

Adeilad IBERS Plant Phenomics, Campws Gogerddan Aberystwyth Ceredigion SY23 3EB	IBERS Plant Phenomics Building Gogerddan Campus Aberystwyth Ceredigion SY23 3EB
Ffôn: (01970) 622284 Ffacs: (01970) 621981 Epost: ayh@aber.ac.uk www.aber.ac.uk/ibers	Tel: (01970) 622284 Fax: (01970) 621981 Email: ayh@aber.ac.uk www.aber.ac.uk/ibers

Herding behaviour is one of the most useful impacts of canine domestication by humans. During work with the Welsh Sheepdog Society as part of the BBC TV programme “Kate Humble: My Welsh Sheepdog’s Tale”, my lab was asked if we could identify the genetic background of Kate’s dog Teg, which appeared to have mixed Welsh/Border Collie heritage. This meant we had to use a genetic screen of other Welsh dogs and Borders to determine what parts of the DNA are unique to each breed. As a result of this work, we were not only able to show that Teg was 75% Welsh/25% Border, but also identify the bits of DNA that strongly distinguish the two breeds. What we found interesting was that a high number of these genetic markers were in or near genes linked to brain/nervous system development. Given the key determinant of a Welsh dog is the loose-eyed herding behaviour versus the strong-eyed nature of the Borders, we began to wonder if we might have found a genetic “signature” of selection for the two different herding behaviours.

What we would like to do to confirm this is look at other loose-eyed and strong-eyed breeds with the same DNA test and determine if the same regions of DNA have been under selection. In addition, we will try to break down some other herding traits such as Backing/Non-backing of sheep, Crouch vs Upright, Barking, Set vs Non-Set, Tail Up/Down and Independence from human command. We are therefore hoping to collect DNA swabs from loose-eyed breeds such as Welsh, Australian, Shetland and English sheepdogs, Fell dogs and Cardigan/Pembroke Corgis, plus strong-eyed breeds such as Border Collies, Australian Kelpies and US Borders. Swabs can be posted to the owners and involve a simple collection method: <https://www.youtube.com/watch?v=Rj0-vSfE7Vk>. Once taken, swabs are stable at room temperature for a month so can be posted back. We would also need video of the dogs working in order for assessors to judge their behaviours. Ideally, samples should be as unrelated as possible (uncle/aunt/cousin level at most) to avoid biasing the test with too much shared genetics. Whilst we can accept as many samples as can be sent, the project will only have funds to screen 100 dogs maximum, so we are looking for ~10-15 individuals per breed. All data must be made publically available but we have the option to anonymize the animals if owners desire. No secondary usage of the genetic data (i.e. testing for genetic disorders) will be done without the owners’ permission.

Yours,



Dr. Matthew Hegarty, Senior Research Lecturer in Quantitative Genetics

