



Exceptional Researchers and LI-COR Imaging Systems Driving Results

Spotlight on Dr. Paul Digard

Dr. Paul Digard is a Senior University Lecturer in the Department of Pathology at the University of Cambridge studying influenza A. Flu viruses are one of the major uncontrolled infectious diseases remaining today, and therefore a global public health concern.

Influenza A viruses are well-known causes for flu epidemics and pandemics. The 2009 H1N1 (swine flu) pandemic and Bird flu were caused by Influenza A. Therefore, a better understanding of the virus and how it operates is of critical medical importance.

Dr. Digard's lab has a number of projects in progress that study the biology of Influenza A. Some of the lab's areas of interest are the packaging of virus components, how the virus assembles and packages its genome, how the virus transcribes and replicates its genome, and what factors determine host range. These projects contribute to the understanding of how the virus works, and as a result, influenza therapeutics further down the line. Although, the Digard lab is not directly working in drug screening, their findings are important to some of their collaborators. For instance, some lab members are studying the Influenza A polymerase, which is a therapeutic target. Other lab members are looking at potential new flu proteins, and



"The Odyssey is the best piece of equipment that we have purchased in the last couple of years."

- Dr. Paul Digard

they just recently identified another protein product that is translated by the genome.

Quantitative Westerns have allowed the lab to run a time course of protein expression during virus development. According to Dr. Helen Wise, one of Digard's post docs, "one of the things that you can do, for example is infect some cells and harvest the lysates at different times and look at how quickly or slowly or the amounts of flu proteins are present." They were able to show a relative delay in accumulation of one of the proteins in one of the viruses they generated.

Another area where quantification is very useful is in siRNA knockdowns. "It is really nice to be able to say, well, when you treat cells with this siRNA there is a 80% reduction in the target protein compared to wild type samples and if you don't infect there is a further difference. It is really nice to get numbers on that." Dr. Wise feels quantification of knockdown levels gives her much more confidence in her results.

This wide range of research is covered by Dr. Digard's laboratory of 2 post docs, 8 graduate students and several collaborators. The lab uses a range of techniques, including Western blots on their Odyssey®. When asked about how the Odyssey is used, Wise

LINKS

For more information about Dr. Digard, visit the links below:

<http://www.path.cam.ac.uk/research/investigators/digard/>

said "It's used an awful lot! At the moment, we use it primarily for Western blotting and that has really made a difference as to how we run those. It's really nice to get quantitative data from the Western blots, which we were not able to do previously... and there's quite a lot of quantification that makes it into the papers we've published recently"

It is not just the quantification and Western blots that "look far prettier than ECL" but Wise explained that they also like that with the Odyssey the signal does not saturate so quickly and they can run 2-color Westerns enabling them to put more than one antibody on at once and distinguish them. Wise also appreciates LI-COR's friendly and helpful staff.

In addition to what the Odyssey has enabled the Digard lab to do now, Wise explains that they are really excited to move towards using their Odyssey for other techniques as well. For example they would like to develop a non-radioactive primer extension procedure for Odyssey in the future.

We thank Dr Digard lab's work on the Influenza A virus, and are proud to consider him an Odyssey Expert.

PUBLICATIONS

Publications resulting from work on the Odyssey:

1. Bruce, A.E., Digard, P. and Stuart, A.D. Influenza A viral morphogenesis and budding are determined by Rab11. *J. Virol.* (in press online). doi:10.1128/JVI.00307-10
2. Read EK, Digard P. Individual influenza A virus mRNAs show differential dependence on cellular NXF1/TAP for their nuclear export. *J Gen Virol.* 2010 May;91(Pt 5):1290-301. Epub 2010 Jan 13.
3. Wise, H.M., Foeglein, A., Sun, J., Dalton, R.M., Patel, S., Howard, W., Anderson, E.C., Barclay, W.S. and Digard, P. (2009). A complicated message: identification of a novel PB1-related protein translated from influenza A segment 2 mRNA. *J. Virol.* 83, 8021-31. doi:10.1128/JVI.00826-09
4. Hutchinson, EC, Curran MD, Read EK, Gog JR, Digard P. (2008). Mutational analysis of cis-acting RNA signals in segment 7 of influenza A virus. *J. Virol* 82, 11869-11879. Epub Sept 24 doi:10.1128/JVI.01634-08
5. Eliot K. C. Read and Paul Digard. Individual influenza A virus mRNAs show differential dependence on cellular NXF1/TAP for their nuclear export. Division of Virology, Department of Pathology, University of Cambridge, Tennis Court Road, Cambridge CB2 1QP, UK. *Journal of General Virology* (2010), 91, 1290–1301.

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