The psychiatric diseases constitute a wide range of mental conditions characterized by impairment of an individual’s normal cognitive, emotional or behavioral functioning, and are thought to be caused by various psychosocial and/or physiological factors. Despite decades of research, originally with autopsy specimens and now with neuroimaging and spectroscopy, reliable MR biomarkers for the various psychiatric diseases remain elusive.

MR spectroscopy has always held great promise for the diagnosis of psychiatric disease since it can measure several important chemicals within the brain. In the past two decades, hundreds of MRS studies of psychiatric patients have been performed. Unfortunately, among these studies there has been little consensus as to the location and type of chemical abnormalities noted in the various psychiatric illnesses.

Schizophrenia is the most spectroscopically studied psychiatric illness, with over 100 MRS studies of schizophrenic patients performed over the past 15 years. While many of the study results are conflicting, meta-analysis has proven most useful for defining the metabolic trends in this debilitating disease. This talk will describe these metabolic findings in the context of neuropathological and imaging studies in schizophrenia.

As there are certain clinical and metabolic similarities, bipolar disorder will also be considered. The strengths and limitations of MRS in the psychiatric patient will be discussed. The talk will conclude with recommendations of what to explore next, specifically, which metabolites in which locations will have the best chance of serving as biomarkers of these two psychiatric diseases.