

Career Development Plan-Year 2

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BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS REALISED IN YEAR 1 AND EXPECTED in the coming years (half page should be sufficient):

The title of the individual project assigned to ESR9 is “**Development and implementation of a tree-ring data network for the assessment of the date and provenance of Iberian ship-timbers**”. As the title suggests, the major accomplishment of this sub-project will be the construction of a much needed dataset of long-span tree-ring chronologies from oak and pine originating from different areas in Iberia. **Major achievements of YEAR 1 in this regard have been:**

- Completion of PhD Thesis in September 2015. Title: ‘Forest history, timber supply and tree rings: a dendroarchaeological approach to the study of Iberian Cultural Heritage’. This thesis provides an overview of the current state of dendroarchaeology in the Iberian Peninsula and presents strategies for its future development and implementation in this territory. Furthermore, it illustrates the importance of the application of dendroarchaeology in the study of cultural heritage made of wood. Therefore it is a great contribution to the ForSEAdiscovery project.
- Collection of samples from 353 trees, 220 timber elements from buildings in Gipuzkoa, Segovia, Jaen and Granada, and 131 samples from shipwrecks, in collaboration with colleagues from WP3, WP2, and colleagues from the National Geographic Project in which I am also involved. The samples from living trees and historic buildings originate from key source areas that supplied timber for shipbuilding from the 16th to the 18th century, hence the selection of sites has followed the initial planning. Many of these samples have already been analysed and the rest will be concluded before May 2016 (Taking into account that I will be on maternity leave for 16 weeks from approximately December 2015 until the end of March 2016).
- Participation in dissemination and outreach activities to promote the ForSEAdiscovery project and to enhance the need to apply dendrochronology in the study of Iberian material cultural heritage.

Besides the development of chronologies, this individual project focuses on testing new methodologies, which will include both the test of other variables derived from the tree rings (e.g. blue reflectance to measure latewood density in conifers as dendroprovenancing marker,

in collaboration with ERS10) as well as statistical techniques (e.g. hierarchical analysis, fuzzy clustering, identification of disturbance events, etc.) to assess their suitability for provenancing historical timbers. During 2016, sampling campaigns will have a major focus on living trees and historic buildings in the north and centre of Spain, with some scouting actions in Portugal.

LONG-TERM CAREER OBJECTIVES (over 5 years):

1. Goals

Working towards the creation of my own research group in dendroarchaeology and dendroprovenancing at some European research institute or university. Funding options to achieve this goal are the ERC Starting Grants, the VIDI program from the Dutch Netherlands Organisation for Scientific Research (NWO), or in Spain, the Ramón y Cajal program, although I may need to strengthen my curriculum first with some post-doc program (VENI from the Dutch NWO, Juan de la Cierva or Ramón y Cajal in Spain, or the Marie Curie Individual Fellowships).

Long-term view:

- **ERC Starting Grants** aim to support up-and-coming research leaders who are about to establish a proper research team and to start conducting independent research in Europe. The scheme targets promising researchers who have the proven potential of becoming independent research leaders. It will support the creation of excellent new research teams. This program is addressed to researchers with 2-7 years of experience since completion of PhD and scientific track record showing great promise.
- **VEDI** is part of the Innovational Research Incentives Scheme from the NWO. It allows researchers who have already spent several years doing postdoctoral research to develop their own innovative lines of research, and to appoint one or more researchers. Vidi is targeted at the excellent researcher who following his/her PhD has carried out several years of research and in doing this has demonstrated the ability to generate and effect innovative ideas independently. Researchers who have obtained their PhD within the last 8 years can apply for a Vidi grant.
- **Ramón y Cajal:** *Estas ayudas van dirigidas a promover la incorporación de investigadores nacionales y extranjeros con una trayectoria destacada en centros de I+D. La selección se fundamenta en un riguroso proceso de concurrencia competitiva de los candidatos en base a sus méritos curriculares y en base a su capacidad para liderar una línea de investigación, en función de la experiencia científica y profesional así como de la independencia de su trayectoria.*

Potential funding schemes for post-doc after this employment (shorter term view):

- **VENI** is part of the Innovational Research Incentives Scheme from the NWO. This grant is meant for individual researchers who have completed their PhD within the last three years and it consists of 3-year funding (€ 250,000).

- **Juan de la Cierva-*formación***: candidates must have finished their PhD within 2 years before the application is submitted. Budget: 25.000 € gross/year. *Las solicitudes de participación las presentan los centros de I+D incluyendo en ellas a los investigadores candidatos para su incorporación a los equipos de investigación. La selección por concurrencia competitiva de los candidatos en base a sus méritos curriculares y en el historial científico-técnico del equipo de investigación en el que se quiere integrar, dando especial relevancia a los méritos relativos al investigador tutor.*
- **Marie Curie Individual Fellowships**: This action is meant to support the best, most promising individual researchers from anywhere in the world. Only experienced researchers can apply.

2. What further research activity or other training is needed to attain these goals?

In my case, I need to strengthen my curriculum towards the Humanities, as in the future I will submit my proposals to this panel. Achieving an excellent publication record focused on the multidisciplinary aspect of dendroarchaeology and methods for wood provenancing would also be mandatory to apply to any of the funding programs I consider at long-term. Additionally, proven experience supervising students also scores high, therefore I would like to include the co-supervision of Bachelor, Master or PhD students as a short term goal within my current employment period as Marie Curie ESR.

