



Towards certified reference materials for SARS-CoV-2 serology

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Joint Research Centre, European Commission

*Workshop on Measurement Challenges:
SARS-CoV-2 & Future Pandemics*

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EURM-017 and EURM-018



- Released in December 2020
- Large batches of pooled serum
- Donors clinically recovered from SARS-CoV-2 infection
- Glass ampoules closed under argon atmosphere
- Main intended use: control materials for IgG measurements (in relation to protective immunity)

EURM-017 and EURM-018: differences

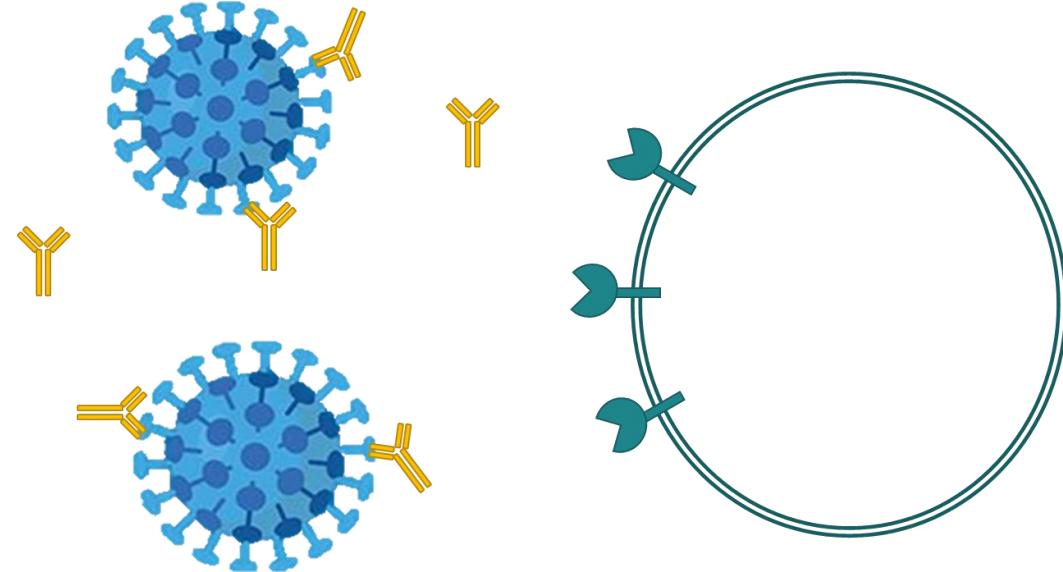
EURM-017

- Serum converted from citrate plasma
- Origin: Germany, period: April-June 2020
- 7 different donors with mild to moderate symptoms
- Donations collected 10.5 -16 weeks after SARS-CoV-2 infection
- IgG levels correspond to average levels after natural infection
- IgA and IgM very low, below LOD of some assays

EURM-018

- Serum-off-the-clot
- Origin: UK, period: April-June 2020
- 19 different donors: asymptomatic to moderate symptoms
- Donations collected 4 -10 weeks after SARS-CoV-2 infection
- IgG levels correspond to average levels after natural infection
- IgA and IgM low, but above LOD of most assays

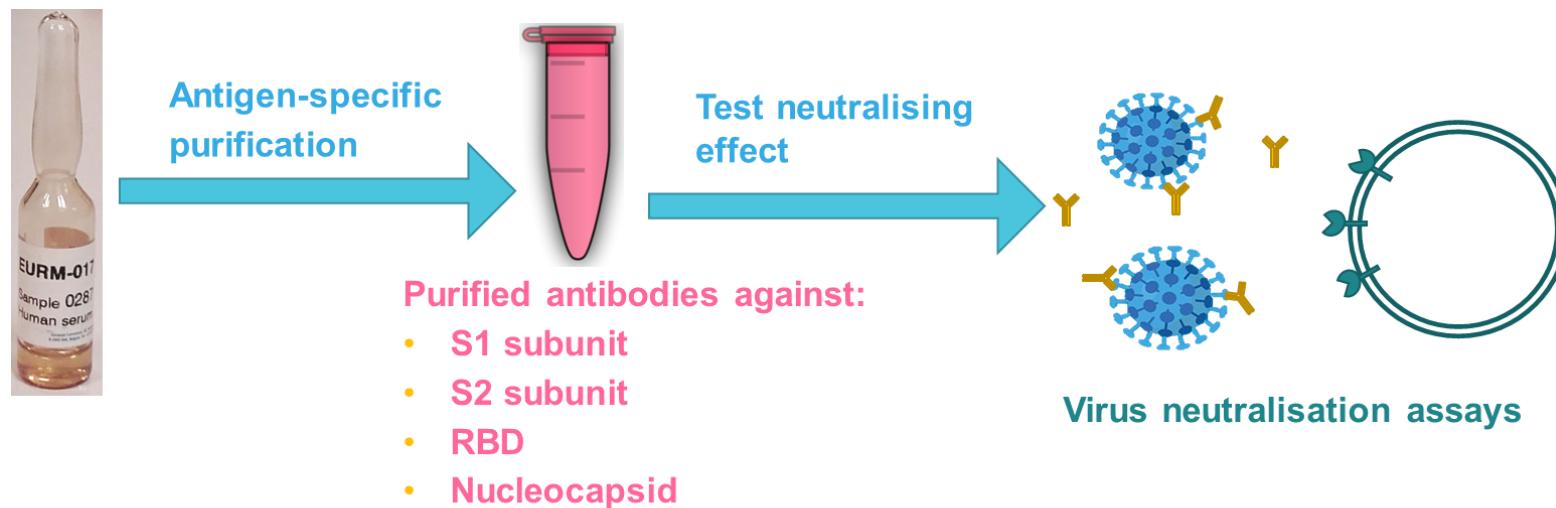
EURM-017 and EURM-018: characterisation Virus neutralisation tests (VNT)



