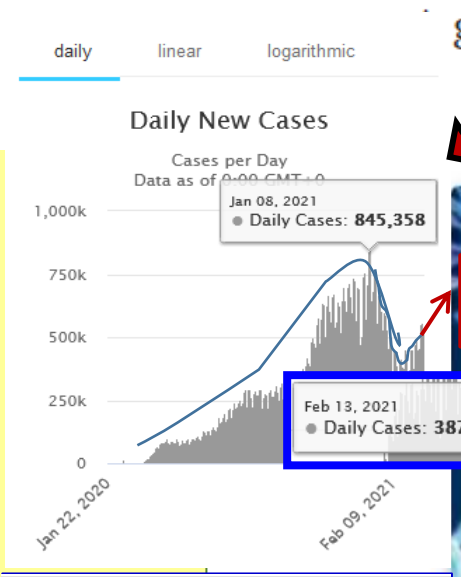
The first pandemic of the Anthropocene*

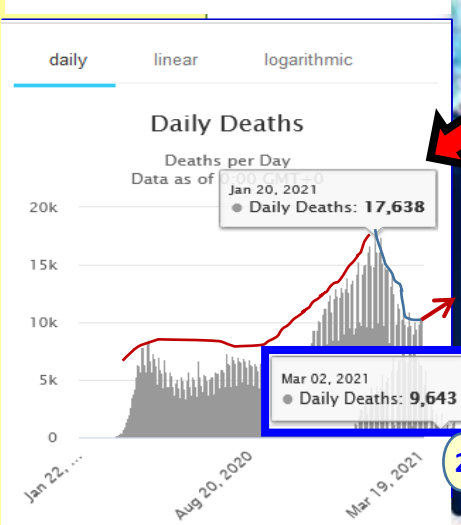
global biological and health crisis widely predicted

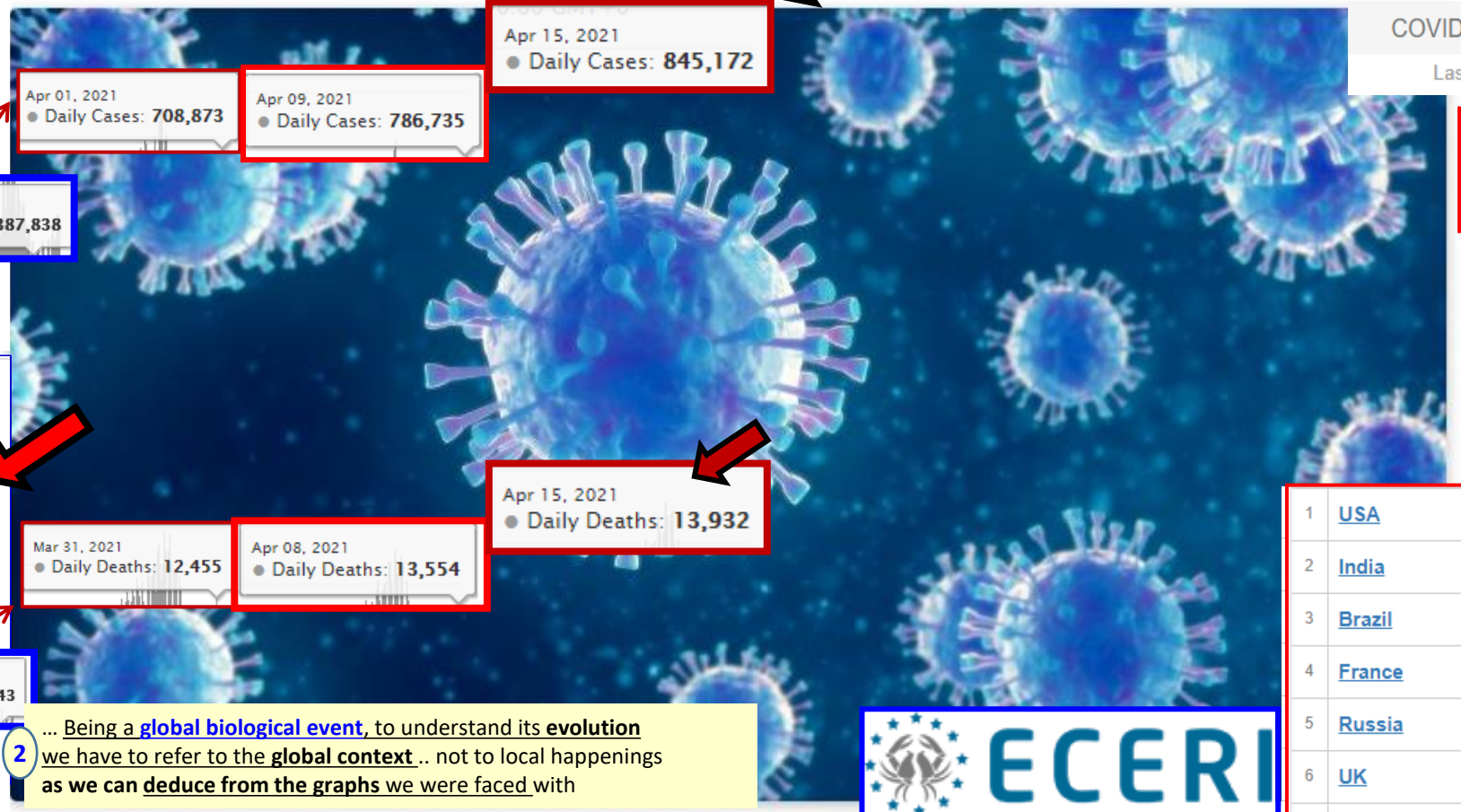
18 MARCH 2021, ERNESTO BURGIO

* This is not an **accidental event**, a sort of "***acute-illness***" that struck the human population because a **particularly virulent pathogen accidentally** spread.....but a particularly dramatic episode of a "***chronic and rapidly progressive disease"*** that affects the entire ***ecosphere/biosphere..*** irresponsibly produced, **within a few decades**, by a single species (Homo sapiens..) through a true "***War on Nature***"..

1







COVID-19 CORONAVIRUS PANDEMIC

Last updated April 20, 2021, 18:15 GMT IT

Coronavirus Cases:
143,268,269

Deaths:
3,050,150

	Total Cases	Total Deaths	Deaths/ 1M pop
1 USA	31,924,090	575,853	1,749
2 India	13,616,385	170,673	123
3 Brazil	13,482,543	353,293	1,754
4 France	5,058,680	98,750	1,510
5 Russia	4,649,710	103,263	707
6 UK	4,373,343	127,100	1,867
7 Turkey	3,849,011	33,939	399
8 Italy	3,779,594	114,612	1,948
9 Spain	3,347,512	76,328	1,632
10 Germany	3,017,237	79,035	941

2 ... Being a **global biological event**, to understand its **evolution** we have to refer to the **global context** .. not to local happenings **as we can deduce from the graphs** we were faced with

a) ..**a single big wave**** that has been increasing until the beginning of January.... **in January we were witnessing, for the first time, a clear reduction in the number of cases and of death**s... But, **in the past 15 days numbers are increasing again**

b) **.. lethality and mortality rates*** are extremely higher in Western countries, Europe and the Americas**, than in Asia, Africa.. Australia, Cuba..

ERNESTO BURGIO
ECERI - European Cancer and Environment Research Institute

ECERI
European Cancer and Environment Research Institute

#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop	Population
	World	136,897,026	+266,172	2,953,098	+3,759	110,081,754	23,862,174	103,486	17,563	378.9			
1	USA	31,924,090	+5,489	575,853	+24	24,483,025	6,865,212	9,166	96,009	1,732	419,438,212	1,261,427	332,510,877
2	India	13,616,385	+91,006	170,673	+464	12,191,598	1,254,114	8,944	9,792	123	257,806,986	185,402	1,390,530,992
3	Brazil	13,482,543		353,293		11,880,803	1,248,447	8,318	63,081	1,653	28,600,000	133,812	213,732,948
4	France	5,058,680		98,750		309,787	4,650,143	5,838	77,367	1,510	69,627,924	1,064,877	65,385,892
5	Russia	4,649,710	+8,320	103,263	+277	4,272,165	274,282	2,300	31,851	707	123,900,000	848,728	145,983,181
6	UK	4,373,343	+3,568	127,100	+13	3,981,812	264,431	406	64,160	1,865	136,821,861	2,007,270	68,163,171
7	Turkey	3,849,011		33,939		3,331,411	483,661	2,824	45,260	399	41,591,854	489,069	85,042,925
8	Italy	3,779,594	+9,789	114,612	+358	3,140,565	524,417	3,593	62,584	1,898	53,245,501	881,657	60,392,563
9	Spain	3,347,512		76,328		3,095,922	175,262	2,050	71,576	1,632	43,458,915	929,227	46,768,878
10	Germany	3,017,237	+7,696	79,035	+71	2,683,900	254,302	4,515	35,923	941	51,559,277	613,857	83,992,315
11	Poland	2,586,647	+12,013	58,481	+61	2,197,782	330,384	3,483	68,404	1,547	13,062,929	345,449	37,814,322
12	Colombia	2,536,198		65,889		2,383,785	86,524	3,079	49,435	1,284	13,314,269	259,520	51,303,536
13	Argentina	2,532,562		57,779		2,233,140	241,643	3,789	55,639	1,269	9,590,737	210,704	45,517,627
14	Mexico	2,280,213	+1,793	209,338	+126	1,809,921	260,954	4,798	17,542	1,610	6,273,107	48,261	129,983,471
17	Peru	1,647,694		54,903		1,566,543	26,248	2,302	49,439	1,647	10,001,832	300,106	33,327,621
18	Czechia	1,581,184	+976	27,918	+43	1,466,296	86,970	1,157	147,437	2,603	14,397,254	1,342,471	10,724,441
25	Belgium	925,476	+2,989	23,473	+45	59,754	842,249	899	79,585	2,019	11,704,200	1,006,481	11,628,838
28	Sweden	857,401		13,621		N/A	N/A	376	84,488	1,342	7,847,033	773,245	10,148,191
32	Hungary	725,241	+5,077	23,708	+291	429,074	272,459	1,249	75,223	2,459	4,961,146	514,576	9,641,234
43	Bulgaria	371,993		14,418		286,258	71,317	797	53,853	2,087	2,270,329	328,671	6,907,614

If we look at the **global context**... it emerges very clearly that **lethality and mortality rates are extremely higher in Western countries**: **US 1732 deaths per 1000000 inhabitants**, UK **1865**, Italy **1898**.... **Belgium 2019**, **Czechia 2603**, **Hungary 2459** **Bulgaria 2087** Slovenia **1984**

#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop	Population
	World	116,371,108	+158,283	2,583,987	+3,090	91,999,256	21,787,865	89,730	14,929	331.5			
82	North Macedonia	141,844		4,228		116,780	20,836	124	68,086	2,029	669,141	321,192	2,083,307
86	S. Korea	110,146	+587	1,770	+2	100,804	7,572	103	2,147	35	8,152,783	158,913	51,303,532
90	Montenegro	94,419	+150	1,381	+8	88,834	4,204	69	150,318	2,199	353,329	562,511	628,128
91	Ghana	91,260		754		89,092	1,414	10	2,890	24	1,025,654	32,484	31,573,869
92	China	90,426	+16	4,636		85,495	295	3	63	3	160,000,000	111,163	1,439,323,776
95	Cuba	87,385	+854	467	+8	81,900	5,018	58	7,719	41	3,235,144	285,759	11,321,232
98	Mozambique	66,306		747		52,882	12,677		2,080	23	466,296	14,626	31,881,573
99	El Salvador	63,344		1,986	+3	60,681	677	35	9,730	305	819,582	125,899	6,509,859
100	Singapore	60,221	+13	30		60,051	140		10,235	5	8,055,714	1,369,191	5,883,556
115	Malta	29,661	+47	402		28,706	553		67,037	909	834,763	1,886,649	442,458
116	Australia	29,419	+17	909		26,361	2,149		1,143	35	16,141,909	627,375	25,729,274
113	Thailand	33,610	+985	97		28,248	5,265	1	481	1	8,124,896	116,176	69,936,240
134	Burkina Faso	12,559		145		12,177	237		589	7			21,313,244
137	Hong Kong	11,398		203		10,901	294	10	1,511	27	9,296,529	1,232,817	7,540,883
177	Vietnam	2,705	+12	35		2,445	225		28	0.4	2,598,753	26,513	98,018,310
178	New Zealand	2,583	+9	26		2,457	100		516	5	1,944,883	388,813	5,002,100
163	San Marino	4,962		86	+1	4,510	366	8	145,997	2,530	56,114	1,651,043	33,987
168	Gibraltar	4,277		94		4,181	2		126,978	2,791	219,808	6,525,785	33,683

.. on the contrary, **China has only 3 deaths per million inhabitants,** **Thailand** 1, **Vietnam** 0.4 ... **Mozambique** 23, **Burkina** 7, **Australia** 35, **Cuba** 41, **New Zealand** 5 ...

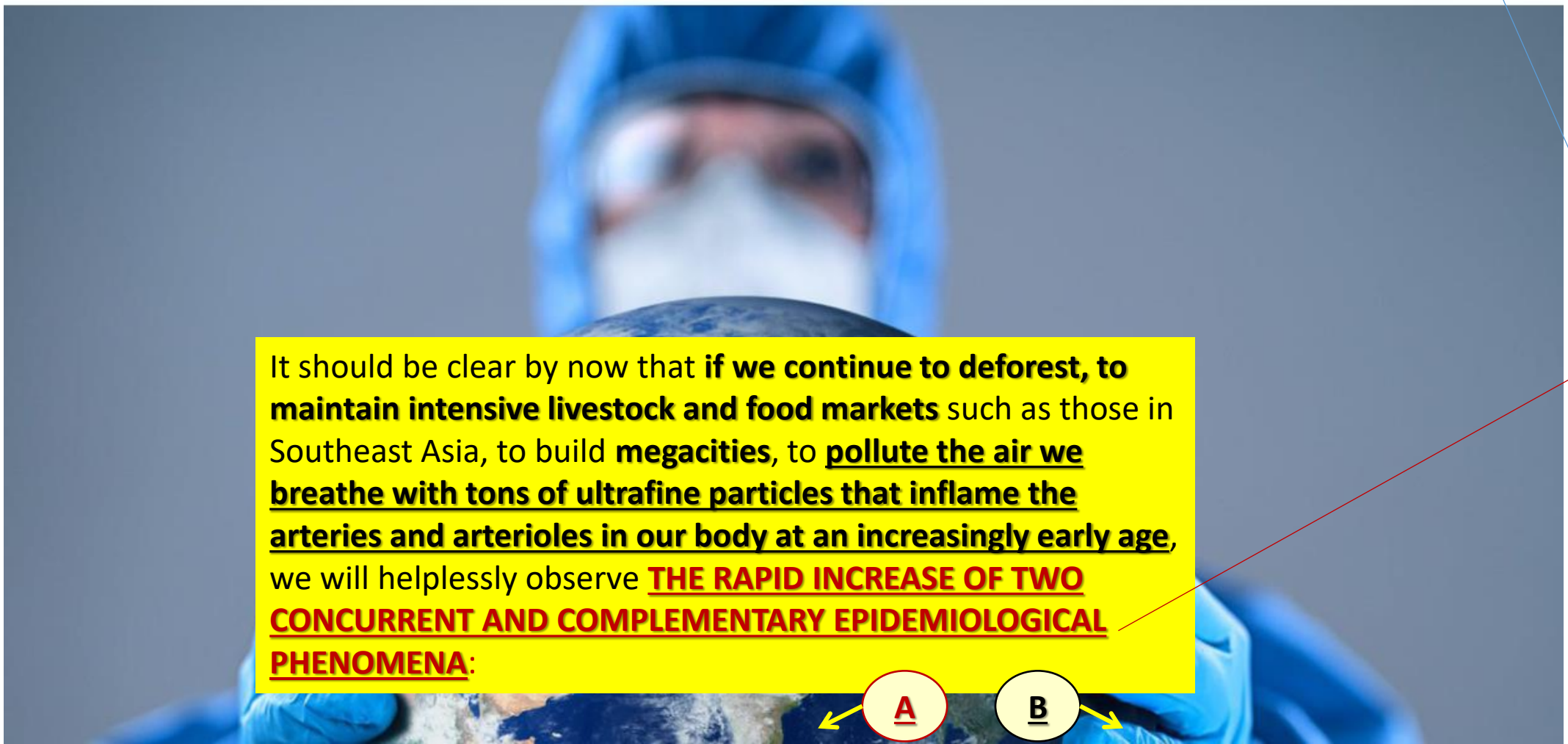
the difference is so evident that any doubt seems out of place

…. the very first **pan-syndemic of the Anthropocene**

The first pandemic of the Anthropocene

A global biological and health crisis widely predicted

18 MARCH 2021, ERNESTO BURGIO



It should be clear by now that **if we continue to deforest, to maintain intensive livestock and food markets** such as those in Southeast Asia, to build **megacities**, to **pollute the air we breathe with tons of ultrafine particles that inflame the arteries and arterioles in our body at an increasingly early age**, we will helplessly observe **THE RAPID INCREASE OF TWO CONCURRENT AND COMPLEMENTARY EPIDEMIOLOGICAL PHENOMENA**:

A **B**

A

On the one hand, the "***Epidemiological transition***" that has been taking place for at least three decades, consisting in a **continuous increase of chronic diseases with a strong inflammatory component** (***atherosclerosis and cardiovascular diseases, endocrine-metabolic and autoimmune diseases, cancer, neurodegenerative diseases and neurodevelopmental disorders***) which is essentially the effect of the **exposure, in recent decades, of hundreds of millions of embryos and fetuses** to an increasing number of ***epi-genotoxic factors*** (***DOHaD: Theory of Fetal Origins of Adult Diseases***): ***pollutants, EMFs, Ups, viruses and maternal stress***

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Editorial

Environment and fetal programming: the origins of some current "pandemics"

EPIGENETICS > GENETICS

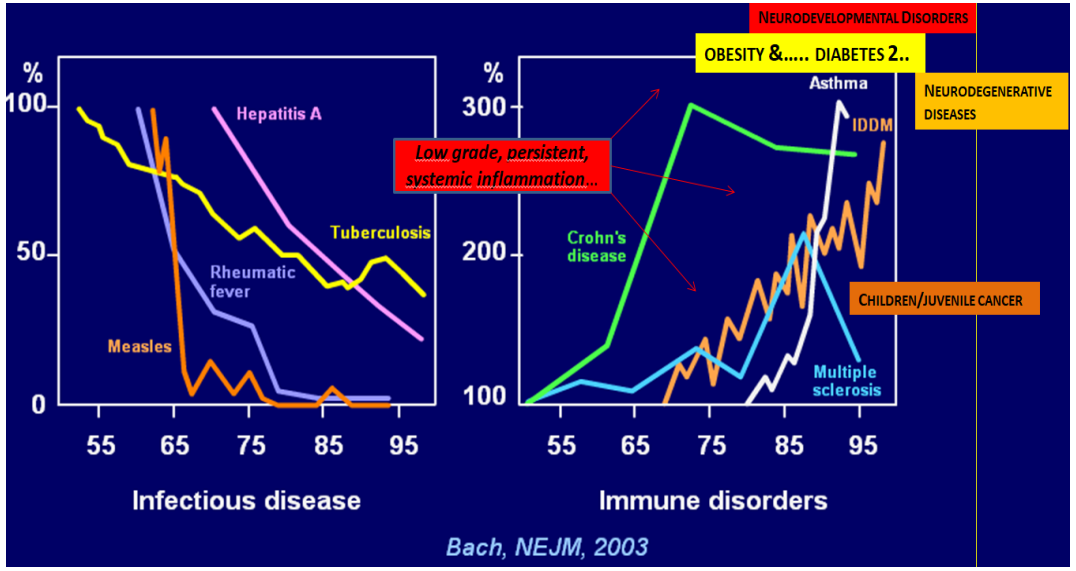
"The womb may be more important than the home"
David Barker

Ernesto Burgio

ECERI – European Cancer and Environment Institute, Bruxelles, Belgium
ISDE – International Society of Doctors for Environment (Scientific Office), Arezzo, Italy

This new paradigm is important not only to explain in a more exhaustive way the embryo-foetal origins of all the above mentioned disorders and their dramatic increase over the last decades, but also to try to effectively face this epidemiological transition. The key-term in this context is certainly primary prevention: only by reducing the maternal-foetal factors of distress and the exposure of the foetus (and of its gametes) to pollutants, it would be possible to protect the correct programming of cells, tissues and organs.

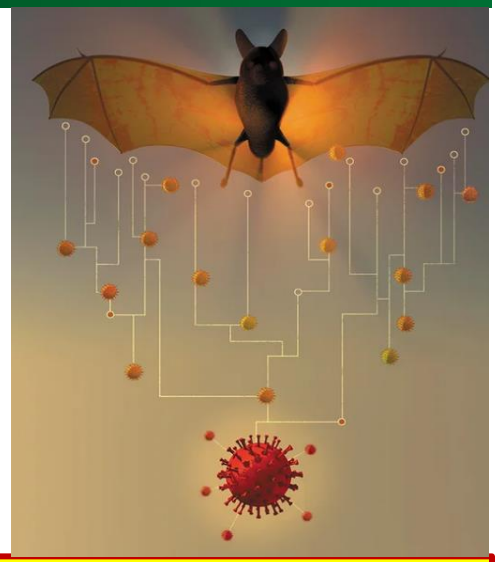
The key-term in this context is certainly ***primary prevention***



EDITORIAL | VOLUME 5, ISSUE 1, E1, JANUARY 01, 2021

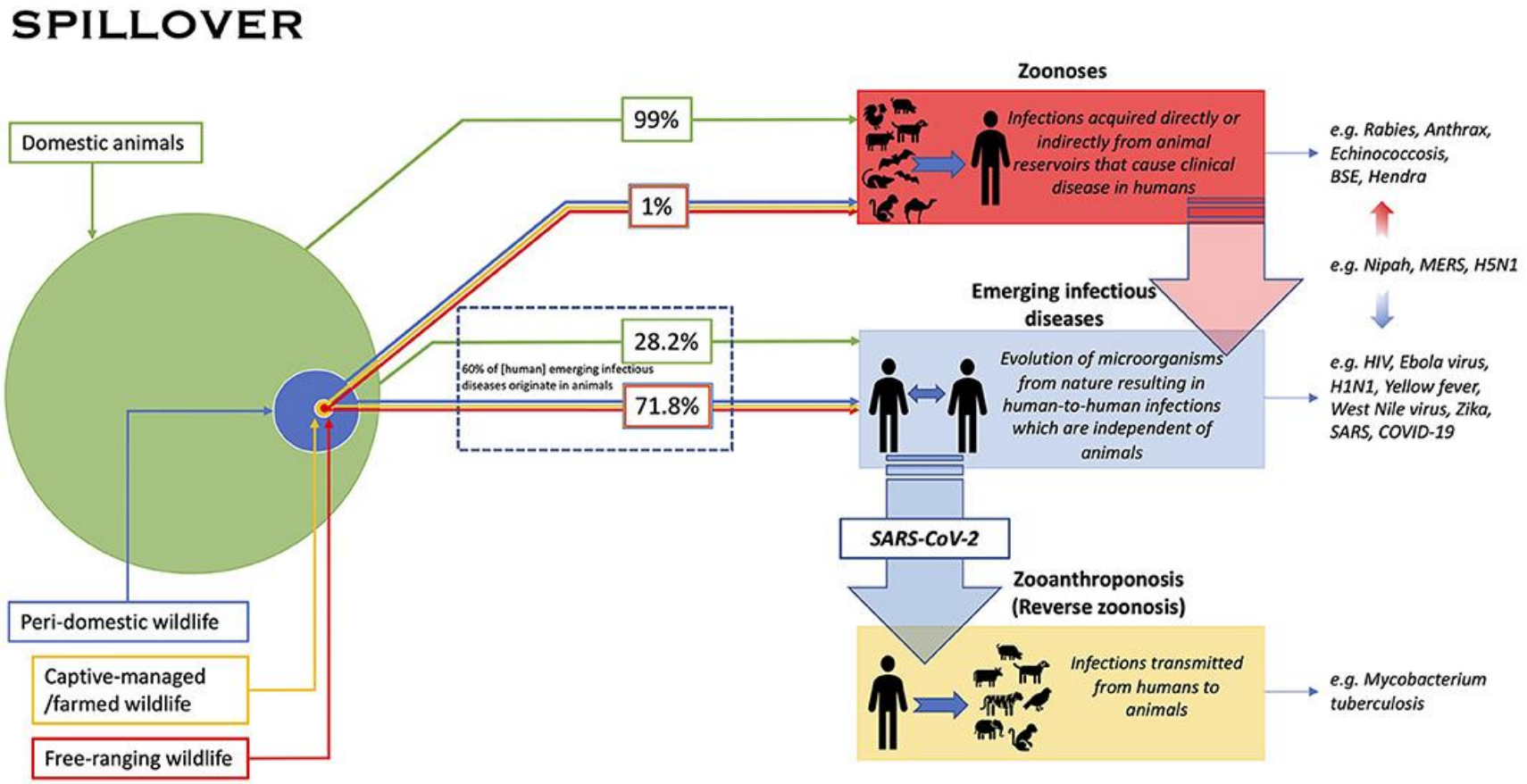
A Pandemic Era

The Lancet Planetary Health



B

On the other hand, the materialization of the dreaded "***pandemic era***" due to the **continuous increase of zoonoses**: i.e. the ***spillover*** **of new pathogens to humans from animals** which we keep in painful and unnatural conditions.



P Rothman-Ostrow (2020)

IGBP Newsletter 41: May 2000

The "Anthropocene"

by Paul J. Crutzen and Eugene F. Stoermer

The name Holocene ("Recent Whole") for the post-glacial geological epoch of the past ten to twelve thousand years seems to have been proposed for the first time by Sir Charles Lyell in 1833, and adopted by the International Geological Congress in Bologna in 1885 **(1)**. During the Holocene mankind's activities gradually grew into a significant geological, morphological force, as recognised early on by a number of scientists. Thus, G.P. Marsh already in 1864 published a book with the title "Man and Nature", more recently reprinted as "The Earth as Modified by Human Action" (2). Stoppani in 1873 rated mankind's activities as a "new telluric force which in power and universality may be compared to the greater forces of earth" [quoted from Clark (3)]. Stoppani already spoke of the anthropozoic era. Mankind has now in-

panied e.g. by a growth in cattle population to 1400 million (6) (about one cow per average size family). Urbanisation has even increased tenfold in the past century. In a few generations mankind is exhausting the fossil fuels that were generated over several hundred million years. The release of SO_2, globally about 160 Tg/year to the atmosphere by coal and oil burning, is at least two times larger than the sum of all natural emissions, occurring mainly as marine dimethyl-sulfide from the oceans (7); from Vitousek et al. (8) we learn that 30-50% of the land surface has been transformed by human action; more nitrogen is now fixed synthetically and applied as fertilizers in agriculture than fixed naturally in all terrestrial ecosystems; the escape into the atmosphere of NO from fossil fuel and biomass combustion likewise

groves. Finally, mechanized human p
dation ("fisheries") removes more th
25% of the primary production of t
oceans in the upwelling regions and 3
in the temperate continental shelf
gions (10). Anthropogenic effects are a
well illustrated by the history of biotic communities that leave remains in lake sediments. The effects documented include modification of the geochemical cyde in large freshwater systems and occur in systems remote from primary sources (11-13).

Considering these and many other major and still growing impacts of human activities on earth and atmosphere, and at all, including global, scales, it seems to us more than appropriate to emphasize the central role of mankind in geology and ecology by proposing to use the term "anthropocene" for the cur-

Ian Angus

Anthropocen

Capitalismo fossile
e crisi del sistema Terra

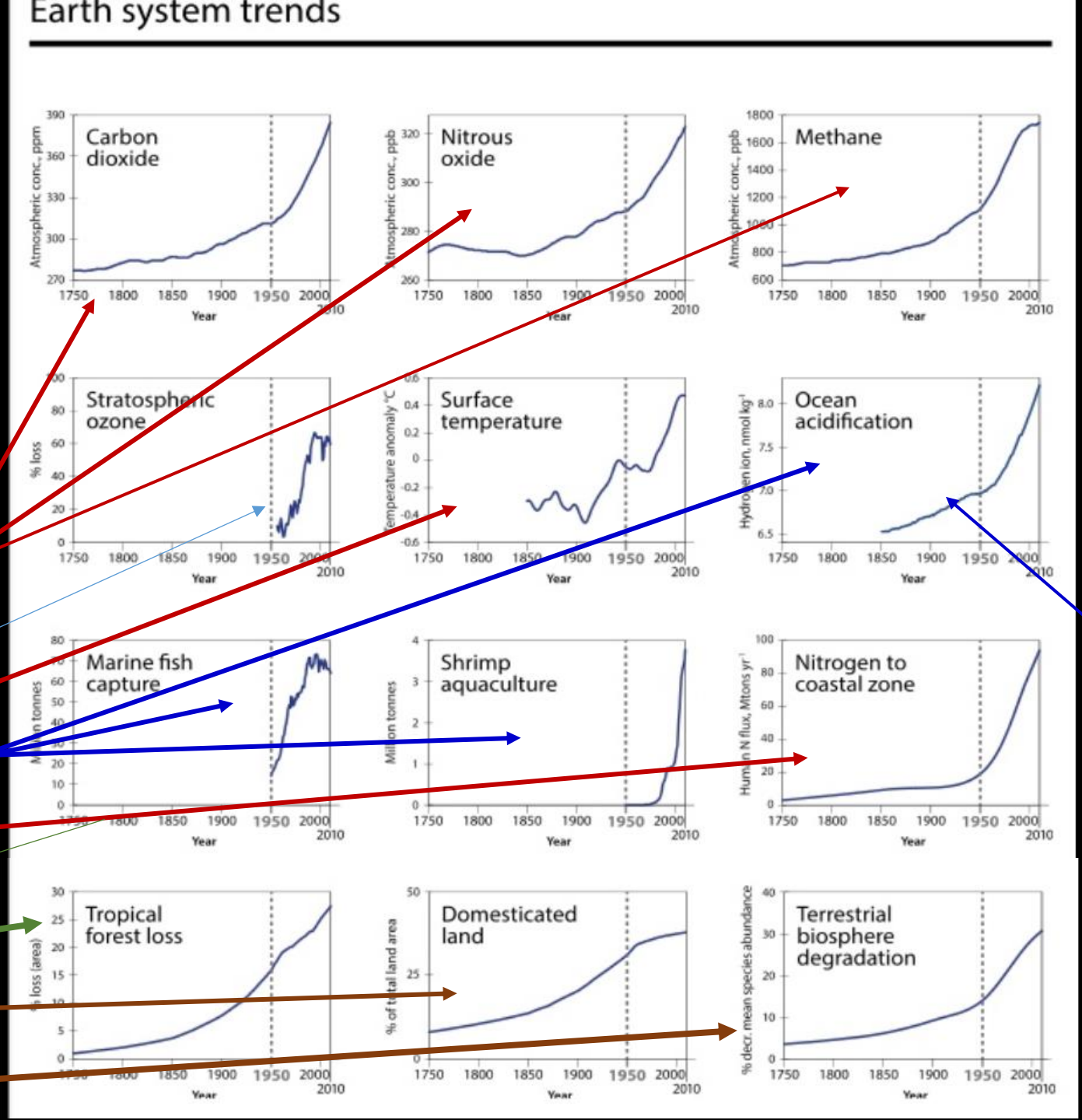
A cura di Giuseppe Sottile e Alessandro Cocuzza

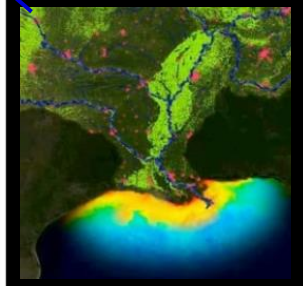
Asterios

The Great Acceleration

Global Impact

- Greenhouse gases
- Ozone depletion
- Climate
- Marine ecosystems
- Coastal zone
- Nitrogen cycle
- Tropical forests
- Land systems
- Biosphere integrity

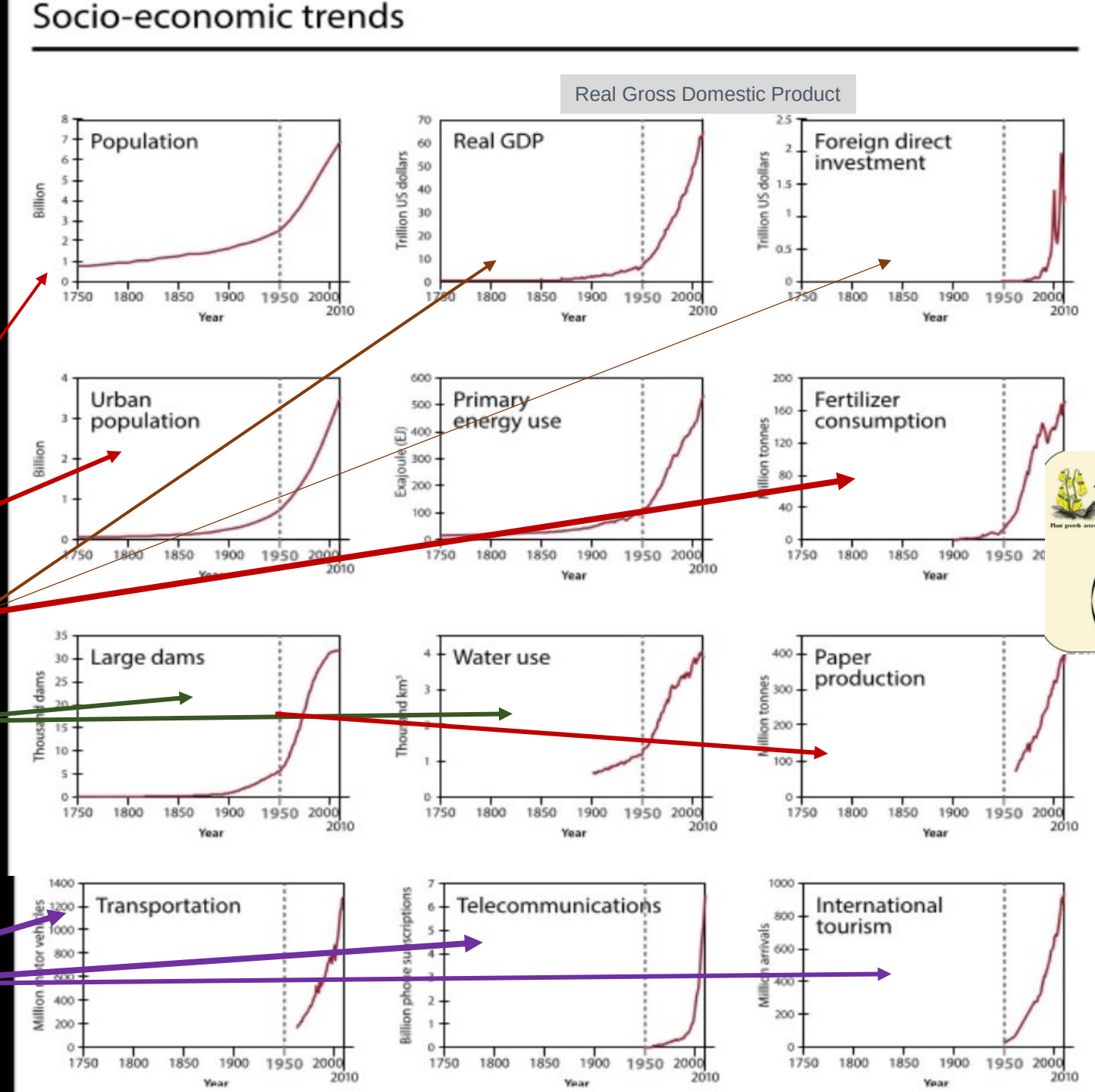


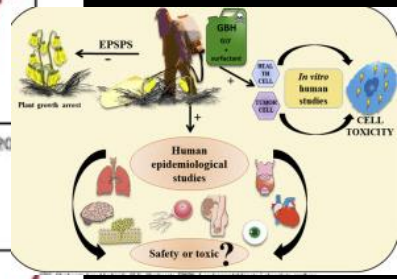


The Great Acceleration

The Human Enterprise

- **Population**
- **Economic Growth**
- **Freshwater use**
- **Energy use**
- **Urbanization**
- **Globalization**
- **Transport**
- **Communication**





nel 2011 ***The Economist***,
una pubblicazione solitamente nota per le speculazioni arcana sulla geopolitica e l'economia, ha accolto i suoi lettori nell'Antropocene
e ha avvertito che **gli esseri umani avevano "cambiato il modo in cui funziona il mondo".** Il tam tam è continuato, ricevendo di recente nuovo slancio con l'uscita nel numero dell'8 gennaio della rivista ***Science*** di un rapporto dell'***Antropocene Working Group*** della ***Subcommission on Quaternary Stratigraphy*** della ***International Commission on Stratigraphy*** con il titolo accattivante " ***L'Antropocene è funzionalmente e stratigraficamente distinto dall'Olocene*** ".

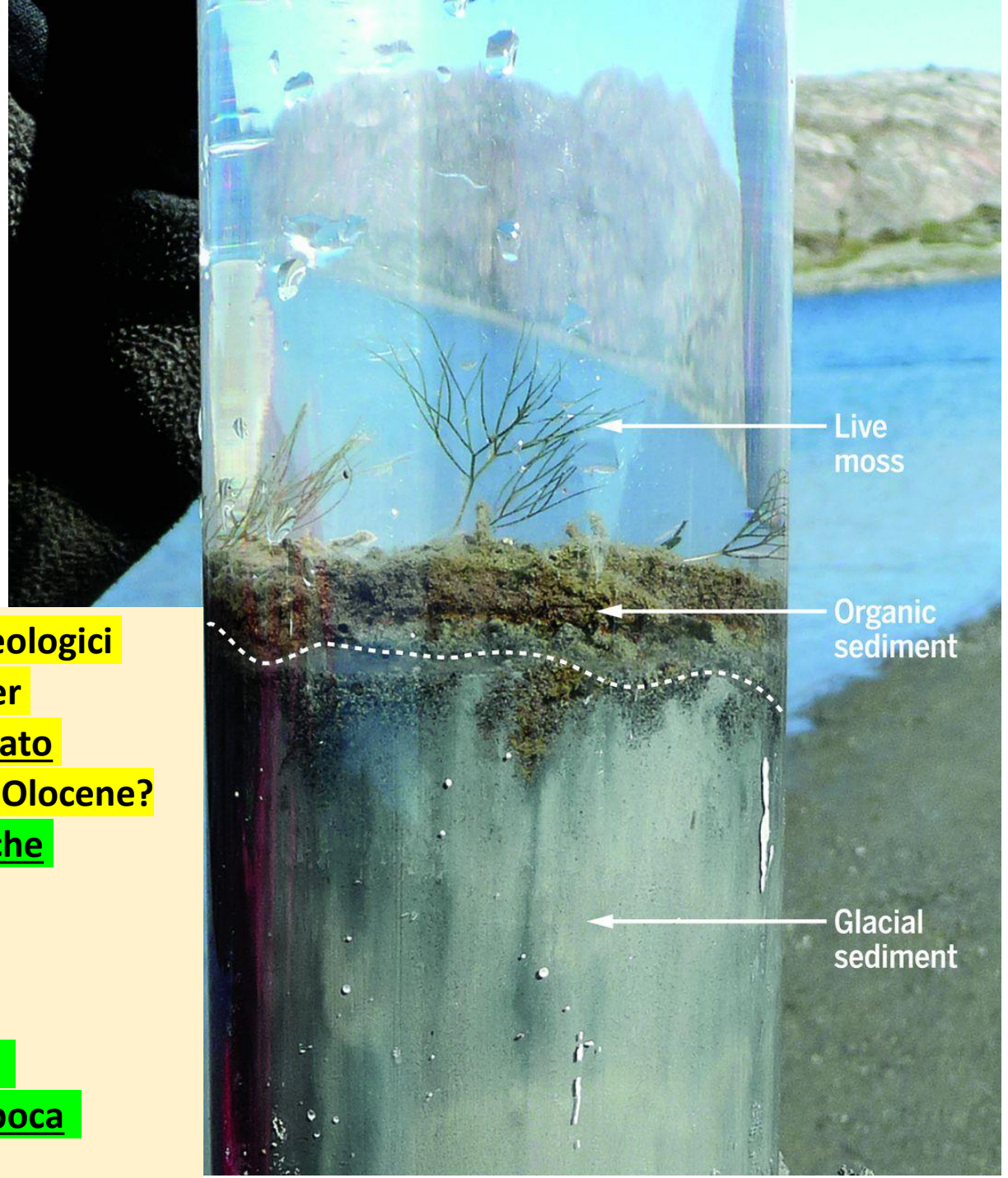
REVIEW

https://science.sciencemag.org/content/351/6269/aad2622/tab-pdf

EARTH HISTORY

The Anthropocene is functionally and stratigraphically distinct from the Holocene

Colin N. Waters,[1*] Jan Zalasiewicz,[2] Colin Summerhayes,[3] Anthony D. Barnosky,[4] Clément Poirier,[5] Agnieszka Gałuszka,[6] Alejandro Cearreta,[7] Matt Edgeworth,[8] Erle C. Ellis,[9] Michael Ellis,[1] Catherine Jeandel,[10] Reinhold Leinfelder,[11] J. R. McNeill,[12] Daniel deB. Richter,[13] Will Steffen,[14] James Syvitski,[15] Davor Vidas,[16] Michael Wagreich,[17] Mark Williams,[2] An Zhisheng,[18] Jacques Grinevald,[19] Eric Odada,[20] Naomi Oreskes,[21] Alexander P. Wolfe[22]



Gli esseri umani stanno senza dubbio alterando molti processi geologici sulla Terra, da molto tempo. Ma qual è l'evidenza stratigrafica per distinguere ufficialmente questo nuovo periodo di tempo dominato dall'uomo, chiamato "Antropocene", dall'epoca precedente dell'Olocene?

Waters et al. studiano **le firme climatiche, biologiche e geochimiche dell'attività umana nei sedimenti e nelle carote di ghiaccio.**

Confrontando i depositi di nuovi materiali e radionuclidi, con la modificazione dei processi sedimentari causati dall'uomo, l'Antropocene si definisce stratigraficamente come una nuova epoca che ha avuto inizio nella seconda metà del 20 ° secolo.

L'attività umana sta lasciando una traccia pervasiva e persistente sulla Terra. Continua un acceso dibattito sul fatto che ciò permetta il **riconoscimento di una nuova unità di tempo geologica nota come Antropocene.**

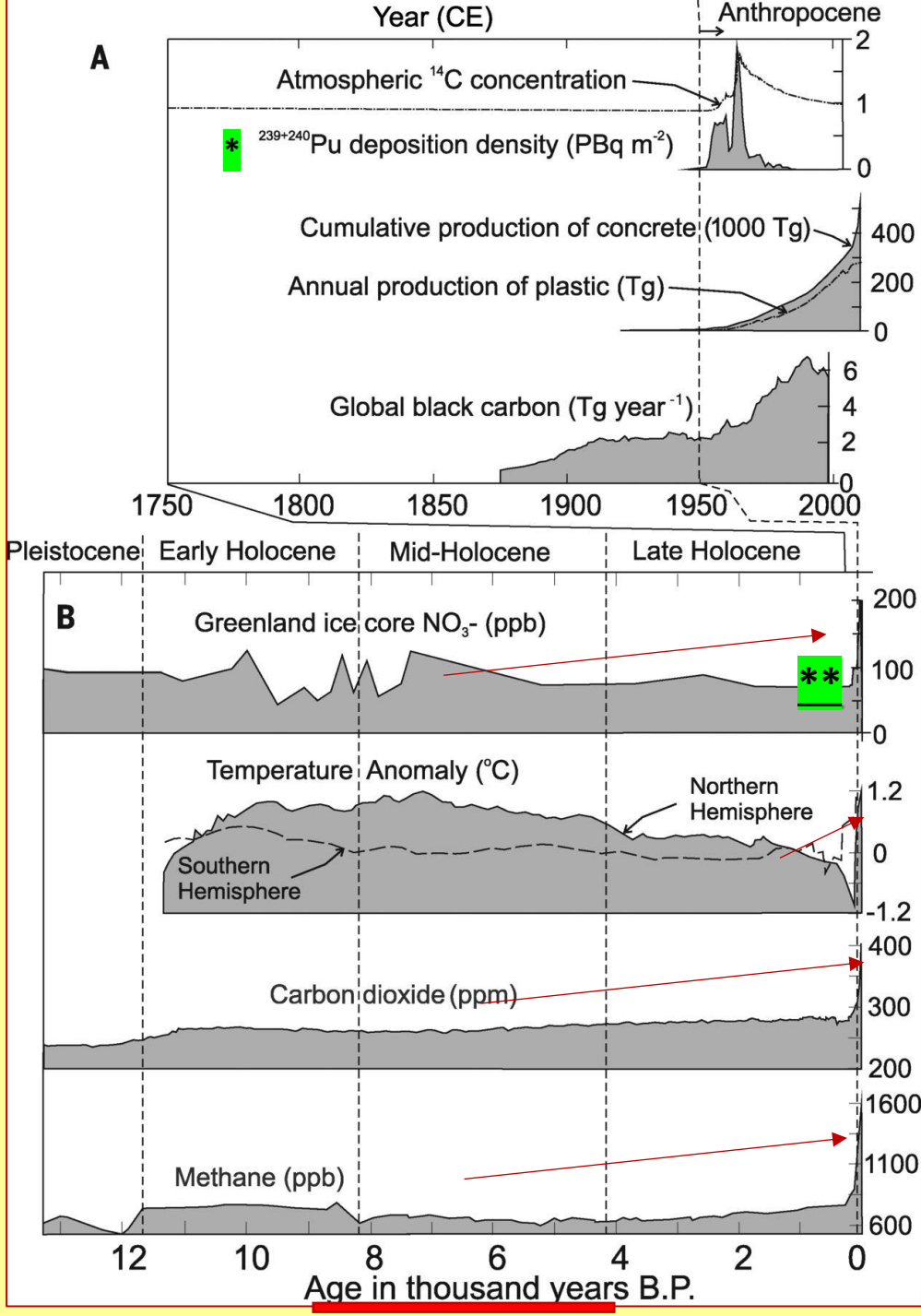
Esaminiamo i **marcatori antropogenici dei cambiamenti funzionali nel sistema Terra attraverso la registrazione stratigrafica.** La comparsa di **materiali artificiali nei sedimenti, inclusi alluminio, plastica e cemento, coincide con i picchi globali dei radionuclidi di ricaduta e del particolato dalla combustione di combustibili fossili**. **I cicli del carbonio, dell'azoto e del fosforo sono stati sostanzialmente modificati nel secolo scorso**.

I **tassi di innalzamento del livello del mare e l'entità della perturbazione umana del sistema climatico superano i cambiamenti del tardo Olocene**.

I cambiamenti biotici includono le invasioni di specie in tutto il mondo e l'accelerazione dei tassi di estinzione.

(A) **Nuovi marcatori**, come **cemento, plastica, carbonio nero globale e ricaduta di plutonio (Pu),** mostrati come **concentrazione di radiocarbonio (14C) *.**

(B) **Segnali di lungo termine** come **nitrati (NO3–), CO2, CH4 e temperature globali, che rimangono a valori relativamente bassi prima del 1950, aumentano rapidamente ** durante la metà del XX secolo e, entro la fine del XX secolo, superano tutti i livelli dell'Olocene**



Potenzialmente il segnale antropogenico più diffuso e sincrono a livello globale è la ricaduta dei test sulle armi nucleari. L'inizio dell'Antropocene può quindi essere definito da un'Era Stratigrafica Globale Standard (GSSA) coincidente con la detonazione del dispositivo atomico Trinity ad Alamogordo, New Mexico, il 16 luglio 1945 CE (10).

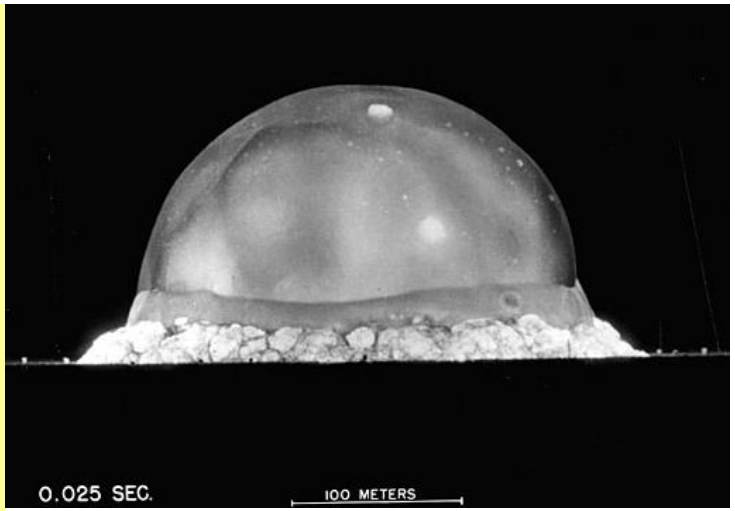
Tuttavia, il fallout dal 1945 al 1951 CE proveniva da dispositivi di fissione e ha provocato solo la deposizione localizzata di radionuclidi.

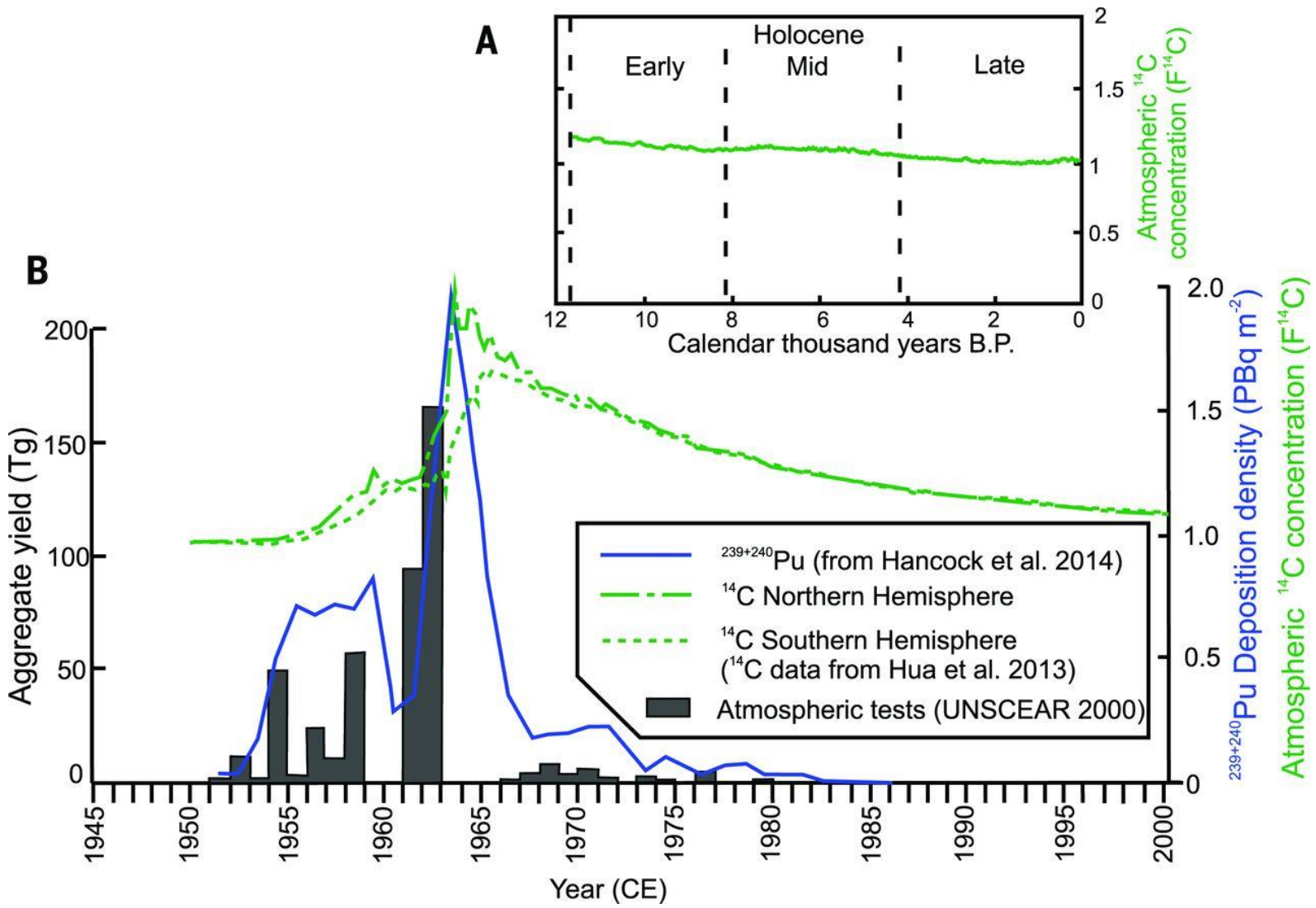
I rendimenti aggregati dei test sulle armi termonucleari iniziati nel 1952 CE e hanno raggiunto il picco nel 1961-1962 CE hanno lasciato una firma chiara e globale, concentrata alle medie latitudini e più alta nell'emisfero settentrionale

Un eccesso di 14 ° C forma un forte picco a partire dal 1954 (10) e raggiunge il picco MASSIMO nel 1964 d.C. (5), entrambi gli anni sono stati suggeriti come potenziali indicatori per l'inizio dell'Antropocene.

Tuttavia, il picco è diacrono tra gli emisferi (Fig. 4B) (63).

239 Pu, con la sua lunga emivita (24.110 anni), la bassa solubilità e l'elevata reattività delle particelle, in particolare nei sedimenti marini, può essere il radioisotopo più adatto per segnare l'inizio dell'Antropocene





Nel 1960 il test nucleare voluto da De Gaulle: la nube contaminata di Cesio 137 e Iodio 131 dall'Algeria, sospinta dal vento, raggiunse la Sicilia Occidentale. All'epoca la Francia non rivelò l'accaduto

Fig. 4 Segnali di **RICADUTA RADIOATTIVA COME MARKER DELL'ANTROPOCENE.**

(A) Concentrazione atmosferica di 14C corretta per l'età (F14C) basata sulla curva IntCal13, prima dei test nucleari (62).

(B) La concentrazione atmosferica di 14C (F14C) (63) e 239 + 240Pu (64) ricaduta radioattiva dai test sulle armi nucleari (PBq, petabecquerel), rapportata ai rendimenti annuali aggregati dei test sulle armi atmosferiche (60).

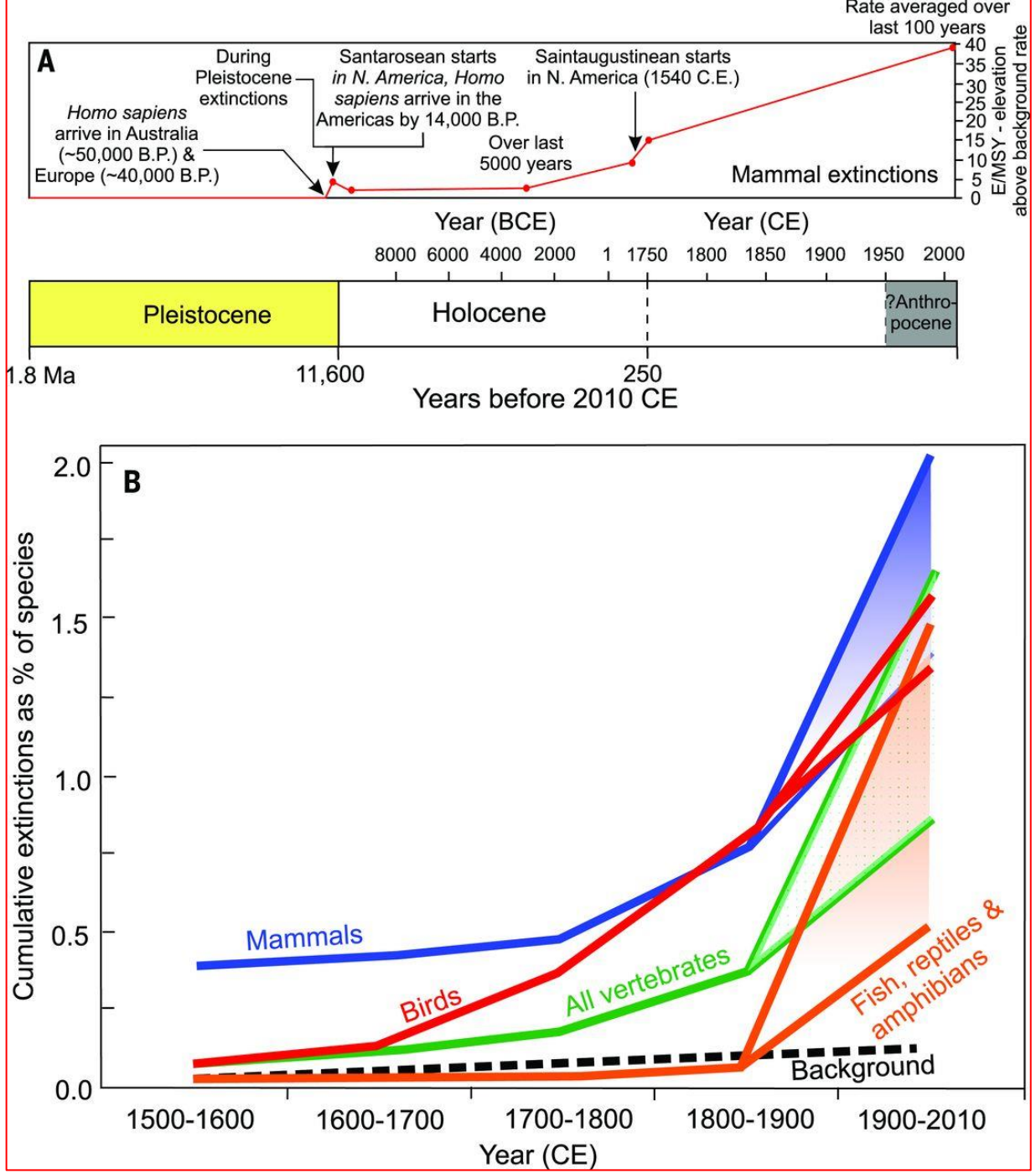
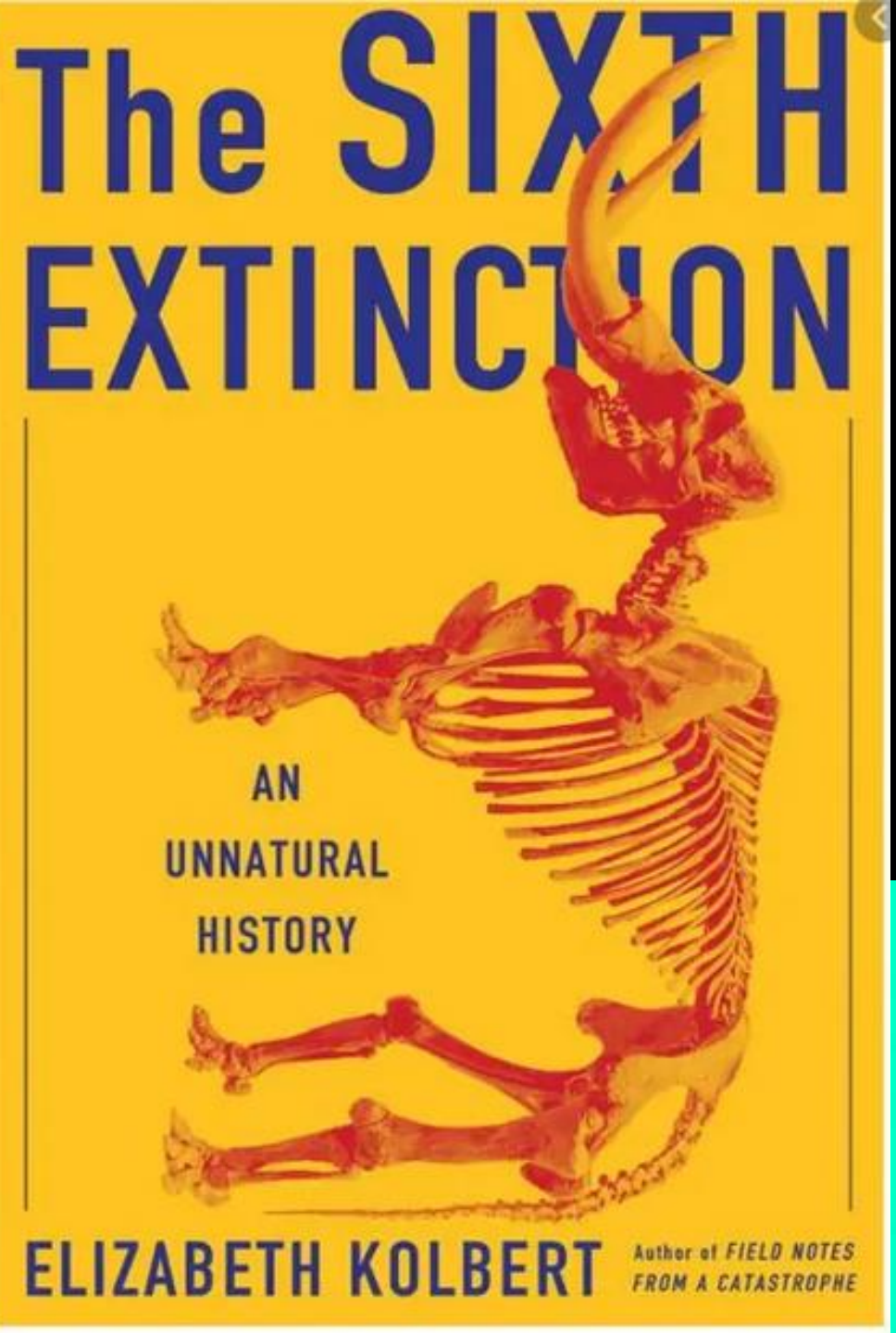


Fig.7 Aumento dei tassi di estinzioni dei vertebrati.

