precision medicine SMEs, ensure savings for NHS and benefit patients in Scotland to create a healthier workforce.

4. Outcome (Entrepreneurialism): Scottish HEIs as a sector will have made a significant and positive change in the way entrepreneurial opportunities are promoted and delivered to students, HEI staff, and businesses.

- Continued support for under-graduate, post-graduate and graduate entrepreneurs which includes hosting of 2 Unlocking Ambition Fellowships, RAENG Enterprise Fellowship and RSE Edinburgh Enterprise Fellowships. Delivered the Summer Business Start-up Workshop Program 2018 (including the Santander Summer Company Program) to over 330 students / recent graduates. 30 student start-up companies receiving support
- Tier 1 Graduate Entrepreneur Endorsement – increasing number of international students applying for Tier 1 GE (36 in 2017 vs 56 in 2018). 18 endorsements approved in 2017 resulting in 13 start-ups. Expecting to approve 20 endorsements in 2018, which should result in an additional 15 start-ups. Highest Scottish HEI conversion of Tier 1 GE to Tier 1 Entrepreneur.
- Converge Challenge – 4 successful applications moving to second stage with 2 reaching the semi-finals and 1 reaching the Kickstart finals.
- EPSRC IAA Funding (£1.7m) has supported 24 early stage commercialisation projects which has led to 7 technology demonstrators, licence agreement and incubation of 4 spin out company opportunities.
- 12 new spin-out ventures to commercialise academic research are being incubated by the University. This includes support with business planning, opportunity validation, securing technology de-risking funds and investment in patent filings; Completed formation of joint venture drug development company with Canadian based Portage Pharmaceuticals Ltd; Developed relationships with investors including Advent Life Sciences; Medicxi Ventures; Juvenesence and Archangels;
- Early Career Development Programme and ECR network ran workshops and networking events to raise awareness of commercialisation and the support available at Glasgow from the IP & Commercialisation team.
- Innovate UK portfolio 26% from FY 2017 and 150% since FY 2015
- UofG only Scottish partner in the £5m Connecting Capability Fund project led by the London School of Economics (LSE) and including Oxford, Manchester, Sussex, Sheffield and Cardiff. The project called ASPECT (A social sciences platform for entrepreneurship, commercialisation and transformation') aims to: clarify the social science value proposition to business; leverage the joint strengths of the seven RG partner Universities to promote greater social science-based innovation in the economy; launch a new generation of *scalable* 'tech for good' businesses. Program set up activities are currently underway.
- Various workshops for Post-Graduate Researchers and Post-Doctoral Researchers including Physics 2 days entrepreneurship workshop; Joint UofG / UoS Social Enterprise 1 day's workshop (business beyond the bottom line); BBSRC Biotech YES competition (annual); inspirational video case studies/blogs from staff and student entrepreneurs
- The £1.15m CiC, P2D and BBSRC funding AY2017/18 deployed has supported 31 projects in total, 18 of which were technology demonstrators. To date, this has resulted in 3 patent filings, 2 diagnostic prototypes, and a public health database for HEP C for Public Health England. This funding directly supported successful phase 1 application to Scottish Enterprise for High Growth Spin Out support scheme for exploring development of a company with a focus on novel Insecticides.
- Glasgow/Tel Aviv team successfully pitched joint technology to FutuRX (<http://www.futurx.co.il/>) which is Israel's leading biotechnology commercialisation accelerator. FutuRX partners are Israeli Government, J&J Innovation, Takeda and OrbiMed. FutuRX will invest in a new venture to exploit the joint IP with the University providing contracted services as required.

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- Continue to support the creation of scalable new ventures to exploit academic-led innovations (current pipeline of 15 projects) and seek to license technologies to entrepreneurs and existing companies;
- Increase (and widen the base) of investor/corporate engagement with academic and research staff through various marketing and business development initiatives;

- Continue to grow the innovation pipeline from MVLS and CoSE researchers via deployment of resources from UKRI IAA, MRC CiC, UofG KE and UIF funds (as well as seeking external funds e.g. SE HGSP; MRC DPFS) on internal IP /opportunity prospecting, patent protection, commercial/technical readiness for investor and/or corporate engagement and market analysis/business planning
- Provide support to Glasgow's participation with ZINC (<https://www.zinc.vc/about>) the tech-for-good incubator program, to promote opportunities for students to apply to join the program as well as internships and student placements with businesses created through the ZINC accelerator program. During 2019/20 we will learn from the ZINC partnership and develop plans to launch a locally based 'tech for good' incubation activity for the Scottish student/graduate community.
- Deliver the 2019 Science Den competition. This competition supports innovation amongst early career researchers. The competition requires involves teams pitching ideas, attending workshops and working with mentors. The winning team is awarded £10,000 to be utilized for the development of their innovation/business idea
- Build on an opportunity audit program amongst academic researchers to identify knowledge exchange and translational opportunities with investor and / or corporate engagement potential. This initiative was initiated by MVLS during 2017/18 and has been successful in finding new opportunities and driving engagement.
- Continue to fund a team of student interns to develop and deliver entrepreneurship support initiatives to student entrepreneurs; Develop plans for a new fully serviced student incubator to be located in the new Research Hub building due for completion 2020/2; Identify/appoint a strategic lead to take forward the University's vision for student enterprise; Work with the University's student bodies to ensure that there is good support in place for student-led enterprise activities

