



Proteomics in Eye Research

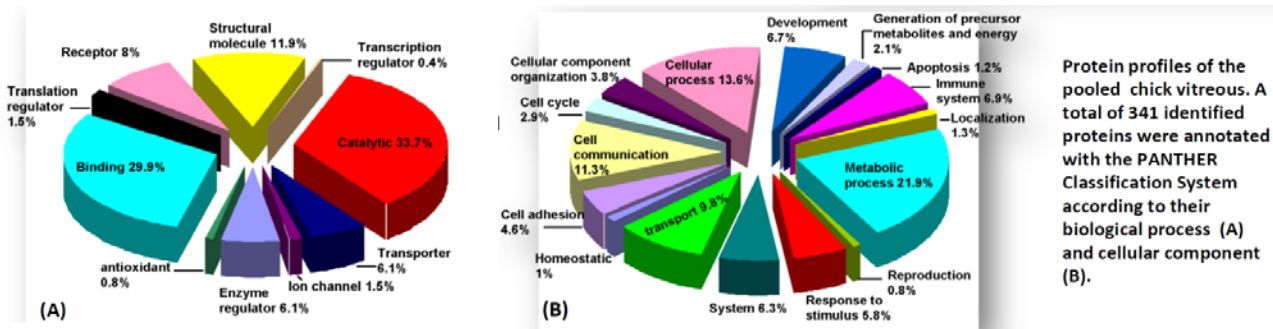
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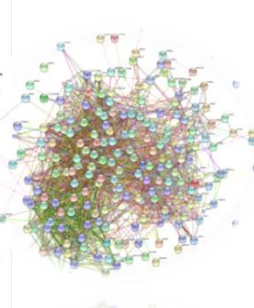
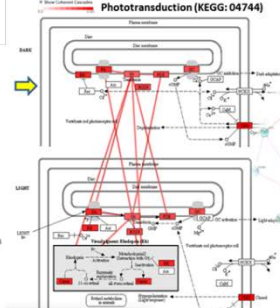
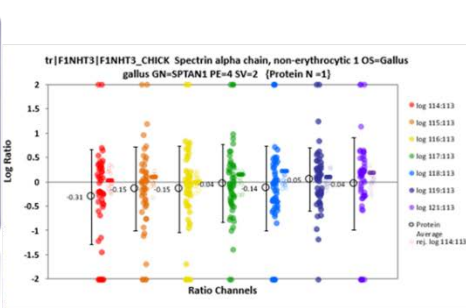
- Quantitative Regulations of Protein / Small Molecules in Ocular Diseases .
- Protein Translational Modifications in Ocular Diseases . Protein Biomarkers Discovery .

Proteomics has been regarded as the core research technology in the post-genomic era. Central to the life sciences in health discipline is the aim of identifying potential and small molecule biomarkers that may correlate to diseases, drug toxicity, genetic and environmental variations. Recent revolution in mass spectrometric (MS) platforms paves the way for rapid evaluation of potential biomarkers qualitatively and quantitatively for various diseases or physiological conditions. Cutting edge Next Generation MS platform can routinely allow thousands of unknown biological compounds be resolved and analyzed in an accurate and fully automated fashion. Ultimately, these measurements will provide novel insight into the biological regulation of signalling compounds in disease-causing alterations.

The application of proteomics in eye research is not popularized yet. Using comprehensive proteomic line-up including gel-based (DIGE) and liquid based MS coupled with bioinformatics tools, we are interested in exploring the expressions / regulations of proteins in various ocular disorders and diseases (dry eyes, myopia, glaucoma and others).



Protein profiles of the pooled chick vitreous. A total of 341 identified proteins were annotated with the PANTHER Classification System according to their biological process (A) and cellular component (B).



Representative Publications

- Lam, T. C., Li, K. K., Lo, S. C., Guggenheim, J. A. and To, C. H. (2007). "Application of Fluorescence Difference Gel Electrophoresis Technology in Searching for Protein Biomarkers in Chick Myopia." *J Proteome Res* 6(11): 4135-49.
- Yu, F. J., Lam, T. C., Liu, L. Q., Chun, R. K., Cheung, J. K., Li, K. K., To, C. H. (2017). "Isotope-coded protein label based quantitative proteomic analysis reveals significant up-regulation of apolipoprotein A1 and ovotransferrin in the myopic chick vitreous" *Sci Rep* 2017, 7, (1), 12649.
- Shan, S. W., Do, C. W., Lam, T. C., Kong, R. P. W., Li, K. K., Chun, K. M., Stamer, W. D., To, C. H. (2017). "New insight of common regulatory pathways in human trabecular meshwork cells in response to dexamethasone and prednisolone using an integrated quantitative proteomics: SWATH and MRM-HR mass spectrometry." *J Proteome Res* 2017, 16, (10), 3753-3765.