

# WHY DOES SARS-COV-2 PERSIST? DEEP LEARNING, A SOLUTION TO ERADICATE COVID-19.

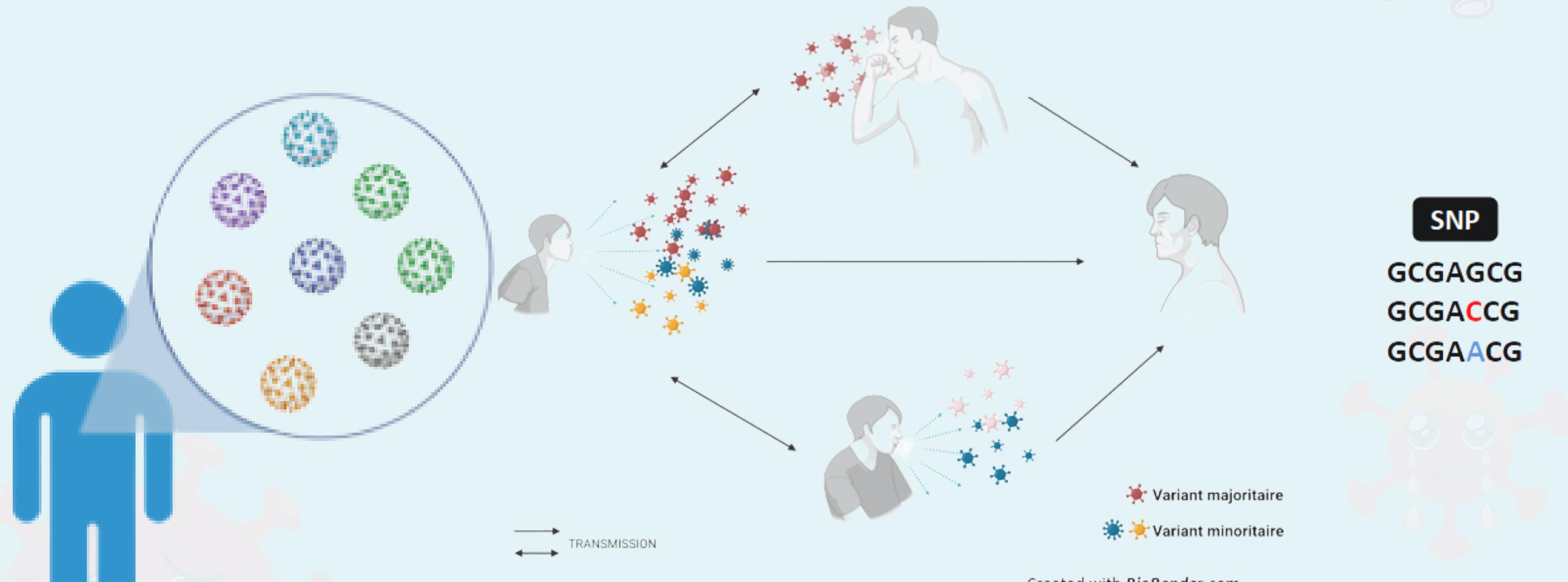
## summary

COVID-19, caused by the SARS-CoV-2 virus, has become a global pandemic since its emergence in late 2019, resulting in over 6.9 million deaths. It spreads through respiratory droplets and can cause symptoms ranging from mild to severe. Mutations in the virus's genetic sequence have led to complex variants. Machine learning could predict future mutations based on known ones, aiding in the development of more effective vaccination and therapy strategies.