(A) **L'aumento approssimativo dei tassi di estinzione dei mammiferi** calcolato su intervalli di tempo variabili, esteso a ritroso dal 2010 CE (Ma, milioni di anni fa). Le linee indicano la quantità di cui i tassi di estinzione superano 1,8 estinzioni per milione di specie anni (E / MSY) [vedere (89); proveniente da (22)].

(B) Estinzioni cumulative di specie di vertebrati come percentuale del totale delle specie, con intervalli (ombreggiati) tra tassi conservativi (comprese estinzioni, estinzioni in natura e possibili estinzioni) **e tassi altamente conservativi inferiori** (solo estinzioni verificate).


The SIXTH EXTINCTION
AN UNNATURAL HISTORY
ELIZABETH KOLBERT
Author of FIELD NOTES FROM A CATASTROPHE


Nature is declining globally at rates unprecedented In human history
Around 1 million animal and plant species are now threatenedwith extinction, many within decades.
The web of life on Earth is getting smaller and increasingly frayed.

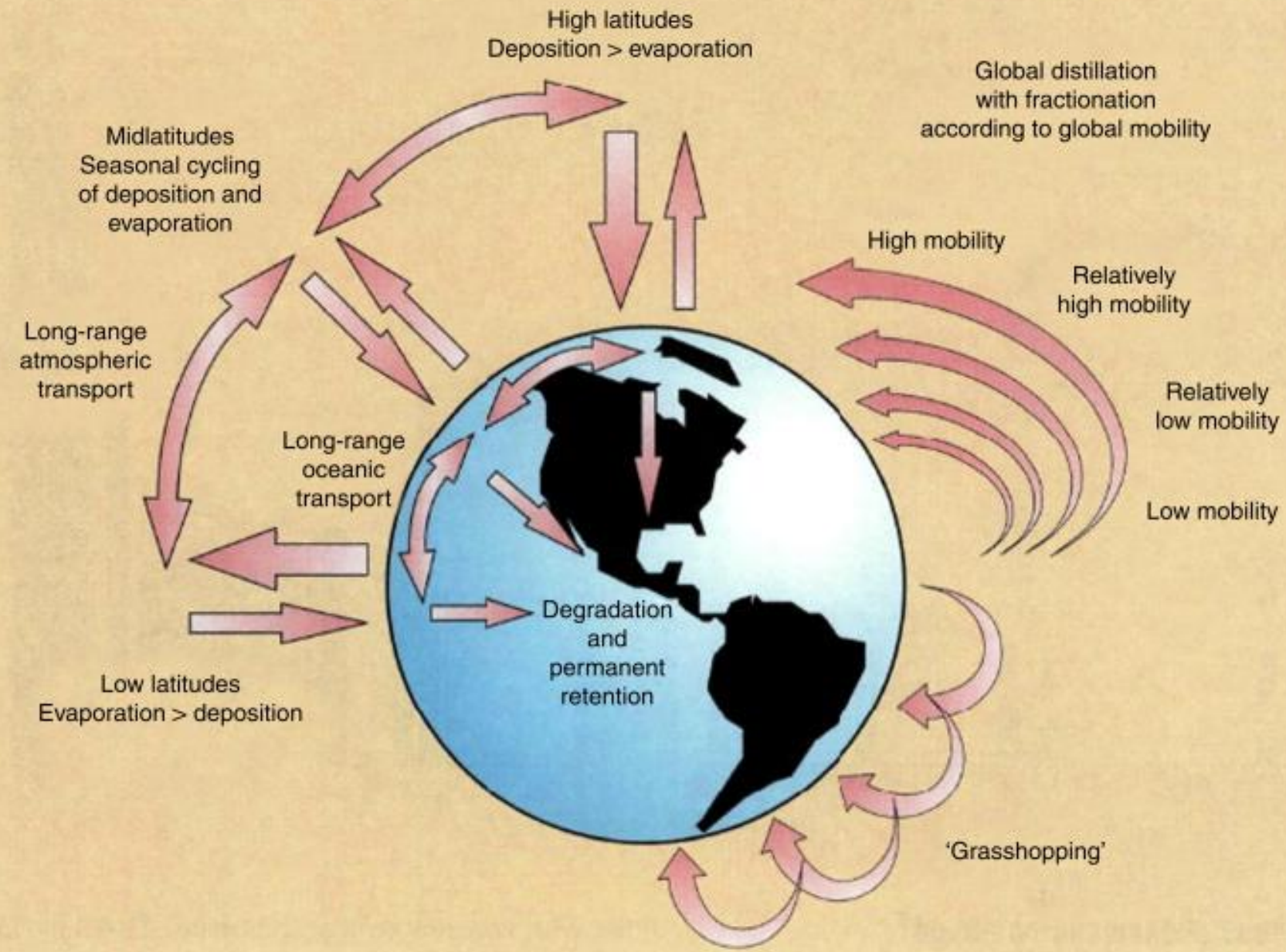
Since 1970, we've lost 52% of the Earth's bird, mammal, fish, reptile and amphibian populations:
39% for land-based species
39% for marine species
76% for freshwater species
SOURCE: World Wildlife Fund
USA TODAY

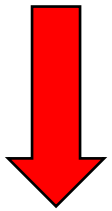
WE ARE IN THE MIDST OF A 6TH MASS EXTINCTION
Scientists have estimated that in the next five centuries, approximately 75% of the species inhabiting Earth will go extinct.
The current mass-extinction has already begun: 865 species that we know of have already gone extinct in the past 500 years.
Almost 20,000 more species are threatened with extinction.
At this rate our own mass extinction will rival the last one that wiped out the dinosaurs.

2019

POP migration processes

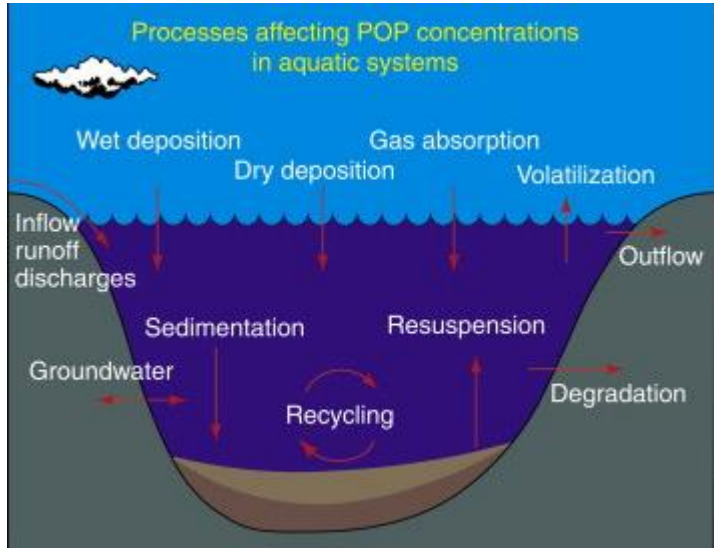
Global deposition processes become more pronounced than evaporation at high latitudes and lower temperatures

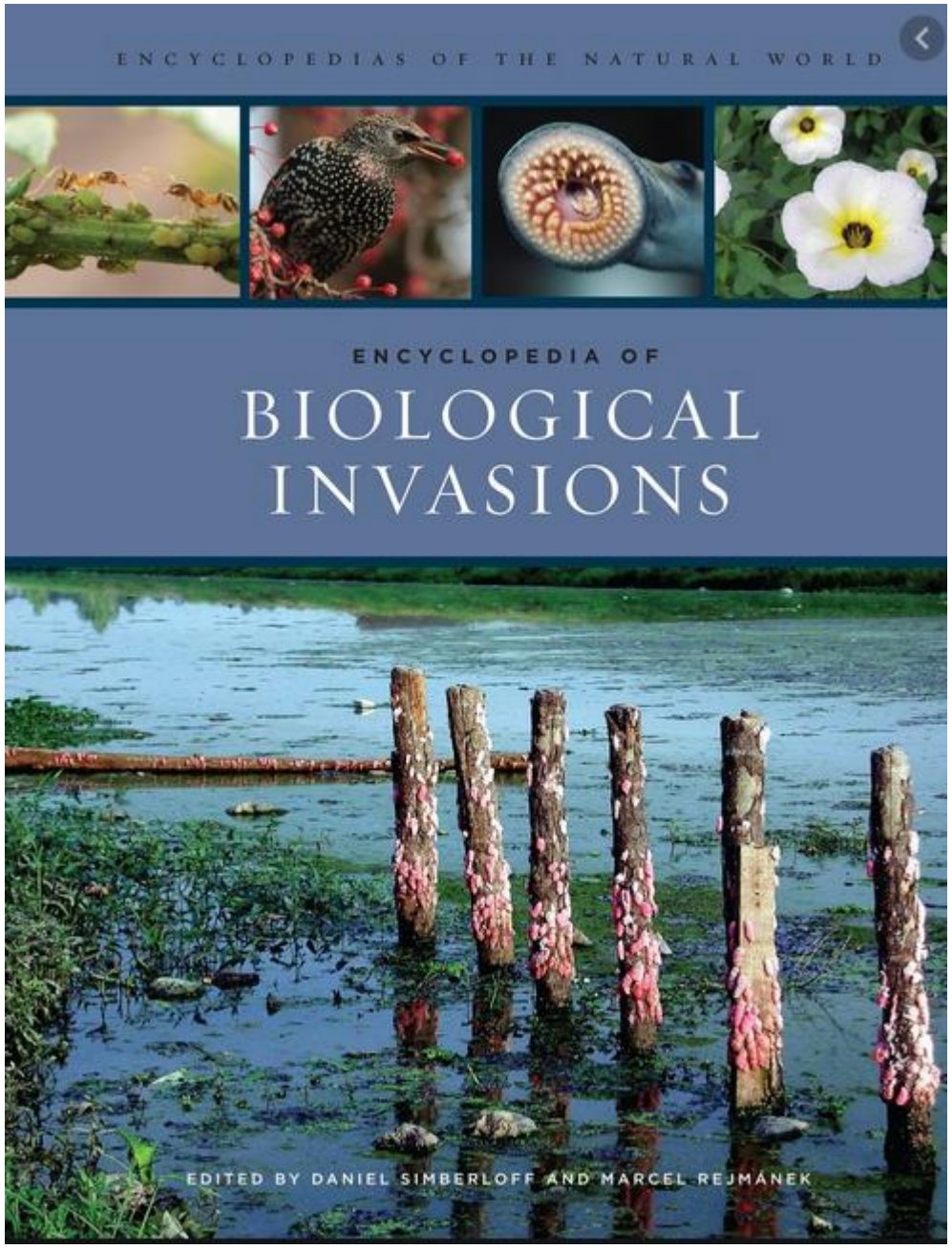




[Xenobiotic (Pesticides, PCB, Dioxins) Cycles](#)
V.N. Bashkin, in [Encyclopedia of Ecology](#), 2008

POP Transport in the Northern Hemisphere





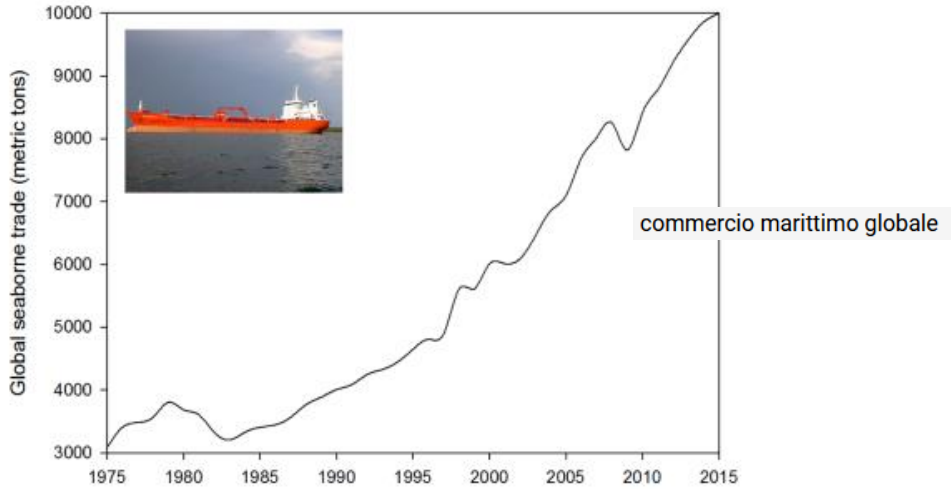
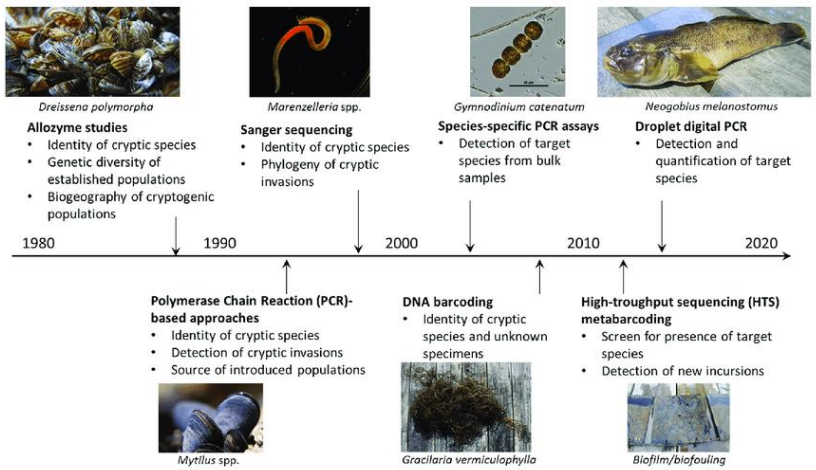
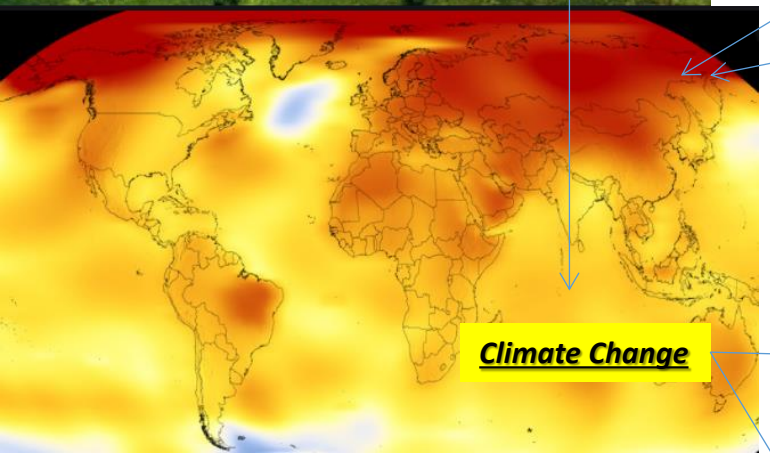


Fig 1. Global seaborne trade, volume in metric tons, 1975–2015 (data from [45]). Photo credit: Maiju Lehtiniemi.

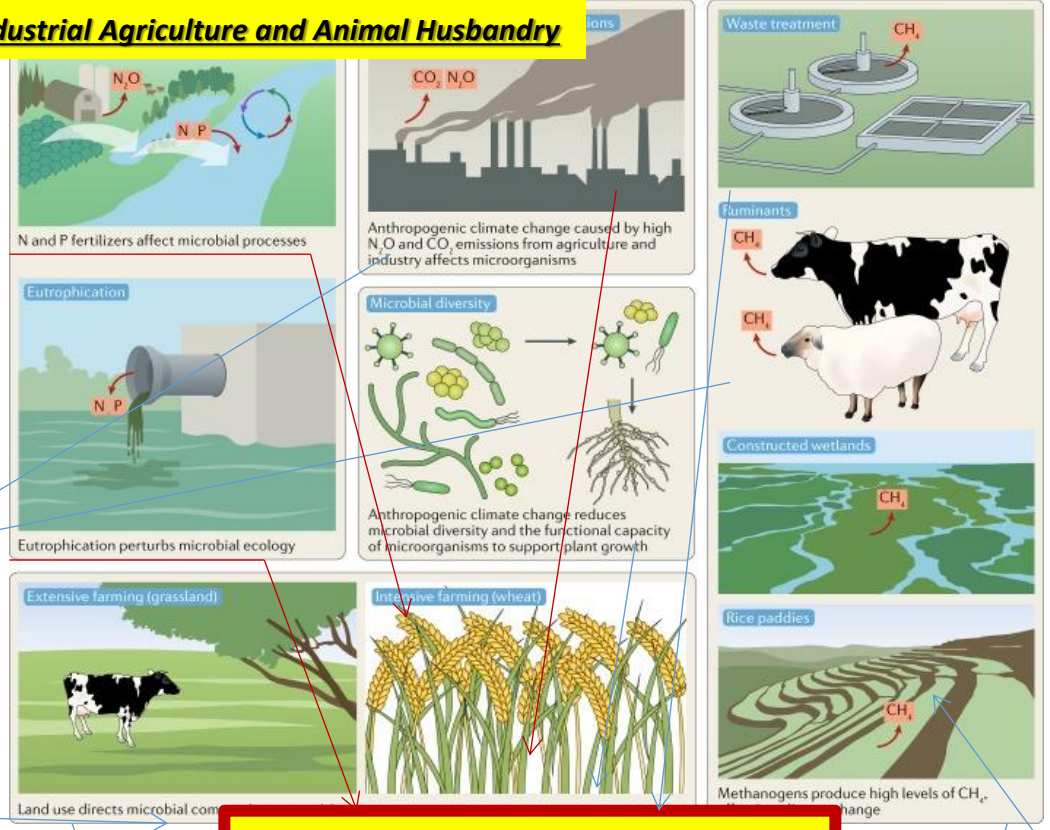


Deforestation



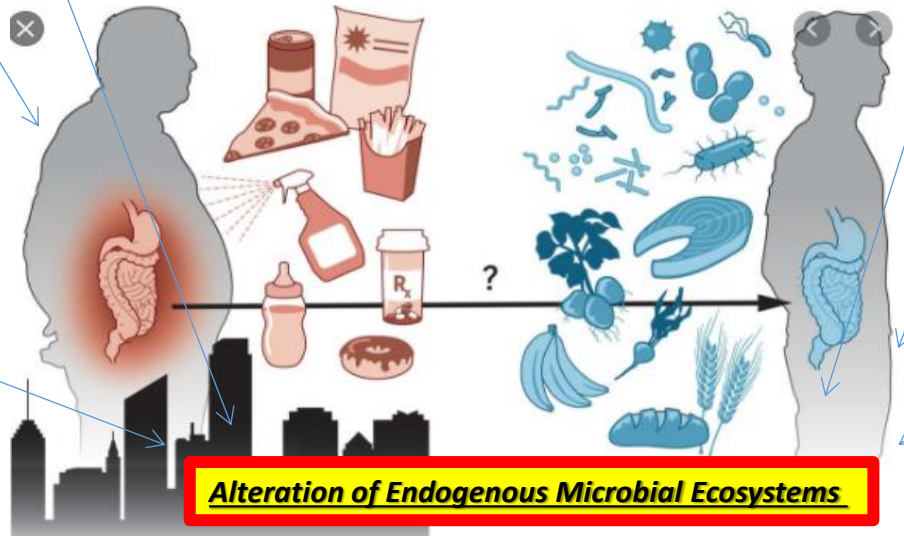
Climate Change

Industrial Agriculture and Animal Husbandry



MICRO-BIOSPHERE DISRUPTION

Wet-markets



Alteration of Endogenous Microbial Ecosystems

Megacities: Environmental Friend or Foe?

MEGACITIES

As of last year, more than half the world's population was living in cities. By the end of this decade, it's estimated that three out of five people will live not only in cities, but in *mega*cities.

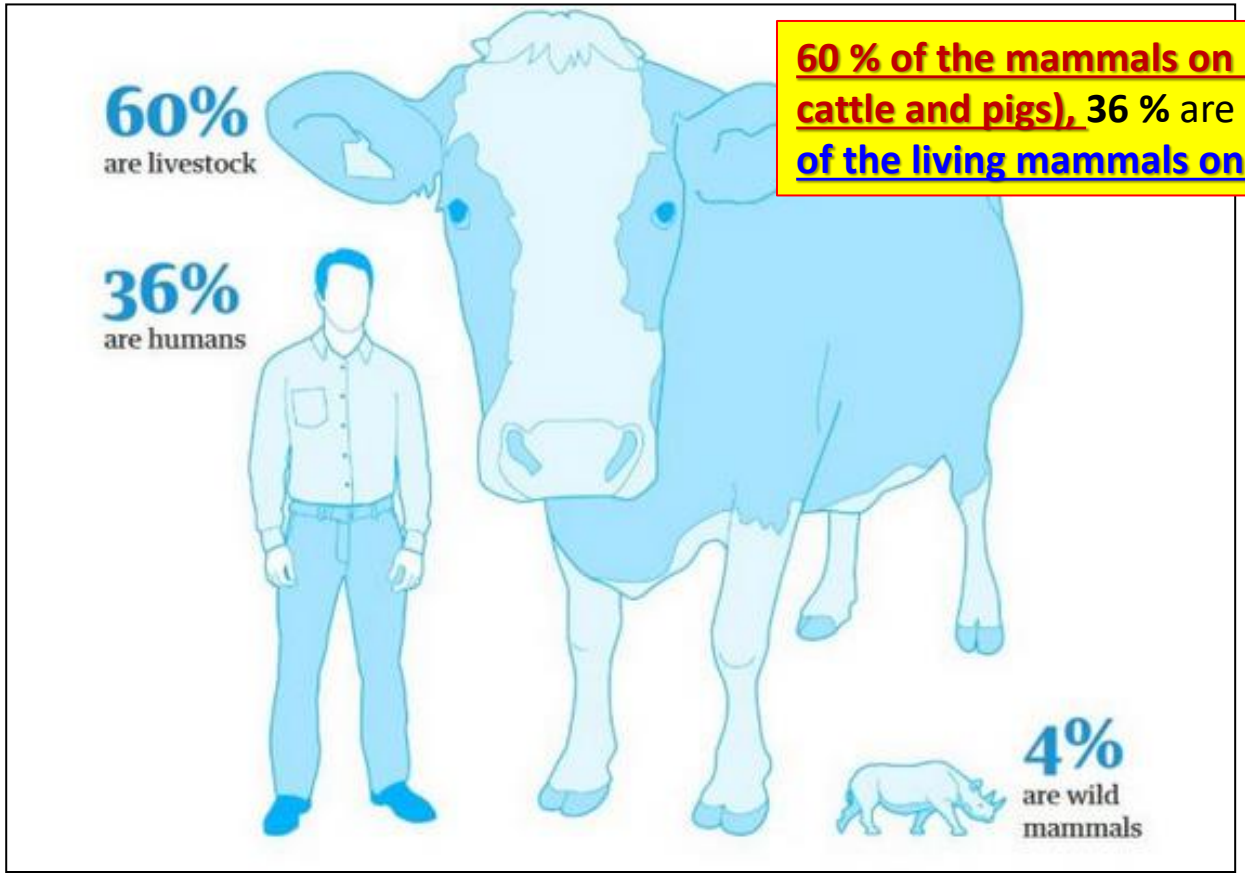
Biotech/Hypertech Labs

The biomass distribution on Earth

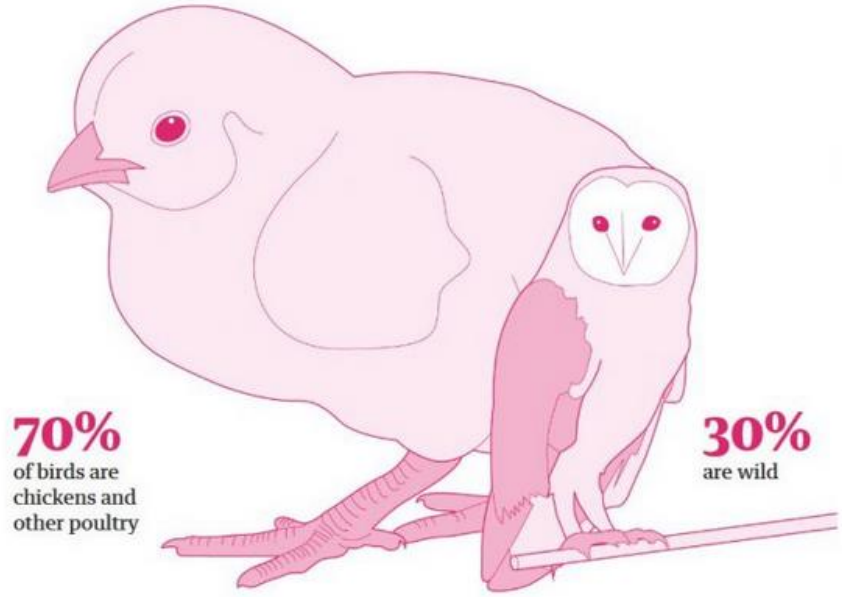
Yinon M. Bar-On[a], Rob Phillips[b,c], and Ron Milo[a,1]

[a]Department of Plant and Environmental Sciences, Weizmann Institute of Science, 76100 Rehovot, Israel; [b]Department of Physics, California Institute of Technology, Pasadena, CA 91125; and [c]Division of Biology and Biological Engineering, California Institute of Technology, Pasadena, CA 91125

PNAS June 19, 2018 115 (25) 6506-6511; first published May 21, 2018; https://doi.org/10.1073/pnas.1711842115



60 % of the mammals on Earth are livestock (predominantly cattle and pigs), 36 % are **humans**, and **just 4% percent of the living mammals on the planet are wild animals** !!!



70% of all birds on Earth are **farmed poultry**, leaving a mere 30 percent to be wild.

https://www.livekindly.co/coconut-milk-brand-koko-to-launch-soy-free-vegan-cheese/

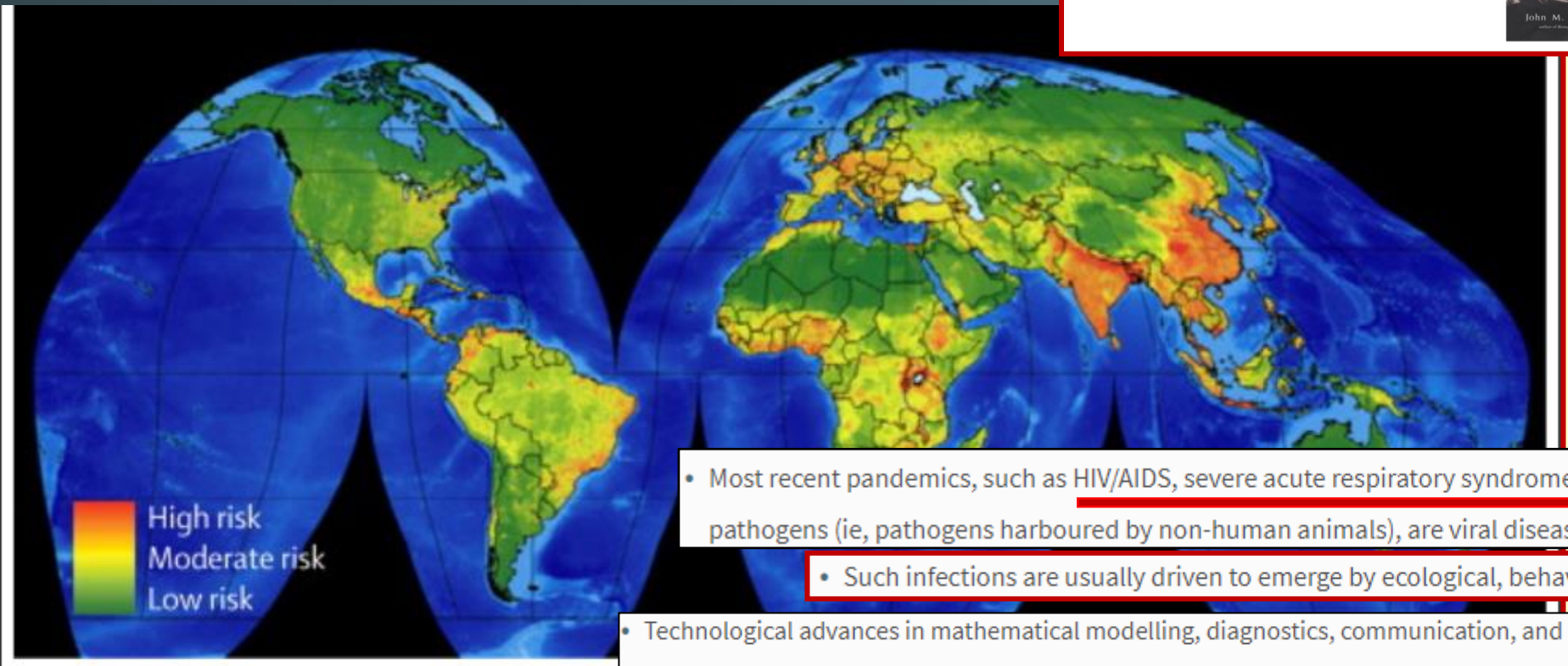
THE LANCET

SERIES | ZOONOSES | VOLUME 380, ISSUE 9857, P1956-1965, DECEMBER 01, 2012

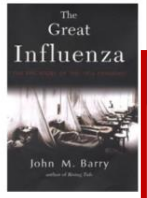
Prediction and prevention of the next pandemic zoonosis

Prof Stephen S Morse, PhD • Prof Jonna AK Mazet, PhD • Prof Mark Woolhouse, PhD • Prof Colin R Parrish, PhD • Dennis Carroll, PhD • William B Karesh, DVM • et al. Show all authors

Published: December 01, 2012 • DOI: https://doi.org/10.1016/S0140-6736(12)61684-5

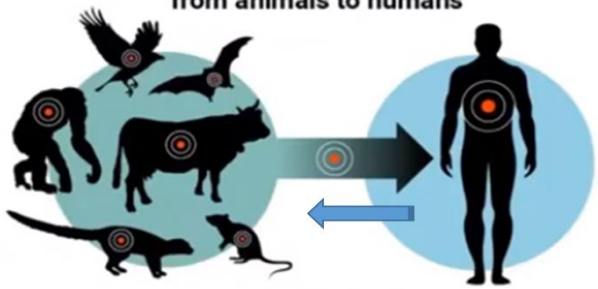


(RE)-EMERGING ZOONOSIS



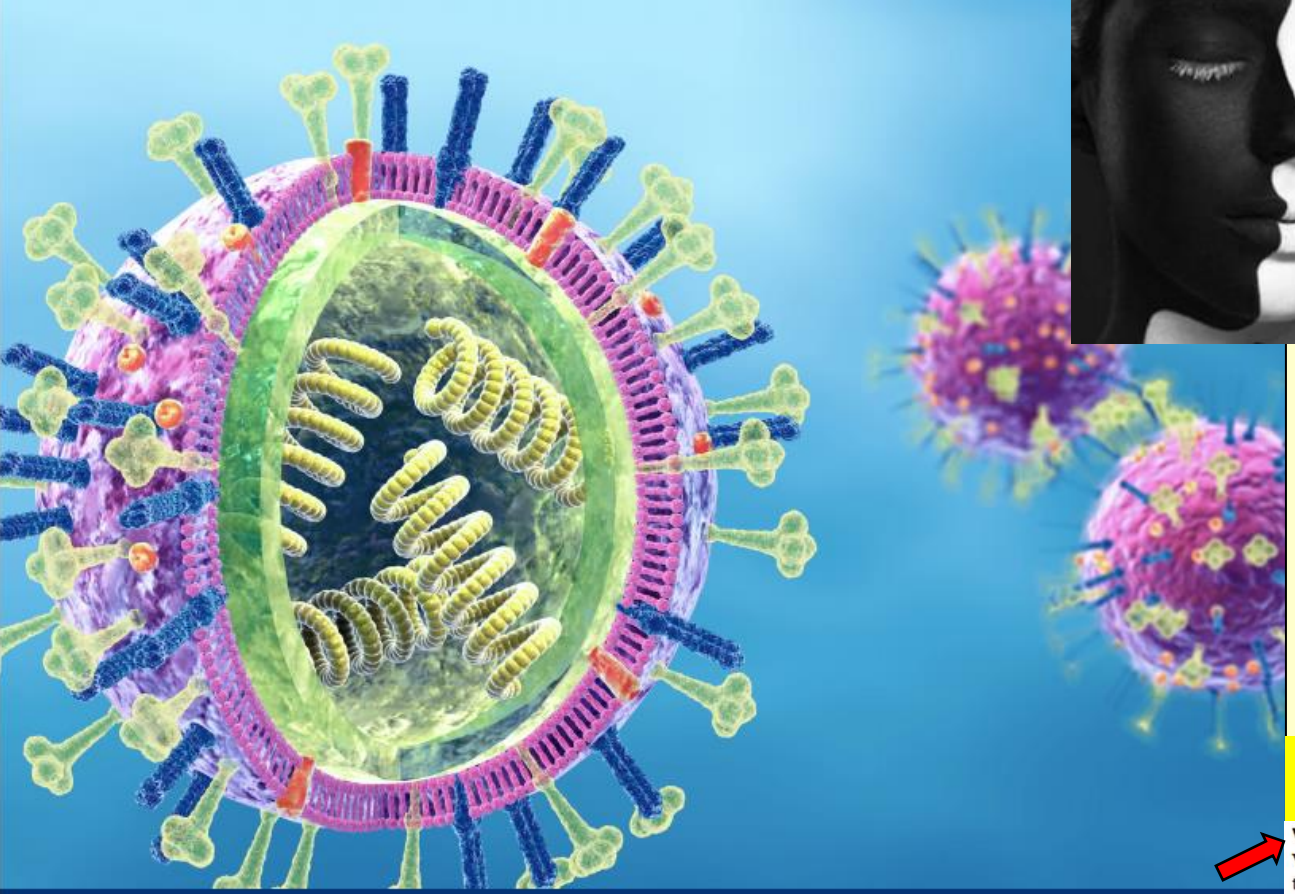
What are zoonoses and how prevalent are they?

Zoonoses are diseases transmitted from animals to humans



They comprise: **60%** of all infectious diseases in humans; **75%** of all emerging infectious diseases

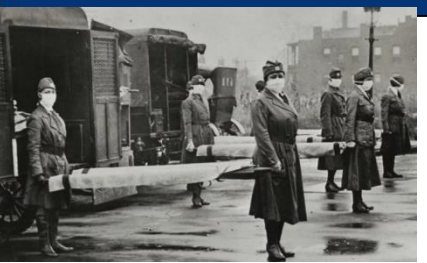
- Most recent pandemics, such as HIV/AIDS, severe acute respiratory syndrome, and pandemic influenza, are caused by zoonotic pathogens (ie, pathogens harboured by non-human animals), are viral diseases, and originated in wildlife
- Such infections are usually driven to emerge by ecological, behavioural, or socioeconomic changes
- Technological advances in mathematical modelling, diagnostics, communication, and informatics enable targeted global surveillance of emerging and previously unknown infections in both human beings and other species
- New risk-assessment approaches show promise for the use of these capabilities to predict and pre-empt potential pandemics at their source (eg, in wildlife or other animals), and need to be further developed



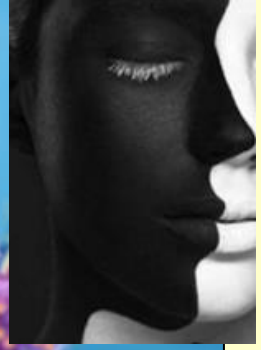
Johns Hopkins Center for Health Security

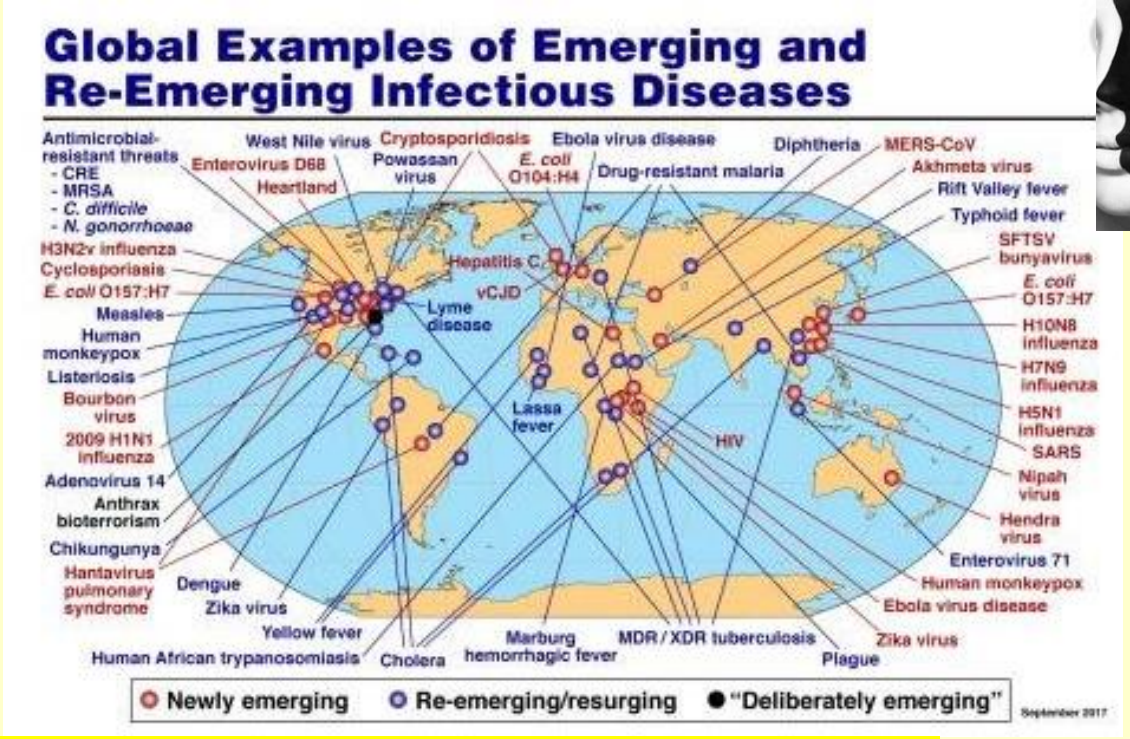
Preparedness for a High-Impact Respiratory Pathogen Pandemic

??



JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH | Center for Health Security





Global examples of emerging and reemerging infectious diseases Source: National Institute of Allergy and Infectious Diseases-USA (September 2017).

Vietnam detects more H5N1 and H5N6 avian flu in poultry
Vietnam today reported more highly pathogenic avian flu outbreaks in poultry, one from H5N1 and three from H5N6, according to the latest notifications from the World Organization for Animal Health (OIE).

Russia, Taiwan report more avian flu outbreaks in poultry
Today and yesterday, Russia and Taiwan reported more avian flu poultry outbreaks involving different highly pathogenic strains, according to the latest notifications from the World Organization for Animal Health (OIE).

H5N8 in Russia
H5 in Russia
H5N5 in Taiwan

Avian flu outbreaks strike birds in Australia and Russia
Animal health officials in Australia reported new avian flu outbreaks in commercial birds involving two separate strains, low-athogenic H7N6 and highly pathogenic H7N7, according to notifications from the World Organization for Animal Health (OIE).

H7N6 in Australia
H7N7 in Australia

Sep 17 OIE report on H5 in Kazakhstan
Sep 14 CIDRAP News scan "H5N8 avian flu strikes more poultry in Russia"

High-path H5 avian flu outbreaks hit poultry in Kazakhstan
Animal health officials in Kazakhstan today reported seven highly pathogenic H5 avian flu outbreaks in poultry in the north near the Russian border, where several similar outbreaks were recently reported, according to a notification today from the World Organization for Animal Health (OIE).

WHO sounds alarm about monkeypox outbreak in DRC
The World Health Organization (WHO) today detailed a monkeypox outbreak in the DRC, with 4,594 suspected cases reported so far this year, 171 of them fatal, with illnesses spread across 17 of the country's 26 provinces.

Three more fatal Ebola cases reported in DRC outbreak; 128 cases, 53 fatal
Three retrospective probable Ebola deaths from July have been added to the total in the Democratic Republic of the Congo (DRC) Equateur province, the United Nations Office for the Coordination of Human Affairs (UN OCHA) said in a statement today.

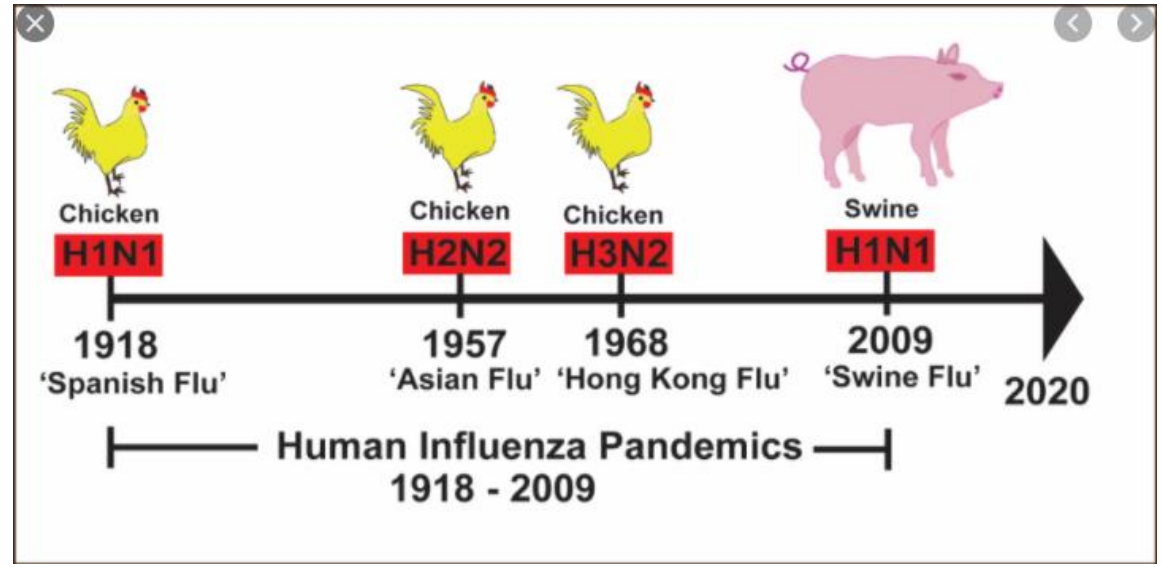
COSA STA SUCCEDENDO / RAVENNA

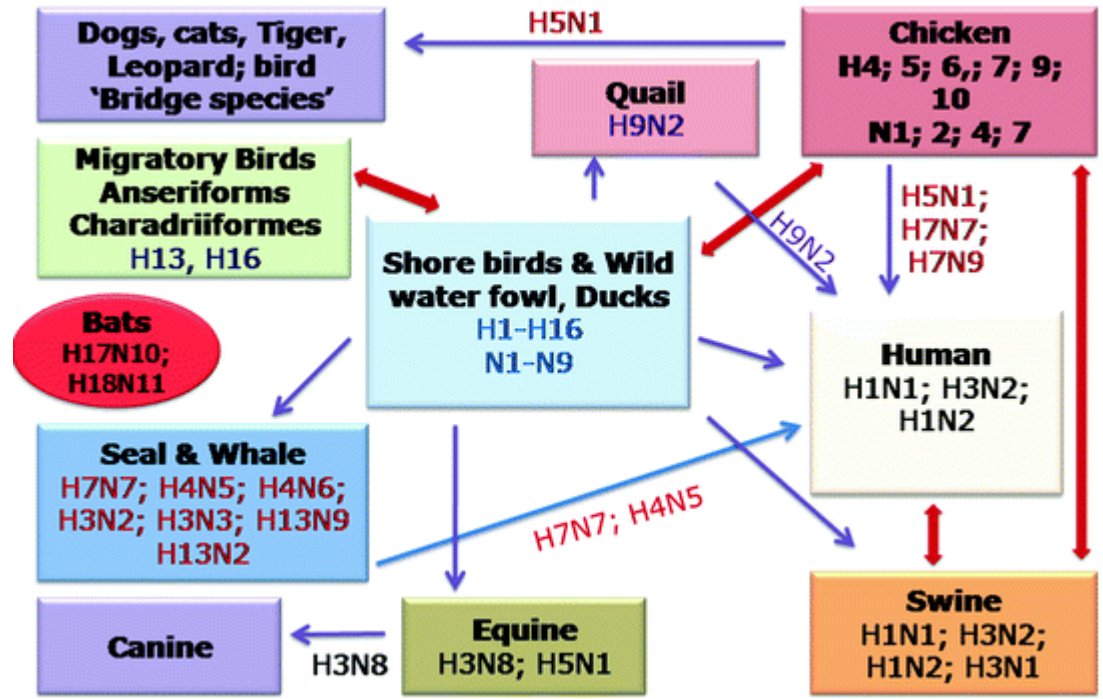
27 gennaio 2021 13:33

I casi di influenza aviaria H5N8 individuati in un allevamento italiano

Succede a Lugo, in provincia di Ravenna. Il presidente della regione, Stefano Bonaccini, ha firmato un'ordinanza urgente per contenere l'eventuale diffusione del virus

Un focolaio di **influenza aviaria H5N8** è stato individuato in un allevamento familiare a Lugo, cittadina in provincia di Ravenna in Emilia Romagna. È stata riscontrata la positività al virus di due gru, due





Highly Pathogenic Avian Influenza (HPAI)
Report N° 19: December 4 to December 24, 2020
World Animal Health Information and Analysis Department

WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future

HPAI SITUATION – update

The epidemiology of avian influenza (AI) is complex. AI viruses constantly evolve by mutation and re-assortment with the emergence of new subtypes causing significant impact on animal health and production. Some AI subtypes can be zoonotic and therefore pose major threat to human health.

This report presents an overview of HPAI disease events (in poultry and non-poultry including wild birds) reported to the **OIE's early warning system** (immediate notification and follow-up reports) by its Members, as well as non-Member Countries, during the period 04 December – 24 December, 2020 through the World Animal Health Information System (WAHIS). The stable situations reported in the **six-monthly reports** by two countries, namely Egypt and Indonesia, are not described in this report as this data for the second semester 2019 and first and secod semester 2020 will be collected throughout the first semester of 2021.

The HPAI events (new outbreaks) are reported in Table 1.

Table 1: HPAI outbreaks reported through early warning system during 04 December – 24 December 2020

REGION	COUNTRY	Administrative divisions affected	Subtype(s)		N° Outbreaks	
			Poultry	Non -poultry	Poultry	Non poultry
Asia	Chinese Taipei, Iran, Israel, Japan, Korea (Rep. of), Vietnam	26	H5N5, H5N6, H5N8	H5N8	43	28
Europe	Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands, Norway,Poland, Russia, Slovenia, Sweden, Ukraine, United Kingdom	51	H5, H5N1, H5N8	H5, H5N1, H5N3, H5N5, H5N8	31	270

1. Spatial distribution

Figure 1. New and ongoing outbreaks in poultry (04 December – 24 December, 2020)
In this period, **74** new outbreaks (red dots on the map) were notified in poultry, in 14 countries in Asia and Europe. The total ongoing HPAI outbreaks worldwide is **168** (blue dots on the map). They are distributed as follows: Africa (16), Asia (69), Europe (83).

Figure 2. New and ongoing outbreaks in non-poultry, including wild birds (04 December – 24 December, 2020)
In this period, **298 new outbreaks** were notified in non-poultry in 17 countries in Asia and Europe. The total ongoing HPAI outbreaks (blue dots on the map) in these bird populations is **460.** They are distributed as follows: Africa (9), Asia (35), and Europe (416).

2. Impact of the disease by Region in poultry

During the period (04 December – 24 December), a total of **4,811,316** animals were notified as losses in Asia and Europe in the ongoing and new outbreaks (**2,255,702** * losses notified in the previous report).

* The impact of the disease is measured in terms of losses, which are calculated by the sum of dead and culled animals from the infected farm or backyard premises of the reported outbreak. In case of non-poultry the losses correspond to the dead animals reported.

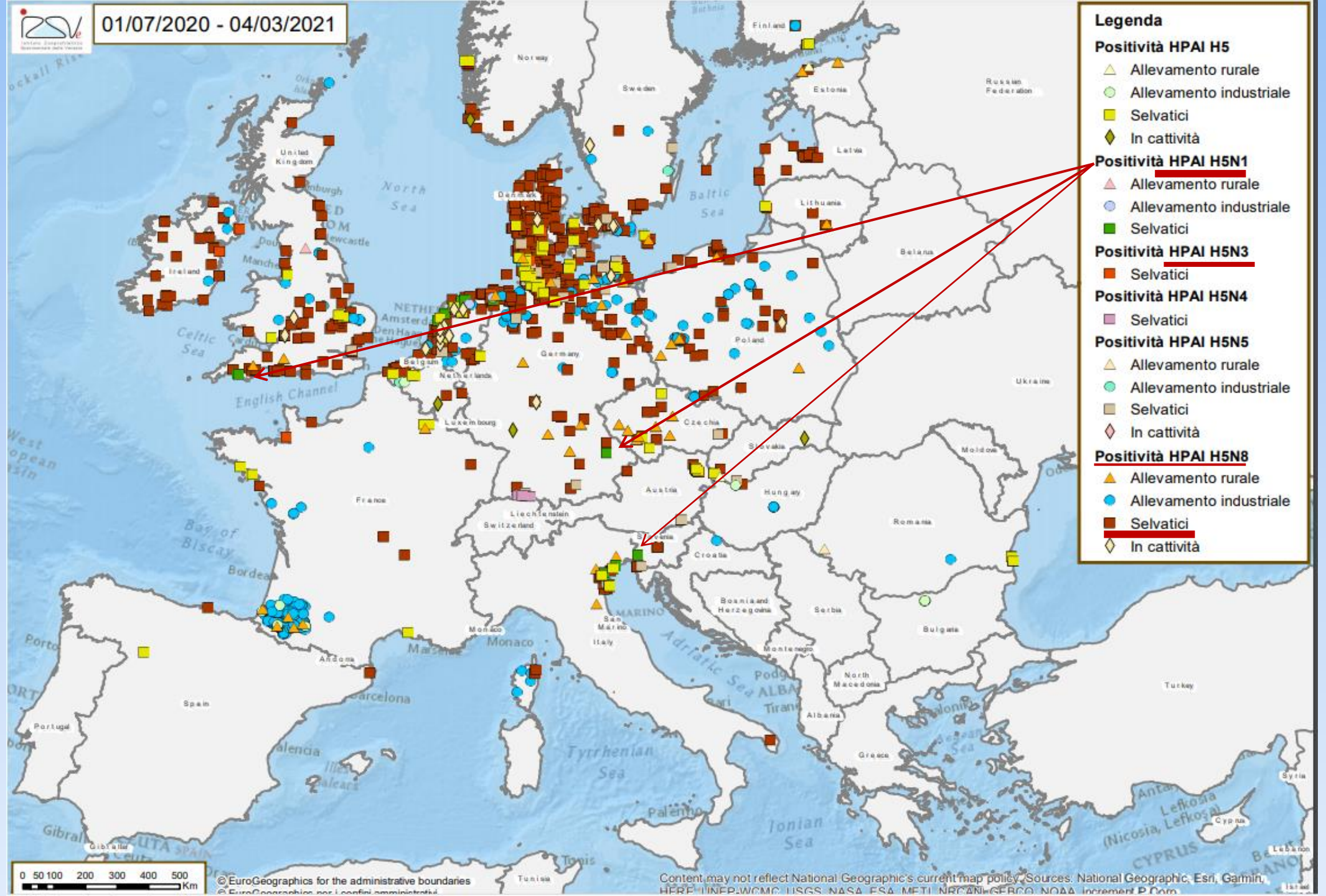
Asia

Six countries reported **43 outbreaks** (H5N5, H5N6, H5N8) in poultry. Four countries reported **28 outbreaks** (H5N8) in non-poultry. Ongoing outbreaks are still present in 8 countries in poultry (H5, H5N1, H5N2, H5N5, H5N6, H5N8, H7N9) and in 3 countries in non-poultry (H5,H5N6, H5N8, H7N9).

Europe

Eight countries reported **31 outbreaks** (H5, H5N1,H5N8) in poultry. Thirteen countries reported **270 outbreaks** (H5, H5N1, H5N3, H5N5,H5N8) in non-poultry. Ongoing outbreaks are still present in 11 countires in poultry (H5, H5N1, H5N5, H5N8) and in 9 countries in non-poultry (H5,H5N1, H5N3, H5N5, H5N8).

Nel periodo di riferimento in Asia ed Europa, sono stati segnalati **74 nuovi focolai di HPAI in volatili domestici** che coinvolgono i sottotipi H5, H5N1, H5N5, H5N6 e H5N8 e 298 **nuovi focolai in non-pollame** che coinvolgono i sottotipi H5, H5N1, H5N3, H5N5 e H5N8. Inoltre, **628 focolai di HPAI nel pollame e non nel pollame sono ancora in corso in Europa, Asia e Africa** che coinvolgono diversi sottotipi, vale a dire H5, **H5N1, H5N2, H5N3, H5N5, H5N6, H5N8 e H7N9**. Dall'ultimo aggiornamento dell'OIE sulla situazione HPAI, **il numero di focolai nuovi e in corso segnalati dai paesi è notevolmente aumentato, in particolare in Europa**.


