



Promega

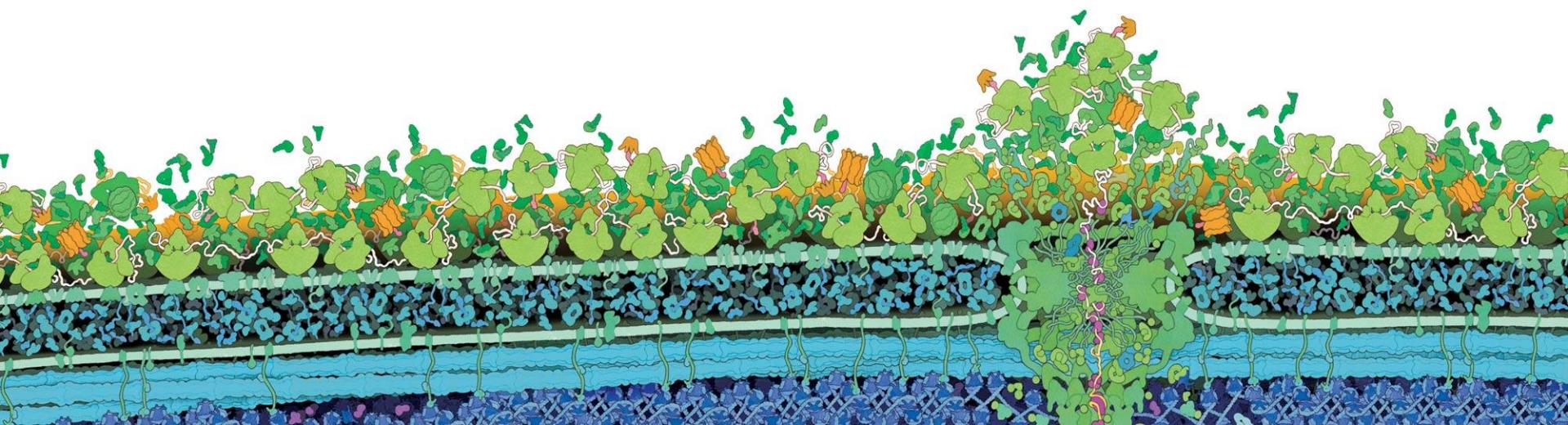
UAM

Universidad Autónoma
de Madrid

Career Opportunities for Intrepid Biologists

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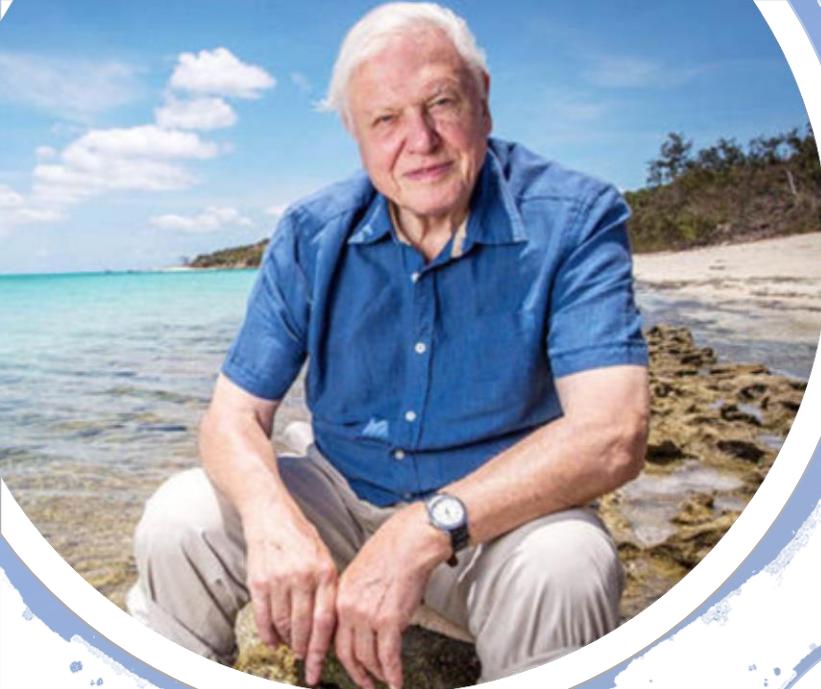
Introduction





