Bjørn & Einar

We were granted money from EPINOR to participate in the Stat-XP (Statistical approaches to characterize the exposome from "-omics" platforms) in London 8–12, December 2014. With no background in biology, statistics or epidemiology we had an interesting few days in London!

The Course

The Stat-XP is a course that is a joint collaboration with Imperial College and the University of Utrecht. This was the second time the course was given. The course consisted of five days, where all but Wednesday were divided into a lecture series before lunch, and a practical session after lunch. Wednesday was a full day of lectures at Imperial College, St. Mary's, while the other days were at the Royal Statistical Society. Slides and presentations are available at the course website at statxp.com.

Imperial College

Lectures

Monday started with introductory lecture about the exposome concept by Dr. Roel Vermeulen from University of Utrecht. It gave a good introduction to the topic and the challenges in the field. Following this lecture was an introduction to "-omics" data talk by Dr. Gianluca Campanella from Imperial College. Gianluca discussed the diffent types of data and analysis methods. In conclusion he summarized that you need to know about biotechnology, statistics, biology, epidemiology and computer science to make progress. Continuing the lecture series was talk about metabolic profiling and data analysis by Dr. Tim Ebbels from Imperial College, and mass spectrometry analysis by Dr. Austin Scalbert from University of Lyon. The day ended with a practical session where we got an introduction to the R programming language, importing data and retrieving some summary statistics from the data.

For dinner we went to a burger joint called Meat Liquor by Oxford Circus, where they served the most greasy burger of the trip (perhaps in the world)!

The most greasy burger

Tuesday started with a talk about performing statistical analyses of OMICs data by Dr. Marc Chadeau-Hyam from Imperial College. The talk started with univariate approaches and multiple testing, and continued with multivariate approaches. We learned about family-wise error rate (FWER) and false discovery rate (FDR). After lunch we tried out OMICs data analysis using the methods we learned about in the morning.

For dinner we invited Dr. Karina Standahl Olsen to join us for burgers at Patty & Bun, a great success!!

Burgers with Karina!