01/07/2020 - 04/03/2021
Legenda
Positività HPAI H5
Allevamento rurale
Allevamento industriale
Selvatici
In cattività
Positività HPAI H5N1
Allevamento rurale
Allevamento industriale
Selvatici
Positività HPAI H5N3
Selvatici
Positività HPAI H5N4
Selvatici
Positività HPAI H5N5
Allevamento rurale
Allevamento industriale
Selvatici
In cattività
Positività HPAI H5N8
Allevamento rurale
Allevamento industriale
Selvatici
In cattività
0 50 100 200 300 400 500 Km
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Switzerland
Provincia Autonoma di Bolzano/Bozen
Provincia Autonoma di Trento
Friuli-Venezia Giulia
Zahodna Slovenija
Vzhodna Slovenija
Severna Hrvatska
Slovenia
Croatia
Serbia
Grad Zagreb
Panonska Hrvatska
Lombardia
Veneto
Piemonte
Liguria
Emilia-Romagna
Jadranska Hrvatska
Bosnia and Herzegovina
Monte negro
Albania
Toscana
Marche
Umbria
Abruzzo
Lazio
Molise
Campania
Puglia
Basilicata
Calabria
Sicilia
Sardegna
Corse
France
Vatican
Palermo
Ligure Sea
Tyrrhenian Sea
Adriatic Sea
Gulf of Taranto
Legenda
Positività HPAI H5
Allevamento rurale
Allevamento industriale
Selvatici
H5N1 HPAI outbreaks
Wild birds
Positività HPAI H5N4
Selvatici
H5N5 HPAI outbreaks
Wild birds
Positività HPAI H5N8
Allevamento rurale
Allevamento industriale
Selvatici
0 25 50 100 150 Km
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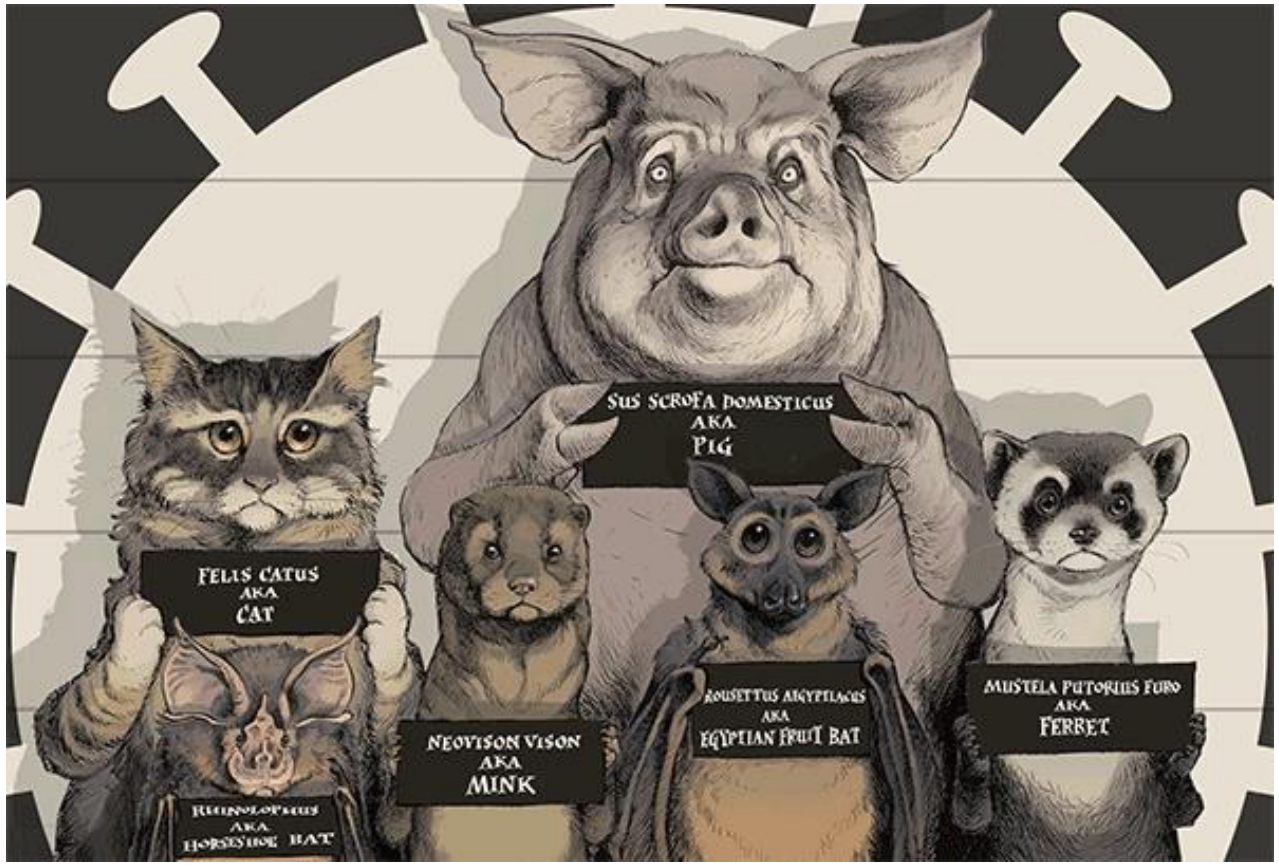
NEWS FEATURE 02 MARCH 2021

The search for animals harbouring coronavirus — and why it matters

Scientists are monitoring **pets, livestock and wildlife to work out where SARS-CoV-2 could hide**, and whether it could resurge.



Since the coronavirus started spreading around the world, scientists have worried that it could leap from people to animals.

If so, **it might mutate and then resurge in humans even after the pandemic has subsided**.

Illustration by David Parkins

ANIMAL OUTBREAKS

The World Organisation for Animal Health (OIE) tracks outbreaks, reported by individual countries, of SARS-CoV-2 in animals. An outbreak consists of one or more cases, identified by the presence of viral RNA in an animal. Countries had reported 458 outbreaks by 15 February 2021.

Region	Cats	Dogs	Mink	Pet ferrets	Lions	Tigers	Pumas	Snow leopards	Gorillas
Africa	0	0	0	0	0	0	1	0	0
Americas	40	32	19	0	1	2	0	1	1
Asia	9	13	0	0	0	0	0	0	0
Europe	16	2	317	1	2	1	0	0	0
Total	**65**	**47**	**336**	**1**	**3**	**3**	**1**	**1**	**1**

From pet cats to farmed mink, experiments have found **many animals that can harbour SARS-CoV-2 and pass it on.**

"**The virus taught us a lesson with mink**," says virologist Linfa Wang.

"It said, '***You guys can never catch me.***'"

Veterinary Research Communications
https://doi.org/10.1007/s11259-021-09787-2

REVIEW ARTICLE

Received: 29 December 2020 / Accepted: 6 January 2021

Bats, pangolins, minks and other animals - villains or victims of SARS-CoV-2?

Beatriz do Vale[1] · Ana Patrícia Lopes · Luís Cardoso[1,2] · Ana Cláudia Coelho

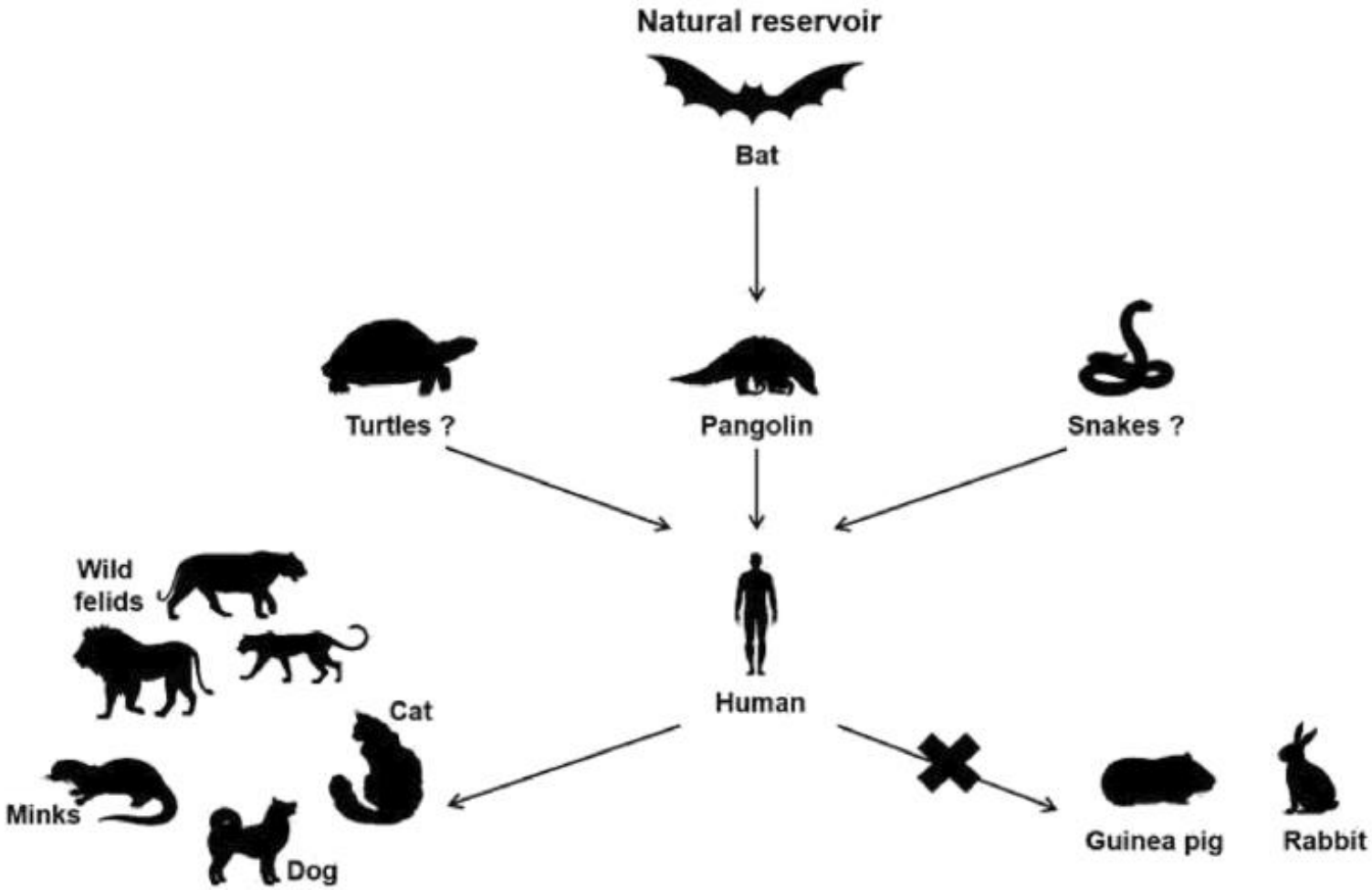
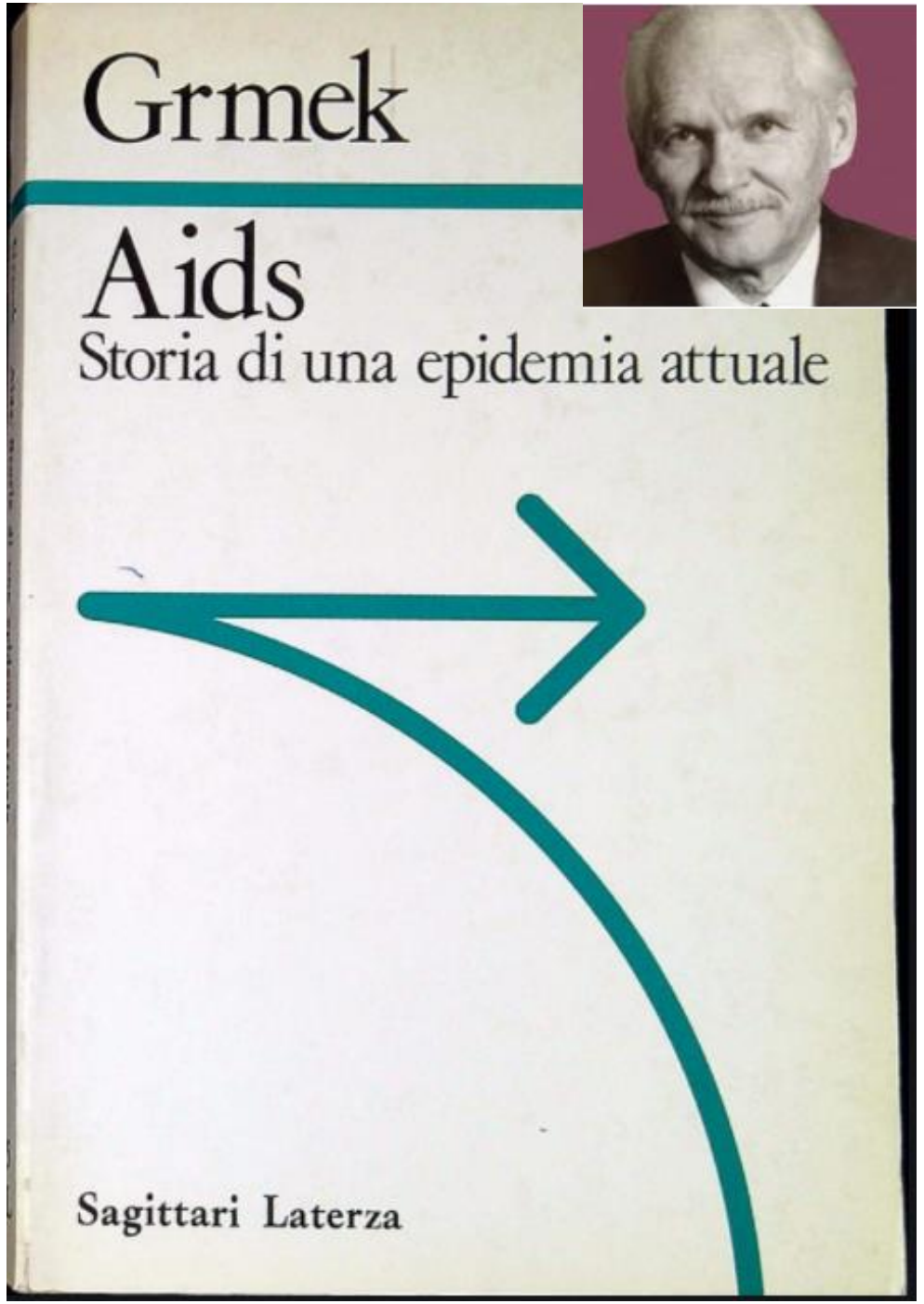


Fig. 1 Susceptibility of a range of animals to natural infection by SARS-CoV-2. Bat: *Rhinolophus affinis*; Turtles: *Chrysemys picta bellii*, *Chelonia mydas* and *Pelodiscus sinensis*; Pangolins: *Manis javanica*; Snakes: *Bungarus multicinctus* and *Naja atra*; Wild felids: *Panthera tigris jacksoni*, *Panthera leo*, *Puma concolor*; Minks: *Neovison vison*; Cat: *Felis catus*; Dog: *Canis lupus familiaris*; Guinea pig: *Cavia porcellus*; Rabbit: *Oryctolagus cuniculus*

"Studiando l'apparizione dell'epidemia, la sua ***prophasis,*** si può restare sconcertati, o quantomeno stupiti, da tutta una serie di **coincidenze cronologiche**.
Nel **1978**, l'uomo si trova per la prima volta in possesso dei mezzi concettuali e tecnici che gli permettono di identificare e di isolare un ***retrovirus* umano patogeno**. E proprio in quel momento ha avuto inizio la diffusione dell'Aids.
Supporre che il virus dell'Aids **sia nato, a causa di una brusca mutazione, in quel preciso momento, non significherebbe accordare un ruolo preciso al Caso**, attribuendogli cioè una coincidenza tanto improbabile? In ogni caso la scoperta di un **secondo virus dell'Aids** è venuta a dare il colpo di grazia ad ogni nostra residua esitazione: **non è possibile sostenere l'ipotesi di due mutazioni aleatorie, parallele e indipendenti,** che si sarebbero realizzate in tutta la storia dell'umanità proprio nel momento in cui, per la prima volta, si era in grado di registrarle.
Aggiungiamo **un'ulteriore coincidenza: il vaiolo**, la malattia virale che fu, in passato, responsabile del maggior numero di morti tra gli uomini, **si era spenta nel 1977**; l'ultimo malato fu un africano, un somalo; e proprio dall'Africa sarebbe allora partito il germe che ne prende la successione…
Non è che tutti gli eventi che abbiamo citato si condizionino a vicenda; piuttosto essi **derivano tutti da una fonte comune: i progressi della medicina, o meglio, gli sconvolgimenti tecnologici che caratterizzano il mondo moderno**. E' grazie a questi progressi delle scienze e delle tecniche che gli uomini hanno **sconfitto il vaiolo**, messo a punto i metodi per lo **studio dei *retrovirus*** e, infine, **spianato la strada alle devastazioni** provocate da un germe con il quale, poco tempo prima vivevano in **silenzioso equilibrio** (il germe dell'Aids è un *retrovirus* estremamente mutevole, mantenuto in letargo dalla pressione della selezione naturale, che favoriva i ceppi poco virulenti).
La medicina vi ha contribuito sia attraverso la **rottura della *patocenosi*, cioè sopprimendo delle malattie che sbarravano la strada all'Aids**, sia **facilitando la trasmissione del virus, in particolare grazie alle nuove modalità di contatto diretto con il sangue.** Inoltre la tecnologia moderna è all'origine dell'incrocio delle popolazioni e della liberazione dei costumi, ulteriori fattori dell'emergere e del diffondersi dell'Aids.
L'epidemia è insomma l'altra faccia della medaglia, il prezzo inatteso che dobbiamo pagare per avere perturbato così radicalmente equilibri ecologici millenari



ILMISTERO H5N1: WAITING FOR THE BIG ONE?

La rivolta dei virus, silenziosi postini della *genosfera*

Ernesto Burgio – Ecologist Italia

Le più importanti testate giornalistiche escono da mesi con titoli cubitali e le maggiori reti televisive del pianeta mostrano da anni le tristi immagini dei falò di carcasse di polli ed anatre che illuminano le notti di Jakarta ed Hanoi e i mercati del Guandong brulicanti di uomini, maiali, volatili e... virus. Da quelle fiamme e da quelle povere baracche giungono fino a noi poche immagini disperate e confuse, che potrebbero essere le prime avvisaglie di un Dramma planetario, che credevamo di non dover più vivere. E invece lo spettro di una terribile Pandemia, la prima del III millennio dell'era cristiana, sembra davvero sul punto di materializzarsi: anche i bollettini dell'Organizzazione Mondiale della Sanità e dei CDC di Atlanta – solitamente piuttosto cauti e rassicuranti – non sembrano lasciar adito a dubbi e persino l'ONU preannuncia cifre da capogiro, tanto sul piano dei costi economici (parlando di una crisi finanziaria globale che potrebbe offuscare nella nostra memoria quella del '29), che di quelli sanitari (delineando scenari apocalittici in confronto ai quali sarebbero le spaventose immagini del '18-'19, della grande Pandemia di Spagnola, a passare in secondo piano). Ma quello che forse stupisce maggiormente la gente comune, abituata a pensare alle grandi epidemie come ad un lontano retaggio dei secoli bui, è che a seminare dolore, panico e morte potrebbe non essere uno di quei virus dai nomi inquietanti (*Ebola, Marburg, Nipha, Hendra*) che da decenni popolano romanzi e film ispirati al mito angosciante della *black biology*, della cattiva scienza che si è venduta al miglior offerente - uomini di governo, magnati texani, bioterroristi o agenti segreti più o meno deviati, certamente privi di scrupoli e affetti da delirio di onnipotenza – ma un banalissimo virus influenzale, senza nome e contrassegnato con una semplice, anonima sigla: H5N1. Come mai questo virus minaccia di trasformarsi in un *serial killer*. È davvero una "Natura matrigna" a creare tali minuscoli agenti del Caos? O il disordinato Sviluppo umano è responsabile anche di questo possibile dramma planetario? Siamo certi che i virus siano soltanto questo: malefici agenti del disordine, contro cui soltanto una Scienza *high-tech* potrebbe difenderci? O può ciascuno di noi fare ancora qualcosa?

Perché se anche è vero che H5N1 rappresenta il problema del giorno, **ciò che dovrebbe destare l'interesse degli esperti** e spingere le autorità sanitarie e politiche di tutto il mondo ad affrontare in modo più organico e radicale la situazione, **non è l'improvvisa mutazione di un singolo ceppo virale, ma una trasformazione sempre più radicale del quadro epidemiologico e patocenotico globale.**

Curatore: G. Pucci
Editore: Libreria Editrice Fiorentina
Anno edizione: 2006
In commercio dal: 1 marzo 2006

di **Giannozzo Pucci** leggi

ETICA E SALUTE

Ecologia della salute di Edward Goldsmith

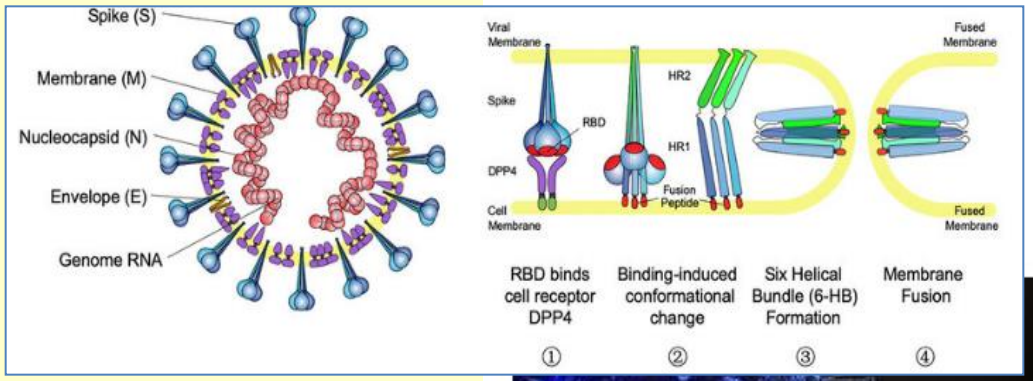
Una scienza vera per la vita di Aldo Sacchetti

La vita, la morte e i limiti della persona di Ivan Illich

La medicina ipertecnica è sostenibile? di Ernesto Burgio

GUERRA ALLA NATURA

La rivolta dei virus e il mistero H5N1 di Ernesto Burgio



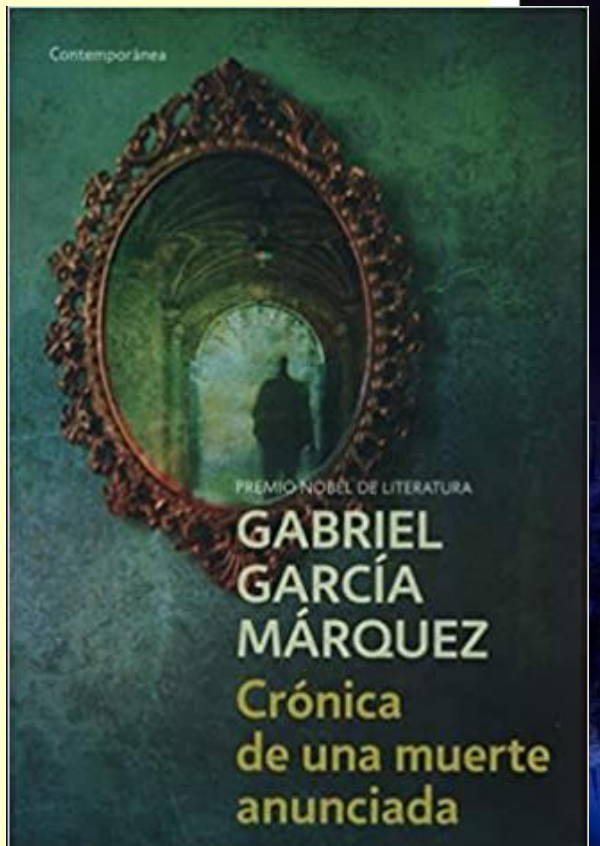
W SCIENCE & TECHNOLOGY

COVID-19: the Italian Drama

Four avoidable risk factors

21 APRIL 2020, ERNESTO BURGIO

Crónica de una Pandemia anunciada



https://wsimag.com/science-and-technology/61967-covid-19-the-italian-drama

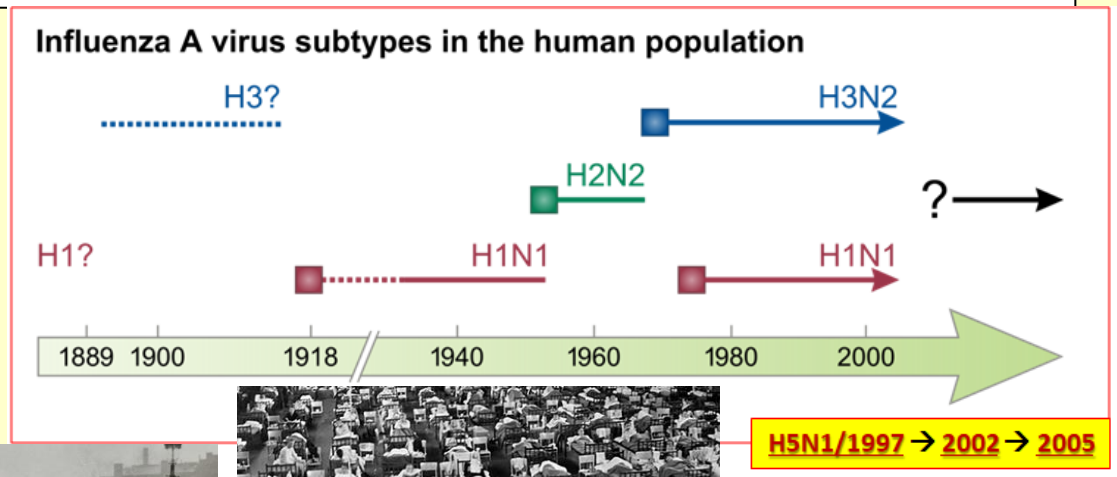
GLI INTERVENTI PREVENTIVI ED ASSISTENZIALI: LUCI ED OMBRE

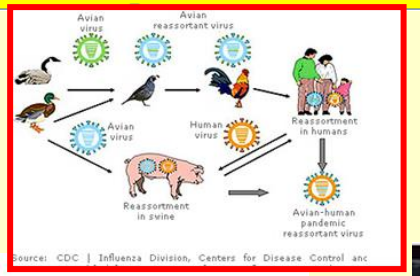
Ernesto Burgio – ECERI European Cancer and Environment Research Institute (Bruxelles)

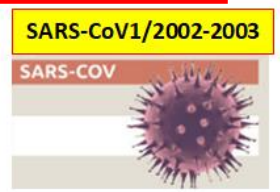
Nel dicembre 2019 un nuovo coronavirus potenzialmente pandemico fece la sua comparsa nella provincia di Hubei, in Cina. Da lì l'epidemia cominciò ad espandersi in tutto il Sud Est asiatico e quindi nel resto del mondo. Già alla fine di gennaio casi di polmonite dovute al nuovo coronavirus, in un primo tempo denominato con la sigla 2019nCoV, furono segnalati in tutto il mondo: in Giappone e in Australia e poi in Germania, Francia, Stati Uniti, Brasile. **La temuta trasmissione da uomo a uomo fu immediatamente confermata in tutti i paesi e proprio in Europa anche da soggetti asintomatici. Difficile capire come mai questi dati furono lungamente sottovalutati, almeno in Occidente.** Tanto più che si trattava di una pandemia **lungamente** e a questo punto lo possiamo sottolineare **inutilmente annunciata**. Visto che già negli anni **1997/2002** si erano susseguiti i primi allarmi pandemici, dopo che alcuni virus influenzali erano passati direttamente dal serbatoio naturale aviario all'uomo, causando numerosi *outbreak* epidemici in Cina, Vietnam e Indonesia, caratterizzati da indici di letalità altissimi (in particolare il virus **H5N1 con TL: 50%, superiore al virus del vaiolo**). Ma soprattutto dopo che nel **2002/2003** un Coronavirus era passato dal pipistrello all'uomo, causando quasi 1000 decessi tra medici e operatori sanitari in Cina e in Canada (**SARS**). E che nel **2012** un altro Coronavirus aveva causato un piccolo ma significativo secondo outbreak nei paesi arabi (**MERS**).

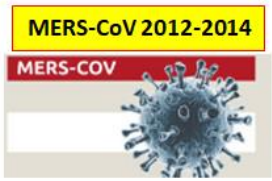
FOREWORD 1: despite the **AIDS tragedy**, despite the **constant alarms of the past twenty years**, **western countries were not prepared to face a real pandemic.** The last pandemics due to respiratory viruses had been the **Asian (1957) and the Hong Kong Flu (1968) more than half a century ago**.

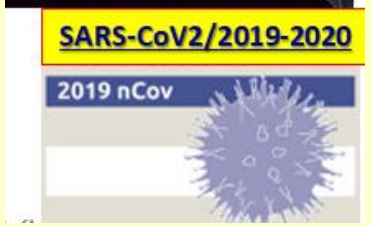
(The H1N1/2009 virus in fact had not behaved very differently compared to the common seasonal flu viruses).







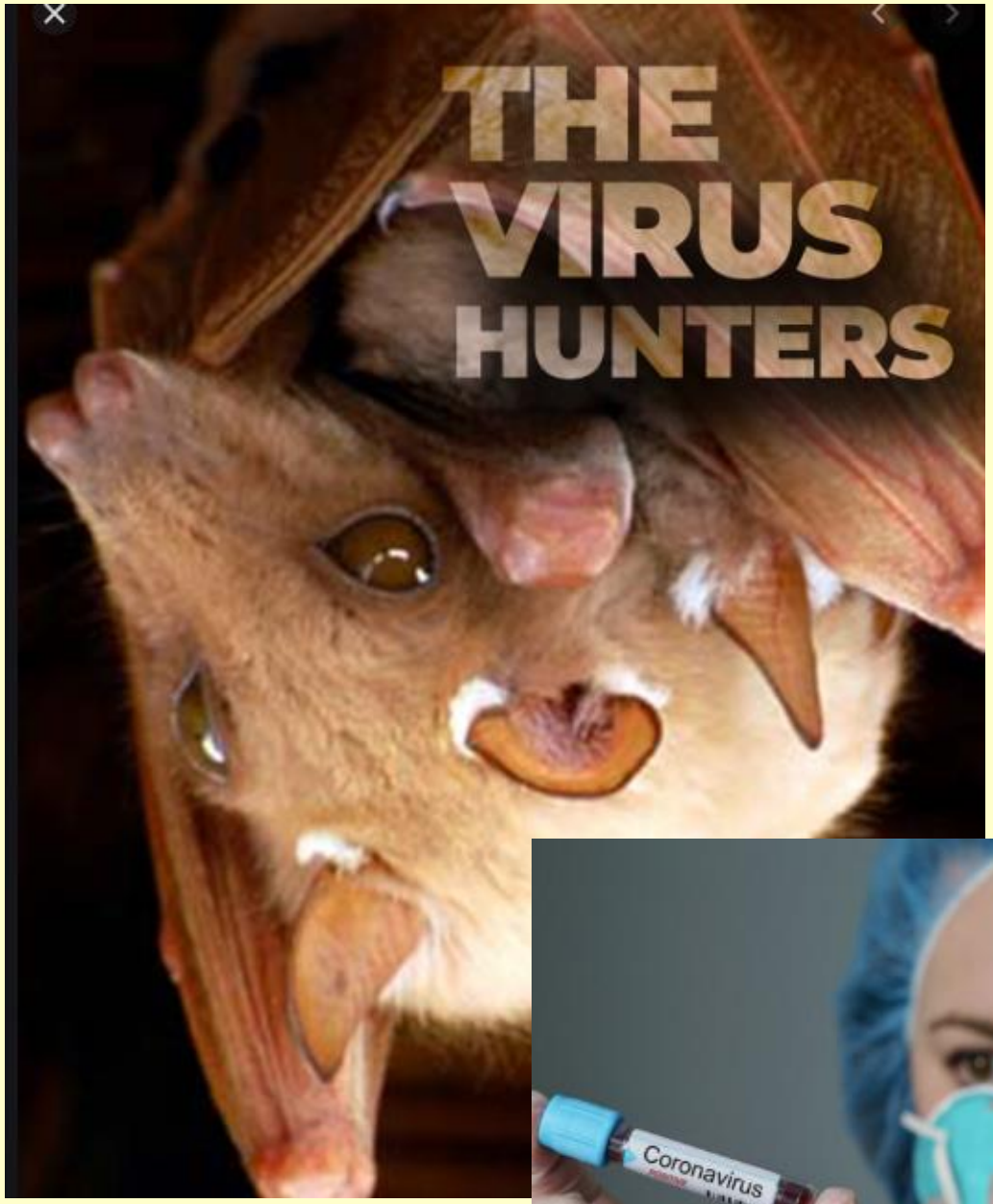


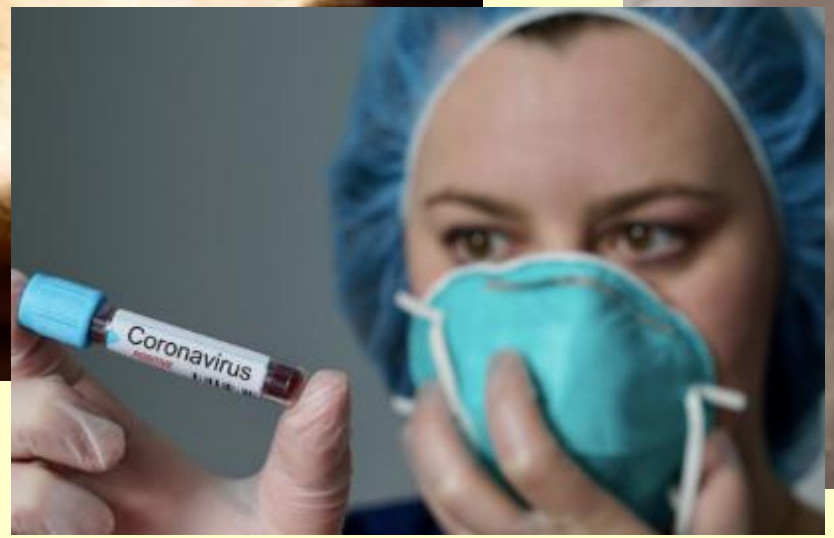


H5N1/1997 → 2002 → 2005

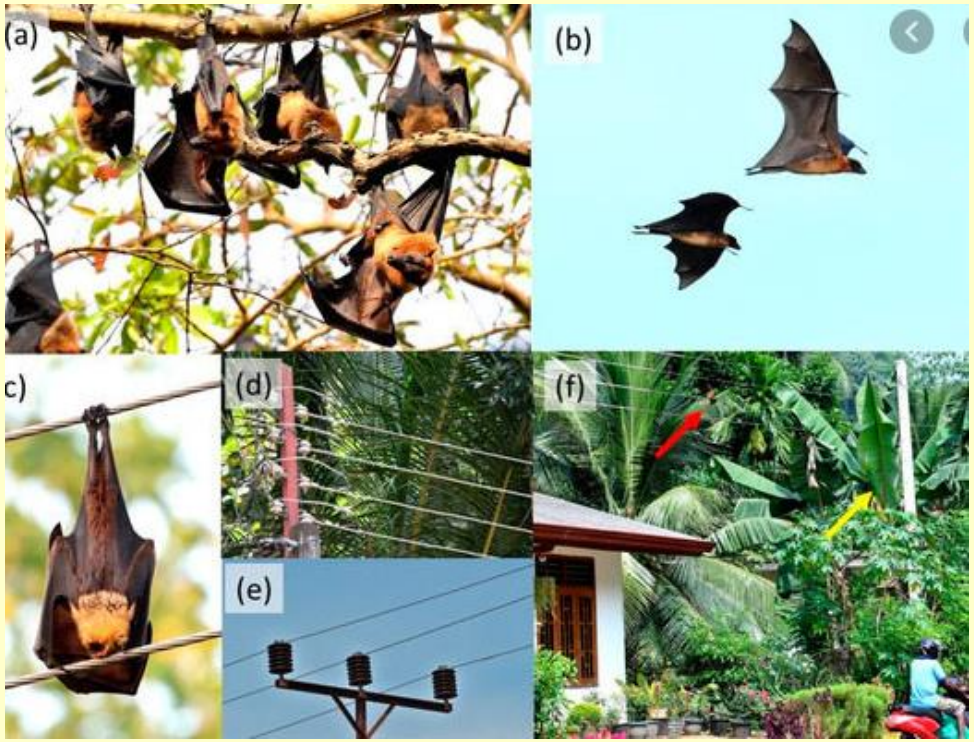
H5N2 **H5N3** **H7N7** **H9N2** **H7N9**

AVIAN FLU OUTBREAKS


THE
VIRUS
HUNTERS


Coronavirus


Deforestation Worldwide
Allianz
See what remains of the world's virgin forests. Click on the island of Borneo to see an animated example of deforestation since 1950.
Borneo
Current forest cover
Original forest cover


(a)
(b)
(c)
(d)
(e)
(f)


BATS NEED THE FOREST, FORESTS NEED BATS
Nectarivores
Insectivores
Frugivores
Major Bat Cave Locations
BAT POPULATION

First of all, we have known for decades that (**due to truly epochal ecosystemic, social and urban subversions**) ***ZOONOSES*** **have returned to be a GLOBAL THREAT** and that, in particular, **BATs represent a reservoir species of many VERY DANGEROUS viruses able to do the SPILLOVER into the human species: Ebola, Marburg, Nipah, Hendra and many BAT-CoV..**

AMERICAN SOCIETY FOR MICROBIOLOGY | Clinical Microbiology Reviews®

Clin Microbiol Rev. 2006 Jul; 19(3): 531–545.
doi: 10.1128/CMR.00017-06

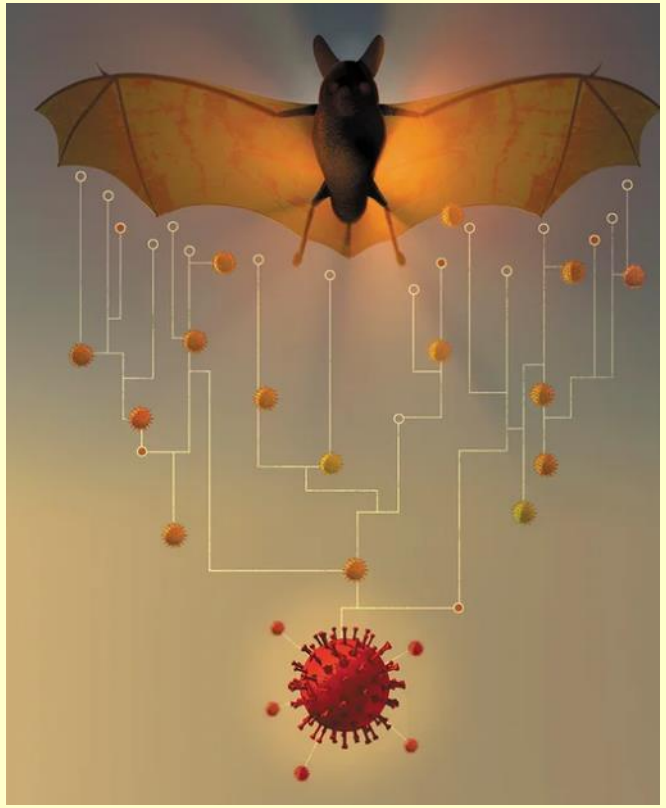
Bats: Important Reservoir Hosts of Emerging Viruses

Charles H. Calisher,[1,*] James E. Childs,[2] Hume E. Field,[3] Kathryn V. Holmes,[4] and Tony Schountz[5]

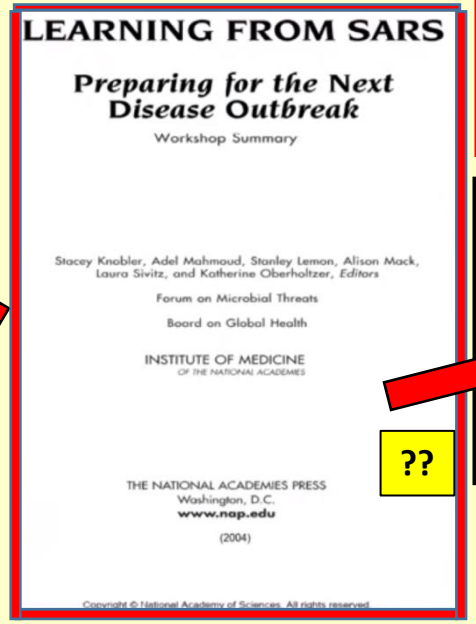
Author information · Copyright and License information Disclaimer

Impacts of zoonoses

Zoonosis	Primary transmission/ reservoir species	Impact
Avian Influenza		The 2004 outbreak in East Asia resulted in economic losses of US$ 20 billion over the following five years.[48] The 2015 outbreak in the US has cost the poultry industry US$ 3.3 billion and led to the death of 48 million birds either from the flu itself or from culling.[46,47]
Bovine tuberculosis		US$ 15 billion of economic losses from 1986-2009 in the UK.[7]
Ebola		The 2014-2015 Ebola outbreak in Guinea, Liberia and Sierra Leone led to 11,310 deaths and 28,616 confirmed cases.[48]
MERS		Since September 2012, 27 countries have reported confirmed cases, with about 624 deaths.[49]
Nipah virus		US$ 671 million of economic losses, one million pigs culled, and 100 people died from the 1998 outbreak in Malaysia.[7]
SARS		The impact of the 2002 outbreak was estimated at US$ 41.5 billion, with 8,000 confirmed infections and 800 deaths.[7]



Questi allarmi erano stati giudicati eccessivi da molti, anche a causa di un discusso quasi-falso allarme lanciato dall'OMS nel 2010, per un altro **virus influenzale (H1N1/2009)** che pur se molto contagioso, non aveva acquisito mutazioni particolari, ne' mostrato, di conseguenza, particolare virulenza. Ma dal 2015 a questa parte cacciatori di virus, virologi e scienziati di tutto il mondo avevano ampiamente documentato che nelle **Grotte dello Yunnan (Cina) decine di coronavirus di pipistrello**, abbastanza simili a quello della prima SARS, avevano mostrato le temute mutazioni adattative candidandosi come i più probabili agenti patogeni della "prima grande pandemia del III millennio". **Da allora, le istituzioni sanitarie internazionali avevano recepito l'allarme ed invitato i paesi occidentali ad adattare i loro vetusti piani pandemici**.


LEARNING FROM SARS

Preparing for the Next Disease Outbreak

Workshop Summary

Stacey Knobler, Adel Mahmoud, Stanley Lemon, Alison Mack, Laura Sivitz, and Katherine Oberholtzer, *Editors*

Forum on Microbial Threats

Board on Global Health

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

(2004)

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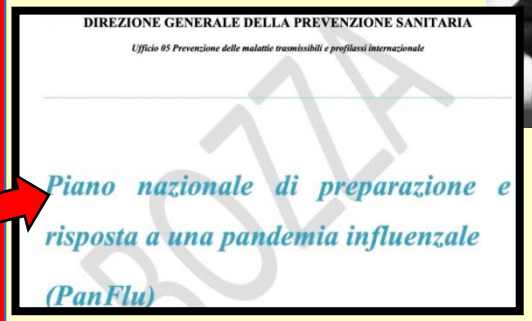

DIREZIONE GENERALE DELLA PREVENZIONE SANITARIA

Ufficio 05 Prevenzione delle malattie trasmissibili e profilassi internazionale

Piano nazionale di preparazione e risposta a una pandemia influenzale (PanFlu)

BOZZA

CLINICAL MICROBIOLOGY REVIEWS, Oct. 2007, p. 660–694
0893-8512/07/$08.00+0 doi:10.1128/CMR.00023-07

Severe Acute Respiratory Syndrome Coronavirus as an Agent of Emerging and Reemerging Infection

Vincent C. C. Cheng, Susanna K. P. Lau, Patrick C. Y. Woo, and Kwok Yung Yuen*

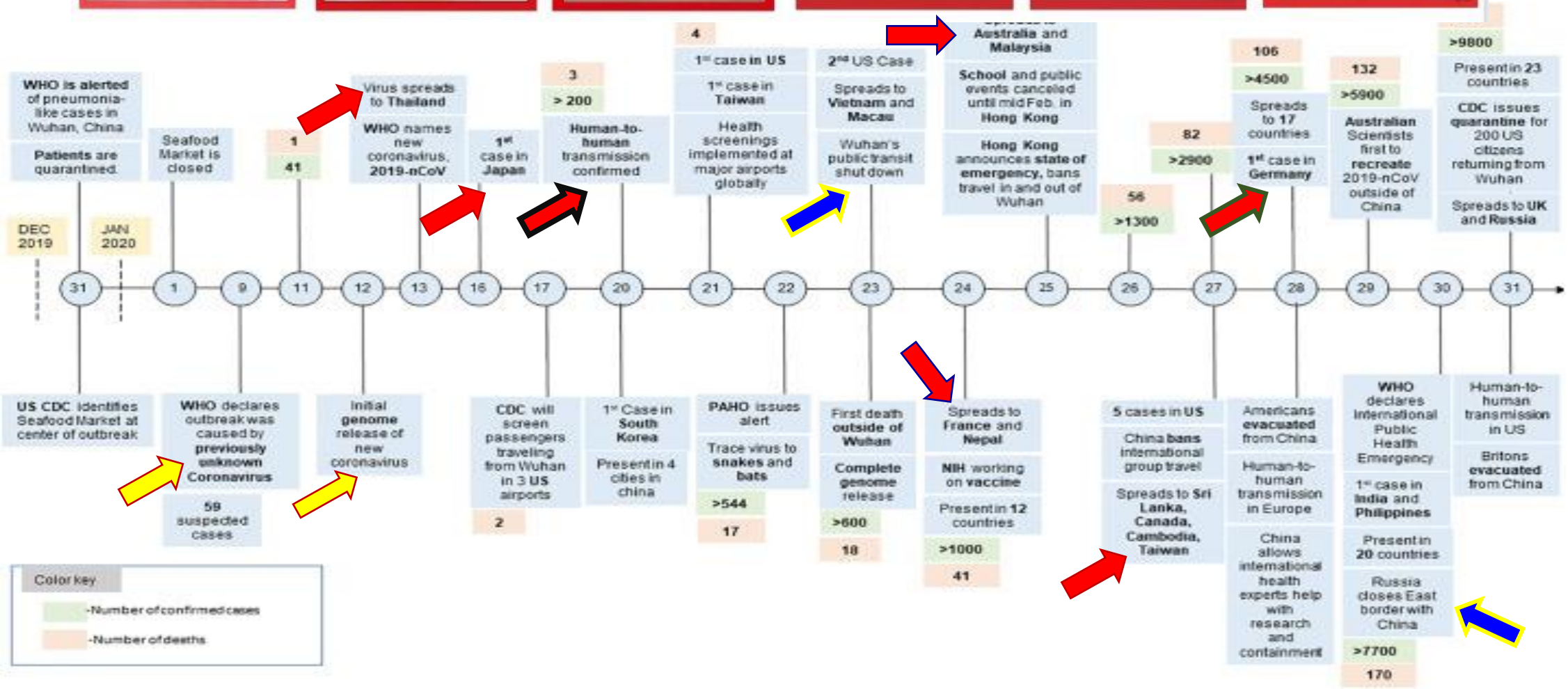
State Key Laboratory of Emerging Infectious Diseases, Department of Microbiology, Research Centre of Infection and Immunology, The University of Hong Kong, Hong Kong Special Administrative Region, China

testing antivirals or immunization (Table 10). The Koch's postulates for SARS-CoV as a causative agent of SARS were fulfilled with a primate model using cynomolgus macaques (*Macaca fascicularis*), which demonstrated clinical and pathological features with some similarities to those found in humans (182). On the contrary, African green monkeys (*Cercopithecus aethiops*) did not develop significant lung pathology after inoculation with the SARS-CoV. The lack of consistency in primate animal models of rhesus, cynomolgus, and African green monkeys for experimental SARS was noted in another study (239). Moreover, these large mammals are expensive and difficult to handle. BALB/c mice demonstrated asymptomatic or mild infections in lungs and nasal turbinates by intranasal inoculation, which was not significantly different from the findings with inoculation of immunological Th1-biased C57BL/6 mice (105). BALB/c mice that were 12 to 14 months old developed symptomatic pneumonia, which correlated with the age-related susceptibility to acute SARS in humans (287). As expected, STAT-1 knockout-immunodeficient mice had fatal and disseminated disease (143). Transgenic mice expressing human ACE2 receptors also developed fatal disease, with extrapulmonary dissemination to many organs including the

SHOULD WE BE READY FOR THE REEMERGENCE OF SARS?

The medical and scientific community demonstrated marvelous efforts in the understanding and control of SARS within a short time, as evident by over 4,000 publications available online. Despite these achievements, gaps still exist in terms of the molecular basis of the physical stability and transmissibility of this virus, the molecular and immunological basis of disease pathogenesis in humans, screening tests for early or cryptic SARS cases, foolproof infection control procedures for patient care, effective antivirals or antiviral combinations, the usefulness of immunomodulatory agents for late presenters, an effective vaccine with no immune enhancement, and the immediate animal host that transmitted the virus to caged civets in the market at the beginning of the epidemic. Coronaviruses are well known to undergo genetic recombination (375), which may lead to new genotypes and outbreaks. The presence of a large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a time bomb. The possibility of the reemergence of SARS and other novel viruses from animals or laboratories and therefore the need for preparedness should not be ignored.


2003
TIME
THE TRUTH ABOUT SARS
2004
TIME
BIRD FLU
Is Asia hatching the next human pandemic?
2005
TIME
AVIAN FLU
DEATH THREAT
2007
TIME
H1N1
How Bad Will It Get?
2009
TIME
Why You'll Be Wearing Masks Again
2017
TIME
WARNING:
WE ARE NOT READY FOR THE NEXT PANDEMIC


DEC 2019
JAN 2020
31
1
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11
12
13
16
17
20
21
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24
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30
31
WHO is alerted of pneumonia-like cases in Wuhan, China
Patients are quarantined
Seafood Market is closed
1
41
Virus spreads to Thailand
WHO names new coronavirus, 2019-nCoV
1st case in Japan
3
> 200
Human-to-human transmission confirmed
4
1st case in US
1st case in Taiwan
Health screenings implemented at major airports globally
2nd US Case
Spreads to Vietnam and Macau
Wuhan's public transit shut down
Australia and Malaysia
School and public events canceled until mid Feb. in Hong Kong
Hong Kong announces state of emergency, bans travel in and out of Wuhan
56
>1300
82
>2900
106
>4500
Spreads to 17 countries
1st case in Germany
132
>5900
Australian Scientists first to recreate 2019-nCoV outside of China
>9800
Present in 23 countries
CDC issues quarantine for 200 US citizens returning from Wuhan
Spreads to UK and Russia
US CDC identifies Seafood Market at center of outbreak
WHO declares outbreak was caused by previously unknown Coronavirus
59 suspected cases
Initial genome release of new coronavirus
CDC will screen passengers traveling from Wuhan in 3 US airports
2
1st Case in South Korea
Present in 4 cities in china
PAHO issues alert
Trace virus to snakes and bats
>544
17
First death outside of Wuhan
Complete genome release
>600
18
Spreads to France and Nepal
NIH working on vaccine
Present in 12 countries
>1000
41
5 cases in US
China bans international group travel
Spreads to Sri Lanka, Canada, Cambodia, Taiwan
Americans evacuated from China
Human-to-human transmission in Europe
China allows international health experts help with research and containment
WHO declares International Public Health Emergency
1st case in India and Philippines
Present in 20 countries
Russia closes East border with China
>7700
170
Human-to-human transmission in US
Britons evacuated from China
Color key
-Number of confirmed cases
-Number of deaths

Comunicato Stampa

Coronavirus: la SIPPS fa chiarezza e propone strategie operative funzionali

Roma, 25 febbraio 2020 – In questi giorni di emergenza sanitaria nazionale e globale, sono troppi gli interrogativi che ognuno di noi ancora si pone quotidianamente.

Una raccomandazione per tutti: interventi assistenziali qualificati, efficaci ed appropriati, tutelare chi è affetto da altre patologie

Prioritario: salvaguardare il sistema sanitario e gli operatori esposti in prima linea

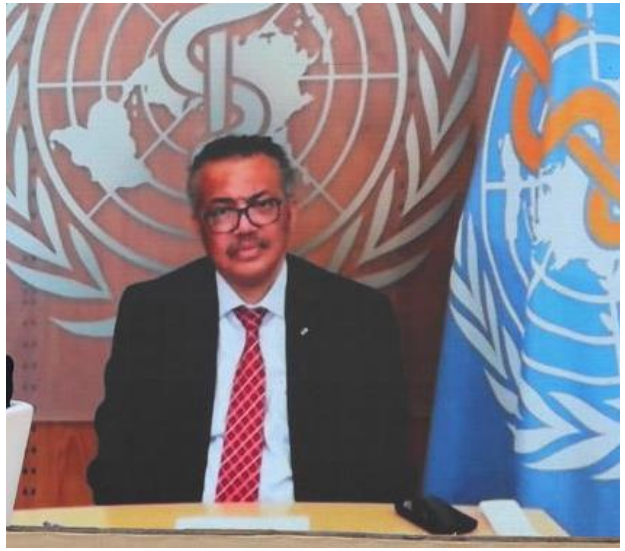
- **E' necessario evitare in tutti i modi** l'assalto agli ospedali e soprattutto ai servizi di pronto soccorso che potrebbe renderli i luoghi più pericolosi
- **Adottare corridoi preferenziali** in cui poter canalizzare l'eventuale afflusso dei casi o supposti tali nei prossimi giorni o mesi.
- **Mettere a disposizione ospedali militari delle grandi città** (attualmente quasi inutilizzati) in modo tale da trasformarli in breve tempo in centri di diagnosi, isolamento, e smistamento per i casi necessitanti di terapia intensiva

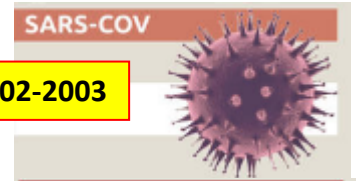
E' importante sottolineare come questa sarebbe **la miglior strategia non solo per scongiurare i rischi potenzialmente connessi all'outbreak in corso, ma anche e soprattutto per garantire un intervento rapido ed efficace in caso di qualsiasi allarme analogo dei prossimi anni.**

Ma **mentre i paesi asiatici, per così dire "vaccinati" dalla prima SARS** e dagli *outbreak* di influenza aviaria, avevano programmato le necessarie **misure di potenziamento della medicina territoriale e preventiva**, i **paesi occidentali hanno continuato a sottovalutare il pericolo imminente**, nonostante le notizie e le immagini drammatiche inerenti alla prima ondata epidemica in Cina.

…from the kingdom of the ***FLU VIRUSES*** and ***BIRDS…***

…. to the *BAT KINGDOM*





SARS-CoV1/2002-2003

MERS-CoV 2012-2014

SARS-CoV2/2019-2020

IL PARERE DELL'ESPERTO

Covid-19: ritardiamo il contagio
La scienza vincerà anche stavolta

Il differimento del picco e i precedenti: che cosa sapere

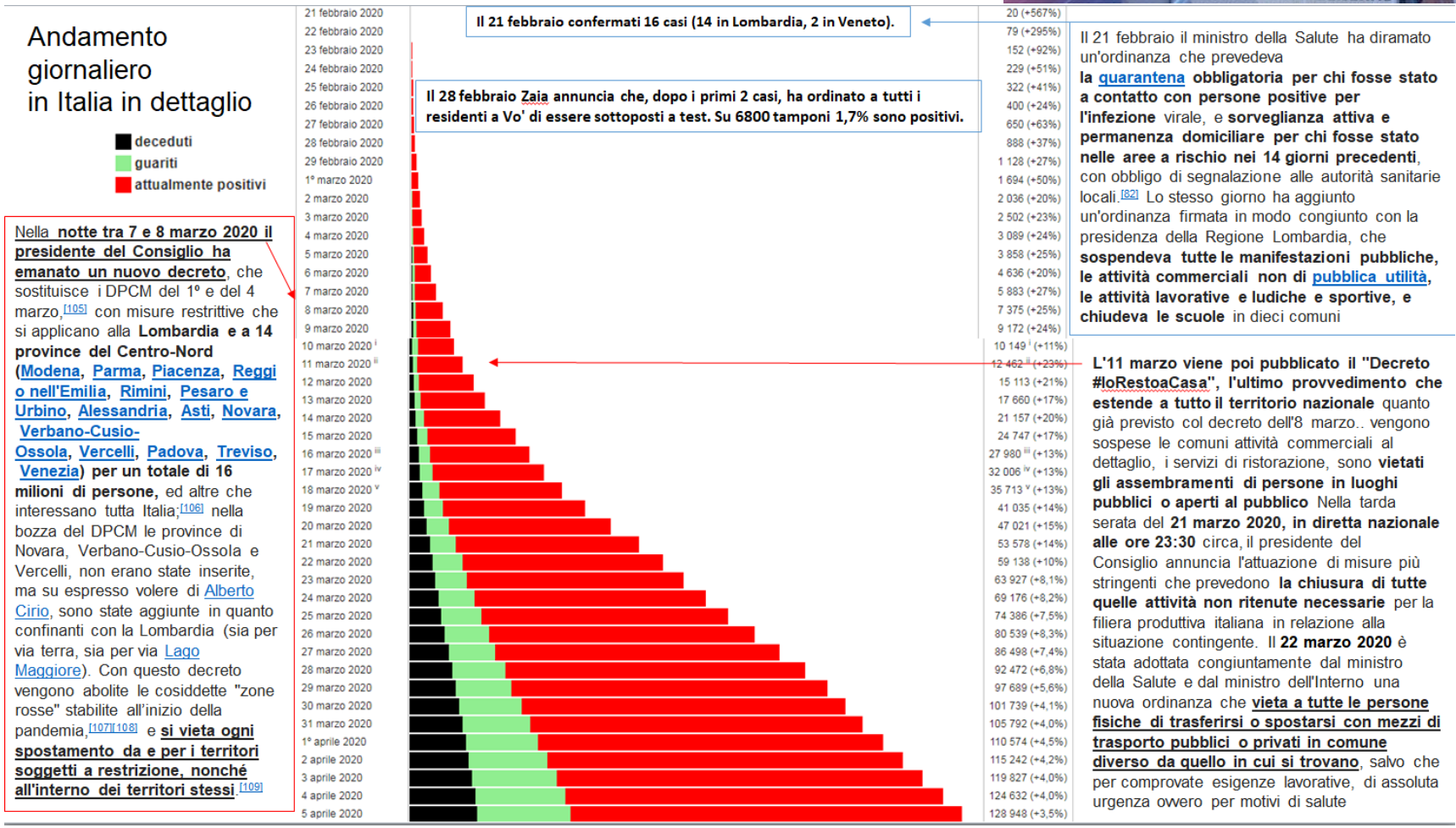
25-02-2020

CORONAVIRUS I dati sul contagio e le linee guida da seguire

Calma contro la psicosi

Dobbiamo ridimensionare questo grande allarme, che è giusto ma va posto nei giusti termini: su 100 malati, 80 guariscono spontaneamente e solo 3 muoiono

L'Italia fu dichiarata formalmente in stato di emergenza pandemica il 31 gennaio 2020, ma per tutto il mese di febbraio **poco si fece per prepararsi alla possibile ondata epidemica** e per verificare la presenza del virus sul territorio nazionale. Soltanto **alla fine di febbraio alcuni *cluster* individuati in Lombardia (Codogno) e in Veneto (Vo')** mostrarono che il virus aveva raggiunto il nostro paese e i primi accertamenti epidemiologici dimostrarono che nei primi epicentri epidemici una parte consistente della popolazione era già infetta. **Soltanto l'11 marzo del 2020 la WHO decretò l'allarme pandemico**. Tra il 7 e il 22 marzo con una serie di decreti il governo italiano decise misure di contenimento sempre più restrittive, inevitabilmente criticate da molti, ma assolutamente necessarie e casomai tardive in relazione a quanto detto fin qui. **Le misure di Lockdown riuscirono nel giro di alcune settimane a ridurre il numero dei contagi e poi dei ricoveri in terapia intensiva e infine dei decessi**, che comunque dopo un mese dall'adozione del *lockdown* erano stati circa 20.000, oltre metà dei quali nella sola Lombardia che aveva tardato ad accettare le misure di contenimento. **Ma il grande e innegabile risultato del *lockdown* fu di evitare la diffusione del virus alle regioni del Centro Sud**.



