

Investimento & Inovação na Saúde

O Valor da Inovação na Saúde:
uma visão para o futuro

M. Carmo-Fonseca

Saber Investir **2015**
Saber Inovar

Ciclo de Conferências Apifarma



O valor da Inovação na Saúde

- Definir prioridades
- Investir na excelência
- Preparar as novas gerações
- Catalisar inovação
- Internacionalizar

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Science is worthwhile

- Science expands the frontier of human understanding.
- Businesses that invest in research and other forms of innovation have higher productivity, create high quality jobs and are more likely to export.
- Commercialisation of science and new technologies plays a vital role in economic growth.

Science is worthwhile

- Science and innovation is the right path for sustainable growth.
- But innovation requires investment.

Deciding priorities

- We cannot hope to do everything equally well.
- We need to choose our priorities.
- Scientists are always scanning the horizons of science, to see what others are doing and what is appearing in the distance.
- Every good business must be aware of the competitive environment and new market opportunities or disruptions.

UK 8 Great Technologies

- Big data and energy-efficient computing
- Satellites and commercial applications of space
- Robotics and autonomous systems
- Synthetic biology
- Regenerative medicine
- Agri-science
- Advanced materials and nano-technology
- Energy and its storage

Plastic made 100% from plants

(a genetically altered microbe that turns
corn sugar into plastic polymer)

The microbial fuel cell:
generation of electricity coupled to
wastewater treatment

Engineered microbes to detect arsenic in
drinking water

Reprogram E. Coli to produce
hemoglobin (“bactoblood”) that can be
used for emergency blood transfusions

"George Church is one of the most brilliant scientists in the world."

—STEVEN PINKER



REGENESIS

*How Synthetic Biology Will
Reinvent Nature and Ourselves*

GEORGE CHURCH AND ED REGIS

Resurrect any extinct animal

2010: a draft sequence of the
Neanderthal genome

But why resurrect a Neanderthal?

...give *Homo sapiens* a sibling species
that would allow us to see ourselves in
new ways...

Precision Medicine

- Obama's new Precision Medicine Initiative:
“delivering the right treatment at the right time,
every time, to the right person”

The **time is right** because of:

Sequencing
of the human
genome



Improved
technologies for
biomedical analysis



New tools
for using large
datasets



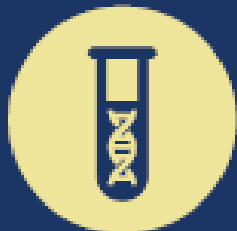
Precision Medicine

- “Precision Medicine” vs “Personalized Medicine”
- treatments are now more precisely tailored to specific molecular targets

Precision Medicine

LONGER TERM GOALS

Create a research cohort of **> 1 million American volunteers** who will share genetic data, biological samples, and diet/lifestyle information, all linked to their electronic health records if they choose.



Pioneer **a new model for doing science** that emphasizes **engaged participants, responsible data sharing, and privacy protection.**

Precision Medicine

- “if you know somebody’s genes, you’ll be able to fit the treatment to them”
-“Ultimately, we almost certainly have more control over how much we exercise, eat, drink, and smoke than we do over our genomes.”

Precision Medicine

- the initiative's earliest successes are expected to be in pharmacogenomics and cancer.
- Already, labels on more than 150 medications contain pharmacogenomic information, although they don't necessarily recommend genetic testing before use

Precision Medicine

- In September 2011, Dana-Farber launched its Profile program, becoming the first hospital to offer tumor genotyping to all patients with cancer
- “We see 16 000 new patients a year. We want to turn them into a giant cohort study”.

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- Cutting edge science cannot happen without modern infrastructure.
- Excellence cannot be achieved without resources.
- Working groups comprising research funders and representatives of the science community.

How to best balance funding?

Working groups comprising research funders and representatives of the science community:

- Invest in new large facilities (for ex, in UK the Crick Institute in London; Centre for Ageing Science and Innovation in Newcastle).
- But also ensure funding at institution and project level in order to ensure the best minds are able to explore new ideas.

