Eva Bugallo Blanco

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Research interests

I am an early career researcher with a passion for translational research, having worked in neuroscience, synthetic biology and childhood cancer for the last two years. I am eager to pursue a cancer-related PhD to further enrich my skills and conduct impactful research.

Key Skills

- Broad spectrum of technical and transferable skills, for example *in situ* hybridisation in mouse brain, CAR-T cell production and flow cytometry.
- Strong ability to design, plan and execute experiments, achieved Distinction in all projects.
- Excellent written and verbal communication skills.

Education

Imperial College London *(October 2016 – September 2017)*

MRes in Molecular and Cellular Biosciences

- **Distinction** award
- Master's theses: **"**Characterization of recombinant proteins in mammalian cells", "Role of GABAergic neurons in thermoregulation and sleep" and "Analysis of the hetero-hexamer HrpRS that regulates the Type III Secretion System in *Pseudomonas syringae pv.* Tomato DC3000"

University of Melbourne, Australia *(July 2015 – June 2016)*

One-year student exchange programme
4th year bachelor in biotechnology

- **First class** (9.13 out of 10)
- Dissertation: "Oligonucleotide RNA Targeting: A Novel Therapy for Treating Friedreich's Ataxia"

University of Salamanca, Spain *(September 2012 – June 2015)*

First three years of a 4-year bachelor in biotechnology

- Second-class, upper division (7.12 out of 10)

Research Experience

Research Assistant, UCL Institute of Child Health *(January 2018 – present)*

Main project: Generation of panel of O-Acetyl-GD2-specific antibodies for development of immunotherapies targeting neuroblastoma.

- Functional testing of expression vectors for immunization by transient transfection and retroviral transduction of 293T and human Hap 1 cell lines, respectively. Detection through flow cytometry.
- Validation of reference cell lines for antibody panning.
- Production and purification of O-Acetyl-GD2-specific antibody.
- Flow cytometry and western blotting.

Contributing to additional projects:

- Functional testing of an existing GD2-specific chimeric antigen receptor targeting childhood brain tumour DIPG.
- Generating of single cell suspensions from fresh tumour samples to assess for candidate target antigen expression using scRNAseq.

MRes Research Student, Imperial College London *(October 2016 – September 2017)*

"Characterization of recombinant proteins in mammalian cells" (Synthetic biology)

- Cloning industrially relevant difficult-to-express proteins (biologics).
- Transfection of GSKO mammalian cells, measurement of cell viability.
- Analysis of reporter gene expression levels by flow cytometry.

"Role of GABAergic neurons in thermoregulation and sleep" (Neurosciences)

- Analysis of the role GABAergic and Glutamatergic neurons in the neural circuitry of sleep.
- Protocol optimization for PACAP and BDNF chromogenic *in situ* hybridization.
- Protocol optimization for PACAP fluorescent *in situ* hybridization.
- Wide field and fluorescence microscopy imaging and analysis with Fiji software.

"Analysis of the hetero-hexamer HrpRS that regulates the Type III Secretion System in *Pseudomonas syringae pv.* Tomato DC3000" (Synthetic biology)

- Cloning and mutating the industrially relevant hetero-hexamer HrpRS in *P. syringae.*
- *In vivo* studies: bacterial two-hybrid system, transcription reporter and β-galactosidase assays.
- *In vitro* studies: protein purification *via* fast protein liquid chromatography, complex assembly through gel filtration and native SDS-PAGE gels, and DNA Electrophoretic Mobility Shift Assay.

BSc Research Student, Centre for Neural Engineering, University of Melbourne, Australia *(March 2016 – June 2016)*

"Oligonucleotide RNA Targeting: A Novel Therapy for Treating Friedreich's Ataxia" (Neurosciences)

- Stem cell culture, neural induction for neurosphere formation and differentiation into sensory neurons
- Oligonucleotide treatment, Q-PCR to measure drug levels after treatment.
- Immunostaining and confocal microscopy imaging.

Languages

- Native Spanish.
- Full proficiency in English.

Laboratory skills

Molecular biology techniques

Production

- Vector and primers design, digestions, ligations, PCR, real time PCR and qPCR.
- Cloning: transformation, DNA gel analysis, DNA purification (mini-, maxi-, giga-preps).

Protein Separation

- Electrophoresis: agarose gel, SDS-PAGE and native gels.
- Chromatography: paper, High Performance Liquid Chromatography (HPLC), Fast Protein Liquid Chromatography (FPLC).
- Western Blot.

Detection

- Immunohistochemistry.
- Chromogenic and fluorescence *in situ* hybridization.
- Microscopy: light, fluorescent and wide field.
- Flow cytometry including multi-parameter immunophenotyping and CFSE dilution assay.

Cell biology skills

Cell culture

- Ficolling for peripheral blood mononuclear cell PBMC isolation.
- Maintenance of cell lines including Human pluripotent stem cells (PSC), patient-derived iPSCs, primary tumour cell lines, T-lymphocytes and mammalian cell lines.
- Differentiation of hPSCs and iPSCs into sensory neurons.
- Single cell suspension from fresh tumours.

In-house Production

- Antibody production in K562 cells and purification with HiTrap columns.
- Production of retrovirus.
- CAR-T cell production by T-cell transduction.
- Recombinant protein production by electroporation of mammalian cell lines.

Functional assays

- ELISA.
- Luciferase assay.
- B-galactosidase assay.
- Cytotoxicity and proliferation assays.
- DNA Electrophoretic Mobility Shift.

Bioinformatics tools

- Perl programming language, R-bioconductor.
- Sequence alignments and similarity, phylogenetic trees.

Science communication

- Talk to kids on flow cytometry on Research Centre Family Fun Day, Great Ormond Street Hospital (GOSH) , London, October 2018
- Hosting tours of the laboratory for supporters of Cancer Research UK and GOSHCC/Sparks, London, September 2018

Seminar Talks

- “Next generation GD2-targeted immunotherapeutics”, Bi-Annual Symposium department of Developmental Biology and Cancer, UCL Institute of Child Health, London, June 2018
- “GMOs, superheroes or supervillains?”, FEBIotec, III Biotechnology Week, Salamanca, 2015
- “Genes and inherited diseases”, FEBiotec, II Biotechnology Week, Salamanca, Spain, 2013

Honours & Awards

- Honourable Mention for Excellence in High School granted by Community of Madrid, Spain (2012)
- Third prize and Audience Prize at the 43rd Choir competition in Ejea de los Caballeros, Spain (2013)
- Third place in the Spanish National Kickboxing Championship (2014 & 2015)
- Mercurialis Scholarship in recognition for being an elite kick-boxing athlete (2015)
- Exchange scholarship at the University of Melbourne (2015-2016)