



SAveRUNNER: a network-based algorithm for drug repurposing and its application to COVID-19

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Bioinformatica e Biomatematica – Parte II*



Our group



Giulia Fison



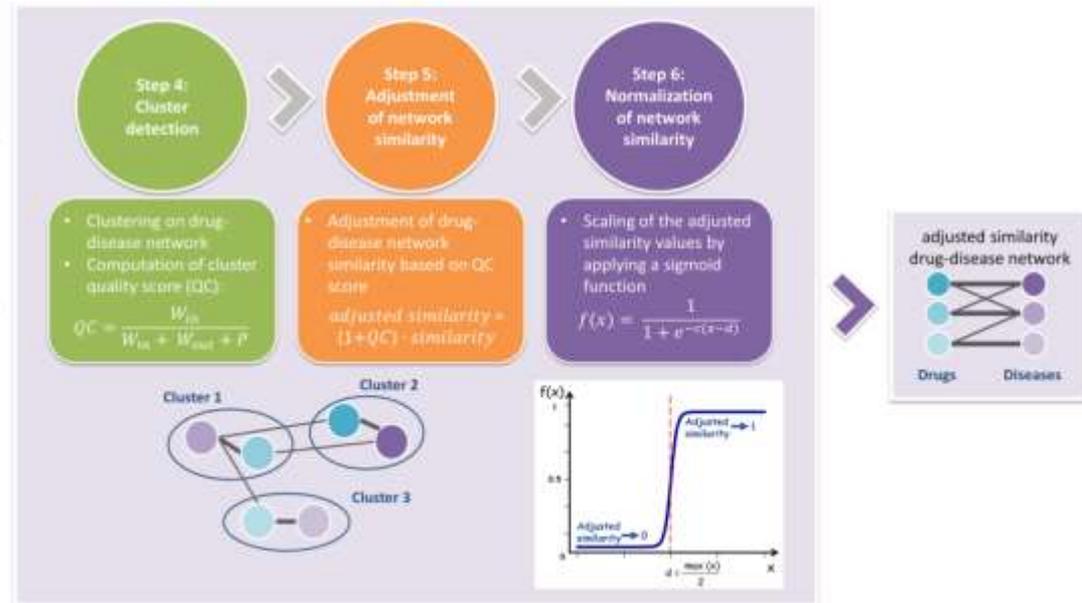
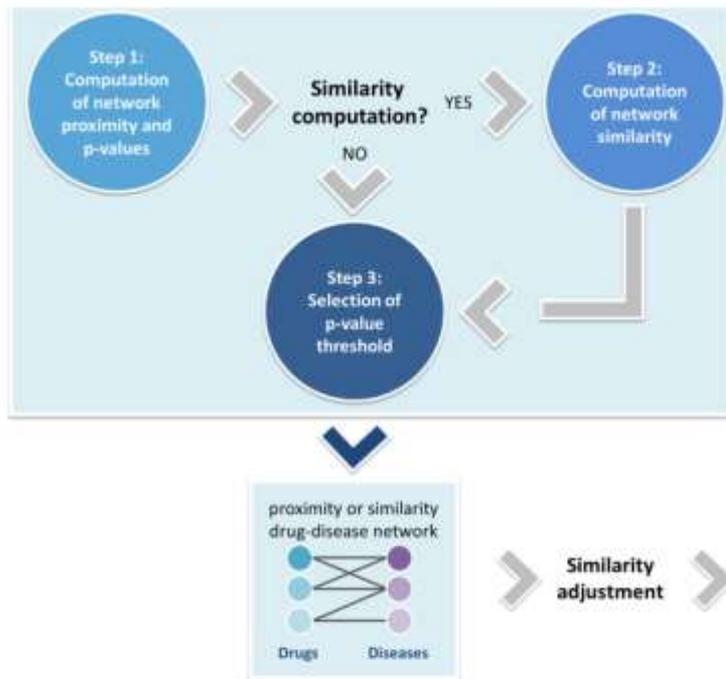
Paola Paci