The organisation of congresses, courses and dissemination activities would strengthen my curriculum in the Humanities, as well as being the co-editor of proceedings derived from a congress. By the end of 2016 I would like to organise a workshop/congress about dendroarchaeology in the Iberian Peninsula. In 2017 I would like to participate in the organization of the final congress of the ForSEAdiscovery project in collaboration with the other fellows from WP1 and WP2.

I also need to improve my knowledge in statistical analyses and learn to use R to be able to perform analyses independently. I would like to train further in GIS (ArcGIS, QGIS) and the use of Rhino, as well as getting acquainted with isotope research and geochemistry, and gaining skills to conduct historical research.

SECONDMENTS

- May 2016: one month secondment at the University of Lampeter Trinity Saint Davis, with the objective of training in GIS and Rhino.
- Another one-month secondment will be planned, probably in 2017, in collaboration with Ana Crespo at the CSIC (dates to be decided), with different objectives still to be defined (collaboration in the organisation of the final congress, writing articles, conduct historical research, etc.).
- A third month secondment could be used to carry out the latewood density study with ESR10 in Wageningen, or could be added up to the secondment at the CSIC or could

be used for something else. We can see at a later stage how can I make the most out of this month.

SHORT-TERM OBJECTIVES (1-2 years):

1. Research results

○ Anticipated publications 2016/17:

- Domínguez-Delmás, M., Alejano-Monge, R., Wazny, T., *ready for submission*. Dendroarchaeological research on roof structures from architectural heritage in Andalusia (Spain): case studies of the Jaen cathedral and the *Colegial del Salvador* church in Seville.
- Domínguez-Delmás, M., Alonso, F., García-González, I., *in prep.* Lightnings, earthquakes and forest management: the roof structure of Segovia cathedral reveals its history through tree-ring research.
- Domínguez-Delmás, M., Van Daalen, S., Haneca, K., *in prep.* Developing oak chronologies (*Quercus sp.*) for dating historic barns in the Ancares (Western Cantabrian Mountains, NW Spain).
- Soberón Rodríguez, M., Pujol Hamelink, M., Llergo López, Y., Riera Mora, S., Juliá Bruges, R., Domínguez-Delmás, M., *in prep.* Shipwreck *Barceloneta I* - A medieval clinker-built ship in Barcelona. *International Journal for Underwater Archaeology*.
- Article about oak growth variability in the Cantabrian mountains (results *in prep.*; to be presented at the Ameridendro 2016).
- Article about sapwood statistics for oak and pine in the Iberian Peninsula (results *in prep.*).
- Article about the choir stalls of Seville cathedral (possible involvement of Germán Jiménez Montes, ESR4), (results *in prep.*).
- Article about growth releases in the Cazorla and Segura mountains in relation to historical logging events.
- Articles collaborating as coauthor.

○ Anticipated conference, workshop attendance, courses, and /or seminar presentations in 2016:

- ForSEAdiscovery workshops and courses (mandatory)
- Ameridendro 2016 (28 March – 1 April 2016)
- IKUWA VI 2016 (28 November- 2 December 2016, Australia)

2. Research Skills and techniques:

○ Training in specific new areas, or technical expertise etc:

- Statistical analyses, with special focus on multivariate techniques and the use of R
- GIS applied to field and historical data
- Use of Rhino
- Diving and sampling timbers underwater
- Geochemistry (isotopic research -strontium- and analysis of element composition in the wood)
- Analysis of biomarkers in the wood (pyrolysis, FT-IR...)

3. Research management:

○ **Fellowship or other funding applications planned (indicate name of award if known; include fellowships with entire funding periods, grants written/applied for/received, professional society presentation awards or travel awards, etc.)**

- co-applicant in awarded National Geographic Waitts Grant (Sept.2014 – Dec 2015): this project has been extended until January 2016.
- Participation in other proposals for National Geographic Foundation Waitts Grant with other ForSEAdiscovery colleagues.
- Collaboration in future applications to national and regional open calls within the working group at the USC.

4. Communication skills:

- Attendance to several courses within the Training and Teaching Innovation Program (TTIP) at the USC (including e.g., Prezi presentations, management of library facilities, etc.); this programme is updating continuously.
- Courses on scientific writing (still to be located)

5. Other professional training (course work, teaching activity):

- I would like to take in a Bachelor or Master student under supervision.
- Courses and seminars organized within the ForSEAdiscovery project
- If possible, teaching of interactive lessons at the Department of Botany (USC)

6. Anticipated networking opportunities

- ForSEAdiscovery network meetings
- Meetings with archaeologists, building historians, foresters, restorers and architects from private and public institutes in Spain, Portugal and abroad to promote the project, and to get access to research objects.
- Attendance to congresses on different disciplines (underwater archaeology, history and dendrochronology).

7. Other activities (community, etc) with professional relevance:

- Dissemination and outreach activities organized in cooperation with town halls, museums, schools, professional associations of archaeologists, restorers, etc. (still to be planned).

Date & Signature of fellow:

Date & Signature of supervisor



7 November 2015