The importance of place

- Place can make a difference – the clustering of resources and industries in specific locations can provide a conducive – and, in some cases, essential – context for success.
- Bring people together so that they collaborate with each other and make advances that would not be possible in isolation.

The power of place

- Amongst the most innovative environments are geographic clusters of businesses in the same industry or clusters of organisations that offer complementary activities, enhanced by opportunities for training, development and collaborative research.
- foster higher levels of collaboration between disciplines, sectors, institutions.

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The skills pipeline

- Any strategy can only be as good as the people that it can attract, educate, train and retain.

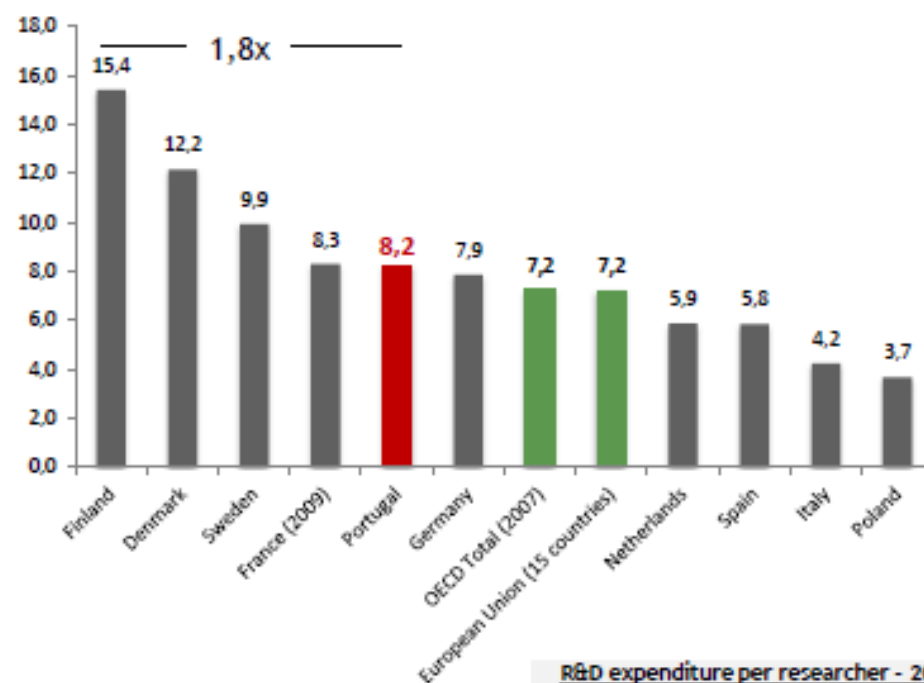
Investigadores

Total Researchers in Portugal (FTE)



