Blood testing for mood disorders

There are to date no objective clinical laboratory blood tests for mood disorders. The current reliance on patient self-report of symptom severity and on the clinicians’ impression is a rate limiting step in effective treatment and new drug development. Investigators from Indiana propose, and provide proof of principle for, an approach to help identify blood biomarkers for mood state. They measured whole-genome gene expression differences in blood samples from subjects with bipolar disorder that had low mood vs. those that had high mood at the time of the blood draw, and separately, changes in gene expression in brain and blood of a mouse pharmacogenomic model. They then integrated their human blood gene expression data with animal model gene expression data, human genetic linkage/association data, and human postmortem brain data, an approach called Convergent Functional Genomics, as a Bayesian strategy for cross-validating and prioritizing findings. Topping the list of candidate blood biomarker genes they are five genes involved in myelination (Mbp, Edg2, Mag, Pmp22 and Ugt8), and six genes involved in growth factor signaling (Fgfr1, Fzd3, Erbb3, Igfbp4, Igfbp6, and Ptprm). All of these genes have prior evidence of differential expression in human postmortem brains from mood disorder subjects. A predictive score developed based on a panel of ten top candidate biomarkers (five for high mood, five for low mood) shows sensitivity and specificity for high mood and low mood states, in two independent cohorts. These studies suggest that blood biomarkers may offer an unexpectedly informative window into brain functioning and disease state. Moreover, this work uncovers an intriguing overlap between genes involved in cancer biology and genes involved in mood regulation.

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Identifying Blood Biomarkers For Mood Disorders Using Convergent Functional Genomics

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