5. Outcome (International): in partnership with Scottish Development International, Connected Scotland and others, Scottish HEIs will have pooled their knowledge and networks, and shared good practice to promote and engage Scotland internationally (operating under Scotland's International Framework).

- Strategic Partnerships include (i) agreement signed with Smithsonian Institution in the US. This relationship will support staff research collaborations and exchanges as well as student internships and work placements; (ii) PUCV (Chile); McGill (Canada) and Columbia (US) - Smart Urban Infrastructure with; (iii) University of Lüneburg - European Centre for Advanced Studies (ECAS) based in Lower Saxony, Germany; (iv) Radboud University in Nijmegen, the Netherlands - collaborative research and education initiatives (both investing £100k) in joint projects.
- BioClavis, a US-owned cancer diagnostics specialist is set up a new base in the Clinical Innovation Zone, creating more than 40 jobs. The move is part of a £10.5m investment supported by Scottish Enterprise. A research and development grant of £4.5million has been provided by Scottish Enterprise to the firm to work in collaboration with the NHS and university researchers.
- The University, working in partnership with Strathclyde University, is exploring the lessons we can learn from one of the world's most effective university-innovation eco-systems for economic growth at Tel Aviv University. A joint seminar with TAU Ventures at the Technology Innovation Centre was held on October 25th with representatives of universities, local government and enterprise agencies from both Glasgow and Tel Aviv.
- In partnership with Glasgow City Council, the University is involved in a number of international partnerships including Rockefeller 100 resilient cities and Metrolab, a US city-university partnership focusing on the use of data and data analytics to improve public services (Glasgow and Bristol are being invited to join as the first two non-US cities). Metrolab will afford opportunities to develop cross-Atlantic, city-to-city, projects where University expertise can be applied to solving urban issues through the more effective use of data.
- Continue to grow international activity in Asia (i) **Singapore:** Working with SDI developed research collaboration and consultancy in the themes of water, data and healthcare. Worked with SDI on renewal of our co-investment including work in other SE Asian countries (ii) **China:** deepened the strategic

partnership with the University of Electronic Science and Technology (UESTC) in Chengdu. Up to 540 graduates per annum are now trained in electronic engineering. Around 40 students come to Glasgow for years 3 & 4 of their degrees or for postgraduate study. The undergraduate programs are supported by an Industrial Advisory Board comprising leading Chinese and international companies. Beyond Engineering, collaboration at undergraduate level is developing in Critical Studies and Clinical Medicine via summer schools and elective placements.. In research, the Chinese Scholarship Council continues to support a program between the University and UESTC in Biomedical Engineering, under which 15 students are provided with stipends for three years to come to Glasgow and work on research topics of interest to both partners. Research is supported via: (i) program funded by the Chinese Ministry of Education to develop an Optoelectronics Design Centre between UofG, TU Eindhoven and UESTC; (ii) programs in medical imaging funded by NSFC; (iii) program supported by the French Government in radar for healthcare; (iv) Newton Funds support research exchanges and (v) Glasgow staff have worked on projects with Chinese companies and institutes, including Huawei, Proton Products (based in Buckinghamshire) and several institutes of the Chinese Academy of Sciences.

- The University has invested in the new post of International Development Coordinator in its Global Centre for International Development (GCID). This position will support responses to GCRF funding opportunities and build links with potential partners from across the globe looking to engage in international development activity;
- Locally the University has engaged with SFC and Universities Scotland on GCRF initiatives on building networks through participation as well as leadership of events/workshops; Internationally the University has used SFC GCRF funding to strengthen capacity in areas including food security, renewable energy, water and healthcare.
- The University has been successful in winning >£15m of GCRF funding in the period, including £7.1 million to set up a GCRF Centre for Sustainable, Healthy and Learning Cities and Neighbourhoods, led by the College of Social Science.

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- Continue to participate, develop and grow in informal and formal international networks including UNIVERSITAS 21 and the Guild of European Research-Intensive Universities e.g. (i) hosting a meeting of Vice Principals from the Guild of European Research-Intensive Universities and (ii) building relationships with companies based in Chengdu e.g. Intel, TI. Discussions are on-going with SDI on how to leverage these connections and (iii) 4th conference in the 'UK China Emerging Technologies' series will to develop collaborations with UESTC and more widely across China.

