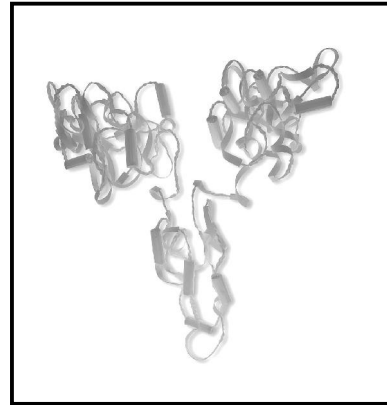


An Overview of R&D in
Scotland

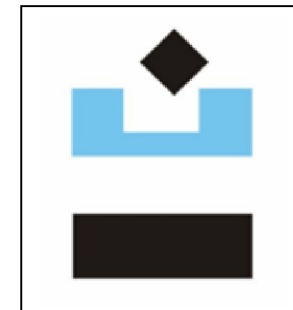
And the Opportunities for
Entrepreneurs



Andy Porter PhD FRSE
Professor of Biotechnology
Deputy Director Institute of Medical
Sciences, Aberdeen

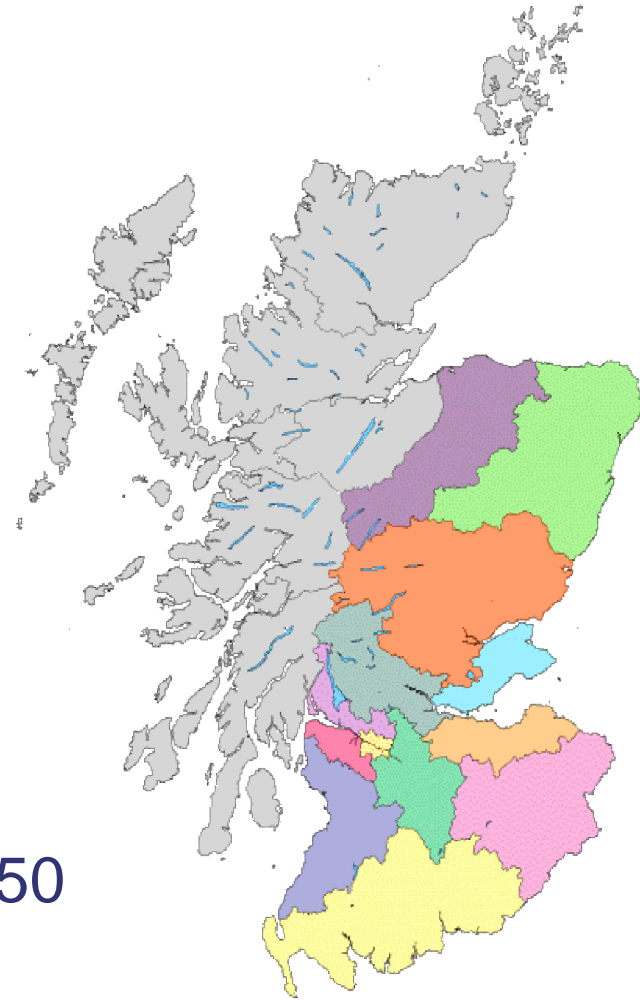


Wyeth



Scotland in Profile

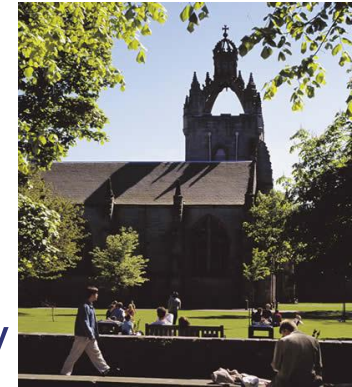
Population	5.114m
Area	78,132 sq. km
Workforce	2.54m
GDP	Approx \$100 bn
Value of exports	Approx \$ 50 bn
Universities	14
	6 in world's top 150



A heritage of innovation

From the 15th century.....