Nella **notte tra 7 e 8 marzo 2020 il presidente del Consiglio ha emanato un nuovo decreto**, che sostituisce i DPCM del 1º e del 4 marzo,[105] con misure restrittive che si applicano alla **Lombardia e a 14 province del Centro-Nord** (Modena, Parma, Piacenza, Reggio nell'Emilia, Rimini, Pesaro e Urbino, Alessandria, Asti, Novara, Verbano-Cusio-Ossola, Vercelli, Padova, Treviso, Venezia) **per un totale di 16 milioni di persone**, ed altre che interessano tutta Italia;[106] nella bozza del DPCM le province di Novara, Verbano-Cusio-Ossola e Vercelli, non erano state inserite, ma su espresso volere di Alberto Cirio, sono state aggiunte in quanto confinanti con la Lombardia (sia per via terra, sia per via Lago Maggiore). Con questo decreto vengono abolite le cosiddette "zone rosse" stabilite all'inizio della pandemia,[107][108] e **si vieta ogni spostamento da e per i territori soggetti a restrizione, nonché all'interno dei territori stessi**.[109]

Il 21 febbraio confermati 16 casi (14 in Lombardia, 2 in Veneto).

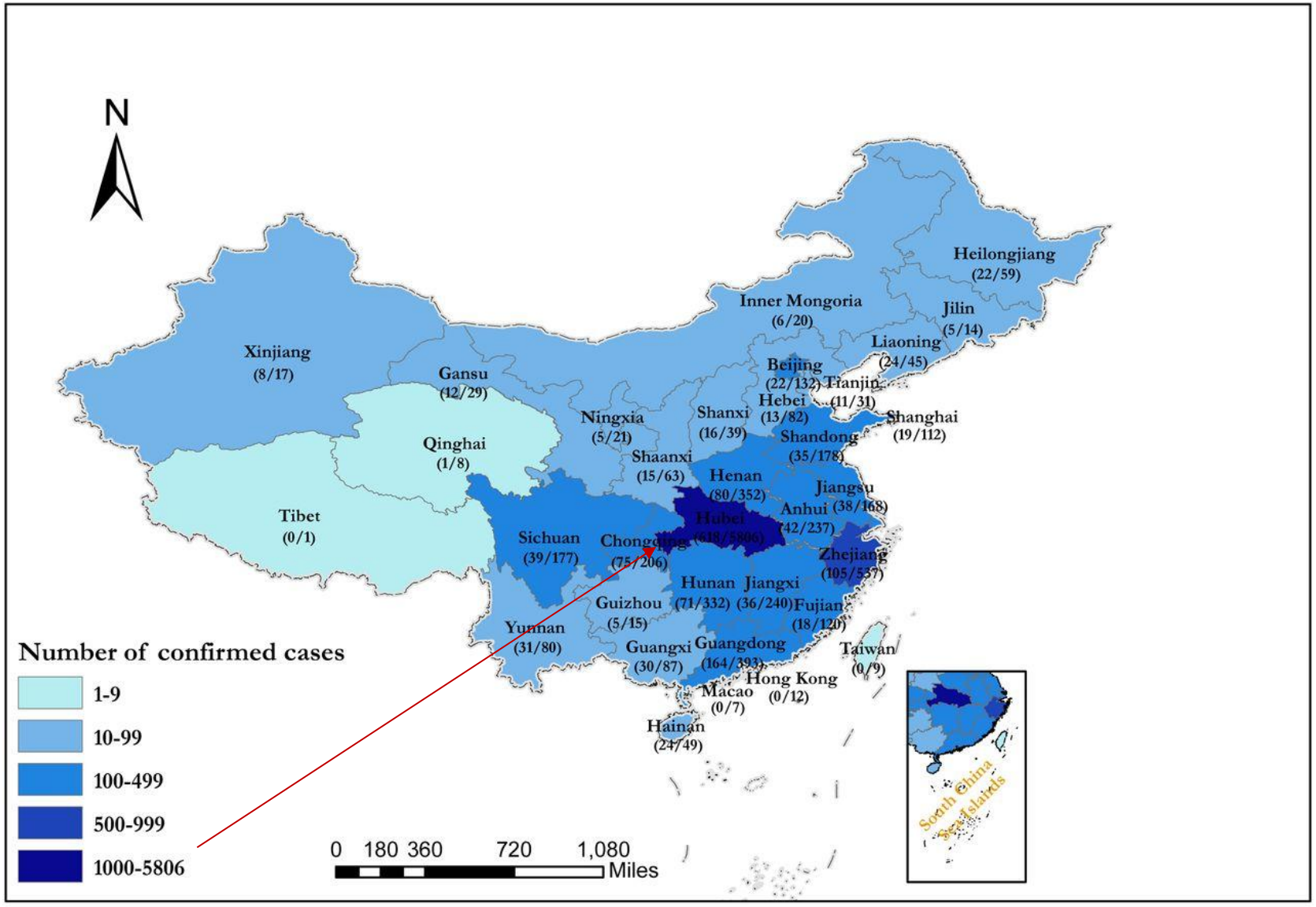
Il 28 febbraio Zaia annuncia che, dopo i primi 2 casi, ha ordinato a tutti i residenti a Vo' di essere sottoposti a test. Su 6800 tamponi 1,7% sono positivi.

Il 21 febbraio il ministro della Salute ha diramato un'ordinanza che prevedeva **la quarantena obbligatoria per chi fosse stato a contatto con persone positive per l'infezione** virale, e **sorveglianza attiva e permanenza domiciliare per chi fosse stato nelle aree a rischio nei 14 giorni precedenti**, con obbligo di segnalazione alle autorità sanitarie locali.[82] Lo stesso giorno ha aggiunto un'ordinanza firmata in modo congiunto con la presidenza della Regione Lombardia, che **sospendeva tutte le manifestazioni pubbliche, le attività commerciali non di pubblica utilità, le attività lavorative e ludiche e sportive, e chiudeva le scuole** in dieci comuni

L'11 marzo viene poi pubblicato il "Decreto #IoRestoaCasa", l'ultimo provvedimento che estende a tutto il territorio nazionale quanto già previsto col decreto dell'8 marzo.. vengono sospese le comuni attività commerciali al dettaglio, i servizi di ristorazione, sono **vietati gli assembramenti di persone in luoghi pubblici o aperti al pubblico** Nella tarda serata del **21 marzo 2020, in diretta nazionale alle ore 23:30** circa, il presidente del Consiglio annuncia l'attuazione di misure più stringenti che prevedono **la chiusura di tutte quelle attività non ritenute necessarie** per la filiera produttiva italiana in relazione alla situazione contingente. Il **22 marzo 2020** è stata adottata congiuntamente dal ministro della Salute e dal ministro dell'Interno una nuova ordinanza che **vieta a tutte le persone fisiche di trasferirsi o spostarsi con mezzi di trasporto pubblici o privati in comune diverso da quello in cui si trovano**, salvo che per comprovate esigenze lavorative, di assoluta urgenza ovvero per motivi di salute

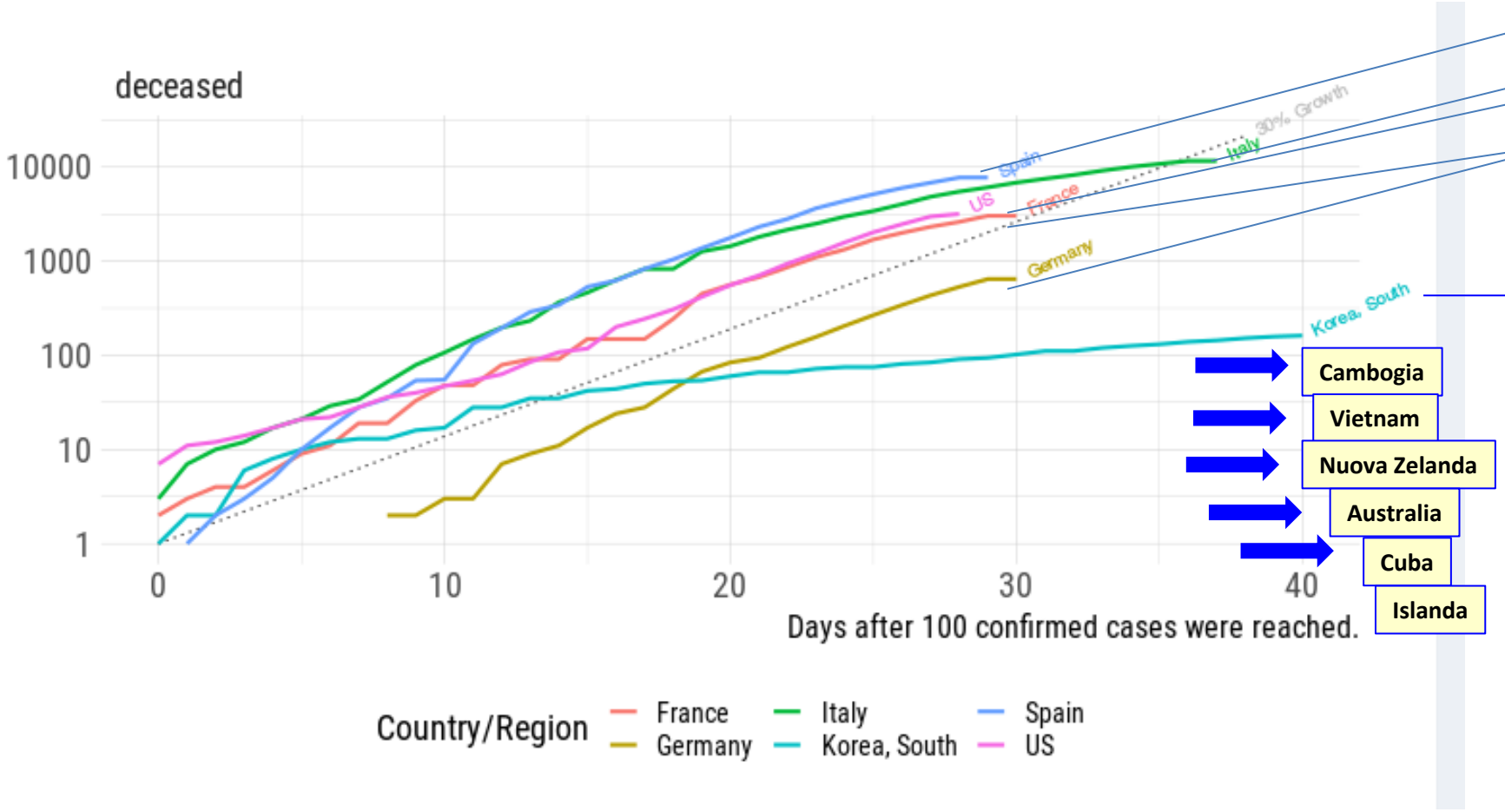
ITALIA 7/11 MARZO: LOCKDOWN TARDIVO MA NECESSARIO

Official statistics of all documented laboratory-confirmed cases throughout China according to the National Health Commission



Clinical characteristics and outcomes of hospitalised patients with COVID-19 treated in Hubei (epicenter) and outside Hubei (non-epicenter): A Nationwide Analysis of China European Respiratory Journal 2020; DOI: 10.1183/13993003.00562-2020

II wave…..?



Cambogia

Vietnam

Nuova Zelanda

Australia

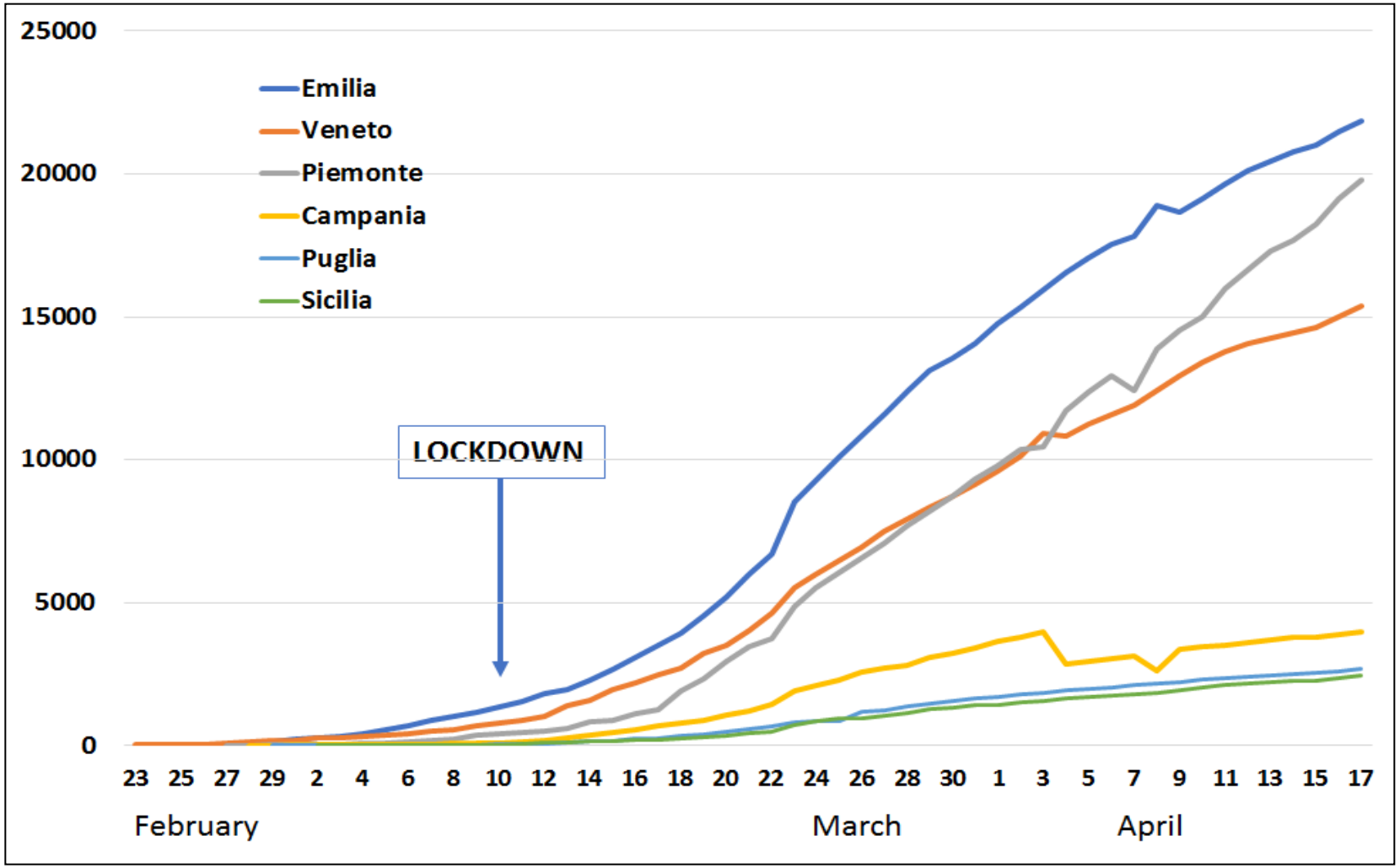
Cuba

Islanda

The GLOBAL DEVIDE between Asian and Western countries, (which have not been able to stop the virus since the early days) appears **equally evident after the first month.**

Yet, another confirmation of the validity of **the rule that during epidemics, every lost day implies an exponential growth in cases and deaths…**

The global divide. Asian versus Western Countries. **The diffusion patterns of SARS-CoV-2 deaths number growth in different countries** are outlined. Cumulative number of deceased is considered from the first day with 100 recognized cases. **South Korea is taken as example of a country accustomed to dealing with this type of emergency and "sensitized" by SARS/2002 related pandemic warnings.** Taken from Ernesto Burgio: ***COVID-19: the Italian Drama*** https://wsimag.com/science-and-technology/61967-covid-19-the-italian-drama



II wave ???

Equally clear is **the devide between the regions of Northern Italy** where the virus spread in the first few days
and those of **Central-South where the virus arrived with sufficient delay** to allow the **implementation of the simplest precautionary rules**.

The Italian divide. Cumulative growth of COVID cases in **three North Italian regions (Veneto, Piemonte, Emilia) and three South regions (Campania, Puglia, Sicilia)** starting from the first case in Veneto. The six areas have a similar population size. The Red Zone was established 17-18 days after the tenth case in North Italy and 6-11 days after the tenth case in the South.
Ernesto Burgio: COVID-19: the Italian Drama https://wsimag.com/science-and-technology/61967-covid-19-the-italian-drama

A group of physicists also evaluated the **TOTAL DAILY DEATHS in Lombardy during the month of March, the most dramatic one**, and compared **the data of surplus deaths** with those certified by the civil protection: a further confirmation, that **the number of deaths was significantly underestimated in the most affected regions.**

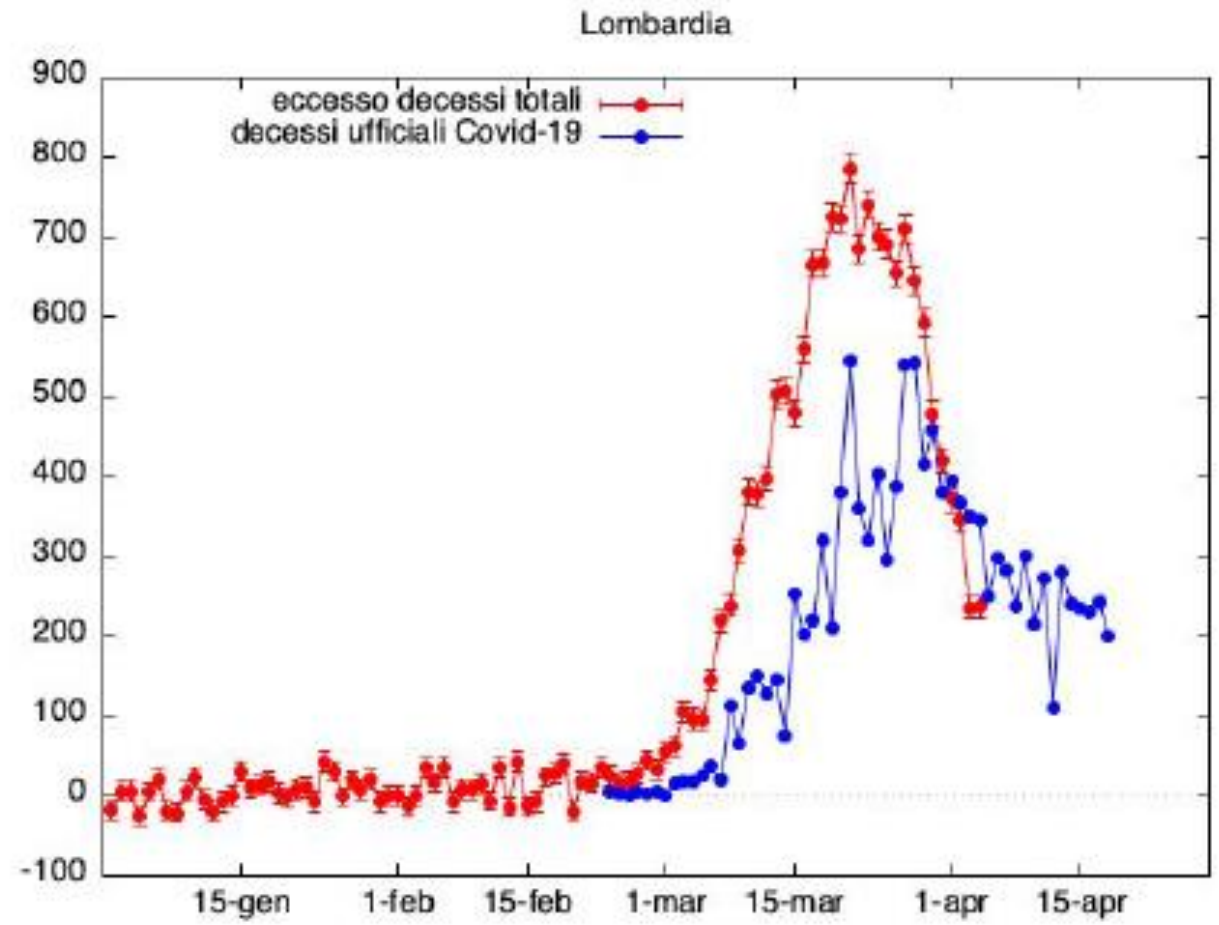
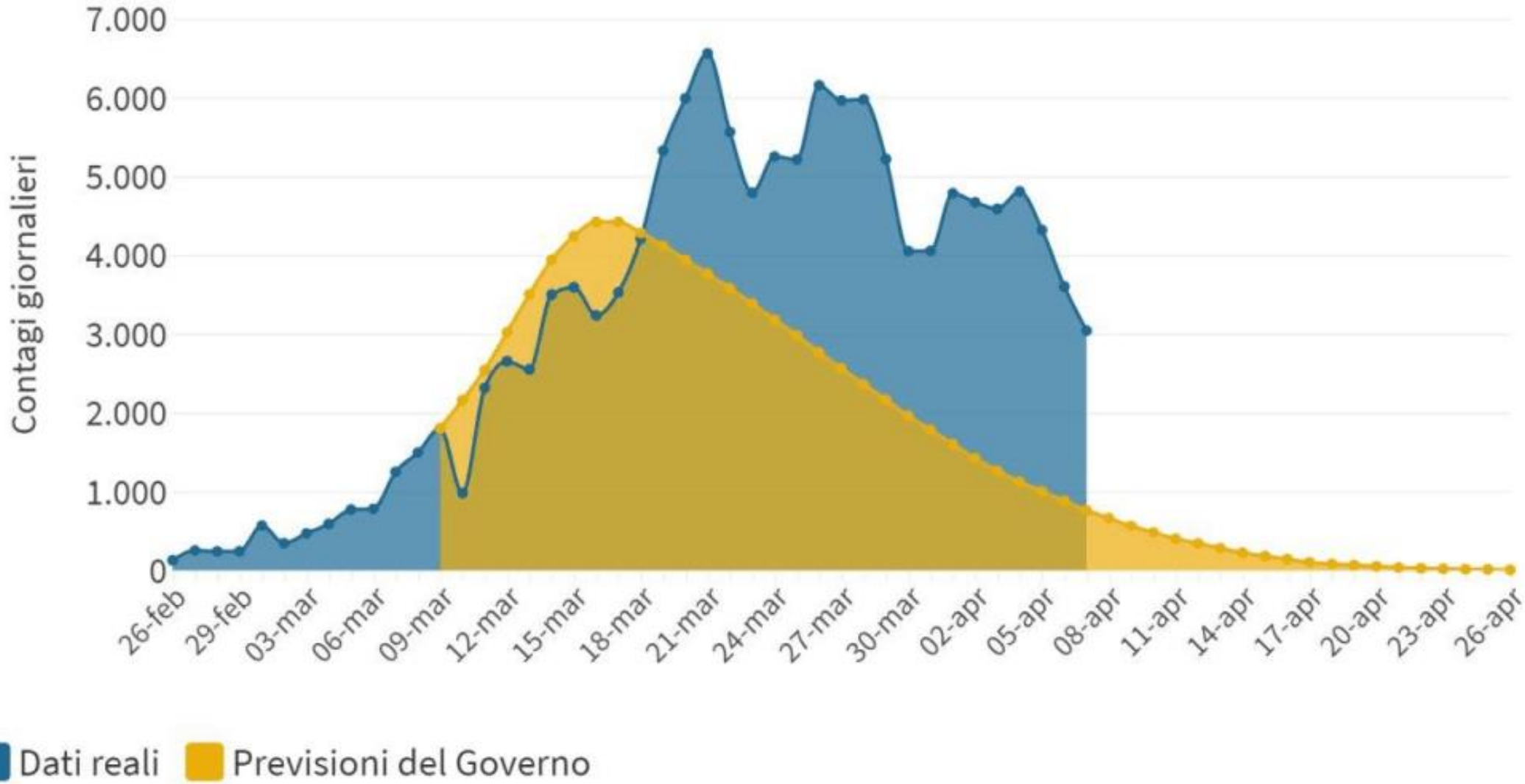


Figura 2. Numero di decessi in eccesso rispetto ad un anno senza epidemia stimato per la Lombardia dai dati Istat (punti rossi con errore) e numero di decessi certificati positivi al Covid-19 forniti dalla Protezione Civile (punti blu)

Coronavirus: i contagi giornalieri in Italia

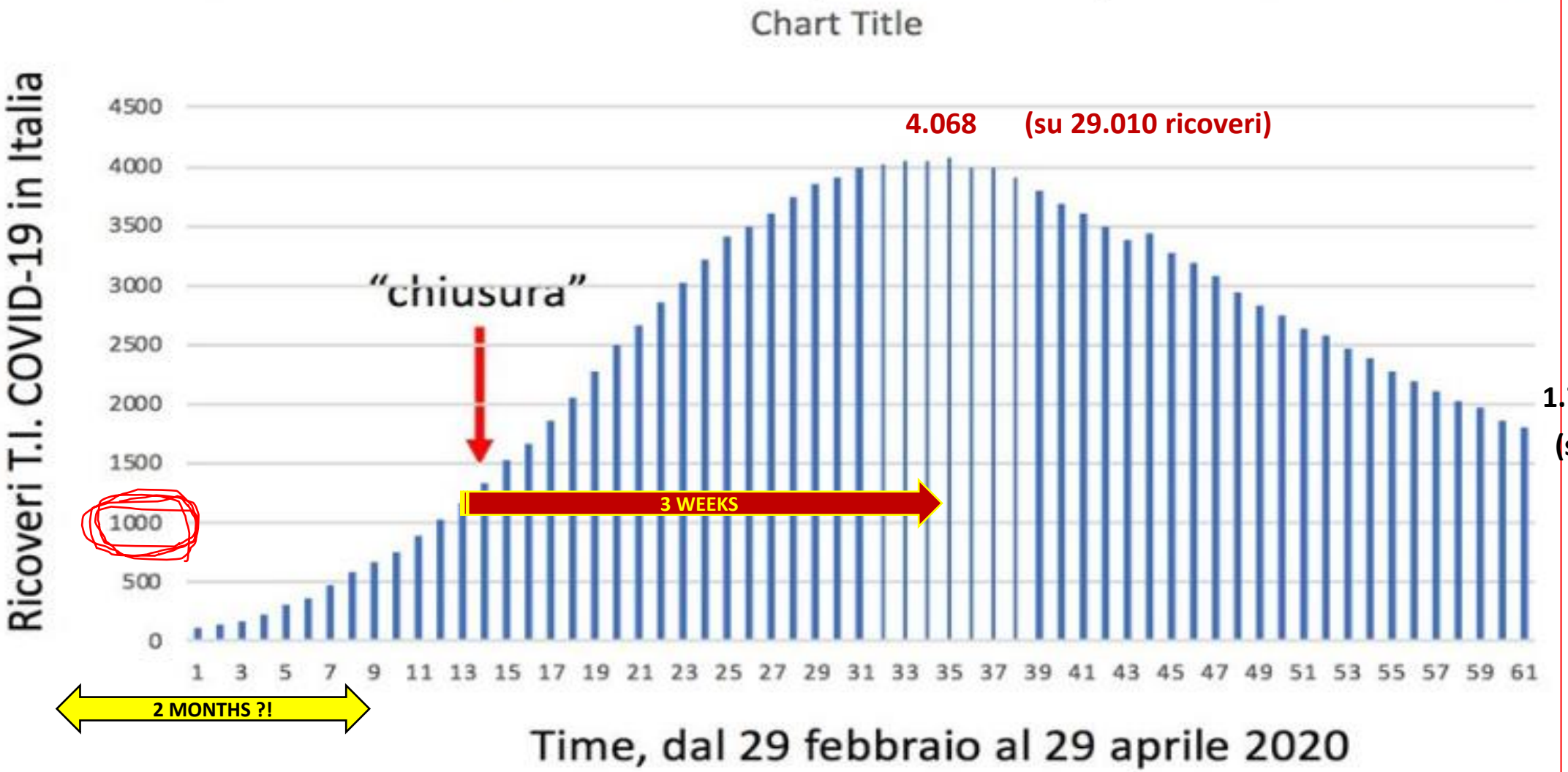
Il confronto fra i **dati reali** e le **previsioni del governo**

YOU TREND



Fonti: Dati reali: Bollettino quotidiano della Protezione Civile, Previsioni del Governo: stime estrapolate dal grafico presente nella bozza della Relazione tecnica allegata al decreto Cura Italia

Andamento dei ricoveri in Terapia Intensiva per COVID-19 in Italia



I ricoveri in Terapia Intensiva per COVID-19 in Italia continuano a calare per il DICIASSETTESIMO giorno consecutivo. Adesso siamo arrivati a **1.795** (Picco di **4.068** registrato il 4 aprile.. Calo ieri di altre 68 unità). Continuano a **calare anche i ricoveri ospedalieri totali, che ieri sono scesi di 513 unità** (siamo a quota **19.210**, mentre il picco di **29.010**, quasi diecimila malati in più, risale ormai al 5 aprile scorso) (G SILVESTRI)

Gli operatori sanitari nella seconda ondata

10.3K 12 Min | 11 Gennaio 2021

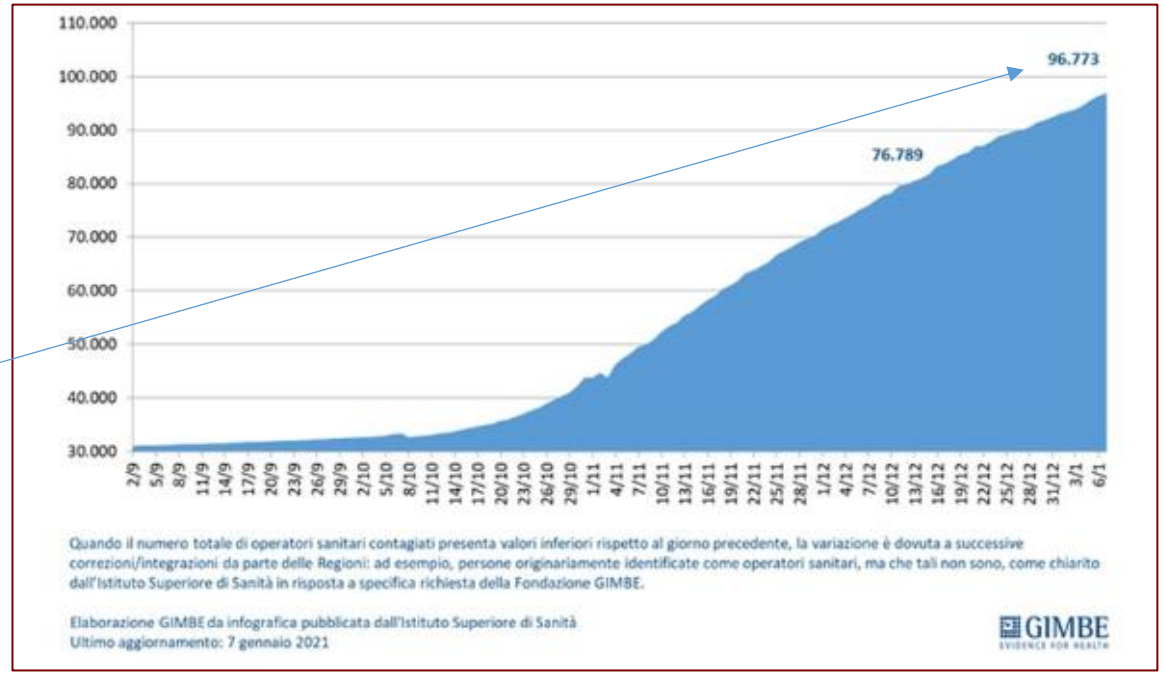
Claudio Beltramello

Il problema delle infezioni rappresenta solo la punta dell'iceberg di molteplici problemi riguardanti gli operatori del SSN, che vivono questa seconda ondata con due sentimenti prevalenti: la rabbia e la rassegnazione.

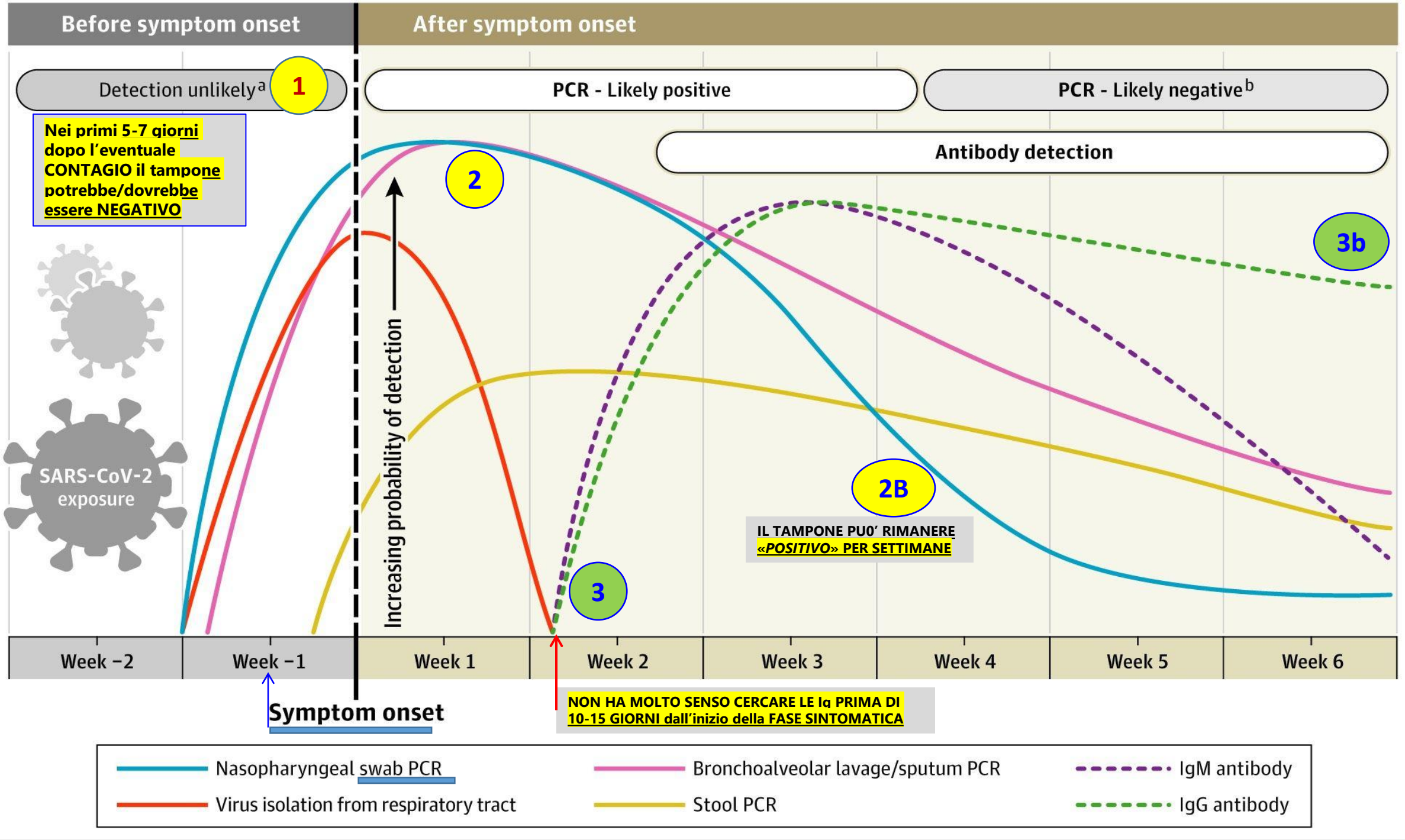
La **trasmissione per aerosol e non solo per droplets gioca un ruolo cruciale**… Fa specie che **né OMS né ISS abbiano pubblicamente ammesso l'errore** di aver dichiarato in modo apodittico il contrario per mesi… **non consigliando** agli operatori sanitari **l'uso costante delle mascherine** (almeno chirurgiche)

Sta anche emergendo che la sensibilità del **tampone antigenico rapido** non è sufficiente dando come risultato **troppi falsi negativi**. In particolare nelle RSA sono stati segnalati numerosi focolai sviluppatisi per questo motivo

Guardando la Figura 1 si resta sconcertati. Il personale sanitario sta pagando ancora il più grande tributo di infezioni di COVID-19 nella nostra società. Pari al 4,3% del totale delle infezioni in Italia. Tenendo conto che il personale sanitario nel nostro Paese è inferiore all'1% della popolazione, significa che il rischio infettivo per i sanitari in questa epidemia è di circa 5 volte maggiore rispetto alla popolazione generale. Per buona pace di quei Direttori generali (pochi per fortuna) che si sono permessi di affermare che il personale sanitario si infetta per lo più "fuori dal servizio". Se fosse così avremmo una incidenza sovrapponibile alla popolazione generale e invece tale enorme differenza non può essere spiegata interamente con il numero superiore di tamponi al personale sanitario rispetto alla comunità.



quasi **100.000 infettati** e circa **350 decessi** tra medici, infermieri e altro personale sanitario


Before symptom onset
After symptom onset
Detection unlikely[a]
1
PCR - Likely positive
PCR - Likely negative[b]
Nei primi 5-7 giorni dopo l'eventuale CONTAGIO il tampone potrebbe/dovrebbe essere NEGATIVO
Antibody detection
2
3b
SARS-CoV-2 exposure
Increasing probability of detection
2B
IL TAMPONE PU0' RIMANERE «POSITIVO» PER SETTIMANE
3
Week −2
Week −1
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Symptom onset
NON HA MOLTO SENSO CERCARE LE Ig PRIMA DI 10-15 GIORNI dall'inizio della FASE SINTOMATICA
Nasopharyngeal swab PCR
Bronchoalveolar lavage/sputum PCR
IgM antibody
Virus isolation from respiratory tract
Stool PCR
IgG antibody

Clinical Infectious Diseases

MAJOR ARTICLE

Published: 22 May 2020

IDSA Infectious Diseases Society of America | hivma hiv medicine association | OXFORD

Clinical Infectious Diseases, ciaa638, https://doi.org/10.1093/cid/ciaa638

Predicting Infectious Severe Acute Respiratory Syndrome Coronavirus 2 From Diagnostic Samples

Jared Bullard,[1,2,3] Kerry Dust,[1] Duane Funk,[4,5] James E. Strong,[2,3,4] David Alexander,[1,3] Lauren Garnett,[3,4] Carl Boodman,[3] Alexander Bello,[3,4] Adam Hedley,[1] Zachary Schiffman,[3,4] Kaylie Doan,[4] Nathalie Bastien,[3,4] Yan Li,[3,4] Paul G. Van Caeseele,[1,2,3] and Guillaume Poliquin[2,3,4]

[1]Cadham Provincial Laboratory, Manitoba Health, Winnipeg, Canada, [2]Department of Pediatrics and Child Health, University of Manitoba, Winnipeg, Canada, [3]Department of Medical Microbiology and Infectious Diseases, University of Manitoba, Winnipeg, Canada, [4]National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Manitoba, Canada, and [5]Departments of Anaesthesiology and Medicine, Section of Critical Care, University of Manitoba, Winnipeg, Canada

Background. Reverse-transcription polymerase chain reaction (RT-PCR) has become the primary method to diagnose viral diseases, including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). RT-PCR detects RNA, not infectious virus; thus, its ability to determine duration of infectivity of patients is limited. Infectivity is a critical determinant in informing public health guidelines/interventions. Our goal was to determine the relationship between E gene SARS-CoV-2 RT-PCR cycle threshold (Ct) values from respiratory samples, symptom onset to test (STT), and infectivity in cell culture.

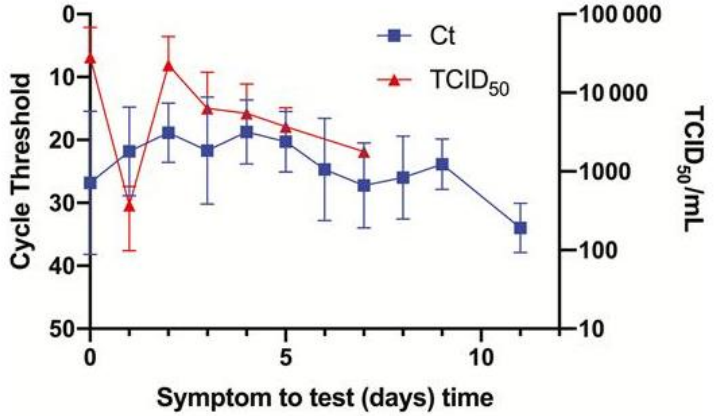
Methods. In this retrospective cross-sectional study, we took SARS-CoV-2 RT-PCR–confirmed positive samples a[illegible] mined their ability to infect Vero cell lines.

Results. Ninety RT-PCR SARS-CoV-2–positive samples were incubated on Vero cells. Twenty-six samples (28.9%) demonstrated viral growth. Median tissue culture infectious dose/mL was 1780 (interquartile range, 282–8511). There was no growth in samples with a Ct > 24 or STT > 8 days. Multivariate logistic regression using positive viral culture as a binary predictor variable, STT, and Ct demonstrated an odds ratio (OR) for positive viral culture of 0.64 (95% confidence interval [CI], .49–.84; $P < .001$) for

Questi risultati dimostrano che **l'infettività (come definita dalla crescita nella coltura cellulare) è significativamente ridotta quando i valori di Ct RT-PCR sono> 24 CICLI**. Per ogni **aumento di 1 unità di Ct, l'odds ratio per l'infettività è diminuito del 32%**. L'elevata specificità di Ct e STT suggerisce che **i valori di Ct> 24, insieme alla durata dei sintomi> 8 giorni, possono essere usati in combinazione per determinare la durata dell'infettività nei pazienti**. I risultati positivi delle **colture cellulari** erano molto probabili tra i **giorni 1 e 5.**

In conclusione, la pandemia SARS-CoV-2 / COVID-19 rappresenta una situazione dinamica in cui **le decisioni e le politiche devono essere guidate da prove.** Il nostro studio **non** ha mostrato **colture virali positive con Ct> 24 o STT> 8 giorni. Le probabilità di una coltura positiva sono diminuite del 32% per ogni aumento unitario di Ct**. Questi dati, se confermati, possono aiutare a **guidare l'isolamento, la ricerca dei contatti e le linee guida per i test.**

Figure 1.



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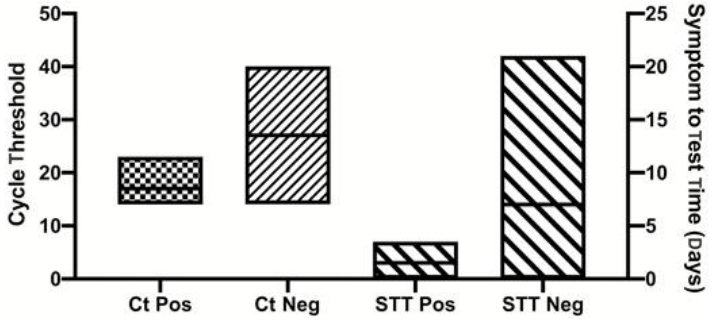
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral dynamics as expressed by E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) value and cell culture median tissue culture infectious dose ($TCID_{50}$)/mL, over time (days).

Figure 2.



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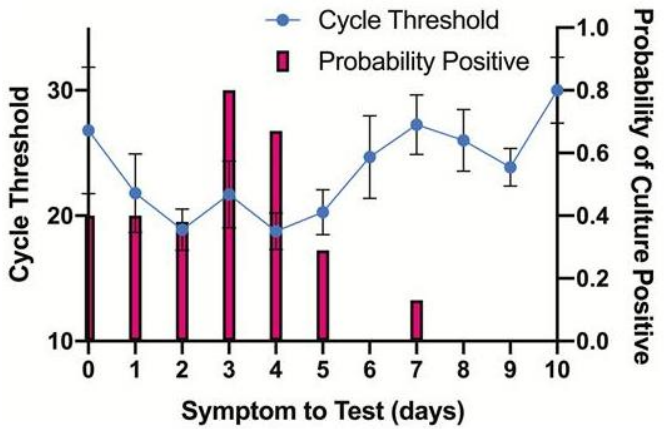
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) values and symptom to test time (STT) in samples that were culture positive or negative. Positive SARS-CoV-2 culture samples had a significantly lower Ct compared with culture-negative samples (17 [interquartile range {IQR}, 16–18] vs 27 [IQR, 22–33]; $P < .001$). STT was also significantly lower in culture-positive vs culture-negative samples (3 [IQR, 2–4] days vs 7 [IQR, 4–11] days; $P < .001$).

Figure 3.



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Comparison of symptom onset to test (days) to the probability of successful cultivation on Vero cells (Probability Positive) and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) E gene reverse-transcription polymerase chain reaction cycle threshold (Ct) value.

Shlomai *et al. Critical Care* (2020) 24:539
https://doi.org/10.1186/s13054-020-03244-3

01 September 2020

Critical Care

RESEARCH LETTER Open Access

Nasopharyngeal viral load predicts hypoxemia and disease outcome in admitted COVID-19 patients

Tra i parametri testati (valori più bassi di albumina, conta linfocitaria, **saturazione di ossigeno nel sangue (BOS)** e pressione sanguigna sistolica, livelli di picco **di lattato deidrogenasi (LDH), proteina C-reattiva (CRP), ferritina**, conta dei globuli bianchi e febbre), **solo BOS min (R = 0,07, p = 0,0004) mostra una correlazione significativa.** Anche **l'età dei pazienti è significativamente correlata alla carica virale**.
Non sopravvissuti e pazienti ventilati meccanicamente (n = 21) avevano un carico virale significativamente superiore rispetto ai pazienti sopravvissuti non intubati.
Un'analisi multivariata aggiustata per età, sesso e BOS_{min} ha rivelato che una **bassa carica virale era indipendentemente associata a un ridotto rischio di ventilazione meccanica e mortalità**. Inoltre, **la BOS e l'età dei pazienti erano anche associate in modo indipendente alla ventilazione meccanica e alla morte.. Pertanto l**a carica virale potrebbe fornire uno strumento di screening rapido per la gravità della COVD-19 tra i pazienti ospedalizzati.

Anche uno studio su 678 pazienti ricoverati a New York ha rilevato che **il 35,0% dei pazienti con un'elevata carica virale al momento del ricovero è morto, rispetto al 6,2% dei pazienti con bassa carica virale**
Magleby R, et al. ***Impact of SARS-CoV-2 viral load on risk of intubation and mortality among hospitalized patients with coronavirus disease 2019***. Clin Infect Dis. 2020;ciaa851

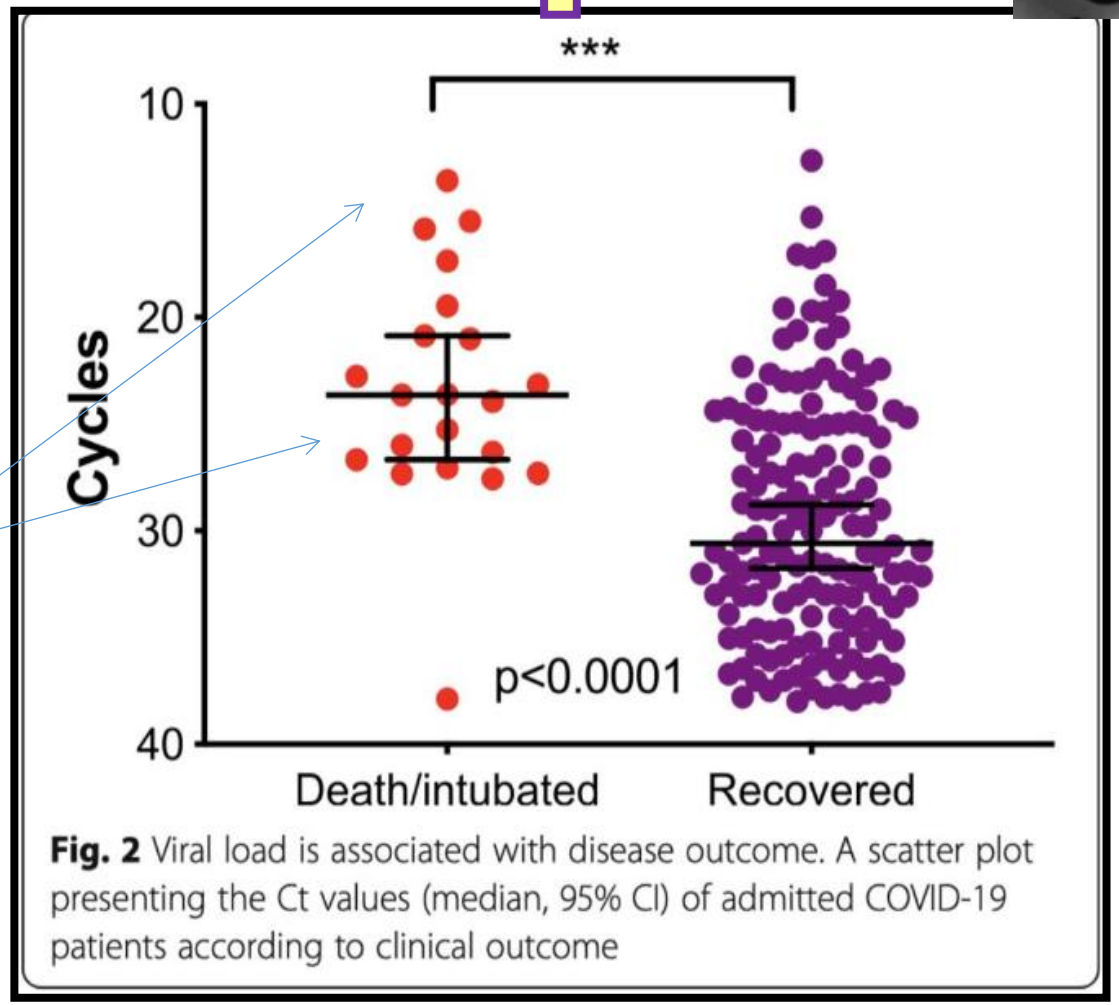


Fig. 2 Viral load is associated with disease outcome. A scatter plot presenting the Ct values (median, 95% CI) of admitted COVID-19 patients according to clinical outcome

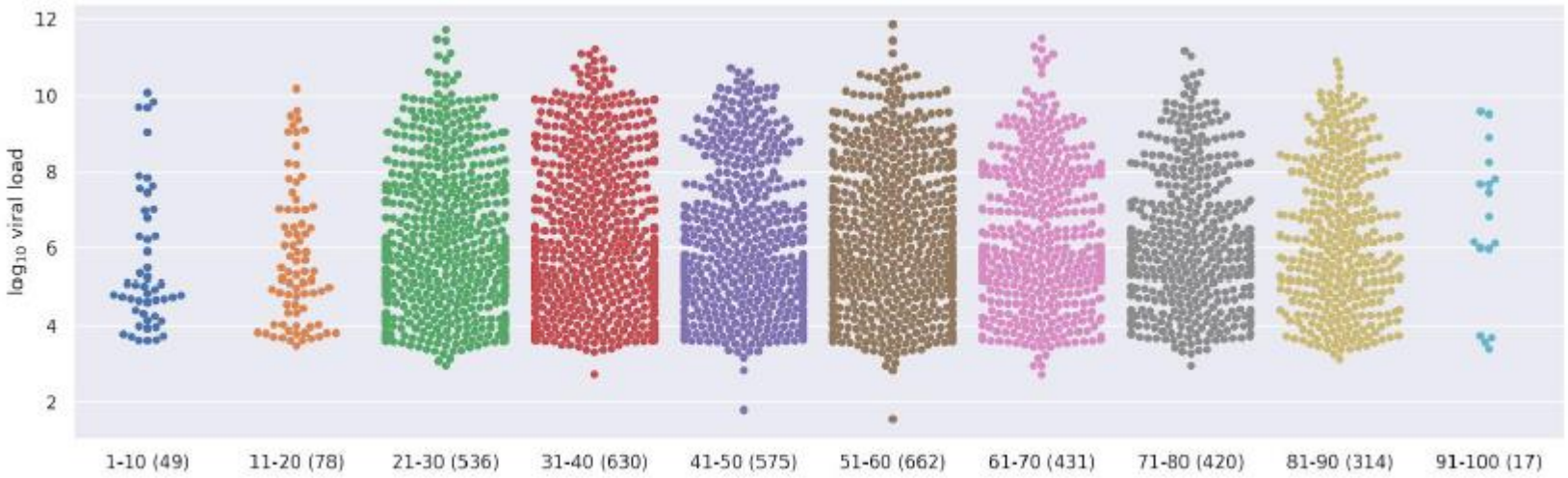
An analysis of SARS-CoV-2 viral load by patient age

Terry C. Jones[1,2], Barbara Mühlemann[1,3], Talitha Veith[1,3], Marta Zuchowski[4], Jörg Hofmann[4], Angela Stein[4], Anke Edelmann[4], Victor Max Corman[1,3], Christian Drosten[1,3]

Posted June 09, 2020.

Affiliations:
1: Institute of Virology, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, 10117 Berlin, Germany

Data on viral load, as estimated by real-time RT-PCR threshold cycle values from 3,712 COVID-19 patients were analysed to examine the relationship between patient age and SARS-CoV-2 viral load. Analysis of variance of viral loads in patients of different age categories found no significant difference between any pair of age categories including children. In particular, these data indicate that viral loads in the very young do not differ significantly from those of adults. Based on these results, we have to caution against an unlimited re-opening of schools and kindergartens in the present situation. Children may be as infectious as adults.



Children and adolescents have a viral load superimposable to that of adults and - as far as we can know at this point - they are **equally contagious and can play an equally important role in the transmission of the virus**

Science

Read our COVID-19 research and news.

Can Europe tame the pandemic's next wave?

By **Kai Kupferschmidt** | Sep. 1, 2020 , 2:00 PM

Alcuni studi stimano che il **10% dei pazienti causi l'80% di tutte le infezioni, mentre la maggior parte non infetta nessuno** .

