# SARS-CoV-2 IgM, A, G kinetics

# PiCo (PIENTER Corona)

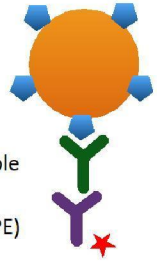
- PIENTER3 presamples
- PiCo1, April ~ 3200
- PiCo2 & PiCo+, June ~ 7400
- PiCo3, October ~ ?

- Fingerprick blood, self-collected
- Questionaire

# SARS-Cov-2 MIA (MBA)

microsphere bead 1

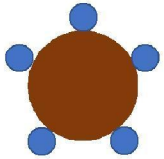
S1 [HPLC, gen-2]
Sino Biological



IgG(IgM, IgG) in sample

detection (anti-IgG RPE)

bead 2
N (Sino)

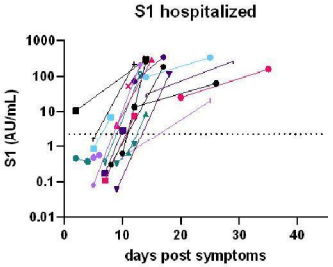


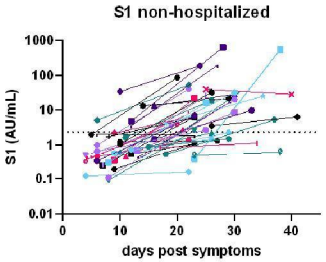
bead 3
RBD (Sino)

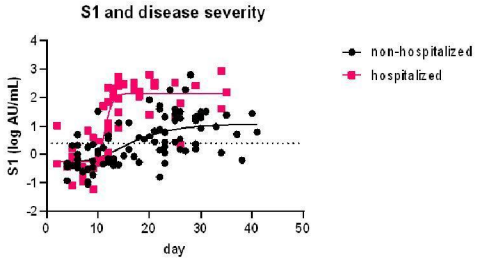
Bead 4, 5,6, ...
OC43, etc.

# Seroconversion in relation to disease severity

- Time to seroconversion
- Concentration



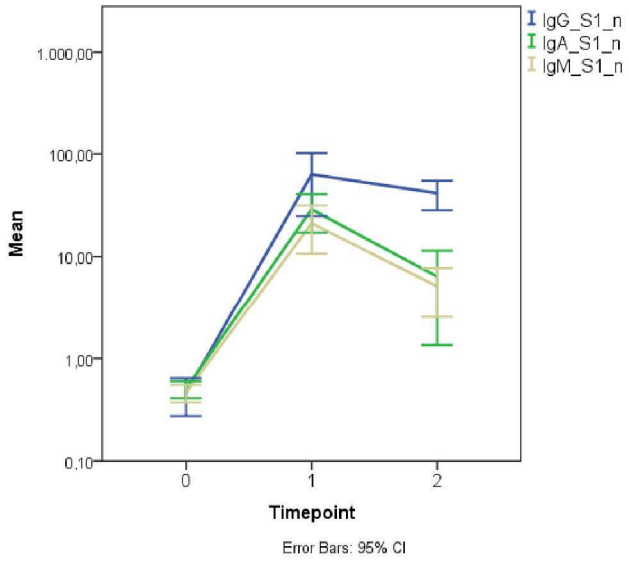



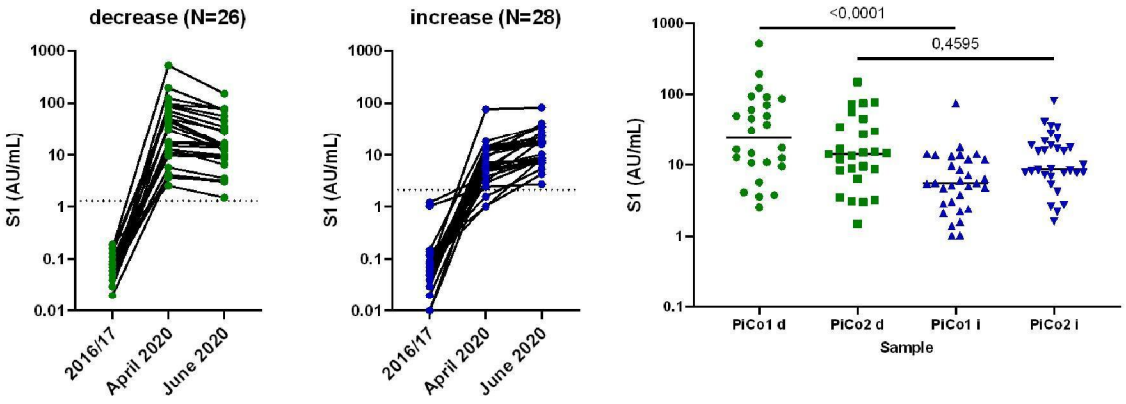

| S1 | Hospitalized | |
|---|---|---|
| | No | Yes |
| Slope | 3.64 | 51.1 |
| $R^2$ | 0.293 | 0.753 |
| *P value* | <0,0001 | |