Início da contabilização de
Professores de Ensino Superior
e Mestrandos

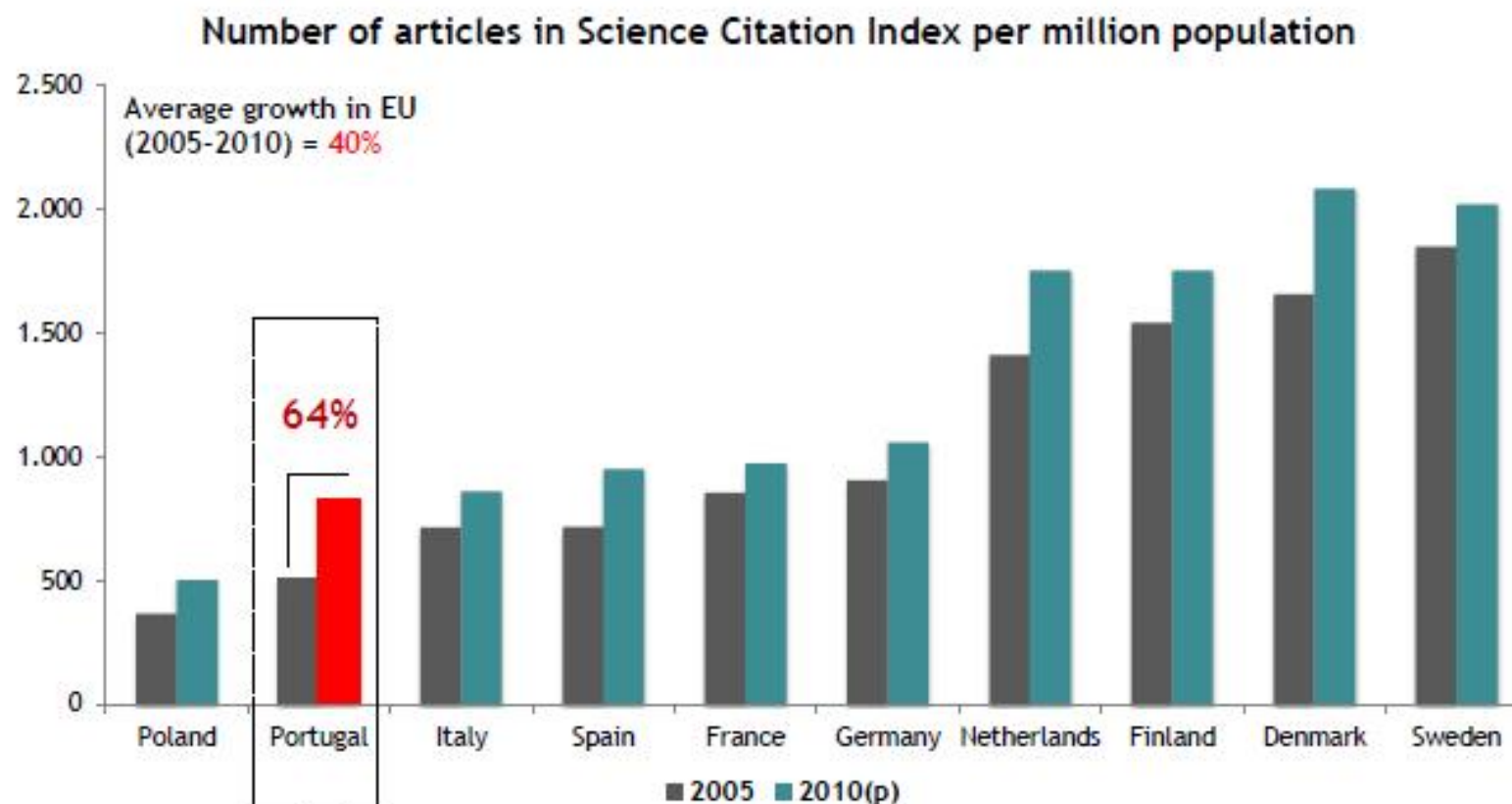
Researchers per 1.000 workforce (PT-2010)



R&D expenditure per researcher - 2009
(1000 USD/FTE)

