

Universities and Research in Scotland:

quality at the service of society.

Research Funding: rewarding quality.

Professor Paul Hagan

Director of Research and Innovation



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Scottish Government's Purpose

A more successful country, with opportunities for all of Scotland to flourish , through increasing sustainable economic growth.

September 2011



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The Government
Economic Strategy



PUTTING LEARNERS AT THE CENTRE:
DELIVERING OUR AMBITIONS FOR
POST-16 EDUCATION





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Role of SFC in Research

- improve the quality and international competitiveness of the research base in Scotland;
- underpin dual support;
- increase the exchange of knowledge and through this the economic, social, healthcare, educational and cultural benefits of research.



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- **Research funding in UK and Scotland - Funding Councils, Research Councils, other sources - purposes and policy agendas.**
- **Quality Research Excellence Assessment, RAE2008, REF2014 and the funding model.**
- **The R&D and Knowledge Exchange agendas.**



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Dual Support System

Funding Councils

- *Scottish Funding Council.*
- Higher Education Funding Council for England.
- Higher Education Funding Council for Wales.
- Department for Employment and Learning, Northern Ireland.



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Dual Support System

Research Councils (RCUK)

- Arts and Humanities Research Council.
- Biotechnology and Biological Sciences Research Council.
- Engineering and Physical Sciences Research Council.
- Economic and Social Research Council.
- Medical Research Council.
- Natural Environment Research Council.
- Science and Technology Facilities Council.



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Role of the Research Councils

- Fund excellent research. £3 billion per annum.
- Access to international facilities for UK researchers.

<http://www.rcuk.ac.uk/research/Pages/Areas.aspx>



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Research Council Cross-cutting themes





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Other sources of funding

- Technology Strategy Board – Catapults, Knowledge Transfer.
- National Institute for Health Research (UK).
- Chief Scientist's Office (Scotland).
- Research Charities - Wellcome Trust, Cancer Research UK, etc.

- European Commission – Framework Programme (FP7).
- European Research Council.
- National Institutes for Health (NIH).
- Bill and Melinda Gates Foundation.



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Aims of Research Pooling

- Excellence
- Critical mass
- Competitiveness and Leverage
- Facilities
- Training
- **Culture change**



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Northern Research Partnership





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Measuring quality: Research Excellence

- The Research Excellence Framework REF (2014).
- **Seventh UK-wide assessment of research quality.**
- 1986, 1989, 1992, 1996, 2001, *2008* and 2014.
- **Informs distribution of research funding by funding bodies.**



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How did it work in 2008?

- HEIs decide who to submit – strategy!
- 67 units of assessment (subject disciplines) – strategy!
- 4 research outputs (publications) per individual.
- Research environment (student numbers, income, strategy, structure).
- Esteem indicators (prizes, awards, leadership etc).
- Assessed by panels of international experts during 2008.



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Results format

Profile showing performance of submission against 5 categories

- **4* : world-leading.**
- **3* : internationally excellent.**
- **2* : internationally recognised.**
- **1* : nationally recognised.**
- **Unclassified: sub-national quality.**



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Scotland's results: sample

UoA30: Architecture and Built Environment

HEI	FTE	4*	3*	2*	1*	u/c
Dundee	7.7	5	35	30	25	5
Edinburgh	31.6	25	45	25	5	0
GCal	12.3	15	45	25	15	0
HWatt	25.4	10	50	30	10	0
Napier	11	5	30	45	20	0
RGU	20.8	10	20	40	25	5
Strathclyde	11.3	5	35	40	20	0



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RAE2008 results by institution

