UTMB
Biomolecular Resource Facility
NHLBI Proteomics Center
The University of Texas Medical Branch

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SameSpots Case Study

Background Information

"The Biomolecular Resource Facility (BRF) plays a triple role here with seven cores organized into two sections: Protein Chemistry and Proteomics. The first role of the BRF is to service UTMB's proteomics, protein, DNA, and small molecule analytical demands. It's second role is to serve as the residence of the National Heart, Lung and Blood Institute (NHLBI) Proteomic Center for Airway Inflammation (note, Dr. Alexander Kurosky is Director of the BRF and PI of the NHLBI Proteomics Center). The third role is as the Proteomics Core for the Specialized Center for Clinically-Oriented Research (SCCOR) for Thoracic Aneurysms and Aortic Dissections housed at the University of Texas Health Science Center at Houston. The SameSpots software resides in the Proteomics Bioinformatics Core that reports to the Proteomics Section of the BRF."

Our 2D experiment design

"Our 2D gels are routinely stained with fluorescent dyes. Sypro™ Ruby for general protein detection/ quantification, Pro-Q™ Diamond for phosphoprotein detection, and our newest application developed in-house—saturation fluorescence pre-separation labelling with uncharged sulfhydryl-reactive dyes. The latter provides us with unparalleled quantification accuracy (>90%), reproducibility (CV < 5-9%), and sensitivity (5 fmol protein) in our 2D gels."

The challenges we face in our 2D image analysis

"We process thousands of 2D gels and consequently thousands of Pairwise and multiple gel comparisons with the SameSpots software. This is not a simple process, nor is it cheap in time, effort, or expense."

How SameSpots helps us to meet the challenges?

"The fundamental concept (image alignment) of SameSpots permits us greatly increased confidence in quantification, and this is enhanced when performed on gels obtained by our saturation fluorescence strategy. The statistical package further enhances confidence in our quantitative studies. In addition SameSpots has increased our throughput - with the demand we experience, this results in tremendous savings in manpower and expense over a year. With the proper tools and attention to detail proteomics can reap enormous benefits whatever your field of biological study. SameSpots is one of the tools that are indisputably required — providing the image and subsequent statistical analyses that are critical to a conclusive and compelling proteomics study."

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