# Luis Enrique Hernandez Castro

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## SUMMARY

I am a senior scientist trained in infectious diseases and advanced data analysis. In my previous roles, I have supported principal investigators, and senior healthcare management teams with analytics, visualisations and communication of sensitive intelligence for data-driven decision-making. My strong oral and written scientific communication, and junior staff and project management skills have led to complete epidemiological, genetics/genomics, and healthcare analytical projects. I have 10 years of experience wrangling/cleaning, visualising, and analysing complex data sets in R/Rstudio and bioinformatics software.  I am honest, kind, friendly and a team player who works well collaboratively, under pressure and can complete a task with or without supervision on time.

## EDUCATION

**PhD Infectious Diseases** at University of Glasgow, UK.                Feb 2016 – awarded on Dec 2020
Supervisors: **Martin Llewellyn** and **Louise Matthews.**

My doctoral training provided me with several research skills, such as project planning and management, fieldwork sampling, molecular biology laboratory work, data analysis, bioinformatics, networking, collaboration, and public speaking. Among my doctoral transferable skills are project management, attention to detail, supervising junior staff, problem-solving, summarising and communicating complex/sensitive information, and collaboration across teams. I also gained my supervisor's trust by managing and organising several South American projects and collaborations.

**MSc Quantitative Methods in Biodiversity, Conservation and Epidemiology** at University of Glasgow, UK.
Sep 2014 - Sep 2015

I learned scientific written and oral communication, and advanced statistical analysis (e.g., GLM/GLMM and SIR/SIRS) which are essential for ecological and epidemiological projects. I worked on a SIRDV model to simulate the effectiveness of vaccination in Siberian tigers (*Panthera tigris altaica*) in Russia.

**BSc (Hons) in Veterinary Medicine and Animal Breeding** at the University of Yucatan, Mexico.
Sep 2007 – Sep 2012
My vet training provided me with clinical skills to diagnose and treat companion, exotic, and farm animals. I also learned animal biology and physiology, microbiology, pharmacology, surgery, veterinary public health, and other subjects. As an intern at a farm animal clinic, I gained important experience communicating with farmers and other stakeholders.

## WORK EXPERIENCE

**Advanced Healthcare Scientist (Epidemiology/Data Analytics)**                May 2023 – Present
Infection Prevention and Control – NHS Greater Glasgow and Clyde (**NHS GGC**) health board

My main responsibility is translating NHS GGC **healthcare-acquired infections (HAI)** microbiology surveillance and other complex healthcare data sets into meaningful intelligence for the infection prevention and control senior management team. My work contributes to the team's ambitions for innovation, performance improvement and data-driven/evidence-based service planning. Under the supervision of infection control doctors/microbiologist consultants, I plan analytical projects to answer scientific and practical questions on HAI transmission and outbreak identification. I supervise the work of junior staff and create collaborations across teams within NHS GGC and national agencies.

**Research Fellow (Epidemiology/Statistics/Training)**                Oct 2020 – May 2023
At the Roslin Institute - University of Edinburgh

My main responsibility was to support the Centre for Tropical Livestock Genetics and Health research programme on smallholder dairy cattle genomics. I also trained MSc and PhD students in biostatistics and genetic/genomic analysis in R. I gained a deep understanding of the risk factors for **infectious zoonotic diseases** in livestock, and the genetic basis of immune response to pathogens. I also contributed to studying livestock haemoparasite/nematode communities and helped with teaching quantitative epidemiology to final-year undergraduate veterinary students.

**Junior project manager**                                                May – July 2020
At the University of Glasgow (UK) and Del Rosario University (Colombia)

I coordinated the procurement of consumables for a COVID-19 project with a **£137,000** budget. Our partners in Colombia and Venezuela were able to rapidly sequence samples and understand SARS-CoV-2 transmission.

**Network coordinator.**                                                Nov 2019 – Oct 2020
At the Pontifical Catholic University of Ecuador & University of Glasgow.

Following the success of my previous role, I had the opportunity to support the coordination and management of a larger networking project (https://www.vbdvenezuelanetwork.com/) with a **£150,000** budget. I organised a workshop and meetings at Del Rosario University in Bogota, Colombia for twenty researchers working in vector-borne diseases in South America, some of whom I still have good collaboration and friendship relationships.

**Junior project manager.**                                                Oct 2017 – Mar 2018
At the University of Glasgow.

My PhD supervisor trusted me to support him in coordinating and managing a project on vector-borne diseases in Venezuela, which had a budget of **£49,731.23.** My responsibilities included organising a meeting and a next-generation sequencing workshop in Ecuador and a meeting in Glasgow, UK, for twenty researchers on vector-borne diseases.

**Graduate teaching assistant.**                                                Sep 2016 – Dec 2019
At the University of Glasgow.

I tutored 15-30 life sciences and veterinary medicine undergraduate and graduate students with laboratory and computational tutorials. "helpful", "patient" "friendly", "approachable" and "answer my questions clearly" among their feedback. I helped different undergraduate students with statistical analysis and a master's student with lab work.

**Clinician and course coordinator.**                                                Sep 2012 – Sep 2014
At Autonomous University of Yucatan.

I collaborate in creating a taught undergraduate course in marine turtle conservation and rehabilitation to advance 60 veterinary and biology students' curricula. I diagnosed and treated diseases in several farm and wild animals, mainly marine turtles.

## TECHNICAL SKILLS

### R and Rstudio for statistics and data science.
- **Manipulating and processing GIS raster/vector data,** e.g., clipping, rasterizing, cropping, reprojecting, etc.
- **Machine learning for classification and optimisation:** randomForest and GA
- **Statistical modelling and data visualisation (e.g., histograms, scatterplots, boxplots, etc).**
- **Analysing genomic data sets for population genomics, phylogenetics and local adaptation.**
- **Database wrangling** and **cleaning** using **tidyverse** in combination with Linux **sed**, **cut**, **awk**, etc.
- **SPC, heat maps, trend and funnel plots** for performance monitoring.

### Bioinformatics.
- **NGS** data **quality control** and decontamination, **genotyping**, mapping, and **text file** manipulation.
- **Genome-wide SNP** imputation and **GWAS** using **Minimac3, EAGLE, PLINK**, **GEMMA** and **R-ASREML**.
- Moderate scripting and programming in **LINUX**, **Python** and **PERL**.
- **Cutadapt** and **Dada2** for **microbial deep sequences** correction and **amplicon sequence variant** assembly.

### Molecular wet lab.
- **DNA** extraction, **gel electrophoresis**, **PCR**, **RADseq NGS** library preparation and **purification** (AMPure).

### Other software
- **QGIS** 3.2.3+ (creating maps), **MS Office** (writing articles, databases maintenance and presentations)**, Ruby language** (individual-based modelling), **GIMP** 2.10.8 (image editing), **Slack**, **GitHub**.