Institution	Estimated overall quality profile					
	Total FTE	4*	3*	2*	1*	Unclassified
Aberdeen, University of	584.5	14	40	35	10	1
Abertay Dundee, University of	53.7	3	20	39	32	5
Dundee, University of	504.7	13	41	34	12	1
Edinburgh College of Art	59.4	13	37	21	20	8
Edinburgh, University of	1,639.8	22	40	28	8	2
Glasgow Caledonian University	157.9	5	23	43	27	3
Glasgow School of Art	76.9	25	25	20	25	5
Glasgow, University of	1,160.7	15	41	32	11	1
Heriot-Watt University	349.0	12	39	37	12	1
Napier University	192.1	2	19	43	30	6
Queen Margaret University, Edinburgh	98.0	2	10	29	39	20
Robert Gordon University	171.3	6	25	42	24	3
Royal Scottish Academy of Music and Drama	11.8	15	25	45	10	5
St Andrews, University of	491.1	19	40	34	6	0
Stirling, University of	297.3	10	36	41	13	1
Strathclyde, University of	588.1	12	36	37	14	1
UHI Millennium Institute	69.4	4	25	40	27	4
West of Scotland, University of the	69.6	5	20	34	36	5
Sector	6,575.4	15	37	34	13	2



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The Research Excellence Grant

Three key principles to the model:

- it is single-stage;
- it is based on volume, quality (as informed by research assessment, currently RAE 2008) and cost; and
- it utilises other activity indicators.



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The Funding Model

Volume: The number of academic staff active in research.

Quality: Quality profile includes 0, 1*, 2*, 3* and 4*.

Cost: Three broad cost factors (1.0, 1.2 and 1.6).

Research Assistants: Weighted.

Research Postgraduates: Weighted.

Research Income (excluding charity): Weighted.

Charity Income: Weighted.



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Cost weightings for research

High (cost factor 1.6):	Engineering, Medicine, Sciences.
Medium (cost factor 1.2)	Archaeology, Economics, Mathematics, Public Health, Primary Care.
Low (cost factor 1.0)	Accounting, Business, Education, History, Languages, Law, Music, Politics.



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The Funding Formula

$$(V_{\text{Staff}} \times C + X) \times Q = \text{Departmental rating}$$

$$Q = \text{Average Quality} = T1 \times P1 + T2 \times P2 + T3 \times P3 \\ + T4 \times P4$$

$$X = \text{Weighted Other Activity Indicators} = \\ V_{\text{RAWRA}} + V_{\text{RSWRS}} + (V_{\text{RIWRI}} \times W_{\text{FEC,RI}}) \\ + (V_{\text{CIWCI}} \times W_{\text{FEC,CI}})$$



Key

- **VStaff** volume of category A research active staff
- **VRA** and **WRA** volume of and weighting of research assistants
- **VRS** and **WRS** volume of and weighting of research students
- **VRI** and **WRI** volume of and weighting of research income
- **VCI** and **WCI** volume of and weighting of charity income
- **T1** quality weighting of submissions rated 1* (and similar for **T2**, **T3** and **T4**)
- **P1** percentage of submissions rated 1* (and similar for **P2**, **P3** and **P4**)
- **WFEC,RI** and **WFEC,CI** are additional weightings given to direct sufficient funds to fill or part fill the full economic cost 'gaps', estimated at 10% for research income and at 20% for charity funded research.
- **C** = the cost factor for the unit of allocation
- **RA** = Research Assistants
- **RS** = Research Postgraduate Students
- **RI** = Research Income (excluding income from charities)
- **CI** = Charity Income



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RAE2008 Quality profiles and funding

Rating	Weighting			
	2009-10	2012-13	2013-14	
Unclassified	0	0	0	Not rated
1*	0.125	0	0	National
2*	1	0	0	International
3*	3.375	1	1	Internationally excellent
4*	8	3	3.11	World leading



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STEMM premium

- Additional funding of STEMM (Units of Assessment 1-29 in RAE2008). Allocated in proportion to each department's volume of research active staff weighted by their average quality and cost factor.

$$V_{\text{Staff}} \times Q \times C$$



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STEMM Premium (UoAs 1-29)

