



AYUDAS RAMÓN Y CAJAL CONVOCATORIA 2015

Turno de acceso general

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Título:

Skin Neglected Tropical Diseases: Evaluation of Diagnostic and Therapeutic Tools and Strategies for Disease Eradication

Resumen de la Memoria:

Skin problems are among the most common diseases in tropical areas and are associated with high disability and mortality rates. Based on the belief that medical research is a powerful tool to improve health in developing countries, along with a genuine interest about infectious diseases of the skin, my research throughout the last 6 years has been focused on the development of diagnostic and therapeutic solutions to control and eradicate skin neglected tropical diseases, particularly yaws which is a chronic and debilitating bacterial infection that affects the skin and bones. That interest led me to travel to the Lihir Research Centre in Papua New Guinea where I worked for 2 years as a pre-doctoral researcher, and 3 years and 6 months as a post-doctoral researcher and principal investigator.

During my pre-doctoral research period I conducted a randomized trial that revealed that single-dose oral azithromycin was effective to cure yaws and is easier and safer to administer as compared to the standard treatment with injectable penicillin. Accordingly the World Health Organization (WHO) changed the treatment policies to recommend the use of azithromycin as the first-line treatment for yaws.

In recent years, my efforts as a post-doctoral fellow have been directed to investigate new strategies to control and eradicate yaws. I have done research to demonstrate the feasibility of yaws eradication using mass antibiotic treatment, and to measure the risks of emergence of antibiotic resistant bacteria. The new evidence on the efficacy of mass treatment for yaws have stimulated WHO to launch a new eradication campaign to achieve world-wide eradication by 2020.

The research work I have done within this project has allowed me to contribute with the validation of new diagnostic tools, including a point-of-care test for confirmation of yaws that can be used in a resource limited setting, and a molecular tests to identify other causative agents of skin ulcer in children (e.g. *Haemophilus ducreyi*). I have also been investigating on the true burden of yaws skin ulcers in all currently-endemic countries, as a coordinator and researcher of a multi-national collaborative project aimed at addressing epidemiological gaps on yaws.

My current interests include the development of integrated surveillance strategies for skin NTDs (Yaws, *H. ducreyi*, Buruli ulcer, leprosy and scabies) and new public health approaches for diseases elimination with the use of drugs including Malaria. I am currently involved in clinical trials for the development of new tools to eliminate malaria

Resumen del Currículum Vitae:

In 2010 after I completed my residency in Internal Medicine (Barcelona, 2010), and a Diploma of Hygiene & Tropical Medicine (London, 2010) my interest on infectious diseases of poverty led me to join a Global Health Research group with a focus on strategies to control neglected tropical diseases of the skin.

I worked as a pre-doctoral researcher during 2 years at the Lihir Research Centre in Papua New Guinea. I conducted research on the diagnosis and treatment of yaws, a chronic, debilitating bacterial infection that presents with skin ulcers and bone deformities. I was the on-site coordinator of a randomized clinical trial for the treatment of yaws with oral azithromycin, and I completed several descriptive studies on skin neglected diseases (e.g. yaws, filariasis and nocardiosis).

In 2012 I completed the writing up of the studies I had conducted in the previous 2 years and I defended my doctoral thesis at the University of Barcelona. In June 2012 I was awarded a PhD in medicine with special award for the degree. Then I travelled back to PNG where I spent 3 years and 6 months working as a post-doctoral researcher and principal investigator in several projects with the Lihir Research Centre.

As a lead investigator I have had research grants totaling more than \$620 thousand USD since 2012. I have participated in other projects that received more than \$300 thousand USD as a co-investigator. I have secured funding mainly from non-competitive calls from foundations like Medicines for Malaria Venture (MMV), and business companies like the Chembio Diagnostics and Newcrest Mining.

In the post-doctoral period I have participated with several international research groups from the US and the UK and I have coordinated



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and led the implementation of 4 international research projects. I have been the Lead Investigator the following projects: (1) pilot project on mass treatment with azithromycin to demonstrate the feasibility of yaws eradication (NEJM, 2015); (2) development of new diagnostic tools for yaws (Lancet GH, 2013); (3) discovery of a new causative agent of tropical ulcers (Lancet GH, 2014); (4) epidemiological review on yaws working with programme managers from 12 countries (Lancet GH 2014).

I have experience with publication in high impact journals. Specifically I participated in 24 scientific papers, in 23 of them as a first, second or last author. I have also participated in 5 international chapters of books and I have presented 5 communications at international conferences. The publication of some of my studies prompted WHO to develop a new strategy to eradicate yaws worldwide by 2020 and I sit on expert committees of WHO and provide technical advice on yaws to their Department of NTDs.

I currently work at both the Lihir Research Centre (LRC) in Papua New Guinea, as a post-doctoral researcher since 2012 and the Barcelona Institute for Global Health (ISGlobal), as an assistant professor since 2013. At ISGlobal I am lecturing at the Master of Global Health where I have supervised 4 Masters final papers. Currently I am supervising 2 PhD students who are expected to present their thesis in 2016/2017.