I guess we all started off like this

These were the
heroes that
inspired me



Today's heroes





Different message





Research & Development



Field work



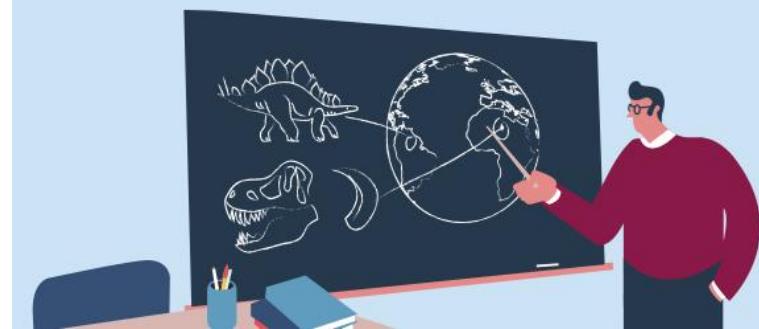
Sales & Marketing



Education



Education



High School:

- By opposition
- Credit your knowledge of Spanish (foreign opponents)
- Be in possession of the title of Doctor (PhD) or Bachelor (BSc)
- Be in possession of the pedagogical and didactic training referred to in article 100.2 of the Organic Law 2/2006, of May 3 (*formerly known as 'CAP', now a Master*)

TEST DEVELOPMENT

Part A: aimed at demonstrating the specific knowledge necessary to teach. It will consist in the development, in writing, of a theme chosen by the applicant of the five randomly taken out by the court.

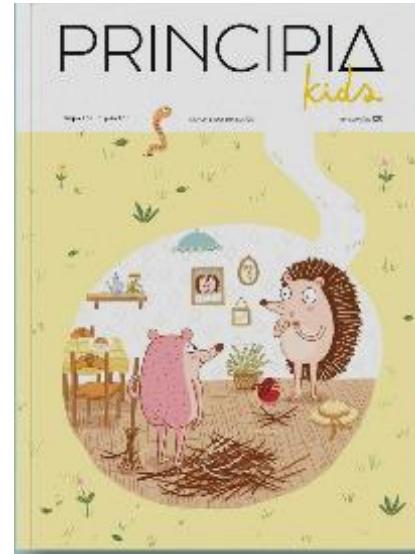
Part B: its purpose is to verify the pedagogical aptitude of the applicant and his / her mastery of the techniques necessary for the teaching exercise and will consist of the presentation of a didactic program and the preparation and oral presentation of a didactic unit.

University:

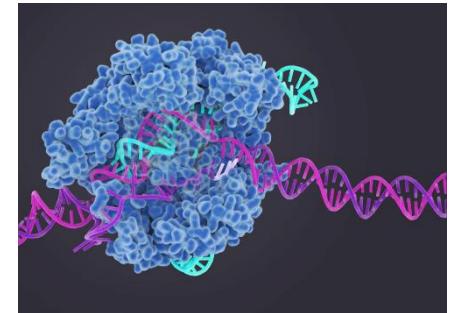
- Be in possession of the title of Doctor (PhD)
- In addition, it is important to have published a minimum number of articles and taught >60 hours per year
- Accreditation by the National Agency for Quality Assessment and Accreditation (ANECA)

But there are other options to educate...

- Information, documentation and dissemination
 - Museums, National Parks, zoos, scientific foundations
 - Environmental education companies (ecotourism; workshops):
[The transmission of environmental knowledge and values that entails the adoption of positive attitudes towards the natural and social environment, which result in actions of care and respect for biological and cultural diversity, and that foster solidarity]
 - Communication agencies, press and TV, specialized journalist, disseminator
- Illustrator or photographer of science, life and the natural environment