## Problematic

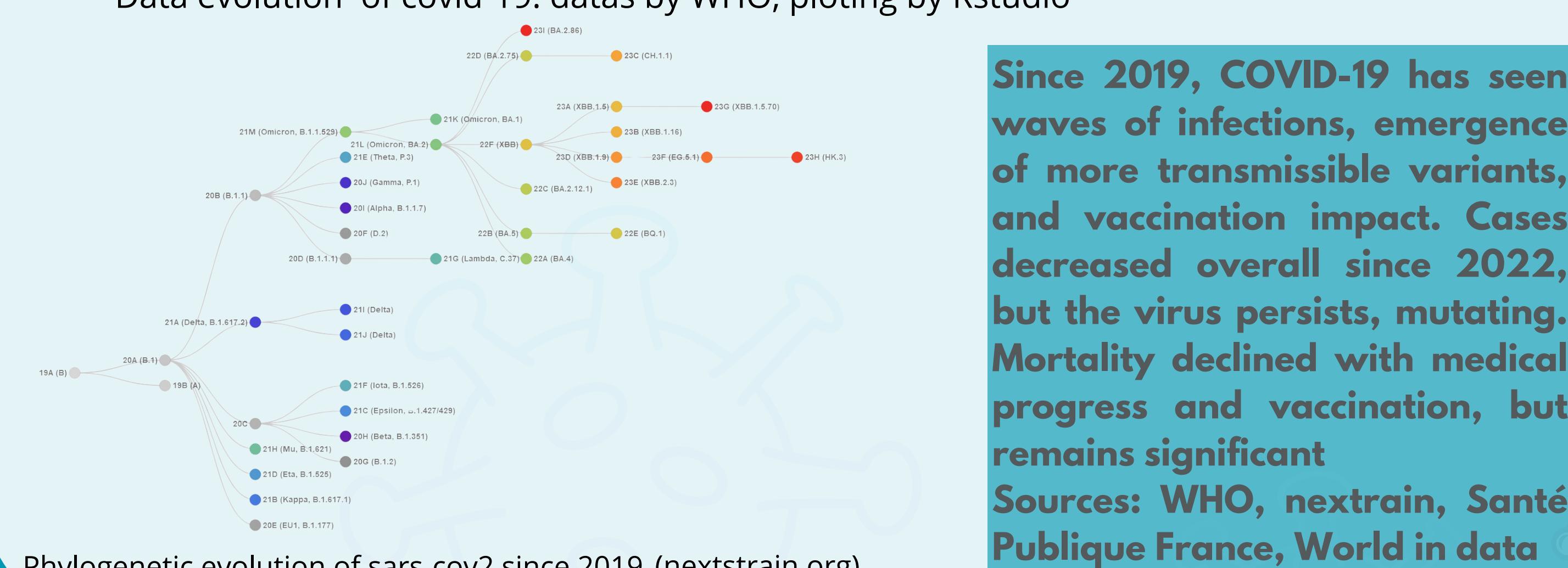
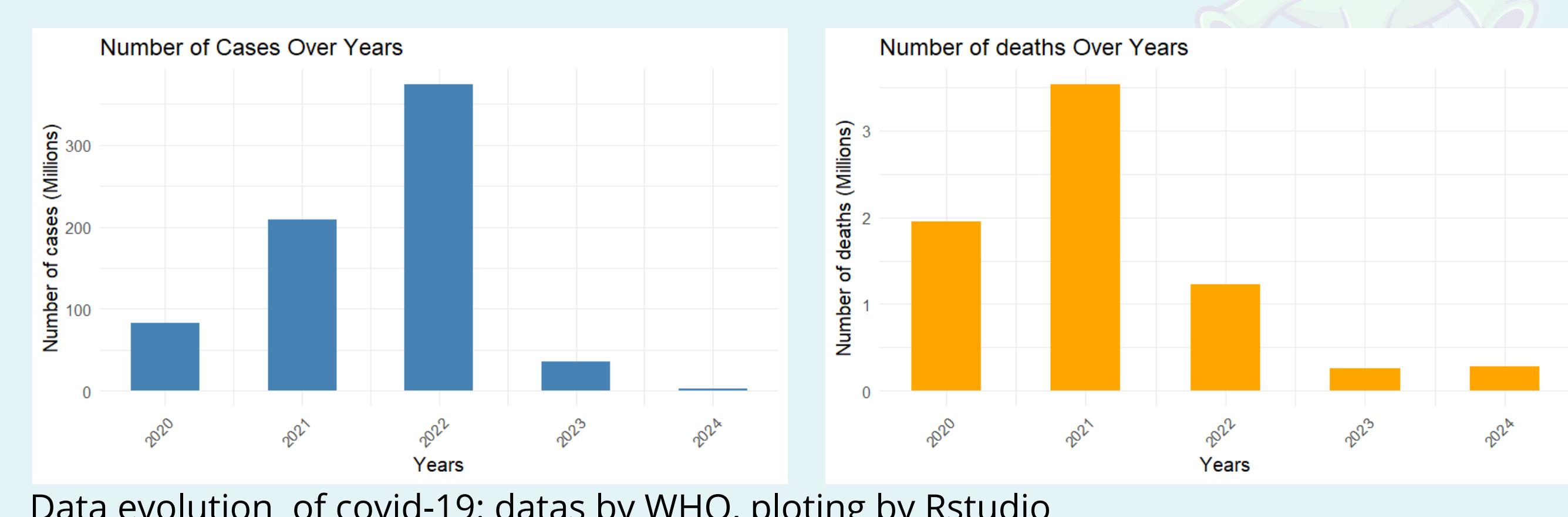
- Complexity on transmission/infecttions mechanisms → Ernest chan et al 2022
  - Non existent Universal vaccine → PMC8824220
  - Genetic diversity and evolution of SARS-CoV-2 → Tung Phan 2020
  - Weakening immunity over time → PMC7871776 (ncbi)
- We might forget, but the coronavirus is still circulating (Ouest France). Addressing issues must be a priority, taking account points mentionned earlier.