Den Hartog et. Al. *The Journal of Infectious Diseases*, jiaa479, https://doi.org/10.1093/infdis/jiaa479

# Spike S1 Ig isotypes

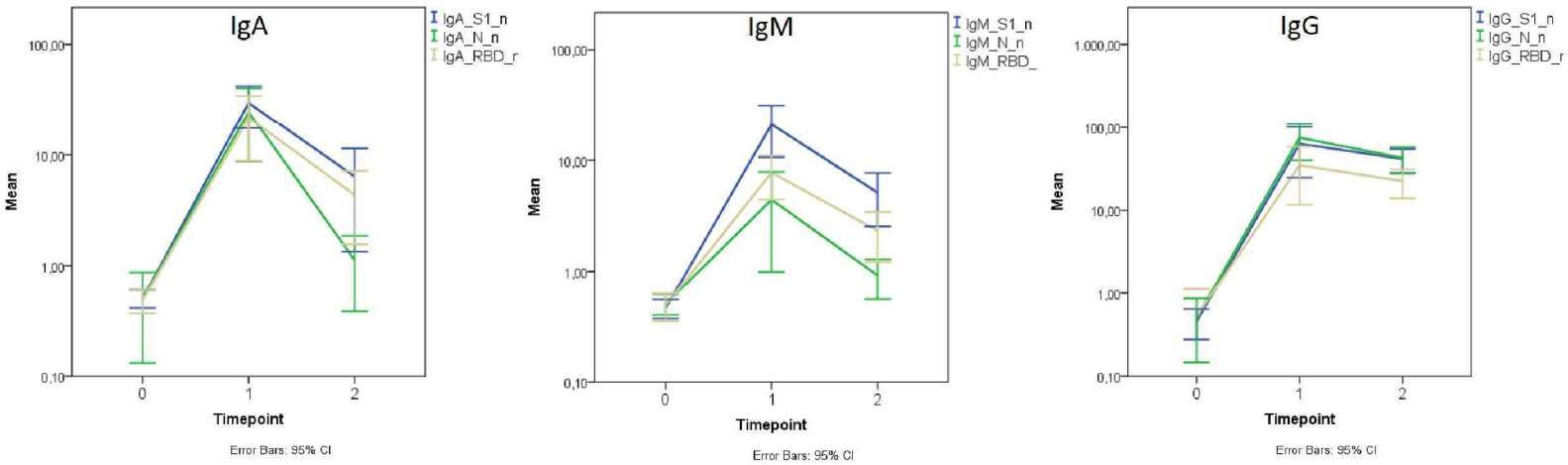


# Concentrations changes (PiCo)



# IgG and antibodies to S1 most persistent (PiCo)

Spike S1
Nucleoprotein
RBD



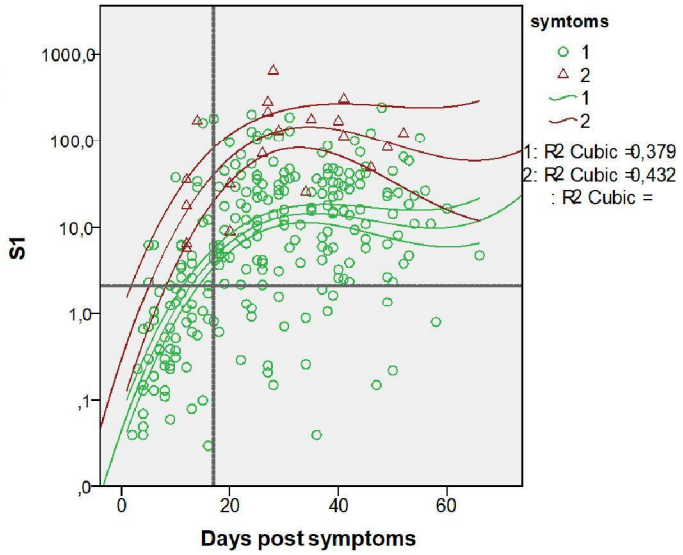
# The statistics

| | | PiCo1 V PiCo2 | P3 V PiCo2 |
|---|---|---|---|
| | | Sig. (2-tailed) | Sig. (2-tailed) |
| IgG | S1 | 0,288 | 0 |
| | N | ***0,094*** | 0 |
| | RBD | 0,318 | 0 |
| IgA | S1 | 0,001 | 0,023 |
| | N | 0,004 | ***0,134*** |
| | RBD | 0,01 | 0,008 |
| IgM | S1 | 0,004 | 0,001 |
| | N | 0,047 | **0,034** |
| | RBD | 0,003 | 0,002 |

