



 **COVID-19 mRNA vaccines transfer to breastmilk spike reactive SIgA and T cells**

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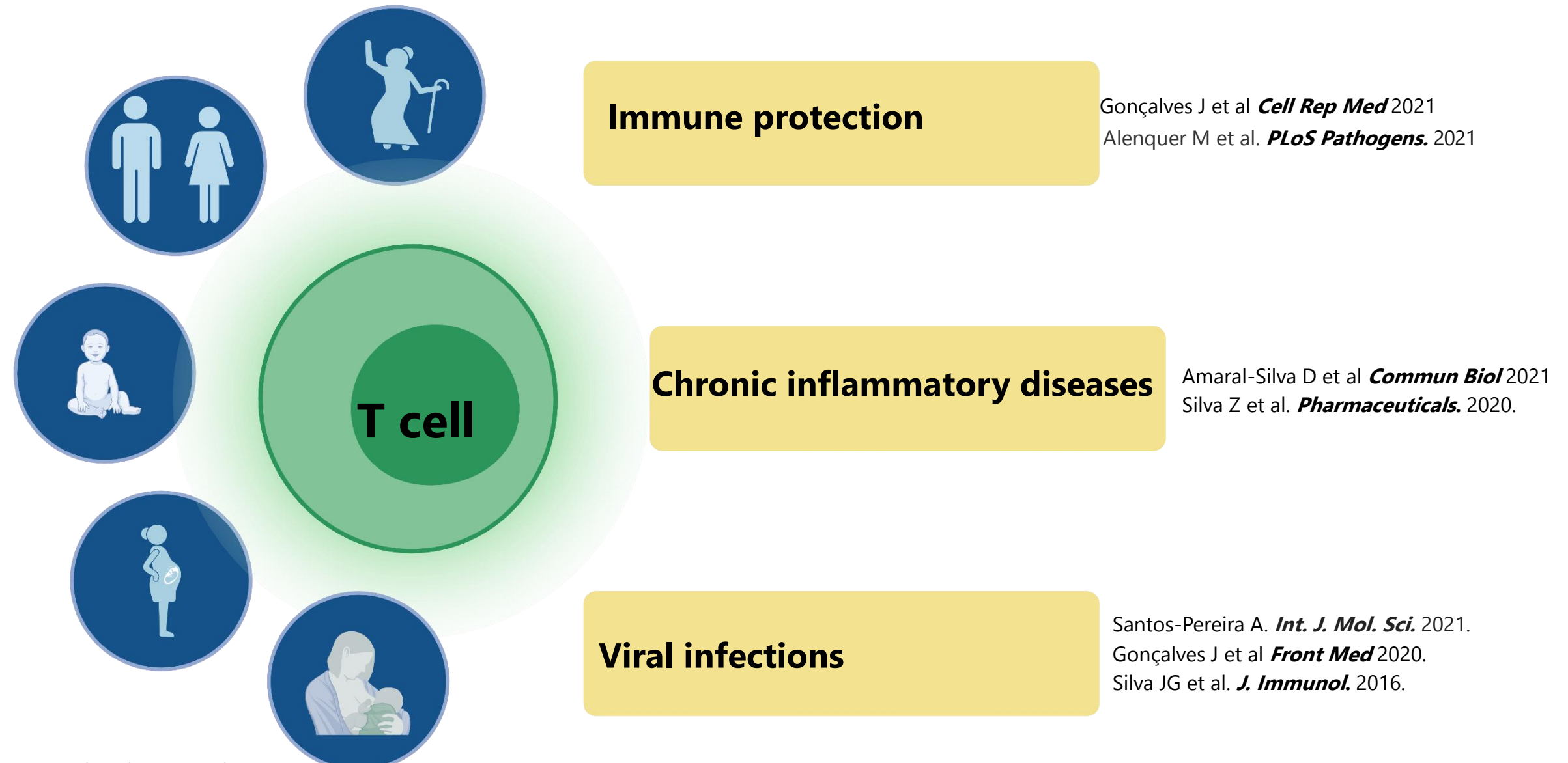
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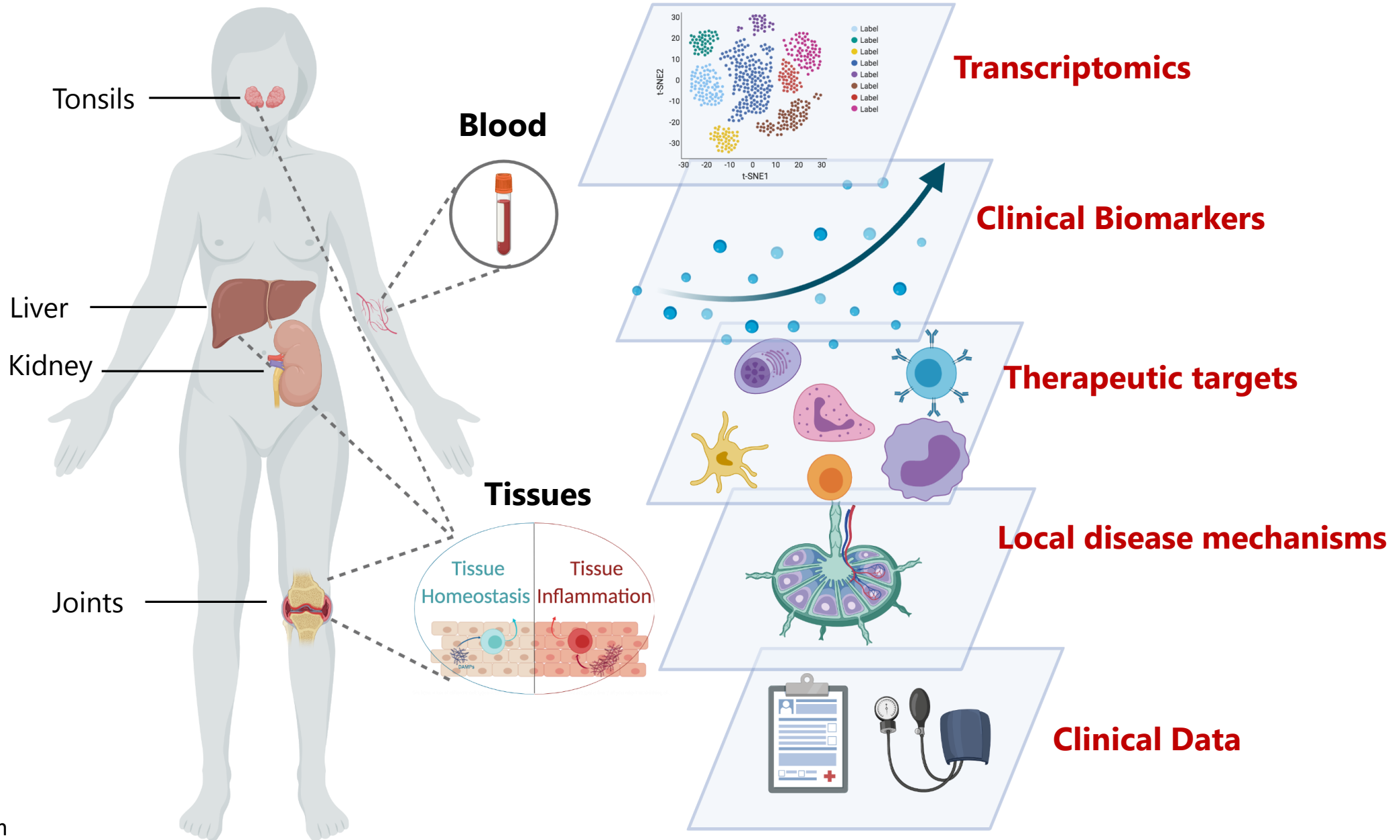
Ciência 2022