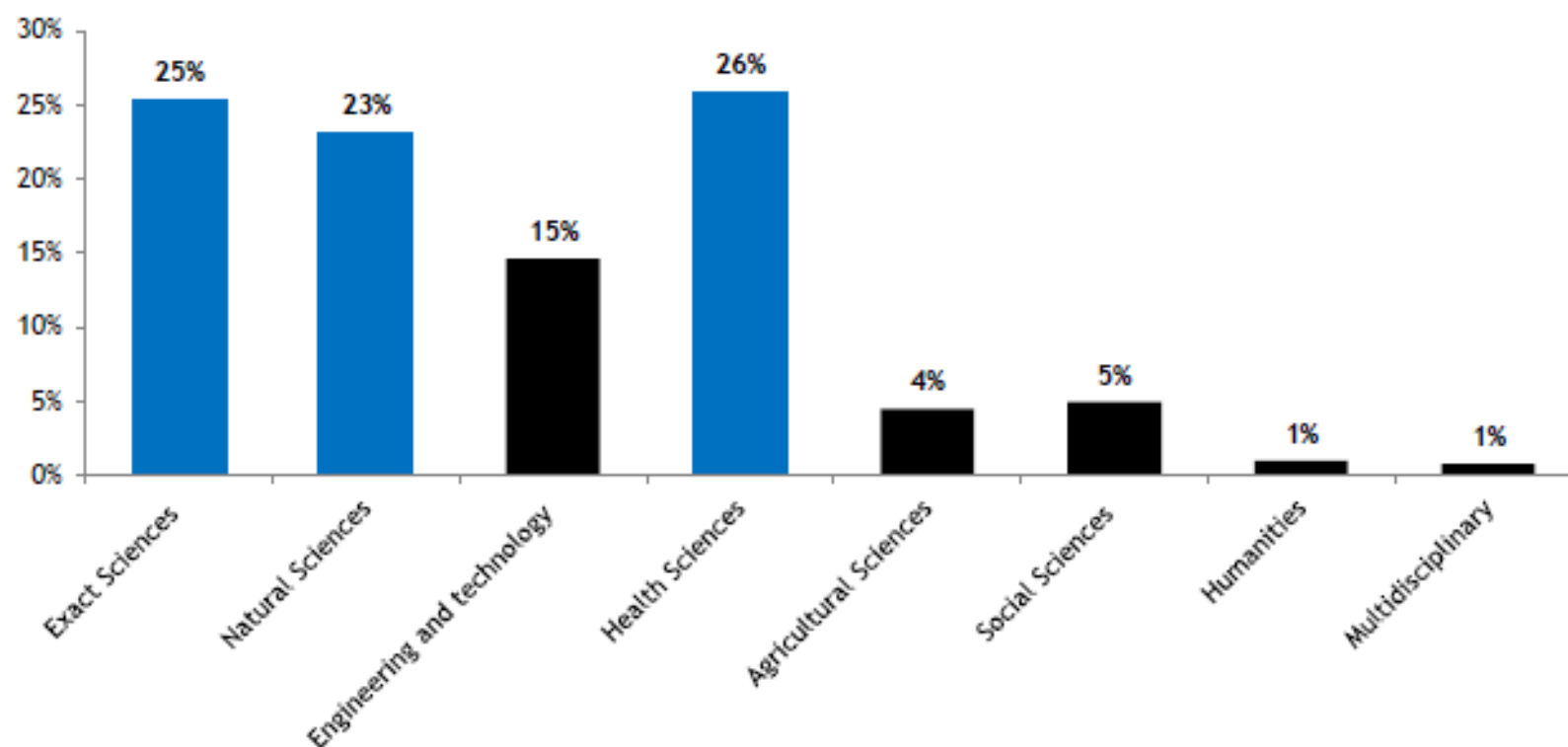
Portugal	69
Netherlands	86
Spain	109
Denmark	138
Finland	150
Italy	184
Germany	203
Sweden	223

Publicações



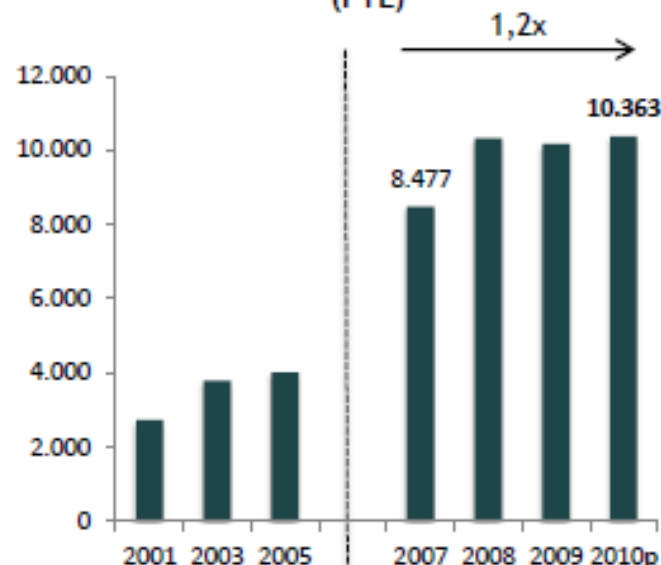
Publicações por domínio científico (%) (Web of Science) (2007-2009)