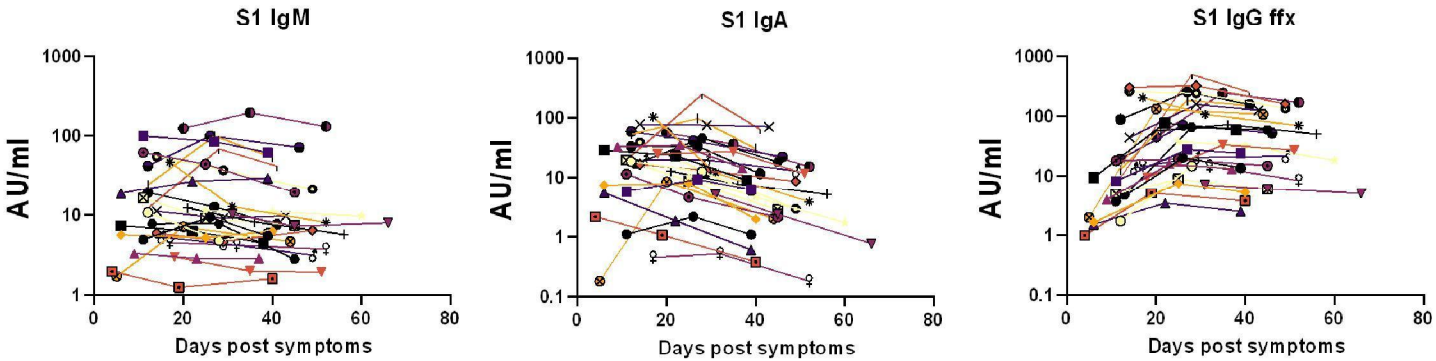
# Sampling relative to time since onset of disease symptoms

- Household setting(N=95)
  - Case or linked case (case=lab confirmed)
  - Representation of mild cases
- Seroconversion before day 17

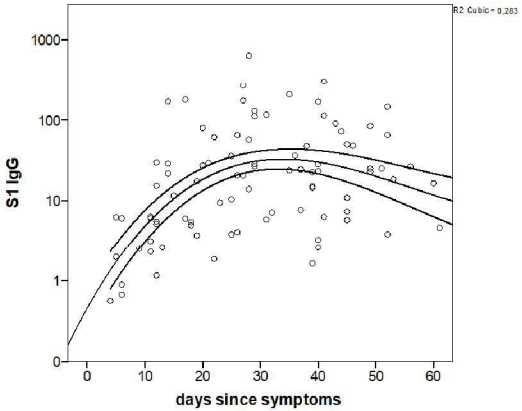
| | | Age group 1-16 | | 17 > | | |
|---|---|---|---|---|---|---|
| | | Mean | Count | Mean | Count | Significance |
| Age | | 12 | | 42 | | |
| Sex | male | | 14 (47%) | | 33 (37%) | |
| Days post symptoms | | 10 | | 12 | | 0.210 |
| Index case | | | 0 | | 55 | |
| Symtoms | | | | | | <0.001 |
| | Asymptomatic | | 9 (30%) | | 2 (2.5%) | |
| | Non-hospitalized | | 21 (70%) | | 71 (88.8%) | |
| | Hospitalized | | 0 (0%) | | 7 (8.8%) | |

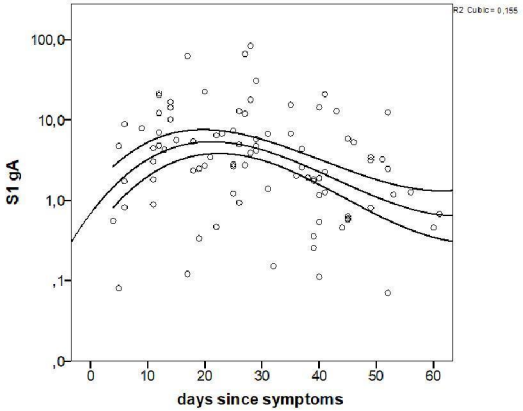


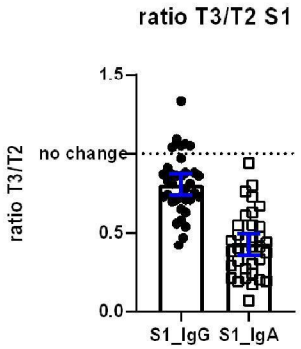
# IgM, IgA , IgG to Spike S1 kinetics (FFX)