World's first Department of Medicine, Aberdeen University



1768	John Hunter	Father of Modern Surgery
1870	Joseph Lister	Pioneered Antiseptic Surgery
1920	John MacLeod	Nobel Prize for Insulin
1929	Sir Alexander Fleming	Discovery of Penicillin
1957	Alick Isaacs	Interferon
1979	Sir David Lane	p53 discovery
1980	Prof. John Mallard	MRI Scanner
1980's	Sir David Jack	Zantac & Ventolin
1992	Sir James Black	Nobel Prize for β -blockers
1997/8	Roslin Institute	"Dolly"



Internationally Renowned Research Base

- § 53 life science academic & research institutes
- § Pioneering work in key life science areas including:
oncology, neuroscience & cardiovascular disease
- § €460M research funding per annum
- § Life sciences = 50% total Scottish research expenditure
- § Strong performance in UK Research Assessment Exercise
- § Resultant numbers of graduates & postgraduates



Availability of Skilled Resources & Staff

- § www.TalentScotland.com
- § Education in the full range of life science & medical disciplines
- § UK's First Dedicated Medical Devices Doctoral Training Centre at the University of Strathclyde
- § Around 15,000 new graduates qualify each year with disciplines related to medical technology
- § Scotland has <9% of the UK's population yet:
 - § 13% of the UK's first Life Science degrees
 - § 14% of the UK's Genetics degrees
 - § 33% of the UK's Microbiology graduates (1st degree)
 - § 20% of UKs total government funded R & D spend

Research Infrastructure

Significant investment in infrastructure maintains leading position in life sciences research

Total investment in last five years = €340 M

Examples:

- Scottish Centre for Regenerative Medicine – €76M
- The Centre for Health Science in Inverness – €14M
- Beatson Oncology Centre – €130M
- Scottish Centre for Nuclear Medicine Aberdeen – €13 M



Scotland's Biomedical Backbone

Inverness

Diabetes Research Institute



Aberdeen

IMS
IAHS
CRF



Dundee

Clinical Research Centre
Health Informatics Centre & Merit
CRUK laboratories



Glasgow

BHFGCRC
Biomedical RC
Integrated CRF
Beatson Oncology Centre
Sackler Institute



Edinburgh

Wellcome CRF
Institute Med Cell Biol



- Purpose built basic biomedical research institutes
- Integrated general clinical research facilities.
- "Bench to bedside"

CNS – Principal Centres

Selected organisations and collaborations shown



Note: 5 or 5* indicates top UK government ratings for research

1. [IMS](#)
2. [Department of Mental Health](#)
University of Aberdeen

Three with 5 or 5* rating

1. [Neuroscience Institute](#)
2. [The Alzheimer's Disease Research Centre](#)
University of Dundee

1. [Division of Clinical Neuroscience](#)
2. [Institute for Biomedical & Life Sciences](#)
3. [PSYRING](#)
4. [Sackler Institute](#)
University of Glasgow

1. [The Centre for Neuroscience Research](#)
2. [Centre for Clinical Brain Services](#)
3. [SFC Brain Imaging Centre for Scotland](#)¹
4. [Division of Clinical Neuroscience](#)¹
5. [Division of Psychiatry](#)¹
6. [Centre for Molecular Medicine](#)
[The Western General Hospital](#)¹
University of Edinburgh



Oncology – Principal Research Capabilities

Selected organisations and collaborations shown

Three with 5 or 5* rating

Scottish Cancer Research Network

- 
1. Cancer Research Centre
Raigmore Hospital



1. Cancer Biology Research Programme
2. Scottish Centre of Medical imaging
University of Aberdeen



1. CRUK Molecular Pharmacology Unit
2. Dept Surgery & Molecular Oncology
3. NTRAC Glasgow & Dundee
University of Dundee



New CRC at Dundee

1. The Beatson Institute for Cancer Research
2. CRC Formulation Unit¹
3. NTRAC - Glasgow & Dundee
University of Glasgow
University of Strathclyde¹



1. CRUK Medical Oncology Unit
2. CRUK Clinical Research Centre
3. NTRAC - Edinburgh
University of Edinburgh
Western General Hospital



Cardiovascular Disease – Principal Research Capabilities

Selected organisations shown

Three with 5 or 5* rating



1. [Cardiology Research Group](#)
University of Aberdeen



1. [The Institute of Cardiovascular Research](#)
2. [Division of Medicine & Therapeutics](#)
University of Dundee

1. [BHF Glasgow Cardiovascular Research Centre](#)
2. [Division of Cardiovascular & Medical Sciences](#)
3. [Vascular Biochemistry Lipid Research](#)
University of Glasgow



