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Prime 95B™ Scientific CMOS Camera

CUSTOMER REFERENCE

Calcium Imaging

Professor Rod O'Connor and Assistant Professor David Moreau

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BACKGROUND

Professor Rod O'Connor and Dr. David Moreau work together to develop flexible, conductive polymer electrode devices to record electrical activity and optical measures of physiology from neurons to study the bioelectrical basis of diseases like epilepsy, Alzheimer's disease and cancer. The electrical devices they create are ideal for imaging as they are nearly transparent and they can be used to both record the electrical behaviour of cells and to stimulate.

At the moment, they are most interested in exploring new fluorescent probes that permit the simultaneous imaging of calcium signals and plasma membrane potential.

“The high speed and the high sensitivity of the Prime 95B were necessary to improve our imaging methods”

CHALLENGE

One of the challenges the group face in their microscopy set up is that they need to use epifluorescence to image cell physiology and transmitted light to observe the semi-transparent plastic electrode devices. Switching between these two modes is not easy to manage within the conditions of their application.

To perform their experiments, they need to rapidly change between these two modes. Therefore, a high-speed camera with high sensitivity is crucial for their imaging needs.

SOLUTION

The group is now using the Teledyne Photometrics Prime 95B sCMOS camera for several projects using widefield fluorescence microscopy. With the Prime 95B, the group can take advantage of the almost perfect 95% quantum efficiency and high framerates to image with the high sensitivity with speed they need for their application.

Professor O'Connor told us, "The high speed and the high sensitivity of the Prime 95B were necessary to improve our imaging methods".

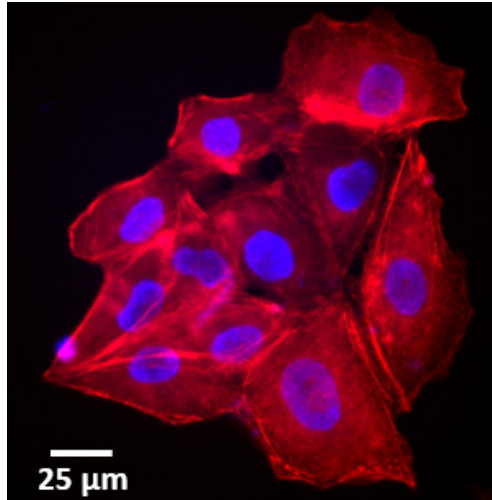


Figure 1 MDCK-II cells labelled with LifeAct-TagRFP (revealing Actin in Red) and Hoechst 33342 (revealing nuclei in blue)

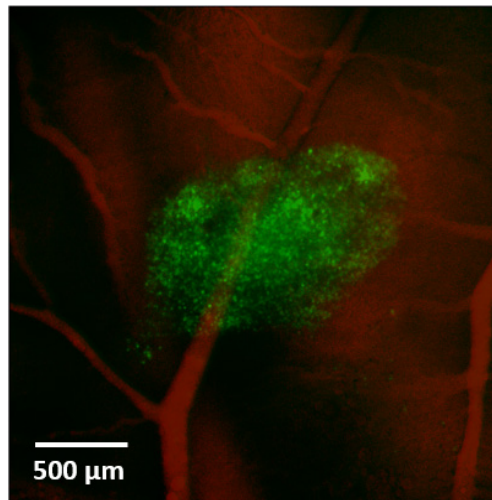


Figure 2 U87 spheroid labelled with calcein-AM (green) implanted on chorioallantoic membrane of Quail embryo with blood vessels labelled with Texas Red (red)

