UNIVERSIDAD COMPLUTENSE MADRID

HR EXCELLENCE IN RESEARCH

Career options guide

April 2020

1 INTRODUCTION

An academic research career is about moving towards full independence as a research professional. It requires setting goals and itineraries taking into account the type of positions, requirements, profiles, funding and institutions in your country and abroad. The research can be carried out in universities, public research organisations, companies and private

research organisations, companies and private research organisations.

Most people progress through a number of combined roles:

- research only: they are primarily engaged in research with limited or no teaching duties.
- teaching only: primarily teaching with little or no time devoted to research.
- research and teaching: a teaching assignment, in which you are expected to teach and carry out research.

The direction you take will depend on your interests, funding and opportunities in your area of specialisation and the opportunities in your area of specialisation and the job market at certain points in your career.

This document is part of the actions foreseen in the human resources strategy for research at the Universidad Complutense de Madrid (UCM).

This document aims to provide information that allows you to explore

alternatives to a research career inside and outside the UCM.

In addition to the resources made available, it also presents

real examples of professionals in non-academic environments.

2 KNOW YOURSELF

Answering the question What can I do after my PhD? is difficult for any doctoral student, it raises the question of whether to pursue a career in academiaor consider alternative careers. Here are some tips on how to answer this question.

2.1 EXPLORE CAREER OPTIONS

Which career path should I follow: in academia or in business?

Some tips for broadening your experience and exploring career options include

- Identify personal strengths and motivations and look for a career that fits them.
- Avoid viewing this decision as an "either/or decision" and consider pathways that bridge the gap between academia and business world, e.g. technology transfer, public policy making in administration or policy-making in management or consultancy careers.
- Consider your career as a path forged from a series of decisions made over time and emphasise the importance of learning through trial and error. Trying different things allows you to see for yourself what kind of work suits you.
- Getting an outside perspective is important - talking to other colleagues can be very helpful. Ask yourself: what have my colleagues done?

- Participate in job fairs, identify companies that might interest you and take every opportunity to ask questions of their executives.

How do I find out about employment options?

- Staying in touch with alumni in your discipline can also provide you with contacts who may be willing to help or advise you.
- Simply register on job portals and look at vacancies for profiles similar to yours, studying your market possibilities.
- Assess how your skills/experience fit within the profiles required in job offers, rather than focusing too much on your discipline.
- Ask contacts outside academia.
- Use social media by following relevant hash tags around desired careers.
-

If we trained to be academics, how do we make the transition to a non-academic filed?

- When applying for a position, emphasise the responsibilities you have had during your PhD. It is important to translate your experiences into a language that employers are familiar with.
- Tailor your experience to the profile required in job offers; analyse each job advertisement and adapt your application.
- - Do not be discouraged if you don't meet all the job requirements - the perfect candidate often doesn't exist.

Can a lack of varied work experience be considered a handicap?

- A PhD has to be defended as professional experience in its own right. It needs to be included in the work experience and training sections to emphasise that it has been an opportunity to achieve autonomy.
- Never refer to yourself as a "PhD student" - you should think of yourself as a professional and present yourself accordingly.
- Don't shy away from positions of lesser responsibility. It is often possible to make the transition to a more responsible job in a short time.
- Think of the most appropriate answers to questions that are predictable.

- For example, prepare a positive response as to why you want to make the transition by focusing on what you can offer to the organisation and why you have a passion for it.
- During your PhD, try to find opportunities to broaden your experiences and knowledge, such as a stay in other laboratories or professional training courses to enhance employability. If your PhD programme does not include this additional training, be proactive, look for internships, etc., but do not wait until the end of the program.

How can I tailor my academic CV?

- Separate the skills on your CV into two sections: technical and personal.
- Each CV should be customized to each company and job position.
- Try to make your CV "easy on the eye".
- Include examples of the skills required within the job profile you are applying for.
- Think of your CV as being rooted in the past, in what you have done, whereas your cover letter should look to the future and indicate what you can do for the organisation.
- Ask someone to review your CV

Why would an employer hire a doctor rather than a graduate?

- Be more optimistic - think of your experience as unique. You may have specific achievements to support your CV being more suitable than that of a graduate and you should use these in your applications and interviews.
- For example, if considering the case of an employer from outside academia coming from a start-up company trying to secure investment, it might be very good to emphasise experience in writing applications for grants and funding, as only a postgraduate has that experience

Should I keep up my social media and blogging activity?

- A blog can be a link to maintain a social media presence with known contacts at conferences and other academic events. A blog is also a good way to promote yourself and your work.
- A blog can be a good way to continue to have the work you have developed throughout your career associated with your profile. By maintaining the blog, you ensure that you maintain an active presence on the web.
- Proactively maintain your public profile, as employers use this profile to search for candidates. LinkedIn and Research Gate are the most commonly used tools to check the public presence of candidates. Recommendations from your LinkedIn contacts can also improve your employability.

Did you know what you wanted to do before your doctorate? Did you change your mind during your PhD?

- Keep other interests alive as you can never predict your future career. You may eventually be able to articulate a coherent and meaningful career story, even if there was no prior plan.
- Always be proactive and take advantage of random encounters at networking events you attend.

How difficult is it to return to academia after leaving the business world?

business world?

- Work experience gained in other professional sectors can sometimes be attractive to some academic environments.
- Some experiences can complement facets not developed in academic environments, such as negotiation, project management, teamwork, etc

2.2 REFLECT ON YOURSELF

Take a moment and reflect on some of the key issues::

Topic	RECOMMENDATION
Self-awareness	Understand what your motivations are for pursuing or leaving research. Show the positive factors, e.g. your interests and passions; as well as the negative ones, e.g. expectations or lack of opportunities..
Take care of yourself	Put yourself first, not your research. Be prepared for a long transition process. Develop emotional and practical support networks.
Foresight	Assess your prospects within the research. Be realistic. Have the courage to change the direction of your work or your life. Think early about your next career move, before it becomes urgent. Look for new career possibilities on a regular basis.
Focus on competencies you can apply to other fields	Do not underestimate any of your competencies. Assess them objectively: ask for help from mentors, friends, family, whoever you can etc. to see where you can apply your skills. Identify your gaps and take advantage of local training opportunities (courses, career services) and those available online.
Research and evaluate opportunities	Engage in other work-related experiences beyond your own research to see where you can beyond your own research to explore what you would like to do, and to develop and help evidence your skills to potential employers.
Research and evaluate opportunities	Be open-minded. Talk to people in different career fields and identify other jobs that match your values and competencies. Get information about what employers may be like. Consider whether it is necessary to move into a lower-skilled job, to get to where you want to be in the long term.
Use your networks	Personal and professional networks are a great resource for information, ideas, practical help and emotional support. Talk to other colleagues who have made successful transitions.

Trust yourself	Be confident that your skills are useful to employers. Be patient and persevering. Don't rush into accepting an unsuitable job..
Receive and accept job offers	Get professional and non-professional help to make sure your applications and interviews are solid. Find out how you would fit into the new work environment and your possibilities for career development.
Cultural change	Be aware of the need to adapt to a different kind of role, typically with less autonomy, multiple activities and different pace of work. Use your skills and attitudes to adapt successfully.
Identity change	Realise that your position in an academic hierarchy is not comparable to that in a business environment. Focus on the positive aspects of your new role. Understand the pros and cons of maintaining your links to academic research.

Once you have got to know yourself better and answered some key questions, you will have more elements to choose one of the career options.

2.3 SKILLS

Academic training is the starting point and the foundation of your career, but to move and grow in the labour market you also need to acquire and develop a number of skills that will improve your employability.

Knowing which professional skills are currently most valued by employers will help you to plan a strategy for improvement.

Here are some of the most important ones.

- **Ability to adapt**. Companies need employees who know how to work in this environment where unforeseen events arise and where you have to adapt quickly in order to move forward. The ability to adapt to new situations also means knowing how to take on other roles and perform functions that may not be our own but which, at a given moment, we have to carry out. The ability to adapt means being versatile, recycling oneself and having the capacity to constantly learn.
- **Creativity and innovation**. One of the most valued professional skills valued by bosses and peers is knowing how to create or devise new ways of doing the job. This means being a professional open to the environment, receptive

to everything that is around us and knowing how to take advantage of it to create and innovate in our performance and achievement of objectives.

- **Communication.** This is the ability to express our opinion, our ideas and transmit information, but it is also related to our ability to listen. Communication is a professional skill that allows you to speak in public and move easily in different environments. It would also include the ability to communicate in other languages, especially English.
- **Collaboration.** The willingness to collaborate with other peers, departments and even companies is essential. Companies need employees with the ability to work in teams, to share, participate, collaborate and help. All of these skills are essential in the search for improvement and to achieve the goals set.
- **Emotional intelligence.** These are a set of skills that allow the expression and understanding of emotions. They allow us to empathise with the people around us, to know how to listen to them and to know how to relate to different groups and contexts.
- **Decision-making.** No matter what position an employee holds, there is always a moment when decisions have to be made and being decisive is fundamental. Improving a professional's employability has a lot to do with his or her ability to make a decision. When you make a decision, how you have carried out the search and evaluation of alternatives and what has led you to choose a certain option is shown. .

3 THE RESEARCH CAREER

Over the last few decades, Spain has undergone a great development in research, with an increase in public and private investment in research, , and recognising the need to promote links between research and the business world.

3.1 STARTING A RESEARCH CAREER

Any recent graduate student in possession of a graduate, engineer or architect degree, can choose to engage in research. To do so, they would have to study a specialised master's degree, except in cases where the studies undertaken have already led directly to obtaining the MECES3 level, and then go on to do a doctorate. The doctorate consists of a combined process of teaching and research in which the doctoral thesis is prepared, carrying out in-depth research on a chosen topic, writing a report with conclusions and defending this doctoral thesis in front of an examining board.

In order to access an official doctoral programme it will be necessary to hold the official Spanish graduate degree, or equivalent, and a master's degree, or equivalent, provided that at least 300 ECTS credits have been passed in in these two courses together.

Universidad Complutense de Madrid offers 59 doctoral programs

to complete a doctoral thesis. They cover the five branches of knowledge:

Arts and Humanities, Sciences, Health Sciences, Social and Legal Sciences, Engineering and Architecture. They are adapted to current regulations and positively evaluated by the national education authorities. In addition, one of the challenges of the UCM Doctoral School is to encourage the internationalisation of our doctoral students; this is why it collaborates with The Europaeum Scholars Programme, a consortium of prestigious European universities, which offers the selected doctoral students the possibility of specific training in various European research centres.

In addition, UCM offers the possibility of preparing doctorates with an international mention and industrials.

During the doctorate, students apply for a research to programs aimed at training in scientific and technical activities offered by the Ministry of

Science, Innovation and Technology, Autonomous Communities, public and private universities, public bodies and private sector entities such as companies or foundations.