Federica Conte



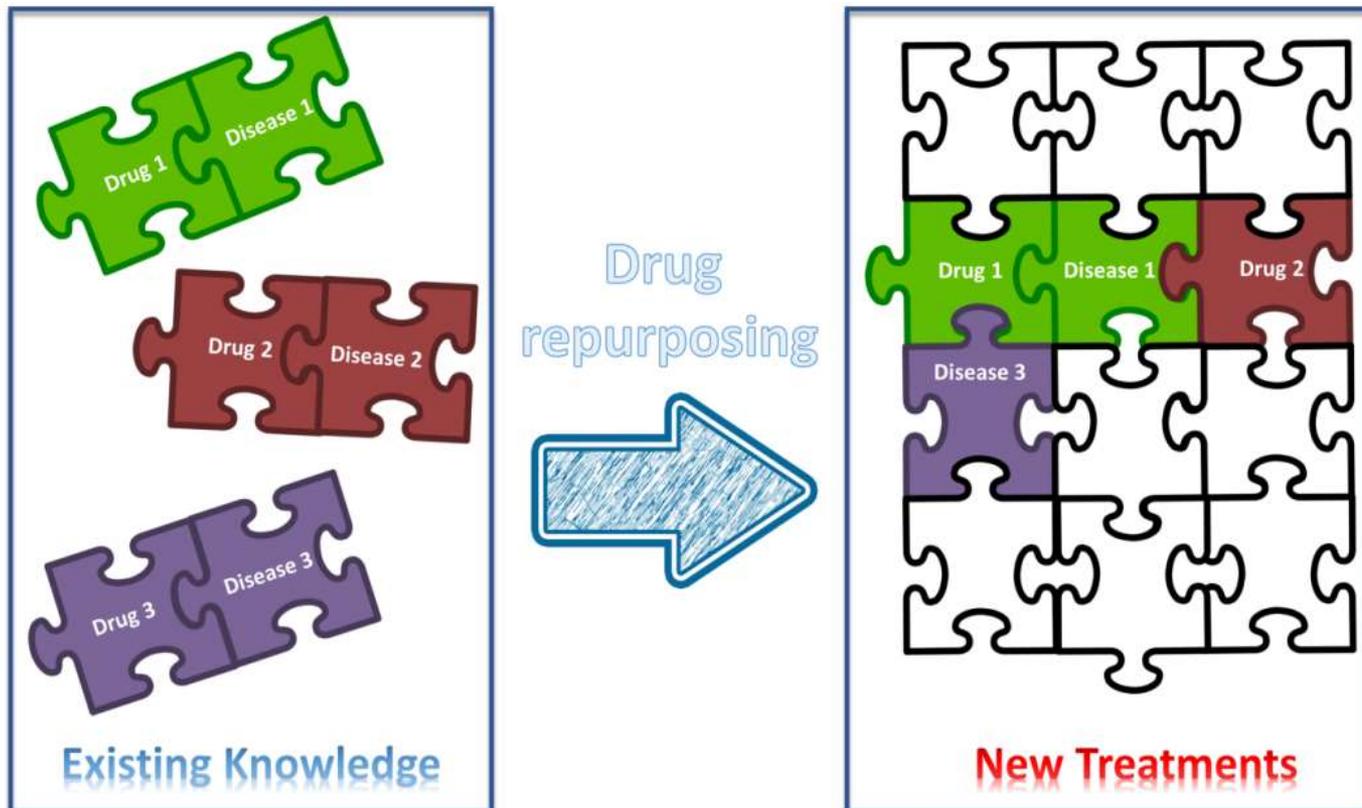
SAveRUNNER



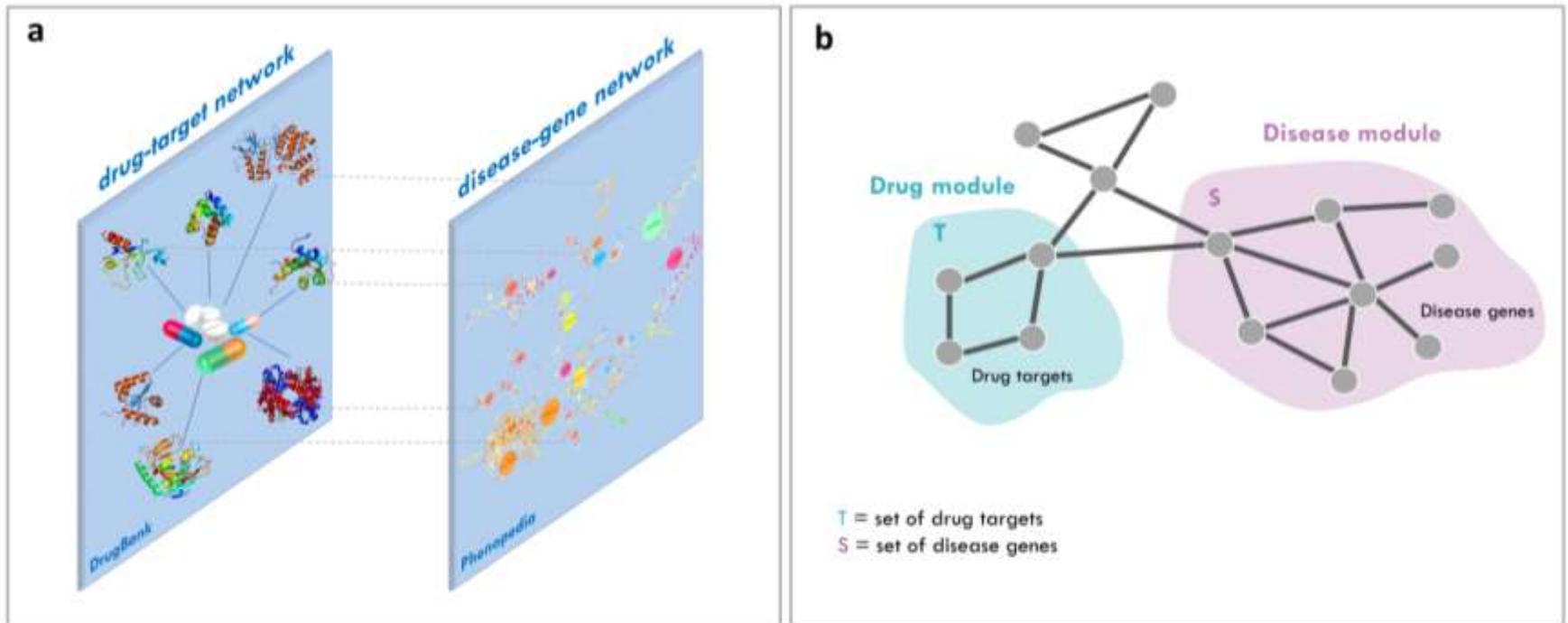
Drug repurposing

Drug repurposing (also called drug repositioning) is a strategy for identifying new uses for approved or investigational drugs that are outside the scope of the original medical indication