Drosten ha esortato che i rilevatori di contatti impieghino più tempo a **trovare la fonte di un nuovo caso, insieme ai contatti** di quella persona…

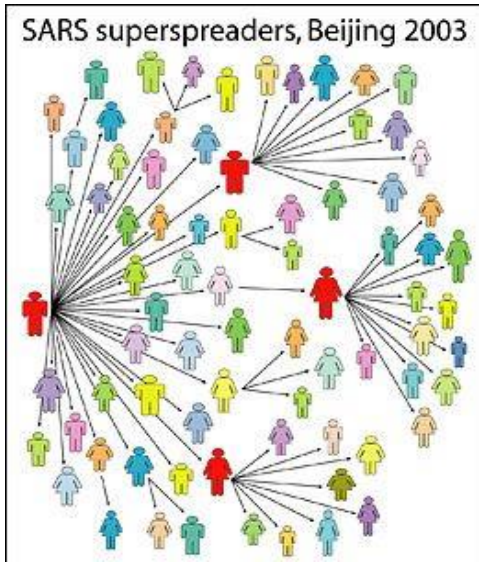
In **un recente preprint , Kucharski e colleghi hanno stimato che il "tracciamento dei contatti a ritroso" potrebbe prevenire il doppio delle infezioni rispetto al rintracciare i contatti in avanti**… Drosten chiede anche un nuovo approccio nel caso in cui le autorità sanitarie siano di nuovo sopraffatte: **mettere in quarantena solo le persone che si trovavano in una potenziale situazione di super diffusione** con un caso appena identificato, ma farlo immediatamente e poi testarle dopo 5 giorni…

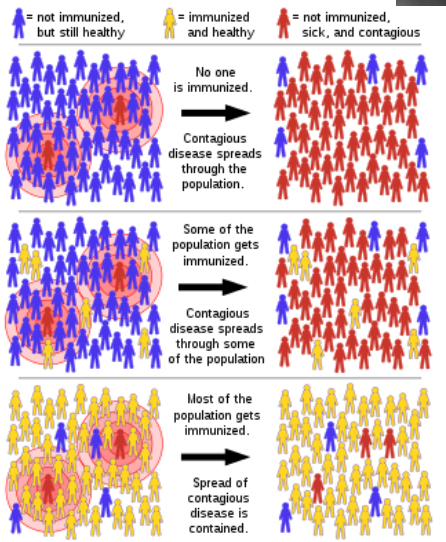
Mettere più impegno nella **ricerca di cluster dovrebbe anche aiutare gli epidemiologi a capire dove e come emergono…**

Vol 438|17 November 2005|doi:10.1038/nature04153

Superspreading and the effect of individual variation on disease emergence

J. O. Lloyd-Smith[1,2], S. J. Schreiber[3], P. E. Kopp[4] & W. M. Getz[1]





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THE PREPRINT SERVER FOR HEALTH SCIENCES

CSH Cold Spring Harbor Laboratory BMJ Yale

Implication of backward contact tracing in the presence of overdispersed transmission in COVID-19 outbreak

Akira Endo,
Centre for the Mathematical Modelling of Infectious Diseases (CMMID) COVID-19 Working Group, Quentin J Leclerc, Gwenan M Knight, Graham F Medley, Katherine E Atkins, Sebastian Funk, Adam J Kucharski

doi: https://doi.org/10.1101/2020.08.01.20166595

SCIENCE & TECHNOLOGY

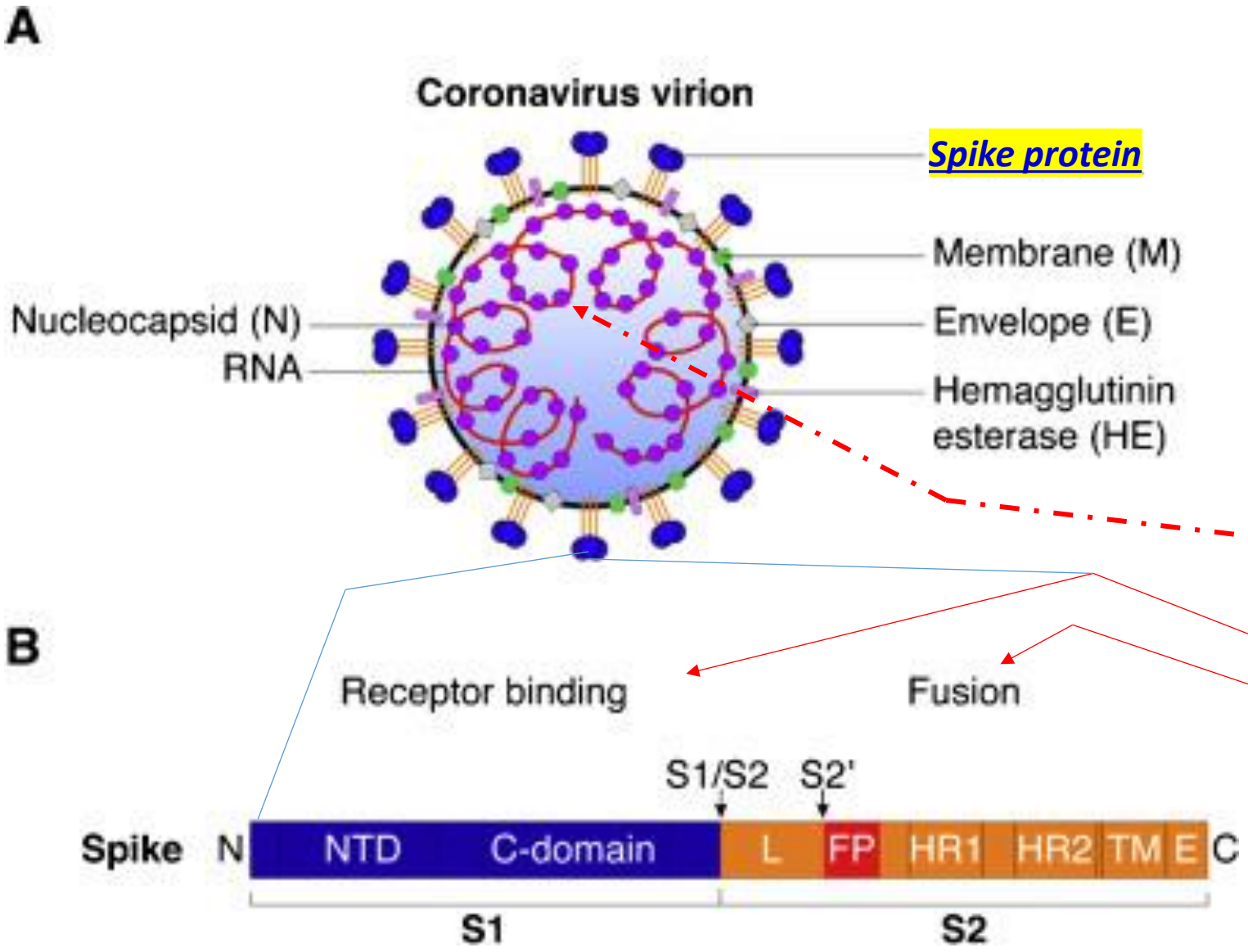
A pandemic foretold (in vain)

A last report

4 AUGUST 2020, ERNESTO BURGIO

We had forgotten that pandemics are epocal dramas

https://wsimag.com/science-and-technology/63016-a-pandemic-foretold-in-vain



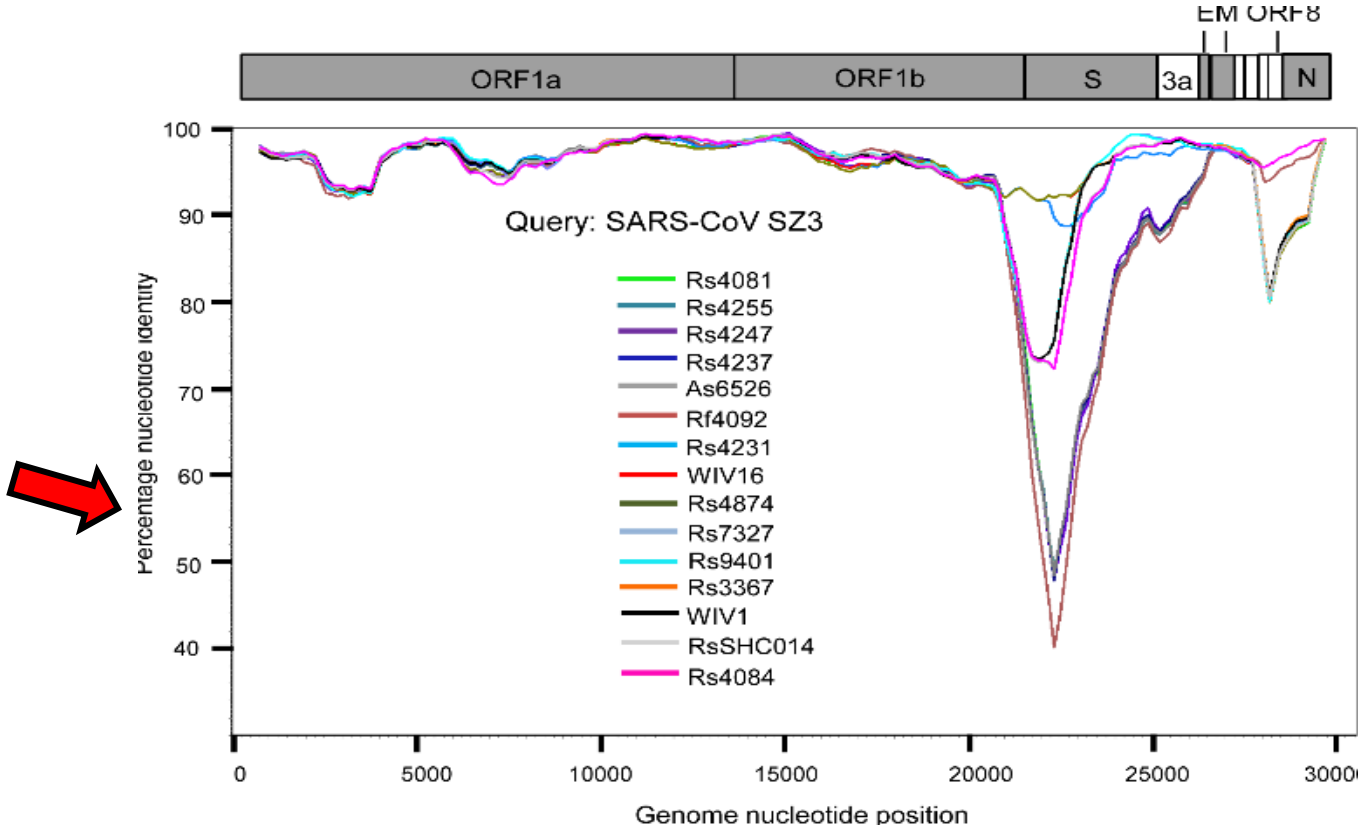
As we have already mentioned, the **most serious mistake made by many "experts" in the Western countries was not immediately recognizing the pandemic potential of the new virus.** Especially since, starting from the study of the first sequences, the virologists had shown that it was ***a Coronavirus*, which had recently made the spillover from a bat into our species, showing at least 8 key mutations (coming from another tropical animal, the pangolin) both in the binding domain and in the fusion domain** of its main capsid protein, the ***Spike protein***, used by ***Coronaviruses*** **to hook the cells of the human respiratory tract and to spread into other tissues…**

PLOS PATHOGENS

Discovery of a rich gene pool of bat SARS-related coronaviruses provides new insights into the origin of SARS coronavirus

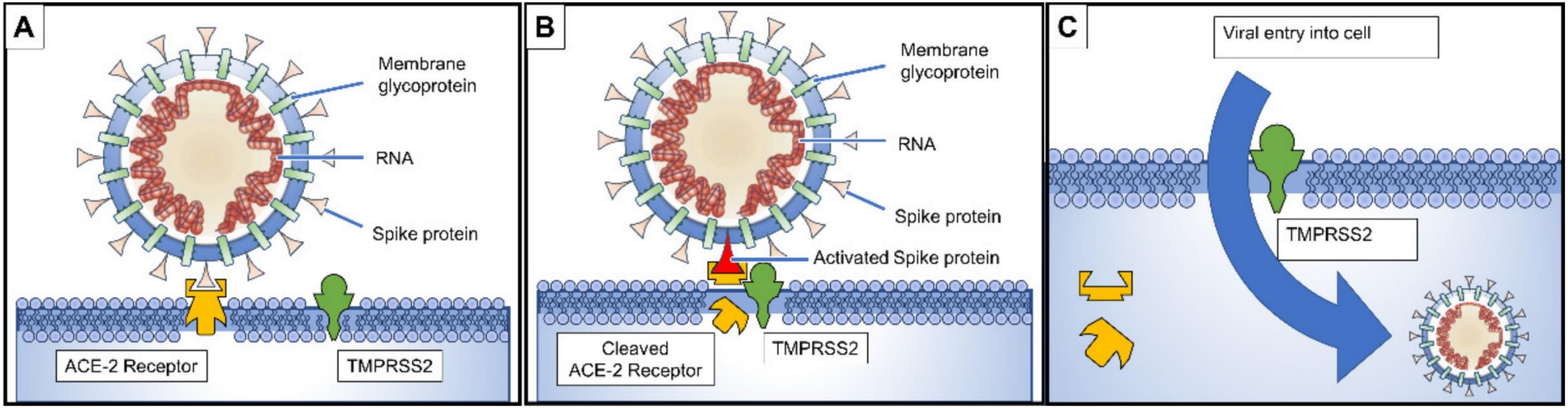
Ben Hu, Lei-Ping Zeng, Xing-Lou Yang, Xing-Yi Ge, Wei Zhang, Bei Li, Jia-Zheng Xie, Xu-Rui Shen, Yun-Zhi Zhang, Ning Wang, Dong-[illegible]Luo, Xiao-Shuang Zheng, Mei-Niang Wang, [...], Zheng-Li Shi [view all]

Published: November 30, 2017 • https://doi.org/10.1371/journal.ppat.1006698



Based on the analysis of the BAT-CoVs genome sequences present in the Yunnan cave, it was understood that **the direct ancestor of SARS-CoV / 2002** could have **arisen from sequential recombination** events between the precursors of these viruses, before the ***spillover*** to an **intermediate host**.

Furthermore, strains of BAT-CoVs with **different Spike proteins able to use for entry into our cells, the same receptor used by SARS-CoV (ACE-2),** have been found, suggesting that different BAT-SARS-CoV circulating in bats in China they are **also able to transmit the disease directly to humans (without the need for an intermediate host)**



A) Spike proteins on the surface of the coronavirus bind to angiotensin-converting enzyme 2 (ACE-2) receptors on the surface of the target cell;
(**B**) **The type II transmembrane serine protease (TMPRSS2) binds to and cleaves the ACE-2 receptor**.
In the process, **the spike protein is activated**;
(**C**) **Cleaved ACE-2 and activated spike protein facilitate viral entry.**

TMPRSS2 expression increases cellular uptake of the coronavirus

SARS-CoV-2 and Coronavirus Disease 2019: What We Know So Far
https://www.mdpi.com/2076-0817/9/3/231/htm

nature medicine

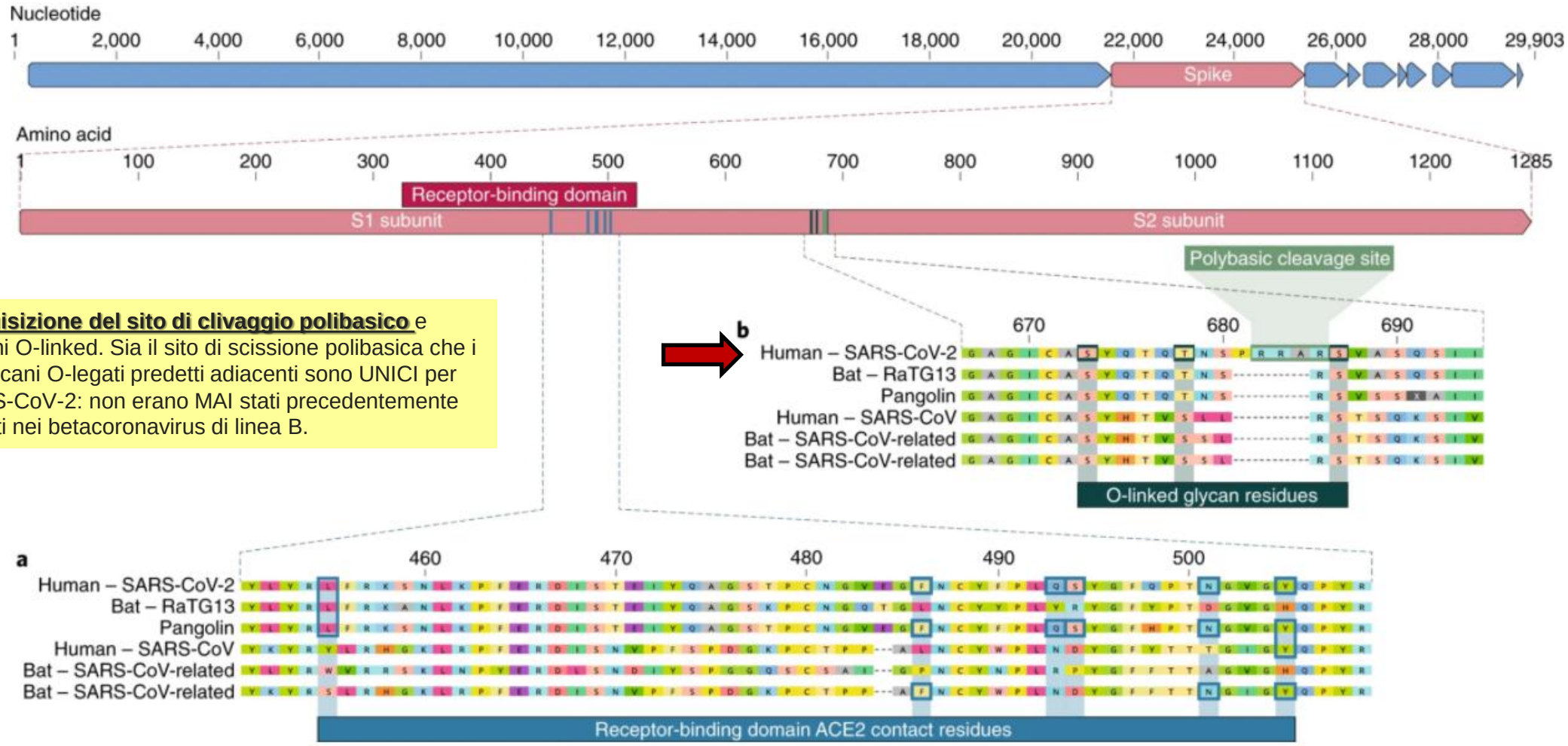
The proximal origin of SARS-CoV-2

Kristian G. Andersen ✉, Andrew Rambaut, W. Ian Lipkin, Edward C. Holmes & Robert F. Garry

Nature Medicine **26**, 450–452(2020)

Fig. 1: Features of the spike protein in human SARS-CoV-2 and related coronaviruses.

From: The proximal origin of SARS-CoV-2



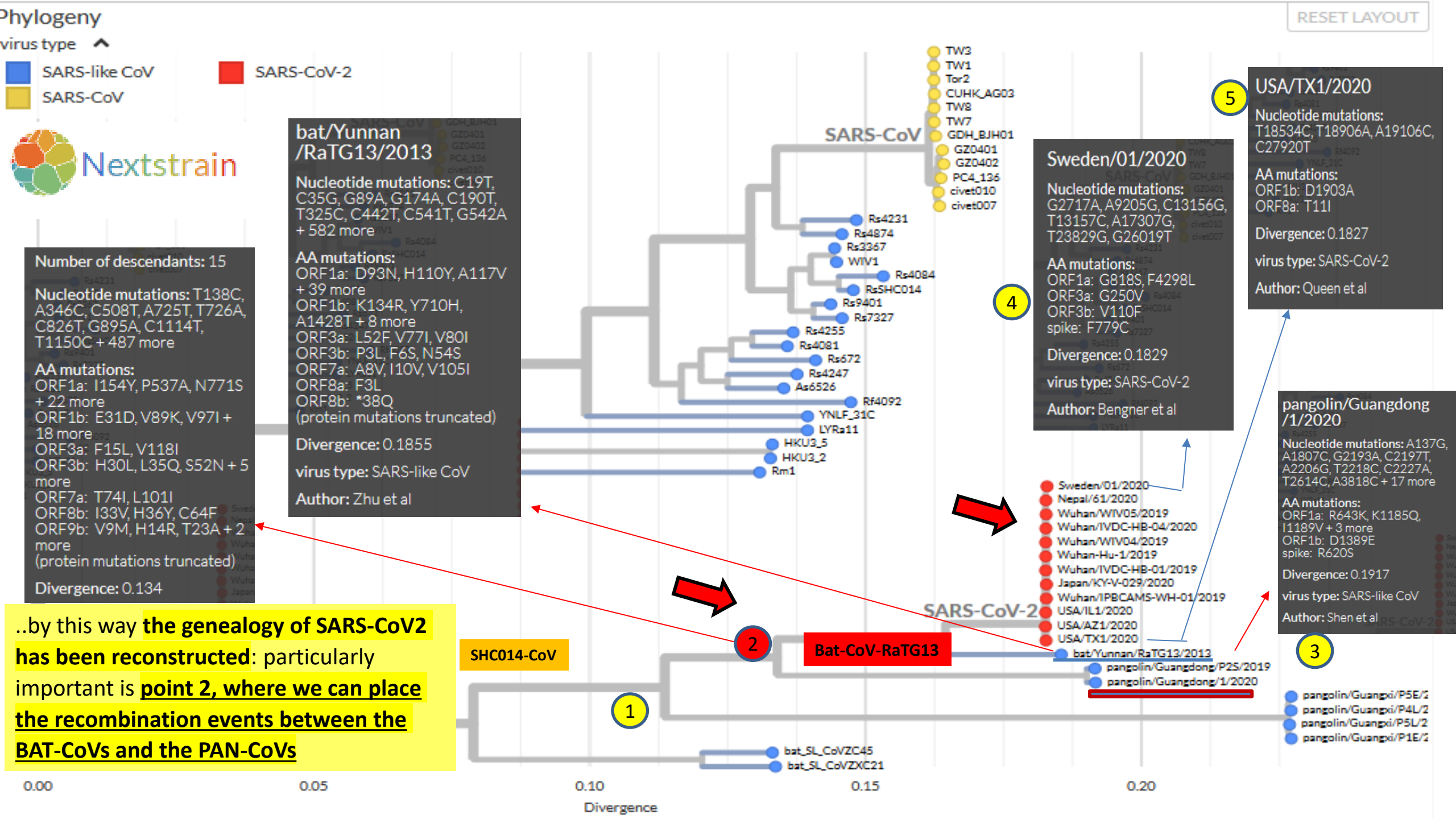
Acquisizione del sito di clivaggio polibasico e glicani O-linked. Sia il sito di scissione polibasica che i tre glicani O-legati predetti adiacenti sono UNICI per SARS-CoV-2: non erano MAI stati precedentemente trovati nei betacoronavirus di linea B.

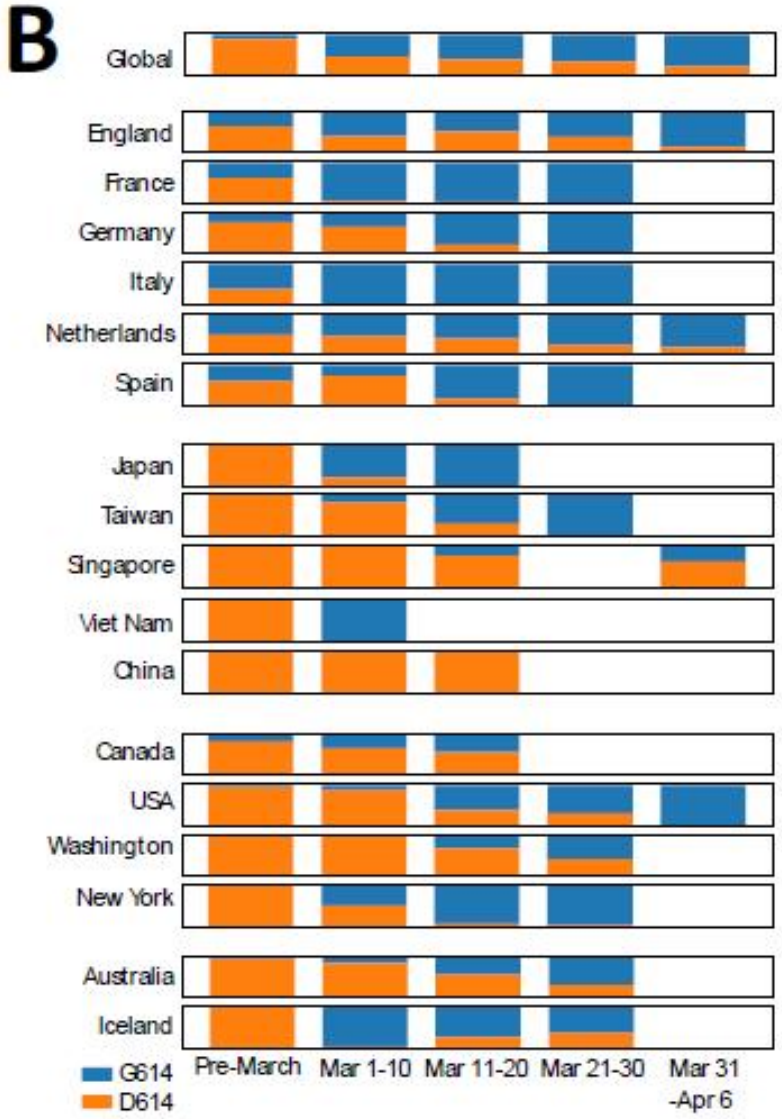
An open debate on SARS-CoV-2's proximal origin is long overdue

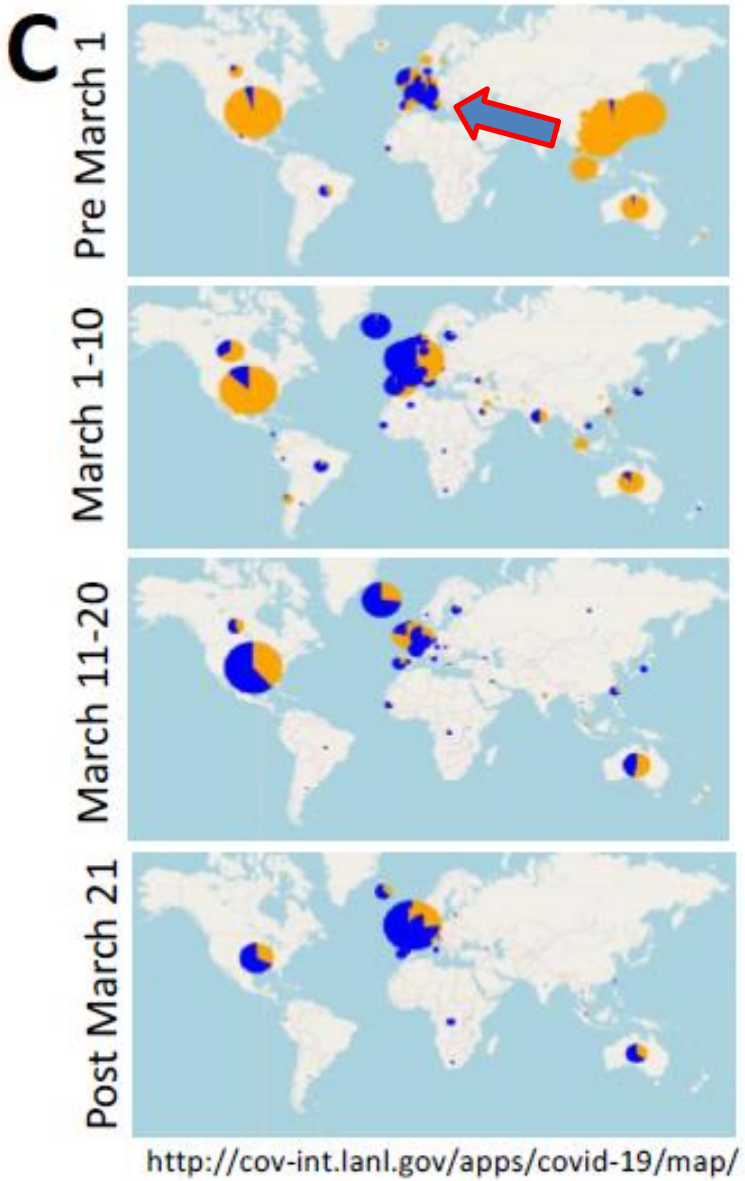
Rossana Segreto[1*], Yuri Deigin[2], Kevin McCairn[3], Alejandro Sousa[4,5], Dan Sirotkin[6], Karl Sirotkin[6], Jonathan J. Couey[7], Adrian Jones[8], Daoyu Zhang[9]

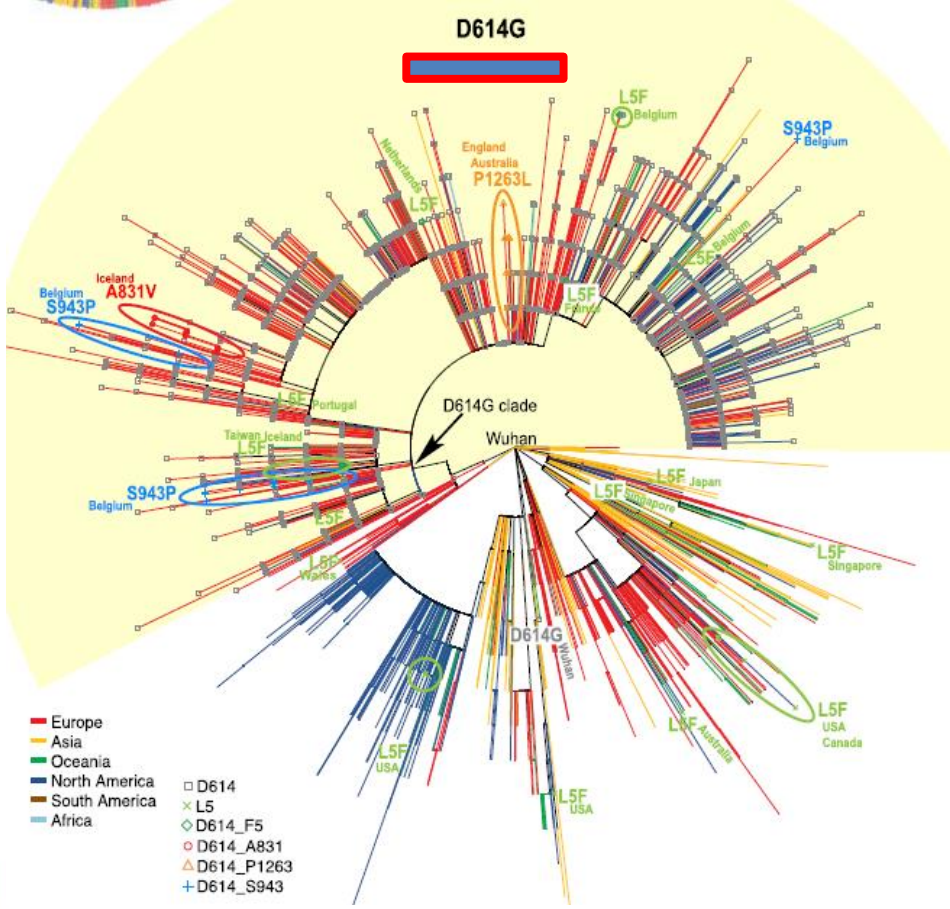
Furin cleavage site

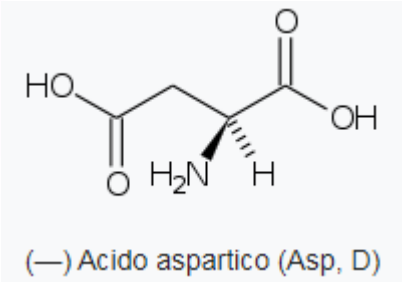
SARS-CoV-2 is the only Sarbecovirus to contain a FCS (Coutard et al., 2020). Indeed, no CoV with a spike protein sequence homology of greater than 40% to SARS-CoV-2 has a FCS (Wu, C. et al., 2020). The multibasic FCS (Fig. 1) ('RRAR↓', the arrow indicates site of proteolytic cleavage) in SARS-CoV-2 plays a key role in its pathogenesis (Johnson et al., 2020; Hoffman et al., 2020; Shokeen et al., 2020; Qiao and Olvera de la Cruz 2020; Lau et al., 2020; Shang et al., 2020) and enhances its human pathogenicity over a minimal FCS 'RXXR↓' (Thomas, 2002). It is also unusual, diverging from the canonical 'RX[K/R]R' motif (Tang, T. et al., 2020). The presence of an arginine at the third position P3 before the FCS increases the efficiency of the FCS tenfold (Henrich et al., 2003). Its presence is also rare, occurring in only 5 out of 132 known FCSs (Lemmin et al., 2020). The 'RRAR' motif conforms to the '[R/K]XX[R/K]' 'C-end rule', creating a binding site for cell surface neuropilin (NRP1 and NRP2) receptors (Teesalu et al., 2009), which are more widely expressed than ACE2. NRP1 has been demonstrated as an alternate route for virus entry (Cantuti-Castelvetri et al., 2020; Daly et al., 2020).


Phylogeny
virus type
SARS-like CoV
SARS-CoV
SARS-CoV-2
RESET LAYOUT
Nextstrain
bat/Yunnan /RaTG13/2013
Nucleotide mutations: C19T, C35G, G89A, G174A, C190T, T325C, C442T, C541T, G542A + 582 more
AA mutations:
ORF1a: D93N, H110Y, A117V + 39 more
ORF1b: K134R, Y710H, A1428T + 8 more
ORF3a: L52F, V77I, V80I
ORF3b: P3L, F6S, N54S
ORF7a: A8V, I10V, V105I
ORF8a: F3L
ORF8b: *38Q
(protein mutations truncated)
Divergence: 0.1855
virus type: SARS-like CoV
Author: Zhu et al
Number of descendants: 15
Nucleotide mutations: T138C, A346C, C508T, A725T, T726A, C826T, G895A, C1114T, T1150C + 487 more
AA mutations:
ORF1a: I154Y, P537A, N771S + 22 more
ORF1b: E31D, V89K, V97I + 18 more
ORF3a: F15L, V118I
ORF3b: H30L, L35Q, S52N + 5 more
ORF7a: T74I, L101I
ORF8b: I33V, H36Y, C64F
ORF9b: V9M, H14R, T23A + 2 more
(protein mutations truncated)
Divergence: 0.134
Sweden/01/2020
Nucleotide mutations: G2717A, A9205G, C13156G, T13157C, A17307G, T23829G, G26019T
AA mutations:
ORF1a: G818S, F4298L
ORF3a: G250V
ORF3b: V110F
spike: F779C
Divergence: 0.1829
virus type: SARS-CoV-2
Author: Bengner et al
USA/TX1/2020
Nucleotide mutations: T18534C, T18906A, A19106C, C27920T
AA mutations:
ORF1b: D1903A
ORF8a: T11I
Divergence: 0.1827
virus type: SARS-CoV-2
Author: Queen et al
pangolin/Guangdong /1/2020
Nucleotide mutations: A137G, A1807C, G2193A, C2197T, A2206G, T2218C, C2227A, T2614C, A3818C + 17 more
AA mutations:
ORF1a: R643K, K1185Q, I1189V + 3 more
ORF1b: D1389E
spike: R620S
Divergence: 0.1917
virus type: SARS-like CoV
Author: Shen et al
SARS-CoV
TW3
TW1
Tor2
CUHK_AG03
TW8
TW7
GDH_BJH01
GZ0401
GZ0402
PC4_136
civet010
civet007
Rs4231
Rs4874
Rs3367
WIV1
Rs4084
RsSHC014
Rs9401
Rs7327
Rs4255
Rs4081
Rs672
Rs4247
As6526
Rf4092
YNLF_31C
LYRa11
HKU3_5
HKU3_2
Rm1
SARS-CoV-2
Sweden/01/2020
Nepal/61/2020
Wuhan/WIV05/2019
Wuhan/IVDC-HB-04/2020
Wuhan/WIV04/2019
Wuhan-Hu-1/2019
Wuhan/IVDC-HB-01/2019
Japan/KY-V-029/2020
Wuhan/IPBCAMS-WH-01/2019
USA/IL1/2020
USA/AZ1/2020
USA/TX1/2020
bat/Yunnan/RaTG13/2013
pangolin/Guangdong/P2S/2019
pangolin/Guangdong/1/2020
pangolin/Guangxi/P5E/2
pangolin/Guangxi/P4L/2
pangolin/Guangxi/P5L/2
pangolin/Guangxi/P1E/2
bat_SL_CoVZC45
bat_SL_CoVZXC21
SHC014-CoV
Bat-CoV-RaTG13
1
2
3
4
5
..by this way the genealogy of SARS-CoV2 has been reconstructed: particularly important is point 2, where we can place the recombination events between the BAT-CoVs and the PAN-CoVs
0.00
0.05
0.10
0.15
0.20
Divergence

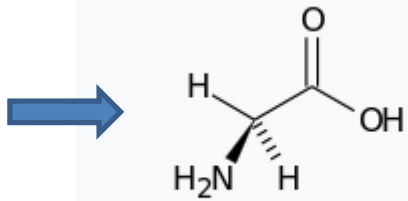








(—) Acido aspartico (Asp, D)



Glicina (Gly, G)

... and it could have been **one of the most important factors of the greater contagiousness of SARS-CoV-2 in the western countries (BLUE),** compared to the **Asian ones (ORANGE)** ...

CLINICAL IMPLICATIONS OF BASIC RESEARCH

Elizabeth G. Phimister, Ph.D., *Editor*

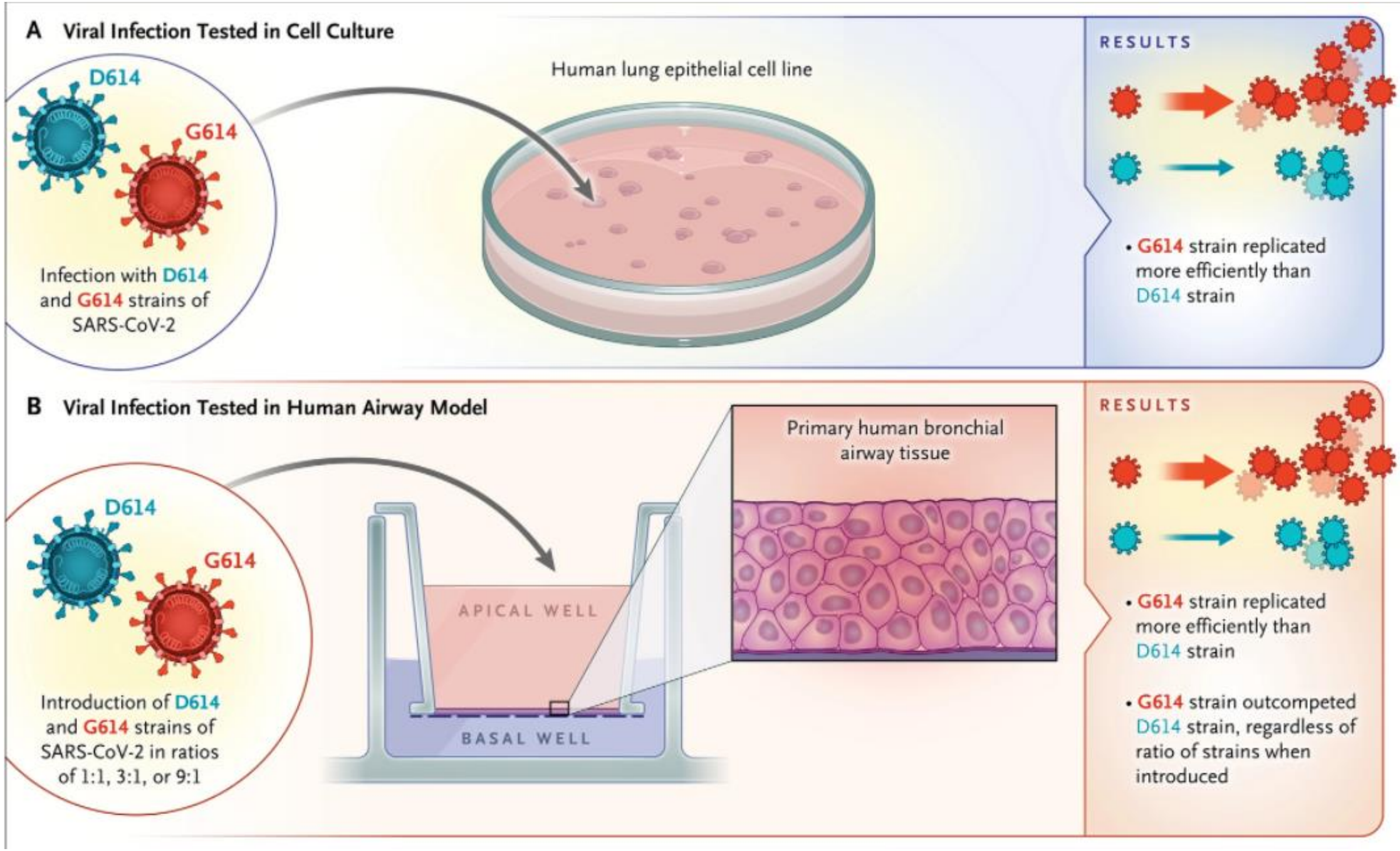
Emergence of a Highly Fit SARS-CoV-2 Variant

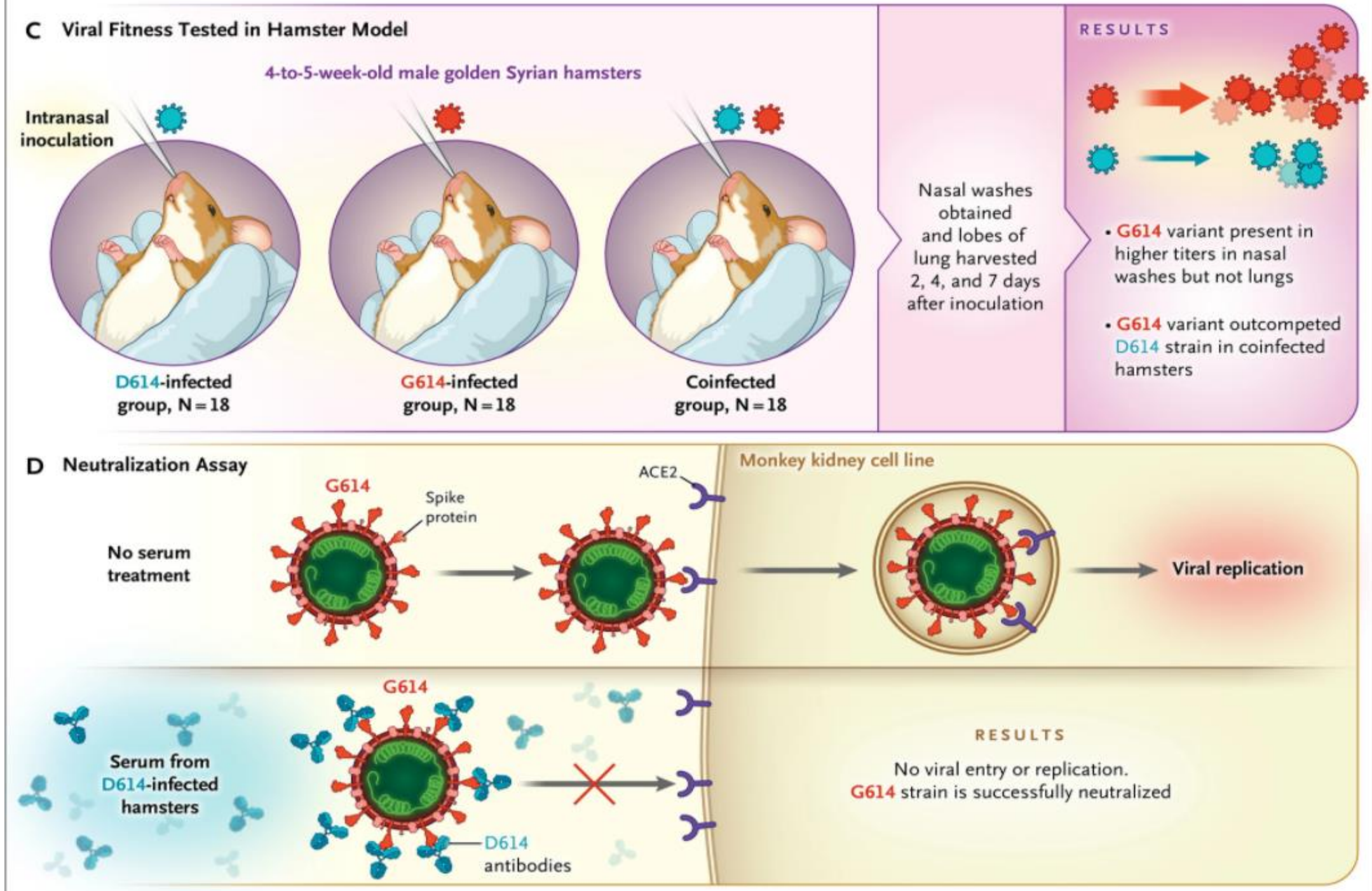
Ralph S. Baric, Ph.D.

December 16, 2020
DOI: 10.1056/NEJMcibr2032888

Sarbecoviruses have emerged twice in the 21st century, causing a worldwide epidemic and pandemic. The ongoing pandemic of coronavirus disease 2019 (Covid-19), the disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused unprecedented disruption of human society. Since its emergence in December 2019, SARS-CoV-2 has spread worldwide, infecting more than 70 million persons and causing more than 1.6 million deaths as of early December 2020. Previous studies have clearly shown that epidemic and pandemic RNA virus spread may

in the upper respiratory tract than patients infected with virus strains without the mutation, but disease severity is not affected. Pseudotyped viruses with the G614 form of the SARS-CoV-2 spike protein have been reported to exhibit increased infectivity in continuous cell lines and increased sensitivity to neutralization. In addition, structural analyses have revealed that the RBD of the G614 form of the spike protein is more likely to assume an "open" conformation than the RBD of the ancestral D614 form, implying an improved ability to bind to the hACE2


A Viral Infection Tested in Cell Culture
D614
G614
Infection with D614 and G614 strains of SARS-CoV-2
Human lung epithelial cell line
RESULTS
• G614 strain replicated more efficiently than D614 strain
B Viral Infection Tested in Human Airway Model
D614
G614
Introduction of D614 and G614 strains of SARS-CoV-2 in ratios of 1:1, 3:1, or 9:1
APICAL WELL
BASAL WELL
Primary human bronchial airway tissue
RESULTS
• G614 strain replicated more efficiently than D614 strain
• G614 strain outcompeted D614 strain, regardless of ratio of strains when introduced

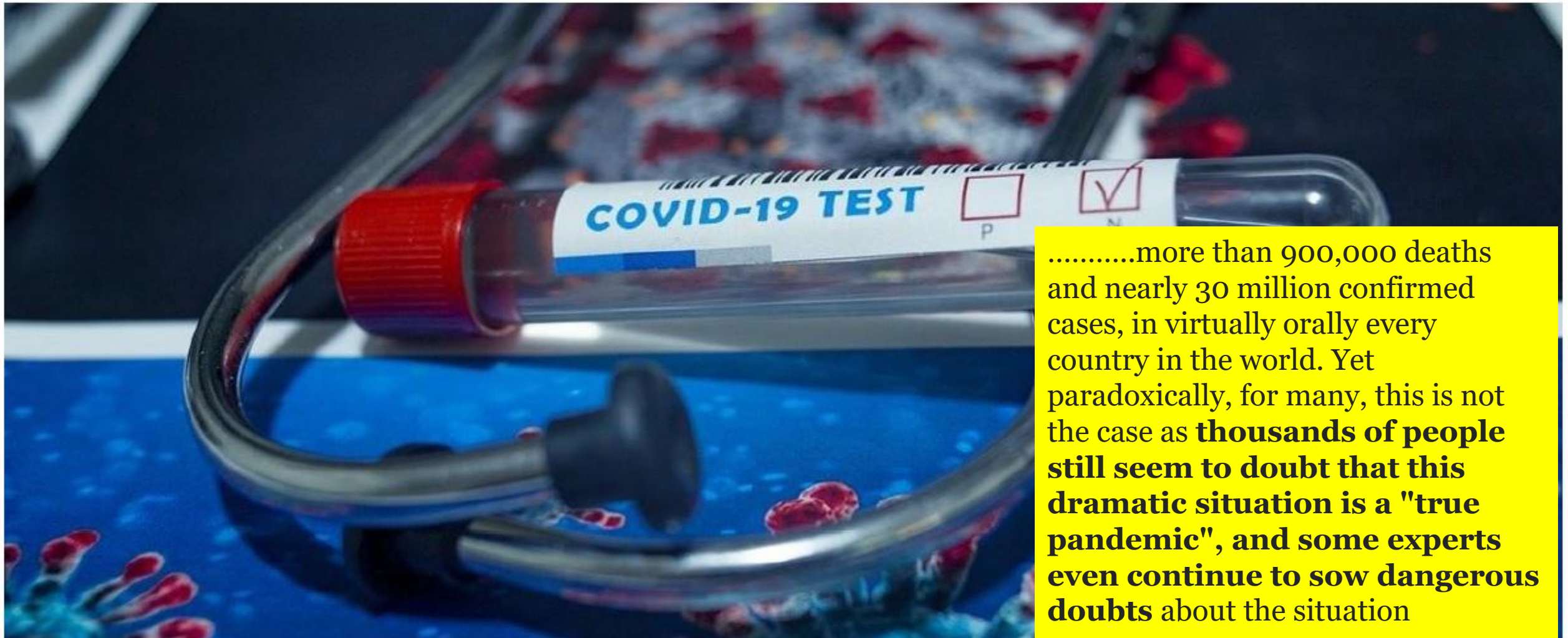

C Viral Fitness Tested in Hamster Model
4-to-5-week-old male golden Syrian hamsters
Intranasal inoculation
D614-infected group, N = 18
G614-infected group, N = 18
Coinfected group, N = 18
Nasal washes obtained and lobes of lung harvested 2, 4, and 7 days after inoculation
RESULTS
• G614 variant present in higher titers in nasal washes but not lungs
• G614 variant outcompeted D614 strain in coinfected hamsters
D Neutralization Assay
Monkey kidney cell line
G614
Spike protein
ACE2
No serum treatment
Viral replication
Serum from D614-infected hamsters
D614 antibodies
RESULTS
No viral entry or replication.
G614 strain is successfully neutralized

Scheduled on September 28, 2020 at 13:28 UTC

Pandemic yes, pandemic no?

This is the question

ERNESTO BURGIO



.....more than 900,000 deaths and nearly 30 million confirmed cases, in virtually orally every country in the world. Yet paradoxically, for many, this is not the case as **thousands of people still seem to doubt that this dramatic situation is a "true pandemic", and some experts even continue to sow dangerous doubts** about the situation

Average daily cases per 100,000 people in the past week

2 | 6 | 10 | 14 | Few or no cases

?!?

Canada
United States
Mexico
Dominican Rep.
Honduras
Costa Rica
Venezuela
Colombia
Ecuador
Peru
Brazil
Bolivia
Paraguay
Argentina
Chile

Sweden
Norway
Estonia
Denmark
Belarus
U.K.
Germany
Ukraine
France
Italy
Romania
Spain
Greece
Turkey
Azerbaijan
Uzbekistan
Cyprus
Tunisia
Morocco
Iraq
Iran
Afghanistan
Israel
Kuwait
Pakistan
Algeria
Libya
Egypt
Saudi Arabia
Oman
Mauritania
Niger
Chad
Sudan
Yemen
Senegal
Guinea
Nigeria
Ethiopia
Liberia
Ghana
Cameroon
Republic of Congo
Kenya
Tanzania
Comoros
Zambia
Zimbabwe
Madagascar
Namibia
South Africa

Russia
Kazakhstan
Mongolia
Japan
Mainland China
Nepal
India
Bangladesh
Hong Kong
Laos
Thailand
Philippines
Sri Lanka
Malaysia
Indonesia
Papua New Guinea
Australia
New Zealand

Where new cases are increasing

Total cases | Cases per capita

India
3,853,406
total cases
7-day
average
Jan. 22
Sept. 2

Spain
479,554

Argentina
439,172

U.K.
338,676

France
293,024

Turkey
273,301

Italy
271,515

Indonesia
180,646

Canada
129,923

Ukr
128

Israel
121,464

Egypt
99,280

Belarus
72,141

U.A.E.
71,540

Honduras
62,526

Portugal
58,633

Costa Rica
43,305

Switzerland
42,763

Nepal
41,649

Azerbaijan
36,732

Austria
27,969

Czech Republic
25,773

West Bank & Gaza
23,875

South Korea
20,644

Cameroon
19,460

Paraguay
19,138

Lebanon
18,375

Ivory Coast
18,161

Libya
15,156

Norway
11,034

Croatia
10,725

Hungary
6,622

Montenegro
5,019

Republic of Congo
4,628

Rwanda
4,218

Tunisia
4,196

Cape Verde
4,048

Slovakia
4,042

Uganda
3,112

Sri Lanka
3,101

Slovenia
2,979

Lithuania
2,958

Angola
2,777

Jamaica
2,683

Estonia
2,415

Bahamas
2,337

Jordan
2,161

Trinidad and Tobago
1,920

Georgia
1,548

Latvia
1,406

Science

Read our COVID-19 research and news.

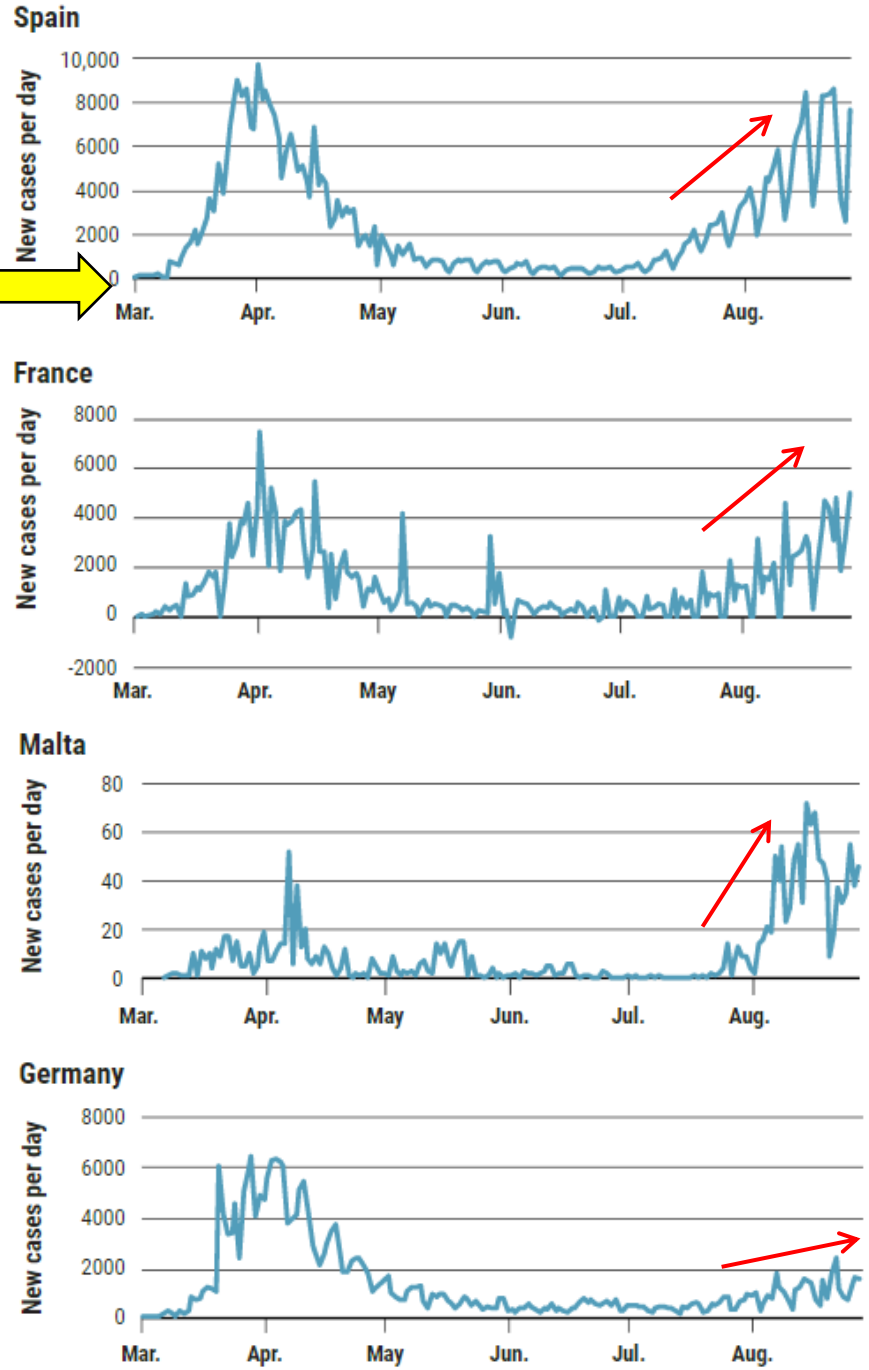
Can Europe tame the pandemic's next wave?

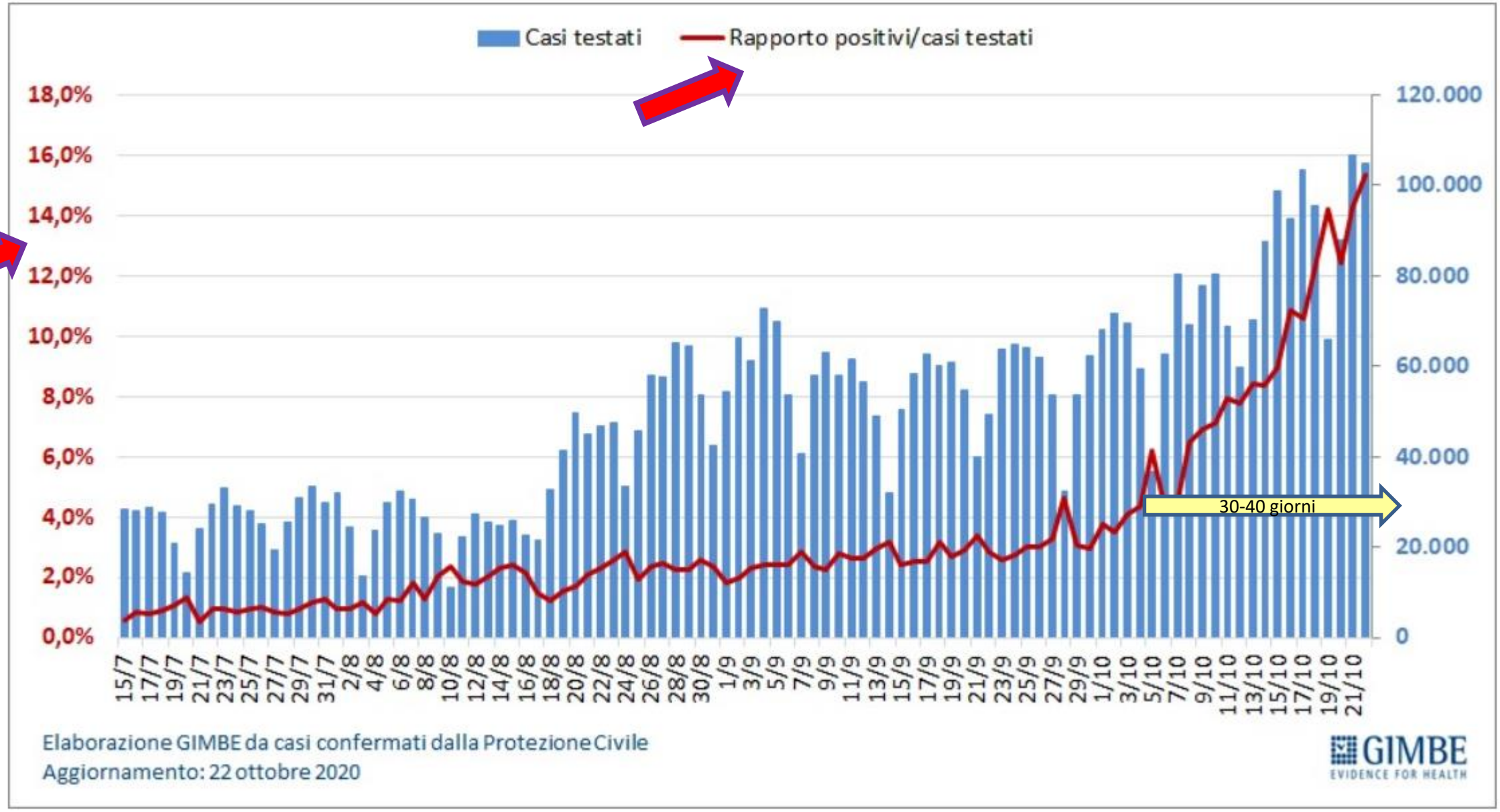
By **Kai Kupferschmidt** | Sep. 1, 2020 , 2:00 PM

2 MONTHS ?!

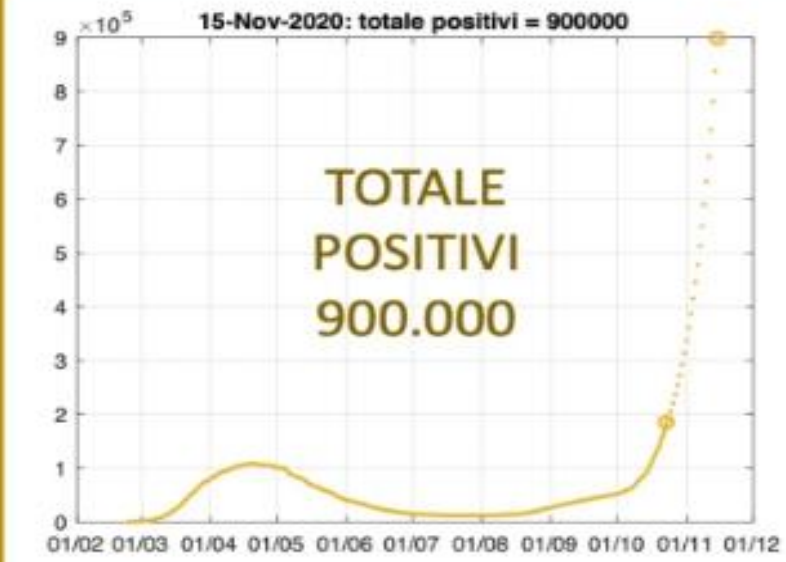
Il numero di casi in aumento oggi non è paragonabile al picco di aprile perché i paesi stanno testando molte più persone su base giornaliera. Ma l'aumento mostra che **l'Europa ha allentato troppo presto e troppo le misure…**Invece, l'Europa avrebbe potuto **tentare di emulare la Nuova Zelanda interrompendo completamente** e con zelo la trasmissione della comunità contro le reintroduzioni.. **In molti paesi la ripresa è guidata da «giovani che fanno festa» e fondamentalmente persone che vivono la loro vita in modo normale. Poiché i nuovi casi sono più giovani, meno di loro muoiono, ma è una questione di tempo prima che gli anziani siano colpiti..**

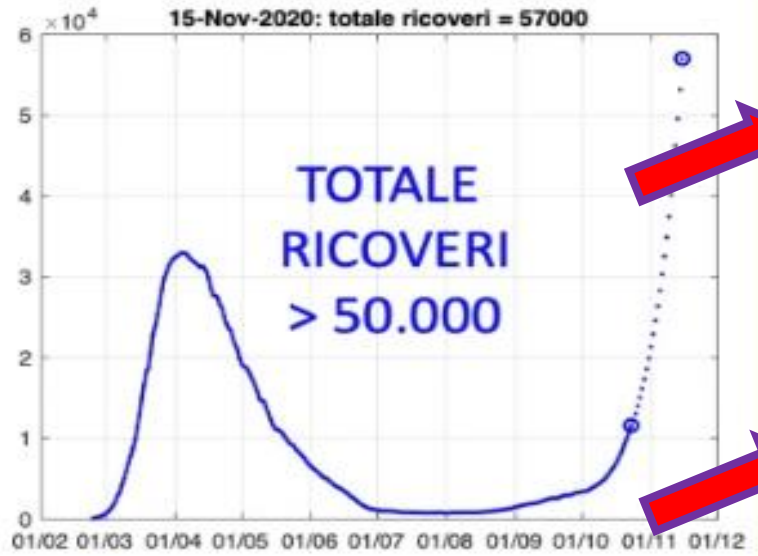
Ma questa volta i paesi sono meglio preparati…test diffusi ora rivelano i movimenti del virus. (**Meno del 3% dei test è positivo nella maggior parte dei paesi europei,** segno di una buona capacità di test.) Le **mascherine, non disponibili o addirittura sconsigliate all'inizio, sono diventate onnipresenti** nella maggior parte dei paesi.




