

Hugo Rafael Oliveira

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Nationality: Portuguese

Date of Birth: 13/07/1980

Education

- 2007-2011** University of Cambridge (UK). PhD Degree in **Archaeology** (Wolfson College and Department of Archaeology).
Title of thesis: Archaeogenetics and the spread of agriculture in the Iberian Peninsula and Northwest Africa: a study of genetic variation within diploid and tetraploid wheats.
- 2006-2007** University of Cambridge (UK). MPhil Degree in **Archaeological Research**
Final classification of *Distinction*.
- 1999-2003** University of Minho (Portugal). BSc Degree in **Applied Biology** (4 years – pre-Bologna BSc degree). Final classification of 16 (range from a minimum of 0 to a maximum of 20) (1st class).
- 2013** Faculty of Economics, University of Porto (Portugal). Master's Degree in **Environmental Economics and Management** (*unfinished*).

Professional Experience

April 2019 – Present

Assistant Researcher at ICAREHB, University of Algarve, Faro, Portugal.

- Genomics of legume domestication
- CEEC-2017 Contract. Project OWLDER.

October 2018

Bluebook Trainee at the European Commission (DG-SANTE), Grange, Ireland.

- Implementation of the Directive 2009/128/EC on the sustainable use of pesticides.
- Administrative work, national action plans analysis.

June 2015 – September 2018

Post-doctoral research associate at Manchester Institute of Biotechnology, The University of Manchester, Manchester, UK.

- Genomics and phenomics of wheat domestication
- Genome analysis (GBS, Axiom SNP arrays, shot-gun sequencing, genome annotation).
- Cereal phenomics (collaboration initiated by me with IBERS-Aberystwyth University).
- ERC-ADAPT project (supervised by Terry A. Brown).

June 2013 – May 2015

Post-doctoral research associate at CIBIO (Research Centre in Biodiversity and Genetic Resources), Vairão, Portugal.

- Genomics of plant domestication
- Temporal changes in agro-bio-diversity, environmental archaeology.
- Legume genetics (collaboration initiated by me with ISA-University of Lisbon).

January 2012 – May 2013

Research Associate at Nordiska Museet-Stockholm / IFM-Linköping University, Sweden.

- Genomic analysis of traditional varieties and museum collections (19th century) of rye.
- Applications of high-throughput genomic technologies to study crop evolution.
- Public outreach activities and research funding application.
- Supervised by Matti Leino (Nordiska Museet) and Jenny Hagenblad (Linköping University)

November 2010 – December 2011

Research Associate at McDonald Institute for Archaeological Research, University of Cambridge / National Institute for Agricultural Research (NIAB), UK.

- Genomic analysis of historic and modern wheat varieties (KASPar SNP assay).
- Development and application of genome-wide SNP markers in wheat traditional varieties.
- Collaboration (initiated by me) with CSIC, Madrid.
- Supervised by Diane Lister (Cambridge University) and Fiona Leigh (NIAB, UK).

April 2005 – February 2006

Research Associate at the Portuguese Institute of Archaeology, Lisbon, Portugal

- Palaeoclimate and palaeovegetation reconstruction.
- Identification of wood, charcoal and seed remains.

November 2003 – March 2005

Research Technician with the R&D project HERBAROM. Department of Biology, University of Minho, Braga, Portugal.

- Use of analytical chemistry for optimising the processing/packaging of herbal tea species.
- Use of MS-gas chromatography and HPLC for the identification/quantification of compounds in mint, lemon balm, sage and lavender essential oils.

February 2003 – October 2003

Research Trainee. Institute for Molecular and Cell Biology, University of Porto, Portugal.

- Study of gene expression of cell wall proteins in the model plant *Arabidopsis thaliana*.
- Molecular biology techniques: bioinformatics, RT-PCR, immunochemistry, fluorescence microscopy, plant tissue culture.

Publications

Hughes N, **Oliveira HR**, Fradgley N, Corke F, Cockram J, Doonan JH, Nibau C. 2019. μ CT trait analysis reveals morphometric differences between domesticated temperate small grain cereals and their wild relatives. *The Plant Journal* (<https://doi.org/10.1111/tbj.14312>).

Larsson P, **Oliveira HR**, Lundström M, Hagenblad J, Lagerås P, Leino MW. 2019. Population genetic structure in Fennoscandian landrace rye (*Secale cereale* L.) spanning 350 years. *Genetic Resources and Crop Evolution* (DOI: 10.1007/s10722-019-00770-0).

Lister DL, Jones H, **Oliveira HR** et al. (2018) Barley heads east: Genetic analyses reveal routes of spread through diverse Eurasian landscapes. *PLoS One* 13(7): e0196652.

Hunt HV, **Oliveira HR**, Lister DLL, Clarke AC, Przelomska NAS (2019) The Geography of Crop Origins and Domestication: Changing Paradigms from Evolutionary Genetics. In Lightfoot E, Fuller DQ and Liu X (eds): *Far from the Hearth: Essays in Honour of Martin K Jones*. Cambridge, McDonald Institute Monographs.

