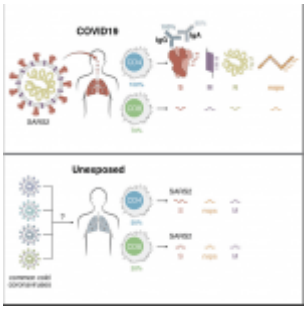
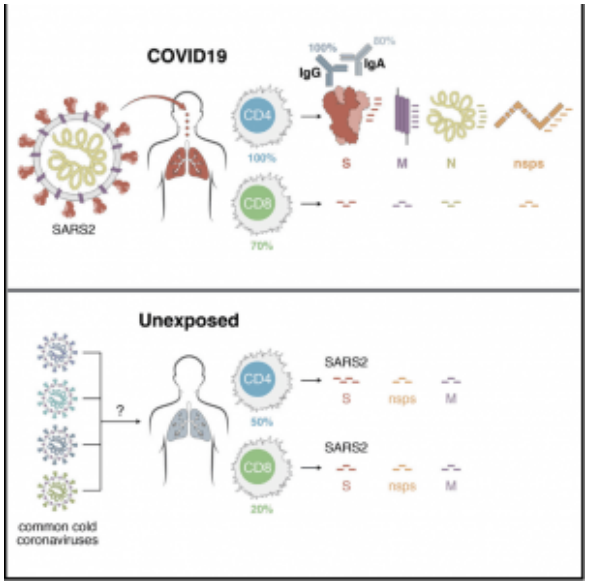
Do we have more T cell immunity to SARS-CoV-2 than we think?





Grifoni et al., 2020 Graphical Abstract

A recently published article in Cell showed the presence of SARS-CoV-2–reactive CD4+ T cells in up to 60% of unexposed individuals – suggesting the presence of cross-reactive T cells. The authors used a set of peptide 'megapools', derived from predicted peptides restricted by several HLA class I and II, and found that 70-100% of COVID-19 convalescent patients had reactive SARS-CoV-2–specific CD8+ and CD4+ T cells. CD4+T cell responses to spike appeared immunodominant and "correlated with the magnitude of the anti-SARS-CoV-2 IgG and

IgA titers." There appeared to be a hierarchy of CD4+ T cells responses to the M, spike and N proteins, as well as responses to nsp3, nsp4, ORF3a and ORF8. CD8+ T cells also recognized the spike and M proteins, with "at least eight SARS-CoV-2 ORFs targeted." These results show that SARS-CoV-2 infected individuals make robust T cell responses to the virus, which is important information towards vaccine development. However, the finding that SARS-CoV-2 unexposed individuals could also react with these peptide pools suggests a level of pre-existing immunity that may have been derived from infection with the circulating 'common cold' coronaviruses. Does this translate to some form of protection?

Journal Article: Grifoni *et al.,* 2020. Targets of T Cell Responses to SARS-CoV-2 Coronavirus in Humans with COVID-19 Disease and Unexposed Individuals. Cell

Article by Clive Gray