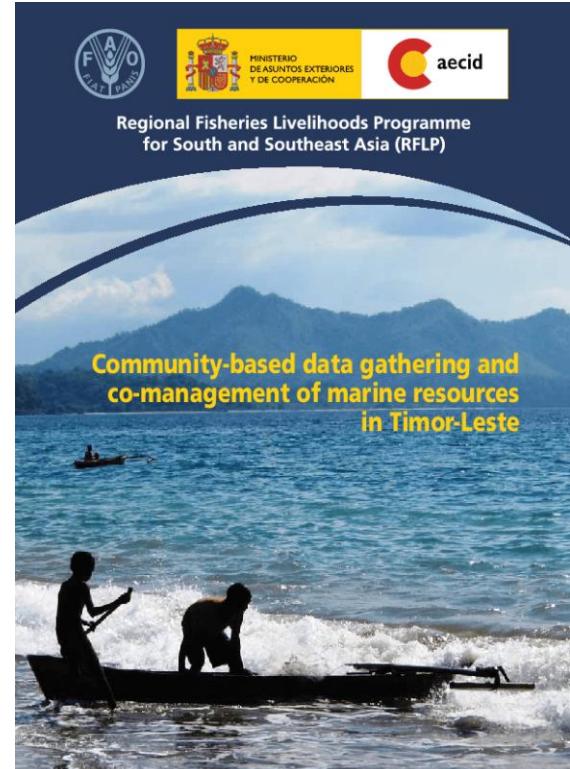
<https://principia.io/>



Field work

• Environment & natural resources

- Planning, conservation and control of the territory (e.g. National Parks, riverbeds, marine protected areas)
- Management of forest, agricultural or marine resources
- Environmental impact assessment and restoration

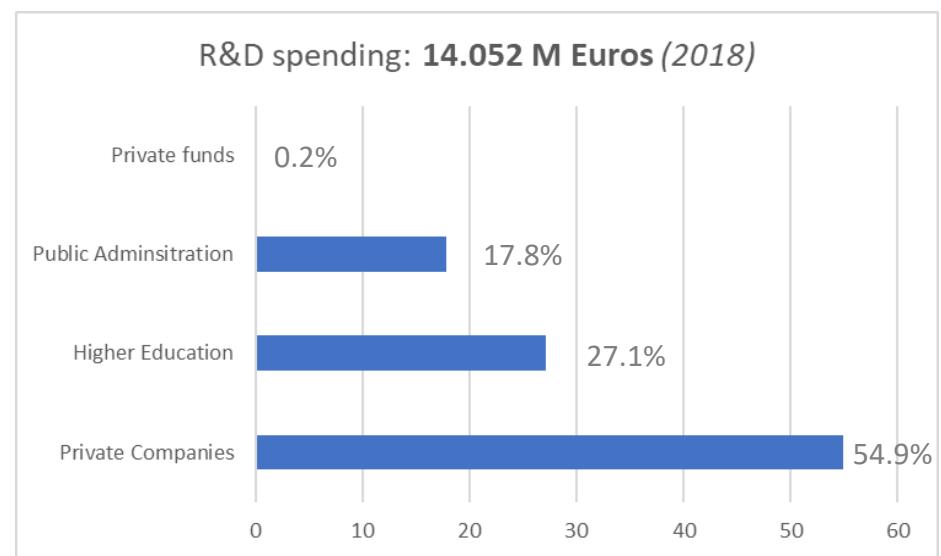


Research and Development (R&D)



Situation in Spain:

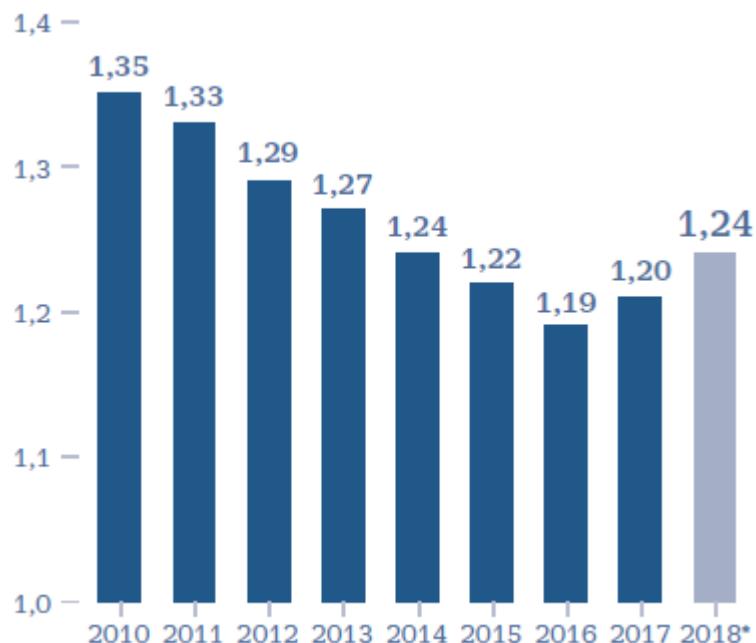
- Low investment by the Public Administration (17.8% vs. EU average 30%)
- Lack of political stability / long term agreement
- Only 46.8% of the State R&D budget is finally executed (3.278 M Euros)
- Increased dependency on EU framework programmes for research and innovation (Horizon 2020 / Horizon Europe)
- Growing contribution of venture capital for Biotechs (e.g. Ysios, Columbus Venture).
- Many Biotechs seek capitalization in the stock market
- Largest R&D effort is rendered by private companies
- Private funding (patronage) is marginal
(e.g. José Carreras Foundation)



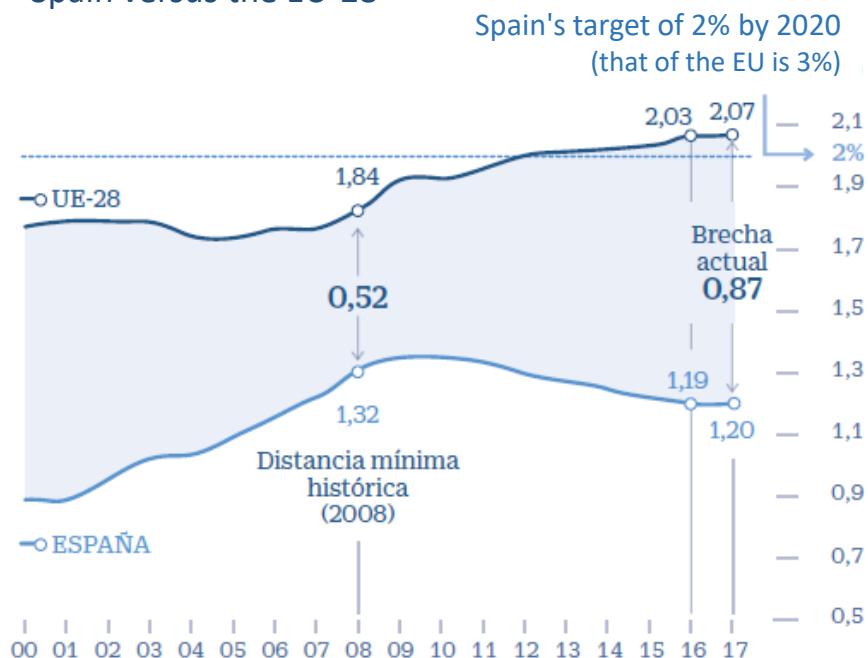
Source: Informe COSCE-DECIDES 2018

Research and Development (R&D)