7 assays, 6 laboratories	
Virus strain	Cell line
hCoV-19/Germany/BY-ChVir_929/2020	VERO E6
hCoV-19/Netherlands/Zuidholland_10004/2020	VERO E6
hCoV-19/Italy/LAZ-INMI1-cs/2020	VERO E6
hCoV-19/Italy/LOM-INMI-10734/2020	VERO E6
hCoV-19/Germany/BY-ChVir_929/2020	VERO E6
hCoV-19/Italy/LAZ-INMI1-cs/2020	VERO
hCoV-19/Czech Republic/NRL_9640/ 2020	CV-1

EURM-017: certification possible?

1. Investigate link between neutralising effect and targeted antigen

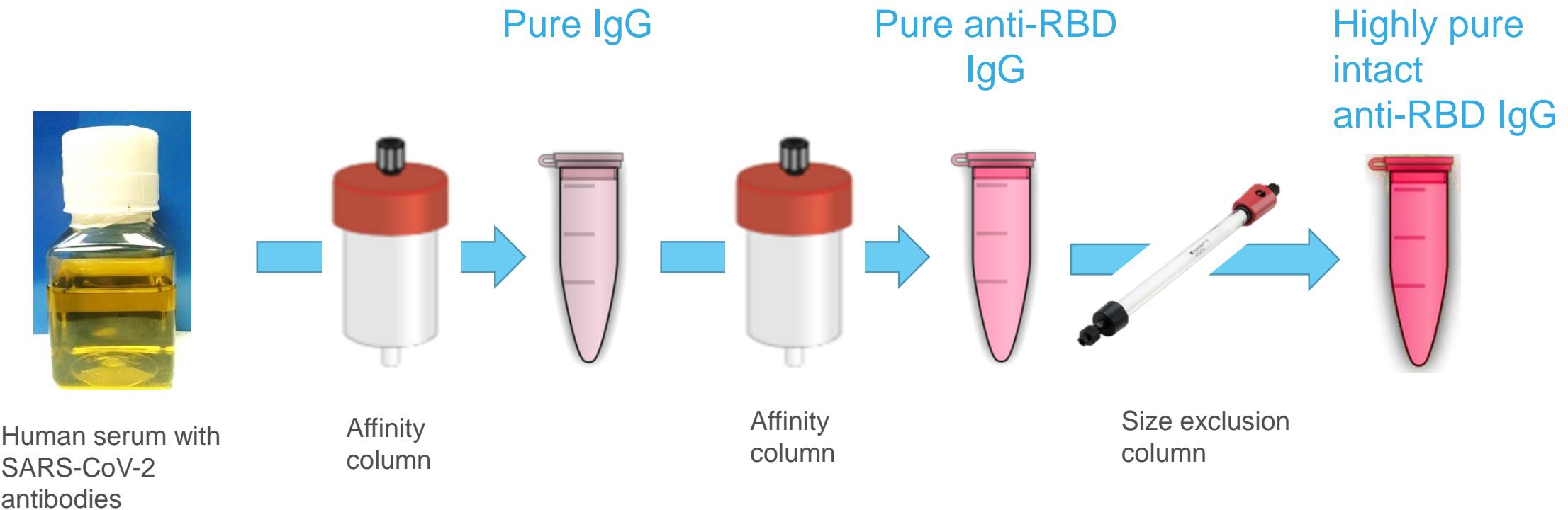


→>Mainly antibodies against RBD/S1 but some neutralising effect in the anti-S2 antibodies