6. Outcome (Inclusive Growth and Social Impact): Building on current and good practice Scottish HEIs will have scaled up their support of the Scottish Government's ambitions for inclusive growth.

- The ASPECT program (see Outcome 4) will bring together entrepreneurs, domain experts, developers, and investors, to launch new social science based, scalable businesses to solve **unmet needs by disrupting**, extending and improving existing services through new technologies and insights from research. ZINC Ltd, a business accelerator company, will work with ASPECT partners to incubate these ventures from the program.
- University's Olympia Social Research Hub in Bridgeton continues to expand the range of its activity. As well as being the base of CaChe, the ESRC's UK Housing research centre, Glasgow academics in partnership with the Glasgow Centre for Population Health have developed a £2.27 M Scottish Children's Neighbourhoods program which is due to start shortly. Through Policy Scotland and the Robert Owen Centre, the Olympia social research hub has become a focus for work on the implementation of 'inclusive growth', drawing on the expertise of GCPH and other partners as well as capitalising on research capability within the University. New approaches to knowledge exchange and engagement activity are being pioneered through the University GCPH partnership, linking activities at the Olympia with the local community in the East End of Glasgow. These will feed into thinking about developing our approach to inclusive growth within the West End and Waterfront Innovation District, which spans areas on both sides of the river.
- Dr David Waite has been employed exclusively to work on the economic impact of the Glasgow City Deal and is the main source of management information in support of the Economic Growth Commission linked to the City Deal. The Economic Commission, chaired by the Principal, has been advising

the Glasgow City Deal cabinet on approaches to maximising inclusive growth, and via Policy Scotland, the University has been making significant inputs into Scottish Government thinking on this topic. Des McNulty is a member of the steering Committee which is overseeing the development of the Scottish Government's Centre for Regional Inclusive Growth

- Policy Scotland was commissioned to provide research support to the Scottish Government's Commission on Poverty and Inequality and its reports to the Commission paying an important part in Commission recommendations that fed into the Scottish Government's Child Poverty Action Plan
- The legacy of the What Works Scotland project, which has developed techniques for assessing the effectiveness of social policy interventions, involving both Glasgow and Edinburgh Universities and the Scottish Government, will be taken forward via Policy Scotland, in conjunction with researchers from other academic units within the University
- University has expanded and developed the widening access provision and partnership work, engaging with over 25,000 pupils and 1,200 adult returners to education in 2017-18 via our site of pre-entry widening access (WA) programmes. These programmes are multi-exit, serving the whole sector. In 2018, over 870 students progressed to University of Glasgow via our programmes, with over 1,100 progressing to other HEIs across Scotland;
- Awarded SFC funding to develop an HNC articulation programme, primarily from the three Glasgow Colleges, over the next 2 years. In August 2018, 20 students commenced HNC Applied Sciences at Glasgow Kelvin College, incorporating regular learning on the Gilmorehill campus and a summer programme, to aid transition into Year 2 of a Life Science degree in September 2019. Intended expansion includes Engineering and Social Science programmes, BTechEd and Community Development.

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- Continue to participate in the Steering Committee which is overseeing the development of the Scottish Government's Centre for Regional Inclusive Growth; Glasgow Regional Partnership Board and Ayrshire Regional Partnership Board.

7. Outcome (equality and diversity): Building on current and good practice HEIs will have ensured positive promotion of equality and diversity in staff and all who are affected by the use of the UIF.

- School of Engineering led proposal to the EPSRC titled 'Inclusion Matters' was successful. The joint project with Edinburgh and Strathclyde will design and implement new strategies to tackle gender imbalances as well as other equality and diversity matters for ECRs in Engineering.
- Gender Equality Steering Group continues to monitor the implementation of the University's Athena SWAN Bronze action plan. The University is aiming to apply for Athena SWAN Silver award in 2020.
- Equality and Diversity Strategy Committee reviews the completion rates for Equality and Diversity Essentials training three times a year, completion rates in May 2018 were 77%.
- *Participation in the 'Ingenious & Enterprising Women' Program. This is a Scotland-wide program funded by SFC and Scottish Government that is aimed at empowering women in STEM roles to take control of their professional development and careers*
- Exception of the Institute of Health & Wellbeing (Gold Accreditation), all of MVLS' seven Institutes and three Schools have attained Bronze or Silver Athena Swan accreditation. MVLS College Equalities Committee champions the consideration of equalities implications during the development and implementation of college-wide strategy and policy. The Committee has overseen the roll-out of many initiatives aimed at supporting those with caring responsibilities including the provision funds to support academic staff returning from carer's leave and to fund additional child care for attendance at conferences or training.

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- Continue to develop positive promotion and incorporation of equality and diversity best practice within UIF initiatives
- Seek to apply for Athena SWAN Silver award in 2019