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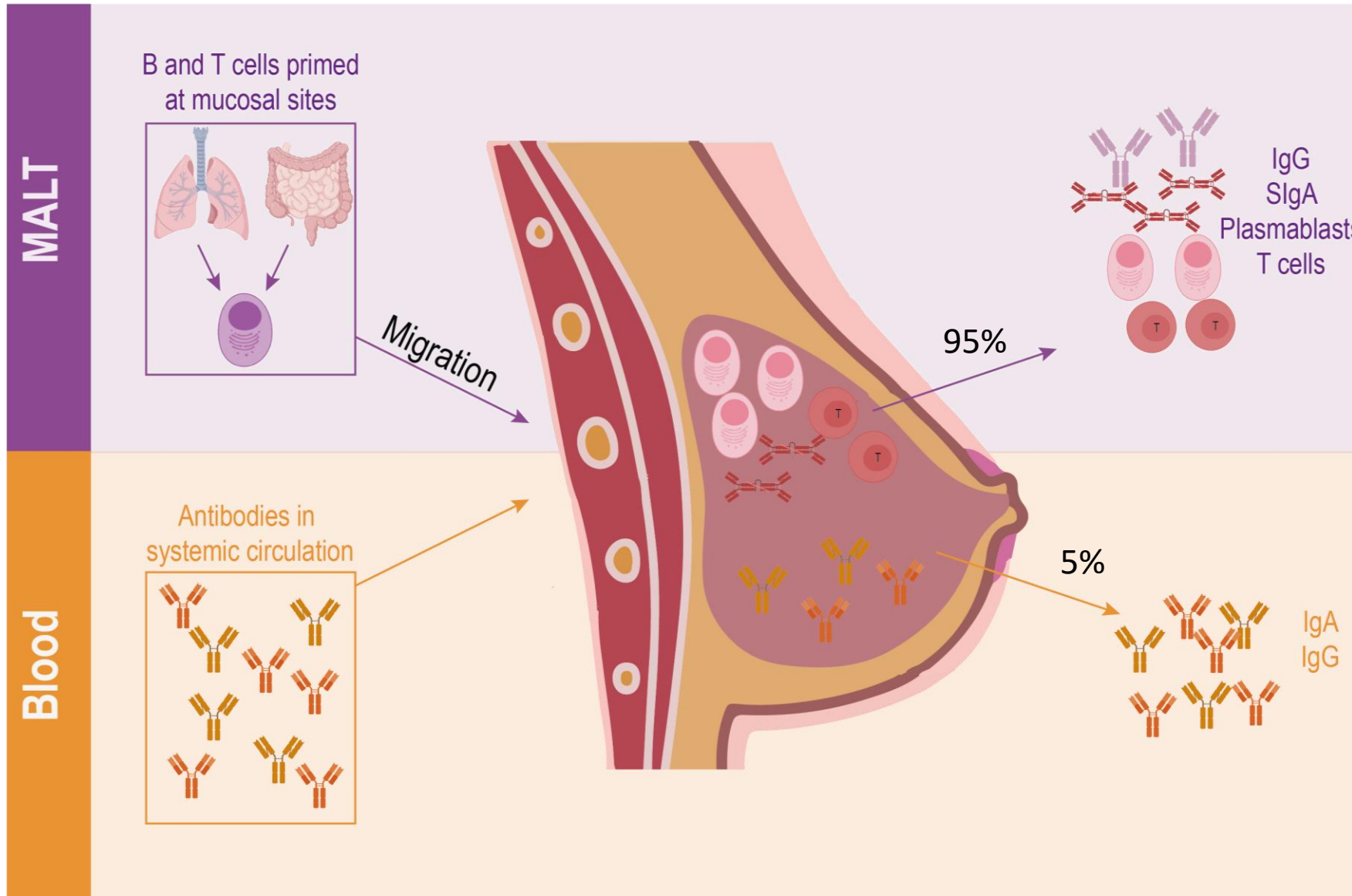
How did we get to study COVID-19?



