

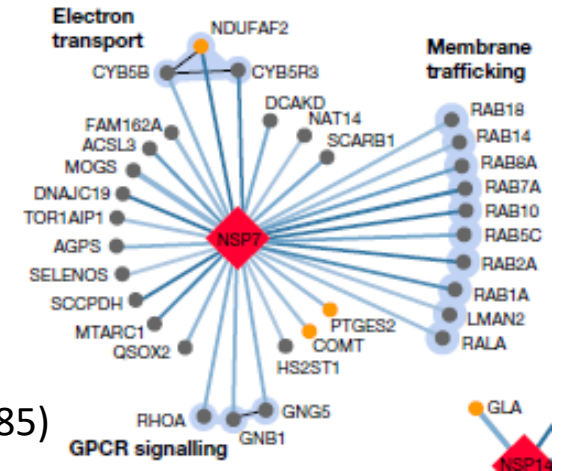
SARS-CoV2 viral protein-cellular protein interactions as cross-species infection Molecular Initiating Events

SARS-CoV2 proteins have been determined to interact with more than 300 proteins in human cells. The proteins known to facilitate entry into human cells, ACE2 and TMPRSS2, have orthologs in other species, but other protein targets have yet to be investigated as to sequence conservation across species.

• Protein mapping reveals viral interactions with basic cellular function networks

- Electron transport
- Membrane trafficking
- GPCR signaling
- Mitochondrial metabolism
- Kinase signaling, etc.

• (Gordon et al. 2020, Nature 583:459-485)



- Proteins with more highly conserved amino acid sequences could be of greater impact in cross-species transmission as well as infection of human cells
- U.S. EPA's SeqAPASS tool can be used to determine sequence similarity across hundreds to thousands of species



Sally A. Mayasich, PhD



Oak Ridge Institute for Science & Education (ORISE) Post-doctoral Fellow
at U.S. EPA, Great Lakes Toxicology & Ecology Division, Duluth, MN

- Amphibian thyroid deiodinase expression in cell culture for *in vitro* toxicity screening
- CRISPR/Cas deiodinase gene knockout in *Xenopus* for AOP development
- Development of tools for cross-species chemical sensitivity predictions using site-directed mutagenesis and molecular modeling
- Doctoral studies in endocrine-immune interactions in sea lampreys (University of Minnesota)
 - Molecular evolution of vasopressin-oxytocin hormone-receptor system
- MS, Marine and Estuarine Environmental Science (University of Maryland)
 - Oyster gut bacteria and chitinase enzymes
- Born and raised in northeastern Minnesota
 - Outdoor: X-C skiing, kayaking, walking, spending time at the family cabin
 - Indoor: Watching shows about science and nature and outer space