Investment in R&D in Spain
in % of GDP



Investment in R&D with respect to GDP
Spain versus the EU-28



Source: Cotec, with data from the INE and Eurostat

Research

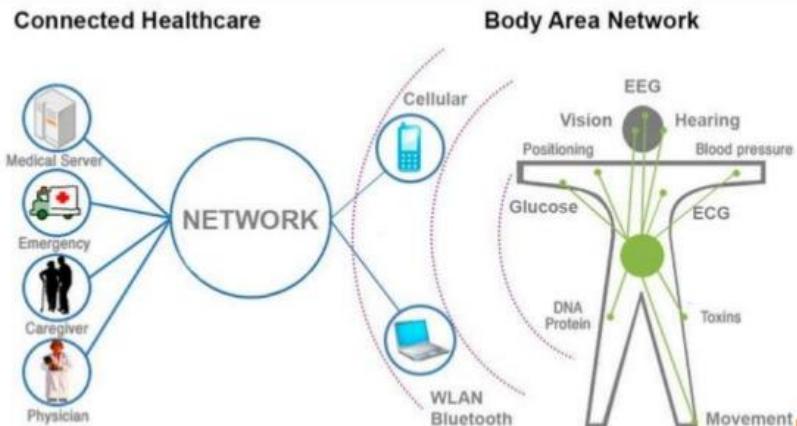


I. Clinical / Hospital environment

- Become a healthcare professional by opposition
- Title of Resident Internal Biologist (BIR)
- Opportunities:
 - Clinical Diagnostics (study of biomarkers by NGS and PCR)
 - Microbiology / Parasitology
 - Immunology (TDM with biopharmaceuticals; autoimmune diseases, CAR-T; HLA typing)
 - Biobanking
 - Genetic counselling (epigenetics, mutations, paternities)
 - Nutrition and Dietetics
 - Food sciences (Functional foods)
 - Pharmacology / Pharmacogenetics
 - Biostatistics
 - **E-Health**

eHealth

CONNECTED HUMAN



'Digital Twin':

- Physical and behavioral data
- Tracking from personal devices
- Historical medical records
- Checking against databases





<https://asebio.com/>

II. Life Science

- Basic and applied research (Lab Technician, PhD, Post-Doc, PI)
- Universities or Public Institutes (CSIC)
- Private entities:
 - Pharmaceutical Industry and CRO's:
 - Drug Discovery (biological assays, contract research)
 - Computational methods: chemoinformatics & predictive modeling
 - Biotechnology:
 - **'RED' – Medical**
 - Biological drugs (MoAb's, interleukins and vaccines)
 - Diagnostics kit and reagent manufacturers
 - Gene Therapy
 - **'GREEN' – Agrifood**
 - Crop engineering, GMO's, plague and climate resistance
 - Functional food (vitamins, nutrition products)
 - Food safety (pathogens, allergens)
 - **'WHITE' – Industrial**
 - Uses plants and marine organisms to create industrial goods
 - Manufacturing of cell lines, yeasts, bioreactors & equipment
 - Biofuels, biopolymers

Research



III. Private labs / Service providers

- Control labs (Blood analysis, pathogens, allergens, food fraud)
- Sequencing (biomarkers)
- Medical Genetics (precision diagnostics; prenatal screening, HLA typing)
- Contract manufacturing

IV. Forensics

- Database- / casework (Scientific Police; Min. of Justice)
- Inheritances (family background)
- Mass graves; missing children
- Paleo-biology / anthropology

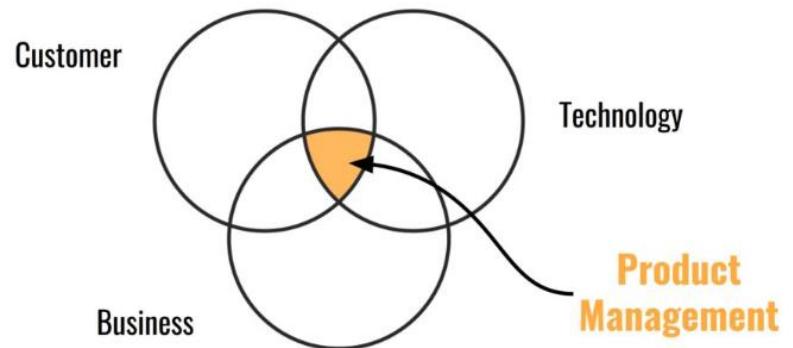
Sales & Marketing

Entry level positions

Marketing:

People that bring a specific area of expertise to the company to support the field staff and provide in depth insights to customers

- (Jr.) Product Manager
- Product / Market Specialist
- Field Support Specialist
- Tech Support (Customer Service)



Sales:

People with a sound technical background, good interpersonal skills, high proactivity and risk averse

- Jr. Sales Representative / account manager



Sales & Marketing

Senior positions

Marketing:

People with a strong knowledge of the customer needs, the target markets, trends and competition

- Senior Product Manager
- Marketing Manager
- Communications / PR Manager
- Community Manager
- eCommerce / Webmaster
- Graphics Design