Publications per scientific domain (%) 2007-2009



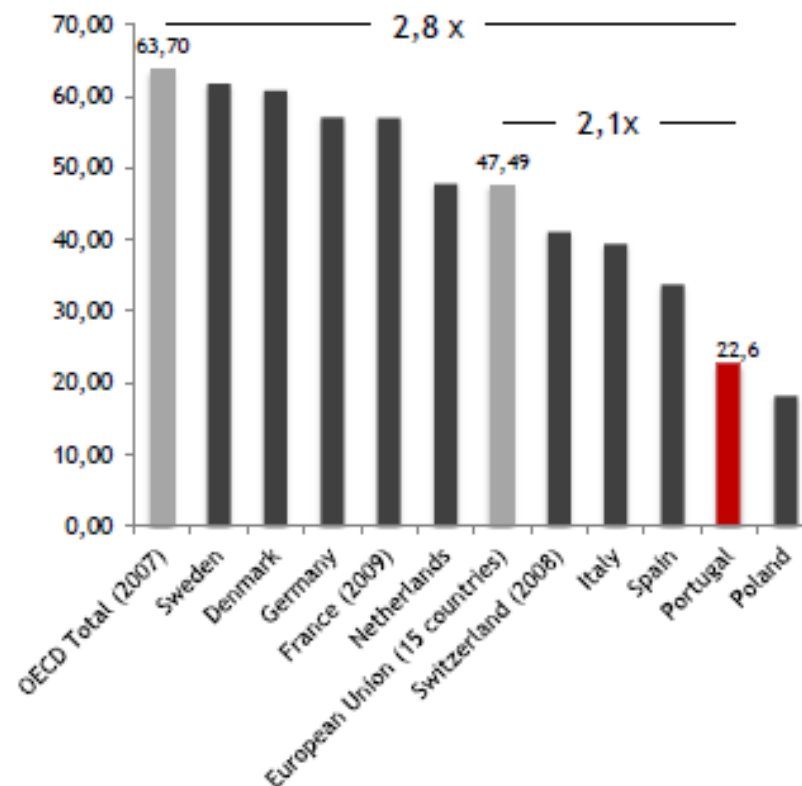
Investigadores - Empresas

Business Enterprise Sector: Researchers (FTE)



Actualização do diretório de empresas, reuniões e contactos directos com empresas/instituições

Researchers (FTE) in Business Sector (%)



The skills pipeline

- Universities expected to deliver economic growth, alongside their traditional roles of teaching and research

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Catalysis

- To generate economic benefit from science and technology investments requires catalysis.
- Venture Capital
- Intellectual Property
- Tax credits

Catalysis

- incentives to encourage much greater collaboration between the research community and business

Catalysis

At present, citizen engagement is typically about collecting data or providing capacity. But the potential is much greater. Citizen engagement in science brings with it a wider range of influences on what research questions might be tackled in the future and how.

Catalysis

- Public engagement: Huge numbers of people are participating as research subjects in population studies such as longitudinal cohorts – like the UK Biobank, which has half a million participants.

UK Catapult Centres

- The Catapults aim to assemble the best facilities and talent nationally to provide open access to businesses new to the technology areas.
- High Value Manufacturing
- Cell Therapy
- Precision Medicine
- Offshore Renewable Energy
- Satellite Applications
- Future Cities and Transport
- Systems

