SARS-CoV-2:
¿No solo un virus respiratorio?

EL CORONAVIRUS SARS-CoV-2 Y LA PANDEMIA DE COVID-19

Sociedad Española de Virología (SEV)

25/4/2020

25

Manejo clínico del paciente de COVID-19

- La mayor parte de los pacientes (80-85%) tienen una enfermedad leve y sin complicaciones *[ver Ficha #InfoSEV nº 8]*
- Algunos (15-20%) desarrollan cuadros clínicos mas graves, que requieren hospitalización y oxigenoterapia.
- Aproximadamente un 5% del total de infectados requieren ingreso en la unidad de cuidados intensivos (UCI).
- En el punto de urgencias: valoración inmediata del riesgo de cada paciente; aislamiento y uso de mascarilla por el paciente; personal sanitario con equipo de protección adecuado.

Cuadro clínico	Síntomas	Medidas
Síntomas leves	Fiebre	Antipiréticos, hidratación
	Dolor de cabeza	Paracetamol
	Fatiga, dolor muscular	Reposo
	Diarrea, anorexia, vómitos	Tto. sintomático, vigilancia
Neumonía severa	Respiración rápida, letargia, saturación O_2 baja	Ingreso en hospital, oxigenoterapia, antivirales, anti-inflamatorios
	Co-infecciones	Antibioterapia específica
	Síntomas neurológicos	Prevención complicaciones, Inmunosupresores
	Dificultad respiratoria	Ventilación en pronación
Síndrome de distress respiratorio	Dificultad respiratoria severa	UCI: Intubación, ventilación mecánica
Sepsis	Problemas de coagulación, síntomas neurológicos, alteraciones urinarias	Heparina, tto. específico
Shock séptico	Hipotensión, taquicardia, taquipnea	Tto. específico

- Para saber más: https://www.who.int/docs/default-source/coronaviruse/clinical-management-of-novel-cov.pdf

https://www.mscbs.gob.es/ https://www.isciii.es/
http://sevirologia.es/

@sanidadgob @CIBER_ISCIII
@sev_virologia

Science

RESEARCH ARTICLES

Cite as: M. M. Lamers *et al.*,
Science 10.1126/science.abc1669 (2020).

SARS-CoV-2 productively infects human gut enterocytes

Mart M. Lamers[1]*, Joep Beumer[2]*, Jelte van der Vaart[2]*, Kèvin Knoops[3], Jens Puschhof[2], Tim I. Breugem[1], Raimond B. G. Ravelli[3], J. Paul van Schayck[3], Anna Z. Mykytyn[1], Hans Q. Duimel[3], Elly van Donselaar[3], Samra Riesebosch[1], Helma J. H. Kuijpers[3], Debby Schippers[1], Willine J. van de Wetering[3], Miranda de Graaf[1], Marion Koopmans[1], Edwin Cuppen[4,5], Peter J. Peters[3], Bart L. Haagmans[1]†, Hans Clevers[2]†‡

Christian Drosten (La Charité, Berlin):

The proportion of infectious SARS-CoV-2 in respiratory secretions is very low (around 1 infectious unit in 10^7 physical particles) and ***even less in feces***

Science Immunology

RESEARCH ARTICLE

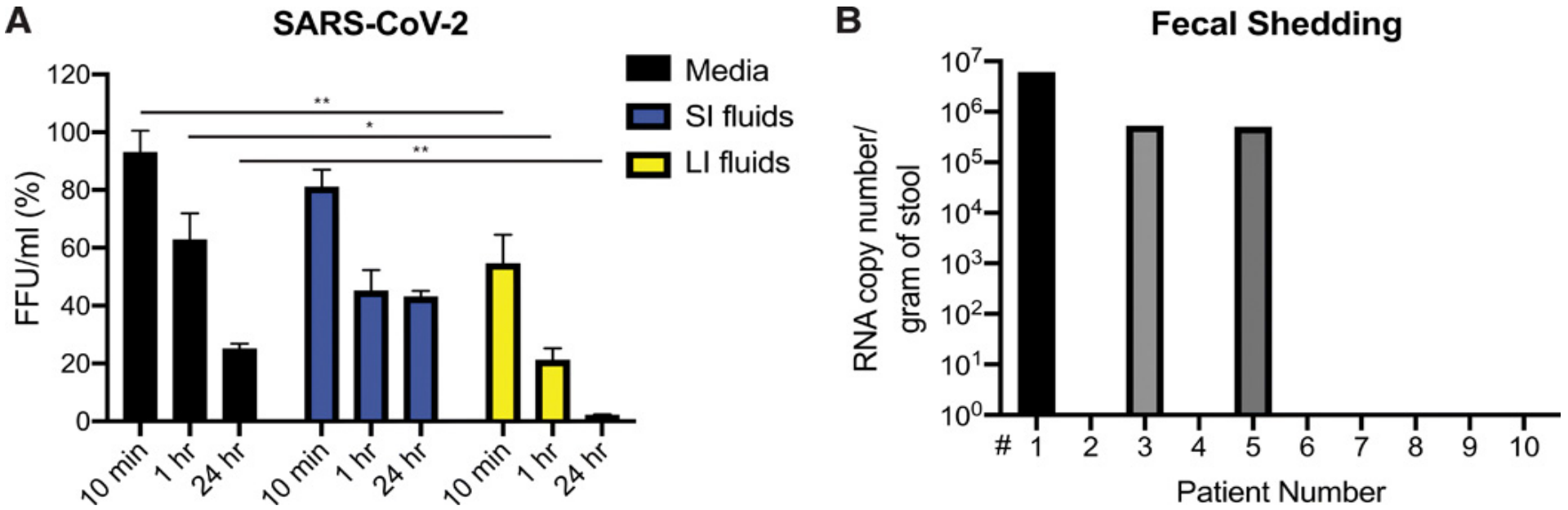
Cite as: R. Zang *et al.*, *Sci. Immunol.* 10.1126/sciimmunol.abc3582 (2020).

CORONAVIRUS

TMPRSS2 and TMPRSS4 promote SARS-CoV-2 infection of human small intestinal enterocytes

Ruochen Zang[1,2,*], Maria Florencia Gomez Castro[1,*], Broc T. McCune[3], Qiru Zeng[1], Paul W. Rothlauf[1,4], Naomi M. Sonnek[5], Zhuoming Liu[1], Kevin F. Brulois[6,7], Xin Wang[2], Harry B. Greenberg[7,8], Michael S. Diamond[1,3,9], Matthew A. Ciorba[5], Sean P. J. Whelan[1], Siyuan Ding[1†]

SARS-CoV-2 rapidly lose infectivity in the human GI tract.



