Dr Jack Arnold (MBBS)
Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, UK
Training bursary program destination: Pfizer-University of Granada-Junta de Andalucía Centre for Genomics and Oncological Research (GENYO), Granada, Spain

What was the motivation to apply for training in this Centre?

I am currently a research fellow working with Dr. Vital's Lupus group in Leeds. A significant common focus between our group and Professor Alarcon's GENYO team revolves around the reclassification of ANA-associated connective tissue diseases using biomarkers. Professor Alarcon's GENYO group in Granada is renowned globally for their expertise in biomarker-driven reclassification of autoimmune connective tissue diseases, particularly through the application of machine learning techniques. Their PRECISESADS cohort stands as the largest European dataset of its kind, and they have a robust track record of publications in the field, showcasing their use of machine learning for disease reclassification.

In the short term, collaborating with GENYO and acquiring new skills would provide me with a valuable toolkit that spans clinical rheumatology and the application of machine learning methodologies for reclassification. These skills can be applied not only to related Rheumatic and Musculoskeletal Diseases (RMDs) but also to broader research inquiries as they arise. In the long term, this collaboration with GENYO could potentially allow me to apply the techniques I've learned to their dataset and vice versa. Moreover, it opens the door to establishing collaborations with other GENYO researchers, enabling them to test their models and approaches within our Leeds-based cohort.

How were the objectives fulfilled by the training?

During my training, I had the opportunity to collaborate closely with Professor Alarcon and Dr. Barturen's team, enabling me to gain expertise in applying machine learning techniques to the PRECISESADS dataset, which complemented my existing skill set. I also honed my skills in RNA-Seq analysis and improved my proficiency in R programming. In the short term, this allowed me to develop and refine machine learning models and generate valuable insights from the PRECISESADS dataset, setting the stage for ongoing collaborations.

Another significant goal of this training was to gain insight into how other prominent European centers of excellence utilize genomic and genetic reclassification at both clinical and public health levels. GENYO uniquely operates as a collaborative hub involving the private biopharmaceutical sector, the University of Granada, and the public sector. This experience afforded me a comprehensive view of how these diverse stakeholders can synergize within a single institution to drive advancements in basic science, translational research, and public health improvements.

On a broader scale, I had the privilege of working closely with established and emerging researchers in the field of lupus and connective tissue diseases. I actively participated in regular bioinformatics meetings and broader research group discussions conducted in English. This not only allowed me to deepen my expertise in machine learning reclassification but also provided me with a more comprehensive understanding of the overarching field of bioinformatics. I firmly believe that this has

significantly enriched my skill set as a researcher, and the collaborations established during this training period will prove mutually beneficial for both GENYO and my host laboratory in the future.

What are the main opportunities / strengths this centre offers for future applicants?

The GENYO team is internationally renowned for their expertise in biomarker-based research, making them an ideal source for top-tier training in this methodology. Their research group is exceptionally robust, comprising numerous postgraduate researchers engaged in diverse fields of study. This unique setup not only facilitates tailored bioinformatics training but also provides exposure to the application of analogous methodological approaches to address similar inquiries in various domains.

Furthermore, GENYO hosts regular bioinformatics and research seminars conducted in English. These sessions offer a platform for researchers to present their own work and gain insights from their peers. It's a valuable forum for both sharing one's contributions and learning from others in the field.

Practical advice for future applicants to the SLEuro training bursary

The SLEuro travelling bursary provides a fantastic opportunity to collaborate and learn from world leading lupologists and researchers in the field. However, the placement is a short one and it is critical to maximise it as much as possible. Therefore:

- Maximise your time at the destination institution by discussing potential projects and collaborations in advance if appropriate.
- Try to achieve some basic proficiency in the local language, if possible. Even a few sentences are better than none!
- Be proactive in discussing and arranging reciprocal collaborations with your home institutions if appropriate.
- Take the opportunity to enjoy the host city’s cultural highlights during your time off, particularly if you are fortunate enough to be placed in Granada.