Transversal to these 2 axis is the compartmentalization of the immune response



Transfer of immune protection through breastmilk relies on local immune response in the mammary gland



Smith *Pediat Res* 1968
Cabinian *PLoS ONE* 2016
Arvola *Biology of Reproduction* 2000
Ghosh *The Journal of Immunology* 2017
Ghosh *The Journal of Immunology* 2016
Weiler *Am J Reprod Immunol* 1983
Schlesinger *The Lancet* 1977

What type of protection is transferred by COVID-19 vaccinated women through the breastmilk?

HCW: Dec 2020- Feb 2021

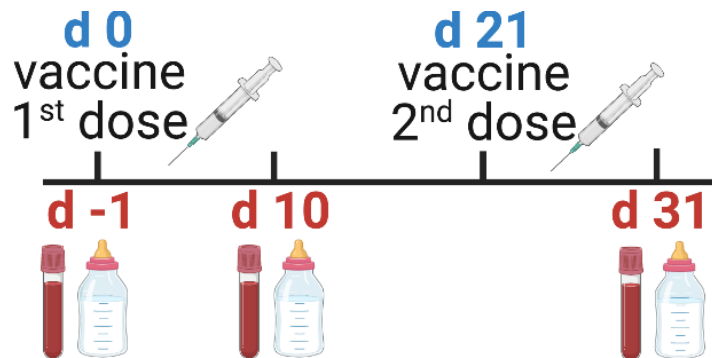
Gen pop: Jun-Sept 2021



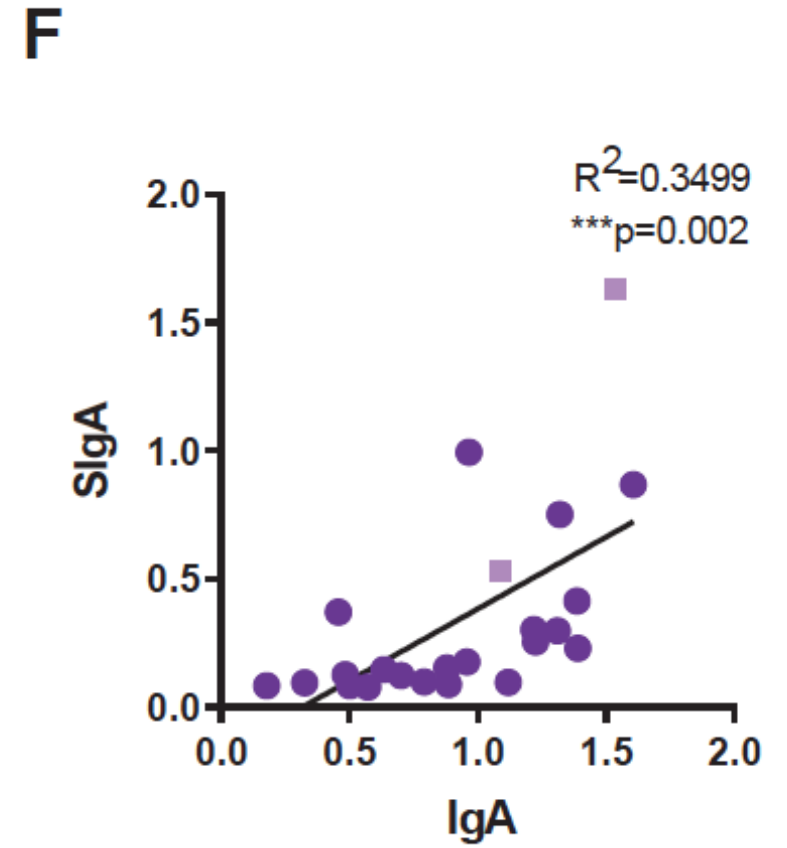
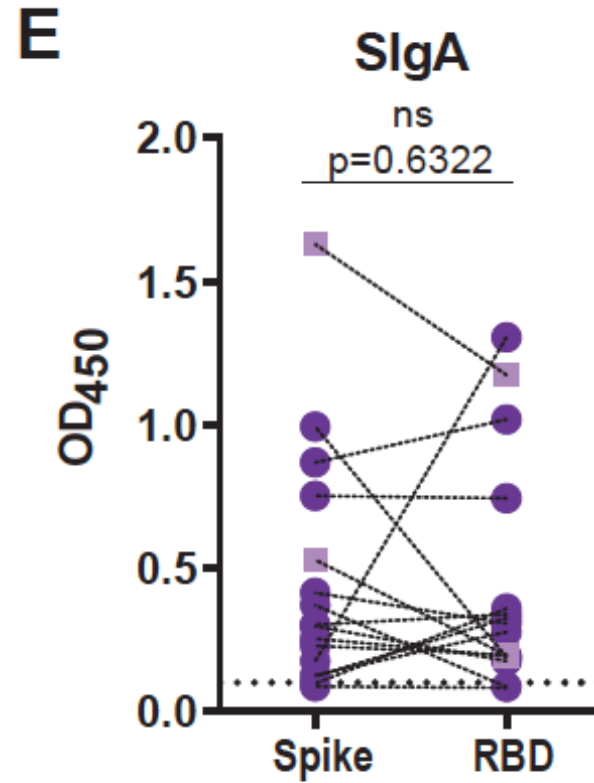
Does the vaccine induced local antibody production by the mamary gland mucosa?

Are milk antibodies neutralizing? Which?

