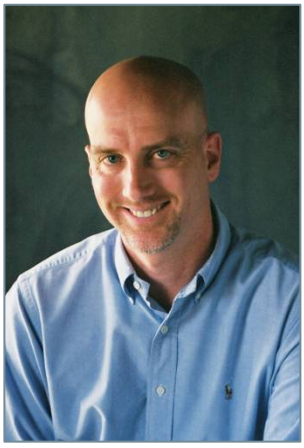
Importance of Hyperspectral Imaging and How to Discover the Most Information from your High Content Images

ABSTRACT
Hyperspectral imaging combined with multivariate analysis techniques, such as multivariate curve resolution (MCR), has proven to be a powerful imaging tool for understanding many biological samples and mechanisms. Whereas overlapping fluorophores are problematic for many traditional fluorescence microscopy techniques, this technique allows us to separate many overlapping fluorophores and create interpretable quantitative images from both known and unknown biological samples. In this presentation, I will discuss the methods I have developed and used to generate quantitative images from hyperspectral data sets. Also, I will illustrate the benefits of hyperspectral imaging by presenting several interesting examples of biological images I have collected over the years.

BIOSKETCH



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Howland is a consultant specializing in the analysis of hyperspectral images. He has over 25 years of experience in applying multivariate analysis techniques to spectroscopy and hyperspectral imaging applications. Howland was employed by Sandia National Labs for 18 of the 25 years, mainly exploring biological applications. He has 8 issued patents and has authored or co-authored 45 publications. The development of a high speed hyperspectral microscope and analysis software at Sandia led to a R&D 100 award ("Hyperspectral Confocal Fluorescence Microscope System," R&D 100 Awards 2009).