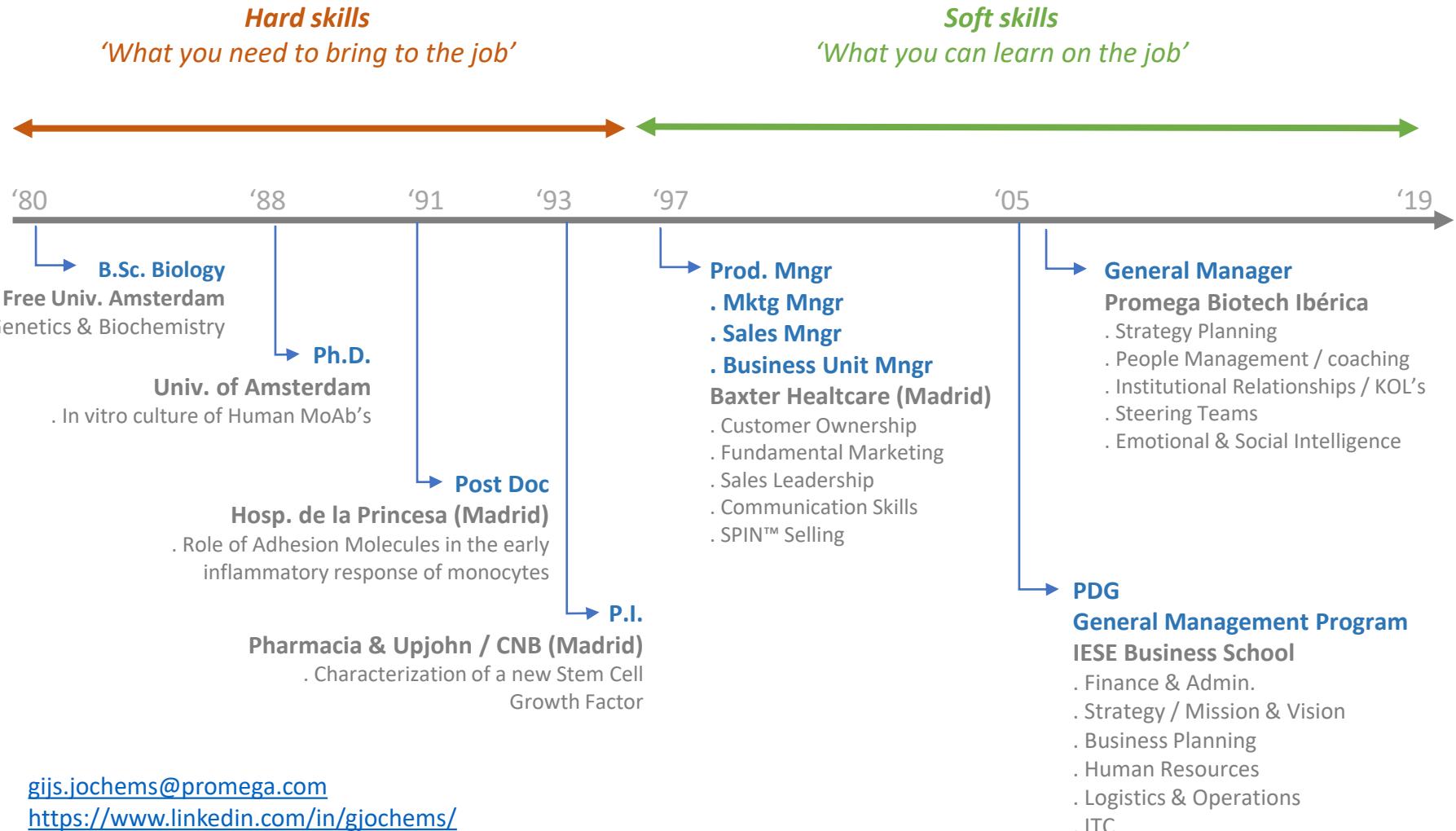
Sales:

People with P&L responsibility and a (small) team of direct reports. Responsible for the execution of the business plan.

- Key Account Manager
- (Regional) Sales Manager
- Business Development Manager
- Business Unit Leader



Learnings from my career path



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