

STATE-OF-THE-ART LECTURE S3

Discovery proteomics of organelles of the secretory pathway

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Proteomics gives insight into protein function as a consequence of protein assignments to cellular locations. Quantitative proteomics of highly purified organelles of the secretory pathway of rat liver has led to a complete accounting of proteins (1242) in these structures. These were readily distinguished from 600 contaminating proteins of other organelles. The proteomics data resolve a major controversy in membrane trafficking. Moreover, the uncovering of 345 proteins of unknown function has led to their localization by the application hierarchical clustering tools to quantitative proteomics. Mechanistic functions were elucidated for a subset of these proteins. The strategy enables the combination of our proteomics database with other databases to mine relationships at the systems level.