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Título:

Air pollution exposure on cardiovascular health

Resumen de la Memoria:

Since finishing my doctoral training in 2006, I have been directing my own research with minimal supervision. I was initially awarded a competitive NIH post-doctoral fellowship, then began as a lecturer at LSHTM on an Economic and Social Research Council early career fellowship. I was a co-Investigator on a Department of Health project for which I led the scientific coordination and supervised three other researchers. I was the Principle Investigator for LSHTM on a recently completed large collaborative project investigating the health effects of traffic noise and air pollution on a range of health outcomes. Finally, I was awarded an ERC starting grant for a complex project involving extensive fieldwork in India. The project began in January 2015 and field work is more than half completed. In addition to directing the overall project and coordination of teams in India, US, and Spain, I am directly supervising three researchers at CREAL.

Much of my research has focused on the health effects of air pollution, a pervasive driver of ill health. Air pollution from household combustion of solid fuel and outdoor sources are ranked the 2nd and 8th most important contributors to ill health globally according to recent Global Burden of Disease Study estimates.

I have established several productive international research collaborations. I am actively collaborating with the Public Health Foundation of India, Sri Ramachandra University (Chennai, India), and Julian Marshall at the University of Minnesota, USA on the ERC project. I am also developing a collaboration with Tata Memorial Hospital (Mumbai, India) and the International Agency for Research on Cancer for further work in India. I continue to collaborate with researchers in the UK at LSHTM as well as University College London (UCL). I have collaborated with researchers from the Whitehall II study as part of my ESRC fellowship and the Department of Health project as well as research on the link between air pollution and cognitive function. Further collaboration is planned with the Whitehall II study from my new position at CREAL. I also collaborate closely with environmental health scientists at King's College London, Imperial, and St. George's through the MRC-PHE Centre for Environment and Health.

My research on the London congestion charge and survival following a heart attack for those more exposed to air pollution received wide media attention. The former provided useful information for policy makers on the impacts of a local traffic management scheme on health and health inequalities. The latter is likely to have raised awareness among clinical audiences of the link between air pollution and outcomes following a heart attack.

Going forward, I plan to further develop my program of research on the influence of environment on human health with a global perspective and to grow my research group in this area at CREAL.

Resumen del Currículum Vitae:

My aspiration is to conduct world class academic research on the influence of environment on human health with a global perspective.

My doctoral research made important contributions to the field of environmental epidemiology, particularly in the development and application of state of the art particle exposure modeling. Following my doctoral degree, I was awarded two highly competitive fellowships, allowing me to direct my own program of work early on and begin developing research leadership skills (e.g. supervising other researchers and PhD students). My publication record reflects both depth in expertise in air pollution epidemiology, having published in the highest impact environmental epidemiology journals (Environmental Health Perspectives, Epidemiology) as well as breadth. I have published in high impact medical journals on health inequalities (Circulation) and the health benefits of strategies to mitigate climate change (Lancet).

My research on the health effects of traffic air and noise pollution in the UK included the first publication relating road traffic noise with all-cause mortality (Eur Heart Journal 2015) and a cutting-edge exposure model of particulate matter integrating information on toxicity (Environ Sci Technol 2012).

The primary focus of my current research is the link between particulate air pollution and risk of cardiovascular disease in rural South India. Air pollution has considerable variability in this setting, including high concentrations for which direct epidemiological evidence of health effects is limited. I was awarded a highly competitive European Research Council (ERC) starting grant to 1) characterize in-depth the exposure of a cohort of adults to particulate air pollution from household and outdoor sources 2) integrate information from GPS, wearable cameras and continuous measurements of personal exposure to particles to understand where and through which activities



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people are most exposed to particles and 3) quantify the association between particulate air pollution and markers of cardiovascular disease.



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Título:

Medicina personalizada en cáncer de próstata

Resumen de la Memoria:

I graduated in Medicine in 2001 and obtained my PhD from Universidad de Málaga. I also trained as Medical Oncologist at Hospital Universitario de Málaga whilst developing a PhD in Molecular Pathology of Hodgkin's Lymphoma.

After completing my oncology and pre-doctoral training in 2006, I moved to the The Institute of Cancer Research & The Royal Marsden Hospital NHS foundation trust (UK) to train as clinician scientist under Professors Johann de Bono. My initial post-doctoral work was focused in developing the methodologies for isolation and characterisation of circulating tumoral cells and the molecular characterization of castration resistant prostate cancers (CRPC), where I led or co-authored several seminal papers. I also completed a second post-doctoral under Prof. Colin Cooper and Dr. Janet Shipley focusing in ETS rearrangements and DNA repair whilst I continued working in Prostate Cancer Biomarkers. At this comprehensive cancer centre, I complemented my laboratory training with a clinical fellowship at the Drug Development and Prostate Cancer Units, where I was involved in more than 100 Phase I, II and III trials including those of the novel active drugs abiraterone, enzalutamide, cabazitaxel, figitumumab and olaparib.