## Complexity of Sars-cov2



One of the complexities in SARS-CoV-2 lies in the presence of multiple variants within the same individual, and the dynamism observed during transmission and infection mechanisms (Ernest Chan and al.). Infections can give rise to novel variants long before they become prevalent in the human population (Peter Halfmann and al. 2022)

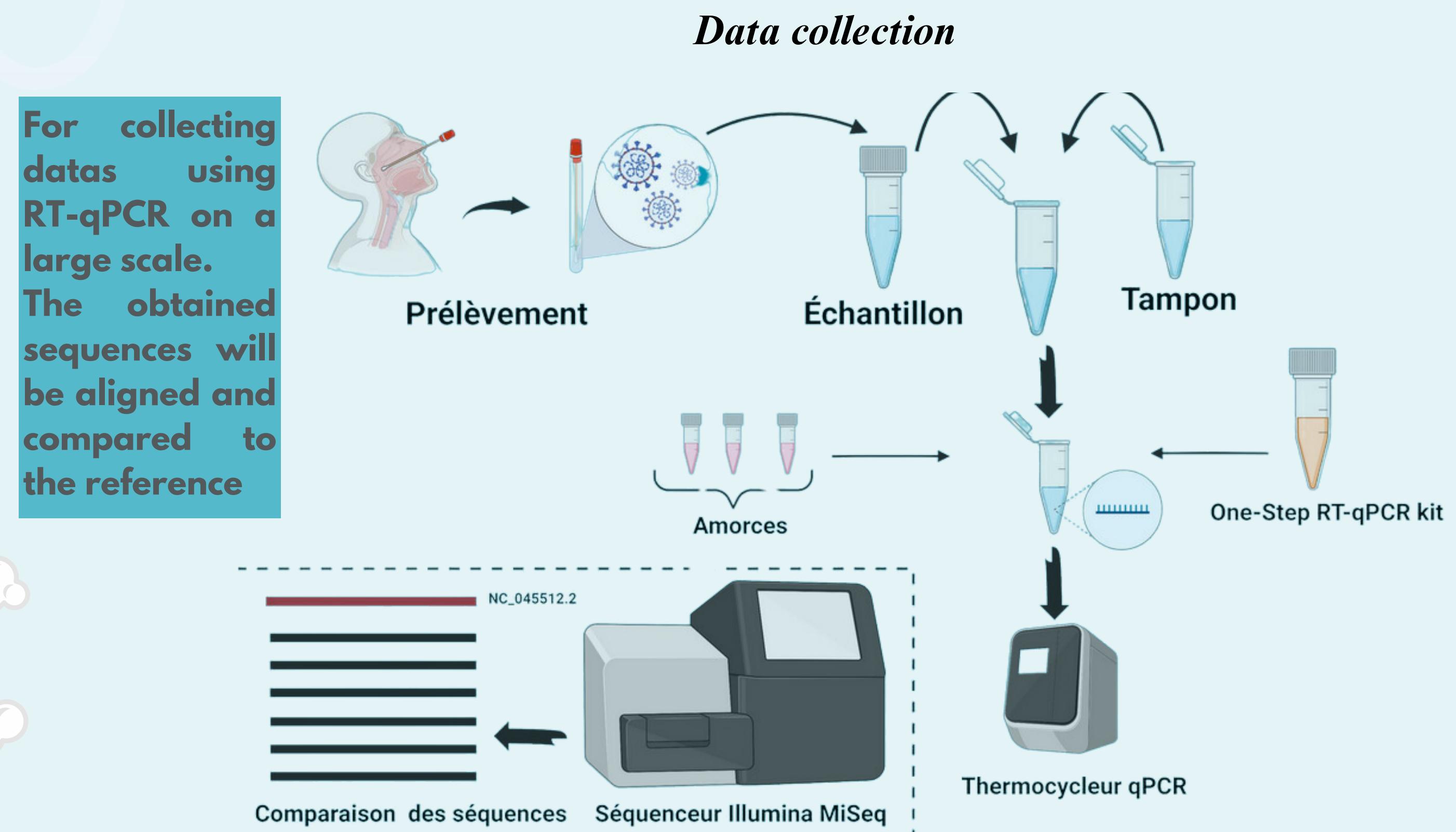
## Evolution of pandemic and sars-cov2



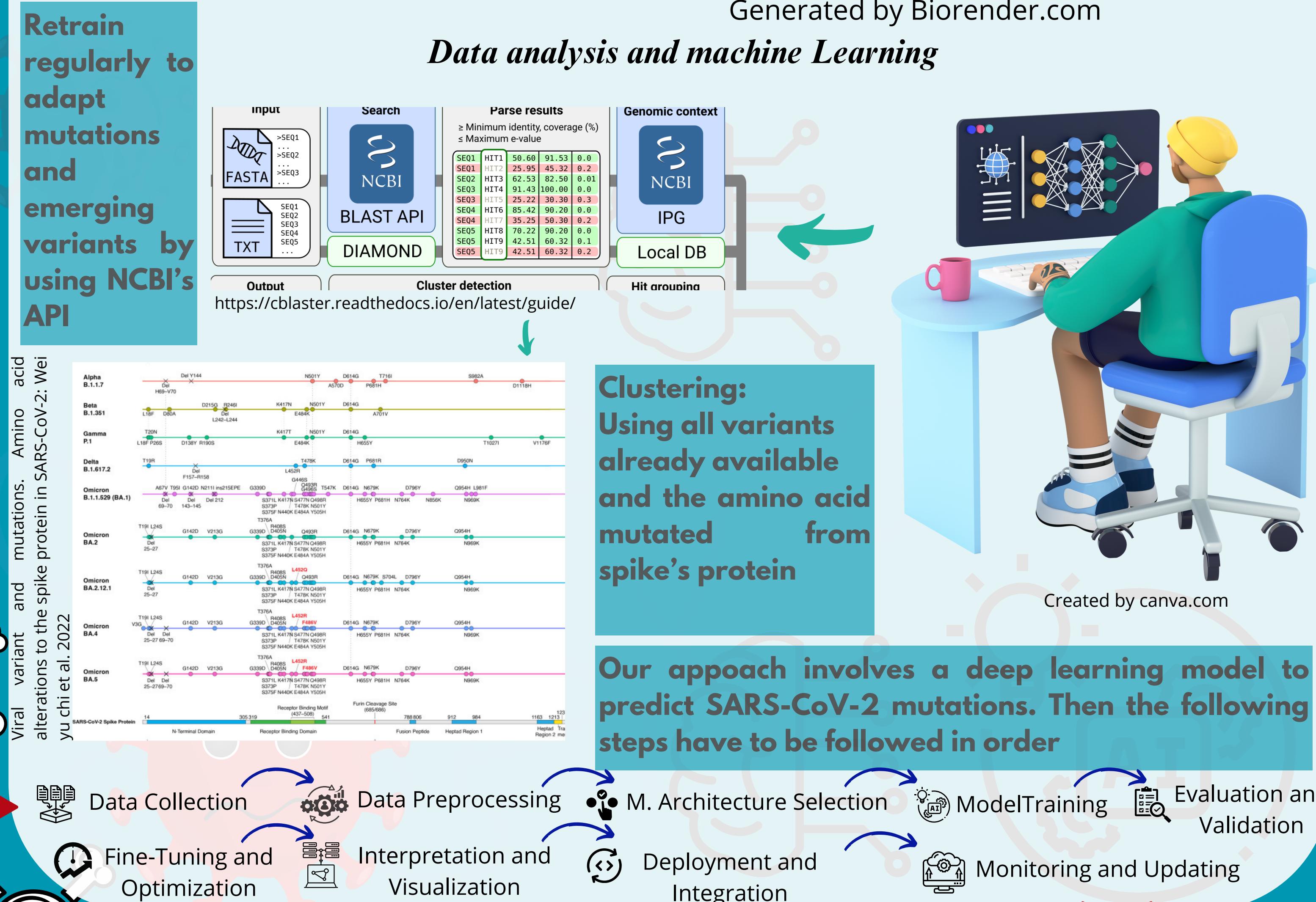
## Conclusion

By using our approach, the model is trained, validated, and optimized to accurately identify mutations. Once deployed, it aids in understanding virus evolution and supports public health efforts to control the pandemic.