EMERGING INFECTIOUS DISEASES®

EID Journal > Volume 26 > Early Release > Main Article

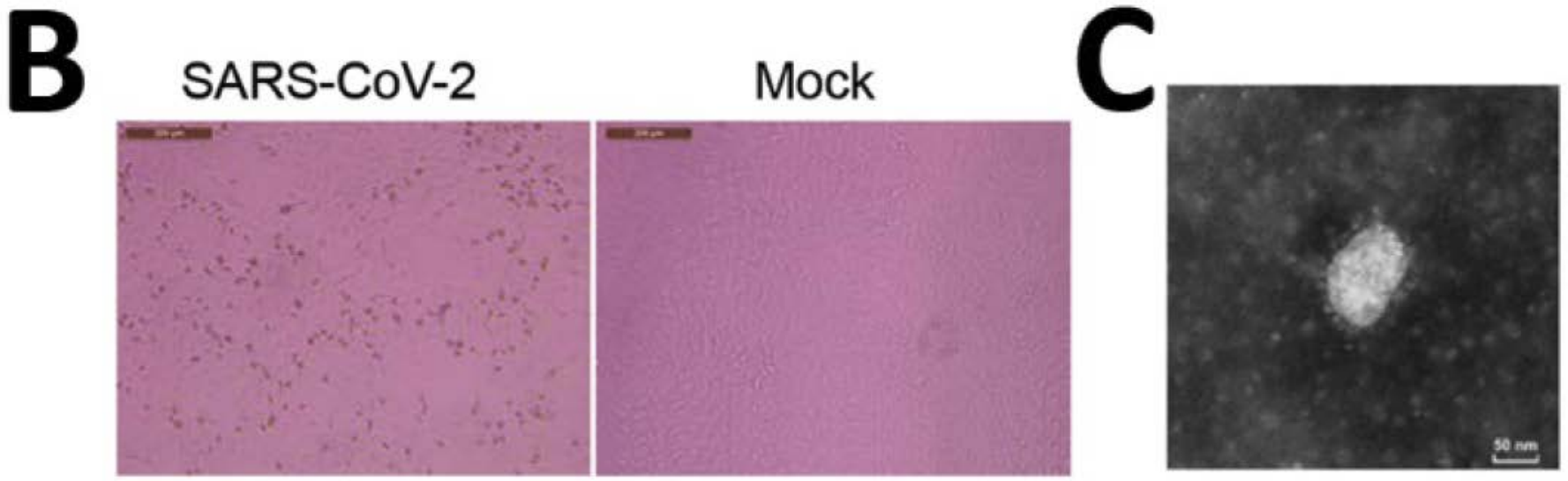
Volume 26, Number 8—August 2020

Research Letter

Infectious SARS-CoV-2 in Feces of Patient with Severe COVID-19

Fei Xiao[1], Jing Sun[1], Yonghao Xu[1], Fang Li[1], Xiaofang Huang[1], Heying Li, Jingxian Zhao, Jicheng Huang, and Jincun Zhao✉

Author affiliations: Sun Yat-sen University, Zhuhai, China (F. Xiao); Guangzhou Medical University, Guangzhou, China (J. Sun, Y. Xu, F. Li, X. Huang, Jingxian Zhao, Jincun Zhao); Chinese Academy of Sciences, Guangzhou (H. Li); Guangzhou Customs District Technology Center, Guangzhou (J. Huang)



B) Vero E6 cells infected with SARS-CoV-2 isolate for 72 hours. C) Detection of viral particles by using transmission electron microscopy (original magnification, ×98,000).

Persistence of Coronaviruses on Surfaces

Source: *J. Hosp. Infect.* DOI: https://doi.org/10.1016/j.jhin.2020.01.022
Note: Coronavirus activity may be impacted by temperatures higher than 86°F (30°C). Authors also confirm that

Medscape

Journal of Hospital Infection 104 (2020) 246–251

Available online at www.sciencedirect.com

Journal of Hospital Infection

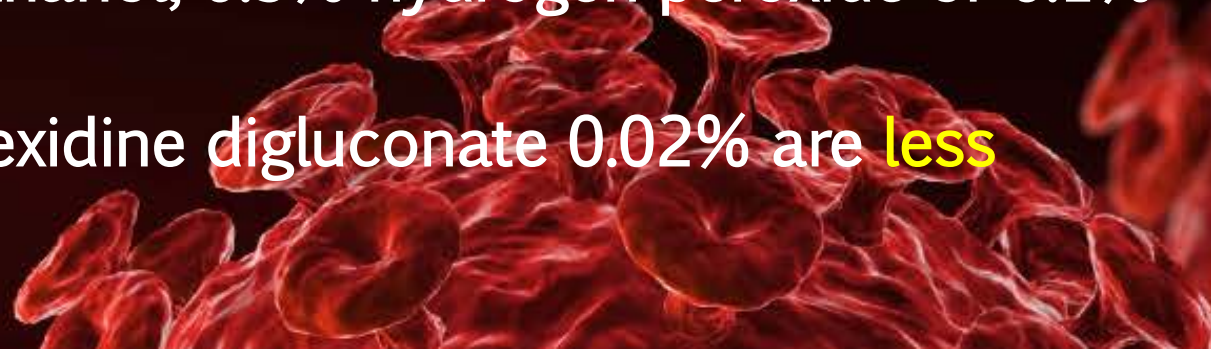
journal homepage: www.elsevier.com/locate/jhin

Review

Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents

G. Kampf [a,*], D. Todt [b], S. Pfaender [b], E. Steinmann [b]

- SARS, MERS or HCoV can persist on inanimate surfaces for up to 9 days.
- Efficient surface disinfection with 62-71% ethanol, 0.5% hydrogen peroxide or 0.1% sodium hypochlorite within 1 minute.
- Benzalkonium chloride 0.05-0.2% or chlorhexidine digluconate 0.02% are less effective.