St. Mary's campus of Imperial College

Wednesday was a full day of lectures at St. Mary`s Hospital. Paul Elliot started off the day with an overview of exposome-related research at the MRC-PHE Centre for Environment and Health, providing us with the famous quote: "Genetics loads the gun, but the environment pulls the trigger". Roel Vermeulen gave a lecture about omics technologies in occupational and envrionmental research, and Florence Guida talked about smoking-induced genome-wide methylation changes with data from the NOWAC study. The afternoon consisted of lectures about OMICs data and causal inference, and socio-molecular epidemiology.
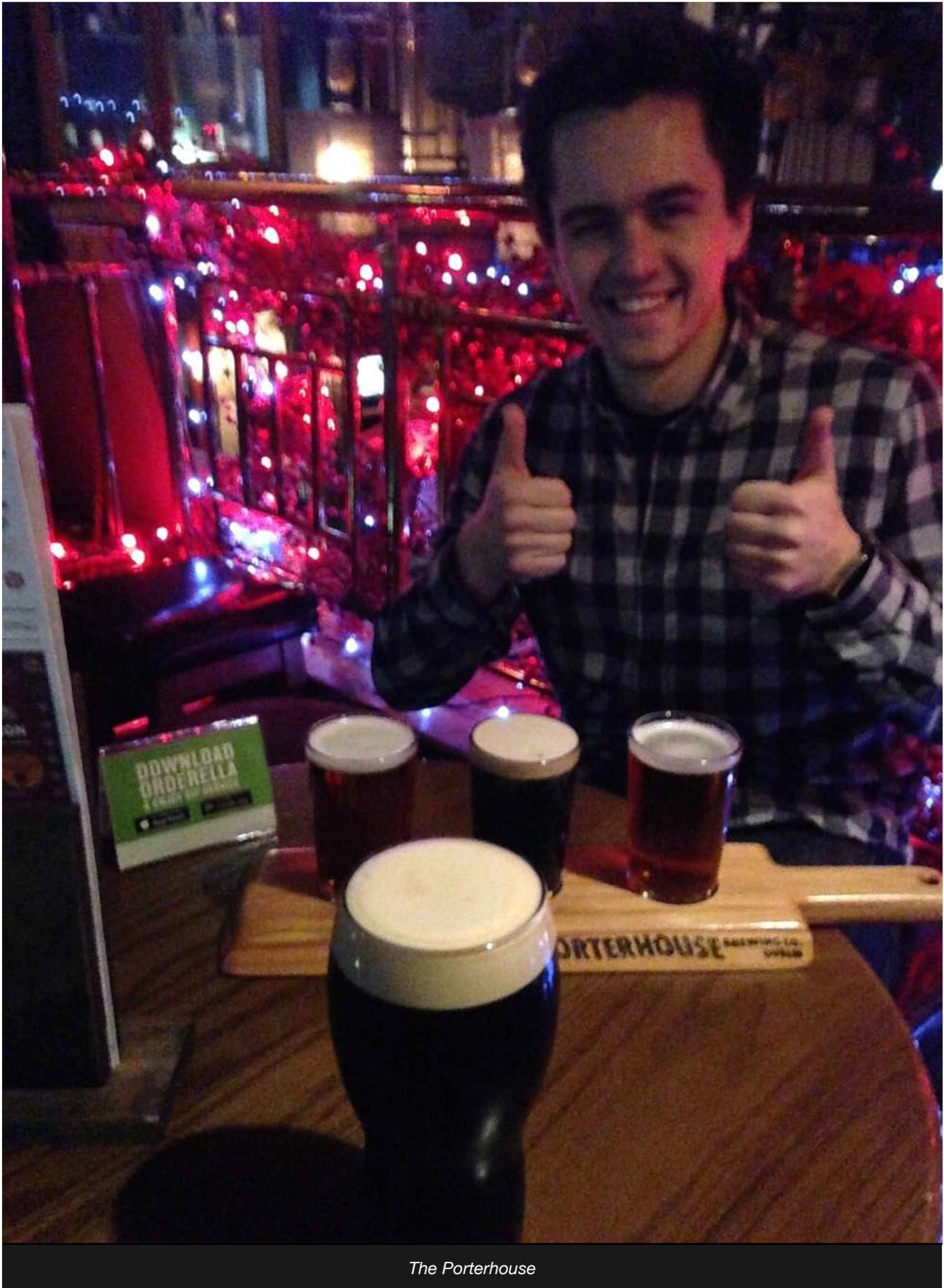
For dinner we joined a group of Ph. D. students from the course and went to a Persian restaurant in Paddington.

Little Persia

Thursday started with a lecture from Raphaële Castagé about pathway analyses, giving an overview about different enrichment methods such as Single Enrichment Analysis (SEA) and Gene set enrichment analysis (GSEA). The last lecture before lunch was a broad overview of Principal Least Squares (PLS) and Ridge Regression. The practicals in the afternoon gave us a practical introduction to performing dimensionality reduction of data with PCA and also some PLS.

Since we were a bit tired of burgers we had beers at the Porterhouse in Covent Garden, and pasta in a nearby restaurant.

The Porterhouse

The last day of the course started with a practical session where we continued with the analyses we started with on thursday, and continued with some more advanced PLS. After lunch Roel Vermeulen presented the challenges we are faced with in exposome related research. The last lecture was by Marc Chadeau-Hyam wrapping up the course and looking at future perspectives involving the "mechanome".

For dinner we had burgers at the Gourmet Burger Kitchen by Spitalfields Marked, a great end to our stay!

Gourmet Burger Kitchen

Summary

We have learned a lot from the Stat-XP course. Both theoretical concepts and practical use of these. Since the both of us have background in Computer Science there were a lot of new words and concepts, but we managed somewhat to follow the course all the way to the end. We'd like to thank EPINOR for funding the trip, and we hope to take more of these courses in the future!

Selfridges