Casi testati
Rapporto positivi/casi testati
18,0%
16,0%
14,0%
12,0%
10,0%
8,0%
6,0%
4,0%
2,0%
0,0%
120.000
100.000
80.000
60.000
40.000
20.000
0
30-40 giorni
15/7
17/7
19/7
21/7
23/7
25/7
27/7
29/7
31/7
2/8
4/8
6/8
8/8
10/8
12/8
14/8
16/8
18/8
20/8
22/8
24/8
26/8
28/8
30/8
1/9
3/9
5/9
7/9
9/9
11/9
13/9
15/9
17/9
19/9
21/9
23/9
25/9
27/9
29/9
1/10
3/10
5/10
7/10
9/10
11/10
13/10
15/10
17/10
19/10
21/10
Elaborazione GIMBE da casi confermati dalla Protezione Civile
Aggiornamento: 22 ottobre 2020
GIMBE
EVIDENCE FOR HEALTH

ITALIA: PREVISIONI COVID AL 15 NOVEMBRE



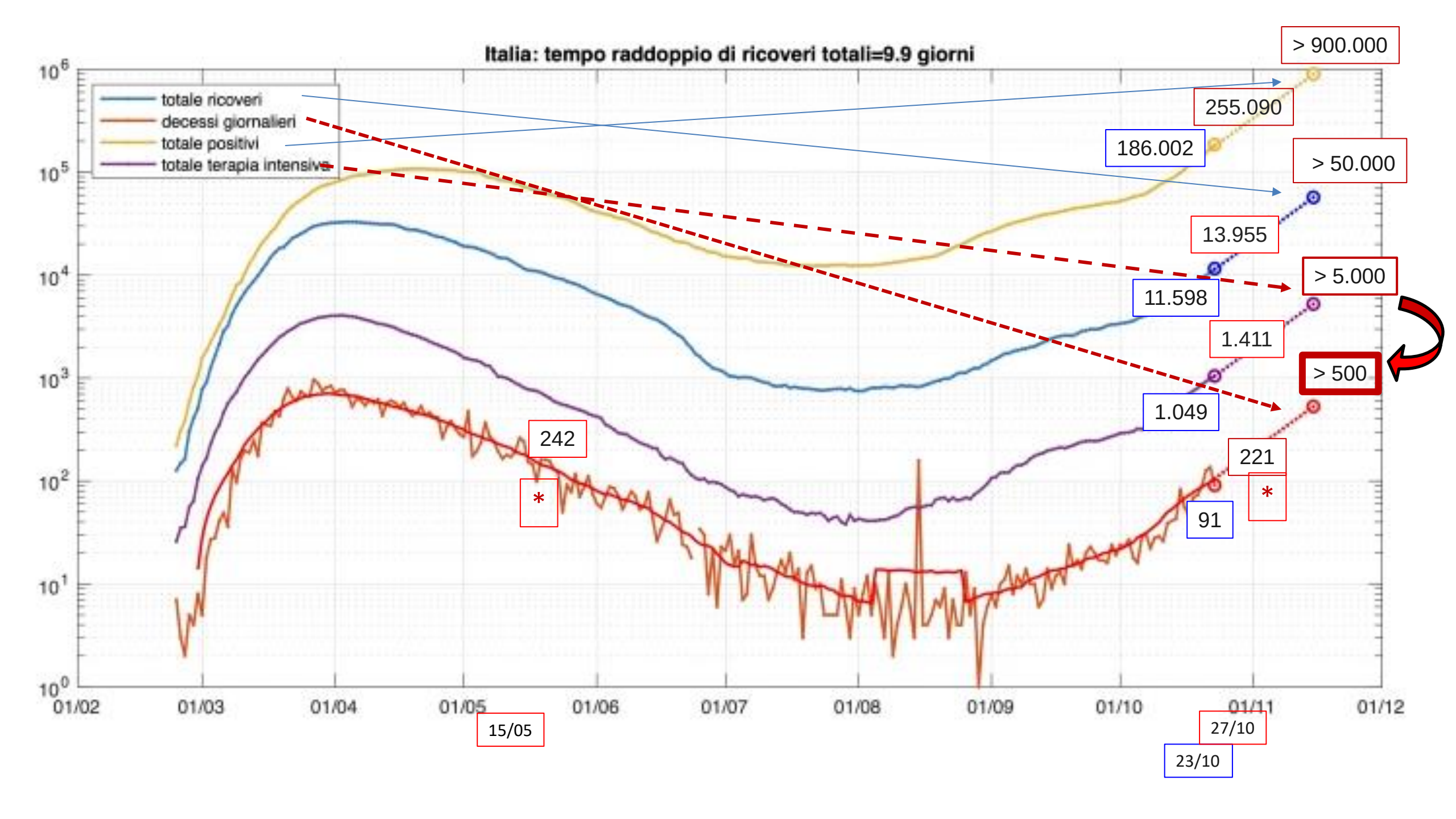


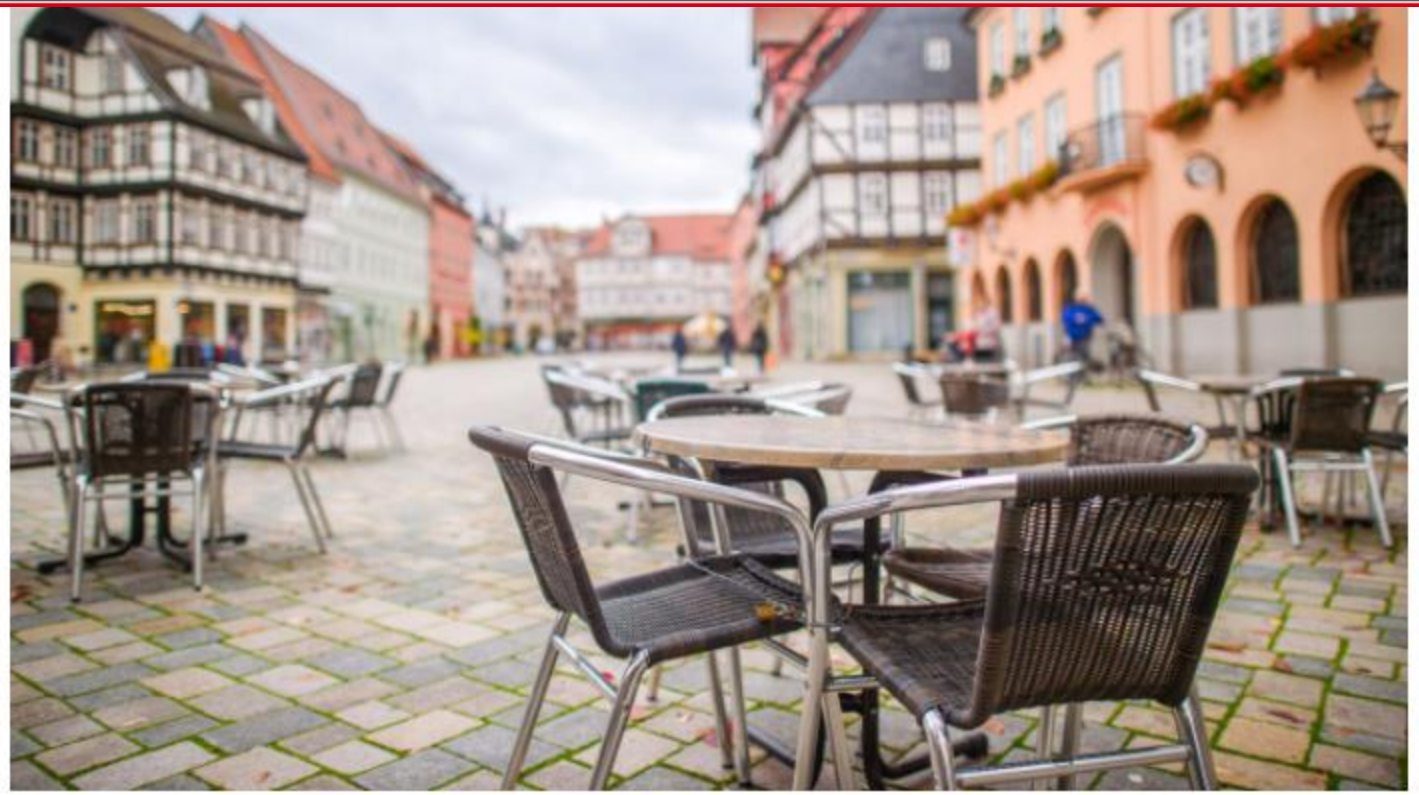
L'esame delle curve in scala logaritmica mostra che per periodi medio-brevi le quattro curve presentano profili circa paralleli.

Un'importante conseguenza è che **se crescono i positivi, crescono in modo proporzionale pure ricoverati e poi terapie intensive e decessi (con un tempo di latenza di 2→ 3 → 4 settimane).**

Quindi, la **crescita esponenziale dei contagiati, se non viene frenata, è comunque destinata a produrre una crescita esponenziale dei decessi**, oltre che **dei ricoverati e dei ricoverati in terapia intensiva, con conseguente collasso del sistema sanitario.**

https://statisticallearningtheory.wordpress.com/2020/10/24/previsioni-covid-19-di-ricoveri-terapie-intensive-e-decessi-23-ottobre-15-novembre-2020/


Italia: tempo raddoppio di ricoveri totali=9.9 giorni
totale ricoveri
decessi giornalieri
totale positivi
totale terapia intensive
> 900.000
255.090
186.002
> 50.000
13.955
11.598
> 5.000
1.411
1.049
> 500
242
*
221
*
91
15/05
27/10
23/10
01/02
01/03
01/04
01/05
01/06
01/07
01/08
01/09
01/10
01/11
01/12



Tables and chairs remained empty today at a coffee stand in Quedlinburg, in the state of Saxony-Anhalt. Germany implemented a new lockdown on 1 November at 11 p.m. KLAUS-DIETMAR GABBERT/PICTURE ALLIANCE/GETTY IMAGES

Europe is locking down a second time. But what is its long-term plan?

By Kai Kupferschmidt | Nov. 2, 2020 , 2:05 PM

Now, that wave is here, with the force of a tsunami. Europe has surpassed the United States in cases per capita; last week, it accounted for half of the more than 3 million cases reported to the World Health Organization (WHO). “Europe is at the epicenter of this pandemic once again,” WHO’s regional director for Europe, Hans Kluge, said on 29 October.

nature human behaviour

ARTICLES

https://doi.org/10.1038/s41562-020-01009-0

Haug, N., Geyrhofer, L., Londei, A. *et al.* ***Ranking the effectiveness of worldwide COVID-19 government interventions.*** *Nat Hum Behav* **4,** 1303–1312 (2020).

Ranking the effectiveness of worldwide COVID-19 government interventions

Nils Haug[1,2,7], Lukas Geyrhofer[2,7], Alessandro Londei[3], Elma Dervic[1,2], Amélie Desvars-Larrive[2,4], Vittorio Loreto[2,3,5], Beate Pinior[2,4], Stefan Thurner[1,2,6] and Peter Klimek[1,2] ✉

Assessing the effectiveness of non-pharmaceutical interventions (NPIs) to mitigate the spread of SARS-CoV-2 is critical to inform future preparedness response plans. Here we quantify the impact of 6,068 hierarchically coded NPIs implemented in 79 territories on the effective reproduction number, R_t, of COVID-19. We propose a modelling approach that combines four computational techniques merging statistical, inference and artificial intelligence tools. We validate our findings with two external datasets recording 42,151 additional NPIs from 226 countries. Our results indicate that a suitable combination of NPIs is necessary to curb the spread of the virus. Less disruptive and costly NPIs can be as effective as more intrusive, drastic, ones (for example, a national lockdown). Using country-specific 'what-if' scenarios, we assess how the effectiveness of NPIs depends on the local context such as timing of their adoption, opening the way for forecasting the effectiveness of future interventions.

Il 16 novembre è stato pubblicato su *Nature Human Behaviour* un ampio **studio incrociato sull'efficacia relativa delle differenti misure restrittive introdotte in 79 diversi territori, realizzato con quattro differenti approcci statistici e ulteriormente validato con i dati di oltre 200 paesi.** I risultati sono chiari: **le misure più efficaci sono il divieto di riunirsi in piccoli gruppi e la chiusura delle scuole**. Non solo: **le restrizioni all'uso dei trasporti pubblici sono valutate separatamente e sono in penultima posizione**. D'altra parte, i risultati sono coerenti con la logica: **i trasporti pubblici sono spazi chiusi tanto quanto le aule, ma mediamente ci si permane per molto meno tempo.**

Table 1 | Comparison of effectiveness rankings on L2

L2 category	Score (%)	Consensus	ΔR_t^{CC}	ΔR_t^{LASSO}	Importance (RF)	ΔR_t^{TF}
Small gathering cancellation	83	4	-0.35 (2)	-0.22 (5)	0.020 (2)	-0.327 (3)
Closure of educational institutions	73	4	-0.16 (2)	-0.21 (4)	0.028 (2)	-0.146 (2)
Border restriction	56	4	-0.23 (2)	-0.12 (2)	0.017 (2)	-0.057 (2)
Increased availability of PPE	51	4	-0.11 (2)	-0.13 (2)	0.012 (1)	-0.062 (2)
Individual movement restrictions	42	4	-0.13 (2)	-0.08 (3)	0.017 (2)	-0.121 (2)
National lockdown	25	4	-0.14 (3)	-0.09 (2)	0.0020 (9)	-0.008 (3)
Mass gathering cancellation	53	3	-0.33 (2)	0	0.012 (1)	-0.127 (2)
Educate and actively communicate with the public	48	3	-0.18 (4)	0	0.018 (2)	-0.276 (2)
The government provides assistance to vulnerable populations	41	3	-0.17 (3)	-0.18 (4)	0.009 (1)	0.090 (3)
Actively communicate with managers	40	3	-0.15 (2)	-0.20 (4)	0.004 (2)	-0.050 (2)
Measures for special populations	37	3	-0.19 (2)	0	0.008 (1)	-0.100 (2)
Increase healthcare workforce	35	3	-0.17 (20)	-0.13 (3)	0.030 (8)	0.011 (2)
Quarantine	30	3	-0.28 (2)	-0.2 (1)	0.0023 (9)	0.023 (2)
Activate or establish emergency response	29	3	-0.13 (2)	0	0.0037 (9)	-0.121 (2)
Enhance detection system	25	3	-0.19 (3)	0	0.0032 (9)	-0.106 (2)
Increase in medical supplies and equipment	25	3	-0.13 (3)	-0.004 (3)	0.003 (2)	-0.200 (3)
Police and army interventions	23	3	-0.16 (2)	0	0.003 (2)	-0.091 (2)
Travel alert and warning	20	3	-0.13 (3)	0.0 (1)	0.002 (1)	-0.159 (3)
Public transport restriction	13	3	00.20 (4)	-0.01 (7)	0.004 (1)	-0.023 (3)
Actively communicate with healthcare professionals	11	3	0	-0.08 (4)	0.003 (1)	-0.003 (2)

Out of the 46 NPI categories, all four methods show significant results for six NPIs (consensus 4) while three methods agree on 14 further NPIs (consensus 3). We report the average normalized score, the observed reduction in R_t for the various methods and NPI importance for RF. Numbers in parentheses denote half of the amount by which the last digit of the corresponding number outside the parentheses fluctuates within the 95% confidence interval.

divieto di riunirsi in gruppi

chiusura delle scuole

restrizioni frontaliere

maggiore disponibilità di DPI

lockdown nazionali

annullamento raduni di massa

COVID-19 CORONAVIRUS PANDEMIC

Last updated: December 10, 2020, 21:03 GMT

Coronavirus Cases:

70,583,973

view by country

Deaths: (3%)

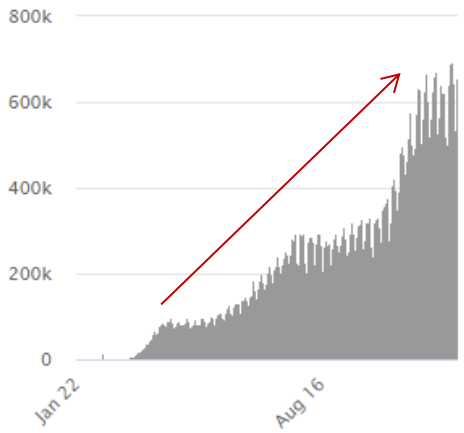
1,585,861

Recovered:

49,030,487

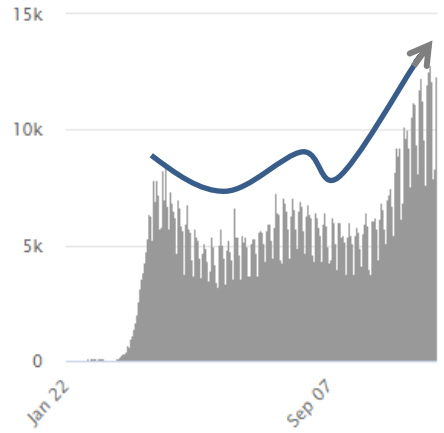
Daily New Cases

Cases per Day
Data as of 0:00 GMT+0



Daily Deaths

Deaths per Day
Data as of 0:00 GMT+0



#	Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical	Tot Cases/ 1M pop	Deaths/ 1M pop	Total Tests	Tests/ 1M pop	Population
	World	70,583,973	+563,059	1,585,861	+10,926	49,030,487	19,967,625	106,669	9,055	203.5			
1	USA	15,958,653	+137,039	298,716	+1,996	9,289,687	6,370,250	27,220	48,089	900	214,227,911	645,537	331,859,797
2	India	9,795,598	+33,272	142,214	+479	9,288,853	364,531	8,944	7,068	103	150,759,726	108,775	1,385,975,035
3	Brazil	6,781,799	+51,681	179,765	+733	5,901,511	700,523	8,318	31,806	843	25,700,000	120,529	213,225,942
4	Russia	2,569,126	+27,927	45,280	+562	2,033,669	490,177	2,300	17,601	310	81,021,364	555,084	145,962,223
5	France	2,337,966	+13,750	56,940	+292	174,658	2,106,368	2,959	35,783	871	28,282,874	432,874	65,337,492
6	UK	1,787,783	+20,964	63,082	+516	N/A	N/A	1,243	26,274	927	46,730,999	686,781	68,043,572
7	Italy	1,787,147	+16,999	62,626	+887	1,027,994	696,527	3,291	29,578	1,036	23,676,174	391,845	60,422,323
8	Turkey	1,748,567	+30,424	15,751	+220	1,154,333	578,483	5,943	20,635	186	20,500,579	241,929	84,738,106
9	Spain	1,734,386	+4,595	47,344	+325	N/A	N/A	2,158	37,089	1,012	24,101,272	515,394	46,762,812
10	Argentina	1,475,222		40,222		1,311,488	123,512	3,688	32,509	886	4,145,226	91,348	45,378,388
11	Colombia	1,392,133		38,308		1,287,597	66,228	2,376	27,232	749	6,855,035	134,093	51,121,380
12	Germany	1,270,335	+28,082	21,231	+527	922,100	327,004	4,339	15,141	253	30,494,036	363,446	83,902,518
13	Mexico	1,205,229	+11,974	111,655	+781	889,168	204,406	3,515	9,305	862	3,086,510	23,829	129,528,514
14	Poland	1,102,096	+13,749	21,630	+470	792,119	288,347	1,775	29,134	572	6,586,361	174,112	37,828,199
15	Iran	1,083,023	+10,403	51,496	+284	778,167	253,360	5,768	12,822	610	6,568,472	77,766	84,464,781
16	Peru	977,312		36,455		912,501	28,356	1,016	29,461	1,099	5,204,299	156,883	33,173,225
17	Ukraine	858,714	+13,371	14,470	+266	465,021	379,223	177	19,688	332	4,838,979	110,944	43,616,596
20	Belgium	597,643	+3,071	17,603	+96	40,541	539,499	662	51,468	1,516	6,191,181	533,174	11,611,926
21	Netherlands	585,685	+8,720	9,902	+61	N/A	N/A	491	34,147	577	5,077,285	296,023	17,151,667
78	China	86,673	+12	4,634		81,754	285	5	60	3	160,000,000	111,163	1,439,323,776
91	S. Korea	40,098	+682	564	+8	30,637	8,897	172	782	11	3,277,947	63,912	51,288,752
125	Cuba	9,181	+75	136		8,212	833	11	811	12	1,218,718	107,627	11,323,546
151	Thailand	4,169	+18	60		3,888	221	1	60	0.9	977,854	13,994	69,877,544
169	Vietnam	1,385	+4	35		1,225	125		14	0.4	1,339,465	13,707	97,724,280
189	Cambodia	356	+2			307	49		21		242,754	14,432	16,820,418
	Total:	70,583,973	+563,059	1,585,861	+10,926	49,030,487	19,967,625	106,669	9,055.3	203.5			

COVID-19 CORONAVIRUS PANDEMIC

Last updated: February 24, 2021, 15:57 GMT

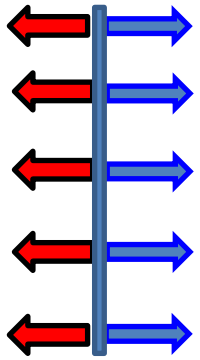
Coronavirus Cases:

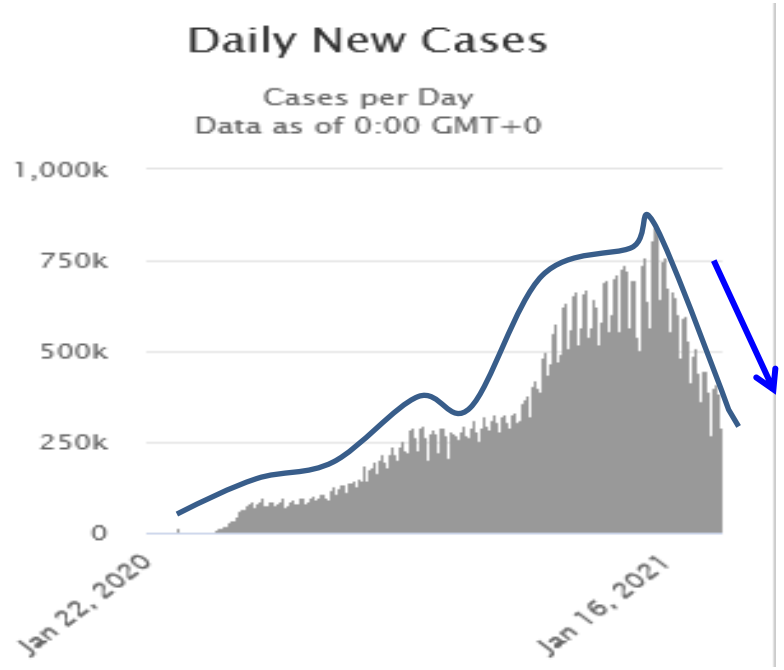
112,801,712

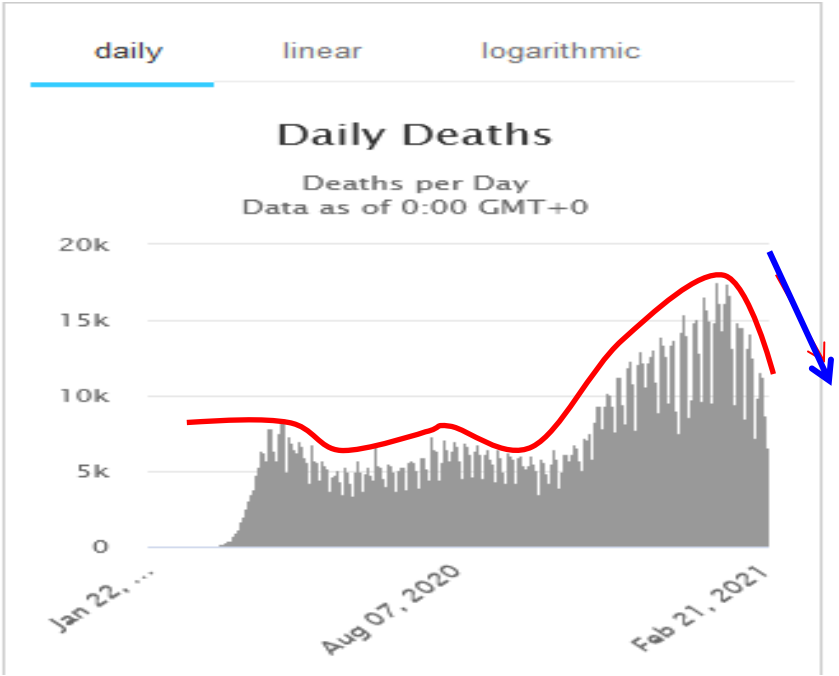
Deaths:

2,499,618

Belgium	21,956	1,889
Czechia	19,682	1,836
UK	121,305	1,781
Italy	96,348	1,595
USA	515,333	1,551







At this point **it is useful to recall a truly enlightening** article by ***Richard Horton*** (1)

Richard Horton
richard.horton@lancet.com

www.thelancet.com Vol 396 September 26, 2020

Offline: COVID-19 is not a pandemic (2)


Peter Schickert/Getty Images

As the world approaches 1 million deaths from COVID-19, we must confront the fact that we are taking a far too narrow approach to managing this outbreak of a new coronavirus. We have viewed the cause of this crisis as an infectious disease. All of our interventions have focused on cutting lines of viral transmission, thereby controlling the spread of the pathogen. The "science" that has guided governments has been driven mostly by epidemic modellers and infectious disease specialists, who understandably frame the present health emergency in centuries-old terms of plague. But what we have learned so far tells us that the story of COVID-19 is not so simple. Two categories of disease are interacting within specific populations—infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and an array of non-communicable diseases (NCDs). These conditions are clustering within social groups according to patterns of inequality deeply embedded in our societies. The aggregation of these diseases on a background of social and economic disparity exacerbates the adverse effects of each separate disease. COVID-19 is not a pandemic. It is a syndemic. The syndemic nature of the threat we face means that a more nuanced approach is needed if we are to protect the health of our communities.


Alison Michael Cranston/Getty Images

*

The notion of a syndemic was first conceived by Merrill Singer, an American medical anthropologist, in the 1990s. Writing in *The Lancet* in 2017, together

Addressing COVID-19 means addressing hypertension, obesity, diabetes, cardiovascular and chronic respiratory diseases, and cancer. Paying greater attention to NCDs is not an agenda only for richer nations. NCDs are a neglected cause of ill-health in poorer countries too. In their *Lancet* Commission, published last week, Gene Bukhman and Ana Mocumbi described an entity they called NCDI Poverty, adding injuries to a range of NCDs—conditions such as snake bites, epilepsy, renal disease, and sickle cell disease. For the poorest billion people in the world today, NCDIs make up over a third of their burden of disease. The Commission described how the availability of affordable, cost-effective interventions over the next decade could avert almost 5 million deaths among the world's poorest people. And that is without considering the reduced risks of dying from COVID-19.

*

The most important consequence of seeing COVID-19 as a syndemic is to underline its social origins. The vulnerability of older citizens; Black, Asian, and minority ethnic communities; and key workers who are commonly poorly paid with fewer welfare protections points to a truth so far barely acknowledged—namely, that no matter how effective a treatment or protective a vaccine, the pursuit of a purely biomedical solution to COVID-19 will fail. Unless governments devise policies and programmes to reverse profound disparities, our societies will never be truly COVID-19 secure. As Singer and colleagues wrote

(3)

(4)

A ***SYNDEMIC*** OR ***SYNERGISTIC EPIDEMIC*** is the aggregation of two or more ***CONCURRENT OR SEQUENTIAL EPIDEMICS OR DISEASE CLUSTERS*** in a population with **BIOLOGICAL INTERACTIONS, WHICH EXACERBATE the prognosis and the burden of disease**.

(5)

2 MAIN QUESTIONS :

→ Why are elderly and obese people the great part of victims ?

→ Why higher lethality rates in polluted areas?

- the Chagas disease, rheumatic heart disease and congestive heart failure
- the possible asthma and infectious disease syndemic,[14]
- the malnutrition and depression syndemic,[citation needed]
- the TB, HIV and violence syndemic,[15]
- the whooping cough, influenza, tuberculosis syndemic,[citation needed]
- the HIV and STD syndemic,[citation needed]
- the stress and obesity syndemic,[16][17][18]
- the HIV infection, mental health and substance abuse syndemic.[19]
- the built environment, physical inactivity and obesity/diabetes syndemic, w

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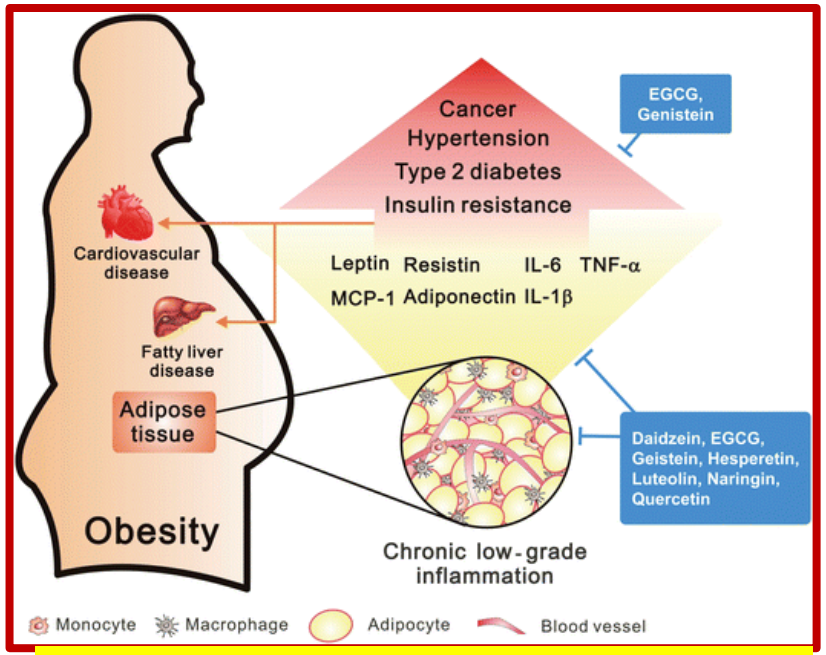
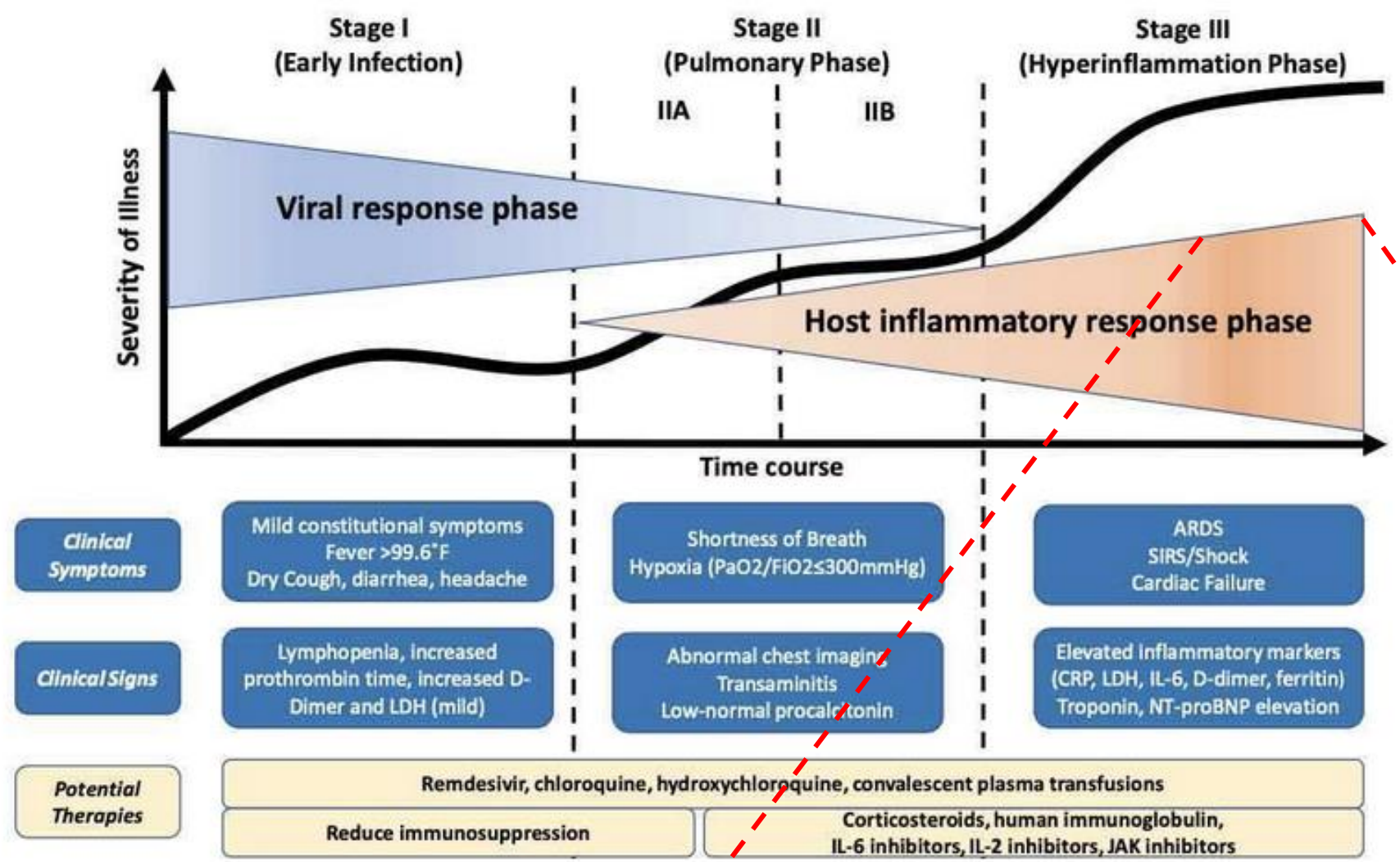
There is no doubt that the **current pandemic** has become the **disaster** we know because and **to the extent that it has acted ON DEBILITATED ORGANISMS**... However, it must be emphasized that it is **NOT TRUE THAT COVID ONLY KILLS THE ELDERLY AND THE POOR....THIS WAS A SIMPLIFICATION...**

SARS-COV-2 ACTUALLY KILLS INDIVIDUALS WITH *ENDOTHELIAL DYSFUNCTION*, that is, people with CHRONICALLY INFLAMED ARTERIES. These are predominantly people who are *obese*, who have *diabetes 2* or are suffering from *systemic atherosclerosis (which, as we know, is an inflammatory disease)* and therefore from *hypertension* and *cardiovascular diseases*.



Journal of Clinical Investigation, 2015; DOI: 10.1172/JCI78941

Certainly, most of them are **elderly**, **but many elderly people have non-severe forms** and **some young people and even some children may**, although **rarely, experience severe or critical forms**.



It is ALMOST ONLY IN THESE PEOPLE THAT SERIOUS / CRITICAL FORMS OCCUR DUE TO A SYSTEMIC IMMUNE-INFLAMMATORY REACTION

In terms of **pathogenic mechanisms**, this means (in a nutshell) that **in most cases there is an inflammation of the airways with symptoms and signs of moderate systemic involvement (asthenia, fever...)**

While in **5-10% of cases** there is **a systemic immuno-inflammation, macrophage activation, cytokine storm, systemic / multifocal endotheliitis, pulmonary and systemic thromboembolism, disseminated intravascular coagulation** (as in similar systemic reactions **provoked by other "new viruses"**: **H1N1/1919; H5N1/2004; SARS-CoV1...Marburg/Ebola/Nipah/Hendra viruses**)

THE LANCET

CORRESPONDENCE | VOLUME 395, ISSUE 10234, P1417-1418, MAY 02, 2020

Endothelial cell infection and endotheliitis in COVID-19

Zsuzsanna Varga • Andreas J Flammer • Peter Steiger • Martina Haberecker • Rea Andermatt • Ann[illegible]ies S Zinkernagel • et al. Show all authors

Published: April 20, 2020 • DOI: https://doi.org/10.1016/S0140-6736(20)30937-5

SARS-COV-2 HOOKS THE ACE-2 RECEPTORS that are located **not only in the upper airways and lungs,** but also **IN THE ARTERIES AND ARTERIOLES OF ALL ORGANS AND TISSUES** and,

IF IT FINDS THEM ALREADY INFLAMED, IT LITERALLY **TRIGGERS POTENTIALLY LETHAL SYSTEMIC IMMUNE-INFLAMMATORY REACTIONS**

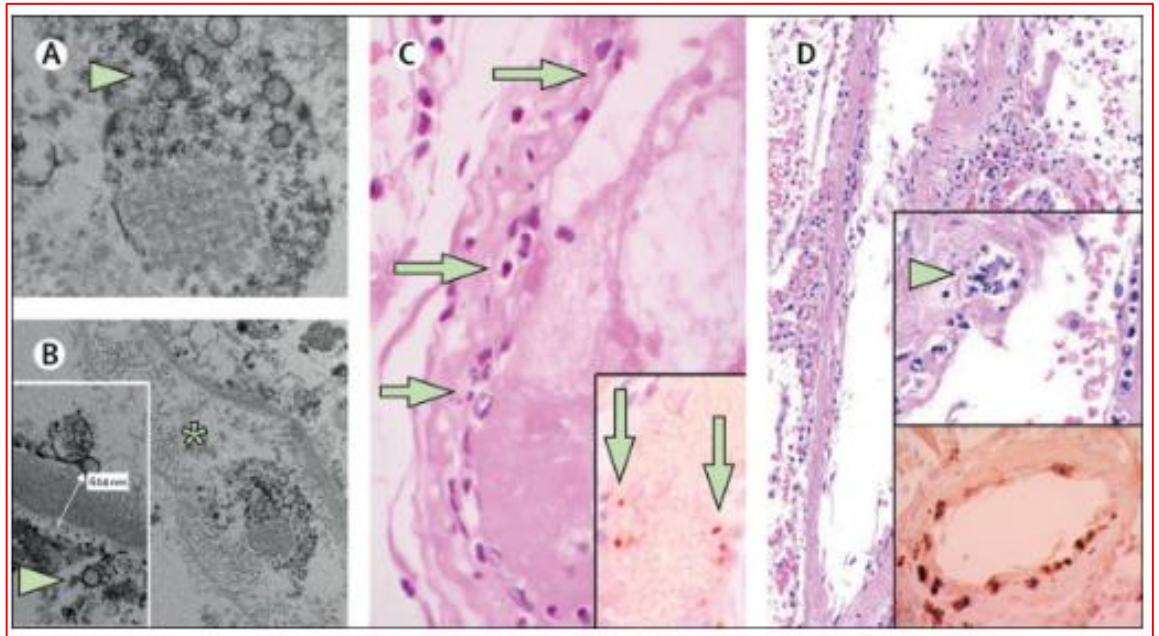
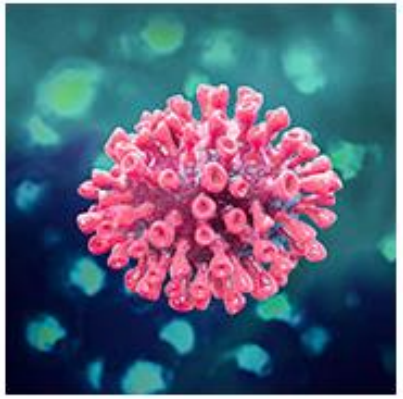


Figure Pathology of endothelial cell dysfunction in COVID-19

Post-mortem analysis of the transplanted kidney by **electron microscopy revealed viral inclusion structures in endothelial cells** (A, B) In histological analyses, we found an **accumulation of inflammatory cells associated with endothelium, as well as apoptotic bodies, in the heart, the small bowel** (figure C) and **lung** (figure D).
An **accumulation of mononuclear cells was found in the lung, and most small lung vessels appeared congested..**

COVID-19 Resource Centre



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Journal of *Clinical Medicine*

MDPI

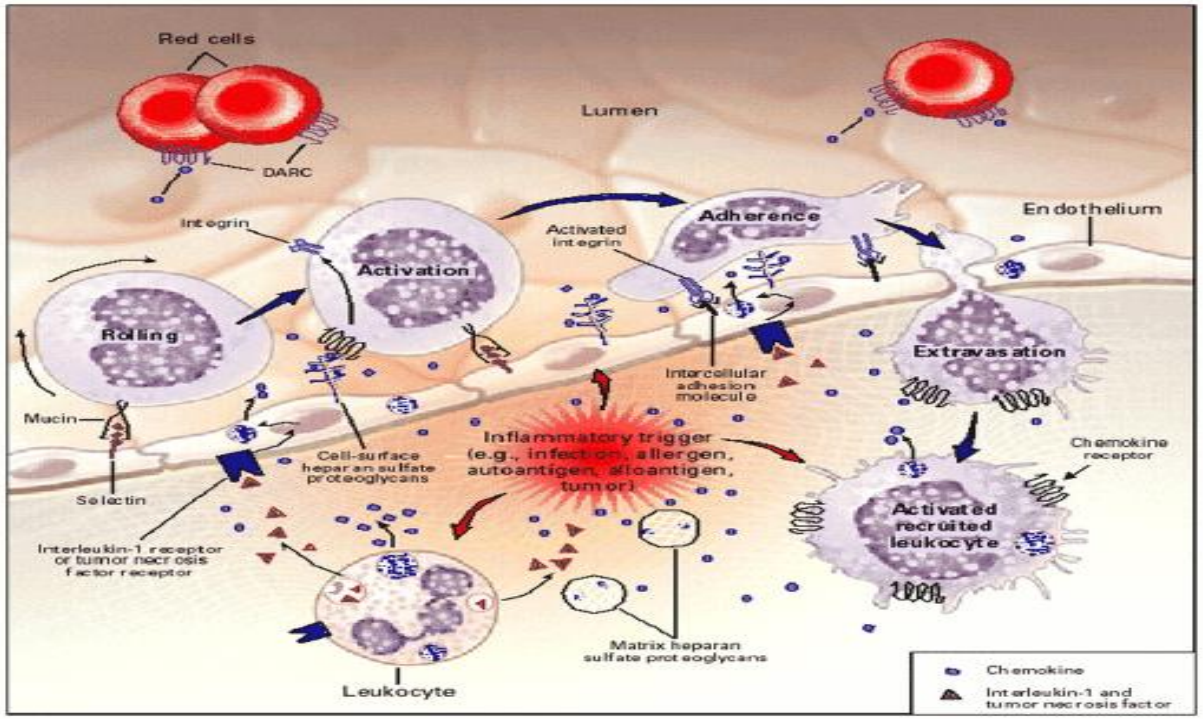
Editorial

Endotheliitis and Endothelial Dysfunction in Patients with COVID-19: Its Role in Thrombosis and Adverse Outcomes †

Wassim Mosleh [1], Kai Chen [1], Steven E. Pfau [2,3] and Aseem Vashist [1,2,4,*]

1 Division of Cardiovascular Medicine, University of Connecticut, Farmington, CT 06105, USA; mosleh@uchc.edu (W.M.); kachen@uchc.edu (K.C.)
2 Division of Cardiovascular Medicine, VACT Healthcare System, West Haven, CT 06111, USA; steven.pfau@yale.edu
3 Division of Cardiovascular Medicine, Yale School of Medicine, New Haven, CT 06510, USA
4 Division of Cardiovascular Medicine, Saint Francis Hospital, Hartford, CT 06205, USA
* Correspondence: vashist@uchc.edu
† Brief Title: COVID-19, Endotheliitis and Endothelial Dysfunction.

Received: 4 June 2020;



DISFUNZIONE ENDOTELIALE/ENDOTELITE

Poiché **l'endotelio vascolare è un organo endocrino, paracrino e autocrino dinamico che esercita un ruolo fondamentale nella regolazione del tono vascolare e dell'omeostasi,**

la sua **disfunzione** porta a cambiamenti dannosi dell'equilibrio vascolare verso

la VASOCOSTRIZIONE (CHE SI MANIFESTA CLINICAMENTE COME ISCHEMIA, INFARTO E SHUNT)

INFIAMMAZIONE (ATTIVAZIONE MACROFAGICA/MAS; TEMPESTA DI CITOCHINE..)

e uno **STATO PRO-COAGULANTE CON CONSEGUENTI TROMBOSI E CID**

..ANOTHER IMPORTANT **KEY POINT:**

Some studies have shown a **CLEAR LINK BETWEEN AIR POLLUTION RATES** (ESPECIALLY FROM **ULTRAFINE AND FINE PM 0.1-2.5 PARTICULATE MATTER**) AND **COVID LETHALITY RATES** in the population …

International Journal of *Environmental Research and Public Health*

Article

Associations between COVID-19 Incidence Rates and the Exposure to PM2.5 and NO_2: A Nationwide Observational Study in Italy

Fabiana Fiasca [1], Mauro Minelli [2,3], Dominga Maio [2], Martina Minelli [2], Ilaria Vergallo [2], Stefano Necozione [1] and Antonella Mattei [1,*]

1 Department of Life, Health & Environmental Sciences, University of L'Aquila, 67100 L'Aquila, Italy; fabiana.fiasca@alice.it (F.F.); stefano.necozione@univaq.it (S.N.)
2 Specialistic Allergic Unit & Immunological Pathologies, PoliSmail Network, 73100 Lecce, Italy; mauro.minelli@unipegaso.it (M.M.); dmaio@polismail.it (D.M.); martinaminelli@polismail.it (M.M.); ilaria.vergallo@gmail.com (I.V.)
3 Centro Direzionale Isola F2, Pegaso Online University, 80132 Naples, Italy

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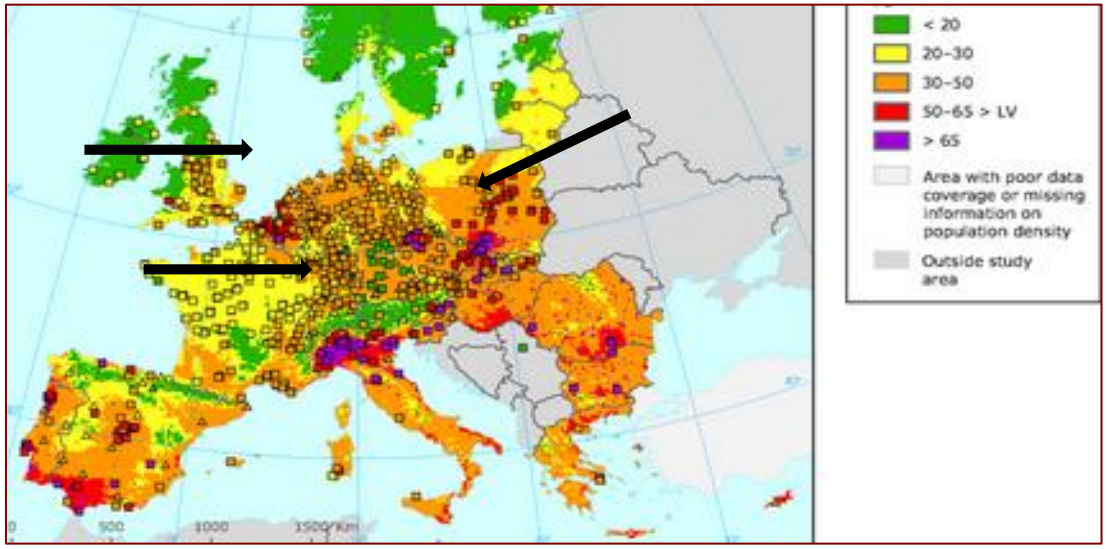


The COVID-19 outbreak disproportionately affected the elderly and areas with higher population density. Among the multiple factors possibly involved, **a role for air pollution has also been hypothesized**. This nationwide observational study demonstrated **the significant positive relationship between COVID-19 incidence rates and PM2.5 and NO_2 levels**, both considering the period 2016–2020 and the months of the epidemic…

An increase in PM2.5 and NO_2 concentrations by one unit (1 μg/m^3) corresponded to an increase in incidence rates of 1.56 and 1.24 × 10^4 people, respectively, taking into account the average levels of air pollutants in the period 2016–2020, a**nd 2.79 and 1.24 × 10^4 people during March–May 2020.** Considering the entire epidemic period (March–October 2020), these increases were 1.05 and 1.01 × 10^4 people, respectively, **and could explain 59% of the variance in COVID-19 incidence rates (R^2 = 0.59).**

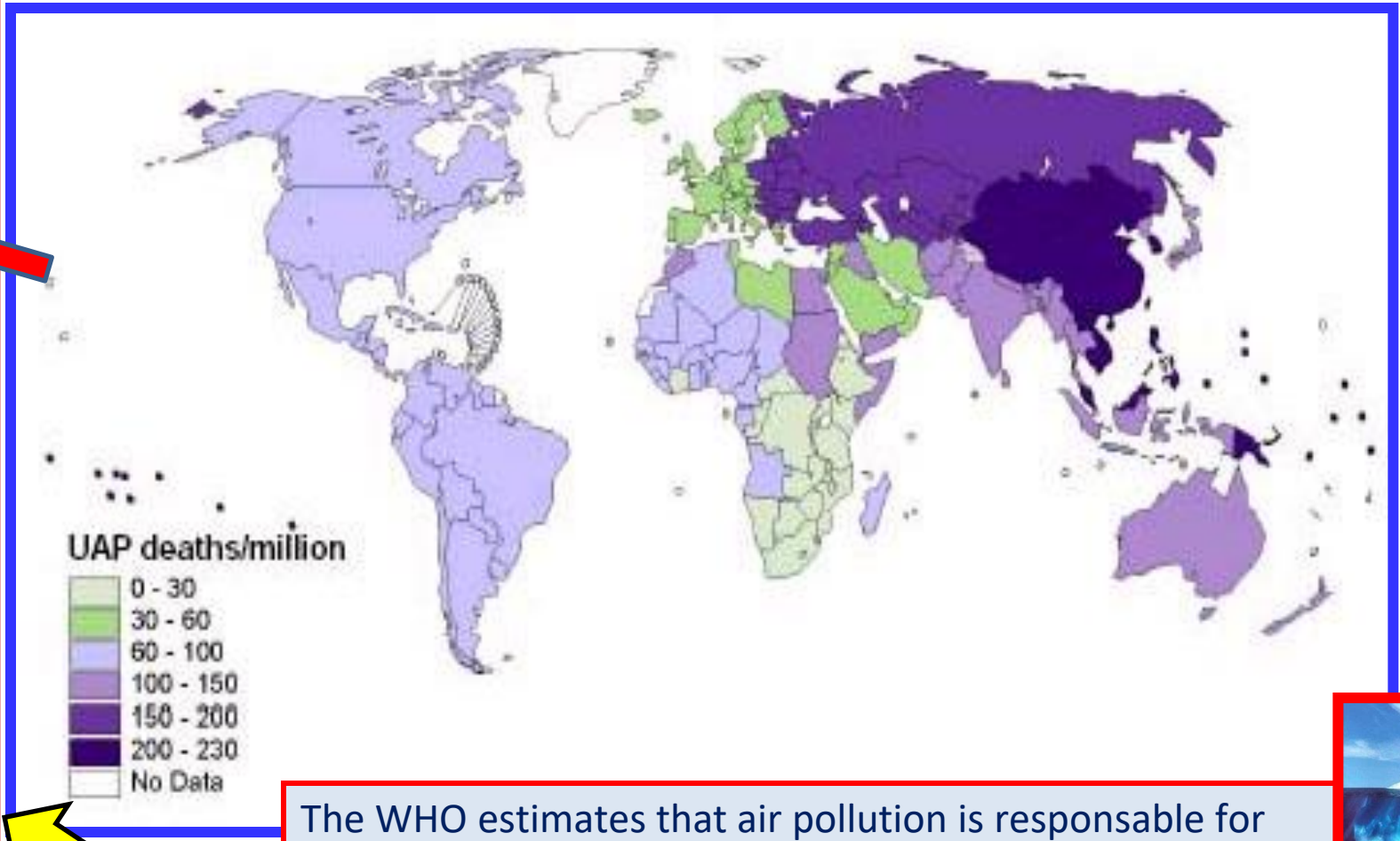
https://www.mdpi.com/1660-4601/17/24/9318/htm

Deaths from urban air pollution in 2000, as estimated by the WHO

World Health Report, 2002

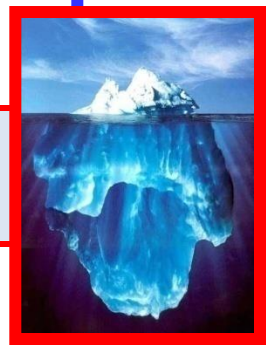
This is **NO SURPRISE!**

For at least **20 years now,** the **WHO has stated that 3 - 7 - 10 million avoidable deaths every year ** (far more than because of the pandemic itself) ARE DUE TO AIR POLLUTION** AND ABOVE ALL TO **PARTICULATE MATTER**. **This means that SARS-COV2 AND PARTICULATE MATTER ACT AS TRIGGERS (SYNERGISTICALLY) ON THE ENDOTHELIUM** (ESPECIALLY IF IT IS **ALREADY INFLAMED** !!)

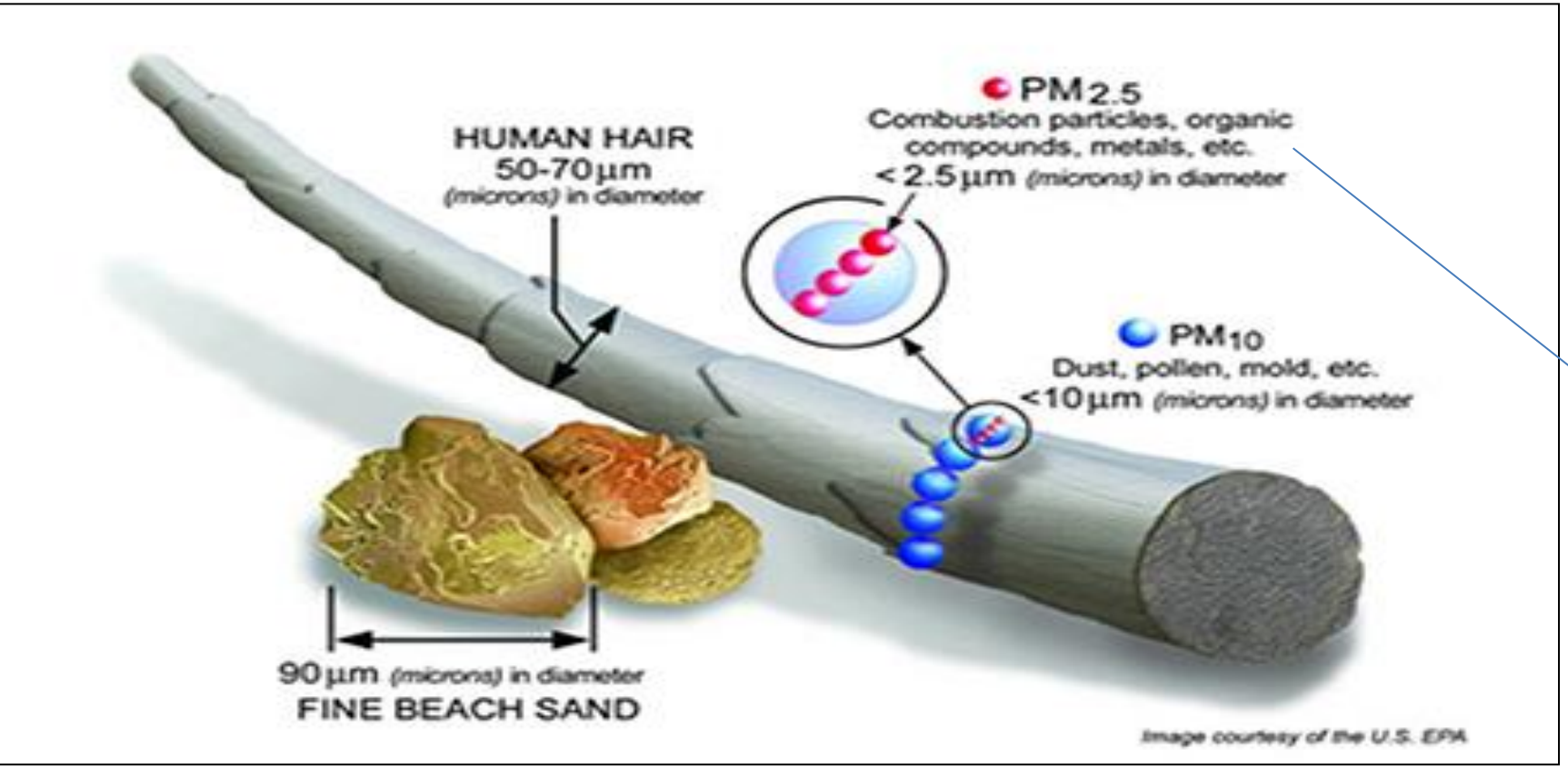


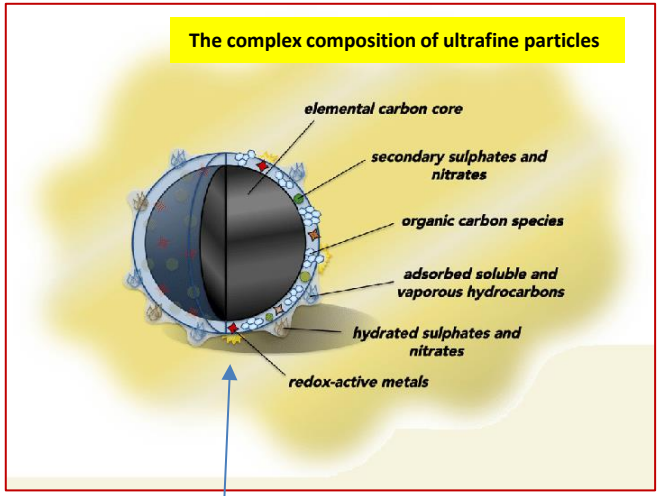
(** here **only the deaths, directly related to pollution** are calculated, which are **the tip of the iceberg**

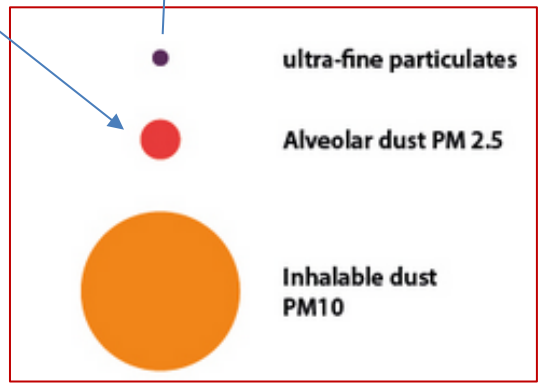
The WHO estimates that air pollution is responsable for **3 (→7- 12) million premature deaths each year.**



Here you see the size of the **FINE PARTICULATE MATTER (PM 2.5)** compared to a **hair**.