Pushpakom et al. Nat Rev Drug Discov 18, 41–58 (2019)



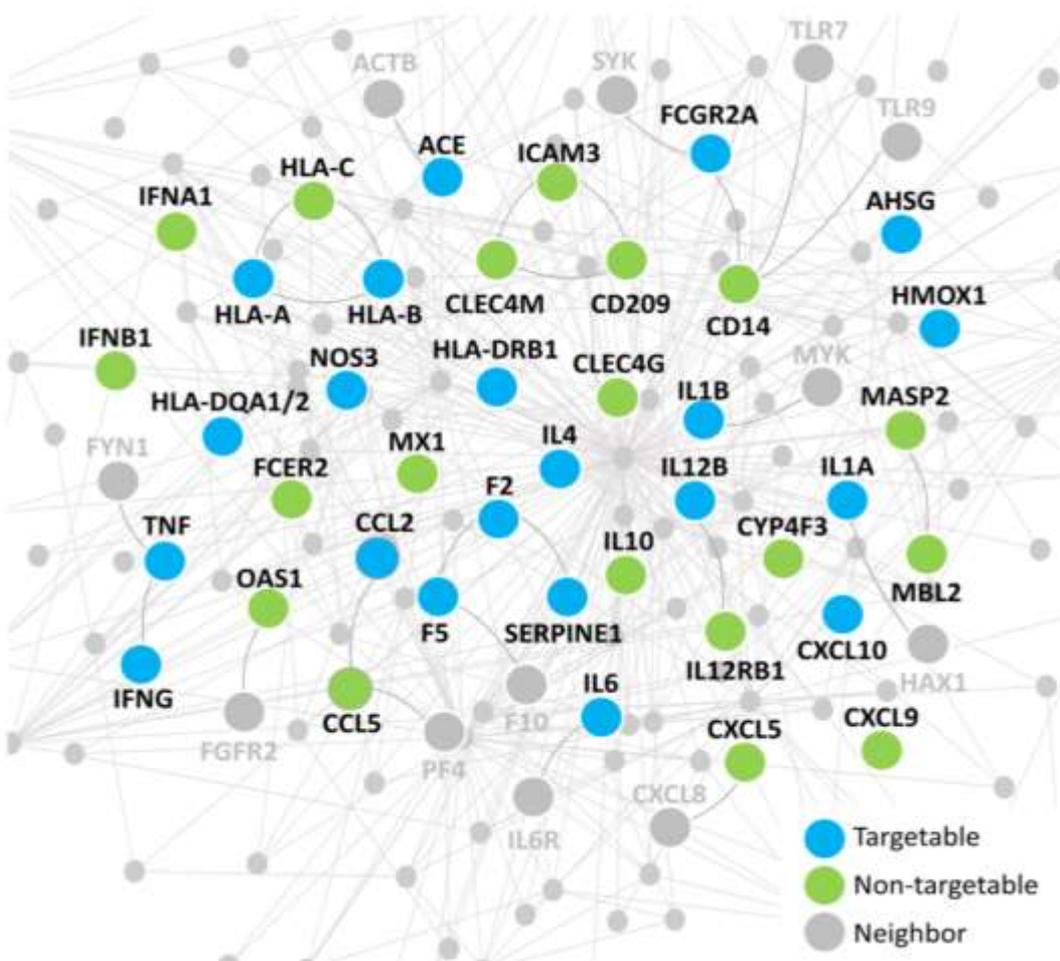
Network Medicine



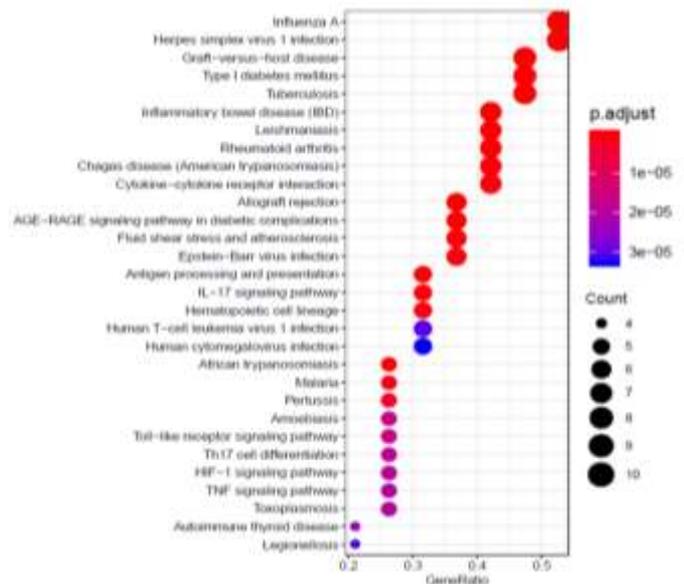
Data

Network type	Database
Drug Target 	DrugBank https://www.drugbank.ca/
Disease Gene 	Phenopedia https://phgkb.cdc.gov/PHGKB/startPagePhenoPedia.action
Protein Protein 	Interactome network from Cheng et al. <i>Nat Commun</i> 9 , 2691 (2018)