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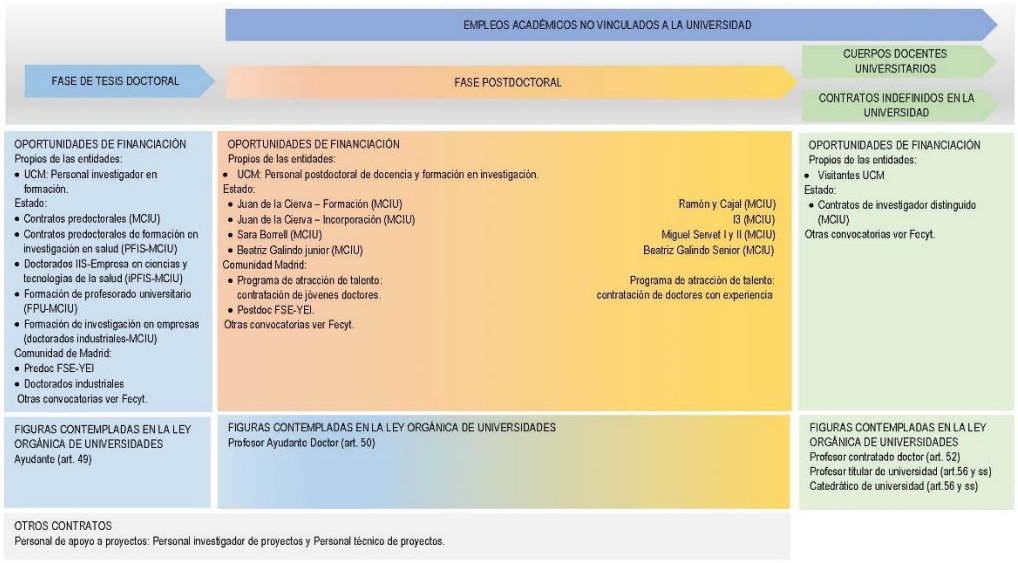
3.2 CAREER OPTIONS FOR RESEARCHERS

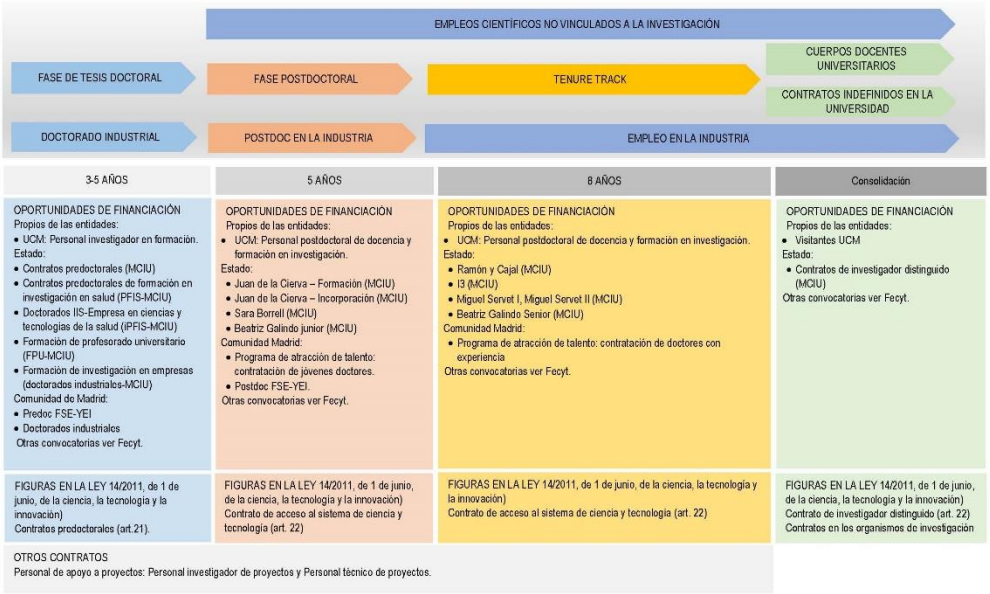
The fields of employment to which PhD holders can direct in order to research are in the public or private sector, with a prominent presence in public and private universities and research centres, , research-focused foundations, etc.

We could summarise the research teaching itinerary in the following diagram



1 Research teaching itinerary. Source: UCM www.ucm.es/hrs4r_es/docencia-e-investigacion-

And the fundamentally research itinerary in the following diagram



2Research itinerary. Source: UCM www.ucm.es/hrs4r_es/investigacion

The employment alternatives available to a researcher include the following:

- **Post-doctoral studies**. This consists of working in an academic institution or research centre, doing research for a limited period of time. Generally, post-docs are international stays of two or three years in a centre that has research lines related or unrelated to the subject of their thesis.
- **Research and teaching at the university**. This is the option most often chosen, but also the most limited, as it depends on the existence of teaching assignments.
- -**Working in private companies** in R&D&I departments or management in non-scientific careers. Complementary management training may be required to access these jobs.
- **Creating technology-based companies (spin-offs):** by researchers or participating in self-employment projects. In principle, the university or research centres themselves support the creation of companies when an innovative idea arises.
- **Working in research management**: there are numerous bodies and positions with responsibilities in research management, to hold positions in: a) the design of scientific policy, planning and management of science funding programs, in organisations such as the European Commission, Ministries and Departments with competences in science, innovation, etc. b) the management of research and its results in research centres and universities, occupying positions in the management of research projects, technology transfer, technology transfer, research and innovation, etc

3.3 RESEARCH CAREER OUTLINE

The European Commission, in the HRS4R - Human Resources Strategy for Researchers programme, in order to refer in a generic way to the different stages of a scientific career, divides researchers into 4 levels:

STUDENTSS		RESEARCHERSS			
GRADO	MASTER	R1	R2	R3	R4
		Doctoral Training	Postdoctoral stay	Independent researcher	Established researcher
		Early stage researcher	Recognised researcher	Independent researcher	Lead researcher
		Thesis	Postdoctoral	Tenure Track	Civil servant researcher, tenure
		Art. 21 LCTI*. Predoctoral contract	Art. 22 LCTI*: Contract for access to the Spanish Science System, Technology and Innovation	Art. 23 LCTI*: Distinguished researcher contract	Art. 25 LCTI*: Professional career of civil servant research personnel
4 year	1-2 years	4 years	5 years	8 years	CONSOLIDATION
			Teaching		
			Management		
			Industry		
			Entrepeneur		

2 Research career scheme. Source: Own elaboration based on Euraxess.a

*** Law 14/2011, of 1 june, on Science, Technology and Innovation (BOE 02/07 /2011)**

3.4 PROFILES

The European Framework for Research Careers describes four broad profiles in this pathway, which are independent of any particular sector

(universities, research institutions, companies or NGOs):

- R1 Researcher: Early stage researcher. Individuals carrying out supervised research under supervision in industry, research institutes or universities. Includes people who are pursuing a doctorate.
- R2 Researcher: Recognised researcher. Persons with a doctoral degree who have not yet established a significant level of independence, as well as researchers with an equivalent level of experience and competence.
- R3 Researcher: Established researcher. They have developed a level of independence.
- R4 Researcher R4: Principal investigators. They lead their area or field of research. This would include the team leader of a research group or the person responsible for an industry R&D laboratory. In some specific disciplines, they may include individuals operating as lone researchers.

A more detailed explanation of each of these career levels can be found in the following sections.

The pre-doctoral stage

During this phase you will have to find a PhD thesis supervisor and enrol in

an official postgraduate program at a university. When choosing a program, you should take into account whether it has a quality mention or any other national or international recognition.

In this pre-doc stage, you will carry out original research work, which will lead to a doctoral thesis. During this phase, you will do training courses, national or international scientific publications, and presentations in journals and events in your field of knowledge such as national or international congresses. It will also be interesting for you to spend time at centres in other countries.

If you want your doctoral thesis to have an international mention, you must have carried out at least three months of your research at a centre in a different country other than Spain, and part of the examining board judging the thesis must also be from a country other than your own, among other requirements that you can consult here.

During this period, you can access different types of pre-doctoral contracts, some of them from the institutions themselves and others through supports from public administrations (See chapter 3. See EDUCM (UCM Doctoral School)

R1 Researcher. First Period, Predoctoral Researcher	
First stage for a researcher. Research is carried out under supervision in universities, research institutes or industry. Includes PhD students	
COMPETENCIES REQUIRED	**DESIRABLE COMPETENCIES**
· Carry out research under supervision - Develop integrated · language, communication and analytical skills, · - Have the ambition to develop knowledge through the use of international research methodologies and discipline · - Demonstrate a good understanding of a field of study · - Demonstrate the ability to produce data · - Be capable of critical analysis, evaluation and synthesis of new and complex ideas · - Be able to explain the outcome of the research (and its value) to other researchers	Develop integrated language, communication and analytical skills,especially in an international context **REQUIREMENTS** 300 ECTS credits of which at least 60 must be at Master's level. Enrolment in Doctoral Programmes

The post-doctoral stage - R2

The post-doctoral stage can be used to orientate your career towards the more purely research, or towards the academic-research area, in the public or private sector.

At this stage, you will start to participate more actively in research projects and you will carry out your research more autonomously, within the framework of a research group.

During this period, you may be eligible for various public grants, which will in turn guide you towards a more specific research career or a career with a greater academic-teaching component (see).

In general, during this period you should strive to undertake stays at universities or research centres in other countries, preferably for at least two years, as international experience is an important, often essential, requirement for some grants at a more advanced stage, as well as a significant selection criterion or merit in universities and public research organisations .

During this stage, you can try to gain access to non-permanent positions

at the university, such as the position of doctoral assistant. For this purpose, it is necessary the evaluation by ANECA, the National Agency for Quality Assessment and Accreditation.(You can consult the procedures at http://www.aneca.es/).

At the end of this stage, it is expected that you will have acquired considerable research experience and autonomy, and that you have fully developed your teaching competence

R2 Researcher. Second period, post-doctoral researcher	
Recognised researcher. Doctors who have not yet established that they have a significant level of independence or researchers with an equivalent	
REQUIRED COMPETENCES	**DESIRABLE COMPETENCES**
- Those of R1 plus the following - Demonstrate a systematic understanding of a field of study and research proficiency - Demonstrate the ability to conceive, design, implement and adapt a substantial research programme with a high level of research skills - Has contributed to the broadening of knowledge barriers by means of original research that has developed a substantial body of work, innovation or application reflected in national or international publications or patents. - Demonstrate critical analysis, evaluation of results, and synthesis generating new and complex ideas - Demonstrate good communication skills with colleagues by being able to explain the outcome of their research and its value to the international community. - Takes responsibility for and manage their own career progression by setting realistic and achievable career goals, Identifies and develops ways to improve their ways to enhance their employability - Co-authors articles, participates in workshops and conferences	Understands the needs of industry and other related employment sectors - Understands the relevance of their research work for the generation of industrial products and services and for other related employment sectors. - Communicates his/her contributions and areas of expertise to the community, and society at large, - Promotes, in professional contexts, technological, social or cultural progress in a knowledge-based society
REQUIREMENTS	
· PhD degree	

Stabilised R3 and R4 researchers.

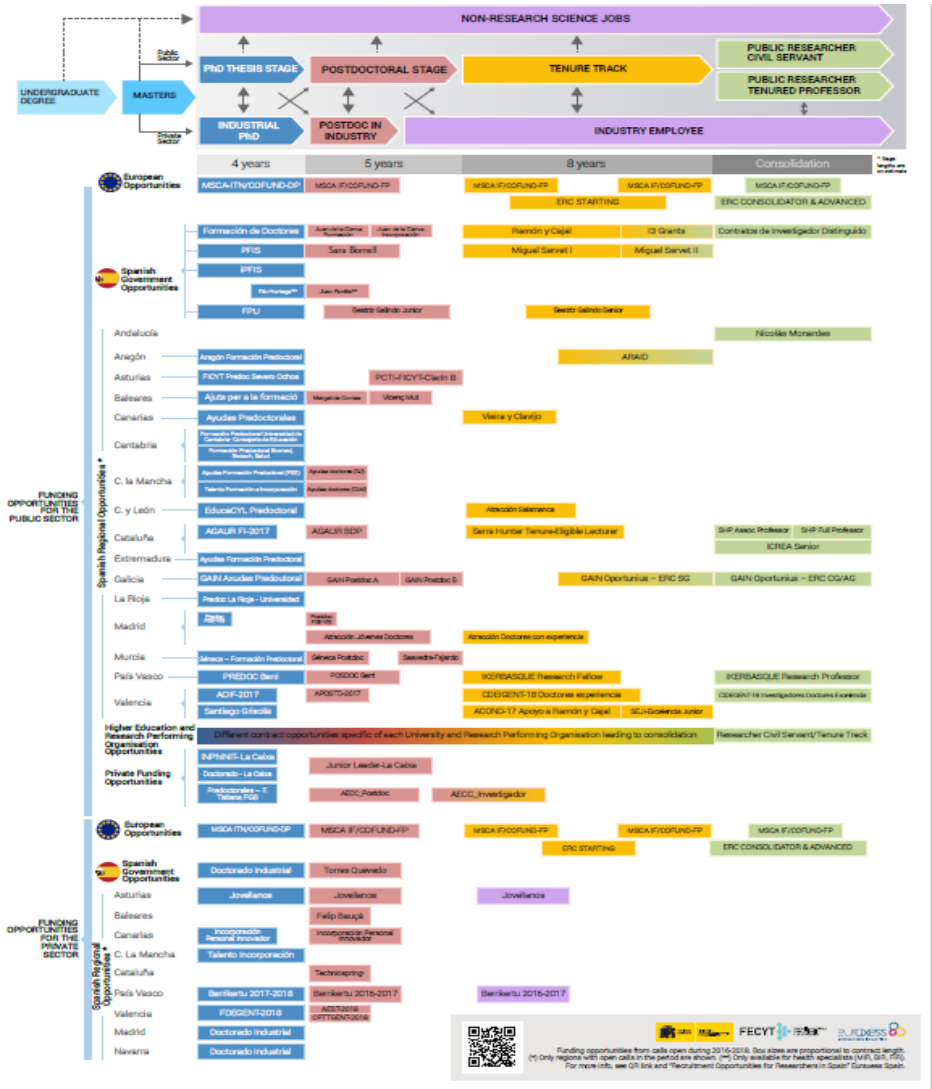
At this stage, there are employment-type contracts, such as lecturer and civil servant positions, corresponding to the so-called university teaching bodies, in which you will find full university lecturers and university lecturers and university chairs.