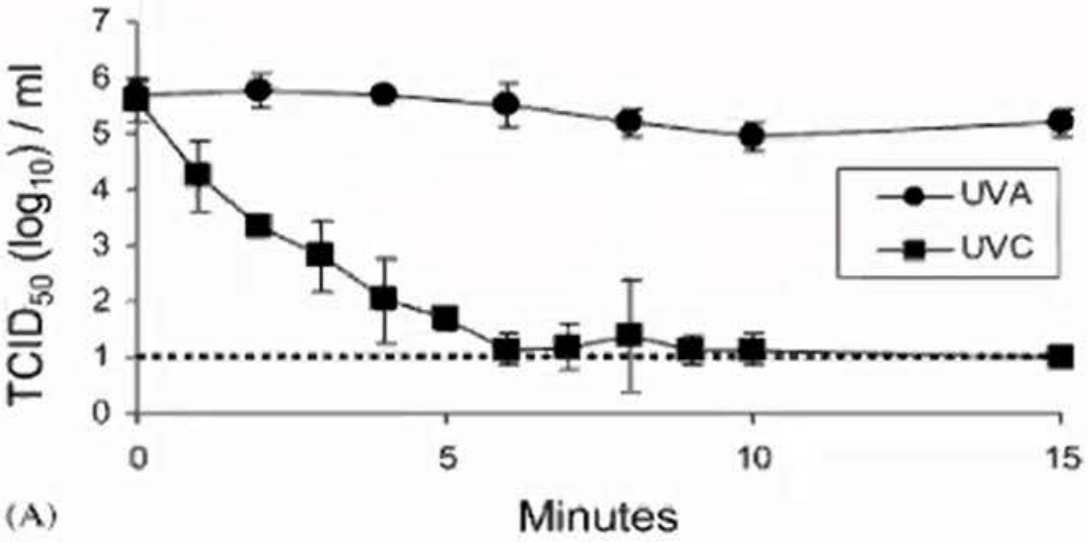
Inactivation

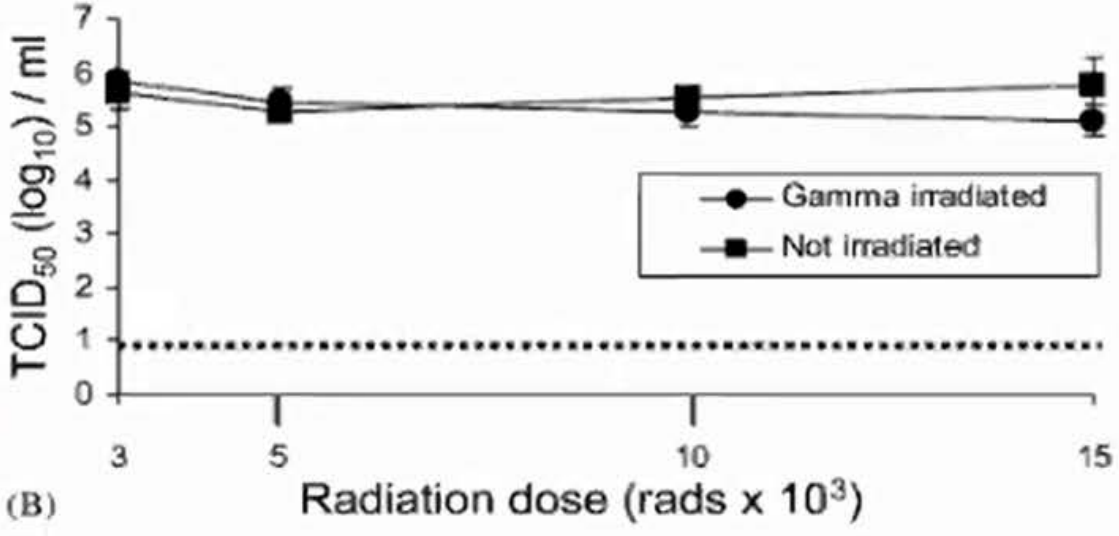
Journal of Virological Methods

Inactivation of the coronavirus that induces severe acute respiratory syndrome, SARS-CoV

Miriam E.R. Darnell[a], Kanta Subbarao[b], Stephen M. Feinstone[a], Deborah R. Taylor[a,*]

Journal of Virological Methods 121 (2004) 85–91 doi:10.1016/j.jviromet.2004.06.006





Ultraviolet Light

UVA (320-400 nm, 365 nm)—2133 µW/cm2

UVB (280-320 nm)

UVC (200-280 nm, 254 nm)—4016 µW/cm2

(µW=10-6 J/s)

Fig. 1. Effect of radiation on the infectivity of SARS-CoV. (A) UV irradiation. The UV lamp was placed 3 cm above the bottom of 24-well plates containing 2 ml virus aliquots. Samples were removed at each time point, frozen, and titrated in Vero E6 cells. The results shown are representative of three independent experiments. (B) Gamma irradiation. Virus aliquots (400 µl) were placed in cryovials on dry ice and exposed to the indicated dose of gamma irradiation. Control samples were treated identically, without radiation exposure. Samples were titrated in Vero E6 cells in triplicate. The dotted line denotes the limit of detection of the assay.

Heat

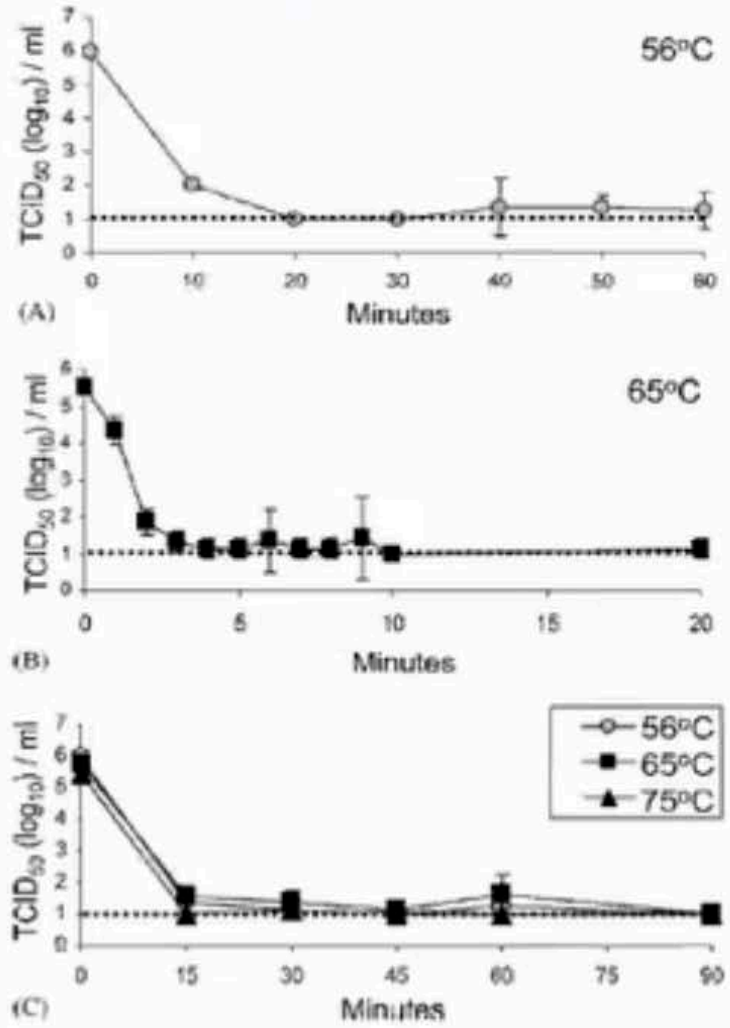


Fig. 2. Effect of heat treatment on the infectivity of SARS-CoV. Virus aliquots (400 μl) were incubated at (A, C) 56 °C, (B, C) 65 °C and (C) 75 °C. Samples were removed at the designated time, frozen, and titrated in Vero E6 cells in triplicate. The dotted line denotes the limit of detection of the assay.

