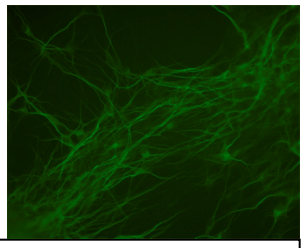
**Research update from the Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland**

Dear friends, parents and supporters of BrAshA-T

Below is a brief update about A-T research that is currently underway at the Australian Institute for Bioengineering and Nanotechnology (AIBN), University of Queensland.



Skin cells (left), two colonies of iPSC (~10000 cells each, middle) and human iPSC derived neurons (right).

Our laboratory uses a special kind of stem cell called an induced pluripotent stem cell (iPSC) to study A-T. These stem cells are made from skin cells derived from a small skin biopsy. They grow continuously and can be turned into almost every cell type on the body.

Our aim is to turn these cells into brain cells, particularly cerebellar cells, as these are the cells that cause the most problems in patients with A-T.

Over the past few years, some of you donated skin samples and we were able to create iPSC lines from these. We don't know who each sample belongs to as they were all secretly and scientifically coded to remain unbiased. What we do know is that we have now collected sufficient numbers of skin samples from A-T carriers and A-T patients to make firm conclusions. Thank you to everyone for making this happen (skin biopsies are not fun)!

BrAshA-T board at work

We can now use these lines to make patient specific human brain cells to study A-T in detail. While we are certainly in the process of correcting the faulty ATM gene, the current lines will not be able to be used for therapies because of the way they were made in the laboratory. At the moment we do not know why or how cells in the hindbrain degenerate to give you A-T and therefore, we are not sure what cell to deliver, where in the hindbrain this needs to occur, and when the best time to do this is. So our strategy has been to generate the different human brain cell types from iPSC and study how they live and die and what genes they express.

Sam Nayler in his favourite spot

Last year we were the first research group to report the generation of A-T iPSC lines. This work was driven by Sam Nayler, a PhD student supported by BrAshA-T, co-supervised by me Associate Professor Ernst Wolvetang at AIBN and Professor Martin Lavin at Queensland Institute of Medical Research (QIMR).

Sam has subsequently made forebrain and hindbrain cells from the A-T lines and has been able to study their behaviour and gene expression. We are the first in the world to do this and we can now think about how to improve the survival and function of A-T brain cells.

We would love to be able to tell you that we have cracked it however a lot more work needs to be done. A-T is a difficult condition to tackle but at least we now have the tools (an unlimited supply of A-T brain cells) to have a go at it.

If you have any questions about what we do, I will be happy to answer them. Please email me at (e.wolvetang@uq.edu.au). We will also try to give you six-monthly updates on where we are at.

We value your support and encourage you to keep BrAshA-T strong and healthy!

All the best

Ernst