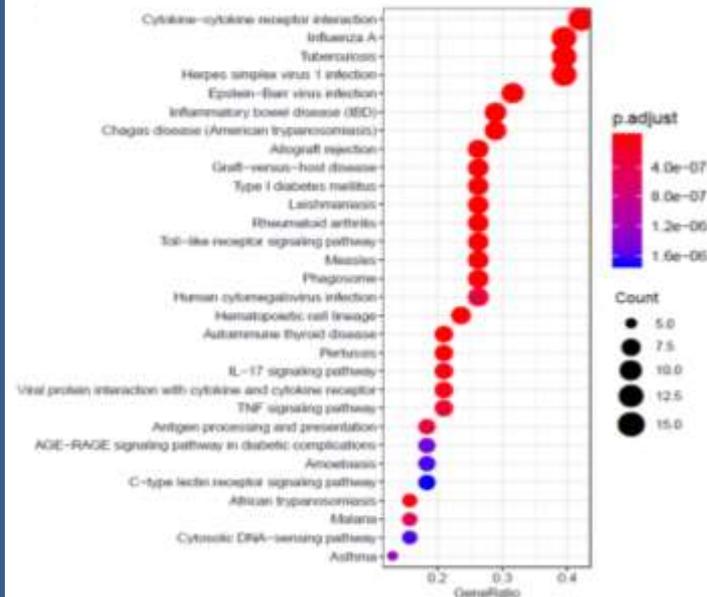
The SARS-CoV-associated disease genes subnetwork in the human interactome