Journal of Virological Methods

Inactivation of the coronavirus that induces severe acute respiratory syndrome, SARS-CoV

Miriam E.R. Darnell[a], Kanta Subbarao[b], Stephen M. Feinstone[a], Deborah R. Taylor[a,*]

Journal of Virological Methods 121 (2004) 85–91 doi:10.1016/j.jviromet.2004.06.006

pH

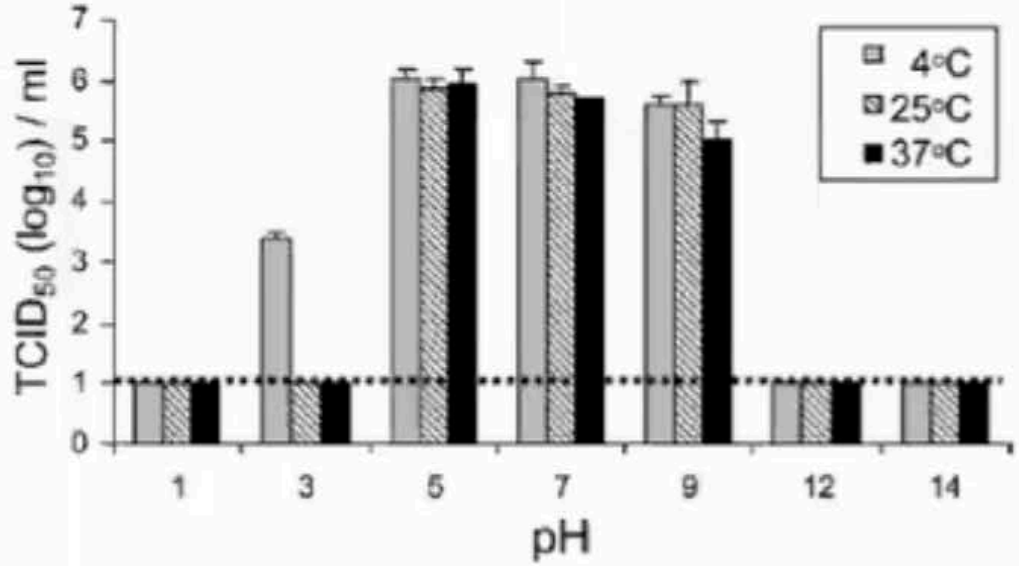


Fig. 3. Effect of pH conditions on the infectivity of SARS-CoV. Virus aliquots (2 ml) were adjusted to the indicated pH condition, divided into triplicate samples, incubated at the designated temperature for 1 h, neutralized, frozen, and titrated. The dotted line denotes the limit of detection of the assay.

Stability of SARS-CoV-2 in different environmental conditions

*Alex W H Chin, Julie T S Chu, Mahen R A Perera, Kenrie P Y Hui, Hui-Ling Yen, Michael C W Chan, Malik Peiris, *Leo L M Poon*
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www.thelancet.com/microbe **Vol 1 May 2020**

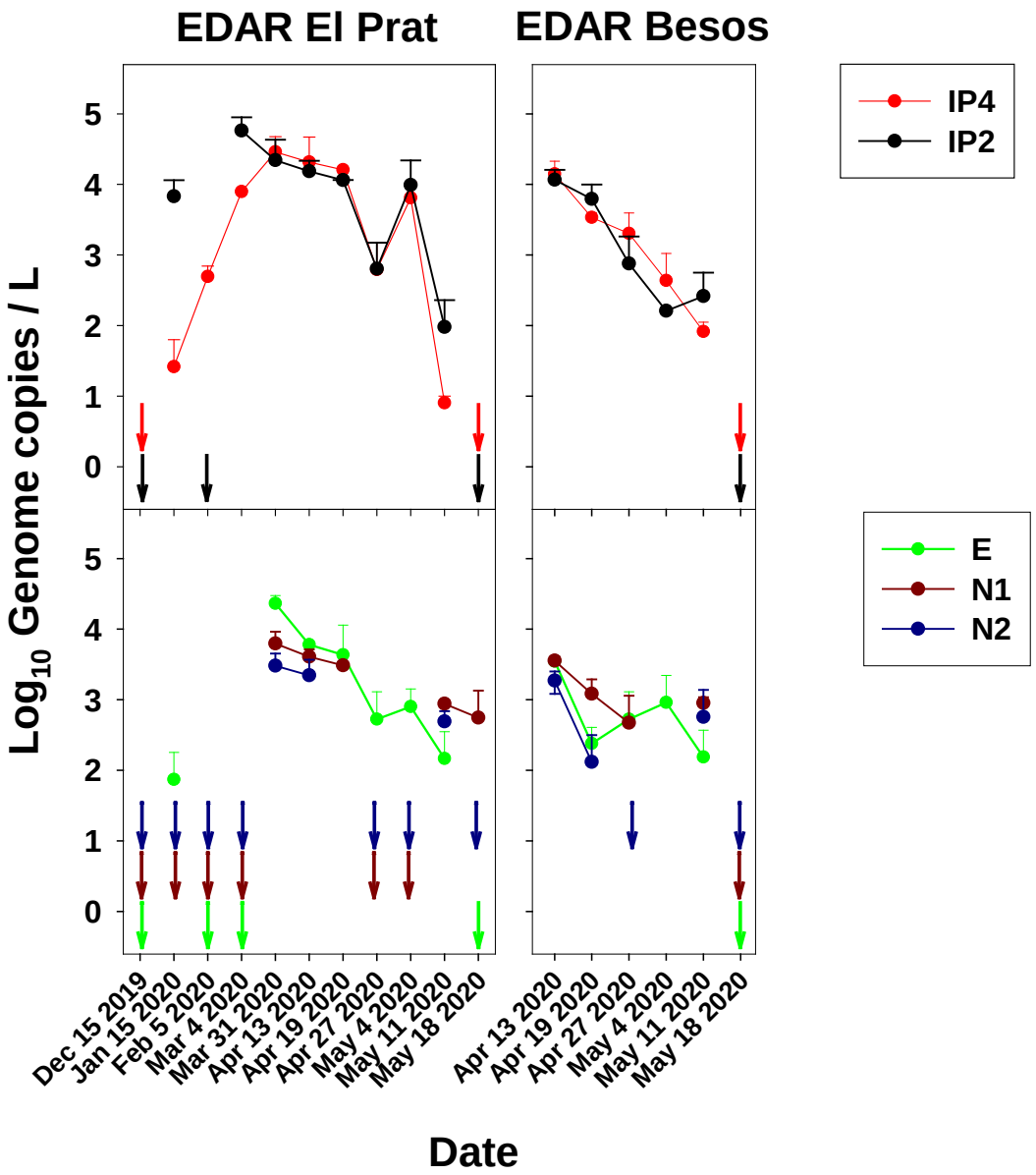
The virus is highly stable at 4°C, but sensitive to heat. At 4°C, there was only around a 0·7 log-unit reduction of infectious titre on day 14. With the incubation temperature increased to 70°C, the time for virus inactivation was reduced to 5 mins.

No infectious virus could be recovered from printing and tissue papers after a 3-hour incubation, hereas no infectious virus could be detected from treated wood and cloth on day 2.
No infectious virus could be detected from treated smooth surfaces on day 4 (glass and banknote) or day 7 (stainless steel and plastic). Strikingly, a detectable level of infectious virus could still be present on the outer layer of a surgical mask on day 7

Will an Ozone Generator protect me and my family from COVID-19?

