Slide 4

Intro to Mental Disorders and their pharmacological treatment. What is known already about epigenetic findings of these drugs

Slide 5

Method

* EPIC
* Why we think blood is informative about what is happening in the brain

Aims –

To identify

Make a demographic table like Zong’s Table 1 but for SCZ, BPD and MDD

Slide 6

Project 1 - Time of Blood Sampling

It is standard practice in EWA- studies to adjust for the heterogeneity of cell-type proportions. Cell-type proportions change during the course of the day and are influenced by many factors, including diet, exercise, smoking, ill-health and medication use. In this study, we looked at the association of schizophrenia versus healthy controls on cell-type proportions. It is well documented that patients with schizophrenia have higher neutrophil-to lymphocyte ratios than controls, suggestive of a low-grade inflammatory process. But recent studies report on the influence of time-of-day on DNA methylation levels. Here the natural process of methylation/demethylation in white blood cells is oscillating with circadian rhythms. Overlaps of these oscillating methylated cytosines with methylated sites associated with SCZ. The Function of the Circadian Clock Is Tissue Speciﬁc.Yeung and Feliz, 2018

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Project 1

Show the bimodal distribution

Slide 8

Project 1

Our findings

Slide 9

Project 2

Common and Specific effects of antipsychotics on DNA methylation in Psychosis

Why we chose psychosis as a phenotype rather than diagnostic categories. Something about “trouble at the borders”. In this case, it is not about the treatment effect on the disorder, but the fact that the drug was prescribed for the symptoms of psychosis. And you can argue that there can be differences in the expression of the psychotic state, where individuals with scz may experience negative and frightful voices while individuals with psychosis in bipolar mania may experience voices of grandiosity. Tragically, in bipolar depression, voices in a psychotic state may seem clear and rational, and this is the danger in terms of suicide risk. In MDD, psychosis is …

Nevertheless,

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Project 2

To date there is evidence that antipsychotics ameliorate the symptoms of psychosis by … affecting neurotransmitter systems, like gaba and glutamate, as serotonin. Evidence from DNA methylation studies ….

Therefore we wish to see identify the common effects of antipsychotics in part one of the study, followed by the specific effects in part 2.

We can validate the risperidone.

Thefirst antipsychotic medication was introduced in the 1950s. Al-though this was thefirst medical treatment to reduce psychotic symp-toms, it was not until 20 years later that the underlying mechanism ofaction—blockade of the dopamine D2 receptor—was identified. Themost consistent and influential theory to date to explain the develop-ment of psychosis is that the disease is related to dopaminergic alter-ations. (Devi Treen)

Effects of AP on neutrotransmitter levels (Bojesen, 2020)

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Project 2

Slide 12

Project 3

Lithium (Li) is the cornerstone maintenance treatment for bipolar disorders (BD), but response rates are highly variable.

Effects of anticonvulsants on DNA methylation in Bipolar Disorder

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Project 3

Slide 14

Project 3

Slide 15

Slide 16

End of public presentation

Slide 17

Status of educational requirements

Slide 18

Challenges - Technical

Slide 19

Challenges – Scientific

Heterogeneity of disorders