Functional Gene Annotation Initiative

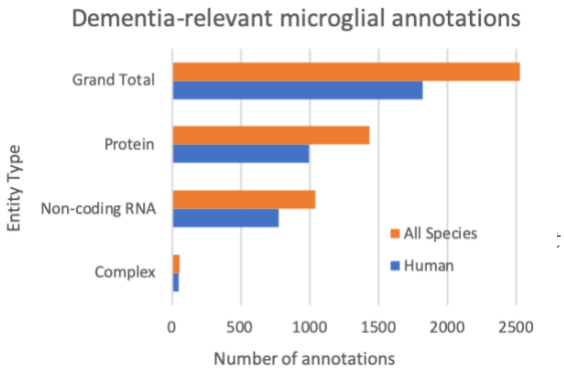
Curating knowledge about proteins and microRNAs

Newsletter June 2019

Editor – Barbara Kramarz

We have finished Gene Ontology annotation of dementia-relevant microglial gene products

Barbara and Mila have finished Gene Ontology (GO) annotation of the prioritised dementia-relevant microglial proteins, resulting in over 1500 annotations contributed for a total of 352 proteins and macromolecular protein complexes, among these over 1000 are for 235 human gene products (Figure 1). Previously, Rachael, Barbara and Ruth completed annotation of microRNAs that regulate the expression of these microglial proteins and/or are involved in inflammatory processes. Shirin Saverimuttu has also been annotating microRNAs, with a focus on those that regulate expression of the 'good' amyloid-beta receptors (reviewed by Jarosz-Griffiths *et al*., 2016, and annotated by us, Kramarz *et al*., 2018), as a part of her MSc project. Shirin has so far contributed over 100 annotations for around 20 microRNAs bringing the total number of ARUK-UCL microRNA annotations to 1040.



ARUK-UCL Gene Ontology annotation progress

Overall, since our ARUK-funded GO annotation efforts began in January 2017, we have contributed 7528 GO annotations to 1185 distinct gene products, including proteins, microRNAs and macromolecular protein complexes involved in interactions with amyloid-beta and tau as well as in dementia-relevant microglial processes. Of these, 5325 GO annotations have been associated with 711 human gene products (QuickGO accessed: 16th May 2019). We have also contributed to ontology revisions and development and the number of GO terms, which we have either revised or added to the ontology since this initiative began has now reached 145 (AmiGO2 accessed: 16th May 2019).

Gene Ontology annotation of proteins involved in maintenance of the blood-brain barrier

Having completed the GO annotation of dementia-relevant microglial proteins and microRNAs regulating their expression, our next focus is the annotation of proteins implicated maintenance of the structure of and transport across the blood-brain barrier (BBB). Following consultations with our Scientific Advisory Panel, including the Alzforum curators and experts from UCL and University of Manchester, we have selected a review by Sweeney *et al*., 2019, as the basis for this project. Mila will annotate the endothelial connective junctions in the brain, described by Sweeney *et al*., 2019, in Figure 2, and Barbara will focus on proteins involved in transport across the BBB (Figure 3 in the same review). The priority lists are provided in the most recent accordion sections on our ARUK-funded GO annotation webpage.

Meetings Attended

In March Ruth and Barbara presented posters at the Alzheimer's Research Conference in Harrogate and the Biocuration Conference in Cambridge, where Ruth, Barbara and Mila spent some time catching up with former members of the UCL team. The posters can now be viewed on our website and on F1000.

Two-day Workshop on Bioinformatics Resources and Gene Ontology

In May Ruth and Vanessa Acquaah, a former curator in our team, and currently a British Heart Foundation PhD student, delivered the 11th two-day workshop. This workshop, funded by ARUK, provided an overview of several biological knowledgebases, as well as an introduction to Gene Ontology and functional analysis tools. We thank all the attendees for their participation and invite their feedback.

We have a new logo!

It is our new profile picture on twitter!

Recent Publications

Attrill H, Gaudet P, Huntley RP, Lovering RC, … Gene Ontology Consortium. **Annotation of gene product function from high-throughput studies using the Gene Ontology**. *Database (Oxford).* 2019 Jan 1. doi: 10.1093/database/baz007. PMID:30715275.