In September 2012, I was awarded an Ayuda de Investigación Oncológica. Modalidad de Retorno from Asociación Española Contra el Cáncer and I moved back to Spain to create and lead the Prostate Cancer Clinical Research Unit at the Spanish National Cancer Research Centre (CNIO) with the support of Fundación CRIS contra el cáncer. In 2013, I was awarded a grant from Fondo de Investigación Sanitaria (FIS) and in 2014 a grant from the prostate Cancer Foundation (Santa Mónica, CA, US)

Our current research is focused in:

- 1) DNA repair in Prostate Cancer. In this area we started studying how prostate cancer associated to mutations in BRCA1 and BRCA2 were associated to poor prognosis and worse outcomes after standard treatments. These findings has been already published in J Clin Oncol 2013 and Eur Urol 2015 (Olmos senior/corresponding author), and have already impact in the recommendations guidelines of the American Genetic Society and the National Cancer Comprehensive Network for Prostate Cancer genetic screening. Then we have started to study the impact of other DNA repair genes defects in prostate cancer outcomes as well as the molecular characteristics associated to this tumours, work supported by a grant from Fondo de Investigaciones Sanitarias. In addition, we are also studying the interplay between the Androgen Receptor pathway and DNA repair in prostate cancer oncogenesis and progression (in this case supported by a grant from Prostate Cancer Foundation US).
- 2) Circulating Nucleic Acids as Biomarkers in Castration-Resistant Prostate Cancer. I have worked extensively in this area, initially as post-doc using Circulating Tumour Cells as surrogate tumour tissue for genomic analyses and the whole Blood RNA expression to profile host-cancer response and circulating Tumour cells profiling. This work has yield to several highly cited publications in first decile journal. More recently, we have started to work in cfDNA and exosomes as alternative source to analyse DNA and RNA clonal dynamics in Metastatic Castration Resistant Prostate to identify genomic markers with prognostic and predictive value for these patients.

Resumen del Currículum Vitae:

I hold the following University degrees:

- Bachelor in Medicine and Surgery, Medicine School, Universidad de Málaga
- Certificate of speciality training in Medical Oncology, Hospital Universitario Virgen de la Victoria
- Doctor in Medicine, Universidad de Málaga
- University Diploma in Statistics, Universidad Autónoma de Barcelona
- Master Degree in Research Methodology, Univ. Autónoma de Barcelona

I have had the following appoints:

- specialist Register in Medical Oncology (MIR), Hosp. Univ. Virgen de la Victoria Jun'02- Jun'06
- Pre-doctoral student, onco-pathology program, Univ. de Málaga Sep'02-Sep'06
- Post-doctoral researcher, Institute of cancer Research Sep'06-Sep'12
- Clinical Research fellow and assistant physician, Royal Marsden Hospital Sep'06-Sep'12
- Team Leader, prostate cancer research unit, Spanish National Cancer Research Centre since Sep'12

I have lead or participated in several national and international projects and presented my research in over 60 communications at national



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and international conferences, being an invited speaker on several occasions. I have been part of the Scientific Committee of the European Society of Medical Oncology Congress in 2012, 2014 and have been selected for 2016 and 2017 committees. I am a faculty member of the ESMO-AACR- ECCO-EORTC Workshop on Methods in Clinical Cancer Research since 2013.

My scientific production includes 85 articles, 60 of them published in peer-review journals in the first quartile/decile of their area of expertise. I am the first author of 21 of them and the senior and corresponding author of 7 and 4 papers, respectively. The cumulative impact factor of my publications is 600.159 and have received 4136 citations. In January 2016, my H-Index is 30.

Five publication highlights in my career included the following highly cited manuscript in first decile journals:

- Olmos et al. Safety, pharmacokinetics, and preliminary activity of the anti-IGF-1R antibody figitumumab in patients with sarcoma and Ewing's sarcoma: a phase 1 expansion cohort study. *Lancet Oncol.* 2010;11:129-35.
- Olmos et al. Patient selection for oncology phase I trials: a multi-institutional study of prognostic factors. *J Clin Oncol.* 2012;30:996-1004
- Olmos et al. Circulating tumour cell (CTC) counts as intermediate end points in castration-resistant prostate cancer (CRPC): a single-centre experience. *Ann Oncol.* 2009 Jan;20(1):27-33
- Olmos et al. Prognostic value of blood mRNA expression signatures in castration-resistant prostate cancer: a prospective, two-stage study. *Lancet Oncol.* 2012;13:1114-24
- Castro et al (Olmos corresponding). Germline BRCA mutations are associated with higher risk of nodal involvement, distant metastasis, and poor survival outcomes in prostate cancer. *J Clin Oncol.* 2013; 31:1748-57

I have received several career grants and awards including an ESMO Research Fellowship (2006-2007), two SEOM Research Fellowships (2013, 2009), a GSK-AACR scholarship (2008), four ASCO merit awards (2008, 2009 and 2010), three ESMO merit awards (2008, 2010 and 2012), ♦Ayuda de Investigación Oncológica. Modalidad de retorno♦ from Asociación Española Contra el Cáncer (2012), "Juan Letona" Translational Medicine Research Award (2013), the Prostate Cancer Foundation Young Investigator Award (2014) and the Astra-Zeneca Foundation Award for Young Researchers in Oncology (2015).