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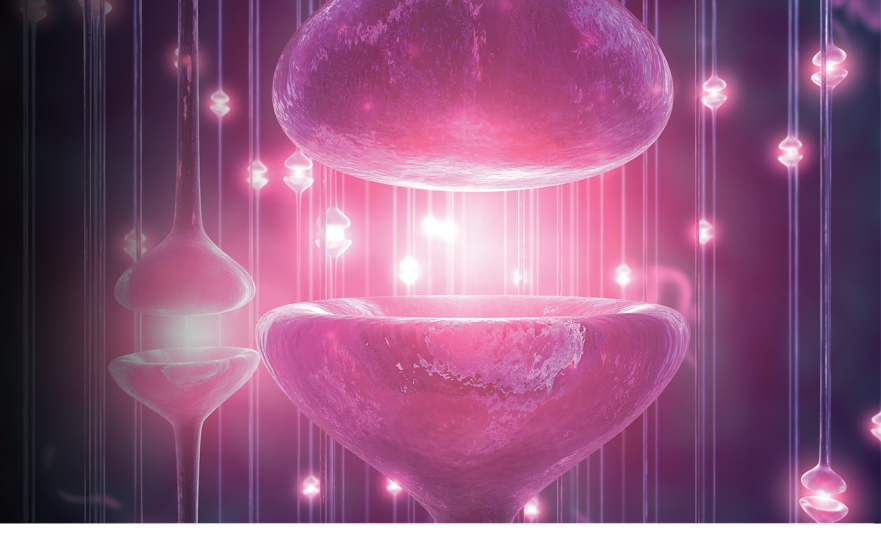


#LabHacks

A guide to Differential Interference Contrast (DIC)

What is Differential Interference Contrast?

Differential Interference Contrast (DIC) is a microscopy technique that introduces contrast to images of specimens which have little or no contrast when viewed using brightfield microscopy. The images produced using DIC have a pseudo 3D-effect, making the technique ideal for electrophysiology experiments, particularly patchclamp.