Monteiro F, Vidigal P, Barros AB, Monteiro A, **Oliveira HR**, Viegas W (2016) Genetic distinctiveness of rye in situ accessions from Portugal unveils a new hotspot of unexplored genetic resources. *Front. Plant Sci.* 7:1334.

Oliveira HR et al (2016) Genetic Diversity and Population Structure in *Vicia faba* L. Landraces and Wild Related Species Assessed by Nuclear SSRs. *PLoS One* 11(5): e0154801.

Tomás D, Dias AL, Silva M, **Oliveira HR**, Suso MJ, Viegas W, Veloso MM (2016) Genetic Diversity Assessment of Portuguese Cultivated *Vicia faba* L. through IRAP Markers. *Diversity* 8(2): 8.

Hagenblad J*, **Oliveira HR***, et al (2016) Geographical distribution of genetic diversity in *Secale* landrace and wild accessions. *BMC Plant Biology* 16: 23 (*these authors contributed equally).

Oliveira HR et al (2014) Wheat in the Mediterranean revisited – tetraploid wheat landraces assessed with elite bread wheat Single Nucleotide Polymorphism markers. *BMC Genetics* 15:54.

Brown TA, Cappellini E, Kistler L, Lister DL, **Oliveira HR**, Wales N, Schlumbaum A (2015) Recent advances in ancient DNA research and their implications for archaeobotany. *Vegetation History and Archaeobotany* 24:207-214.

Oliveira HR (2015) Wheat. In: Mary C. Beaudry and Karen Metheny (eds.) *The Archaeology of Food: an encyclopedia*. Rowman & Littlefield, Lanham MD, USA.

Oliveira HR (2015) Rye. In: Mary C. Beaudry and Karen Metheny (eds.) *The Archaeology of Food: an encyclopedia*. Rowman & Littlefield, Lanham MD, USA.

Leigh FJ, Mackay I, **Oliveira HR**, et al (2013) Using diversity of the chloroplast genome to examine evolutionary history of wheat species. *Genetic Resources and Crop Evolution* 60: 1831-1842.

Leigh FJ, **Oliveira HR**, et al (2013) Remnant genetic diversity detected in an ancient crop: *T. dicoccum* landraces from Asturias, Spain. *Genetic Resources and Crop Evolution* 60:355–365.

Oliveira HR, et al (2012) Tetraploid wheat landraces in the Mediterranean basin: taxonomy, evolution and genetic diversity. *PLoS One* 7(5): e37063.

Oliveira HR, et al (2012) Ancient DNA in archaeological wheat grains: preservation conditions and the study of pre-Hispanic agriculture on the island of Gran Canaria (Spain). *Journal of Archaeological Science* 39(4): 828-835.

Oliveira HR (2012) Book Review: *Biomolecular Archaeology, an introduction*. *Cambridge Archaeological Journal* 22.2: 306-07.

Oliveira HR, et al (2011) Phylogeography of einkorn landraces in the Mediterranean basin and Central Europe. *Archaeological and Anthropological Sciences* 3:327–341.

Oliveira HR, et al (2011) Phylogeography of cereal landraces and the spread of agriculture in Northwest Africa. In Ahmed G. Fahmy, S. Kahlheber & A.C. D'Andrea (Eds.). *Windows on the African Past. Current Approaches to African Archaeobotany*. pp. 167-174. Frankfurt. Africa Magna/ Verlag. ISBN: 978-3-937248-32-5.

Oliveira H (2008) *Molecular Biology and the Human Past: a theory of archaeogenetics*. *Archaeological Review from Cambridge Vol. 23.1*. Cambridge.

Pereira L, Coimbra S, **Oliveira H**, et al (2006) Expression of arabinogalactan protein genes in pollen tubes of *Arabidopsis thaliana*. *Planta*, 223(2):374-80.

Peer-review Experience

Referee for several research papers submitted to *Journal of Archaeological Science* and *African Journal of Biotechnology*.

Teaching Experience & Public Outreach

- Supervisor of the *Evolution & Behaviour* course (**Natural Sciences Tripos**, part IA, University of Cambridge) in assistance of Prof. Christopher Howe, Prof. John Grant and Dr. Beverly Glover (2008, 2009 and 2010).
- Supervisor of the *Archaeological Sciences* course (**Anthropology & Archaeology Tripos**, part IIA, University of Cambridge) in assistance of Dr. Harriet Hunt and Dr. Mim Bower (2010).
- Participation in the organisation of Cambridge Science Festival in 2007, 2008 and 2010 (Cambridge, UK).