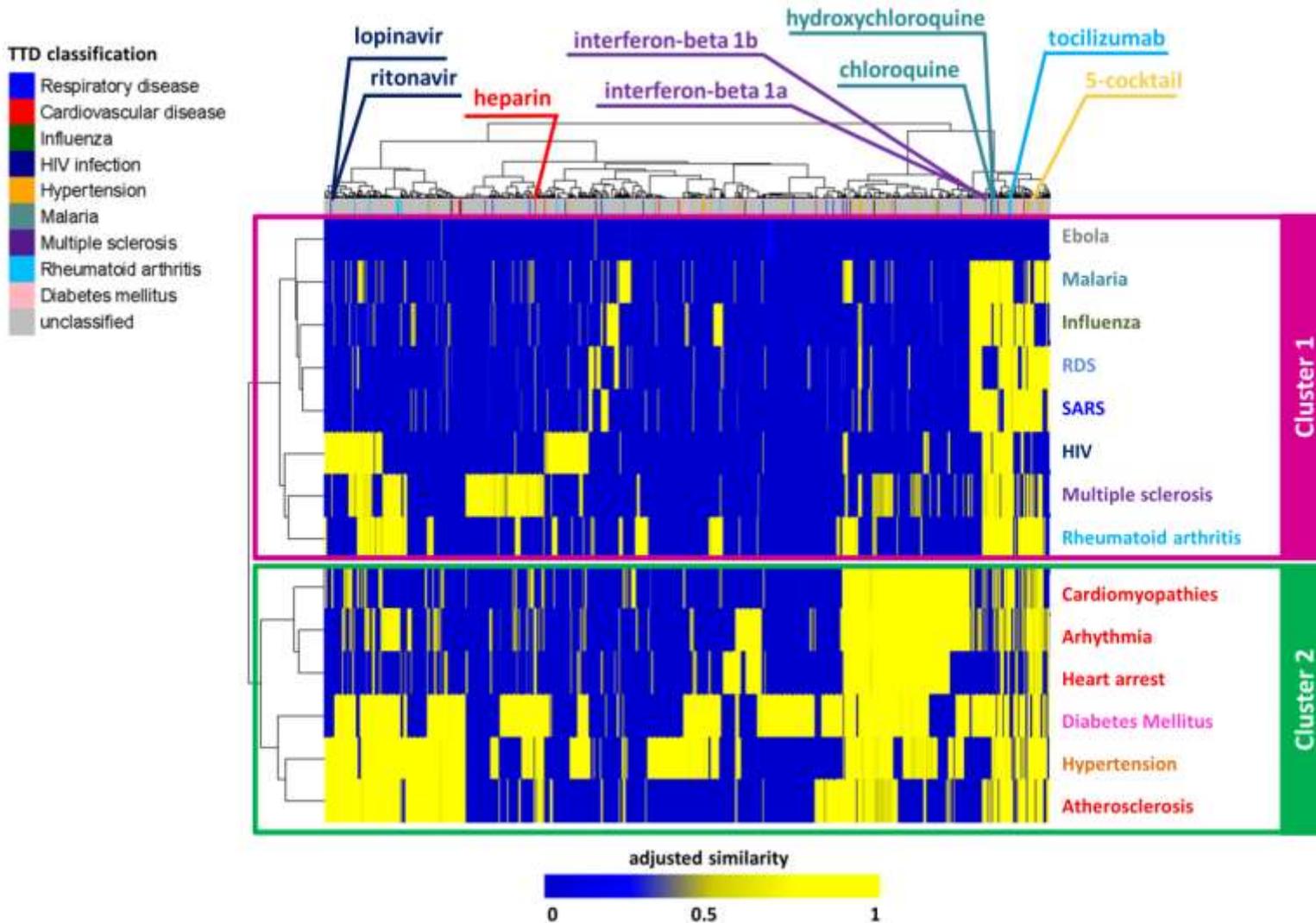
KEGG for 21 targetable disease genes

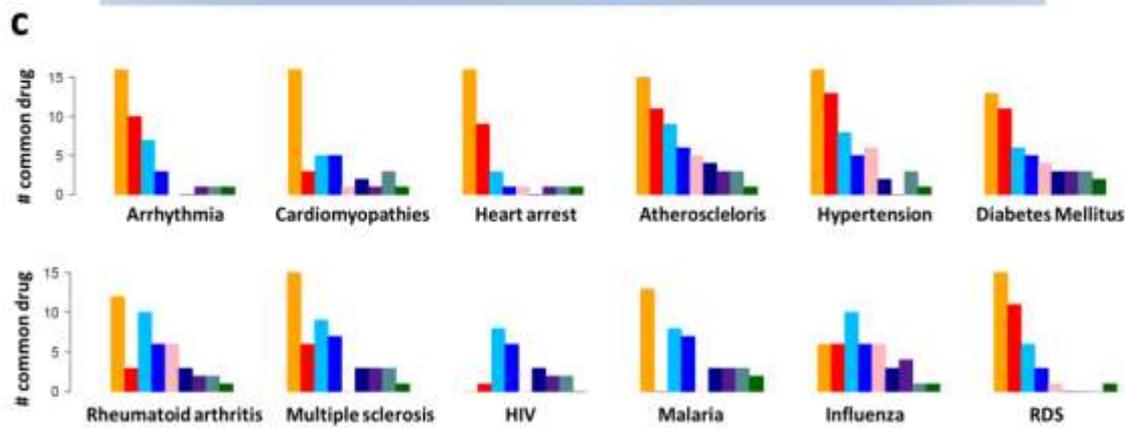
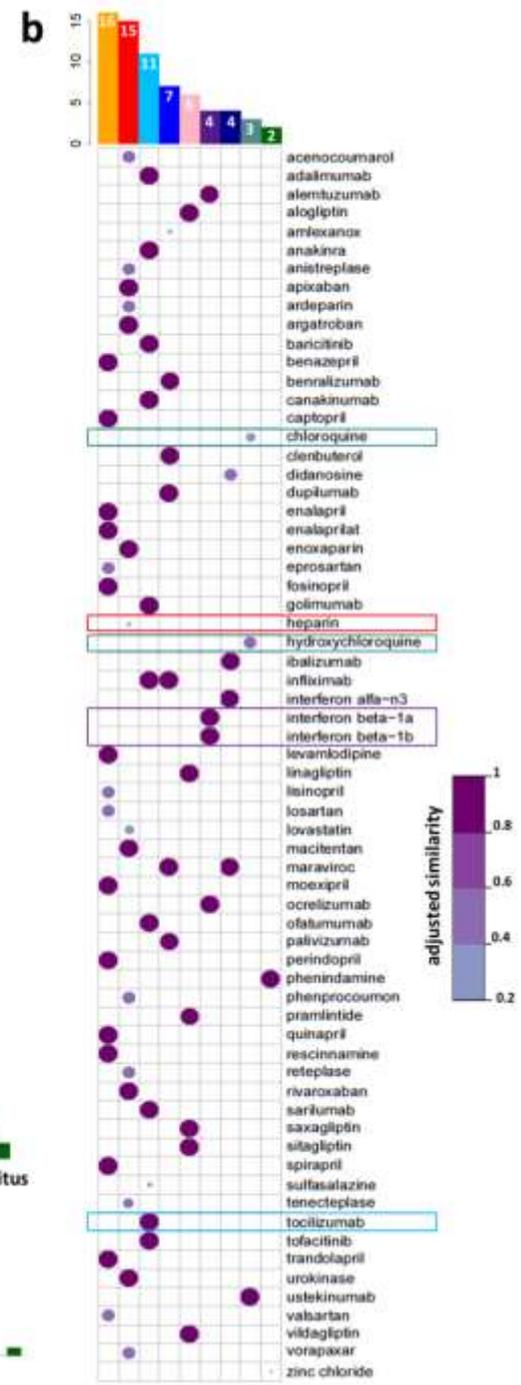
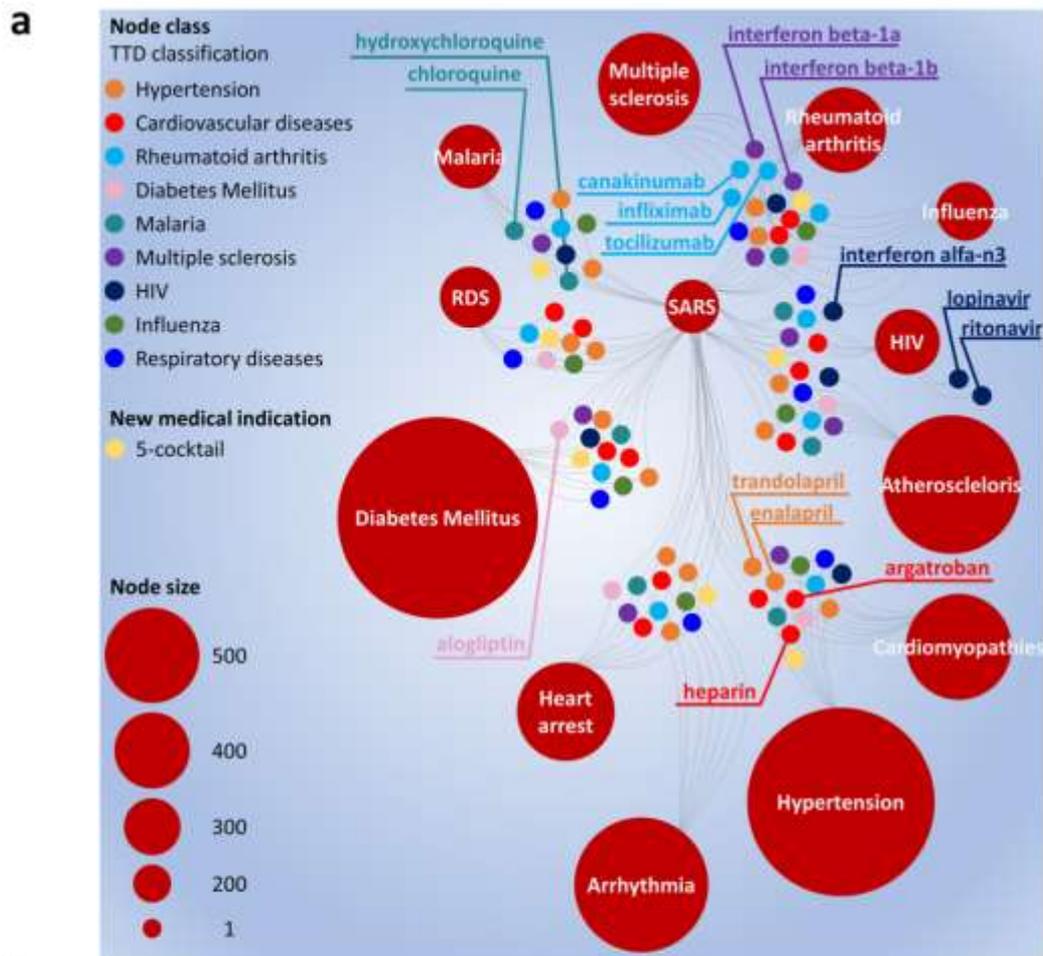