R3 Researcher. Third period independent researcher.	
Established researcher. Researchers who have developed a level of independence	
NECESSARY COMPETENCES	**DESIRABLE COMPETENCES**
- Those of R2 plus the following - Has an established reputation based on the excellence of his/her research in his/her field - Communicates his/her research in a effective way - Positively contributes to the development of knowledge, research and progress through co-operations and collaborations; - Identifies research problems and opportunities within his/her area of specialisation - Identifies appropriate methodologies and research approaches. Conducts research independently - Can lead the implementation of collaborative research projects in cooperation with colleagues and project partners; publishes articles as lead author, organises workshops or conference sessions	Establishes collaborative relationships with relevant research or development groups in industry. - Communicates his/her research effectively to the research community and society at large - His/her research approach is innovative - Can form research consortia and obtain funding / budgets / resources from research organisations or industry - Is committed to his/her own professional career development and acts as a mentor to others
R4 Researcher R4. Fourth period: Stabilised researcher: Professors, research professors, lecturers.	
Leading Researcher. Researchers leading their area of research or field. This would include the team leader of a research group or the head of an industry R&D laboratory	
REQUIRED COMPETENCES	**DESIRABLE SKILLS / COMPETENCIES**

· Those of R3 plus the following · They have an international reputation as research leaders. He/she is an expert in the based on management excellence and the development of others research in their field · Demonstrates critical judgment in the identification and execution of research activities · Makes a substantial contribution (breakthroughs) to his/her field of research; or c overs multiple areas; · Develops a strategic vision for the future of the research field · Recognises the wider implications and applications of his/her research; · Publishes and presents influential papers and books, serves on committees organising workshops and conferences and gives invited lectures	· Has an international reputation as a research leader. He/she is an expert based on excellence in the management and development of others · Has a proven track record in securing significant research funds / budgets / resources · Beyond team building and collaboration, focuses on long-term team planning (e.g., career paths for researchers and securing funding for team positions) · He/she is an excellent communicator and networker within and outside the research community [networking]. · He/she is able to create an innovative and creative environment for research · He/she acts as a role model for others in professional development

4 FUNDING FOR RESEARCH CAREERS

The FECYT (Spanish Foundation for Science and Technology) periodically draws up a career periodically draws up a map of career options with the different sources of funding for each stage of the research career.



3 Career Options Map (FECYT)

4.1 EUROPEAN FUNDING OPTIONS

Europa		
MSCA Marie Skłodowska-Curie Actions	ITN, **Innovative Training Networks**	**Link**
	IF, Individual Fellowships	
	COFUND, Co-Funding of Regional, National & International Programmes	
ERC – European Research Council	**ERC SG**, Starting Grants	Link
	ERC CoG, Consolidator Grants	
	ERC AdG, Advanced Grants	
	ERC PoC, Proof of Concept	
	ERC SyG, Synergy Grants	

4.2 NATIONAL FUNDING OPTIONS

Spanish Government		
Secretaría de estado de Investigación, desarrollo e innovación. (SEIDI)	Training of Doctors, **Grants for pre-doctoral contracts for the training of doctors**	**Link**
	Industrial Doctorates, Grants for contracts for the training of researchers in companies	Link
	Juan de la Cierva Training, Grants for Juan de la Cierva-training contracts	Link
	Juan de la Cierva Incorporation, Grants for Juan de la Cierva-incorporation contracts	Link
	Torres Quevedo, Grants for Torres Quevedo contracts (PTQ)	Link
	Ramón y Cajal, Grants for Ramón y Cajal contracts (RYC)	Link
	Ayudas I3, Grants to incentivise the stable incorporation of PhDs (IED)	Link
	Distinguished Researcher Contracts, Distinguished Researcher of OPIs	Link
Instituto de salud Carlos III.	**PFIS,** Pre-doctoral Health Research Training Contracts	Link
	i-PFIS, IIS-industry Doctorates in Health Sciences and Technologies	

	Río Hortega, Río Hortega contracts	
	Sara Borrell, Sara Borrell contracts	
	Juan Rodés, Juan Rodés contracts	
	Miguel Servet I, Miguel Servet Type I contracts	
	Miguel Servet II, Miguel Servet Type I contracts I	
Ministerio de educación cultura y deporte.	**FPU,** Grants for the training of university teaching staff	Link
	Beatriz Galindo Grants, Junior Mode	Link
	Beatriz Galindo Grants, Senior Mode	Link

4.3 REGIONAL FUNDING OPTIONS

Regional governments		
Andalusia	Nicolás Monardes, **Consolidation contracts for researchers linked to Clinical Management Units,**	**Link**
Aragon	**Aragón Formación Predoctoral**, Recruitment of pre-doctoral research staff in training, 2016-2020	Link
	ARAID, International call for the recruitment of researchers	Link
Asturias	**FICYT Predoc Severo Ochoa**, Severo Ochoa Program of Predoctoral Grants for research and teaching training in the Principality of Asturias	Link
	Jovellanos Program, Program for the incorporation and mobility of university graduates for the development of R&D&I activities in companies in the Principality of Asturias	Link
	PCTI Clarín-COFUND, Clarín-COFUND Program of Postdoctoral Grants of the Principality of Asturias.	Link
Balearic Islands	**Ajuts per a la formació** of research staff from the Government of the Balearic Islands (former FPI CAIB grants)	Link
	Margalida Comas, for young researchers	Link
	Vicenç Mut, for senior researchers	
Canary Islands	**Ayudas Predoctorales**, Grants for the predoctoral training program for research staff within official doctoral programs in the Canary Islands	Link

	Incorporation of innovative personnel into the productive fabric	Link
	Convocatoria Viera y Clavijo 2016: contracts for prestigious PhDs, to incorporate into the public sector of the Canary Islands Autonomous Region researchers who have a relevant scientific, technical, and innovative track record but have not been selected for a YC or have not been selected for a YC	Link
Cantabria	**Grants for contracts** under the Predoctoral Research Staff in Training Program in Biomedicine, Biotechnology and Health Sciences.	Link
Castilla La Mancha	**Grants for pre-doctoral contracts** of the Program for Research Staff in Pre-doctoral Training of the University of Castilla La Mancha.	Link
	Pre-doctoral Training Grants (FSE), Pre-doctoral contracts for the training of PhDs	Link
	Programa Talento Formación e Incorporación (Talent Training and Incorporation Program), grants for the training of pre-doctoral research personnel in Universities, PRIs or other research centres, and companies, by Garantía Juvenil (Youth Guarantee).	Link
	Grants for the recruitment of doctors financed by the Youth Guarantee, doctors under 30 years of age in companies and research centres	Link
	Grants for the recruitment of doctors from the Junta de Castilla La Mancha	Link
Castilla y León	**EducaCYL Predoctoral**, Grants to finance the pre-doctoral recruitment of research personnel	Link
	Program for the Attraction of Scientific Talent in Salamanca	Link
Catalonia	**AGAUR FI**, Grants for the recruitment of new research staff AGAUR BDP	Link Link
	AGAUR BDP, Postdoctoral grants and scholarships in the framework of the Beatriu de Pinós program	Link Link
	ICREA Senior Call	Link
	Serra Húnter Programme	Link
	TecnioSpring+ (Acciò-COFUND), grants for the recruitment of postdoctoral researchers in companies for the development of applied research projects.	Link
Extremadura	**Ayudas Formación Predoctoral**, Predoctoral contracts for the training of doctors	Link
Galicia	**GAIN Axudas Predoutoral**, Grants to Support the Predoctoral Stage	Link
	GAIN Postdoc A and Postdoc B, Grants to Support the Postdoctoral Stage	Link
	GAIN Oportunius Starting, Consolidator and Advanced Grants	Link
La Rioja	**Predoc La Rioja – University,** Predoctoral Contracts for the Training of Research Staff	Link

Madrid	**Predoc FSE-YEI**, Call for grants for the recruitment of pre-doctoral researchers co-financed by the European Social Fund through the Operational Program for Youth Employment and the Youth Employment Initiative (YEI).	Link
	Postdoc FSE-YEI, Call for grants for the recruitment of postdoctoral researchers co-financed by the European Social Fund through the Operational Program for Youth Employment and the Youth Employment Initiative (YEI)	
	Attraction of Young Doctors, Aid aimed at attracting and retaining research talent in R&D centres in the Community of Madrid. Modality 2	
	Attraction of Experienced Doctors, Grants aimed at attracting and retaining research talent in R&D centres in the Region of Madrid. Modality 1 .	
	Grants for the completion of industrial doctorates in the Region of Madrid	
Murcia	**Séneca –** Regional Subprogram for Research Personnel Training Contracts in Universities and OPIs Regional Subprogram for Research Personnel Training Contracts in Universities and OPIs	Link
	Séneca Postdoc, Renewal of Postdoctoral Training Grants	Link
	Saavedra-Fajardo, Saavedra-Fajardo Contracts. Reincorporation of doctors in research centres in the Region of Murcia	Link
Navarra	**Industrial doctorates 2019-2021,** Aid for the recruitment of doctoral students and doctoral candidates by companies and research and knowledge dissemination organisations	Link
País Vasco	**PREDOC Berri**, Predoctoral Training Program for Non-Doctoral Research Staff. New grants	Link
	POSTDOC Berri, Predoctoral Program for the Training of Non-Doctoral Research Staff. Renewals	Link
	POSTDOC Berri, New and Renewal Grants for the Postdoctoral Program for the Further Training of Doctoral Research Staff	Link
	POSTDOC Berri, New and Renewal Grants for the Postdoctoral Program for the Further Training of Doctoral Research Staff. Doctoral Research Staff. Renewals	Link
	Berrikertu 2017-2018, Grants for the incorporation of human research capital, for companies and agents of the Basque Science, Technology and Innovation Network	Link
	IKERBASQUE Research Fellow,	Link
Valencia	**ACIF**- Aid for the Recruitment of Pre-doctoral Research Staff in Training. Santiago Grisolía, Santiago Grisolía Program Grants	Link
	Santiago Grisolía, Santiago Grisolía Program Grants	Link
	FDEGENT, Subsidies for the training of doctors and doctoral students in Valencian companies	Link
	APOST, Grants for the Recruitment of Postdoctoral Research Staff	Link
	AEST, Grants for the recruitment of doctoral research staff in Valencian companies	Link

	CPTTGENT, Grants for the recruitment of young PhDs for the development of a technology transfer project in Valencian companies	Link
	ACOND, Grants to Support the Recruitment of Doctoral Research Staff from the Ramón y Cajal Program, by research centres	Link
	SEJI, Grants for the scientific excellence of junior researchers	Link
	CDEIGENT Grants for the recruitment of PhDs with international experience	Link
	CIDEGENT, Grants for the recruitment of doctoral researchers of excellence to develop an R&D&I project in the Valencian Community	Link

4.4 PRIVATE FUNDING OPTIONS

Private funding		
Obra Social La Caixa	INPhINIT, Doctoral Program MSCA- COFUND	**Link**
	Doctorate in Spain	Link
	Junior Leader, Postdoctoral program for attracting and retaining postdocs	Link
Asociación Española Contra el Cáncer	Postdoctoral AECC PhDs with less than 4 years of postdoctoral experience	Link
	AECC Researcher, PhDs with more than 4 years of postdoctoral experience	Link
Fundación Tatiana Pérez de Guzmán el Bueno	Predoctoral Grants	Link
Fundación ONCE	Master's scholarships, international mobility ,study and sport, and PhD and research scholarships for candidates with disabilities	Link
Fundación Carolina	Doctoral scholarships for teachers from Latin American universities associated with the FC. Scholarships for short postdoctoral stays for professors from these centres and to facilitate the establishment of academic networks between Spain and America	Link