Grants / Awards

- CEEC-2017 – Concurso de Estímulo ao Emprego Científico, FCT, Portugal – 6 year contract as Associate Researcher, University of Algarve, Faro, Portugal.
- BBSRC- Pilot Experiment Funding for a Phenomics Project at the National Plant Phenomics Centre-Aberystwyth University, October 2016.
- Post-doctoral Stipend, Sven och Lilly Lawskis Fond för Naturvetenskaplig Forskning, May 2012 (480,000 SEK).
- Research Fund, KVA Forskningsstipendium, December 2012 (90,000 SEK).
- Research Fund, Helge Ax:Son Johnsons Stiftelse. June 2013 (50,000 SEK).

- **Research Fund**, Helge Ax:Son Johnsons Stiftelse. June 2012 (50,000 SEK).
- **Post-Doctoral Grant**, Isaac Newton Trust, March 2011 (£ 8,400).
- **Research Technician Grant** for the ERC-funded AGRWESTMED project, September 2010.
- **ERC project** ref 230561 - collaborator in the redaction of the project (AGRIWESTMED), 2009 (1,545,169 €).
- **PhD grant**, Portuguese Science and Technology Foundation, Ref: (SFRH/BD/21748/2005). January 2006.
- **Summer School Participation Grant**, EARTH, attributed by the European Research Council. August 2008.
- **School Merit Award**. University of Minho. 2001 and 2002.

Courses, Conferences and Seminars

- **Population Genomics Workshop (NERC)** (Sheffield University, UK, January, 2017).
- **7th International Symposium on Biomolecular Archaeology** (Oxford, UK, September 2016)
- **Genetic Data Analysis using R (GDAR) course** (Cumbriae, Scotland, August 2016).
- **17th Symposium of the International Work Group for Palaeoethnobotany (IWGP)** (Paris, France, June 2016).
- **Invited Speaker at the George-Pitt Rivers Seminar Series** (Cambridge, UK, June 2014).
- **3rd Conference on Plant Genome Evolution** (Amsterdam, Netherlands, September 2015).
- **Invited Speaker at the Café com Ciência-Serralves Museum Seminar Series** (Porto, Portugal, Maio 2015).
- **1st EPPN Plant Phenomics Winter School**. National Plant Phenomics Centre (Aberystwyth, UK, March 2015).
- **Invited Speaker at the N.K. Vavilov Seminar Series**, IPK (Gatersleben, Germany, October 2014).
- **16th Symposium of the IWGP** (Thessaloniki, Greece, June 2013).
- **5th Archaeozoology and Genetics ICAZ Working Group** (Basel, Switzerland, June 2012).
- **15th Symposium of the IWGP** (Wilhemshaven, Germany, June 2010).
- **6th International Workshop for African Archaeobotany** (Helwan University, Cairo, Egypt, June 2009).
- **Invited Speaker at the National Museum of Archaeology** (Lisbon, Portugal, October 2009).
- **EARTH Programme Summer School** (Proaza, Spain, August 2008).

Research Skills

- **High-throughput genomic technologies** (Illumina GoldenGate and KASP SNP genotyping system; SSR analysis, GeneMapper).
- **Next-Generation-Sequencing** methods (library preparation, Illumina platforms, GBS, shotgun sequencing).
- **Ancient DNA** methods.
- **Bioinformatics** (Basic R, Linux and Python programming skills, Geneious, GWAS, BLAST, MEGA, STRUCTURE).
- Statistical knowledge and Intermediate knowledge of **statistical packages** (R, SPSS).
- Basic knowledge of **mapping methods** (ArcGIS)
- Basic knowledge of **photo edition packages** (Adobe Illustrator, Photoshop).
- **Archaeobotany** methods (identification of wood and cereal grain remains).
- **Analytical Chemistry** methods (HPLC, MS-GC).
- **Biochemistry** (SDS-PAGE, immunochemistry) and **Microscopy** methods (light, fluorescence, SEM).
- Basic knowledge of **archaeological excavation methods** (2009 campaign at the Muge Shell Middens site, directed by Nuno Bicho; 2006 campaign at the Gruta da Oliveira site, directed by João Zilhão).

Additional Skills

Languages:

Portuguese: native speaker.
English: Fluent (**British Council IELTS score of 7.5** in January 2006).
Spanish: Fluent in understanding, reading, and speaking levels.
French: Reasonable in understanding, reading, writing and speaking levels.
Swedish: Basic level.

Administration Skills:

- Management of own research projects and assistance in team managed projects
- Representative of the Applied Biology Students in the University of Minho School of Sciences Council Board.

- Technical Skills:**
- Yachtmaster Navigational Theory Course (Cambridge University Yachting Society).
 - BSAC Ocean Diver Qualification.
 - First-Aid Course Certificated by the Red Cross (September 2005).
 - Driving Licence – class B.
 - Hobbies: guitar playing, football, literature.

References

- Prof. Martin K. Jones
(PhD Supervisor) George Pitt-Rivers Professor of Archaeological Science
Faculty Building, Downing Street, Cambridge CB2 3DZ. UK
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- Dr. Leonor Peña-Chocarro
(Collaborator) Vice-director of the Spanish School of Archaeology in Rome
Via de S. Eufemia 13-00187 Rome. Italy
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- Prof. Terence A. Brown
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