

Together against Covid-19 Pandemic

BioRN Member interested in cooperation: GeneWerk GmbH

Member Profile: <https://www.biorn.org/member/GeneWerk-GmbH>

Contact Person (Name and Position):

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What can we offer:

Finding the relevant immune response signature may advance solutions to diagnose, treat, and prevent the disease, augmenting existing research efforts that primarily focus on the biology of the virus. GeneWerk will leverage our existing target enrichment sequencing (TES)-based approach, which relying on the use of target-specific RNA baits to capture the cDNA fragments of interest followed by deep sequencing, mapping population-wide adaptive immune responses to diseases at scale to study COVID-19. We employed customized bait sets, optimized by taking into account V, J and C gene sequence homologies, to enable the simultaneous capture of all the TCR (α , β , γ , δ) and BCR (κ , λ , α , ϵ , γ , μ , δ) chains, respectively.

The approach was evaluated on samples from healthy donors, both peripheral blood mononuclear cells (PBMCs) and isolated T and B cells, as well as in T and B cell lines, which were used as monoclonal controls. In addition to the TES performance, the associated bioinformatical analyses fitting to the study of the patients' immune reconstitution were also assessed in these samples. For the immunome data analysis, the MiXCR pipeline was used to identify and extract the TCR and BCR clonotypes, and VDJtools were employed for the downstream analysis of repertoire diversity and clone tracking.

What are we looking for:

1. Partners who could collect and pre-process peripheral blood mononuclear cells (PBMCs) and/or isolated T and B cell fractions or subsets from SARS-CoV-2 infected patients and healthy controls.
2. Funding opportunities to analyze the dynamic changes that occur within an individual's T-cell and B-cell repertoires during the transition from acute COVID-19 infection into convalescence. We will identify which T- and B-cell clonotypes are expanding, track clonotype populations through the course of the disease, and identify antigen-specific clones indicative of memory responses.
3. Partners to elaborate our TES immune repertoire technology as a quality assessment tool for their cloned monoclonal antibodies for COVID-19 treatment/prevention.

Useful links:

<https://www.genewerk.com/en/immune-repertoire-analyses.html>



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