KEGG for 41 disease genes

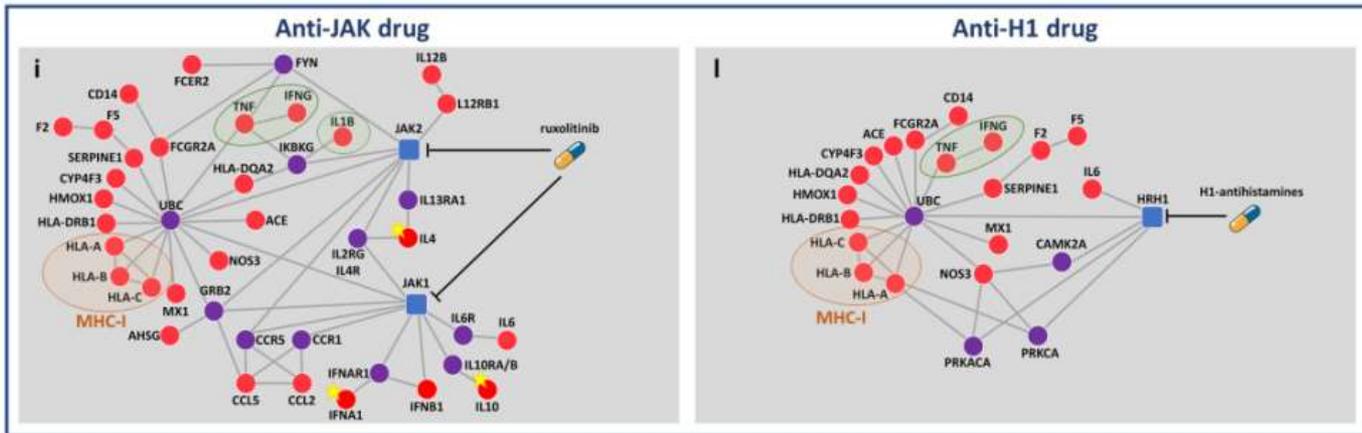
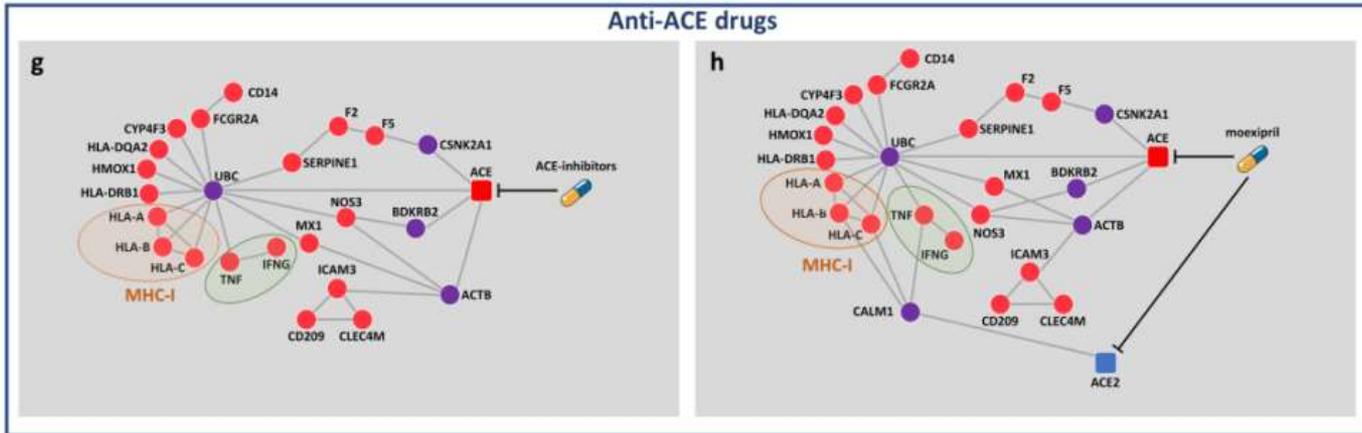