5 OPPORTUNITIES AT UCM

5.1 GENERAL OVERVIEW

Called and managed by UCM	Called and managed by other institutions
Teaching and research staff	
University professors Full professors Hired Lecturers with Doctoral Degrees Hired Professors with Doctoral Degrees on an interim basis Associate Lecturers Associate Lecturers in Health Sciences Assistant Professor Doctorate Assistant (no longer available)	
Research Human Resources	
R2 - Postdoctoral	
Postdoctoral positions in teaching and research training at UCM:	Beatriz Galindo. MCIU. Ramón y Cajal. MCIU. Juan de la Cierva - Training. MCIU. Juan de la Cierva - Incorporation. MCIU. Talent Attraction. Comunidad de Madrid. **Mode 1**: Grants for the hiring of experienced PhDs. Talent Attraction. Comunidad de Madrid. **Mode 2**: Grants for the recruitment of young doctors.
R1 - Predoctoral	
Research Staff in Training at the Universidad Complutense.	Teacher Training (FPU). MCIU Training of PhDs. (Formerly FPI). MCIU.
Technical Staff	
Research Support Staff (staff hired under projects or finalist external funding sources)	

Project Research Staff (PAI-I). UCM Project Technical Staff (PAI-T). UCM.	R+D Technical Support Staff. MCIU.
Mixed sequential process	
Technical and R&D Management Staff for the promotion of Youth Employment. MCIU - UCM	
Research Assistants and Laboratory Technicians. Young Employment. Comunidad de Madrid - UCM	
Pre-doctoral and post-doctoral researchers. Young Employment. Comunidad de Madrid - UCM	

5.2 PREDOCTORAL R1 CONTRACTS

Posotion	Pre-doctoral contracts
Assignment	Research personnel in training.
Admission requirements	You must hold a degree in engineering, architecture, or university grade with at least 300 ECTS credits (European Credit Transfer System) or university master's degree, or equivalent, and have been admitted to a UCM doctoral program.
Access	Call for applications issued by the entity, which establishes its scales for the evaluation of candidates. At UCM, it is published in the Official Bulletin (BOUC).
Background	Bachelor's degree, engineering, architecture or university graduate or master's degree
Possible evolution	Postdoctoral contracts.
Applicable regulations	Act14/2011, of 1 June, on Science, Technology, and Innovation. Art. 21 Pre-doctoral contract. Organic Law 6/2001, of 21 December 2001, on Universities (BOE (Official State Gazette) 24/12/2001), amended by Organic Law 4/2007, of 12 April, (BOE 13/04/2007). Royal Decree 103/2019, of 1 March, which approves the Statute for of pre-doctoral research personnel in training. Amended text of the Workers' Statute. Law 7/2007, of 12 April, Basic Statute of the Public Employee. Where applicable: Organic Law 4/2000, of 11 January, on the rights and freedoms of foreigners in Spain and the liberties of foreigners in Spain and their social integration. See Immigration Portal. UCM: Regulatory bases and calls for applications issued by the UCM. UCM PhD regulations. UCM Governing Council Agreement of 4 May 2017 on collaboration in teaching tasks.
Where can they work	Public and private universities, public research organisations and private institutions.
When is it called	Each institution publishes its calls for applications without a pre-established deadline.
Possible funding	Research staff in training at the UCM. FPU (Formación de Profesorado Universitario, MCIU). Research Training (formerly FPI; MCIU).

	Those of the Autonomous Communities. Those of the entities in which you are going to work (public and private universities, public research bodies, etc.). public and private universities, public research bodies, private entities). private entities).

5.3 POSTDOCTORAL R2 CONTRACTS

Position	Assistant
Assignment	The main purpose of the contract is to complete the teaching and research training of the persons hired. They may collaborate in teaching tasks up to a maximum of 60 hours per year. This is a temporary contract on a full-time basis. Duration of contract: up to 5 years
Admission requirements	Call for applications issued by the entity, which establishes its scales for the assessment of candidates.
Access	Convocatoria emitida por la entidad, la cual establece sus baremos para la evaluación de las personas candidatas.
Background	Normally doctoral students
Possible evolution	It is conceived as the first step in a university teaching and research career
Applicable regulations	Ley Orgánica 6/2001, de 21 de diciembre, de Universidades (BOE 24/12/2001), modified by Ley Orgánica 4/2007, de 12 de abril, (BOE 13/04/2007). Art.49
Where can they work	Public and private universities
When is it called	Each entity announces its own vacancies.

Position	Postdoctoral contracts
Assignment	Research personnel
Admission requirements	In addition to a doctoral degree, the different entities establish additional requirements. In the call for posts financed by UCM, for example, a time limit is established on the length of time the doctorate degree has been held, and it is required to have spent time at institutions other than the one where the doctorate was obtained, as well as not having been linked to UCM by any type of contract during a certain previous period.
Access	UCM: Public call for applications, published in the Official Bulletin of the UCM. Others: Calls for applications from funding and contracting institutions.
Background	Usually a pre-doctoral contract, although this is not a prerequisite.
Possible evolution	Consolidation contracts, temporary positions in universities.
Applicable regulations	Act14/2011, of 1 June, on Science, Technology, and Innovation. Art. 21 Pre-doctoral contract. Organic Law 6/2001, of 21 December 2001, on Universities (BOE (Official State Gazette) 24/12/2001), amended by Organic Law 4/2007, of 12 April, (BOE 13/04/2007).

	Royal Decree 103/2019, of 1 March, which approves the Statute for of pre-doctoral research personnel in training. Amended text of the Workers' Statute. Law 7/2007, of 12 April, Basic Statute of the Public Employee. Where applicable: Organic Law 4/2000, of 11 January, on the rights and freedoms of foreigners in Spain and the liberties of foreigners in Spain and their social integration. See Immigration Portal. UCM: Regulatory bases and calls for applications issued by the UCM. UCM PhD regulations. UCM Governing Council Agreement of 4 May 2017 on collaboration in teaching tasks.
Where can they work	Public and private universities, research organisations or private entities.
When is it called	Each funding or contracting entity establishes its own timetables.
Possible funding	Postdoctoral positions in teaching and research training at UCM. Ramón y Cajal (Ministry of Science, Research and Universities). Juan de la Cierva (Ministry of Science, Research and Universities). Those of the Autonomous Communities (in the Community of Madrid, Talent Attraction Programme - Aid for the recruitment of young doctors and young PhDs and Grants for the recruitment of experienced PhDs). experience)

Position	**Assistant professor doctoral candidate**
Position	Teaching and research staff. The contract is temporary and full-time, with a duration of not less than one year and not more than five years. Contracts are usually signed for one year and are renewed on an annual basis. The purpose of the contract is to carry out teaching and research tasks. The law establishes that the combined duration of the contracts of a person, as assistant and doctoral assistant, in the same or different universities, may not exceed 8 years
Admission requirements	You must hold a doctorate and have obtained a positive evaluation from ANECA, the Agency for Quality, Accreditation and Prospective Studies of the Universities of Madrid (link) or from any agency that has an agreement with them. The law indicates that the candidate's stay in universities or research centres of recognised prestige, Spanish or foreign, other than the university where the recruitment is being carried out, should be a preferential merit.
Access	The universities call for vacancies directly. The UCM carries out a selection process in which the merits of each candidate are assessed based on the documents provided, together with an oral presentation for those who exceed a certain threshold. https://www.ucm.es/profesor-ayudante-doctor
Background	Conceived as the second step in the university teaching career, either after "assistant" contracts or other formulas for hiring pre-doctoral staff
Possible evolution	The people who occupy these positions may subsequently opt for a position as a contracted doctoral candidate.

Applicable regulations	Ley Orgánica 6/2001, de 21 de diciembre, de Universidades (BOE 24/12/2001), modified by Ley Orgánica 4/2007, de 12 de abril, (BOE 13/04/2007). Article 50
Where can they work	Public and private universities
When is it called	https://www.ucm.es/profesor-ayudante-doctor

Position	**Doctor Contract Professor**
Position	Teaching and research staff. The purpose of the contract is to carry out, in full teaching and research capacity, teaching and research tasks, or as a priority, research tasks. The contract is indefinite and full-time.
Admision requirements	You must hold a PhD and have obtained a positive assessment by ANECA, the Agency for Quality, Accreditation and Prospective Studies of the Universities of Madrid (link) or any other agency that has an agreement with them. The requirements for passing this assessment are different and more demanding than those required for those who aspire to the position of doctoral assistant and coincide with those required to be accredited as a private university lecturer.
Access	The universities offer the positions directly. At the UCM, recruitment processes are called in which the merits of the candidates are assessed, on the one hand based on the documents they provide, and, for those who exceed a certain threshold, an oral presentation and debate. The full process and the scales applied can be found here.
Background	These are usually people who have previously held a doctoral assistant position, or a contract for pre-doctoral staff (FPU, FPI) and Ramón y Cajal or other doctoral positions
Possible evolution	It is usually considered as an intermediate step between the temporary positions of assistant and doctoral assistant, and the faculties of university teaching staff (full professors and university professors). However, a person may remain in this type of assignment indefinitely.
Applicable regulations	Organic Law 6/2001, of 21 December, on Universities (BOE 24/12/2001), modified by Organic Law 4/2007, of 12 April, (BOE 13/04/2007). Article 52. Decree 153/2002, of 12 September, on the regime of teaching and research staff contracted by the public universities of Madrid and their remuneration system. Decree 58/2003, of 8 May 2003, of the Governing Council, approving the Statutes of the University of Madrid. Decree 58/2003 of 8 May 2003 of the Governing Council, approving the Statutes of the Complutense University of Madrid. Collective Bargaining Agreement in force for teaching and research staff with of the Public Universities of the Autonomous Community of Madrid. Madrid
Where can they work	Public and private universities
When is it called	https://www.ucm.es/profesor-ayudante-doctor

Position	Associate professor
Position	The purpose of the contract is to develop teaching tasks through which people from outside the university contribute professional knowledge and experience to the university. Employment contract, of a temporary nature and with part-time dedication. The duration of the contract may be quarterly, half-yearly or annual, and may be renewed for periods of the same duration
Admission requirements	They must be specialists of recognised competence, who can prove that they carry out their professional activity outside the university academic sphere.
Access	Public tender.
Background	People who are professionally active outside the university
Possible developments	
Applicable regulations	Organic Law 6/2001, of 21 December 2001, on Universities (BOE 24/12/2001), amended by Organic Law 4/2007, of 12 April 2007 (BOE 13/04/2007). Article 53
Where can they work	Public and private universities
When is it called	www.ucm.es/profesor-asociado

5.4 STABILISED RESEARCHER R3 AND R4 CONTRACTS

Position	Full university professor
Position	Civil servant, university teaching bodies. They have full teaching and research capacity. These are preferably full-time positions.
Admission requirements	Doctors who have obtained the accreditation for tenured university lecturer from ANECA or equivalent.
Access	Public competition, which is published in the BOE (Official State Gazette) and in the bulletin of the Autonomous Community.
Background	The competitions are open to those who have been accredited as civil servants in the Corps of University Lecturers and the Corps of University Professors
Possible evolution	If they obtain accreditation for the corps of university professors, they may apply for positions of this type
Applicable regulations	Law 14/2011, of 1 June, on Science, Technology, and Innovation Organic Law 6/2001, of 21 December, on Universities (BOE 24/12/2001), amended by Organic Law 4/2007, of 12 April, (BOE 13/04/2007). Royal Decree 1313/2007 regulating the system of competitive examinations for access to university teaching bodies RD 1312/2007 establishing national accreditation for access to university teaching bodies (AMENDED by Royal Decree 415/2015 of 29 May). Regulation of competitive examinations for access to University Teaching Bodies at UCM (BOUC 24.07.2017)

Where can they work	Public universities
When is it called	https://www.ucm.es/funcionarios-de-carrera-2

Position	**University Chair**
Position	Civil servant, university teaching bodies. They have full teaching and research capacity. Full-time positions are preferred
Admission requirements	Doctors who have obtained the accreditation for university professor from ANECA or equivalent
Access	Public competition, which is published in the Official State Gazette and in the gazette of the Autonomous Community.
Background	The competitions are open to those who have been accredited as civil servants in the Corps of University Professors
Possible evolution	If they obtain accreditation for the corps of university professors, they may apply for positions of this type
Applicable regulations	Law 14/2011, of 1 June, on Science, Technology, and Innovation Organic Law 6/2001, of 21 December, on Universities (BOE 24/12/2001), modified by Organic Law 4/2007, of 12 April (BOE 13/04/2007). RD 1313/2007 regulating the system of competitive examinations for access to university teaching bodies. RD 1312/2007 establishing national accreditation for access to university teaching bodies (AMENDED by Royal Decree 415/2015 of 29 May). Regulation of competitive examinations for access to University Teaching Bodies at UCM (BOUC 24.07.2017)
Where can they work	Public universities
When is it called	https://www.ucm.es/funcionarios-de-carrera-2

6 POSITIONS IN THE EUROPEAN UNION FOR RESEARCH-TRAINED PROFESSIONALS.

EURAXESS lists thousands of vacancies and fellowships in more than 40 countries in Europe and other parts of the world.