No, do not use ozone generators in occupied spaces. When used at concentrations that do not exceed public health standards, ozone applied to indoor air does not effectively remove viruses, bacteria, mold, or other biological pollutants. Visit the Centers for Disease Control

- EDAR Besòs: 3 M habitant equivalents
- EDAR El Prat de Llobregat: 2 M habitant equivalents
- EDAR Gavà: 300.000 habitant equivalents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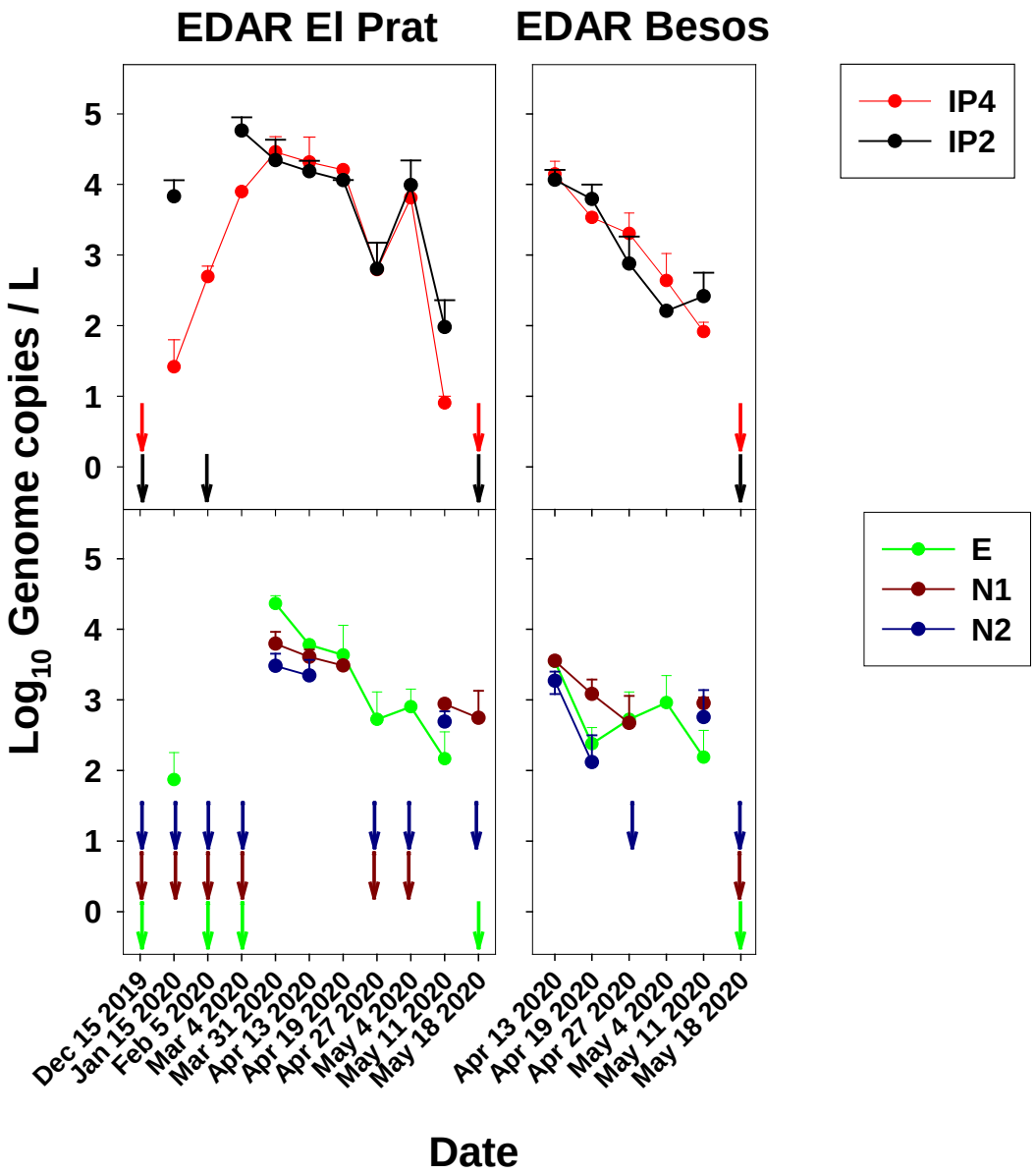
May 4 2020
May 11 2020
May 18 2020
Date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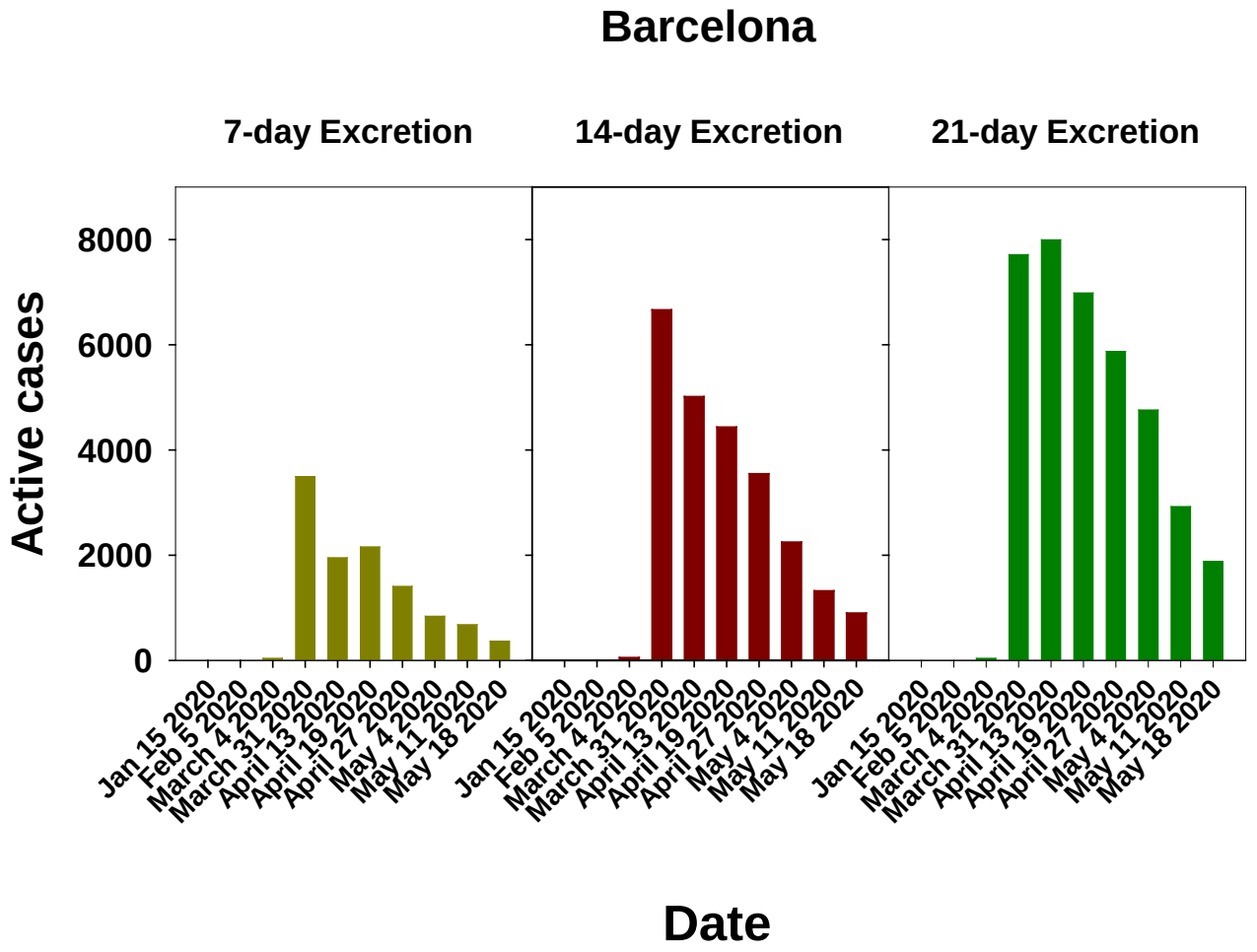
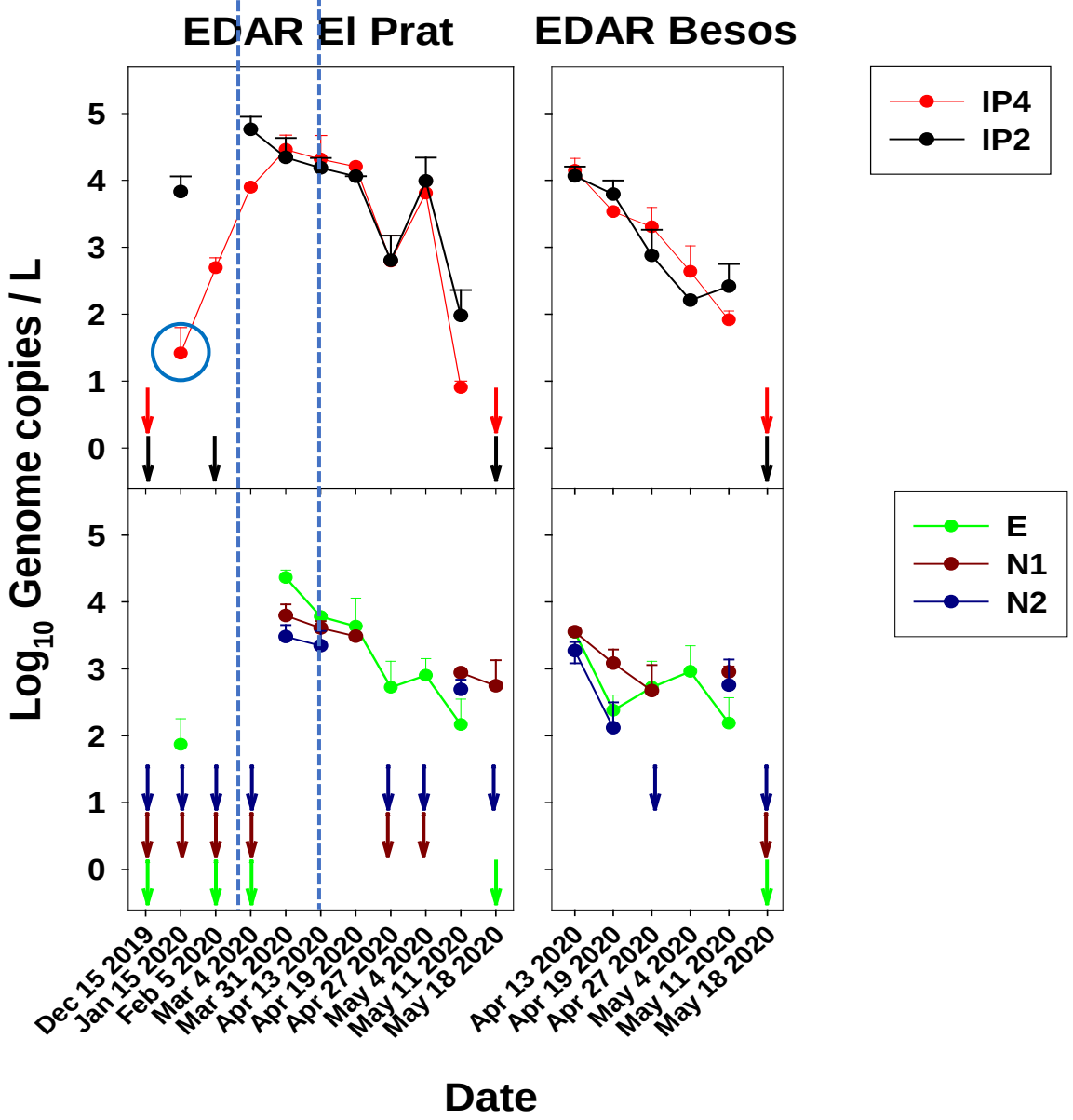
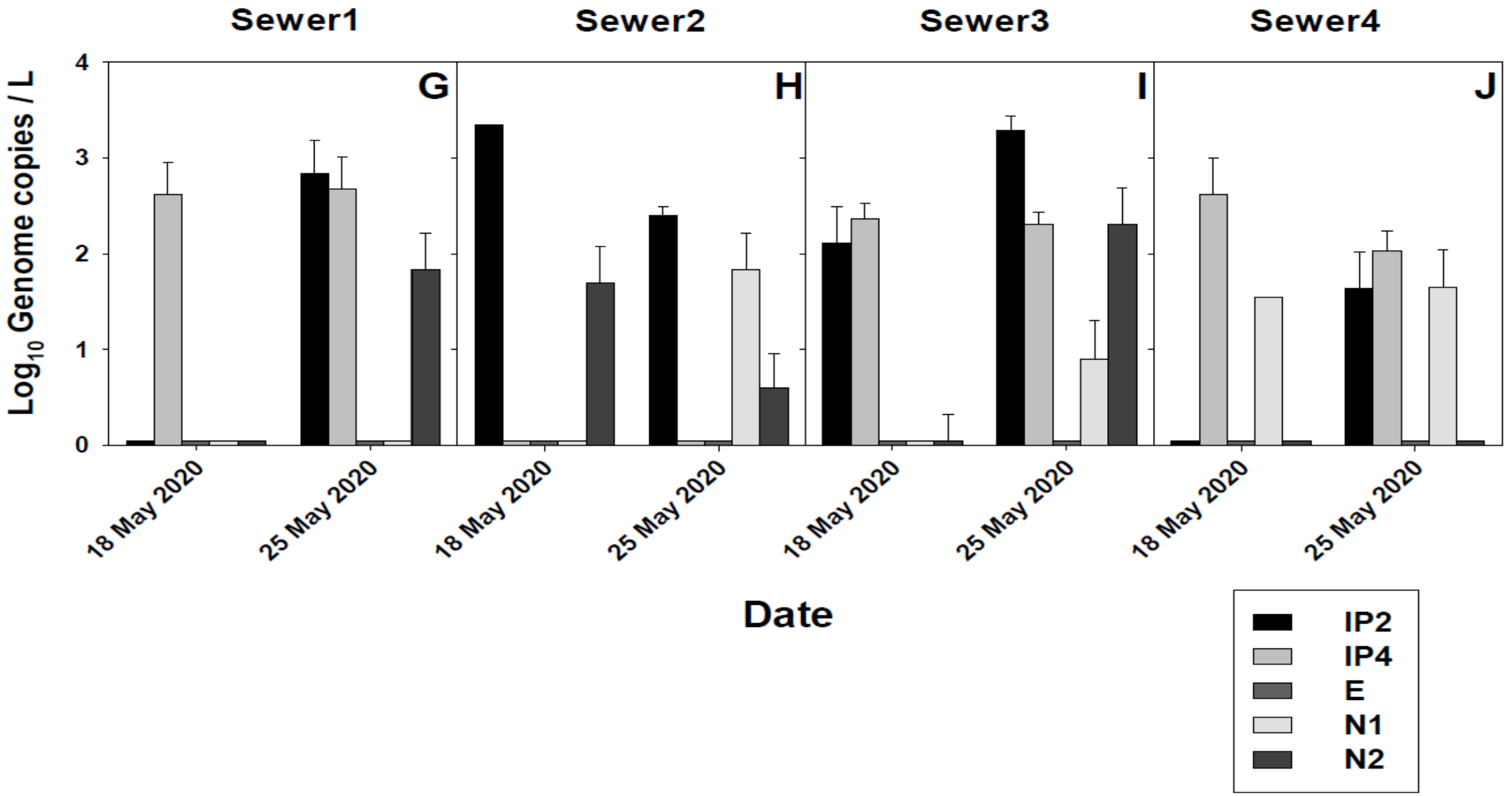