BUT, ULTRAFINE PARTICULATE MATTER (PM 0.1) IS MUCH MORE MICROSCOPIC, MUCH MORE WIDESPREAD IN OUR CITIES AND MUCH MORE DANGEROUS .. than PM 2,5-10

The adverse effects of **ultrafine particles** may be mediated in part by their **ability to inhibit phagocytosis.**

1

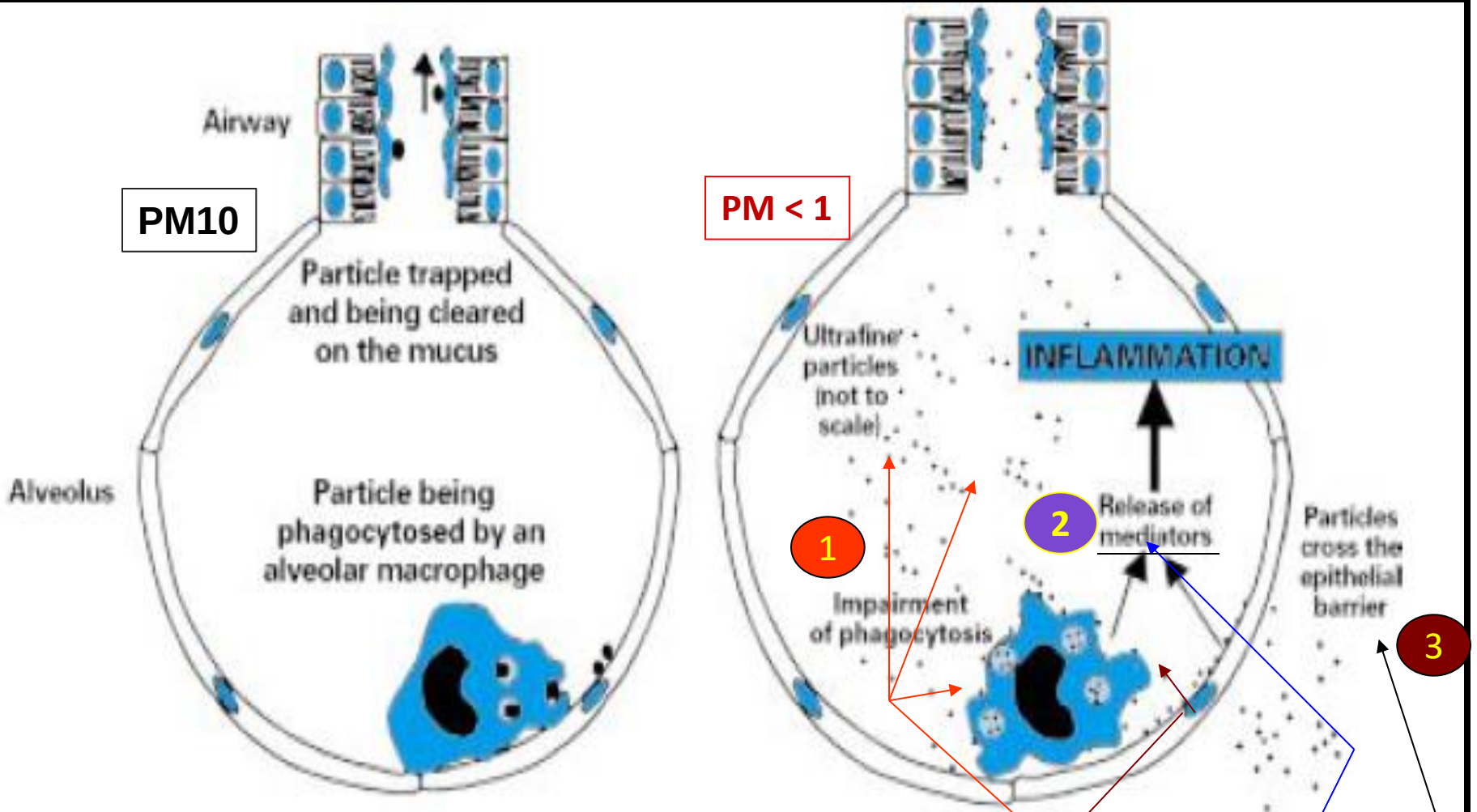


Figure 4 Diagrammatic representation of the hypothetical events after exposure to ultrafine particles (right) compared with fine particles (left). The essential elements of the ultrafine response are many particles outside and inside macrophages. Release of mediators from the macrophages and epithelial cells due to activation of signalling pathways mediated by oxidative stress, may then lead to inflammation. The enhanced interaction of particles with the epithelium leads to their transfer to the interstitium.

4

The mechanism for the effect on macrophages may be the increased oxidative stress from the large surface area of ultrafine particles

… Recent scientific results increasingly point to ***chronic inflammation*** *which may be* ***CLINICALLY SILENT*** → ***LOW GRADE SYSTEMIC INFLAMMATION AS A UNIVERSAL PATHOGENETIC MECHANISM IN CHRONIC DISEASES…***

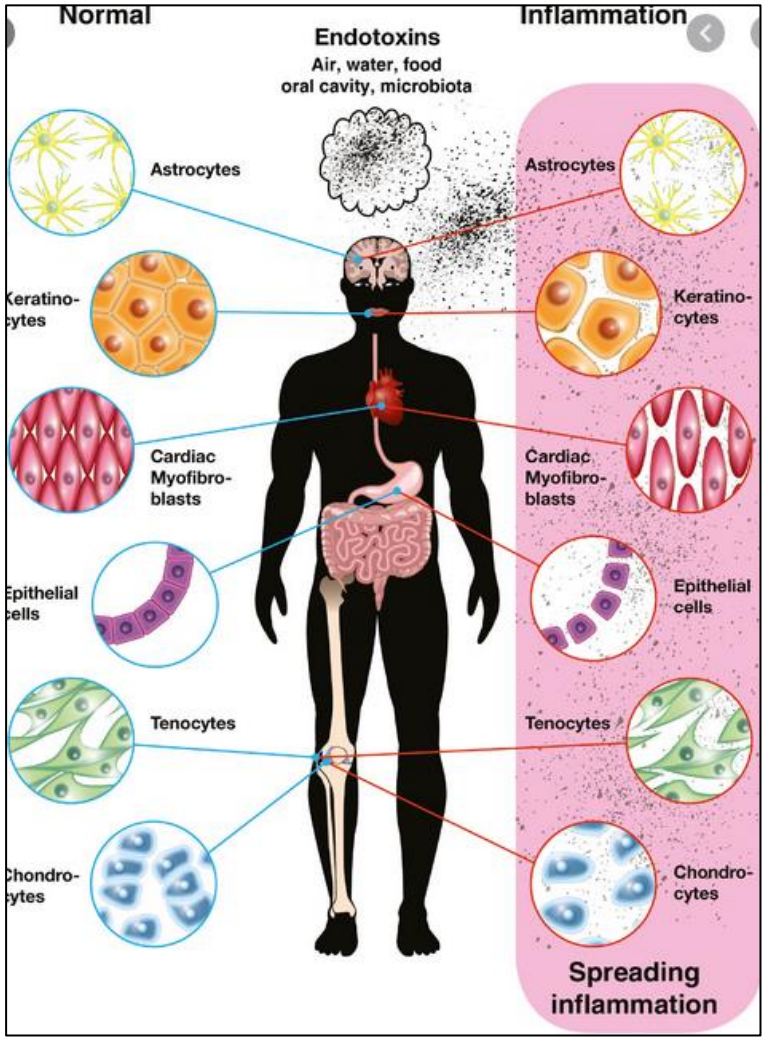
Research

Systemic Microvascular Dysfunction and Inflammation after Pulmonary Particulate Matter Exposure

Timothy R. Nurkiewicz,[1,2] Dale W. Porter,[1,3] Mark Barger,[3] Lyndell Millecchia,[3] K. Murali K. Rao,[3] Paul J. Marvar,[1,2] Ann F. Hubbs,[3] Vincent Castranova,[1,3] and Matthew A. Boegehold[1,2]

[1]Department of Physiology and Pharmacology, and [2]Center for Interdisciplinary Research in Cardiovascular Sciences, West Virginia University School of Medicine, Morgantown, West Virginia, USA; [3]Pathology and Physiology Research Branch, Health Effects Laboratory Division, National Institute for Occupational Safety and Health, Morgantown, West Virginia, USA

VOLUME 114 | NUMBER 3 | March 2006 • Environmental Health Perspectives



.. penetrate the walls of blood vessels resulting in a ***systemic endothelitis → atherosclerosis***

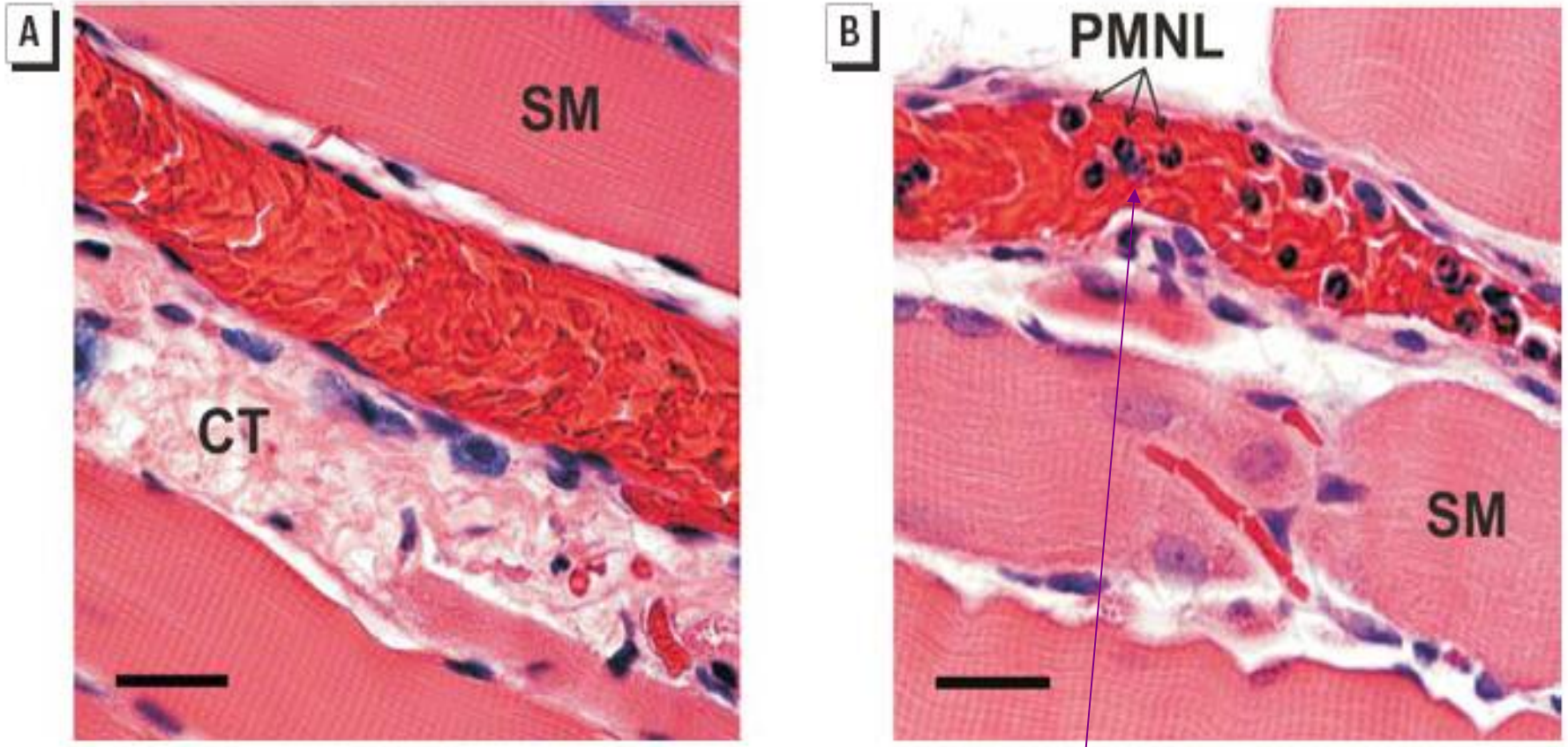


Figure 5. PMNL identification in the spinotrapezius muscle microcirculation of PM-exposed rats 24 hr after IT exposure. (*A*) Representative H&E-stained section from a saline-treated rat. Abbreviations: CT, connective tissue; SM, skeletal muscle fiber. (*B*) Representative H&E-stained section from a rat exposed to 0.1 mg ROFA. Note the deeply lobed nuclei that are characteristic of PMNLs. Bars = 25 µm; similar results were obtained with TiO_2.

Carbonaceous particles in airway macrophages of "healthy" children

… And that is why **even children can be seriously affected**

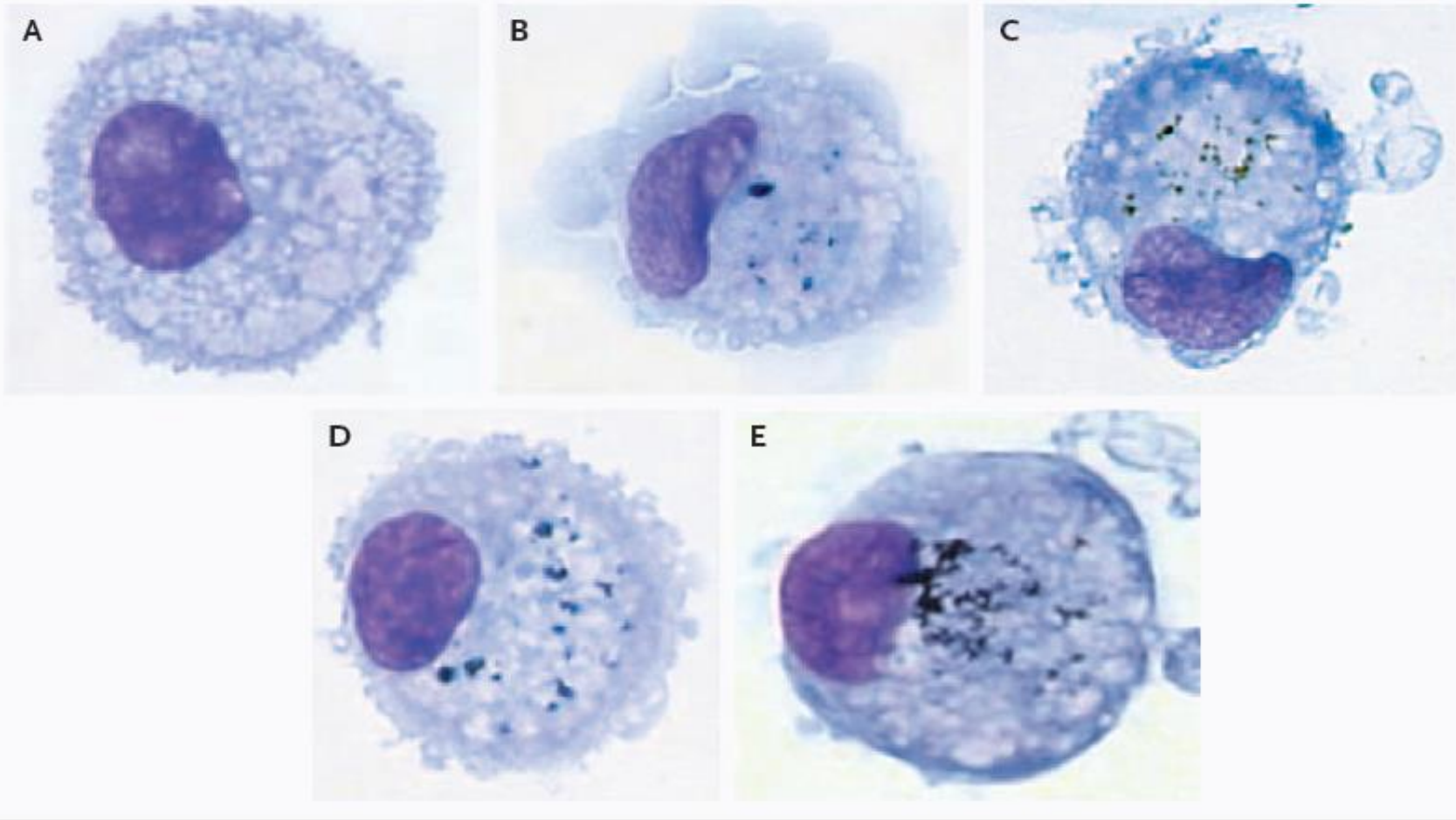


Figure 1. Representative Images of Carbon in Airway Macrophages from Healthy Children.

Panel A shows a macrophage with no carbon. Increasing levels of carbon are shown in Panels B through E. Airway macrophages were obtained from sputum, stained with Diff-Quik, and viewed with an oil-immersion lens. For each child, the area occupied by carbon in 100 randomly selected airway macrophages was determined by means of image analysis, and the median area (in square microns) per cell was calculated.

N Engl J Med 2006; 355:21-30
DOI: 10.1056/NEJMoa052972

JAMA | Original Investigation

Characteristics and Outcomes of US Children and Adolescents With Multisystem Inflammatory Syndrome in Children (MIS-C) Compared With Severe Acute COVID-19

Leora R. Feldstein, PhD; Mark W. Tenforde, MD; Kevin G. Friedman, MD; Margaret Newhams, MPH; Erica Billig Rose, PhD; Heda Dapul, MD;

CONCLUSIONS AND RELEVANCE This case series of patients with MIS-C and with COVID-19 identified patterns of clinical presentation and organ system involvement. These patterns may help differentiate between MIS-C and COVID-19.

JAMA. 2021;325(11):1074-1087. doi:10.1001/jama.2021.2091
Published online February 24, 2021.

Even the fortunately few **severe childhood cases** are due to **immune-inflammatory reactions of the endothelium....**

Now, these **rare/late/critical forms** are **better defined**

MULTISYSTEM INFLAMMATORY SYNDROME IN CHILDREN (MIS-C): in these children many organs and tissues - the **heart, lungs, blood vessels, kidneys, digestive system, brain, skin or eyes - become severely inflamed…**

as in CRITICAL CASES OF ADULTS..

MACROPHAGES ACTIVATION AND, IN THE MOST SEVERE FORMS, CYTOKINE STORMS MAY HAVE A KEY ROLE..

VIRUSES ACT AS TRIGGERS of a systemic immune-inflammatory endotheliitis /vasculitis

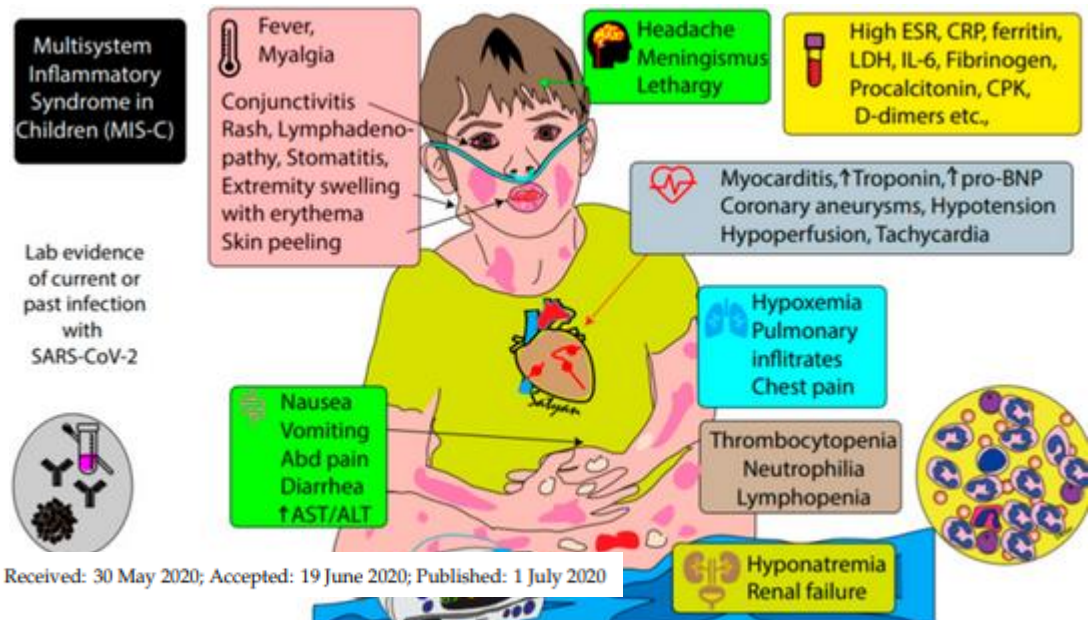
children

MDPI

Review

Multi-System Inflammatory Syndrome in Children (MIS-C) Following SARS-CoV-2 Infection: Review of Clinical Presentation, Hypothetical Pathogenesis, and Proposed Management

Natasha A. Nakra [1,*], Dean A. Blumberg [1], Angel Herrera-Guerra [2] and Satyan Lakshminrusimha [3]



Received: 30 May 2020; Accepted: 19 June 2020; Published: 1 July 2020

Search International edition
The Guardian

New York warns of children's illness linked to Covid-19 after three deaths

State reports 73 cases of children falling severely ill with toxic shock-like reaction that has symptoms similar to Kawasaki disease

The deaths of three children in New York of inflammatory complications possibly linked to Covid-19 has prompted Andrew Cuomo, the state's governor, to warn of "an entirely different chapter" of a disease that had been believed to cause only mild symptoms in children.

The governor reported the first death, of a five-year old boy, on Friday. At his morning press conference on Saturday, Cuomo raised the number of fatalities to three, after the death of a seven-year-old and a teenager.

State health authorities said last week there have been 73 reported cases in New York of children falling severely ill with a toxic shock-like reaction that displays symptoms similar to Kawasaki disease.

Cuomo said many of the children did not display respiratory symptoms commonly associated with Covid-19 when they were brought to area hospitals, but all of them tested positive either for the virus or its antibodies.

NBC News found at least 85 such cases in children across the US with a majority in New York state, which has also recorded the highest number of Covid-19 cases in the country.

State health authorities said last week that **73 cases of children seriously ill from a Kawasaki-like toxic reaction were reported in New York** ... many of the children **did not show the respiratory symptoms commonly associated with Covid-19, but all were positive both for the virus and its antibodies**.

The death of three children in New York from inflammatory complications likely related to Covid-19 prompted Andrew Cuomo, governor of the state, **to warn against "a completely different chapter" of a disease that was believed to cause only mild symptoms in children.**

Hospital Pediatrics
AN OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

AT FIRST THE **RARE CRITICAL/LATE - IMMUNE-INFLAMMATORY – FORMS WERE INTERPRETED AS *KAWASAKI-LIKE DISEASES***

https://hosppeds.aappublications.org/content/early/2020/04/06/hpeds.2020-0123.long

Pre-publication Release

COVID-19 and Kawasaki Disease: Novel Virus and Novel Case

Veena G. Jones, Marcos Mills, Dominique Suarez, Catherine A. Hogan, Debra Yeh, J. Bradley Segal, Elizabet

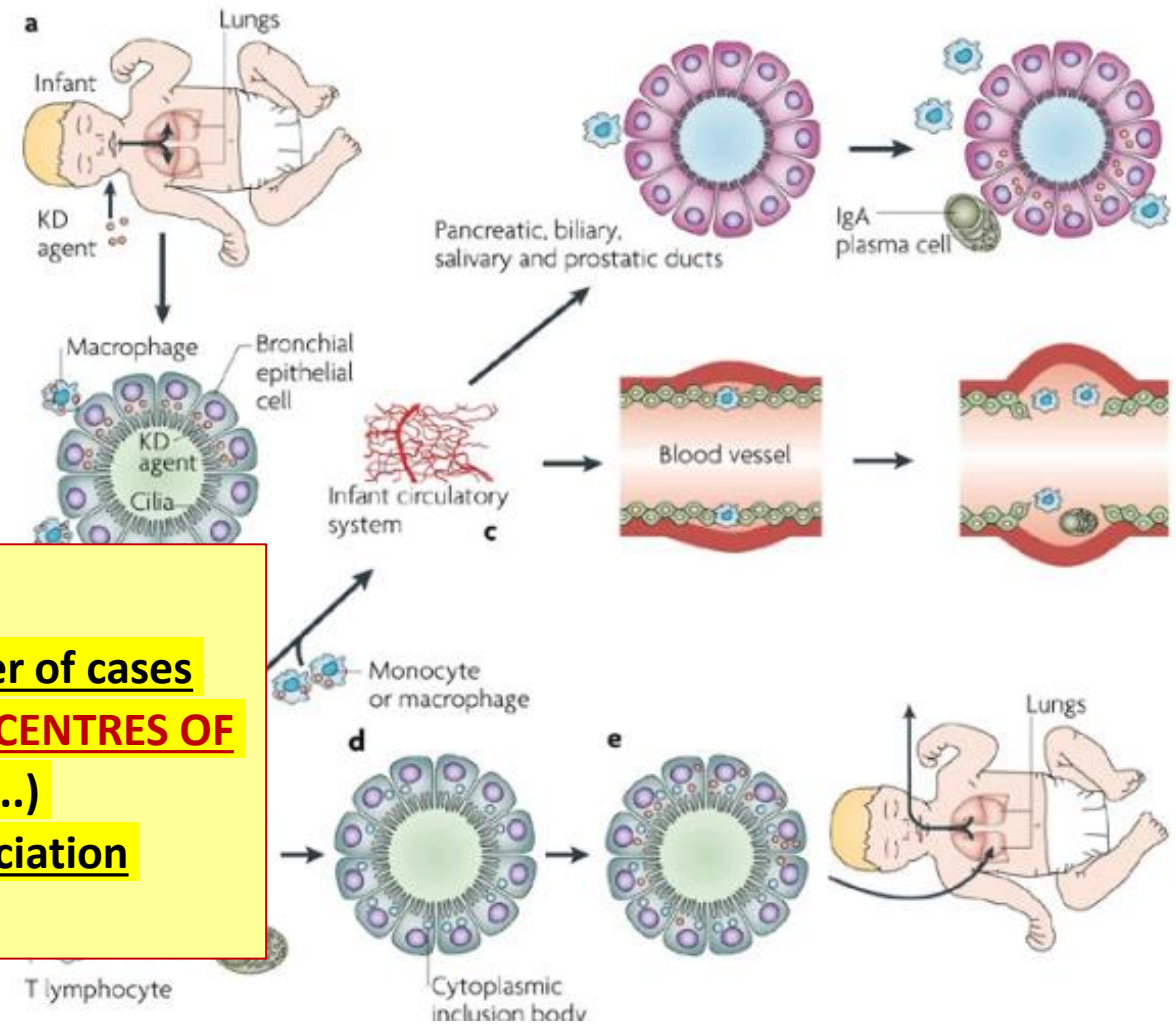
Hospital Pediatrics April 2020, hpeds.2020-0123; DOI: https://doi.org/10.1542/hpeds.2020-0123

Retrovirus	Infection of lymphocytes
Epstein–Barr virus or cytomegalovirus	Infection of various cell types
Toxic shock syndrome toxin 1 (TSST1)	Superantigen-induced immune response
Bacterial toxin other than TSST1	Superantigen-induced immune response
Coronavirus NL-63	
Human bocavirus	
Previously unrecognized persistent RNA virus	

COVID-KAWASAKI SYNDROME ?!

It is important to underline that **the highest number of cases has occurred IN PLACES THAT WERE EPIDEMIC EPICENTRES OF THE DISEASE (Bergamo in Italy, London, New York ..)**
This highlights the **HIGH SIGNIFICANCE of the association between the two pathologies**

Figure 1: Proposed pathogenesis of Kawasaki disease.



Searching for the cause of Kawasaki disease — cytoplasmic inclusion bodies provide new insight

nature REVIEWS MICROBIOLOGY
NATURE REVIEWS | MICROBIOLOGY
VOLUME 6 | MAY 2008 | 395

Anne H. Rowley, Susan C. Baker, Jan M. Orenstein and Stanford T. Shulman

Abstract | Kawasaki disease (KD) has emerged as the most common cause of acquired heart disease in children in the developed world. The cause of KD remains unknown, although an as-yet unidentified infectious agent might be responsible. By determining the causative agent, we can improve diagnosis, therapy and prevention of KD. Recently, identification of an antigen-driven IgA response that was directed at cytoplasmic inclusion bodies in KD tissues has provided new insights that could unlock the mysteries of KD.

1

The fact that **IN JAPAN, UNLIKE IN THE WEST, KD OFTEN MANIFESTS ITSELF IN EPIDEMIC OUTBREAKS** has immediately led to the hypothesis of **an infectious causal agent…**

2

in 2005 a CORONAVIRUS WAS ALREADY HYPOTHESIZED AS A POSSIBLE TRIGGER..

Postulated agent	Proposed pathogenesis	Current status	Refs
Mercury	Direct toxic effect	Lack of supporting evidence	98
Rickettsia-like agent	Infection of macrophages and/endothelial cells	Lack of supporting evidence	36
Propriobacterium acnes	Infection of macrophages and/endothelial cells	Lack of supporting evidence	35
Rug shampoo	Aerosolization of mites or a direct toxic effect	Lack of supporting evidence	37–39
Leptospira spp.	Infection of endothelial cells	Lack of supporting evidence	99
Streptococcus sanguis	Infection or toxin effect	Lack of supporting evidence	100
Retrovirus	Infection of lymphocytes	Lack of supporting evidence	40–43
Epstein–Barr virus or cytomegalovirus	Infection of various cell types	Lack of supporting evidence	101,102
Toxic shock syndrome toxin 1 (TSST1)	Superantigen-induced immune response	Not confirmed by follow-up studies	44–46
Bacterial toxin other than TSST1	Superantigen-induced immune response	Lack of supporting evidence; still under investigation	72–74
Coronavirus NL-63	None	Not confirmed by follow-up studies	47–49
Human bocavirus	None	Reported by one group; currently unconfirmed	50
Previously unrecognized persistent RNA virus	Infection of targeted cells with antigen-driven immune response; cytoplasmic inclusion bodies are formed and can persist	Under investigation	17–22, 87

7952–7957 | PNAS | June 3, 2014 | vol. 111 | no. 22

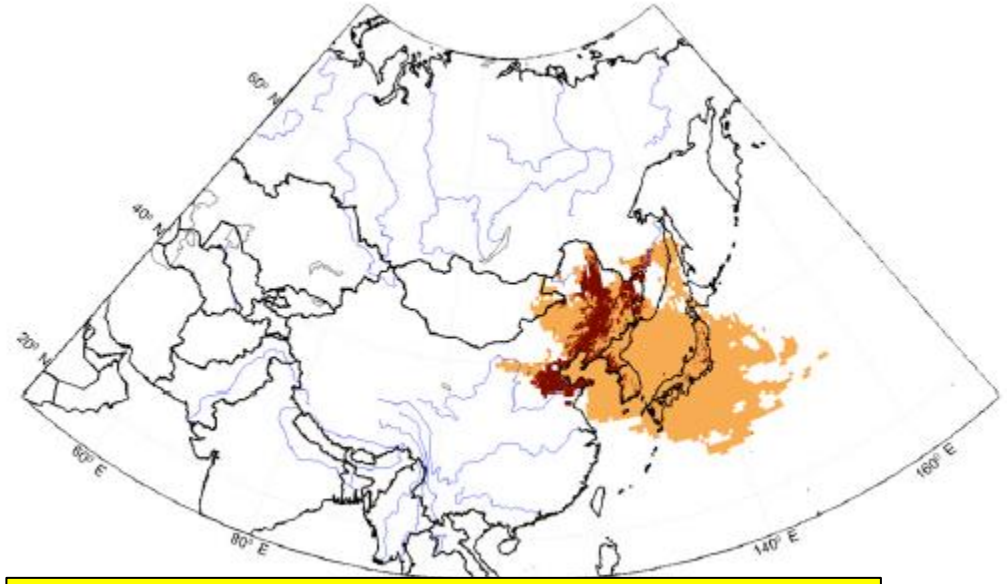
Tropospheric winds from northeastern China carry the etiologic agent of Kawasaki disease from its source to Japan

Xavier Rodó[a,b,1], Roger Curcoll[b], Marguerite Robinson[b], Joan Ballester[b,c], Jane C. Burns[d], Daniel R. Cayan[e,f], W. Ian Lipkin[g], Brent L. Williams[g], Mara Couto-Rodriguez[g], Yosikazu Nakamura[h], Ritei Uehara[h], Hiroshi Tanimoto[i], and Josep-Anton Morgui[b]

[a]Institució Catalana de Recerca i Estudis Avançats, 08010 Barcelona, Catalonia, Spain; [b]Unitat de Dinàmica i Impacte Climàtic (UDIC), Institut Català de

Significance

Kawasaki disease (KD), the leading cause of acquired heart disease in children worldwide, has remained a mystery for more than 40 y. No etiological agent has yet been identified. By using simulations with the flexible particle dispersion model from different Japanese cities from each single high (low) KD incidence day, the source region KD is retrieved in cereal croplands in northeastern China. We infer the incubation time for KD ranges from 6 h to 2 d, thus favoring an antigenic or toxic exposure as the trigger. *Candida* sp. is reported as the dominant fungal species collected aloft (54% of all fungal DNA clones) demonstrating the potential for human disease in aerosols transported by wind currents traveling long distances.



IT WAS EVEN HYPOTHESIZED THAT SPORES OR OTHER MICROORGANISMS COULD SPREAD AEROGENOUSLY from ***China*** to Japan.

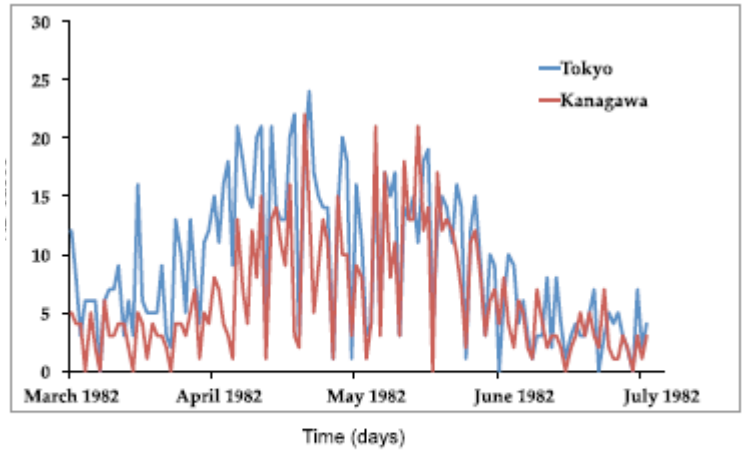
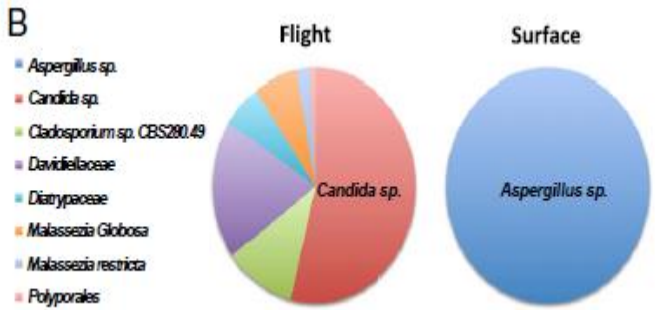


Fig. 2. Daily time series of KD date of onset for patients in Tokyo (blue) and Kanagawa (red) during the epidemics of 1982 (see Fig. S4 for 1986). Axes display cases (*Y*) and day since epidemic onset (*X*). See SDC (11) analysis be-



BOTH THE ULTRAFINE PARTICLES AND THE VIRUS easily pass into the **central nervous system** and in particular, through the **OLFACTORY NERVE (*DYSOSMIA*), DIRECTLY INTO THE BRAIN**

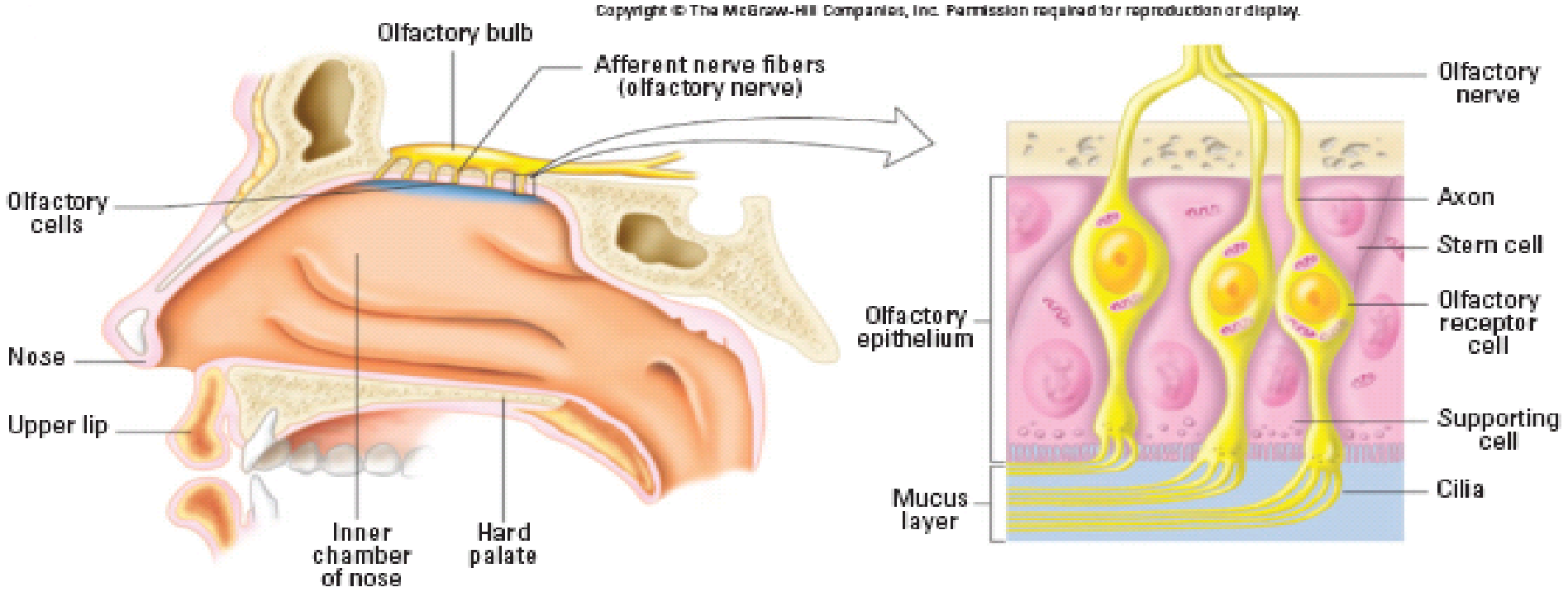
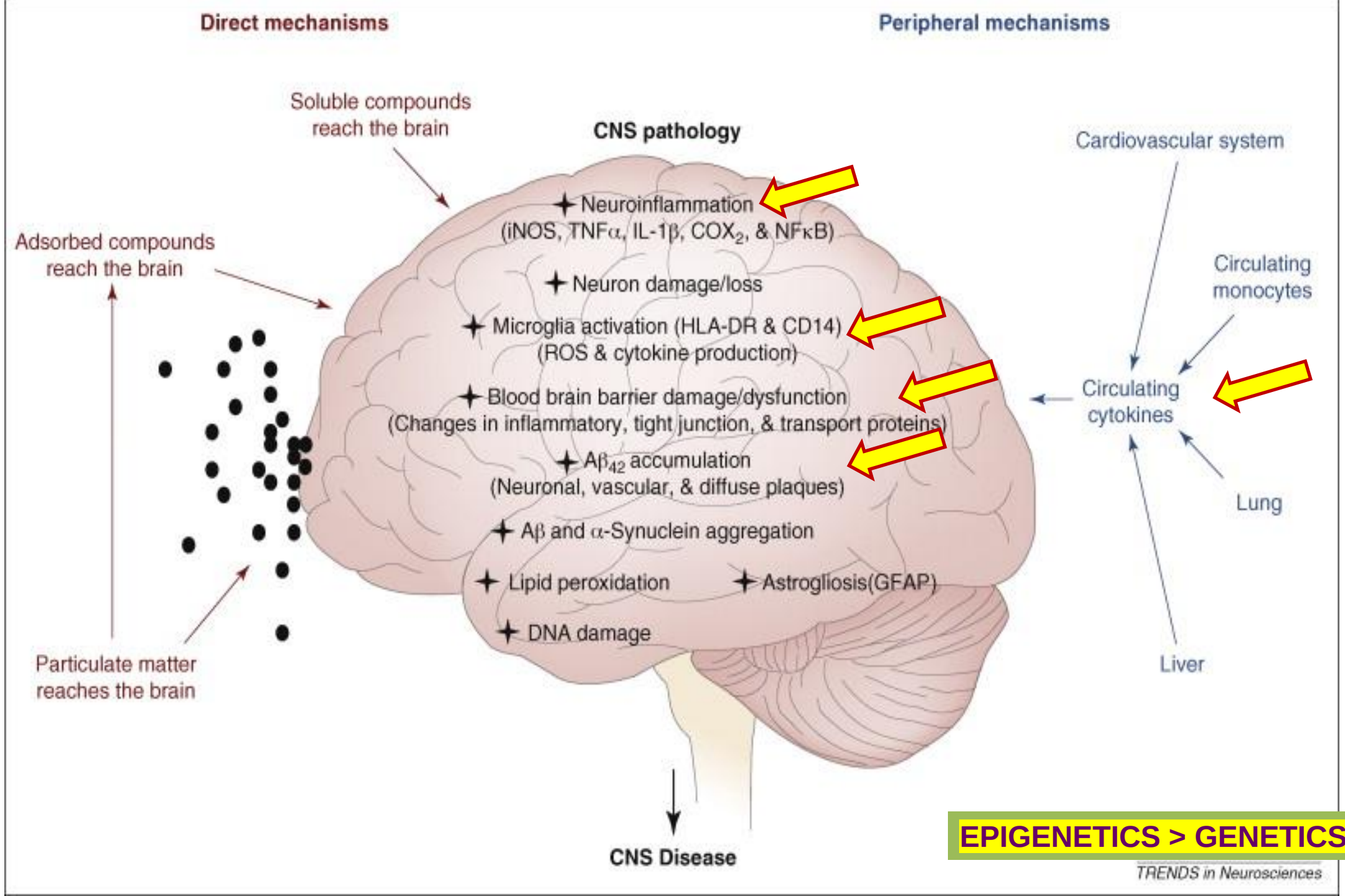


Figure 12. Close proximity of olfactory mucosa to olfactory bulb of the CNS. Inhaled NSP[s], especially below 10 nm, deposit efficiently on the olfactory mucosa by diffusion, similar to airborne "smell" molecules which deposit in this area of olfactory dendritic cilia. Subsequent uptake and translocation of solid NSP[s] along axons of the olfactory nerve has been demonstrated in non-human primates and rodents. Surface chemistry of the particles may influence their neuronal translocation. Copyright © the McGraw-Hill Companies, Inc. Reproduced from Widmaier et al. (2004) with permission from McGraw-Hill.

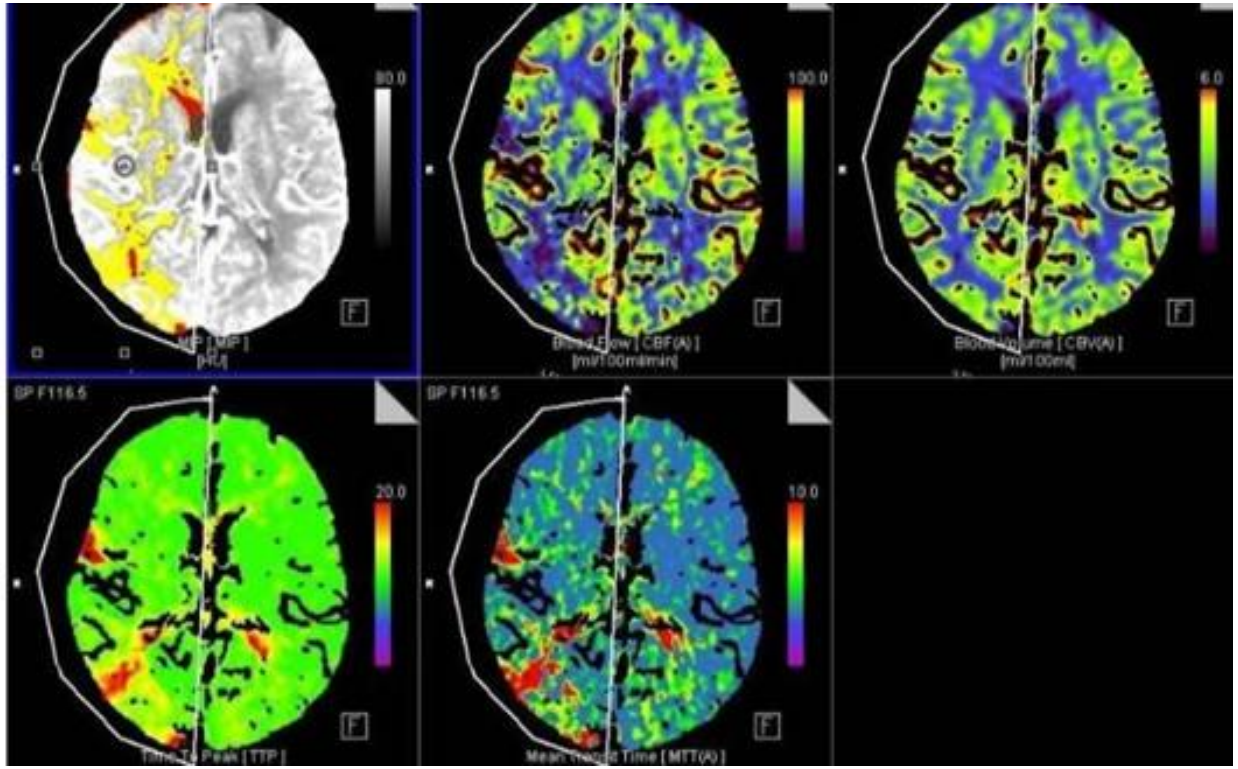
Environmental Health Perspectives • VOLUME 113 | NUMBER 7 | July 2005


Direct mechanisms
Peripheral mechanisms
Soluble compounds reach the brain
CNS pathology
Cardiovascular system
Neuroinflammation (iNOS, TNFα, IL-1β, COX2, & NFκB)
Adsorbed compounds reach the brain
Circulating monocytes
Neuron damage/loss
Microglia activation (HLA-DR & CD14) (ROS & cytokine production)
Blood brain barrier damage/dysfunction (Changes in inflammatory, tight junction, & transport proteins)
Circulating cytokines
Aβ42 accumulation (Neuronal, vascular, & diffuse plaques)
Lung
Aβ and α-Synuclein aggregation
Lipid peroxidation
Astrogliosis(GFAP)
DNA damage
Particulate matter reaches the brain
Liver
CNS Disease
EPIGENETICS > GENETICS
TRENDS in Neurosciences

"***Characteristics of ischaemic stroke associated with COVID-19***". by Rahma Beyrouti et al. *Journal of Neurology, Neurosurgery & Psychiatry* doi:10.1136/jnnp-2020-323586

… The exaggerated inflammatory-immune response known to occur in COVID-19 patients stimulates abnormal blood coagulation, including raised D-dimer and the production of antiphospholipid antibodies …

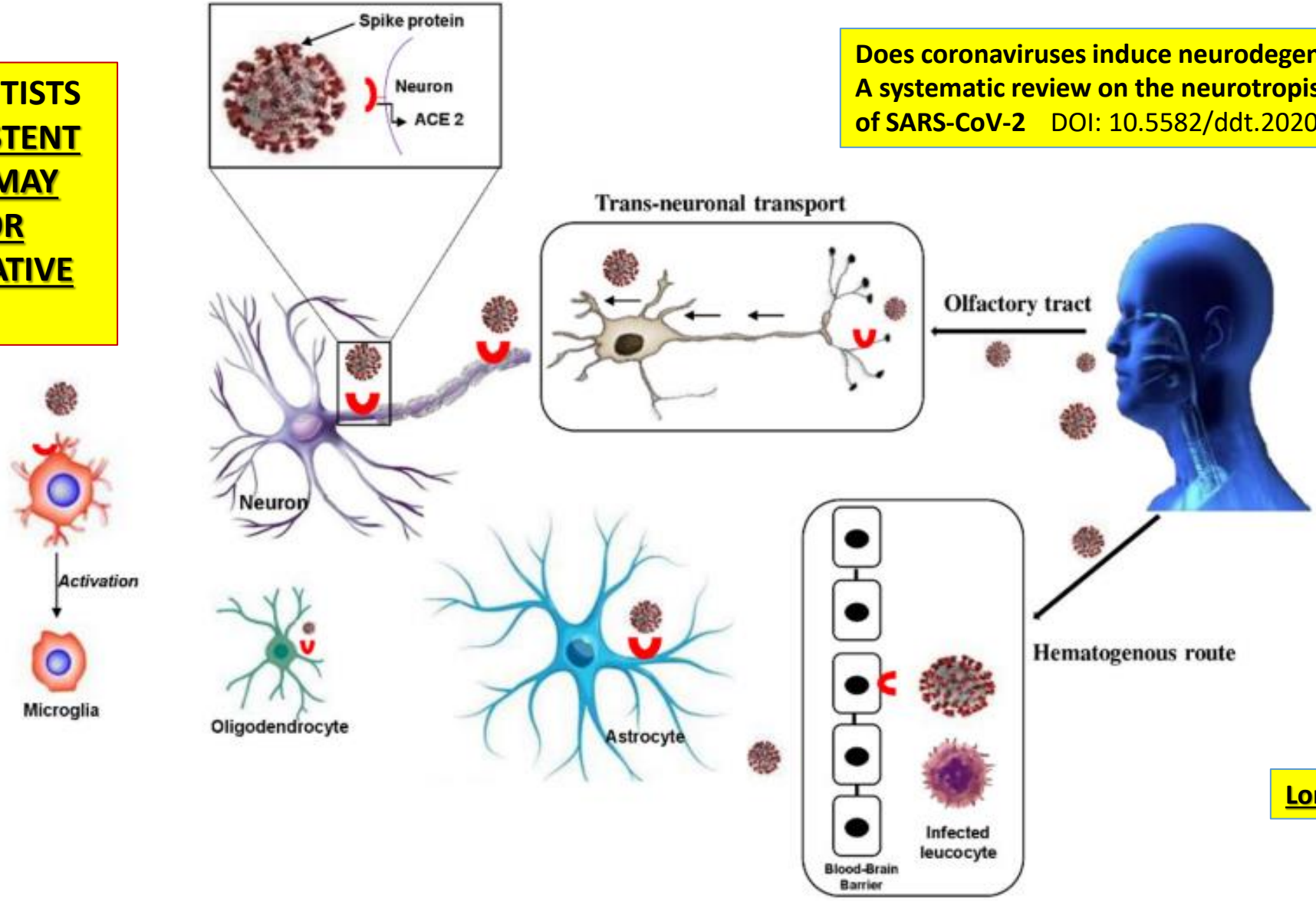
Our findings suggest that **early testing for D-dimer, a protein fragment in the blood associated with increased blood clotting (thrombosis) in COVID-19 patients, could enable clinicians to prescribe specific treatments, including anticoagulants ("blood thinners"), at a much earlier stage…**



"**Early use of anticoagulant drugs might be helpful, but this needs to be balanced against their brain bleeding risk, especially soon after an ischaemic stroke.**

.. and some **SCIENTISTS** FEAR THAT **PERSISTENT INFLAMMATION MAY PAVE THE WAY FOR NEURODEGENERATIVE DISEASES**

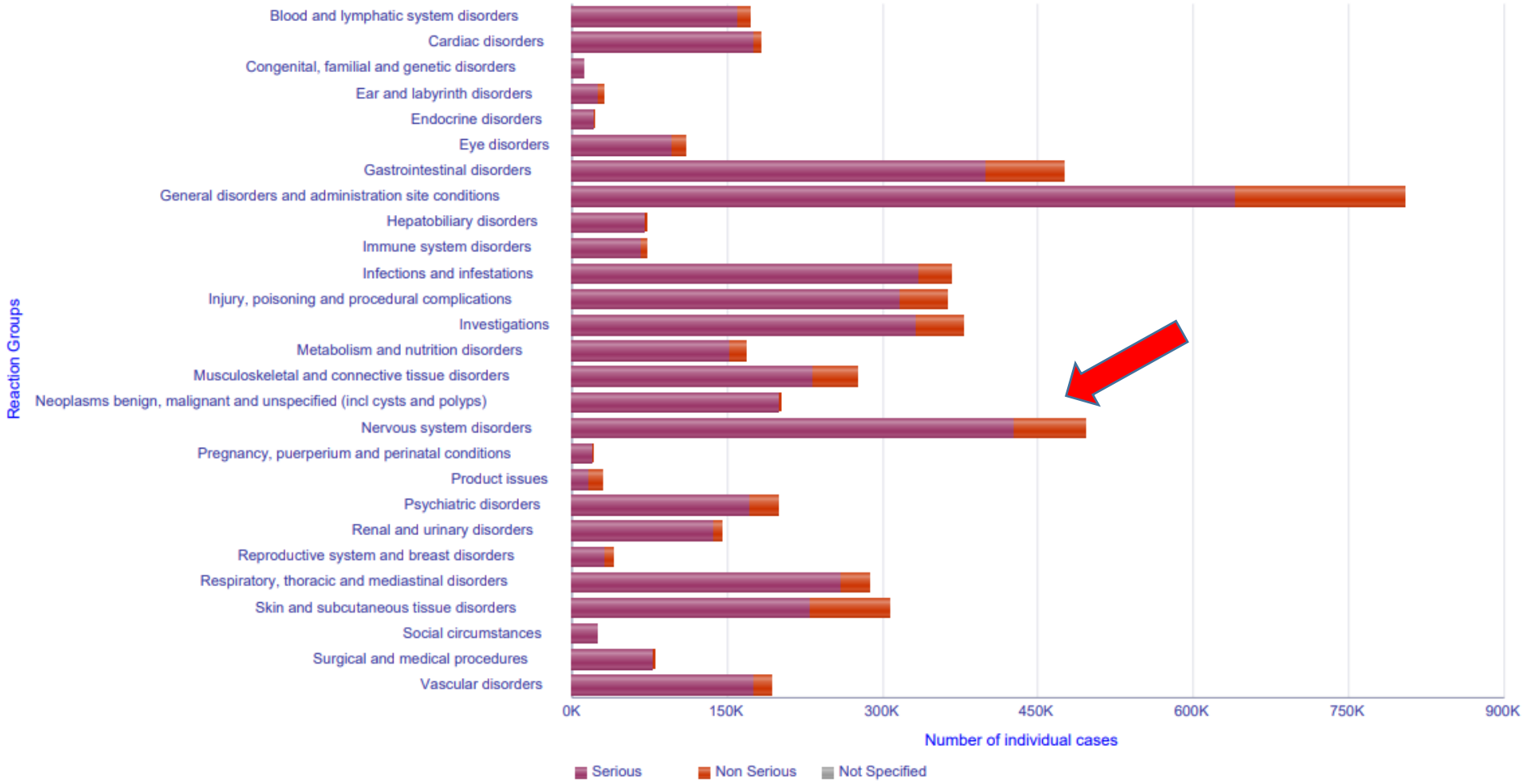
Does coronaviruses induce neurodegenerative diseases? A systematic review on the neurotropism and neuroinvasion of SARS-CoV-2 DOI: 10.5582/ddt.2020.03106



Long COVID !

Figure 1. Putative routes for SARS-CoV-2 neuroinvasion. The most specific routes where SARS-CoV-2 enters the brain are: (*i*) Hematogenous route *via* blood-brain barrier (BBB), SARS-CoV-2 induces direct infection of the neurovascular unit in the BBB. So, infected migrating leukocyte cross BBB freed to infect local neuronal cells. (*ii*) Trans-neuronal route: SARS-CoV-2 could enter the nervous system through peripheral nerve fibers including the olfactory receptors, the pulmonary network and the enteric nervous system. ACE2: angiotensin-converting enzyme 2.