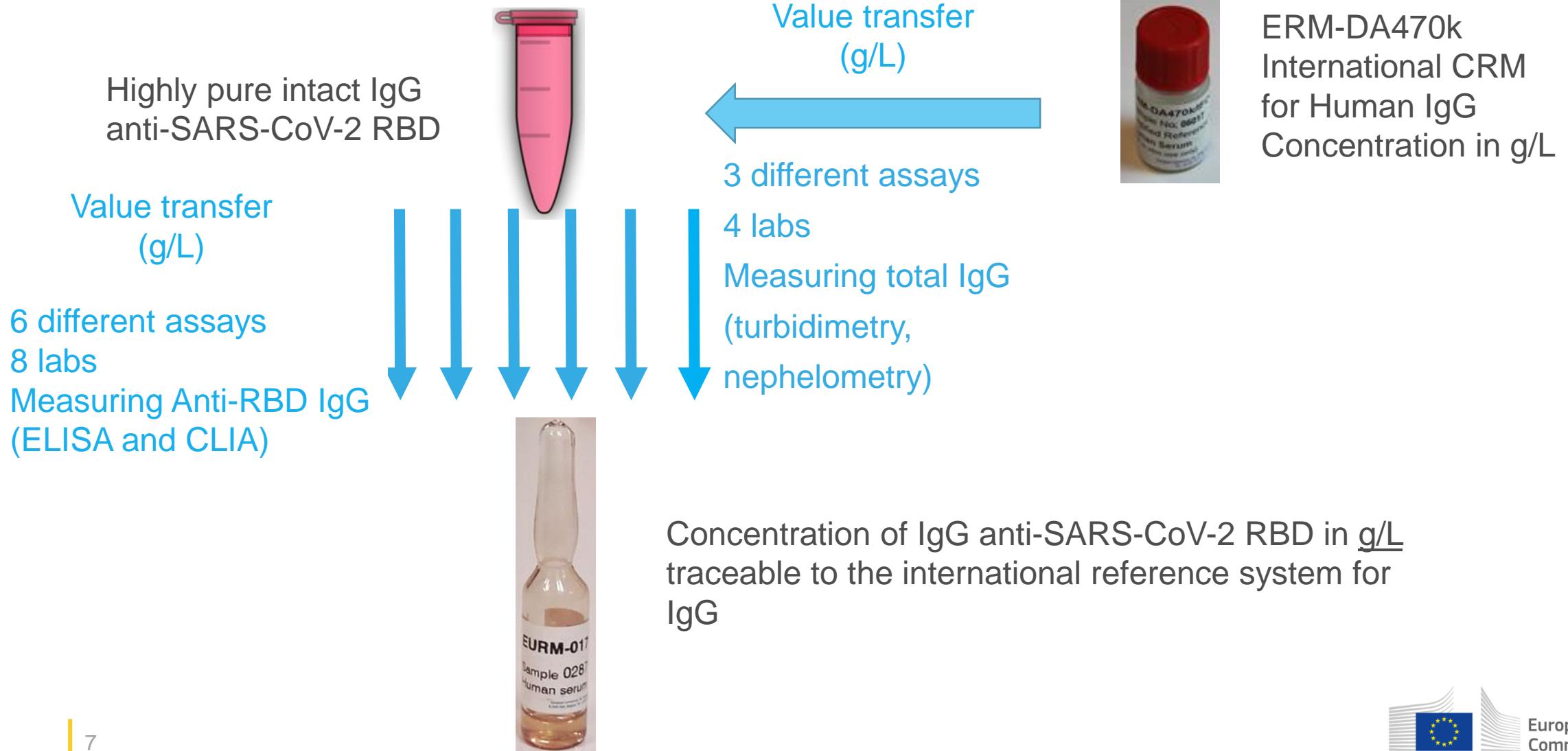
Can we determine the concentration of anti-RBD IgG in mg/L?

EURM-017: certification possible?

Use established approach for autoimmune disorders



EURM-017: certification possible?



Acknowledgements

Serum samples

- St George's University Hospitals NHS Foundation Trust, London, United Kingdom
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VNT measurements

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- Rijksinstituut voor Volksgezondheid en Milieu (RIVM), the Netherlands
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- Zdravotní ústav se sídlem v Ostravě, Czech Republic
- Siemens Healthcare Diagnostics Inc, United States of America

Immunoassays

- ABBOTT Laboratories, United States of America
- Accelerate Technologies PTE LTD, Singapore
- AESKU.Diagnostics, Germany
- Cliniques Universitaires Saint-Luc,, Belgium
- Rijksinstituut voor Volksgezondheid en Milieu (RIVM), the Netherlands
- Eurofins Megalab, Spain
- Euroimmun AG, Germany
- Roche Diagnostics GmbH, Germany
- Siemens Healthcare Diagnostics Inc, United States of America
- SNIBE, P.R. China
- Università Di Padova, Italy

Keep in touch



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Thank you



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