Barcelona
7-day Excretion
14-day Excretion
21-day Excretion
Active cases
0
2000
4000
6000
8000
Jan 15 2020
Feb 5 2020
March 4 2020
March 31 2020
April 13 2020
April 19 2020
April 27 2020
May 4 2020
May 11 2020
May 18 2020
Date

1st case declared 25 Feb 2020

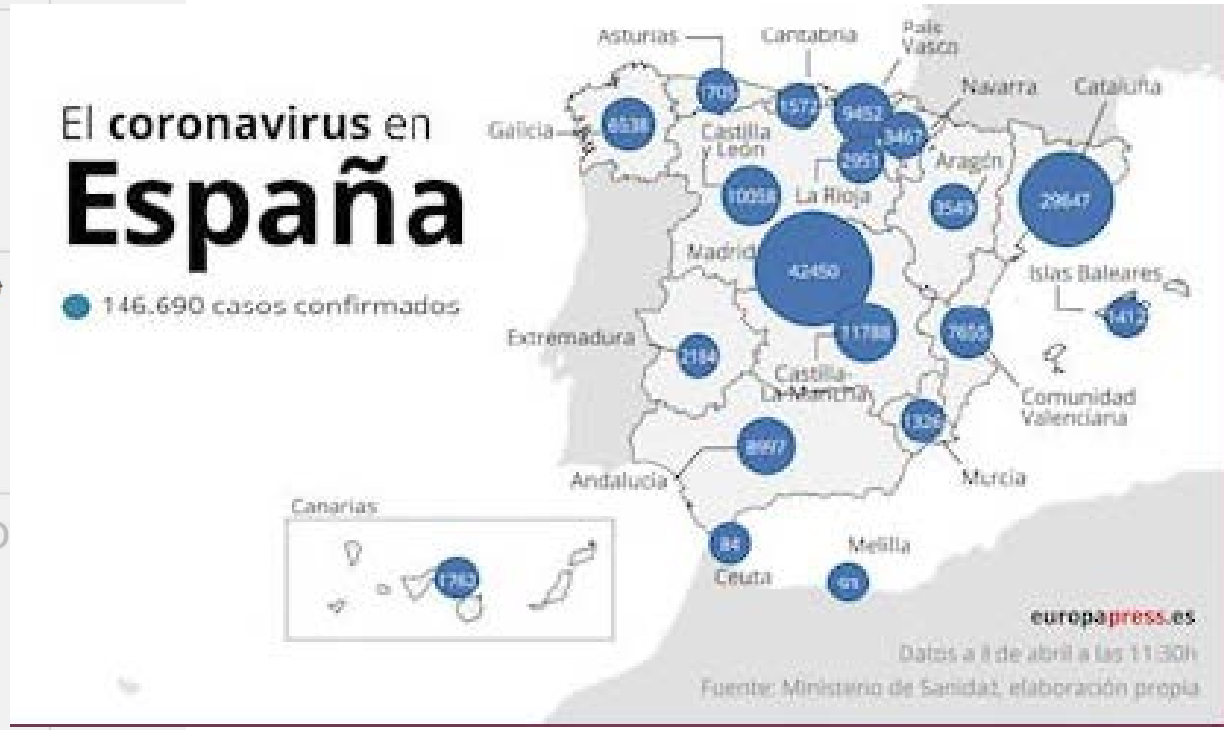
1st sampling 13 Apr 2020





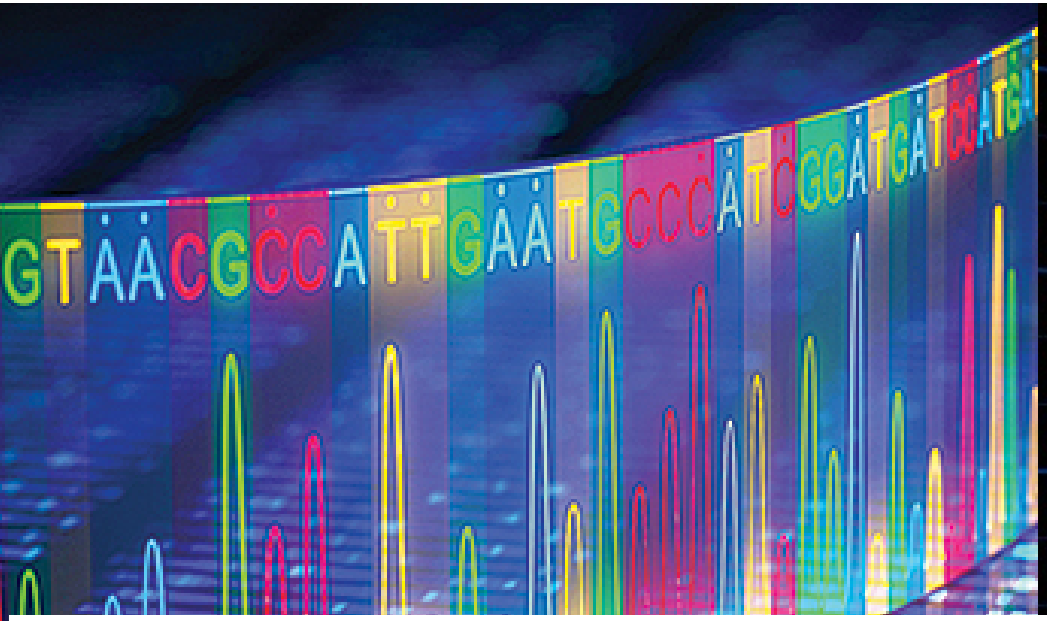
SARS-CoV-2 in Barcelona sewers – End of May 2020