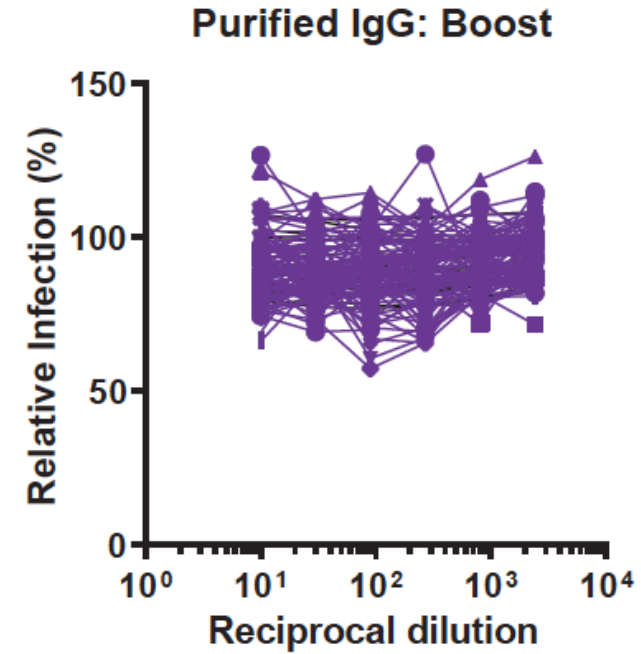
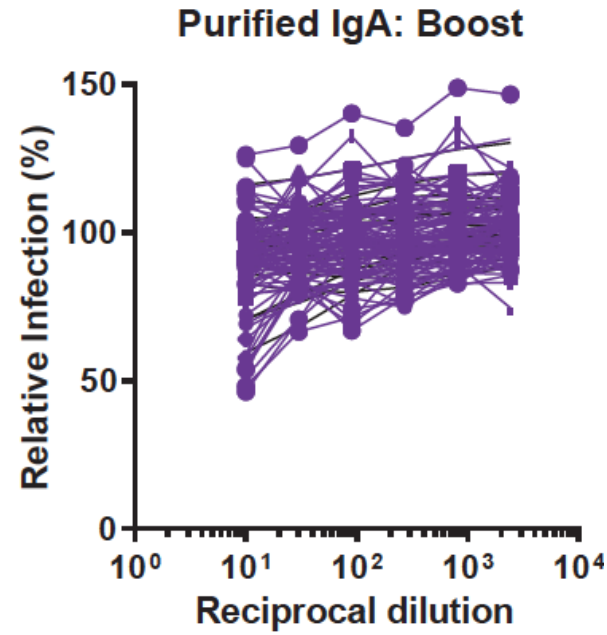
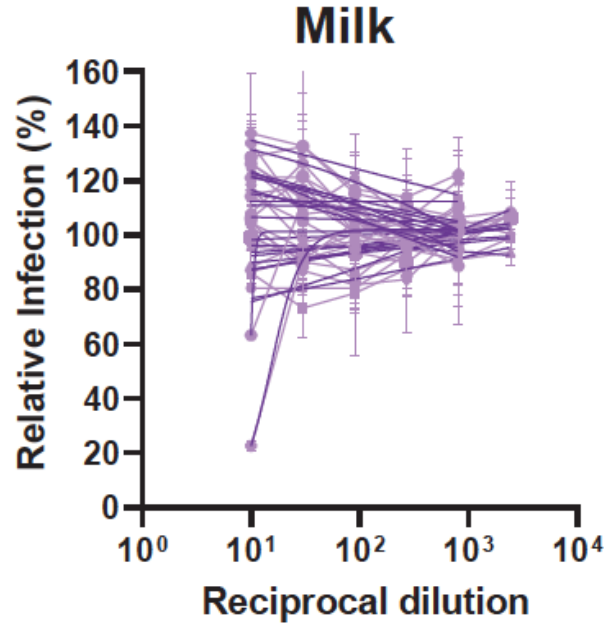
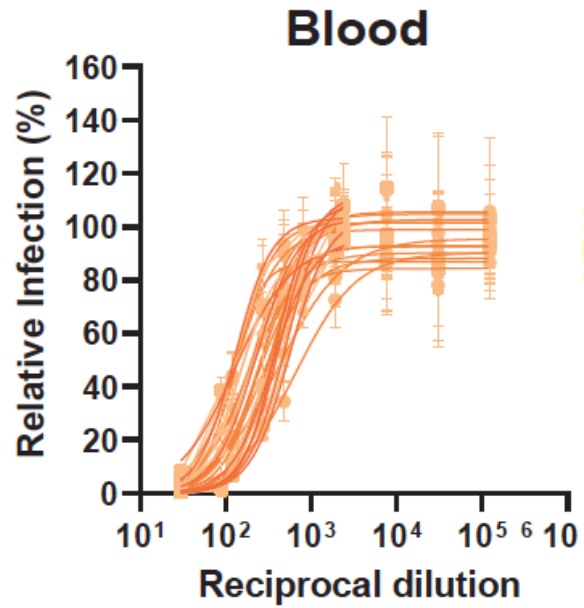
In addition to immunoglobulins are spike-reactive T and B cells also transferred?