1. [Centre for Cardiovascular Science](#)
University of Edinburgh



Scottish Bioinformatics Forum

Promotes collaboration & Increased Commercialisation of Research
 Selected organisations shown

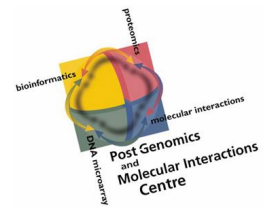
“Research Pooling”



1. [Bioinformatics Research Group](#)
University of Aberdeen
2. [Computational Intelligence Group](#)
Robert Gordon University



1. [Simbios Centre](#) ^{1,2}
2. [Prof Geoff Barton Group](#) ¹
University of Dundee¹
University of Abertay Dundee ²



1. [Bioinformatics Research Centre](#) ¹
Prof. David Gilbert
University of Glasgow

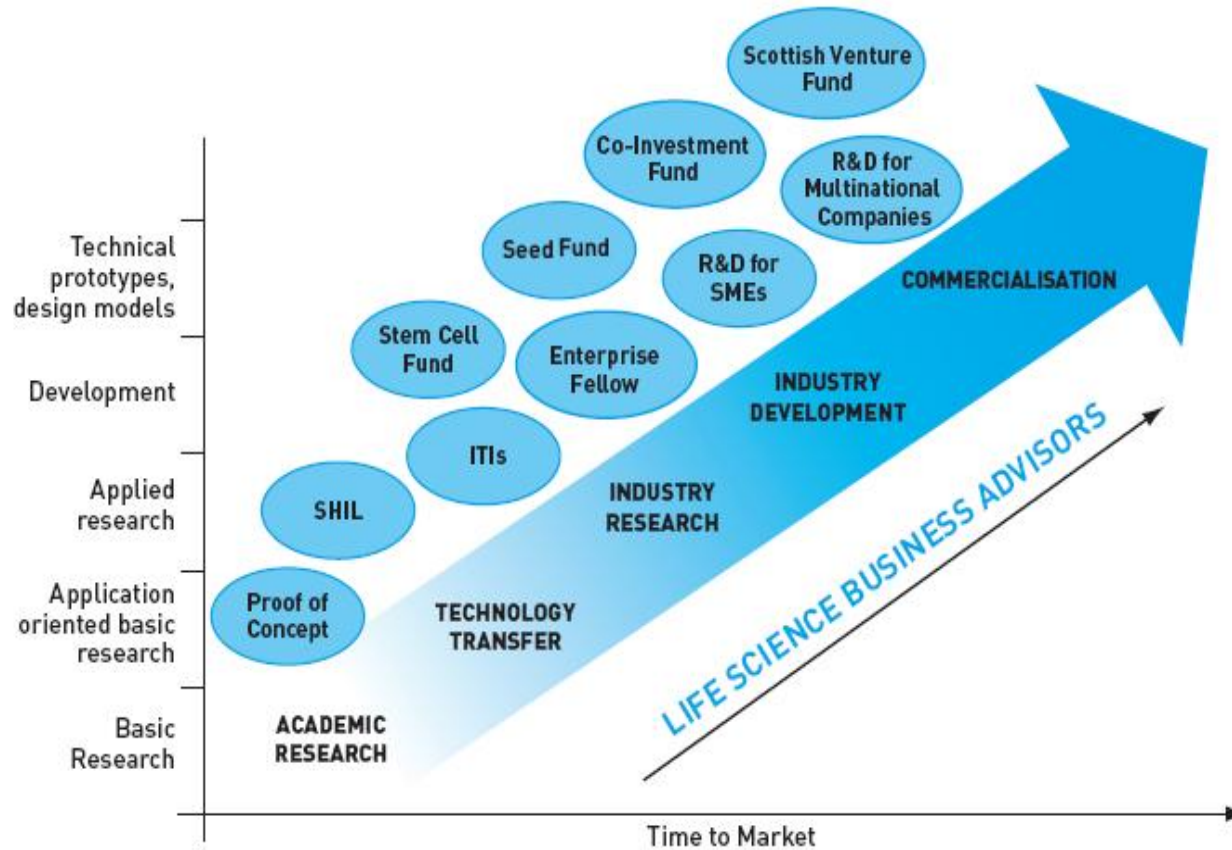


1. [Edinburgh School of Informatics](#) ¹
Prof Igor Goryanin
2. [Scottish Centre for Genomic Technology and Informatics](#) ¹ Pathway and Systems Biology
3. [MRC Human Genetics Unit](#)
University of Edinburgh¹