# Decay rate of IgG and IgA



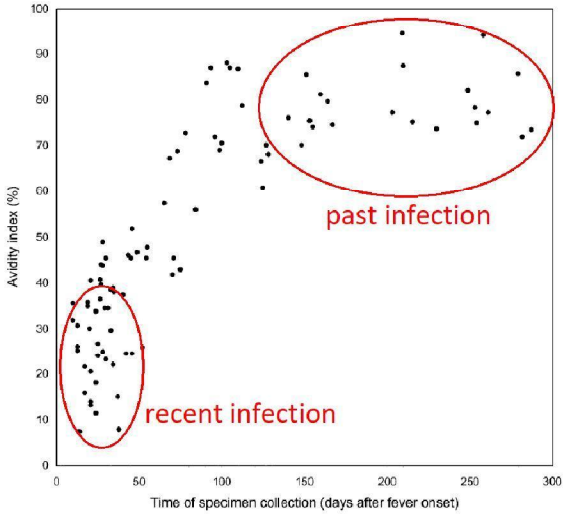



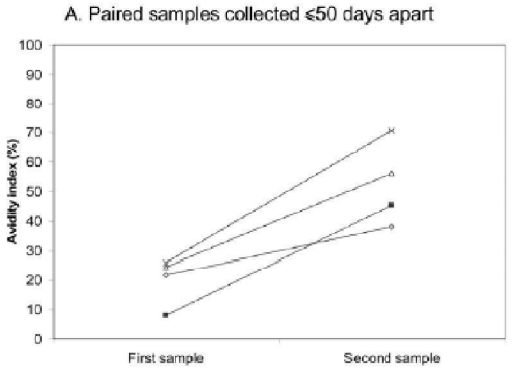



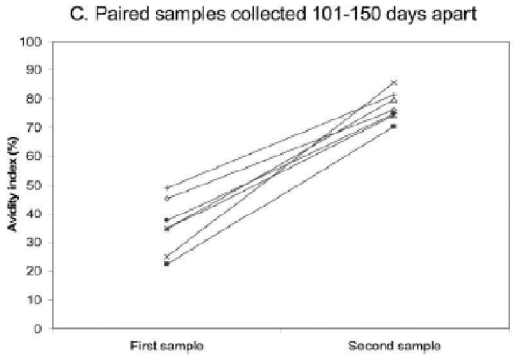
# Antibody Avidity Maturation during Severe Acute Respiratory Syndrome–Associated Coronavirus Infection

The Journal of Infectious Diseases 2005;192:166–9

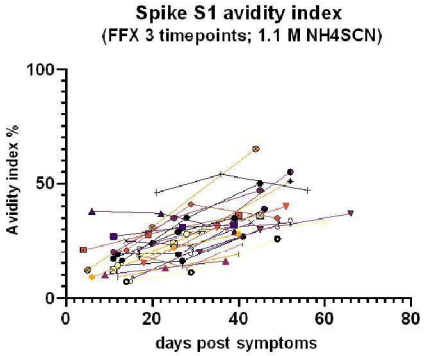
Paul K. S. Chan,[1,2,3] Pak-Leong Lim,[4] Esther Y. M. Liu,[2] Jo L. K. Cheung,[2] Danny T. M. Leung,[4] and Joseph J. Y. Sung[1]

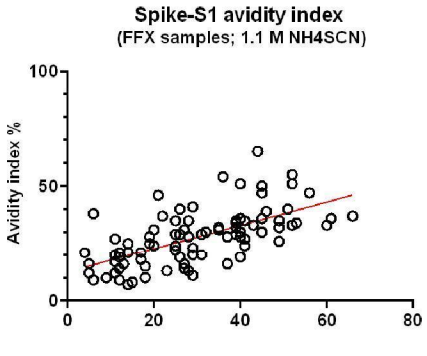


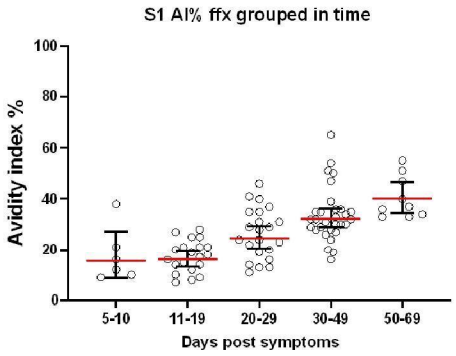



# Development of aviditiy IgG to Spike S1



# Summary

- Rapid decay of IgA (and IgM)
- Rapid decay of anti-N antibodies
- Spike S1 IgG most persistent
- All concentrations decrease, avidity increases

- Two independent studies, One message
- Joined effort > joined CiB-wide (EPI IDS IIV) publication?