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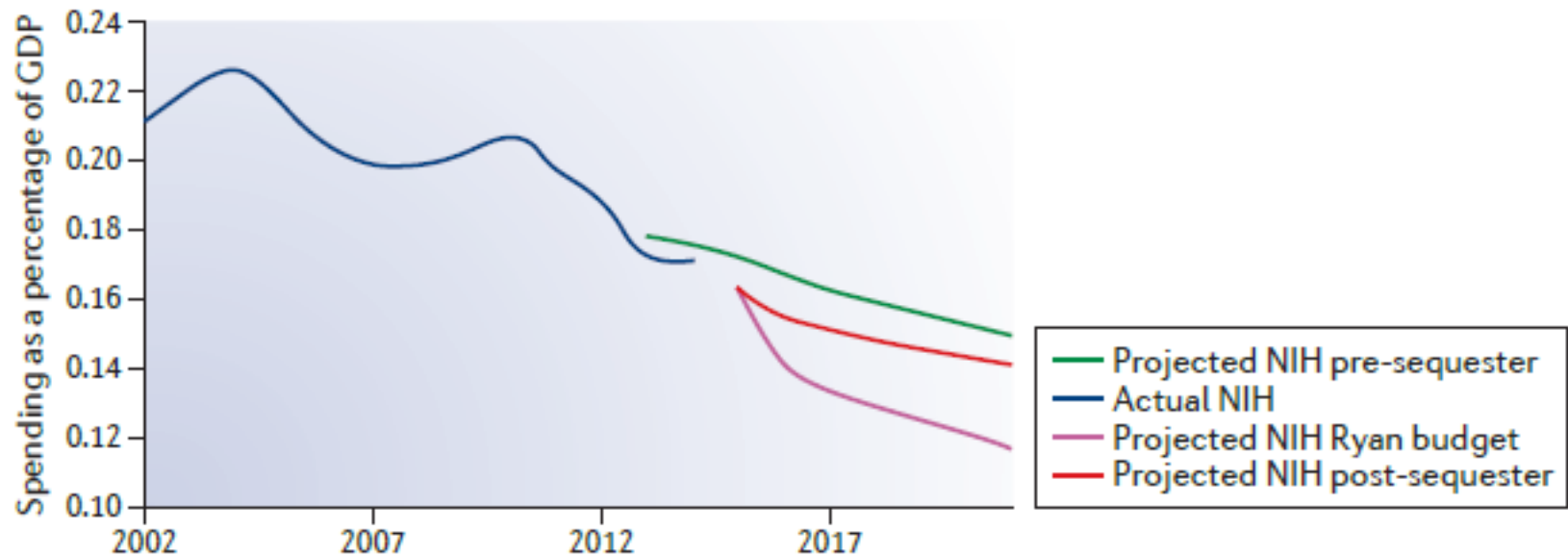
Science and innovation are increasingly international endeavours

- European Research Agency
- The Innovative Medicines Initiative (IMI) is Europe's largest public-private initiative aiming to speed up the development of better and safer medicines for patients.
- International aid funding from multilateral banks, UN agencies and other donors.

Hubs for international talent

- a vibrant scientific environment requires a vibrant mixture of talents
- bilateral science collaborations

The future will require new modes of interaction among academic, industrial and governmental organizations



Proposal:

extending patents on drugs by one year and
using the additional revenue to support
biomedical R&D.

A plan for sustainable funding for
US biomedical research

Preston Hensley and John L. LaMattina

convite

“Investimento & Inovação na Saúde: Promessas e Desafios”

6 de Maio de 2015

Sala Sophia de Mello Breyner, Centro Cultural de Belém

A APIFARMA - Associação Portuguesa da Indústria Farmacêutica, tem o prazer de convidar para a 1ª conferência do Ciclo Saber Investir Saber Inovar, que decorre a 6 de Maio, na Sala Sophia de Mello Breyner do Centro Cultural de Belém, em Lisboa.

Para se inscrever dirija-se a www.apifarma.pt

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Saber Inovar

Ciclo de Conferências Apifarma



programa

09H30 SESSÃO DE BOAS VINDAS - ABERTURA

- João Almeida Lopes, Presidente da APIFARMA
- Eurico Castro Alves, Presidente do Conselho Diretivo do INFARMED, IP

09H45 CONFERÊNCIA “O VALOR DA INOVAÇÃO – UMA VISÃO PARA O FUTURO”

- Maria do Carmo Fonseca, Presidente do Instituto de Medicina Molecular (IMM)