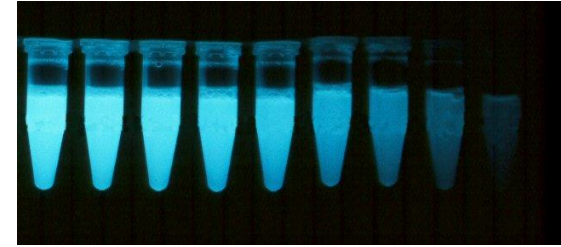


Life Sciences Support

Pipeline of R&D Support



Proof of Concept



- § Scottish Enterprise Proof of Concept (PoC) Programme
- § Supporting 200 innovative projects worth €48M
- § Leveraging additional €260M
- § Created over 500 jobs to date.
- § Bridge between scientific discovery and commercialisation
- § Unique Scottish initiative – being adopted by other countries



Haptogen

Translational Medicine Research Collaboration (TMRC)

Partners

Wyeth

- § Wyeth Inc
- § 4 Scottish Universities with Medical Schools, NHS Scotland and SE

Value to Scotland

- § €30M research programme
- § Access to novel therapeutics
- § IP generation

Value to Pharmaceutical Companies

- § Cost effective route to new therapies and diagnostics
- § Unique combination of patients, research & healthcare infrastructure

Latest TMRC News



In February 2008, second round of research projects funded

- €20M released to support 39 new projects
- €10 M first round funding – 28 projects

Wide range of therapeutic areas including:

- cardiovascular and metabolic disease
- central nervous system
- women's health
- inflammation and oncology.



Wyeth committed in excess of its minimum funding of €29M (\$45M) ahead of schedule.

Science Pedigree



2002

§ Haptogen formed as spin-out from Aberdeen University
– SMART award, delivered science on first contracts

2003

§ Growing portfolio of Haptogen owned IP
§ Compelling data supports display technology & anti-infectives

2004

§ European patent for display technology secured
§ Science delivers several high quality diagnostic mAbs



ENTREPRENEUR
OF THE YEAR®
2005

2005

§ Collaboration deal underpins anti-inferctives
§ University research shows exciting promise
§ Shark antibody platform (PoC funded to AP)
§ Patents: Aberdeen & Maryland in US
§ Liver fibrosis IP filed by Drs Wright & Porter



Science Pedigree



2006

- Haptomics® accepted by industry
 - Validated, de-risked drug platform
 - FTO/IP generally accepted
- Commercial savvy science team – impt new appointments made
- Contract/collaborations in Europe, US and Asia
- Exciting but early product pipeline

2007

- Product focussed company
 - Clinical focus – Inflammation & Infection
- Commercial/science strategy
 - Out-licensing - Technology & Products
 - Display technology grants in the US
 - Positioning science excellence to support Trade-Sale

Wyeth

Win, Win, Win !!

Delivered a number of benefits:

- Wyeth gain technology, products and STAFF
- Financial return to founders, UoA and SE
- Top 10 pharma R & D in Scotland – expanding head count
- Wyeth have leased entire UoA Phase 1 facility
 - Biotech business facility in Aberdeen

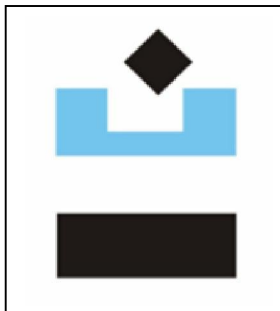
Win, Win, Win !!



Wyeth

Life Post- Acquisition

2008



- Consultancies
 - Wyeth and other UK biotechs
 - 3 x NEDs in Scotland and Asia
 - SSAC, BIA (Scot), Life Science Alliance
- Grampian Bio-partners
 - Biotech “seed” investment in Scotland
 - Biologics, Immuno-diag, Immuno-tech
- New antibody company in 2008
 - watch this space !!

An Overview of R&D in
Scotland

And the Opportunities for
Entrepreneurs