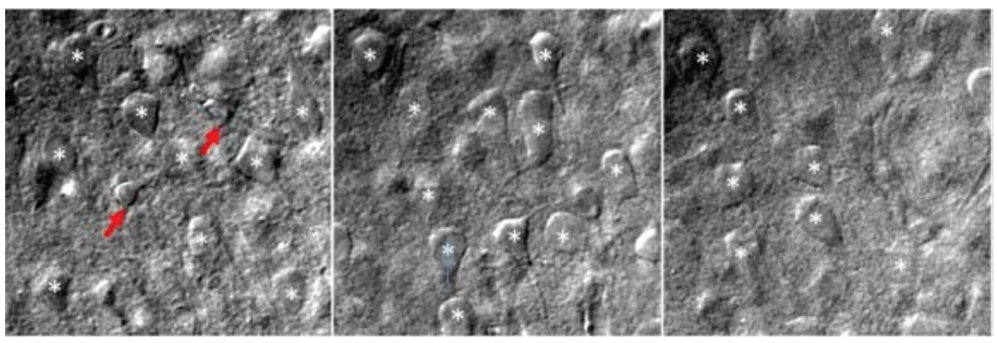
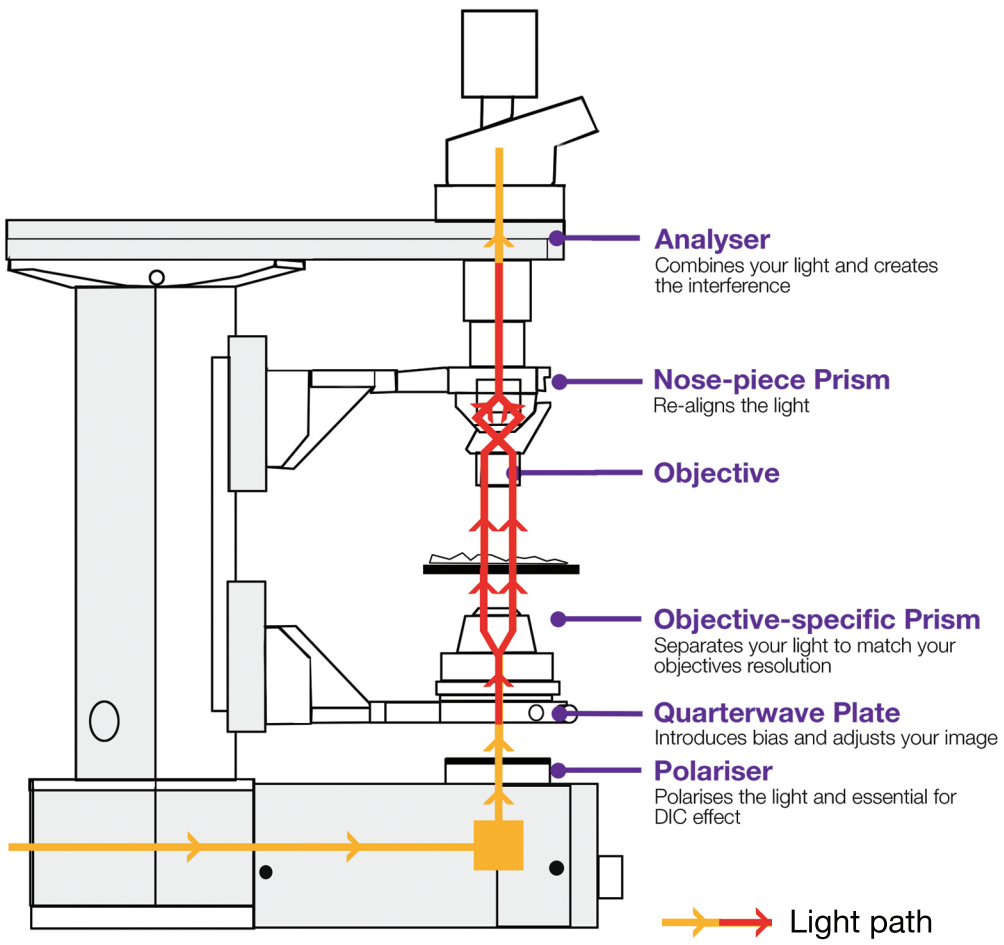


Image courtesy of Dr Sam Booker, University of Edinburgh

How does Differential Interference Contrast work?



Setting up Differential Interference Contrast

DIC can be set up on most upright microscope, including the Scientifica SliceScope, as long as the polariser, condenser and prisms can be installed.

Before setting up DIC on your microscope ensure all components are free of dust and debris as this can reduce image quality, and that your scope is properly set up for Koehler illumination. If you have an IR filter slider ensure this is in place (not pictured) for the best camera images.

Interacting with DIC on a Scientifica SliceScope is localised around the polariser and the quarter waveplate. All the other components are fixed.

Steps

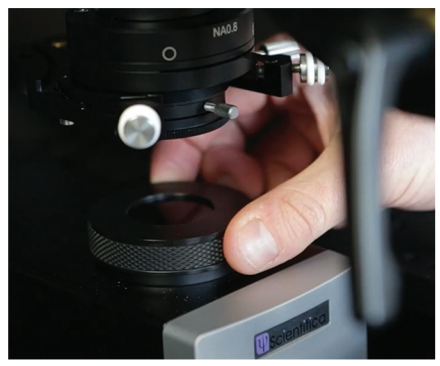
1. Focus on your sample with your high-power objective (eg 40X).

2. Rotate your polariser to align or misalign with the analyser.

3. Adjust your quarterwave plate by rotating it - adjusting this makes the cells structure appear as convex or concave. Again, adjust to your preference.

4. You can create the largest DIC effect by creating the darkest image, introducing the most interference.

   This is largely based on your preference and the cells you are viewing and you can dial it back if desired.



5. Once you have attained your preferred image fix the quarter waveplate in position through the locking screw.

Don't be shy to make small adjustments to the polariser, quarterwave plate or the orientation of your sample to make your image the best for you.

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