

## Summary IMpACT TC, October 13 2016

**Present:** Jonna, Bru, Andreas, Barbara, Jan, Claiton, Henrik, Marta, Alejandro, Angelién

### Agenda:

1. Update To-do-list
2. Update projects
  - a. Release of PGC-iPSYCH GWAS MA: opportunities from this
  - b. Progress adult ADHD GWAS MA (Marta)
  - c. First results ADHD microbiome (Alejandro, see poster attached)
  - d. News projects plans 2016 from different sites
  - e. Update on additional exciting new results coming from individual IMpACT labs to be shared prior to publication (all)
3. Proposal for an analysis of the role of DRD4 in interaction with sunlight in ADHD (Barbara)
4. Others

### To-do-list

	What	Who	Deadline
1	Send data for the adult ADHD GWAS project to Marta	Brazil, Norway, Germany	Next meeting
2	Planning a date IMpACT 2017 – set up a Doodle	Angelién	Next meeting

#### 1. Update To-do-list

1: Marta has received data from Brazil, Norway, The Netherlands, Germany. We are still waiting for Denmark, which has over 2500 cases and 4000 controls. There is an embargo on publishing the data before the main paper is out, but they will send us the GWAS, so that we can start with the analysis.

2: The annual IMpACT meeting, the 10-year anniversary of IMpACT consortium, will be on the 8 and 9 of May in The Netherlands.

#### 2. Update projects

a) Release of PGC-iPSYCH GWAS MA, opportunities from this:

**Andreas:** Overlap bipolar disease and ADHD related to Lithium response. Earlier results show that in the non-responder group has more (family with) ADHD than the lithium responder group. Is there a way to compare the polygenic risk scores for bipolar disorder and for ADHD  
Andreas and Alejandro will discuss this further.

**Jonna:** Nicoletta has preliminary data on polygenic risk scores on remission. High polygenic risk score for ASD also predicts ADHD persistence. Ebba used polygenic risk score for prediction of different outcomes in UK Biobank data. Strongest overlap is with BMI, but also with bipolar disorder and MDD. Henrik suggests to link this to Swedish registry data. Jonna is interested and will contact Henrik. Analysis ongoing of cognitive data in collaboration with Alysa.

**Bru:** Anu is studying miRNA and methylation SNPs. Permission to use PGC ADHD data. GWAS on all methylation variants, hypothesis-driven approach.

**Barbara:** Overlap between ADHD genes (PGC) and genes for subcortical brain volume (ENIGMA). With a combined GWAS analysis specific variants come up, which are shared, but there seems little global overlap. Has to be investigated further, we have larger ENIGMA data sets for hippocampus and ICV.

There seems to be no overlap of the PGC ADHD variants with the GWAS meta-analysis of adult ADHD symptoms in the SAGA group

**Marta:** Polygenic risk score and use of cannabis genetics. Prediction school failure in a cohort with 4000 children. School failure also registered in the Swedish registry data. Perhaps those data can be used for this study.

b) Progress adult ADHD GWAS MA (Marta): See updates To-do-list.

c) First results ADHD microbiome (Alejandro, see poster attached):

Transplantation of mice with faeces of people with ADHD and healthy controls. The mice transplanted with gut microbiome of cases have a more anxious behavior and alterations in brain connectivity.

d) News projects plans 2016 from different sites

**Sweden, Henrik:**

- ADHD in adult females, pregnancy and their offspring
  - Early risk factor, maternal infection, diabetes
  - medication, epilepsy, school achievements, cardiovascular outcomes
  - borderline and obesity
- ADHD and medical somatic outcomes, also with Norway and Steve
- Explain the overlap between ADHD and other psychiatric diseases. Neurodevelopmental disorders more related with each other than with other psychiatric disorders, and more than with somatic disorders
- ADHD in relation to medical outcome, asthma, Huntington's disease, allergy
- Are genetic correlations also seen in phenotypic data in the Swedish registry data?
- Research on ADHD in elderly, smoking is protective or a bias?

**Brazil, Claiton:**

- Establishing DSM5 protocols, treatment analysis, longer follow up
- More focus on candidate genes
- Pharmacogenetics effects on persistence of ADHD and comorbidities. What information is needed for pharmacogenetics studies, is a self-report of symptoms before and after treatment enough? Claiton will make a Word document with the inclusion criteria.
  - a. Update on additional exciting new results coming from individual IMpACT labs to be shared prior to publication (all) No news.

**3. Proposal for an analysis of the role of DRD4 in interaction with sunlight in ADHD (Barbara)**

DRD4 is expressed in the retina so this makes it more plausible. Also Henrik may have interesting data, but they are still entirely at the start of their project.

**New to-do-list**

	What	Who	Deadline
1	Contact Henrik about use Swedish registry data	Marta, Jonna	Fitting with project plans
2	Document with information on assessments necessary for pharmacogenetics studies	Claiton	Next meeting

## **Project plans 2016**

### Netherlands: Alejandro/Barbara

- 1) CDH13 – rare and common variants and their role in ADHD and its comorbidities (those relevant to CoCA)
- 2) Meta-analysis of the adult ADHD GWAS-MA (from Spain) and SAGA (adult ADHD traits in the population) ( Marieke Klein)
- 3) Microbiom project with Brazil and Spain

### UK: Jonna

- 1) CoCA clinical trial
- 2) MiND: polygenic prediction – potentially one could use Marta's results from the adult ADHD GWAS-MA to see predictive value for persistence
- 3) Swedish registry data with Henrik
- 4) Prison cohort

### USA: Steve

- 1) ADHD GWAS-MA not yet done
- 2) Data analysis using the PGC; importantly, the PGC3 NIH grant got very good scores, and it will employ several data analysts, so that the PGC data becomes available to a greater community
- 3) Method to measure malingering, which seems to occur in adults feigning ADHD

### Sweden: Henrik

- 1) Work related to CoCA - mainly WP1
- 2) Initiate a pilot-study for large-scale population-based data collection of adult ADHD cases
- 3) Birth month, ADHD and adult outcomes. Register study with Jonna Kuntsi.
- 4) Continue to encourage IMPACT members to use Swedish registers in studies of ADHD.
- 5) (ECNP symposium discussant for TNM about registry-studies of ADHD in Vienna.

### Barcelona: Marta

- 1) PGC-IMPACT meta-analysis adult ADHD
- 2) Epigenetics analysis in MiND
- 3) Microbiom analysis together with Alejandro
- 4) Cannabis use – ADHD GWAS-MA
- 5) Expression analysis (see above)

### Norway: Jan

- 1) Exome chip data under review in Molecular Psychiatry
- 2) Analysis of neuropsychological data in the IMPACT database
- 3) Analysis on epidemiological data as part of CoCA

### Germany - Frankfurt: Andreas

- 1) Start CoCA
- 2) Work on cell models in MiND
- 3) Expand on bipolar disorder and ADHD overlap, e.g. lithium response genes

### Brazil Claiton

- 1) Acquisition of neuroimaging data from adults with ADHD
- 2) EAT2BNICE (Nutrition/Microbiom project coordinated by Alejandro)
- 3) Gene-level and pathway analyses of ADHD symptoms in adults with ADHD (are being performed by Nina together with the Dutch site)
- 4) Progress on merging and analysing Personality data across IMPACT sites
- 5) Analyses on differences between persisters and remitters –imaging, genetics, neuropsychology
- 6) Pharmacogenetics – focus on the role of clinical heterogeneity, starting plans for GWAS and replications in other sites