SIgA is produced by the mammary mucosa in response to COVID-19 vaccines first dose



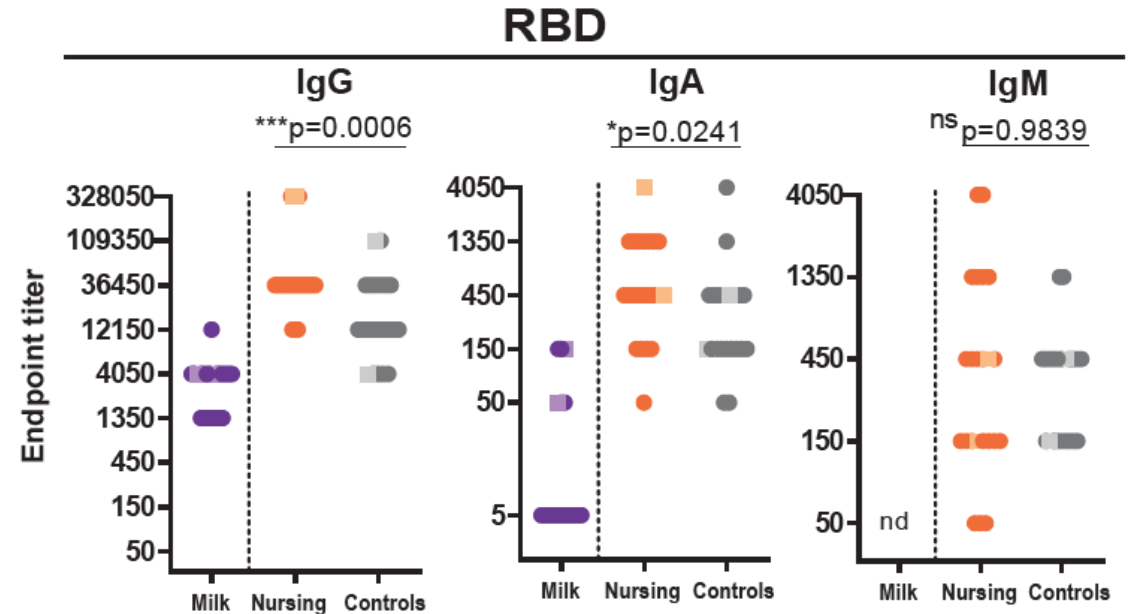
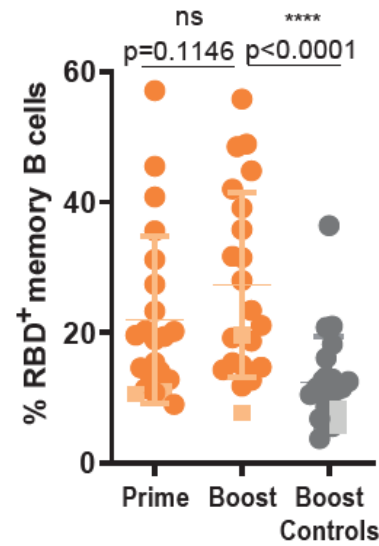
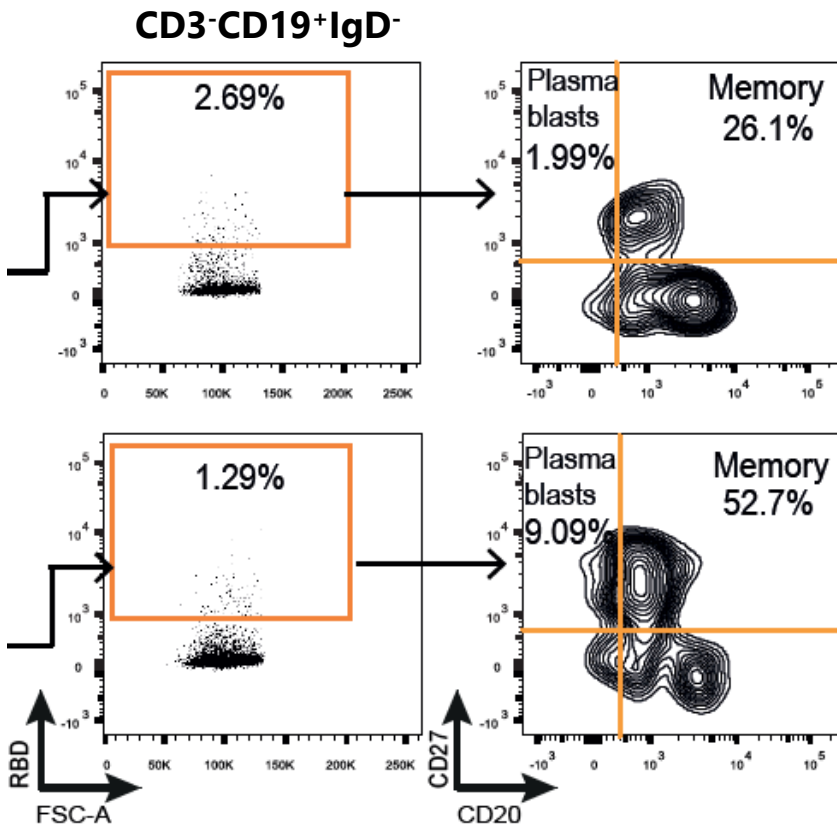
Cumulative transfer of IgA through feeding might provide effective neutralization to the infant