6.1 WORKING AS AN EXPERT AT THE EUROPEAN COMMISSION

The European Commission recruits experts to evaluate project bids and proposals, monitor projects and project proposals, monitor projects and help develop policies and programs.

Experts who wish to do so can register in a database from which they can be selected to evaluate bids and project proposals, monitor projects, and help develop policies and EU-funded programs.

Experts wishing to offer their services in the context of the Horizon 2020 research and innovation program currently underway, can do so by registering via the Participant Portal.

Alternatively, experts may express their interest in being in one of the different departments:

Department	Opportunity
La Dirección General de Traducción	Call for assessors – EMT selection procedure
Dirección General de Migración y Asuntos de Interior	Calls for independent experts to advise the Commission on migration issues
Agencia Ejecutiva en el ámbito Educativo, Audiovisual y Cultura)	Call for experts to assist the Education, Audio-visual, and Culture Executive Agency in the field of Education, Audio-visual, and Culture in the framework of the management of European Union programs
Dirección General de Investigación e Innovación	Call for independent experts to assist the Commission in tasks related to the Research and Innovation Framework Program

Dirección General de Política de Vecindad y Negociaciones de Ampliación	TAIEX Expert Database
Dirección General de Política Regional y Urbana	TAIEX REGIO PEER 2 PEER Database
Agencia Ejecutiva para las Pequeñas y Medianas Empresas	Call for experts on climate action, environment, and resources management
Agencia Ejecutiva para las Pequeñas y Medianas Empresas	Call for independent experts for the evaluation of proposals and the evaluation and monitoring of projects carried out under the COSME program
Agencia Ejecutiva para las Pequeñas y Medianas Empresas	Call for experts for mentoring activities in relation to the SME Instrument
Dirección General de Mercado Interior, Industria, Emprendimiento y Pymes)	Call for experts on the economics of intellectual property
Dirección General de Mercado Interior, Industria, Emprendimiento y Pymes	Call for experts in the EASME database for the evaluation of tourism-related calls for proposals
Dirección General de Justicia y Consumidores	Call for applications concerning the establishment of a Commission expert group on European insurance contract law
Dirección General de Cooperación Internacional y Desarrollo	EuropeAid Horizontal Framework Contracts
Dirección General de Asuntos Marítimos y Pesca	Call for experts for the informal expert group on "Skills and career development in the blue economy"
Dirección General de Asuntos Marítimos y Pesca	Call for experts for the informal group on marine knowledge
Dirección General de Salud y Seguridad Alimentaria	Call for members of an expert advisory panel on health investment
Dirección General de Salud y Seguridad Alimentaria	Call for members of the scientific advisory committee on health
Agencia Ejecutiva de Consumidores, Salud, Agricultura y Alimentación	Call for expressions of interest in the field of public health
Autoridad Europea de Seguridad Alimentaria	Call for members of the Scientific Committee or the Panel on Food Safety
Agencia Europea de Defensa	Call for experts to assist EDA Preparatory Action on Defence Research

6.2 VACANCIES IN THE JOINT RESEARCH CENTRE

JRC web-based application managing part of the recruitment process

of JRC trainees, fellows, CAST and auxiliary contract agents.

The Joint Research Centre, better known as the JRC, is a Directorate-General of the European Commission, located in the JRC's headquarters in Brussels, in charge of providing scientific and technical advice to the European Commission and to the European Union Member States of the European Union in support of their policies.

The JRC's mission is to provide customised scientific and technical support

for the conception, development, implementation, and monitoring of EU policies. As a service of the European Commission, the JRC functions as a science and technology reference centre for the Union. Close to the political decision-making processes, it serves the common interest of the Member States, while remaining independent of partisan interest, whether private or national

7 IN COMPANY RESEARCH

In the Anglo-Saxon world, approximately 80 to 90 per cent of doctoral students leave the university immediately after their doctorate to take up a position in a company or social organisation.

They possess not only professional qualifications, but also management experience. In addition to teaching skills, the supervision of young researchers in skills related to research and innovation, research data management and scientific and academic integrity is particularly valued.

7.1 TRANSITION FROM ACADEMIA TO BUSINESS

Changing your career path can be stressful, from deciding what changes you want to make, to deciphering how to demonstrate to potential employers that you have the skills needed to excel in a position in the organisation. Often, people who have developed competencies applicable to other fields as part of an academic career consider their qualifications and experiences to be very specific and therefore find it difficult to transfer their skill set to a career outside academia.

There comes a time in the life of a doctoral candidate, a doctor and even, from time to time, a tenured academic - when it may be worth considering a transition from academia to business. This step can be difficult, particularly if you have spent years in academia, but the rewards can be great. The hardest part is often the question of changing your mindset. Here are some tips to help you on your way.

7.2 ANALYSE WHAT SKILLS YOU HAVE DEVELOPED THAT ARE TRANSFERABLE TO OTHER FIELDS.

An academic career is challenging and uses a wide range of skills that are immensely desirable to many employers in many fields. Many academics work independently and as part of a research team, solve many problems, collect data, analyse data, manage people, make decisions, plan, present and use different media to communicate their ideas. Being an academic is also a very creative role, as they not only formulate questions based on scientific knowledge, but also have to interpret

results that may be unexpected. Such a diverse and comprehensive skill set is something that many employers value.

Think about how you can demonstrate your capabilities in a way that makes an impact for the employer. It is important to be clear about the requirements of the job you are applying for in the industry, and what skills may be of most interest to a potential employer. Then consider how you can match your experience by emphasising those skills using examples that are more relevant or transferable to a job outside academia.

7.3 DO NOT UNDERESTIMATE YOURSELF!

Many academics can be very humble about their experience and skill set. In an interview, the employer may not have a clear idea of the

capabilities of the person they are interviewing, and humility can detract from the candidature.

This does not mean that you should behave arrogantly or overconfidently, but it does require an awareness of the suitability of your application and an eagerness to explain it with tangible examples.

7.4 SEEK COMPANY CONTACTS

During an academic career, you will inevitably work alongside people who have moved to different workplaces or made changes in career direction. Have a look at your network of contacts to see if any of them have done something similar to what you are considering. Can you get some insight into their experience? Do they have any advice on how to make the transition?

Just because your profile does not fit all the requirements of the job offer does not mean you should not apply. Most job offers require a profile with a broad set of required characteristics. However, not all of them are strictly essential for the job, even if they are desirable.

7.5 LEARN THE LANGUAGE OF YOUR TARGET INDUSTRY

Approaching these companies will allow you to become familiar with the specific 'language' used by their industry. It is necessary to familiarise yourself not only with only with any technologically specific terminology used by your target industry, but also to absorb the general 'discursive environment' of the industry. Read as much as you can about the sector. Do not ignore internal or trade publications, as well as events and communications in online forums and social networks.

7.6 IMPROVE YOUR COMMUNICATION SKILLS

Academic life involves oral and written communication actions, both to a well-informed audience and to students. But communication styles in industry are different; for example, they may involve sending much shorter, more targeted messages and deploying pre-defined communication strategies. (e.g. leadership, conflict resolution, etc.). If you are not familiar with these strategies, it is worth learning about them, and assessing how they can be integrated into your own communication methods.

7.7 TAKE ADVANTAGE OF PROFESSIONAL DEVELOPMENT OPPORTUNITIES

Your university probably offers a range of professional development courses that could help you in your goal of moving from academia to the private sector. Take as many of these courses as possible. Keep a record of the courses you attend and be sure to refer to them on your CV: this will also signal to potential employers that you take responsibility for your own professional development.

7.8 LOOKING BACK FROM THE FUTURE

Even having done all this, it can be daunting to make the leap and, at times, it can seem impossible. A good trick at this point is to imagine yourself five years from now, holding your desired job in your target sector. Now think of three specific achievements of what you will have achieved, and then ask yourself if it is worth taking that step to achieve that goal.

8 THE RESEARCHER AS MANAGER

This career path is aimed at those researchers who are in the early post-doctoral phase of their careers with first time management responsibilities, who are interested in management, business, and economics, and who are pursuing a senior management position in business or society. This position requires not only professional qualifications, but also management experience which can be acquired through specific MBA with economic foundations or a master's degree in innovation management.

8.1 MOVING FROM ACADEMIC TO MANAGEMENT ROLES

The barriers between academia and management positions are much more permeable than they used to be, as universities continue to grow into very complex environments that require sophisticated and adaptable management skills. Therefore, if you are an academic considering a move into management, now may be a good time to reflect on how your experience could be adapted to the industry.

8.2 CHOOSE YOUR SPECIALISM

It is worth deciding in advance which line of management you would like to pursue. Just as academic specialisms are varied, an extremely wide range of roles now fall under the broad heading of "management". Managers may be financial specialists, legal and intellectual property advisors, human resources managers, public policy analysts, operational and strategic planners, research funding managers, teaching, and learning specialists, institutional relations managers, or specialists in alumni relations, and internationalisation and external relations specialists, to name but a few of the possible roles.

8.3 PART-TIME OR FULL-TIME?

Most management positions in a university are full-time, with career management functions from the outset. However, you may not have to switch completely to a full-time management role. Universities are unusual institutions in the sense that they can operate with a dual management system of hybrid full-time and hybrid academic managers, alongside part-time career managers. Many of the senior management roles in higher education are performed on a rotational basis by academics at certain points in their careers as part of their overall academic responsibilities.

8.4 ASSESS GROWTH AREAS

But if your goals are set on a career management path, you need to take a broader view. Consider the areas that are likely to experience most growth. These areas include internationalisation, translational education and, in general, external relations. Strategic planning and finance are always areas that need highly qualified managers. Take stock of your academic background. If you are a humanities´ academic, your linguistic, cultural and analytical skills will be well deployed in the areas of internationalisation, external relations and policy; if your skills are based on science and data-based, you may do well in finance, analytics and strategic planning; if you have technology or IT skills, consider how technology is developing in universities to boost the student experience. Break down your major into its core skills and then analyse how these skills might fit into any of the growth areas you have identified.

8.5 READJUST YOUR SKILLS BASE

Depending on your level, you may already have had some degree of management experience within your setting. In addition, your institution may offer professional development courses that can help you develop the kind of skills you need for your desired management specialization. But often the best way to enhance your CV and gain a fresh perspective on your skills is to go outside your institution and seek out external leadership and advanced skills training programs. Investing your time and money in this is a good way to show that you are serious about developing a career in top-level management.

8.6 REFOCUS YOUR CV

The form of your CV will largely depend on the category of management position you are applying for. The CV of an academic applying for a managerial position in a university will retain many of the discursive and detailed aspects of an academic CV, listing academic aspects (research interests, publications, conferences, internationally acclaimed awards, etc.) as well as providing detailed evidence of management experience.

However, a management CV will be much more concise and less discursive.

Relevant achievements and qualifications should not be presented by themselves, but with clear indications of the skills they enabled you to develop. You will also need to speak the terminology of the target area. So, if you have been a language expert, for example, talk about your achievements in terms of communication and internationalisation. Do not list your publications unless they are strictly relevant or consider presenting them in summary form as evidence of your communication skills. Focus on your experience in teamwork and planning, project management and in particular financial issues (budget management, grant management, etc.).

These steps will help you create a compelling and specific narrative of how you understand the importance of management and what role you can play in it.

9 CAREERS IN WHICH A PHD IS VALUED

A PhD prepares you for research, but many of the skills and knowledge that you gain in a PhD program are valuable for other fields, especially in scientific areas.

