SYSCID – A Systems medicine approach to chronic inflammatory diseases

2nd edition of the SYSCID E-Newsletter: 1/2018

The first year of SYSCID has already come to an end, but before heading straight on to the next one, we would like to share our impressions of the last 6 months and give you a heads up of what's to come in 2018.

The second edition of our E-Newsletter includes highlights of the scientific work of the group, a list of new publications, as well as upcoming events and news from our team.

With this, the whole SYSCID consortium wishes you a good start to 2018.

Tryptophan metabolites as new biomarkers for IBD severity and therapy response

In an analysis of serum and biopsy samples from overall more than 500 patients with IBD, SYSCID researchers observed a negative correlation between serum levels of tryptophan and disease activity. Increased levels of tryptophan metabolites—especially of quinolinic acid—could contribute to development of IBD or aggravate disease activity. The study shows a link between levels of tryptophan metabolites and response to therapy. The composition of the fecal microbiota and mucosal gene expression patterns is associated with tryptophan levels and disease activity in patients with IBD. Additional studies are now warranted to determine whether modification of intestinal tryptophan pathways could be developed into a treatment option for IBD and whether this metabolic impairment is unique to IBD or might also be present in the other inflammatory diseases under study in SYSCID.

The article is available in the December 2017 issue of Gastroenterology.

New method for the analysis of microbial data

The VIB team removed a big elephant in the microbiome room. With their new method, a combination of 16S rDNA sequencing and flow cytometry, microbial data can be evaluated using the actual numbers instead of only relative data. Using this method VIB discovered bacterial cell numbers differ up to ten times between healthy individuals. This difference increases to 50 times when including Crohn's patients, who have a significantly lower cell number. The new technique will allow integrating microbiome and other omics data more easily. The corresponding article was published in nature and will be available open access soon.

Glycosylation of Immunoglobulin G and Inflammatory Bowel Diseases

Causes of inflammatory bowel diseases are not well understood and the most prominent forms Crohn's disease (CD) and ulcerative colitis (UC) are sometimes hard to distinguish. In front of this backdrop, a new paper published by SYSCID partner Genos discusses the association between glycosylation of immunoglobulin G (IgG) with clinical features of these diseases and evaluates the result of the studies showing that patients with CD or UC had lower levels of IgG galactosylation than controls. To view the article, please follow this link.

SYSCID at the annual IHEC meeting

Hosted by the German Federal Ministry of Education and Research (BMBF) and the German Epigenome Program (DEEP), the annual meeting of the International Human Epigenome Consortium (IHEC) as well as the IHEC "Science Days" Symposium united epigenomics scientists and funding agency members from around the world in Berlin.

From October 12th – 14th, various sessions including country updates, working group reports and an engaging discussion on future directions sounded the bell for IHEC Phase II. While tremendous progress has been made in generating and providing an outstanding pool of high-quality epigenomic datasets to the global research community, Phase II will move on to the actual use of these datasets in terms of integrative analyses, interpretation and data assessment.

Since SYSCID fits this new focus perfectly, the presentation of Philip Rosenstiel of the project as one of the new European initiatives was very well received.

Publications from SYSCID members

- Andersen V et al.: A proposal for a study on treatment selection and lifestyle recommendations in chronic inflammatory diseases: A Danish multidisciplinary collaboration on prognostic factors and personalised medicine
- Nikolaus S, Schulte B, Al-Massad N, Thieme F, Schulte DM, Bethge J, Rehman A, Tran F, Aden K, Häsler R, Moll N, Schütze G, Schwarz MJ, Waetzig GH, Rosenstiel P, Krawczak M, Szymczak S, Schreiber S.: Increased Tryptophan Metabolism Is Associated With Activity of Inflammatory Bowel Diseases
- Rosati E, Dowds CM, Liaskou E, Klemsdal Henriksen EK, Karlsen TH and Franke A: Overview of methodologies for T-cell receptor repertoire analysis
- Shen X, Klarić L, Sharapov S, Mangino M, Ning Z, Wu D, Trbojević-Akmačić I, Pučić-Baković M, Rudan I, Polašek O, Hayward C, Spector TD, Wilson JF, Lauc G, Aulchenko YS: Multivariate discovery and replication of five novel loci associated with Immunoglobulin G N-glycosylation
- Šimurina M, de Haan N, Vučković F, Kennedy N A, Štambuk J, Falck D, Trbojević-Akmačić I, Clerc F, Razdorov G, Khon A, Latiano A, D'Incà R, Danese S, Targan S, Landers C, Dubinsky M, IBD-BIOM consortium, McGovern D P M, Annese V, Wuhrer M, Gordan L: Glycosylation of Immunoglobulin G Associates With Clinical Features of Inflammatory Bowel Diseases
- Vandeputte D, Kathagen G, D'hoe K, Vieira-Silva S, Valles-Colomer M, Sabino J, Wang J, Tito R Y, De Commer L, Darzi Y, Vermeire S, Falony G amd Raes J: Quantitative microbiome profiling links gut community variation to microbial load

Upcoming events

- 2nd edition of Revolutionizing Next-Generation Sequencing: Tools and Technologies (RNGS17), March 20-21, 2017 in Antwerp, Belgium
- Personalized and Precision Medicine International Conference – PEMED, June 25-27, 2018 in Paris, France
- 4th International Systems Biomedicine Symposium: Impact of Big Data Analytics on Healthcare, October 4-5, 2017 in Luxembourg
- International Human Epigenome Consortium (IHEC) conference, October 2018 in Hong Kong
- 26th UEG Week, October 20 -24, 2018 in Vienna, Austria

News from the SYSCID team

To give an insight into the work performed by the partners, we have initiated a small lab series which tours from one partner site to another, giving a glimpse of the tasks carried out at the moment. Our first two stops where the Eurice office in Saarbrucken (Germany) and the lab of Prof. Ken Smith´s group in Cambridge (UK).

To read the whole entries and see which partners provide an update next, visit the news section on our website.

Your contact persons

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SYSCID has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 733100.