Drug-Disease network



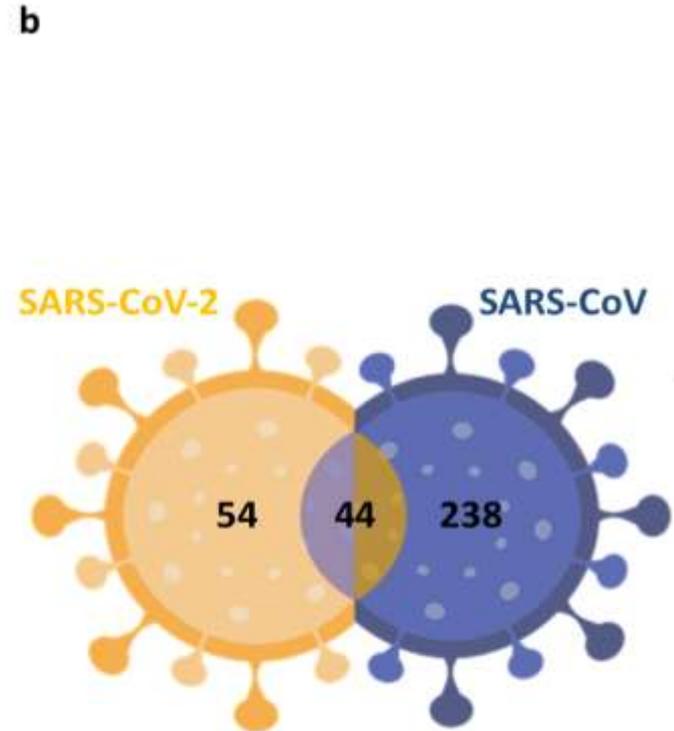
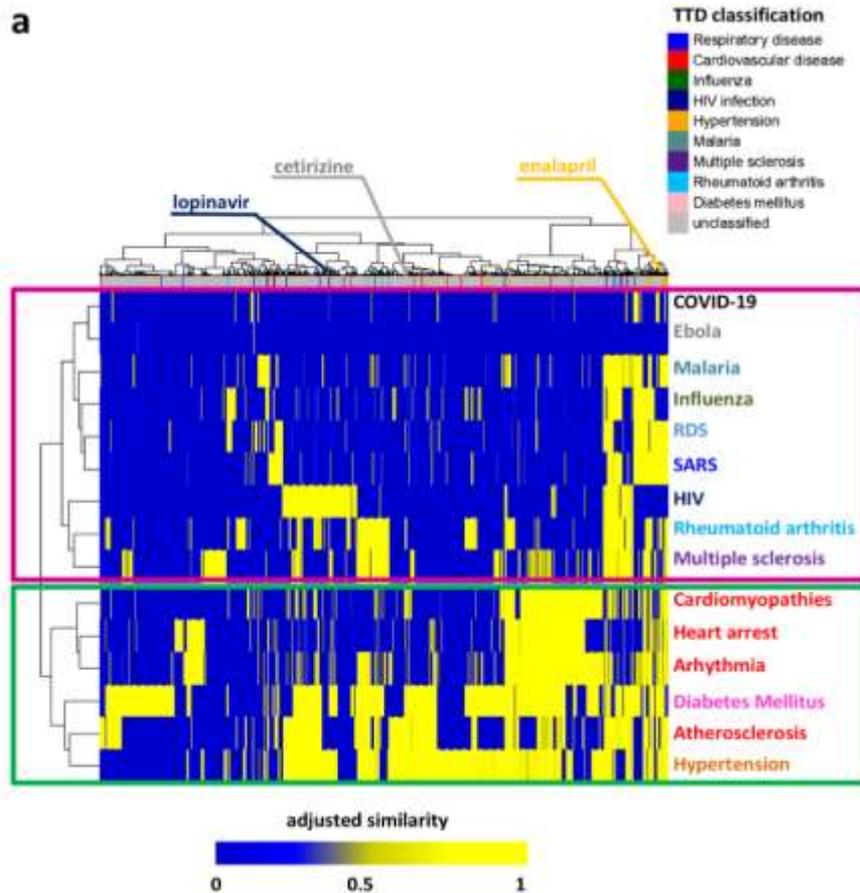