Most of these options are accessible from Masters´ programs and, therefore, PhDs usually only seek these alternatives as a second choice. A PhD may be an unnecessary investment if your main goal is not research. However, it is important to know that a PhD gives you options for other career paths.

Some of the possibilities that are available through a PhD are as follows.

9.1 SCIENTIFIC/TECHNICAL WRITING AND PUBLISHING

Scientific/technical writing and publishing of research papers is an excellent alternative for PhD graduates with good written expression who want to remain involved in the scientific community, without spending hours in the lab. There are many different contexts in which a PhD can apply writing skills: large and small scientific journals, medical writing companies that produce content for pharmaceutical companies, and technology companies that need good writers to produce content. Particularly academic and technical journals i prefer to hire PhDs for editing positions.

9.2 CONSULTANCY

Consultants work with clients (governments, companies, NGOs, etc.) and strategic plans to enable management to make effective decisions to achieve their business objectives. There are all types of consulting firms, some focus on specific industries and other jobs in a wide variety of sectors. While consulting is an exciting field, it is also a demanding one.

Consulting in many cases is a good choice for PhDs because the job requires skills that are obtained in a PhD, among others analytical skills, logical thinking,

and creativity. In addition, consultancy firms value having experts in the areas in which they operate, which is why there are many PhDs in economics in consulting firms and PhDs in biology in health consultancies,

for example. One area of consultancy that of interest to academics is research management consultancy, in environment and energy, in research, environment and energy, health, etc.

9.3 FINANCIAL SERVICES

The finance industry encompasses a wide range of organisations that deal with the management of money. These organisations include banks, credit card companies, insurance companies, consumer finance companies, the stock exchange, investment funds, etc.

Doctors with programming and statistical skills have a wide range of opportunities in the financial services industry, as some functions such as risk monitoring and assessment, fixed income and equity analysis etc. require these skills. Most of these positions can be found in the areas of risk management and financial engineering.

9.4 CULTURAL ORGANISATIONS

Cultural organisations such as museums, libraries, and performing arts centres can be a natural step for PhDs in areas such as history, musicology, biblical studies, history, musicology, history, musicology, history, musicology, musicology, fine arts, or art history. However, there are also cases of doctors in other fields who have moved to other countries, there are also cases of PhDs in other fields who have moved on to professional careers in cultural organisations. In addition to assessment and research, these organisations offer opportunities for outreach and education, program development, proposal writing, marketing, and public relations. In fact, cultural organisations often seek to hire people with doctoral degrees not only for their knowledge of a given topic, but also for their knowledge for their skills in research, writing, analysis, and presentation.

9.5 NGOs

Non-profit organisations are those that do not distribute their profits to their shareholders but invest it in achieving their foundational objectives. Many PhD graduates often look to NGOs as their first step out of academia, partly because non-profit organisations often hold PhDs in high regard, and

because these organisations often need employees with skills in research, fundraising and program evaluation, skills that are acquired through a PhD program.

10 TECHNOLOGY-BASED ENTREPRENEURSHIP

During PhD studies and in the postdoc phase, advice and support is available to develop business ideas or research-based inventions to create a company. The responsible administrative departments and the Entrepreneurship Centre are ready to answer questions about property rights and commercialisation strategies.

Our knowledge economy increasingly demands that public universities, as new regional innovation engines, exploit, transfer and commercialise their knowledge. The valorisation activities of universities include the following knowledge transfer activities, e.g. in consultancy or contract research, technology transfer such as patent licensing and the transfer of products and services through companies. In addition to the traditional role of universities to train high quality professionals and excellent scientific knowledge, society requires increased attention to the transfer and commercialisation of knowledge with the aim of fostering new markets and regional development. Due to these developments, the boundaries between academic research and entrepreneurship are blurring.

Traditionally, collaboration between universities and industry seemed to conflict with the independence of academic research. Today, however, such collaborations are prioritised by national and international research funding authorities.

10.1 ENTREPRENEURIAL SCIENTISTS, THE ENTREPRENEURS OF THE FUTURE

There is a growing consensus in the academic community that the knowledge generated - especially in public institutions - should be transferred to society. Initiatives such as science parks and business incubators fall into this category.

In both cases, universities and public administrations provide venture capital to launch start-ups or spin-offs. In this way, they support scientists during the most delicate stage in the creation of a venture.

The scientific entrepreneur is the scientist who wants to put their knowledge - their techniques, products, or developments - to good use by creating a company. In general, they fall into what are called deep-technology entrepreneurs, such as the development of new vaccines, artificial intelligence, or bioengineering.

The scientist who decides to become an entrepreneur faces several challenges. Unlike 'ICT entrepreneurs', who must validate their venture within six months, scientific entrepreneurs have longer cycles. They first have a phase in which they work on the scientific base, and then move on to subsequent technology-based development. Transforming purely scientific knowledge into a technological product requires research, feasibility, and scaling activities, for example in a biotechnology project, or one involving hardware and software development.

Another obstacle for entrepreneurial scientists is obtaining the necessary funding for the first stage of their initiative. Associated with this are the difficulties in managing this funding effectively. With very few exceptions, private investment will not appear at this stage. In general, the private investor is interested in a venture when there are already some customers or users, and with a much clearer perspective on the market opportunity.

A scientist who wants to become an entrepreneur must learn management, administration, and communication tools.

Perhaps the solution is not for the scientist to be the entrepreneur, but for the scientist to be integrated with an entrepreneur; or that the scientist - through the structure of the university - allows an entrepreneur to use that knowledge.

10.2 ENTREPRENEURIAL SKILLS

There are four key areas that need to be developed to succeed as an entrepreneur:

- entrepreneurship
- business and management
- human relations
- conceptual and relational competencies.

Entrepreneurial competencies framework

Entrepreneurship		
Identification and definition of a market niche	Development of appropriate products or services for selected enterprises	Market niche / product novelty
Idea generation	Market research	Recognising and anticipating situations to exploit opportunities
Formulating strategies to exploit opportunities		
Business and Management		
Development of the management system for the long term	Operation of the institution	Acquisition and development of resources necessary for the operation of the company
Operational business skills	Previous involvement in start ups	Management experience, skills and style
Industry and market familiarity	Financial and budgeting skills	Goal setting skills
Business plan preparation	Marketing skills	Technical skills
Industrial skills	Ability to implement strategy (develop programs, budgets, procedures, performance evaluation)	
Human Relations		
Organisational culture development	Delegation skills	Ability to motivate others individually and in groups
Hiring skills	Human relations skills	Leadership skills
Conceptual and relational competences		
Conceptual competences	Organisational skills	Interpersonal skills
Customer management skills	Mental ability to coordinate activities	Written communication skills
Oral communication skills	Decision-making skills	Analytical skills
Logical thinking skills	Negotiation skills	Commitment skills

11 EJEMPLOS DE CARRERA PROFESIONAL FUERA DE LA ACADEMIA

CASE 1. LAURA ALBA, RESTORER AT THE PRADO NATIONAL MUSEUM.

My name is Laura Alba Carcelén and since 2004 I have been working in the Restoration Department of the Prado Museum, specifically in a unit called Technical Documentation and Laboratory, where a team of restorers is working on the restoration of the works. As a senior museum technician, my contribution within this research team focuses on the study of different imaging techniques, especially radiographic techniques, for which I am responsible within the institution.

MY CAREER

I have been linked to the UCM since I began my degree in Fine Arts in 1991, where I studied the speciality of Painting Restoration, and later in 2015 I obtained my PhD with the thesis, The textile supports used by Spanish painters throughout the 17th century.

Although since I was a child, I had a certain facility for drawing and painting, I had never considered studying this career and in fact in high school I had studied science. I remember that at that time I was attracted to almost every

career, and it was my parents, especially my father, who was a chemist, who suggested that I should start studying Fine Arts. I took the entrance exam and was admitted.

The Fine Arts degree was a discovery, a possibility to develop creativity in all fields and to relate and connect different disciplines, from painting to photography, technical drawing ,or art history. When in the last years of my degree I had to choose a speciality, I opted for Painting Restoration, because it seemed to have more professional opportunities and had scientific subjects (chemistry and physics) that attracted me a lot. Once again, these two two years were exciting to see how science and the arts intermingled. The results of the analyses and studies were directly applied to the knowledge of the work of art and its state of conservation, which determined the criteria for action in our restorations.

At the end of my degree, I continued to be linked to the UCM through the doctoral program, at the same time as I began a course in X-radiography of art works, which allowed me to obtain a licence to supervise radioactive installations. During these years I was awarded a grant from the ICO Foundation (*Instituto de Crédito Oficial*) for research projects which allowed me to carry out an interesting study on the preventive conservation of contemporary works of art on wooden supports, for which I spent two years at the Museo de Arte Abstracto in Cuenca and the INIA (*Instituto Nacional de Investigaciones Agrarias*). At the end of these stays I obtained a grant from the Prado Mueum, where I was able to learn in a practical way the scientific techniques applied to the study of works of art.

After this grant I had the chance to work at the Museo Provincial de Cuenca and at the Guggenheim Museum in Bilbao where I stayed from 2002 to 2004 designing and developing several research projects on contemporary artists. It was an enriching experience as it was a young museum but based on the knowledge of American museums and equipped with the most modern and revolutionary systems of the time.

In 2000 I got married, but it was during my work at the Guggenheim that I became pregnant with my first child. In Bilbao I had an exciting, stable, and promising job, but my husband was in Madrid, so I had to resign and say goodbye. As luck would have it, when I arrived in Madrid, the Prado Museum was looking for a freelance professional to work for six months in the same department where I had enjoyed the scholarship years before. When I told them that I was pregnant, the head of the Restoration Department did not consider it a problem and hired me. Since then, I have been linked to the museum as a freelance worker and with work contracts until 2009, when a public contest was held, and I got the position.

During these years I have seen the importance of technical studies for researching and advancing in the History of Art, as they provide knowledge not only of the isolated object but also of the different artistic movements that have developed over the centuries. Therefore, one of our responsibilities is to share and disseminate this knowledge through publications, conferences and scholarship and internship programs. In my case, I also decided on my thesis subject after several years of work and after realising that there was a lack of knowledge on necessary aspects.

For this reason, we have our own lines of research within the Museum, but we also participate in European projects and are members of working groups together with many other national and international institutions. For example, in 2009, together with a telecom engineer from the University of Seville, I started a project to study the pictorial support through radiography, and thanks to our joint work, today we have software called Aracne which is used by several museums around the world, and which allows analyses that would have been unthinkable just ten years ago.

REFLECTION

Thanks to my stays and work in different museums, I have been able to see that there is a wide range of jobs in which our training is appropriate. Apart from the restoration work itself, the field of preventive conservation, technical

studies, registration of works of art, training or the movement and packaging of pieces, among others.

In addition, our training is unique for research because we combine knowledge and effort with creativity and curiosity. For example, in the field of imaging techniques, our strong point is the ability to interpret documents, not only do we obtain a good image, but through it we can understand the work of art as a whole (materials, procedures or state of conservation).

In my experience, one of the most interesting and developing fields is the application of science to the study of the work of art, and it reaches not only public and private research organisations and universities, but also private companies and small and large museums. Technology and digitisation open endless possibilities that allow old problems to be solved and new ones to be posed, on which we must reflect and try to provide solutions through study and continuous learning. institución.

CASE 2. SERAFÍN CARBALLO, FROM BIOLOGIST TO CONSULTANT.

My name is Serafín Carballo, and I am currently consulting director at PRYSMA.

It has been more than 22 years since I presented my doctoral thesis in Applied Microbiology, but I have been linked to the UCM for about 20 years as an associate professor of biotechnology.

As I said, I have a PhD in Microbiology from the UCM and before that I studied a degree in Biological Sciences at the same university, in my case "with a degree" (it is different from what with Bologna is called a graduate degree) as I presented and defended a dissertation (on the microbiology of water in reservoirs).

In the 80s, and although now it seems that things have never been so complicated, in those years, youth unemployment was tremendous, and biologists did not have many doors to knock on; perhaps that taught me to knock on all of them. As I had been lucky enough to do my thesis in water microbiology, I tried to look for a job in that field and I got it, as head of a small bottled-water and domestic ice industry in the Balearic Islands.

In this first professional experience, the clash with business reality was inevitable, given that our training in management, organisation or economic language was nil (certainly mine). If you learn by making mistakes, I certainly learned a lot on this occasion. At the end of this stage, I promised myself that one day I would learn on my own what the faculty had not been able to teach me, and so years later I studied for an MBA.

