

Automated CLEMing in BioSciences

Rug, M.¹, Lee, J.^{2,3}, Webb, D.^{2,3}, Brink, F.^{2,3}, Popp, S.^{2,4}, van Dooren, G.^{2,5}, Ridgway, M.^{2,5}, Parish, C.^{2,4}, Maier, A.^{2,5} and Simeonovic, C.^{2,4}

¹ The Australian National University, Australia, ² The Australian National University, Australia, ³ Centre for Advanced Microscopy, Australia, ⁴ John Curtin School for Medical Research, Australia, ⁵ Research School of Biology, Australia

Correlative light and electron microscopy (CLEM) is a rapidly expanding application across various research inquiries in the Life Sciences opening avenues to more confidently characterise new organelles and molecular machines. It achieves this by localising fluorescently labelled molecules in a cellular/tissue context with confocal microscopy and subsequently ultra-structurally resolves its underlying structure/organelle.

We will present various CLEM approaches towards a variety of research inquiries highlighting the individual challenges and solutions. We will report on the advantages CLEM provides over single modality approaches and highlight those by elucidating sub-cellular localisation of proteins in Apicomplexan parasites and trafficking and localisation of molecules implicated in reducing oxidative stress in pancreatic beta cells.