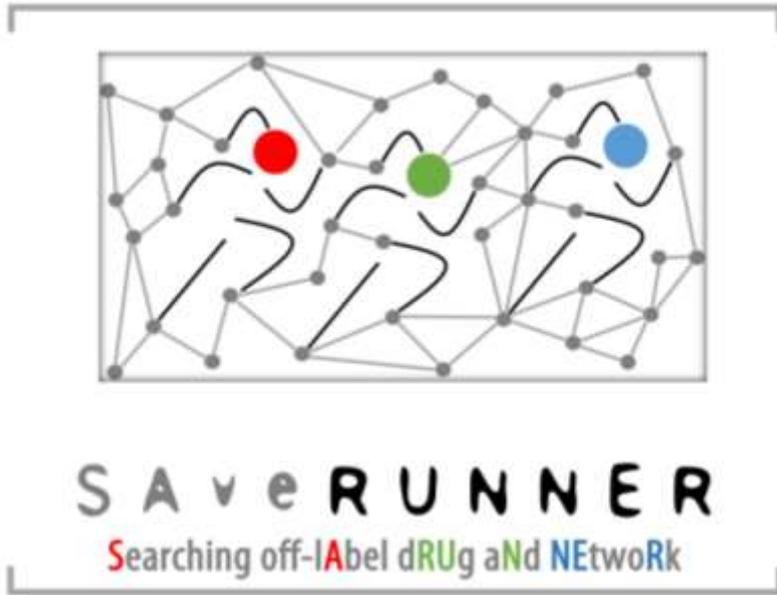
In-silico drug predictions for the management of COVID-19



● disease-gene ■ drug-target ■ drug-target & disease-gene

Preliminary results for SARS-CoV-2

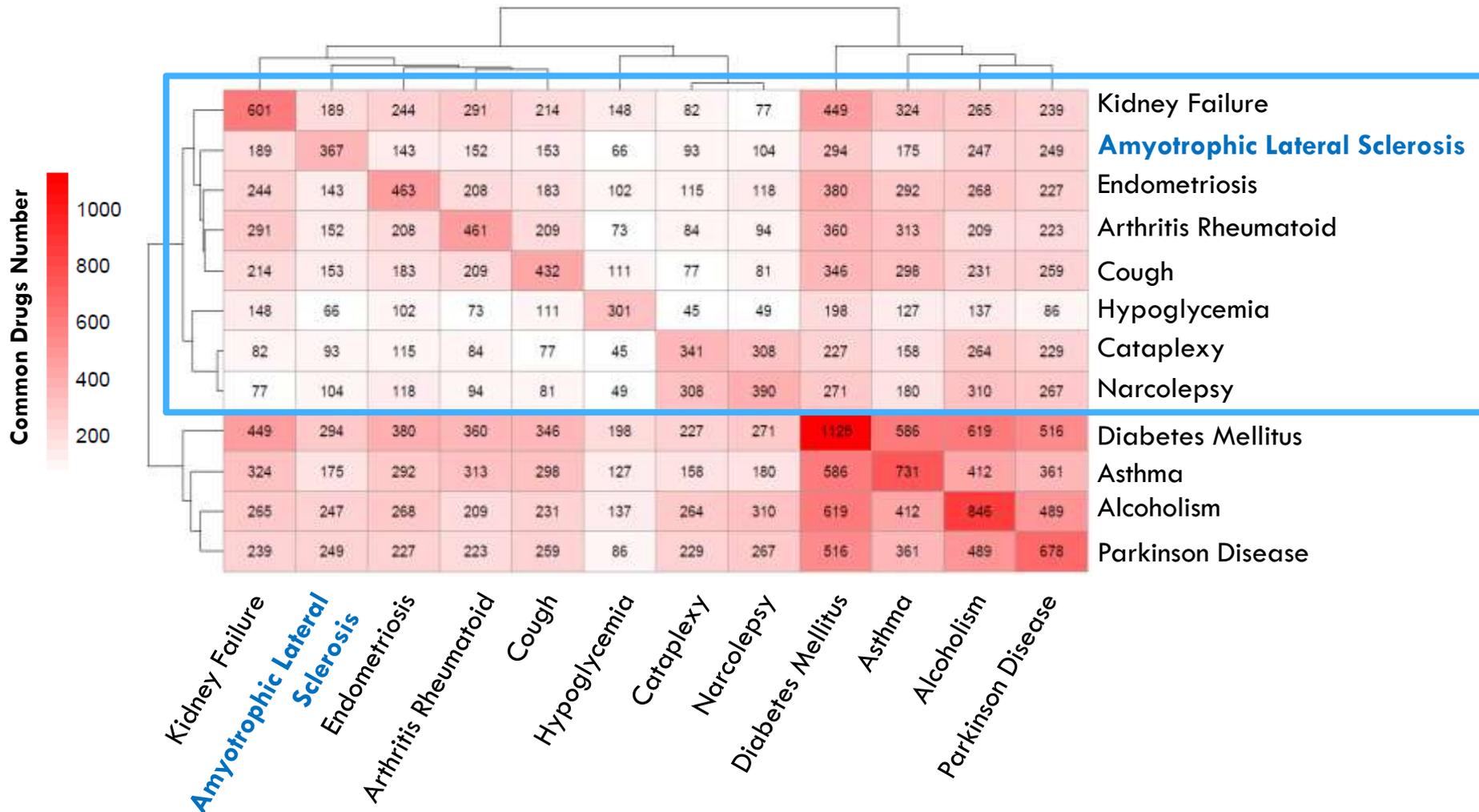




A myotrophic
L ateral
S clerosis

*In collaboration with
Cinzia Volontè*

Predicted drug-disease network





<http://arxiv.org/abs/2006.03110>

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