## Materials and methods

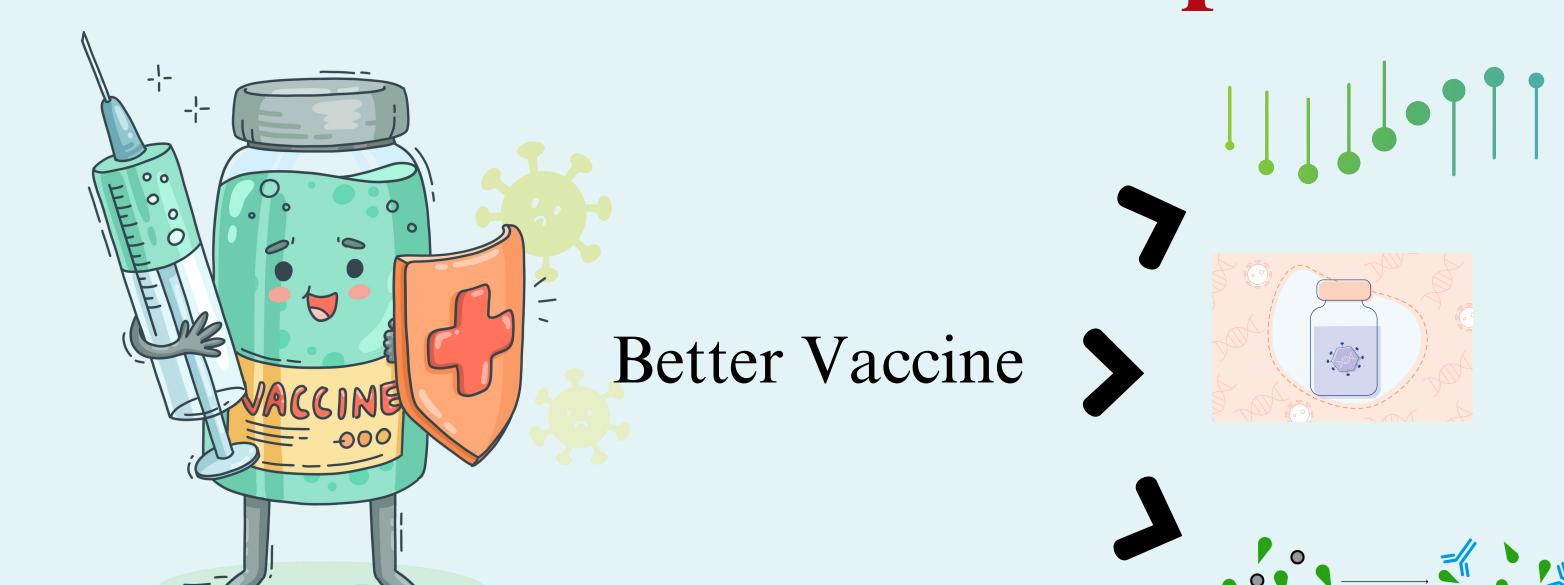


### Data analysis and machine Learning

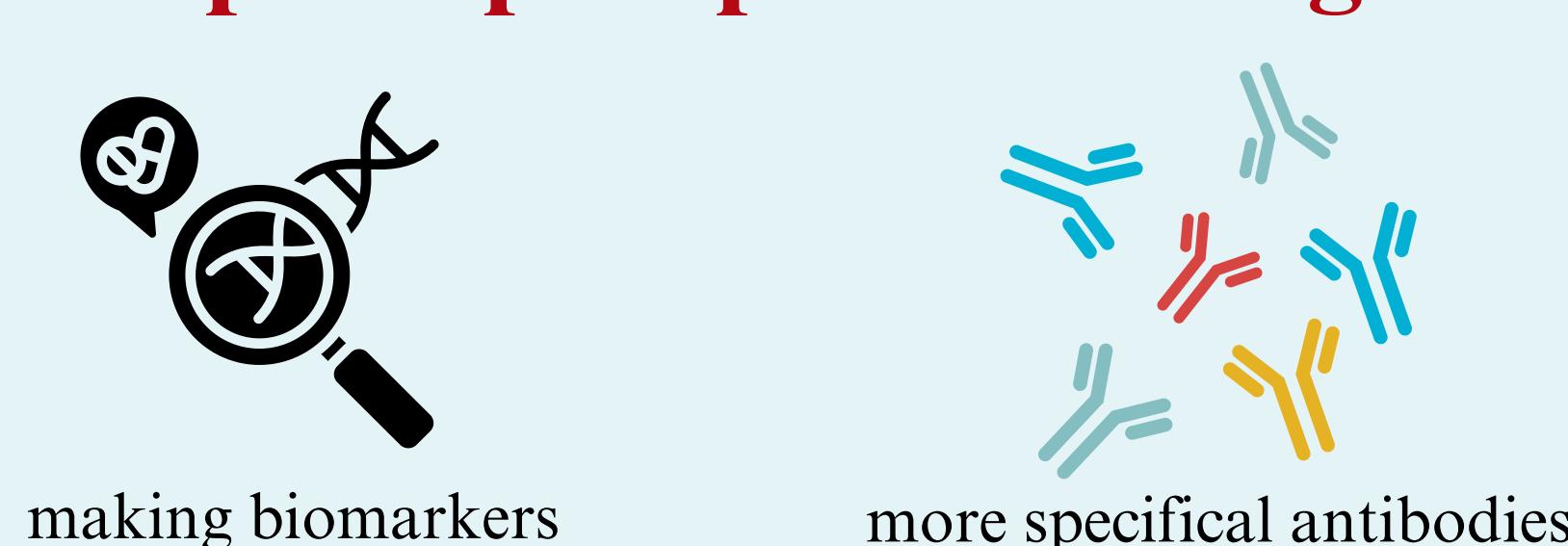


## Expected results

### Most of next mutations predicted



### Anticipate spike protein changes



### Enhanced understanding of the virus evolution