The experience was hard, but it made it much easier for me to join the quality department of a then important soft drinks company (La Casera, which at the time had more than 30 factories in Spain), which had the capacity, unlike the previous SME, to teach me many things, both technically, in terms of quality and food safety (I did my first ISO 9001 implementation there), and in terms of business.

Precisely the experience in quality audits and, above all, the first small experience with ISO 9001 made it easier for me to change to consultancy,

joining NOVOTEC CONSULTORES where in six years I made a professional career from consultant in food quality systems (also AENOR auditor in the same sector) to manager of the food area and from manager to director of the quality systems division.

As director of a division my work was less technical, but more economic and managerial, and it also helped me to tackle other fields of consultancy than just food.

After a brief stint in another company as quality manager, I joined Prysma as one of the founding partners 15 years ago, where I am the director of the consultancy division. Over the years, my technical profile has evolved, and I have continued to learn new things, so that I can now consider myself an expert in operational risks (including criminal compliance) and I have trained with scrum master and agile coach.

In between, I have continued to be an associate professor at UCM in biotechnology, although I mainly explain organisational and safety issues in bio-industries, and for 10 years I was lucky enough to be the technical director of the Quality Master of the School of Industrial Organisation; both things have given me the good fortune of having thousands of students and friends all over the world.

Throughout this journey of almost 25 years, I would argue that I have always worked as a "biologist" because I have always used the tools, but above all the skills that my teachers were able to instil in me. This, together with a pressing need for recycling and new learning, to be able to meet the demands of my clients and my colleagues.

Of course, I have had to solve difficult issues in my professional career. If everything were easy, simple, and immediate, our work would be done by a computer, but that is not the case. I think that the ability to solve problems is more linked to horizontal skills (sorry for the anglicism, the "soft skills"), because the capabilities of a person are always less than those of the team, friends, contacts, etc. Sometimes it is more important to know who has the answer to a problem than to know how to personally solve it, because there are many problems and they mutate more than viruses.

My way of giving back, at least in part, what society has done for me, is to try to ensure that my students can access the labour market with a good preparation, technical of course (I do not usually do classic exams, I am more in favour of team problem solving), but also of skills.

That is why for more than 10 years I have been giving 2-3 workshops every year, where I teach them how to look for a job, how to prepare a proper CV or how to behave in a job interview.

My poor advice to these young members of the university community starts with asking them to have passion for something, to have personal and professional goals; no matter how ambitious they are, without goals all paths are indifferent and no good. Do not forget that the concept of "profession" has been completely distorted, they are no longer looking for a degree, they are looking for a person who brings skills and abilities, not a piece of paper.

That they open up to society, to that society that emits so much information that makes it inextricable, that they adapt to that society (the other way round is not going to happen). The university is big, but the world is bigger.

Let them cultivate and improve their attitudes, which are much more important than skills. Let those attitudes help them to have, starting at university, a good network of job contacts.

And finally, no matter what happens, they should be optimistic and cheerful. No one wants to work alongside an ashen person..., no matter what reason they may have for being so.

CASO 3. MARÍA MARTÍN, CULTURAL HERITAGE RESEARCH

I am María Martín Gil, head of the Research and Training Area of the Spanish Cultural Heritage Institute, and 27 years ago I began my university studies at the UCM.

To talk about my professional career, and especially about the position I hold now, I must go back to the moment when I had to choose my university career. For many, this is a difficult moment, when you think that the decision you are going to make is going to be one of the most decisive in your life. And that is partly true, but it is also true that we all have a margin to modulate our professional field and take it towards our interests. Not forgetting the luck factor, of course, but I am one of those who believe that luck always comes with an important dose of previous work.

In my case, I had to decide between two careers that may seem very different: Chemical Sciences and Fine Arts. I was passionate about both, and I did not want to give up either, but as the choice had to be made, from a practical point of view I decided on the former, as I felt that, being more intellectual, it would be more accessible at a time when the theoretical learning method was fresher and more practised. I thoroughly enjoyed my five years at the Universidad Complutense de Madrid, and above all the years of the speciality I chose: Chemistry-Physics.

The last year I did my dissertation in computer simulation on protein folding. Those were years of deep learning, of developing the capacity for deduction, of critical analysis of a result, and of course, of method and work capacity.

As I continued my research career, the opportunity arose to prepare my doctoral thesis on materials with applications in rechargeable lithium batteries at the San Pablo-CEU University, so I devoted the next four years to inorganic chemistry. During this period came the first scientific conferences, the search for bibliography, and independence in my work.

When I was about to finish my doctorate, and in view of the difficulties in consolidating a research career, I sat a civil service competitive examination,

with a science syllabus (mainly chemistry and physics). That is how I arrived at the *Centro de Investigación y Control de la Calidad* (CICC) belonging to the then National Institute of Consumer Affairs of the then Ministry of Health and Consumer Affairs. I was linked to this centre from 2003 to 2014, carrying out different analyses and tests on consumer products to assess their compliance with the legislation that regulates them. During this period, I would highlight the work with norms and standards, as well as the interesting methodology of working in a quality system.

At the end of 2014 I joined my current position, at the *Instituto del Patrimonio Cultural de España* (IPCE), Ministry of Culture and Sport, as head of the Research and Training Area. The IPCE's task is the research, conservation, and restoration of cultural heritage assets. It is here that, in a way, I have been able to rediscover and merge the interests of my pre-university years, when I was debating between Chemistry and Fine Arts.

The IPCE brings together a truly interdisciplinary staff, as required by such a complex task as the conservation and preservation of heritage in all its facets and typologies. Thus, restorers (with their different specialities), architects, ethnologists, documentalists, chemists, physicists, biologists, geologists, and many other professionals work together according to the specific needs of the cultural assets. The main interest does not lie in a specific discipline but in the common objective of conservation, with a philosophy that is being called trans-disciplinarity.

The Research and Training Area applies techniques from the experimental sciences for a better understanding of cultural assets, from their constituent materials, the technology of creation, the agents responsible for deterioration, etc.; it advises on interventions in terms of the methodology used, or the suitability of certain materials for use in restoration; it also promotes the development of instrumentation and technology at the service of conservation and restoration. These tasks are carried out both in response to the needs of the IPCE's own restorers and in collaboration with other institutions responsible for the custody of cultural property that do not have a laboratory.

But in addition, through participation in national and international research projects.

The other pillar of the Area is training. With the aim of transferring knowledge, more than thirty training activities are organised every year. These are highly specialised activities, in which professionals from the IPCE and other institutions address relevant advances and issues in the field of heritage conservation.

My task in the Area is to manage its activity, understanding this management as coordination, mutual learning, fostering teamwork, promoting procedures, and identifying priority lines. As I said before, it is a highly interdisciplinary field, and this makes the job really interesting, because the learning process is continuous. The relationship with professionals from so many institutions, including those from the IPCE itself, is very enriching and the result of these collaborations are studies, publications, events, and other very fruitful initiatives.

There are other facets of a more institutional nature that are also interesting. To cite a few examples, I co-coordinate the National Conservation Research Plan, which establishes joint initiatives with the Autonomous Communities and other key agents in the field; I actively participate in the establishment of the European research infrastructure for heritage science (E-RIHS) as well as in its Spanish node, E-RIHS.es. I have represented the IPCE on numerous occasions in working groups such as the Inter-ministerial Group for the development of the national strategy for science, technology and innovation, or the Inter-administrative Technical Committee for the implementation of plans for the safeguarding of assets in cultural institutions, among others.

To conclude and understanding that these lines are aimed at students or recent graduates who are starting their professional career, I would like to highlight two aspects that I consider essential for success, and when I speak of success, I do not equate it with high positions on a hierarchical scale, but to enjoy the work, to consider it useful and meaningful. First of all collaboration: always being willing to learn from other colleagues, daring to think from a different point of view, having humility when it comes to and a critical spirit at the same time. Secondly, never stop dreaming, keeping goals in mind and never stop pursuing them. There will be many times when those goals will not come, and that should not be a frustration because we will be dedicated to something that is also worthwhile, but it should not blur our reference point. And in this process of searching, do not be afraid to propose an idea or a small step that will allow us to advance and grow in the indicated direction.

Good work and good luck!

CASE 4. RAFAEL FORT, RESEARCHER IN PETROLOGY AND GEOCHEMISTRY

I am Rafael Fort González, and I work as a Research Scientist at the *Consejo*

Superior de Investigaciones Científicas (CSIC). I have a degree in Geological Sciences and a PhD in Geology Economics at the UCM. One of my first professional decisions was to determine which doctoral thesis I wanted to prepare, where to do it and who would be my Thesis Director.

I joined the Petrology and Geochemistry Department of the UCM thanks to different research grants that allowed me to do my PhD thesis on topics related to mineral deposit prospecting.

During my training as a researcher, I taught different undergraduate subjects related to petrology. When I finished my thesis, I was awarded a postdoc fellowship, funded by the CSIC, joining the *Instituto de Geología Económica* (IGE), which was a joint research centre between the CSIC and the UCM. The following year I obtained a position as a Senior Scientist at the CSIC; since then I have been linked to the UCM for more than 30 years. This double link with the two most important organisations in research and teaching has allowed my personal development. The incorporation as a researcher at the CSIC meant that my teaching activity focused on postgraduate specialisation courses. There was also a change in my line of research, which focused on understanding the causes of deterioration of stone materials and searching for the most appropriate conservation techniques to increase their durability in aggressive environments.

My introduction to research in heritage conservation was an encouragement and I will always be grateful to my thesis supervisors and to the people who allowed me to enter this complicated field of research. This line of research is very much directed towards the conservation of architectural and archaeological heritage, as well as museum pieces. This change was very positive, but quite hard as I had to change my working methods and, above all, interact with professionals from other disciplines who had very different

working methods. These research has allowed me to establish the conservation methods of more than 100 emblematic monuments and archaeological sites in Spain. It has also allowed me to work with other international professionals for the conservation of UNESCO World Heritage Sites such as Machu Picchu in Peru, or the City of Petra in Jordan, or archaeological sites in Egypt, Malta, Italy, or Turkey.

The beginning of any professional career is always uncertain, but it can be achieved if you know what you want to do. In the initial steps I was taking in my research career, I saw that it was increasingly important to form a research group made up of different professionals and to have the necessary resources to carry out the research to be developed, which had to be based on basic principles of knowledge but applied to the needs of society. In this sense, the research group of Petrology Applied to Heritage Conservation is formed by researchers from the geology, archaeology, chemistry, physics, biology, materials engineering, environment, and restoration.

Another achievement of my activity, within management, was to obtain the quality certification of the Petrophysics Lab of the Institute, where I was the scientific-technical director for several years. This laboratory, specialised in non-destructive techniques for the characterisation of materials, has been fundamental for the development of the research carried out by the group and provides support for analytical work for the completion of master's theses and doctoral dissertations. The laboratory has achieved a very good

The laboratory has achieved a very good infrastructure that is a reference in research on the conservation of stone material.

My time as director of the *Instituto de Geología Económica* (IGE), between 2006 and 2011, culminated with its transformation into the *Instituto de Geociencias* (IGEO, UCM-CSIC), of which I was the first acting director, making it much more multidisciplinary and with new capabilities.

The satisfaction of my work can come in different ways. The publication of my research in internationally renowned journals gives me great joy, as they recognise the value of my work. Equally, the development of patents focused on improving the quality of materials or being a member of research commissions or editor of scientific journals.

Of all the activities, there are perhaps two that I enjoy the most. The first is providing solutions for heritage conservation. It is very comfortable when a

company or public administration asks you for help to establish how to carry out a conservation intervention, and they follow your recommendations, always based on scientific knowledge of the problem to be solved. It is in this activity that I see the greatest direct usefulness of transferring the knowledge I have gained at UCM and CSIC. The second, which I am very proud of, is the dissemination of science to society, and in this sense the constitution of what we call Geo-monumental Routes is an example of this. In these scientific routes we show society in a direct way the work we do for heritage conservation. But perhaps the greatest satisfaction is when you see that the researchers you have trained get teaching posts in other universities or are incorporated into other national and international research centres.

The future of my research is directed towards new challenges in the development of new techniques and devices for the conservation of materials used in heritage conservation using new products based on nanotechnology.

