Worldwide, 350 million people suffer from depression. Major depression has a severe impact on daily functioning, and is associated with significant morbidity, mortality, and public health costs. Early prediction of (recurrent) depression is key for preventing relapse, the development of effective preventive (pharmacotherapies), and thus for reducing costs associated with major depressive disorder (MDD). In this thesis Saskia Woudstra describes the identification of persons at risk for (recurrent) depression. She used a method that combines the advantages of genomics and neuroimaging to study the influence of a single variation in a gene on brain activity during planning and emotion processing. This gene, called Piccolo, had previously been associated with MDD. Using a longitudinal method, the brain’s structure and activity during planning was investigated in depressed patients and healthy controls. Two years after baseline measurement, remitted depressed patients, non-remitted depressed patients and healthy controls were compared.