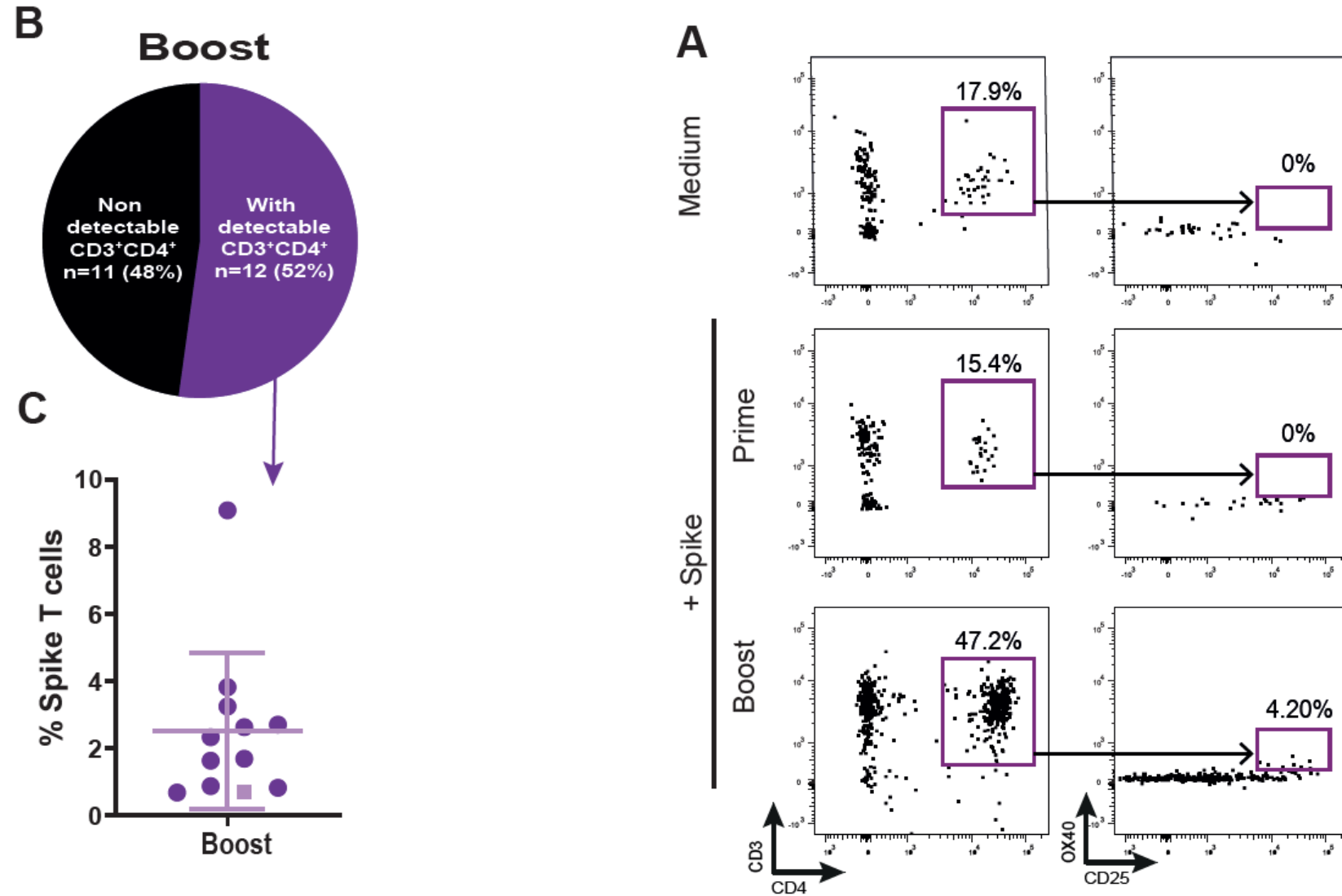
[NT50] = 238.69

[IQR] 148.47–383.36

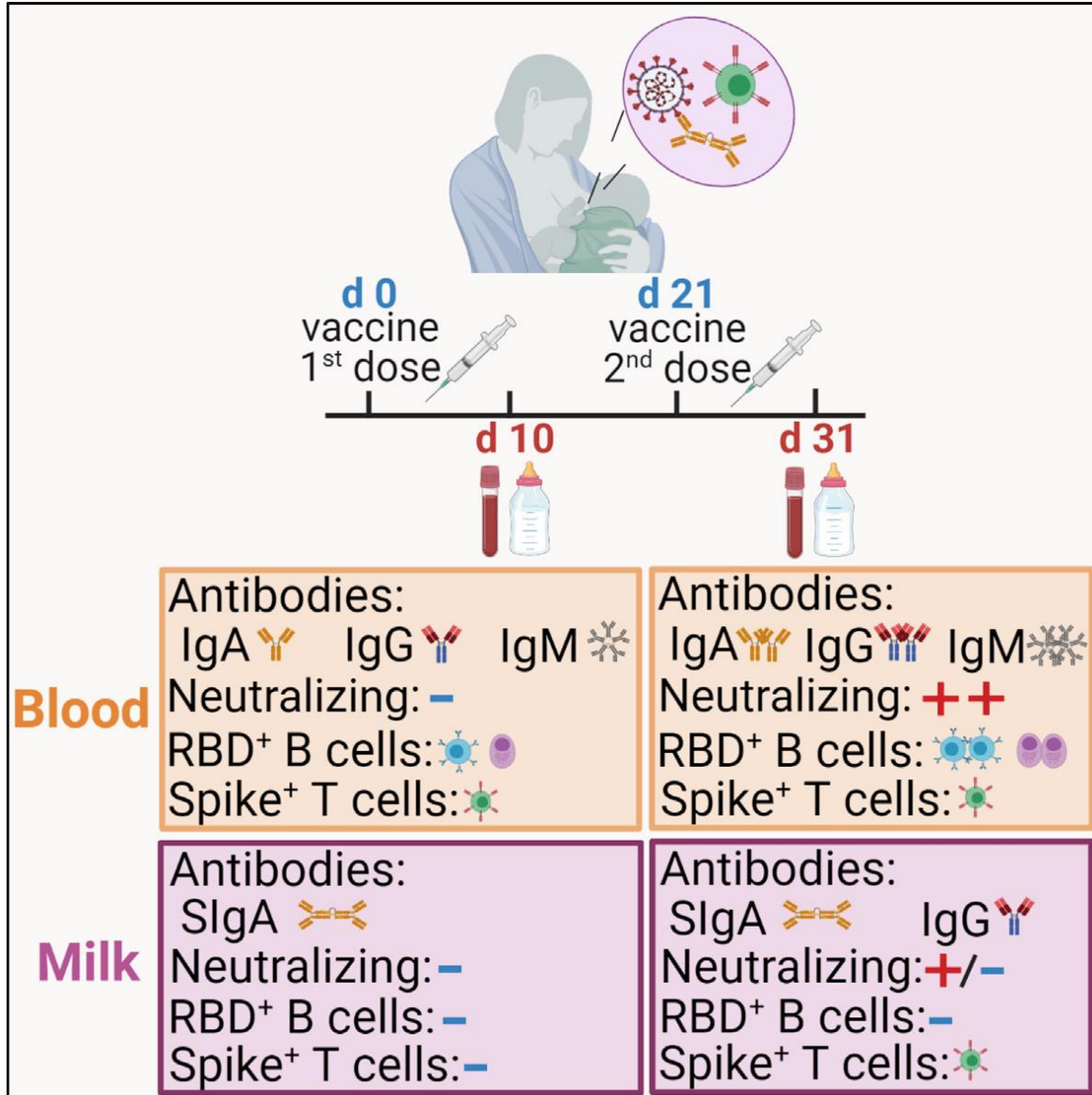
Lactating HCW have higher frequency of RBD-reactive memory B cells and RBD-recognizing antibodies in circulation



Spike-specific T cells are transferred through breastmilk after vaccine boost



Conclusions



- mRNA vaccines induce antibody production by mammary mucosa
- Immune transfer to breastmilk occurs through anti-spike SIgA, IgG and T cells
- Milk SIgA is very weakly neutralizing, but repeated feedings might lead to cumulative transfer of neutralizing SIgA
- Vaccination induces distinct cellular responses in lactating women, despite similar NT50

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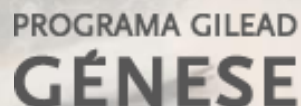


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