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SYSCID – A Systems medicine approach to chronic inflammatory diseases

### SYSCID E-Newsletter: 6/2020

We are pleased to present the 6<sup>th</sup> e-newsletter of the SYSCID consortium which unites internationally renowned experts from 9 countries with the ambition to pave the way for a systems medicine approach to chronic inflammatory diseases. We would like to provide you with a short update of our work progress and interesting news from the field. This includes:

- [SYSCID work progress](#)
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### SYSCID work progress

An ongoing main goal of SYSCID is to identify molecular markers of therapy response towards various biologic treatments in CID. In addition to the expansion and harmonization of transcriptome, microbiome and epigenome data from longitudinal CID cohorts, we have now implemented blood single cell RNA sequencing algorithms as a novel tool for therapy response prediction across CID. In a first hypothesis generation cohort 20 IBD patients undergoing biologic therapy have been longitudinally assessed for blood single cell RNA sequencing. Benchmark studies on the validity of several applicable single cell sequencing techniques have been performed. To understand the temporal stability and dynamics of gut microbiota on host immunity, we have longitudinally sampled 442 healthy control subjects with multiple time point. In total >1000 samples will be conducted for 16s and RNA-Sequencing to generate microbiome-transcriptome interaction analysis. To facilitate multi-omics integration into a single data framework consortium partners have streamlined analytical algorithms and are currently refining their model approaches before dissemination to other consortium members. All together this project is now entering the hot phase in which prior efforts transform into solid findings on the molecular landscape of CID. Stay tuned

### Recent publications

- Aarestrup FM, Albeyatti A, Armitage WJ, Auffray C, Augello L, Balling R, Benhabiles N, Bertolini G, Bjaalie JG, Black M, Blomberg N, Bogaert P, Bubak M, Claerhout B, Clarke L, De Meulder B, D'Errico G, Di Meglio A, Forgo N, Gans-Combe C, Gray AE, Gut I, Gyllenberg A, Hemmrich-Stanisak G, Hjorth L, Ioannidis Y, Jarmalaite S, Kel A, Kherif F, Korbel JO, Larue C, Laszlo M, Maas A, Magalhaes L, Manneh-Vangramberen I, Morley-Fletcher E, Ohmann C, Oksvold P, Oxtoby NP, Perseil I, Pezoulas V, Riess O, Riper H, Roca J, Rosenstiel P, Sabatier P, Sanz F, Tayeb M, Thomassen G, Van Bussel J, Van den Bulcke M, Van Oyen H. Towards a European health research and innovation cloud (HRIC). *Genome Med.* 2020 Feb 19;12(1):18.doi: 10.1186/s13073-020-0713-z.
- Cader MZ, de Almeida Rodrigues RP, West JA, Sewell GW, Md-Ibrahim MN, Reikine S, Sirago G, Unger LW, Iglesias-Romero AB, Ramshorn K, Haag LM, Saveljeva S, Ebel JF, Rosenstiel P, Kaneider NC, Lee JC, Lawley TD, Bradley A,

Dougan G, Modis Y, Griffin JL, Kaser A. FAMIN Is a Multifunctional Purine Enzyme Enabling the Purine Nucleotide Cycle. Cell. 2020 Jan 23;180(2):278-295.e23. doi: 10.1016/j.cell.2019.12.017. Erratum in: Cell. 2020 Feb 20;180(4):815. PubMed PMID: 31978345

- Rosati E, Pogorelyy MV, Dowds CM, Moller FT, Sorensen SB, Lebedev YB, Frey N, Schreiber S, Spehlmann ME, Andersen V, Mamedov IZ, Franke A. Identification of Disease-associated Traits and Clonotypes in the T Cell Receptor Repertoire of Monozygotic Twins Affected by Inflammatory Bowel Diseases. J Crohns Colitis. 2020 Jan 22. pii: jjz210. doi: 10.1093/ecco-jcc/jjz210.

### UEG week 2019

Living up to its motto: sharing the future with digestive health, this year's United European Gastroenterology Week - short UEG Week, united around 17,200 participants (onsite and online) coming from 122 countries. From all over the world practitioners, top scientists and everyone invested in digestive health travelled to Barcelona to join the 27th edition of this renowned meeting from October 19th – October 23rd 2019.

With such an event taking place in the heart of Europe, the SYSCID team was naturally not far. Philip Rosenstiel, Konrad Aden, Neha Mishra and many more participated.

They presented novel data on how i) blood transcriptome/epigenome signatures and ii) microbial metabolic signatures can be employed to predict therapeutic efficacy in IBD patients treated with biologic therapies such as anti-TNF antagonist.

We are looking forward to the next UEG Week in Amsterdam 2020.

### Upcoming events

- [UEG Week: October 10-14, 2020 Amsterdam, Netherlands](#)
- [IHEC annual meeting: September 23-25, 2020 Kiel, Germany](#)
- [SYSCID Symposium: September 23-25, 2020 Kiel, Germany](#)

### News from the team

As SYSCID has been member of IHEC since 2017 we are proud and excited to announce that SYSCID will be hosting the annual IHEC meeting in 2020 as part of the SYSCID Symposium. The IHEC Annual Meeting 2020 & Science Days will take place in Kiel, Germany from 23 to 25 September 2020. Please mark your calendars and save the dates. Further details will be announced in the upcoming weeks. We are looking forward to see you there and discuss the newest trends.

Annual Meeting in Geneva April 2020 cancelled due to COVID-19. We are sad to cancel our annual meeting but instead we will meet up virtually and exchange and discuss online.

### Your contact persons

Should you have questions or suggestions for our newsletter, please get in touch with:

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