

## Rita Guerreiro and José Brás: How BDR helps our research



Rita Guerreiro and José Brás have a [joint lab at UCL's Institute of Neurology](#) and are both Lecturers in neuroscience. Here, they talk about how using tissue from Brains for Dementia Research has helped to advance their work.

**Rita:** Our research involves understanding the genetics of many neurological conditions, including Alzheimer's disease, Dementia with Lewy Bodies (DLB) and Parkinson's disease. We use tissue from Brains for Dementia research to obtain DNA and RNA samples because we need to be sure that the clinical diagnosis is as accurate as possible and that we can reliably distinguish between different conditions.

**José:** The work that I do focuses a lot on dementia with Lewy Bodies, which has a clinical misdiagnosis rate that can be as high as fifty percent. Therefore we need both the clinical and pathological information that is collected by BDR to make sure that the samples we have were definitely affected by DLB. As DLB is an under-researched and under-diagnosed condition, it can be quite difficult to find samples, especially when you need to analyse a lot of them! Having access to this tissue where we can be confident of the diagnosis is essential for researching conditions that are not as well-known.

**Rita:** One of our most important recent findings was the R47H mutation in the TREM2 gene, which we found confers a significantly increased risk of Alzheimer's disease. In order to identify this mutation, we had to analyse a large number of DNA samples. It's essential that the sample that we analyse is as good quality as possible and is prepared before significant degradation of DNA and RNA has occurred. We also had to make sure that the cases we analysed definitely had late-onset Alzheimer's disease and not another, rarer subtype.

**José:** Another advantage of BDR is that we can obtain samples from different banks and we know that the quality will be consistent. We use samples from Bristol, Manchester and Nottingham as well as London, giving us access to much more tissue and allowing us to analyse much larger datasets. The fact that there are many different banks that use the

same protocols means that there is a large amount of tissue that is all prepared in the same way – this helps to standardise work across many different labs.

**Rita:** We have a big upcoming project where we want to create an open-access database of benign genetic variability so that other researchers can find out which variations are not linked to disease. For this we will need to make sure that samples labelled as controls really are controls. It also addresses the issue of there not being many known controls who are over the age of sixty. That fact that we have access to large amounts of high quality tissue means that we will be able to build this resource and will be able to help many other researchers to access important genetic information.

**José:** I think that a lot of our research has only been able to happen because of BDR – it's been an incredibly valuable resource for us.