1. Cardiovascular Medicine
2. Cancer Studies
3. Infection and Immunology
4. Other Hospital Based Clinical Subjects
5. Other Laboratory Based Clinical Subjects
6. Epidemiology and Public Health
7. Health Services Research
8. Primary Care and Community Based Clinical Subjects
9. Psychiatry, Neuroscience and Clinical Psychology
10. Dentistry
11. Nursing and Midwifery
12. Allied Health Professions and Studies
13. Pharmacy
14. Biological Sciences
15. Pre-clinical and Human Biological Sciences
16. Agriculture, Veterinary and Food Science
17. Earth Systems and Environmental Sciences
18. Chemistry
19. Physics
20. Pure Mathematics
21. Applied Mathematics
22. Statistics and Operational Research
23. Computer Science and Informatics
24. Electrical and Electronic Engineering
25. General Engineering and Mineral & Mining Engineering
26. Chemical Engineering
27. Civil Engineering
28. Mechanical, Aeronautical and Manufacturing Engineering
29. Metallurgy and Materials



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Research Postgraduate Grant

- Support for high quality research training and development, and to enhance the contribution of postgraduate research students to the research base in Scotland.
- Allocated in proportion to research postgraduate enrolments.



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Knowledge Exchange Funding

- Knowledge Transfer Grant (General funding) allocation of £70,000 per annum.
- Strategic funding element of Knowledge Exchange. Allocated formulaically to support universities' innovation activities focused on delivering outcomes for the Scottish Government's purpose. Determined by Knowledge Transfer Grant (KTG) metrics.



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Knowledge exchange

“.....the two way flow of people and ideas between the research environment and wider economy, thereby contributing to national prosperity, the quality of life of citizens, and cultural enrichment of our society.”

RCUK/DIUS

“We will work closely with the national enterprise bodies to stimulate new demand from business for knowledge exchange from...universities that can be translated into economic gain... particularly those operating in the priority economic sectors.”

SFC Corporate plan – Outcome 3



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Innovation Landscape

- **Research Pooling**
- **Interface and Innovation Vouchers**
- **Easy Access IP**
- **Single Knowledge Exchange Organisation**
- **Alignment with our Enterprise Agencies SE and HIE**
- **Innovation Centres**
- **Horizon 2020**



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Competitiveness and Leverage

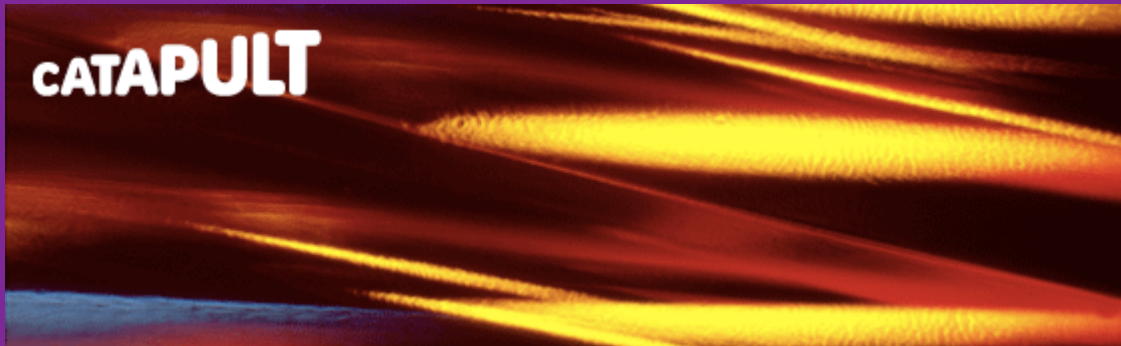




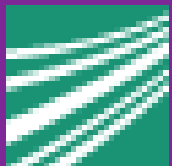
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Competitiveness and Leverage



OFFSHORE RENEWABLE ENERGY



Fraunhofer

**MAX PLANCK
INTERNATIONAL
PARTNERSHIP**



**MEASUREMENTS AND
OBSERVATIONS
AT THE QUANTUM LIMIT**



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Innovation Centres

LEAD HEI	TITLE	SECTOR/AREA
Glasgow	Innovation Centre in Sensor and Imaging Systems (iC-SiS)	Cross-cutting
Edinburgh	Digital Health and Care Innovation Centre	Health
Glasgow	Stratified Medicine	Life sciences



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Innovation Centres

Creative Industries

Oil and Gas

Construction

Business and Finance

Tourism

Software

Fashion and Textiles

Aquaculture

Industrial Biotechnology



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