MINISTERIO
PARA LA TRANSICIÓN ECOLÓGICA
Y EL RETO DEMOGRÁFICO

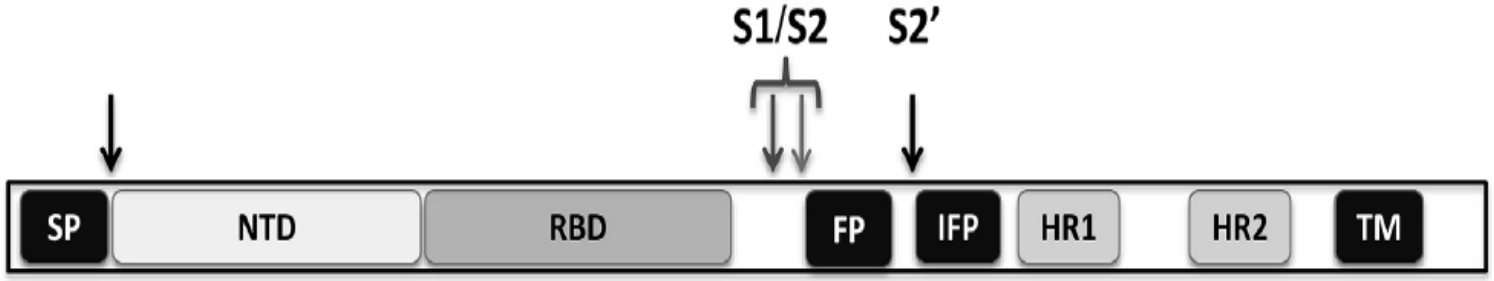


La vigilancia del SARS-CoV-2 en aguas residuales es una herramienta de alerta rápida para la COVID-19

Next-generation sequence (NGS) analysis of SARS-CoV-2 recovered from wastewater



Schematic representation of the SARS-CoV-2 S-protein with the receptor-binding site (RBD) and the S1/S2 cleavage site



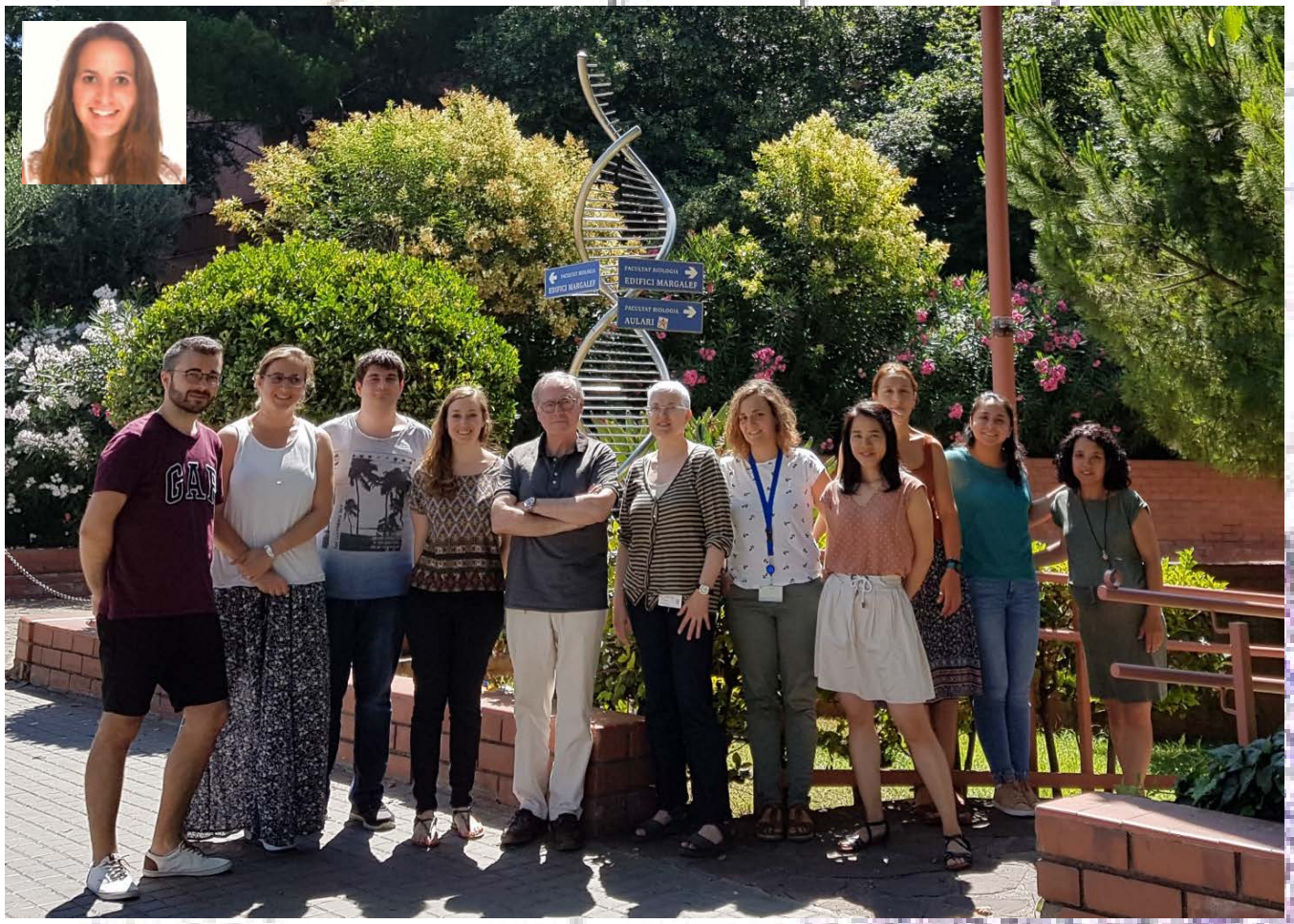
SARS-CoV-2:
¿No solo un virus respiratorio?

AQUAVALENS

SAFE CONSUME

European Commission | Horizon 2020 European Union funding for Research & Innovation

GOBIERNO DE ESPAÑA | MINISTERIO DE CIENCIA E INNOVACIÓN



Aigües de Barcelona

Generalitat de Catalunya
Agència de Salut Pública de Catalunya

VIRUS ENTÈRICS

SAVSA
Servicio de Análisis de Virus en la Cadena Alimentaria
Services for the Analysis of Viruses in the Food Chain

Campus de l'Alimentació
Universitat de Barcelona

INSA
Institut de Recerca en Nutrició i Seguretat Alimentària

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