My recommendation to people who want to start their professional career is to have perseverance and to transmit energy and passion in everything you do, engaging with others so that they are enthusiastic about your ideas. It is important that you move, go abroad to see other ways of working, do not stand still, there are many opportunities that you can get.

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CASE 5. EWA PALKA, ENGLISH TEACHER

I am Ewa Palka, currently an English teacher at the *Escuela Oficial de Idiomas* in San Sebastián de los Reyes, Madrid.

I was linked to the UCM from 1996, when I started my studies in English Philology, until 2009, when I defended my doctoral thesis in Literary and Cultural Studies of English-Speaking Countries entitled "T. S. Eliot t and Metaphysical Rhetoric".

My earliest memories of the University are sharing with other students the same interests in English language and literature and having the privilege of attending lectures by several extraordinary teachers.

Also, the fourth year of my degree when I participated in the Erasmus program and spent an academic year at the University of Bielefeld, Germany, as my second language during my degree was German. It was a very enriching experience, both personally and academically. During the last year of my degree, I obtained the Collaboration Scholarship in the English Philology Department and got to know doctoral students. In 2002 I obtained the Diploma of Advanced Studies while working at the *Centro Superior de Idiomas Modernos* of the UCM as an English teacher.

The following year, I participated in an exchange program to carry out research related to my thesis at the University of Santa Barbara, California. Again, an extraordinary experience.

On my return, I was awarded a pre-doctoral fellowship for University Teacher Training. I learned a lot about organising cultural events, conferences, lecture series, had the opportunity to teach in the faculty, attend courses and conferences, and enjoyed a nine-month research stay at the University of Edinburgh as part of the European PhD. Throughout my studies, I made further short stays at American universities on scholarships, which allowed me to improve my English language skills.

Most students who go on to study for a PhD in English is because they are aiming to become university professors. Once I got the pre-doc scholarship, I realised the importance of research in a university career. At the same time, I realised that teaching, especially language teaching, was something I was simply "better at" than writing a paper. However, it was not an easy decision. One must consider the pros and cons of the two options and position oneself on the side that one is confident will provide more balance.

There are various career opportunities for PhD students: translation and interpreting, interlinguistic or intercultural mediation, work as a writer, editor or proof-reader of specialised texts, in multinationals, in the media, in national and international public administrations, literary and artistic criticism, cultural heritage and management, or a research career in the field of English studies.

At the moment,my job consists of teaching English at different levels, from A2 to C2 according to the Common European Framework. I teach adults, although my students range in age from 16 to 75 years old. Students aim to learn English for professional or study purposes. As it is non-compulsory, the students are highly motivated and there are no discipline problems.

On the other hand, being a teacher in the E.O.I. allows me to continue training in the improvement of the different language activities (Comprehension of Written and Oral Texts, Production and Coproduction of Written Texts, Production and Coproduction of Oral Texts and Written and Oral Mediation) through the training courses offered by the Community of Madrid and my own work experience.

What my current job gives me is that it allows me to combine my professional and personal life, and gives me the opportunity to continue learning, either the language itself or about the culture related to it, which is very extensive, given the number of countries in which English is the first official language. Another important aspect I like about the EEO.II. is the cooperative atmosphere among the teaching staff.

In my day-to-day life, I enjoy teaching the course content, which is very practical to be able to cope with everyday situations during a stay in the Anglo-American countries. I am also involved in the organisation and delivery of workshops and other cultural events within the school. Perhaps one way to measure success as a teacher is to see that students are motivated and pass the course, although I believe that real motivation is personal.

I believe that true motivation is personal: one learns out of necessity and awareness of one's learning. Every year I take part in the External Tests that Madrid carries out in bilingual public schools.

As for my professional future, for the moment, it is conditioned by the age of my three children. In the next 10 years, my intention is to continue in the same position. After that, I will be open to managerial positions within the EEOI or other positions related to the field of education.

My recommendation to pre-doctoral researchers is to take advantage of opportunities for exchanges and stays abroad. This will allow them to get to know other researchers closely and to collaborate with them. It will also give them the opportunity to become familiar with the functioning of a faculty and its department, the possibility to experience first-hand how the faculty works and how the course and the different academic events are organised. In addition, they will be able to deepen their knowledge of the country in which the stay takes place, its language, the local culture, people, gastronomy, and architecture.

I would also highlight the friendships that you make for life. And finally, although I do not currently work for the University, I know that all the experiences and learning that I gained from my years of training and stays abroad during my university years are directly passed on to my E.O.I. students.

CASE 6. JUAN GIL, ENTREPRENEUR IN THE IT SECTOR.

I am Juan Gil, currently CEO of Nalanda, an online documentation management portal with 300 employees and a strong component of innovation as a competitive advantage.

I did my PhD studies at the UCM between 2002 and 2008 and I am still linked to the UCM collaborating in some lectures to undergraduate and PhD students.

For me, training is a fundamental asset. I am a Telecom Engineer; later I studied an MBA at the *Instituto de Empresa* and a Master in Operations at the CEL. I completed my studies with a doctorate at the UCM, Organisation Department at the Faculty of Economics and Business Studies.

I have always had a great affinity for teaching, having worked as a teacher since I was 20 years old. When you teach, you discover the importance of rigour, research and when you present a theory that it is contrasted, citing sources, and in this sense, it was clear to me that I wanted to be a doctor.

My older sister, chairwoman of the *Asociación de Inteligencia Artificial* worldwide, studied her PhD in the United States, Carnegie Mellon University, and her passion and life dedicated to research, currently at USC in California, together with her husband, Kevin Knight, have been an inspiration for me.

In my professional career, I started at Accenture, one of the big consulting firms, carrying out studies and a lot of work in technology and innovation. At the same time, I was teaching at universities and business schools, where every self-respecting professor must complete his or her doctorate studies.

I changed jobs in the year 2000 to an internet portal and soon after the boom and the famous bubble arose, where many internet projects, the so-called ".com", closed. I felt the need to research and analyse what was going on and what was really advantageous about the internet and why so many companies had to close.

I decided to do my doctoral thesis at the UCM and I worked with great rigour to research and advance in order to clarify the advantages of electronic markets in companies. After taking the courses I started the thesis, in a first phase, I collected a lot of documentation and enjoyed reading many articles from different authors and research areas related to the internet, technologies, patents, etc.

For me it has been a very useful experience and although in other countries, as we know, research is more valued, in Spain, it is also valued and it is very useful for companies to have research departments and teams that can advance in new areas such as Blockchain, Big Data, Electronic Signature and many other technological advances, vital to increase competitiveness.

I am part of an association, AECER, where we carry out research and benchmarking of best practices in innovation and technology.

In our company, we take advantage of a lot of aid provided by the public administration for research work, where we are seeing more and more support for research work.

I want to invest in research, support new initiatives and projects in these areas of R&D&I and I try to collaborate with initiatives and universities to promote research.

I recommend students to complete their doctoral studies, it is a plus and there will be more and more demand for this knowledge. The effort is great, above all, although we all think that the deadline can be shortened, you must take on 6 years of work, which I recommend combining with teaching or research tasks to generate income and results.

I wish you the best of luck and remain at your disposal to guide your careers.

CASE 7. CONCEPCIÓN SANZ, RESEARCHER IN A SOFTWARE SME.

My name is Concepción Sanz Pineda, and I am currently working at UGROUND, in the R&D area.

All my university studies have been linked to the Universidad Complutense de Madrid, where I studied Computer Engineering and did my PhD, finishing in 2012.

My first contact with the world of research occurred in the last year of my degree, thanks to a scholarship in the Computer Architecture department. From there, the possibility arose to start a PhD in that department, which allowed me to carry out research stays at IMEC in Belgium. These stays allowed me to get to know what research was like outside the university, in a centre focused on nanoelectronics and digital technologies and which brought together researchers and PhD students from many countries.

I was able to combine my doctoral years with teaching, by getting first an FPU grant and then an assistant professor position in my department.

Personally, I consider that combining teaching and research was the right thing to do, as it allowed me to better cope with the long journey of the doctoral thesis and to get to know different work environments in detail (teaching, research, scientific publications, conferences, etc.), research, scientific publications, conferences, etc.). From a personal and from a personal and professional point of view, the doctoral stage was very enriching.

After completing my PhD, I continued to be involved in research. This time at the Universidad Politécnica de Madrid, within the framework of a project that sought to bring together companies and researchers to provide new technological solutions to business problems. In other words, to take research out of the university and bring it closer to the challenges of business.

In this project, I changed my field of research, moving from the world of hardware (computer architecture) to software (model-driven architecture).

After this experience, it was time to make the final leap to the world of business. I was looking for a job stability that I had not yet found in research.

To be honest, my first job interviews were not very promising. It seems that the profile of a person who has worked in teaching and research is not very appealing for certain jobs. Company recruiters did not see the additional skills that a researcher has, such as effort, hard work, commitment, adaptability, fast and continuous learning, etc.

Finally, the company where I have been working since 2016 gave me the opportunity to join their staff, as part of the team that develops the web platform that is deployed in all their customers. My work has been evolving and I am currently leading the development of a new work environment to accelerate the process of creating new solutions for customers.

It so happens that UGROUND is a company closely linked to research; in fact, it is one of the few software companies in Spain to obtain an ACERTA certificate in R&D, accredited by ENAC and by the Ministry of Science, Innovation, and Universities. The company has developed a new paradigm based on semantic engineering as an alternative to traditional software. This paradigm is based on a platform, developed, and patented by the company itself, which makes it possible to interpret the knowledge of each customer's business processes and generate a business solution very quickly without the need to write code.

Due to the nature of the company and its size, each employee has very specific tasks and must coordinate with the others to meet the objectives.

At the moment, I feel at ease from a work point of view. In the company I find something that is perhaps more difficult to find in the purely research field, the practical application of the work that is done.

In my case, moreover, the R&D group to which I belong is very integrated with the rest of the company, and because of the type of paradigm used, the evolution of the platform we develop is very fast and it is immediately available to customers.

In the medium term, I would love to be able to continue to grow in my current company, facing the challenges that its growth would entail. My experience at UGROUND has allowed me to see that it is also possible to find innovative and attractive projects can also be found in small companies and that, regardless of the job titles, the important thing is to have the capacity for continuous learning, adaptation and to be decisive. It is also true that the company must give you the opportunity to show that you can fit in.

Research still attracts me, but right now I value more the fact that my work is useful to others and that I feel that the effort and time I put in is useful. Even so, the work methodology applied in research is the same as the one I apply in my current position, since when developing a new tool, it is necessary to study the state of the art, see the shortcomings, the benefits, and shortcomings of what is currently available and propose a new solution to solve the problem.

So far, I have had a career path in which I have made the transition from teaching and research at university to working in a private company, through an innovation centre in Belgium and a technology centre at the Universidad Politécnica de Madrid.

All of this has allowed me to develop different professional and personal skills and has allowed me to have different visions of the world of work and research. In my case, I consider the experience in the company to be very interesting, learning to work with tighter time limits and measuring the results of the work in accordance with the results of the project according to other scales. However, if I generalise enough, my current work is not so far away from the work that a researcher can do.

I hope that in the medium term more companies will be able to see researchers as potential employees, benefiting from their knowledge, but also from their capacity for work, organisation, adaptability, and willingness to face new challenges without succumbing.

12SOURCES FOR INFORMATION

Useful tools and websites

- Career opportunities in Spain
- Career paths in Spain at a glance
- A practical guide to planning a research career in academia.
- 10 career paths for PhDs
- Professional career planning for PhDs
- A guide to climbing the academic ladder
- Career development tools for researchers
- Funding for postdoc researchers in Europe Science Europe - Survey Report (2016)
- Career guides for predocs and postdocs
- Careers in Europe. European Science Foundation document
- Transferable skills training for researchers: Supporting career development and research OECD Document (2012)
- VITAE Career Development Framework
- Research career paths in selected European countries
- How to chart the path to success as a research professional.

Useful links on human resources in research.

- OFER-TRABEC. Red Iris mailing list with job offers, grants...
- R+D+i Employment Portal of the Madrid Community Government
- Job offers of the *Consejo Superior de Investigaciones Científicas* (CSIC). Announcements of job vacancies, grants, etc.
- Euraxess
- Nature Jobs
- Researchgate
- Internship and Employment Office (*Oficina de Prácticas y Empleo* OPE)

Mentoría

UCM Mentoring Program