The **symptoms affecting the nervous system** are among
the most typical, PERSISTENT AND WORRYING OF THE SO-CALLED LONG COVID

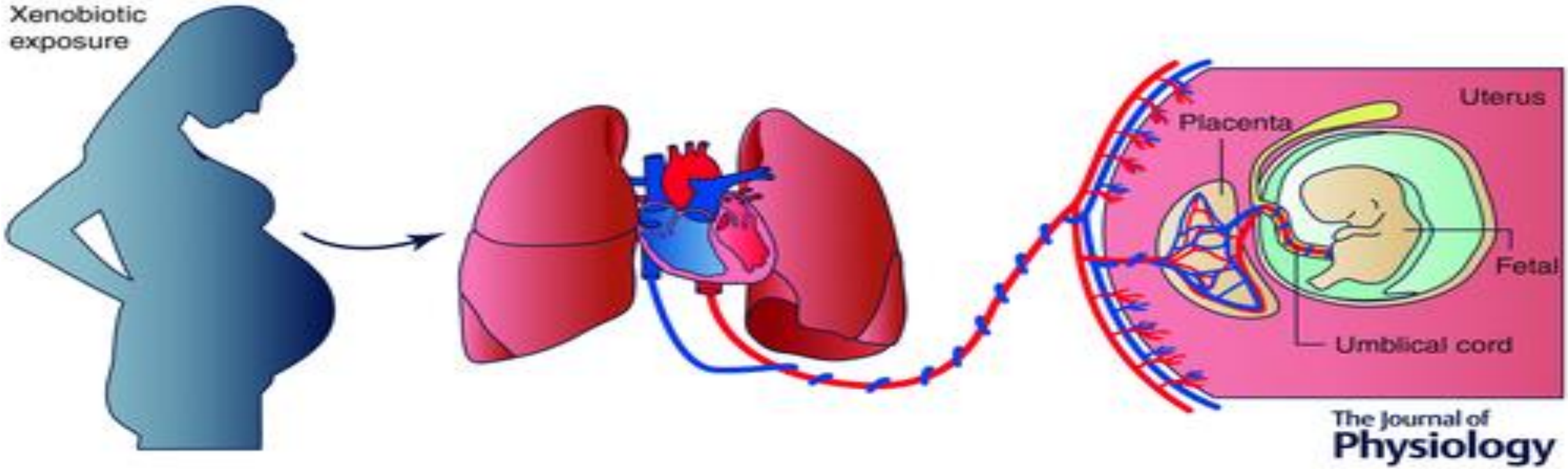


CORRIERE DELLA SERA

Covid, un guarito su otto manifesta sintomi neurologici o psichiatrici

30 gennaio 2021

Lo studio su oltre 200 mila pazienti dell'Università di Oxford segnala strascichi mentali a sei mesi dalla diagnosi con rischi maggiori per chi è stato ricoverato



Maternal	Uterine	Placental	Umbilical	Fetal
• Particle translocation to target organs and mammary glands • Systemic vascular dysfunction • Inflammation • Difficulty breathing/ pulmonary inflammation after exposure	• Particle translocation to target organs • Vascular dysfunction	• Particle translocation/ deposition • Placental malformation • Increase ROS • Endocrine disruption	• Particle translocation to target organs • Vascular dysfunction • Impaired blood flow to fetus	• Particle translocation/ deposition • Vascular dysfunction • Impaired development • Gross abnormalities • Increased mortality

https://doi.org/10.1113/JP270581

There are several routes through which viruses may reach the fetus

Arora N, Sadovsky Y, Dermody TS, Coyne CB. ***Microbial Vertical Transmission during Human Pregnancy.*** Cell Host Microbe. 2017;21(5):561-567. doi:10.1016/j.chom.2017.04.007

A variety of **viral infections in pregnancy are associated with specific effects on the placenta**, including associated **lymphoplasmic villitis with enlargement of villi and intravillous hemosiderin deposition in the context of maternal cytomegalovirus infection** and rare reports of intervillosites in the context of the Zika and Dengue virus

Garcia AG, Fonseca EF, Marques RL, et al. ***Placental morphology in cytomegalovirus infection.*** Placenta.1989;10:1-18

Martines RB, Bhatnagar J, Keating MK, et al. ***Notes from the Field: Evidence of Zika Virus Infection in Brain and Placental Tissues from Two Congenitally Infected Newborns and Two Fetal Losses--Brazil, 2015.*** MMWR Morb Mortal Wkly Rep. 2016;65(6):159-160. Published 2016 Feb 19.

Martines RB, Bhatnagar J, de Oliveira Ramos AM, et al. ***Pathology of congenital Zika syndrome in Brazil: a case series.*** *Lancet*. 2016;388(10047):898-904. doi:10.1016/S0140-6736(16)30883-2

Ribeiro CF, Silami VG, Brasil P, Nogueira RM. ***Sickle-cell erythrocytes in the placentas of dengue-infected women.*** *Int J Infect Dis*. 2012;16(1):e72. doi:10.1016/j.ijid.2011.09.005

→ EVEN IN THE ABSENCE OF TRANSPLACENTAL TRANSMISSION, VIRAL INFECTIONS CAN AFFECT FETAL DEVELOPMENT BECAUSE OF INFLAMMATORY RESPONSES IN THE PLACENTA OR INFECTION-INDUCED SYSTEMIC CHANGES IN THE PREGNANT MOTHER, INCLUDING METABOLIC ALTERATIONS.

ANCHE IN ASSENZA DI TRASMISSIONE TRANSPLACENTALE, LE INFEZIONI VIRALI POSSONO INFLUENZARE LO SVILUPPO FETALE A CAUSA DI **RISPOSTE INFIAMMATORIE NELLA PLACENTA** O DI CAMBIAMENTI SISTEMICI INDOTTI DA INFEZIONI NELLA MADRE (**COMPRESE ALTERAZIONI METABOLICHE**…)

ANTIBODIES

CYTOKINES

UN'INFEZIONE VIRALE MATERNA, ANCHE IN ASSENZA DI TRASMISSIONE, PUÒ PROVOCARE **CONSEGUENZE DI LUNGO TERMINE PER IL NEONATO**, COMPRESO UNO **SVILUPPO NEUROPSICHICO ANOMALO**

MATERNAL IMMUNE ACTIVATION/INFLAMMATION TRIGGERED BY VIRAL INFECTIONS DURING PREGNANCY

Maternal viral infection, even in the absence of transmission, can result in long-term consequences for the newborn, including

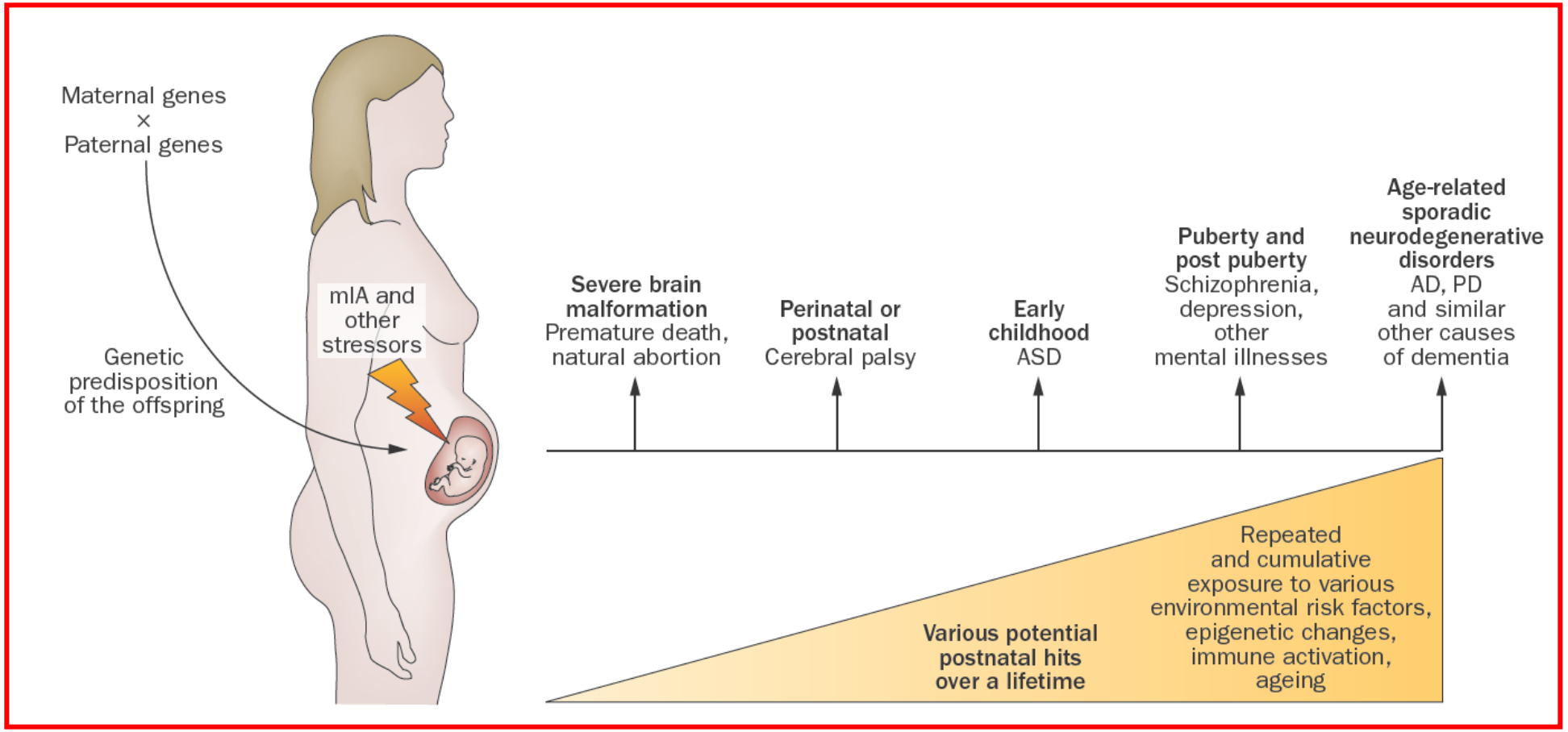
→ abnormal neuropsychiatric development in the case of influenza

Al-Haddad BJS, Oler E, Armistead B, et al. ***The fetal origins of mental illness.*** Am J Obstet Gynecol. 2019;221(6):549-562. doi:10.1016/j.ajog.2019.06.013

Smith SE, Li J, Garbett K, Mirnics K, Patterson PH. ***Maternal immune activation alters fetal brain development through interleukin-6.*** J Neurosci. 2007;27(40):10695-10702. doi:10.1523/JNEUROSCI.2178

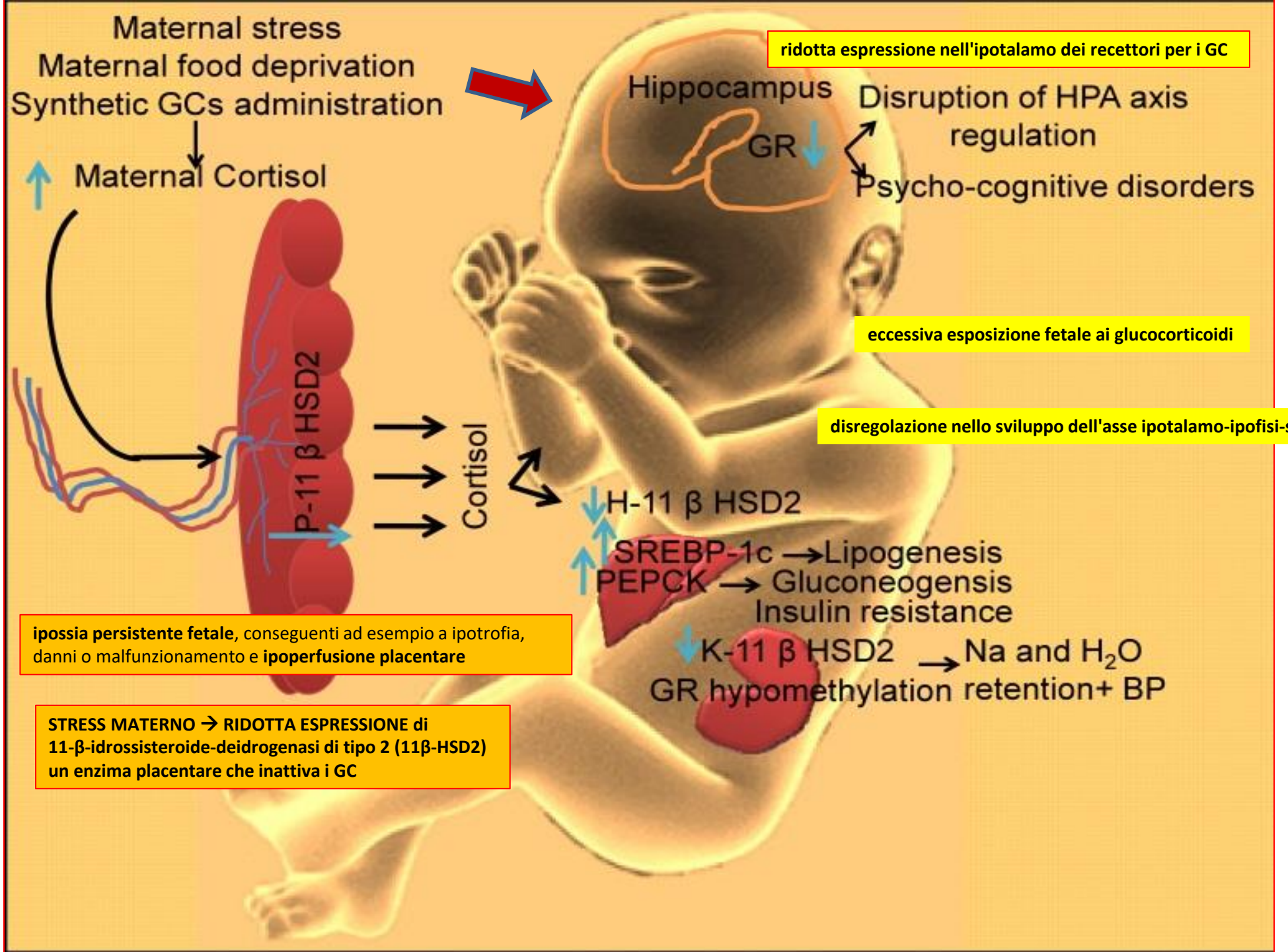
Maternal immune activation and abnormal brain development across CNS disorders

Nature Reviews Neurology 10, 643–660 (2014)

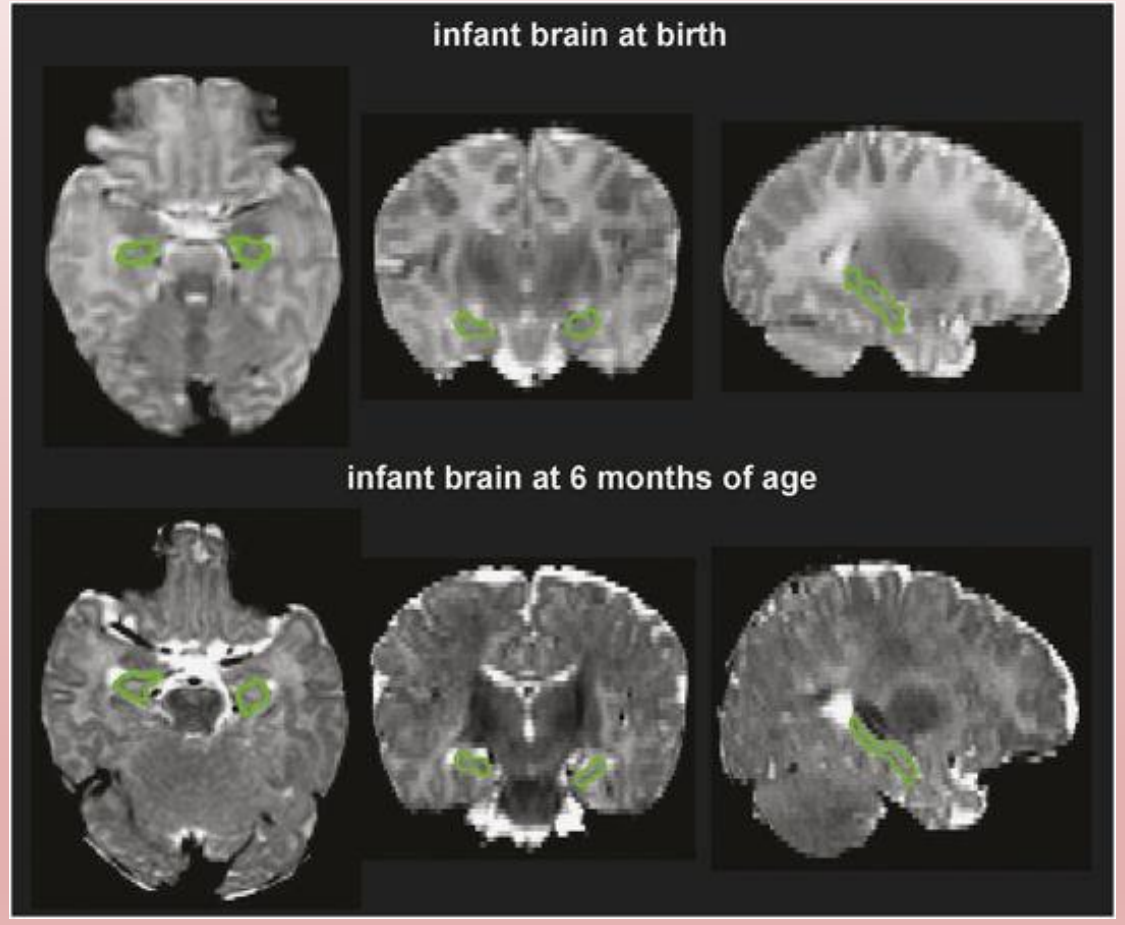


Epidemiological studies have shown a clear association between **maternal infection and schizophrenia or autism** in the progeny.

Animal models have revealed **maternal immune activation (mIA) to be a profound risk factor for neurochemical and behavioural abnormalities in the offspring**.


Maternal stress
Maternal food deprivation
Synthetic GCs administration
Maternal Cortisol
P-11 β HSD2
Cortisol
Hippocampus
GR
Disruption of HPA axis regulation
Psycho-cognitive disorders
H-11 β HSD2
SREBP-1c → Lipogenesis
PEPCK → Gluconeogensis
Insulin resistance
K-11 β HSD2 → Na and H_2O retention+ BP
GR hypomethylation
ridotta espressione nell'ipotalamo dei recettori per i GC
eccessiva esposizione fetale ai glucocorticoidi
disregolazione nello sviluppo dell'asse ipotalamo-ipofisi-surrene (HPA)
ipossia persistente fetale, conseguenti ad esempio a ipotrofia, danni o malfunzionamento e **ipoperfusione placentare**
STRESS MATERNO → RIDOTTA ESPRESSIONE di 11-β-idrossisteroide-deidrogenasi di tipo 2 (11β-HSD2) un enzima placentare che inattiva i GC

Maternal anxiety and infants' hippocampal development: **timing matters**



Furthermore, **a strong positive association between postnatal maternal anxiety and right hippocampal growth was detected**, whereas a **strong negative association between postnatal maternal anxiety and the left hippocampal volume at 6 months of life was found**.

The size of the **left hippocampus during early development is likely to reflect the influence of the exposure to perinatal maternal anxiety**, whereas **right hippocampal growth is constrained by antenatal maternal anxiety, but enhanced in response to increased postnatal maternal anxiety**.

Letter to the Editor Eur J Midwifery 2020;4(May):21 European Journal of Midwifery
DOI: https://doi.org/10.18332/ejm/122385

The impact of COVID-19 pandemic on the healthcare of premature babies

Eleni Vavouraki[1,2]

Nel tentativo di controllare la diffusione del virus, **la stragrande maggioranza delle UTIN ha limitato l'accesso dei genitori:** le restrizioni differiscono non solo tra i paesi ma anche tra ospedali in ogni singolo paese.

La **separazione**, però, ha rischi che non dovrebbero essere trascurati per nessun motivo: essa è **dannosa sia per i neonati che per i loro genitori poiché interrompe il legame biologico ed emotivo che si è sviluppato già durante la gestazione**

Un'altra grave conseguenza è che **mantenendo le madri isolate dai loro bambini, può svilupparsi una tendenza alla riduzione dell'allattamento al seno**, poiché non è possibile applicare tecniche di supporto nell'UTIN, come il **contatto pelle a pelle e la consulenza ostetrica continua**. Ancora più preoccupante è che questa tendenza sia emersa nonostante le raccomandazioni dell'Organizzazione mondiale della sanità (OMS)

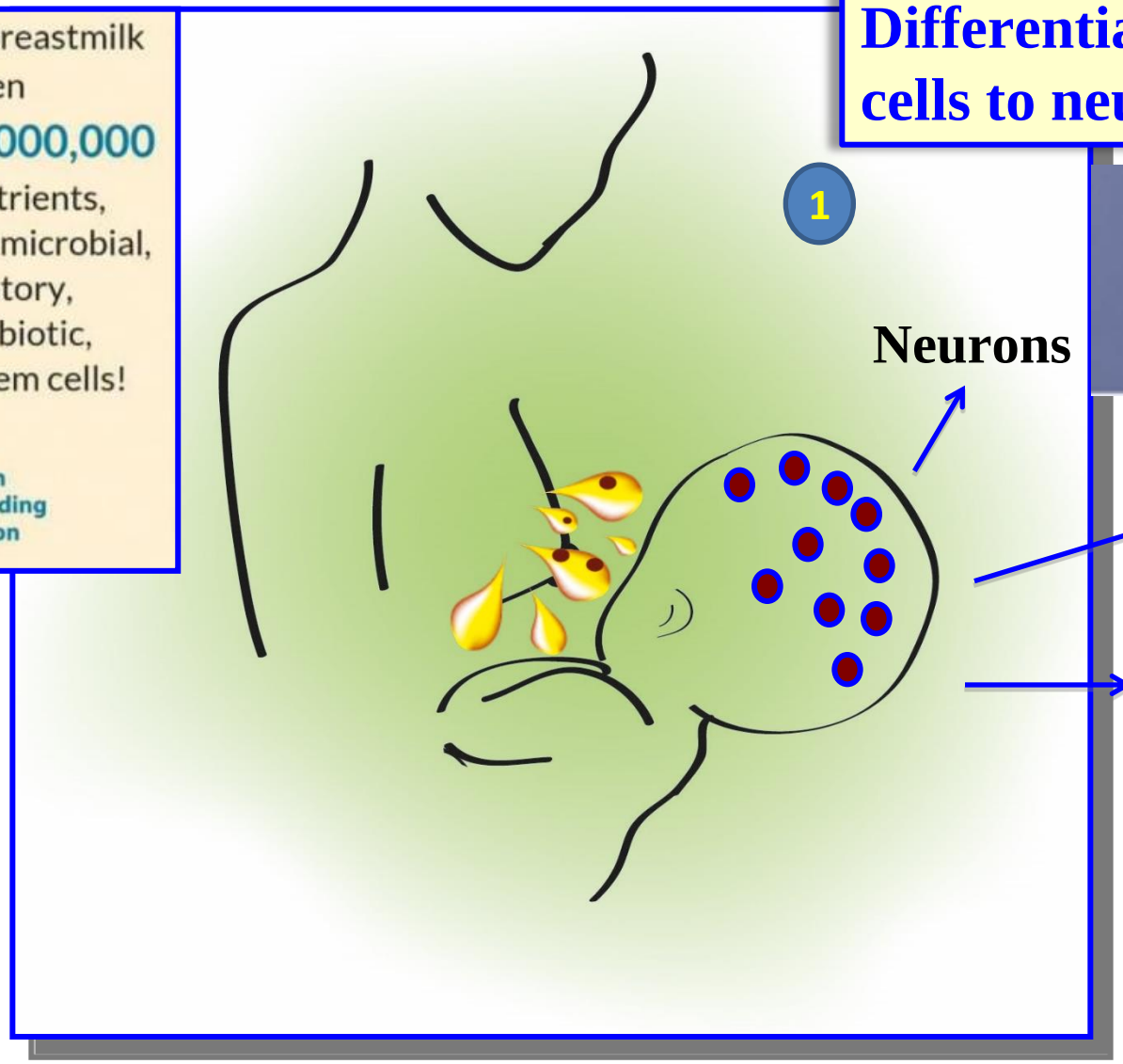
È anche importante sottolineare che gli appuntamenti di **follow-up, la terapia e i servizi di supporto psicologico si sono interrotti in molti luoghi** in tutto il mondo poiché **le cliniche e i centri di riabilitazione hanno sospeso le loro attività durante il *lockdown***, causando grande preoccupazione per molti genitori

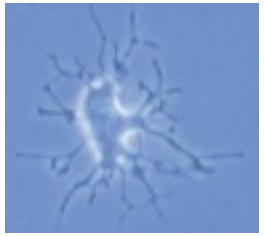
FROM BREAST MILK TO BRAIN

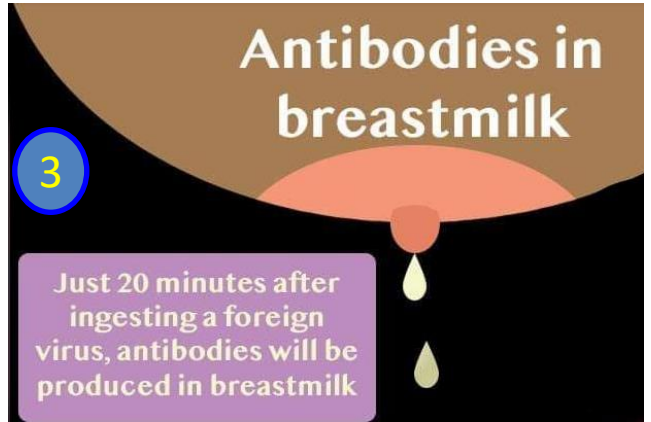
One teaspoon of breastmilk has between **50,000 and 65,000,000** cells that are nutrients, anti-infective, anti-microbial, anti-inflammatory, pre-biotic, pro-biotic, hormones and stem cells!

Australian Breastfeeding Association

Differentiation of breast-milk stem cells to neural stem cells and neurons







Hosseini SM Neurol Res Int 2014

After a year of pandemic

Are we the hostages of Big Pharma?

20 GENNAIO 2021, ERNESTO BURGIO

Why have ***Western countries failed*** to stop the pandemic and are **forced to focus ONLY on drugs and vaccines**?

THE RACE FOR CORONAVIRUS VACCINES

NEWS FEATURE · 28 APRIL 2020

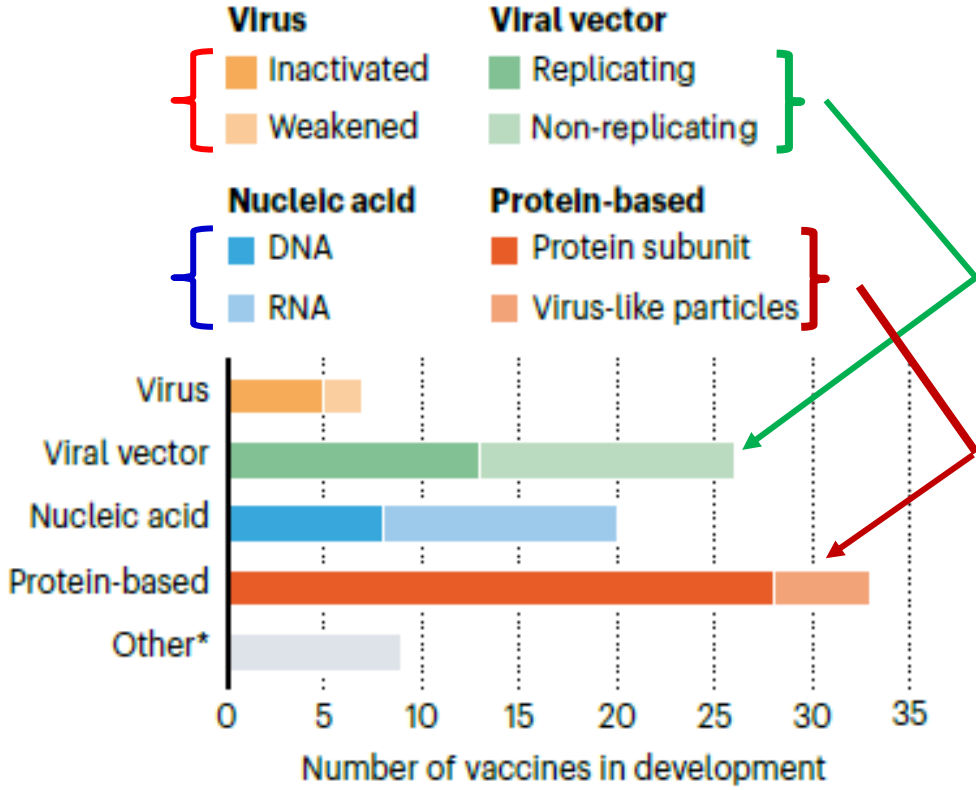
By Ewen Callaway; design by Nik Spencer.

More than 90 vaccines are being developed against SARS-CoV-2 by research teams in companies and universities across the world. Researchers are trialling different technologies, some of which haven't been used in a licensed vaccine before. At least six groups have already begun injecting formulations into volunteers in safety trials; others have started testing in animals. *Nature*'s graphical guide explains each vaccine design.

The ***main vaccination platforms*** in use today were **already ready in March and the experimentation began almost immediately.**

AN ARRAY OF VACCINES

All vaccines aim to expose the body to an antigen that won't cause disease, but will provoke an immune response that can block or kill the virus if a person becomes infected. There are at least eight types being tried against the coronavirus, and they rely on different viruses or viral parts.



* Other efforts include testing whether existing vaccines against poliovirus or tuberculosis could help to fight SARS-CoV-2 by eliciting a general immune response (rather than specific adaptive immunity), or whether certain immune cells could be genetically modified to target the virus.

A Review of the Progress and Challenges of Developing a Vaccine for COVID-19

REVIEW
published: 14 October 2020
doi: 10.3389/fimmu.2020.585354

frontiers in Immunology

Omna Sharma[1], Ali A. Sultan[2], Hong Ding[3] and Chris R. Triggle[3]**

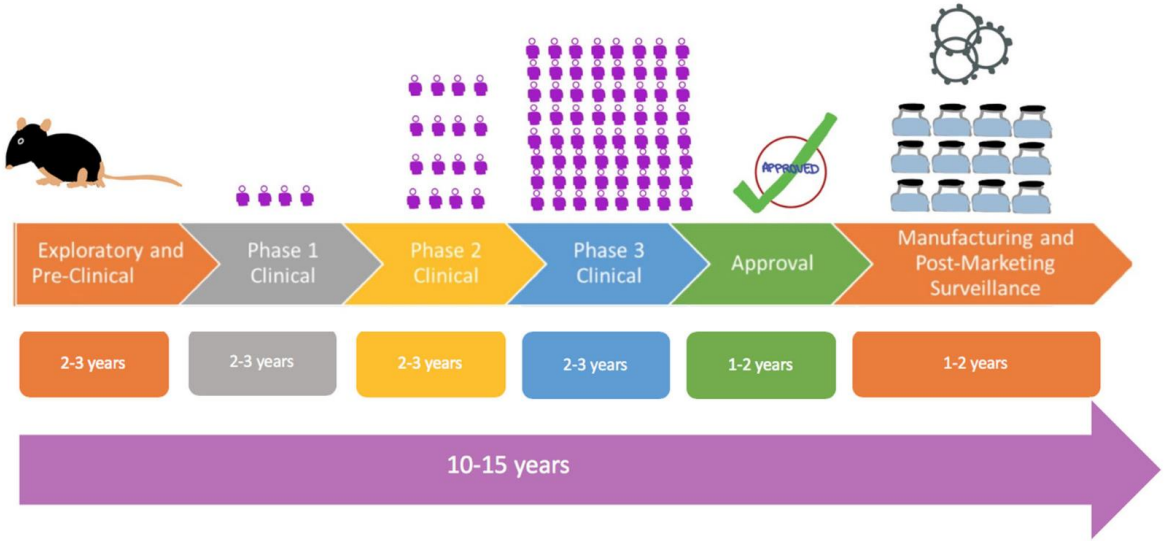


FIGURE 1 | Flowchart showing traditional process of vaccine development from exploratory, pre-clinical studies to Phase 1 studies in a comparatively few control volunteers as depicted by the figure to larger Phase 2 and Phase 3 studies. The symbol is a representation of the number of human subjects in trials.

FIGURE 2 | Flowchart showing accelerated process of vaccine development in a pandemic with combined phases, pre-approval, and rapid large-scale manufacturing. The symbol is a representation of the number of human subjects in trials.

THE DECISION TO FOCUS ESSENTIALLY ON VACCINES TO STOP THE PANDEMIC HAS **FORCED EXTREMELY SHORT EXPERIMENTATION TIMES (FROM ABOUT 10 YEARS TO A FEW MONTHS),** not allowing, according to **some scientists**, to sufficiently verify the **EFFICACY** and **SAFETY** of the **vaccine platforms (in fact experimental)…**

A Review of the Progress and Challenges of Developing a Vaccine for COVID-19

REVIEW
published: 14 October 2020
doi: 10.3389/fimmu.2020.585354

Omna Sharma[1], Ali A. Sultan[2], Hong Ding[3] and Chris R. Triggle[3]**

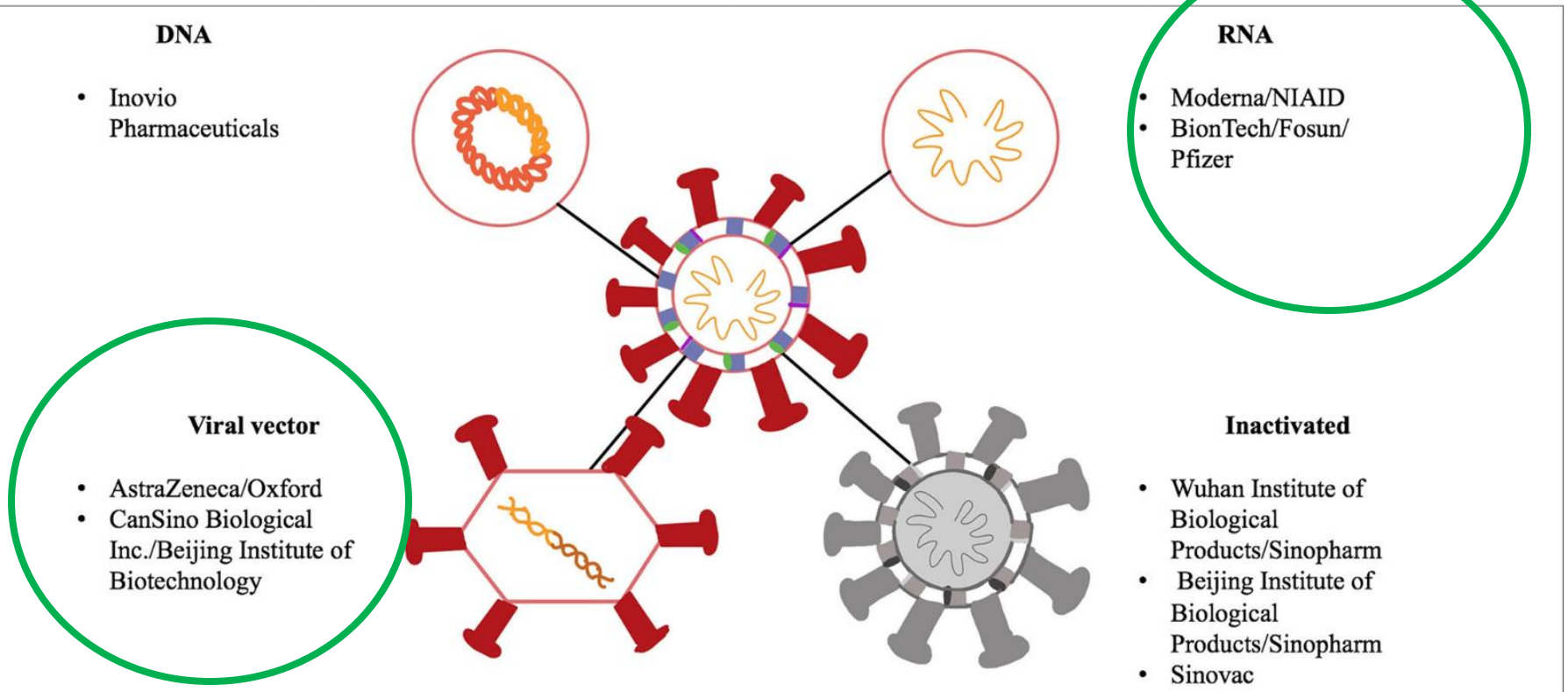


FIGURE 3 | Schematic showing a representation of SARS-CoV-2 along with different components of the virus as potential vaccine targets. SARS-CoV-2 is a single stranded RNA virus, has a lipid bilayer and consists of a spike S protein along with membrane and envelope proteins. DNA and RNA-based vaccines are made from the viral sequence of the virus. Viral vector vaccines utilize another virus, for example an adenovirus, and incorporate genetic material from SARS-CoV-2 into its genome. Inactivated vaccines involve SARS-CoV-2 that has been killed using physical or chemical means.

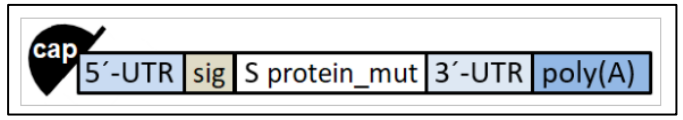
Also see: berthub.eu

Reingegnerizzazione del Codice Sorgente del Vaccino BioNTech/Pfizer

Dec 28 2020 17 mins read

As for ***Pfizer*** and ***Moderna*** *vaccines*, an **RNA sequence (similar to that encoding the spike protein in SARS-CoV2) *drawn by computer*** (!!) and ***synthesized*** **in the laboratory** is **inoculated (using a lipid nanoparticle)..**

Una stampante Codex DNA BioXp 3200 DNA printer



WHO
International Nonproprietary Names Programme
9/2020

Sequence / Séquence / Secuencia

GAGAAΨAAAC	ΨAGΨAΨΨCΨΨ	CΨGGΨCCCCA	CAGACΨCAGA	GAGAACCCGC	50
CACCAΨGΨΨC	GΨGΨΨCCΨGG	ΨGCΨGCΨGCC	ΨCΨGGΨGΨCC	AGCCAGΨGΨG	100
ΨGAACCΨGAC	CACCAGAACA	CAGCΨGCCΨC	CAGCCΨACAC	CAACAGCΨΨΨ	150
ACCAGAGGCG	ΨGΨACΨACCC	CGACAAGGΨG	ΨΨCAGAΨCCA	GCGΨGCΨGCA	200
CΨCΨACCCAG	GACCΨGΨΨCC	ΨGCCΨΨΨCΨΨ	CAGCAACGΨG	ACCΨGGΨΨCC	250
ACGCCAΨCCA	CGΨGΨCCGGC	ACCAAΨGGCA	CCAAGAGAΨΨ	CGACAACCCC	300
GΨGCΨGCCCΨ	ΨCAACGACGG	GGΨGΨACΨΨΨ	GCCAGCACCG	AGAAGΨCCAA	350
CAΨCAΨCAGA	GGCΨGGAΨCΨ	ΨCGGCACCAC	ACΨGGACAGC	AAGACCCAGA	400
GCCΨGCΨGAΨ	CGΨGAACAAC	GCCACCAACG	ΨGGΨCAΨCAA	AGΨGΨGCGAG	450
ΨΨCCAGΨΨCΨ	GCAACGACCC	CΨΨCCΨGGGC	GΨCΨACΨACC	ACAAGAACAA	500

I primi 500 caratteri del mRNA BNT162b2. Fonte: World Health Organization

E così nel vaccino BioNTech/Pfizer, ogni molecola di uracile U è stata sostituita con una molecola di 1-metil-3'-pseudouridina, indicata con Ψ. E la parte ingegnosa è che anche se questa Ψ sostituita calma il nostro sistema immunitario, le parti chiave della cellula la continuano a considerare come una normale U.

La fine del filamento di mRNA è poliadenilata. termina con un sacco di AAAAAAAAAAAAAA

Il terzo e quarto codone, sopra, rappresentano modifiche nel codice. Gli aminoacidi K e V sono entrambi sostituiti da 'P', ossia Prolina. Per la 'K', ciò richiede tre cambiamenti, indicati con !!!, e per la 'V' ne ha richiesti due ('!!').

Caratteristiche principali	Pfizer-BioNTech	Moderna
Tipologia	mRNA	mRNA
Data autorizzazione condizionata EMA	21 dic 2020	6 gen 2021
Temperatura conservazione	-78 °C	2-8 °C
Età minima autorizzata	≥16 anni	≥18 anni
Numero dosi necessarie	2	2
Intervallo tra 1ª e 2ª dose	21 giorni	28 giorni
Tempo dalla 2ª dose per raggiungere l'efficacia massima	7 giorni	14 giorni
Efficacia sulla COVID-19 sintomatica dopo 1ª dose	52,4% (IC 95% 29,5-68,4)	80,2% (IC 95% 55,2-92,5)
Efficacia sulla COVID-19 sintomatica dopo 2ª dose	94,6% (IC 95% 89,6-97,6)	94,1% (IC 95% 89,3-96,8%)
Durata della protezione*	Non nota	Non nota
Efficacia sull'infezione asintomatica da SARS-CoV-2 e sulla sua trasmissione	Non nota	Non nota

We do not know:
- neither the duration of the immunity conferred,
- nor the ability to prevent infection and contagions
(these vaccines only inhibit the entry of the virus into human cells .. so they should reduce the risks of serious disease not allowing the eradication of the virus)

*I dati di efficacia sono disponibili a 2 mesi, periodo di osservazione (follow-up) degli studi e al momento non è possibile valutare la durata della protezione oltre tale periodo

GIMBE EVIDENCE FOR HEALTH

BNT162b2

Pfizer/BioNTech

€€

Vaccino a mRNA incapsulato

Contiene mRNA codificante per la proteina Spike, avvolto in nanoparticelle lipidiche.
Una volta assorbito dalle cellule, i ribosomi leggono il mRNA e producono la proteina Spike, che viene identificata come estranea dal sistema immunitario e stimola la produzione di anticorpi

Efficacia*

FASE III 95%

**Efficacia nel prevenire la malattia COVID-19 dalla variante standard, in un trial di fase 3 con 43000 volontari*

Dosaggio

- **2 dosi** da 0,3 ml
- A distanza di **21 giorni**
- Età > 16 anni

Stoccaggio

- **-80°C**: 6 mesi
- **+2-8°C**: 5 giorni
- **25°C**: 2 ore

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

mRNA-1273

Moderna

€€€

Vaccino a mRNA incapsulato

Contiene mRNA codificante per la proteina Spike, avvolto in nanoparticelle lipidiche.
Una volta assorbito dalle cellule, i ribosomi leggono il mRNA e producono la proteina Spike, che viene identificata come estranea dal sistema immunitario e stimola la produzione di anticorpi

Efficacia*

FASE III 94%

**Efficacia nel prevenire la malattia COVID-19 dalla variante standard, in un trial di fase 3 con 30000 volontari (trial COVE)*

Dosaggio

- **2 dosi** da 0,5 ml
- A distanza di **28 giorni**
- Età > 18 anni

Stoccaggio

- **-20°C**: 7 mesi
- **+2-8°C**: 30 giorni
- **+25°C**: 12 ore

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

NVX-CoV2373

Novavax

€

Vaccino a subunità virale

Contiene delle nanoparticelle alle quali sono legate copie di proteina Spike preformate (coltivate e purificate in laboratorio), con l'aggiunta di una sostanza adiuvante che stimola la risposta immunitaria (denominata saponina).

Efficacia

FASE III 95%*
FASE III 85%**
FASE IIb 60%***

?

*Efficacia complessiva nella variante standard
**Efficacia complessiva nella variante "sudafricana" (B1.351)
***Efficacia complessiva nella variante "inglese" (B1.1.7)

Dosaggio

- **2 dosi**
- A distanza di **21 giorni**

Stoccaggio

- **-20°C:** 2 anni
- **+2-8°C**: 6 mesi

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

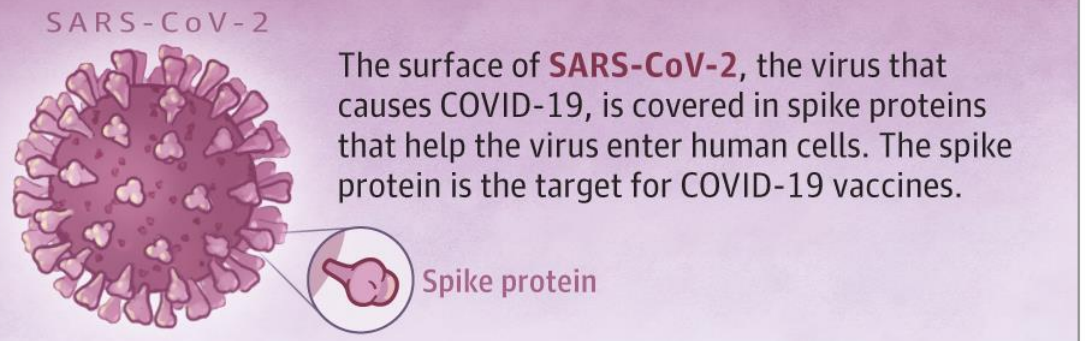
JAMA Patient Page

March 1, 2021

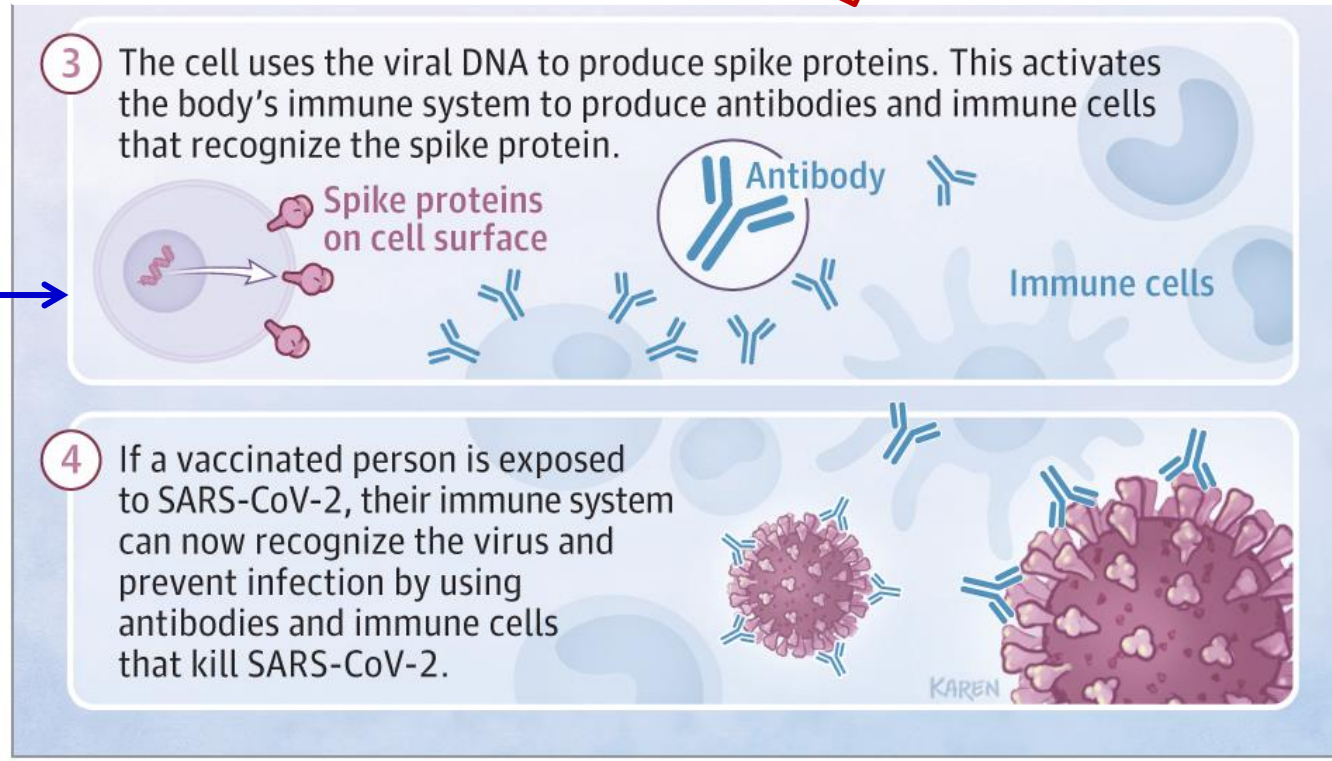
The Johnson & Johnson Vaccine for COVID

Edward H. Livingston, MD[1]; Preeti N. Malani, MD, MSJ[2]; C. Buddy Creech, MD, MPH[3]

Viral vector vaccine for COVID-19



.. with regard to the **ASTRAZENECA, SPUTNIK AND JOHNSON & JOHNSON VACCINES**, THE VIRAL VECTOR IS AN **ADENOVIRUS (OF CHIMPANZEE IN THE FIRST, HUMAN IN THE OTHER TWO) WHICH HAS BEEN GENETICALLY MODIFIED** (to insert the sequence encoding the spike protein) .



ChAdOx1 / AZD1222

Oxford/AstraZeneca

Vaccino a vettore virale

Contiene un virus innocuo per l'uomo (adenovirus di Chimpanzé modificato) al cui interno c'è il DNA necessario per produrre la proteina Spike.
Le cellule infettate dal virus producono la proteina Spike, che stimola la produzione di anticorpi da parte del sistema immunitario.

Efficacia*

FASE III 70%

**Efficacia complessiva nel prevenire la malattia COVID-19 dalla variante standard, in un trial di fase 3 con 11000 volontari*

Dosaggio

- **2 dosi**
- A distanza di **12 settimane**
- Età > 18 anni

Stoccaggio

- **+2-8°C**: 6 mesi
- **+25°C**: 6 ore

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

JNJ-78436735 / Ad26.COV2.S

Johnson&Johnson

Vaccino a vettore virale

Contiene un virus innocuo per l'uomo (adenovirus Ad26) al cui interno c'è il DNA necessario per produrre la proteina Spike.
Le cellule infettate dal virus producono la proteina Spike, che stimola la produzione di anticorpi da parte del sistema immunitario.

Efficacia

FASE III 72%*

FASE III 57%**

?

**Efficacia complessiva nella variante standard*
***Efficacia complessiva nella variante "sudafricana" (B1.351)*

Dosaggio

- **1 dose**
- Età > 18 anni

Stoccaggio

- **-20°C:** 2 anni
- **+2-8°C**: 3 mesi

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

Sputnik V

Sputnik V / Gam-Covid-Vac

Vaccino a vettore virale

Contiene un virus innocuo per l'uomo (adenovirus Ad26) al cui interno c'è il DNA necessario per produrre la proteina Spike.
Le cellule infettate dal virus producono la proteina Spike, che stimola la produzione di anticorpi da parte del sistema immunitario.

Efficacia*

FASE III 91%

**Efficacia complessiva nella variante standard*

Dosaggio

- **2 dosi** da 0,5 ml
- A distanza di 21 giorni

Stoccaggio

- **-20°C:** 2 anni
- **+2-8°C**: 6 mesi

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

BBIBP-CoV

Sinopharm

€€€

Vaccino a virus inattivato

Contiene copie del virus SARS-COV-2 inattivato chimicamente (mediante una sostanza chiamata beta-propiolactone).
Il virus non può replicare, ma mantiene tutte le proteine che scatenano la reazione immunitaria.

Efficacia* FASE III 91%

**Efficacia complessiva nella variante standard*

Dosaggio
- **2 dosi**
- A distanza di **14 giorni**

Stoccaggio
- **+2-8°C**: ? mesi

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CoronaVac

SinoVac

€€€

Vaccino a virus inattivato

Contiene copie del virus SARS-COV-2 inattivato chimicamente (mediante una sostanza chiamata beta-propiolactone).
Il virus non può replicare, ma mantiene tutte le proteine che scatenano la reazione immunitaria.

Efficacia* FASE III ? 50%

**Efficacia complessiva nella variante standard*

Dosaggio
- **2 dosi**
- A distanza di **21 giorni**

Stoccaggio
- **+2-8°C**: ? mesi

@H3_Surgical_Team. Ultimo aggiornamento 11/03/2021

COVID-19 vaccine AstraZeneca analysis print

Report Run Date: 25-Feb-2021
Data Lock Date: 24-Feb-2021 19:00:03

All UK spontaneous reports received between 4/01/21and 21/02/21
for COVID-19 vaccine Oxford University/AstraZeneca

Reaction Name	Total	Fatal
Cardiac disorders Cardiac disorders cont'd		
Ventricular arrhythmias and cardiac arrest		
Cardiac arrest	24	11
Ventricular arrhythmia	1	0
Ventricular extrasystoles	1	0
Ventricular fibrillation	1	0
Ventricular tachycardia	2	0
Cardiac disorders SOC TOTAL	**1516**	**30**
Death and sudden death		
Death	128	128
Sudden death	9	9
Febrile disorders		
Hyperpyrexia	22	0
Masked fever	1	0
Pyrexia	14850	1
Coronavirus infections		
Asymptomatic COVID-19	2	0
COVID-19	129	10
COVID-19 pneumonia	4	4
Cerebral haemorrhage	6	1
Cerebral infarction	2	1
Cerebrovascular accident	35	6
Vascular disorders SOC TOTAL	**1274**	**1**
TOTAL REACTIONS FOR DRUG	**157637**	**244**
TOTAL REPORTS	**42917**	
TOTAL FATAL OUTCOME REPORTS		**244**

la Repubblica

AstraZeneca, casi di trombosi dopo il vaccino: allarme in Italia e in Europa. Von der Leyen a Draghi: "Non ci sono nessi"

Aifa blocca un lotto Astrazeneca, tre morti sospette

Sospesa la vaccinazione dei professori a Cosenza

Redazione ANSA

11 marzo 2021
21:25

Un **caso sospetto** sarebbe stato **registrato in Sicilia**. Un militare in servizio ad Augusta (Siracusa), Stefano Paternò, 43 anni, originario di Corleone, ma residente a Misterbianco (Catania) è morto per un arresto cardiaco nella sua abitazione. Il militare il giorno precedente **si era sottoposto alla prima dose di vaccino Astrazeneca dello stesso lotto a cui fa riferimento l'Aifa**. Sul caso la Procura di

La Procura di Catania ha aperto un fascicolo, al momento senza indagati e ipotizzando l'omicidio colposo, sulla morte di Davide Villa, 50 anni, agente della squadra mobile di Catania, deceduto 12 giorni fa dopo l'inoculazione del vaccino. Al poliziotto è stata

I magistrati hanno poi disposto accertamenti per confermare che un altro militare, a Trapani, morto per infarto oltre 48 ore dopo la somministrazione del vaccino. "Allo stato non vi sono evidenze da cui desumere che l'infarto sia stato causato o anche concausato dal vaccino, ma sono in corso altri accertamenti di tipo istologico",

La professoressa di Napoli deceduta tre giorni dopo aver ricevuto la prima dose di vaccino anti-Covid è morta a causa di un infarto intestinale. **Annamaria Mantile**, 62 anni, e nessuna patologia pregressa, non è deceduta per le conseguenze della vaccinazione,

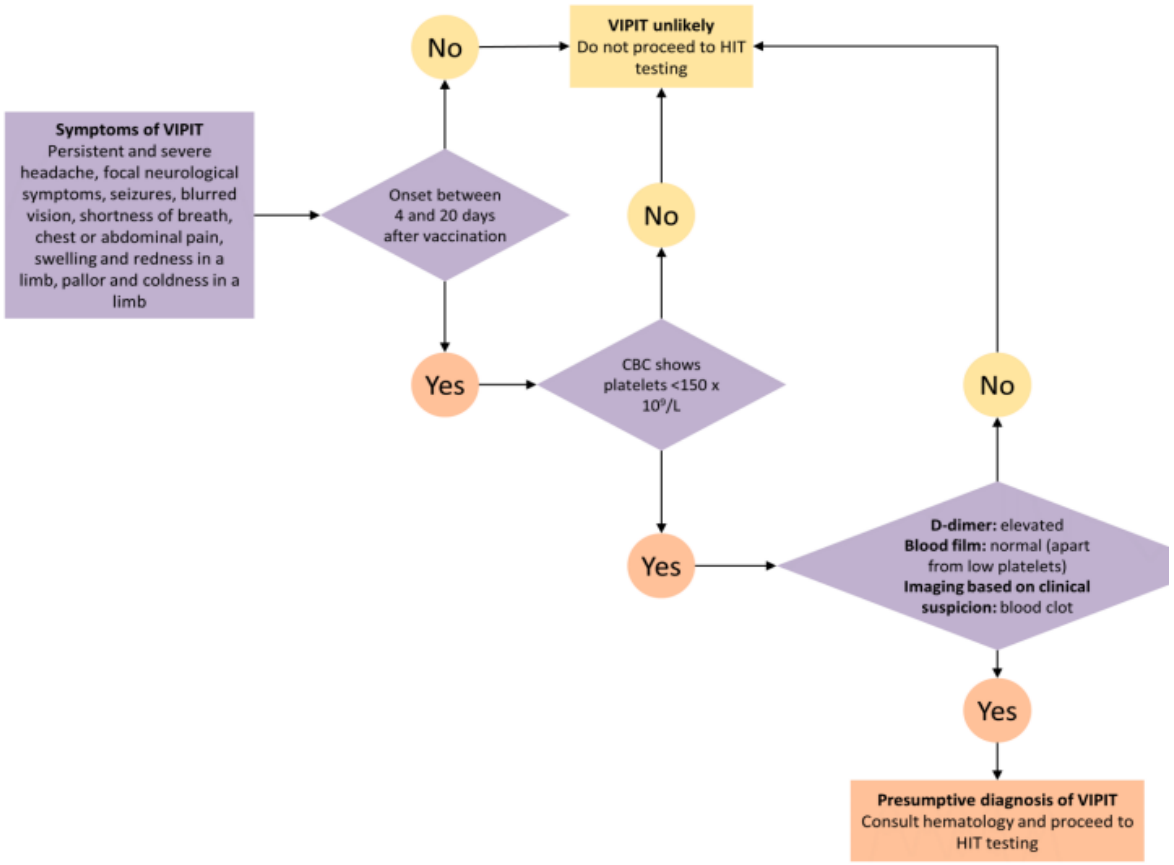
Published: March 26, 2021

SCIENCE TABLE
COVID-19 ADVISORY FOR ONTARIO

SCIENCE BRIEFS

Vaccine-Induced Prothrombotic Immune Thrombocytopenia (VIPIT) Following AstraZeneca COVID-19 Vaccination

Menaka Pai, Allan Grill, Noah Ivers, Antonina Maltsev, Katherine J. Miller, Fahad Razak, Michael Schull, Brian Schwartz, Nathan M. Stall, Robert Steiner, Sarah Wilson, Ullanda Niel, Peter Jüni, Andrew M. Morris on behalf of the Drugs & Biologics Clinical Practice Guidelines Working Group and the Ontario COVID-19 Science Advisory Table



The Paul Ehrlich Institute has demonstrated that affected individuals in Germany have **antibodies that induce massive platelet activation, reducing the platelet count and causing thrombosis**. This phenomenon **mimics heparin-induced thrombocytopenia (HIT)** yet it does not require heparin as a trigger. It has been named **vaccine-induced prothrombotic immune thrombocytopenia (VIPIT)**

In patients with confirmed VIPIT and severe or life-threatening blood clots (e.g., CSVT, splanchnic vein thrombosis), it is important to dampen the prothrombotic response with intravenous immunoglobulin (IVIG). **Administration of high dose IVIG (1 g/kg of body weight daily for two days) is appropriate** and can be guided by the consulting hematologist.

SCIENTIFIC AMERICAN

The Most Worrying Mutations in Five Emerging Coronavirus Variants

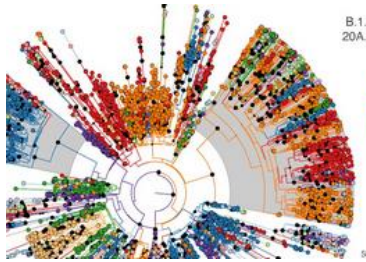
By Sara Reardon on January 29, 2021

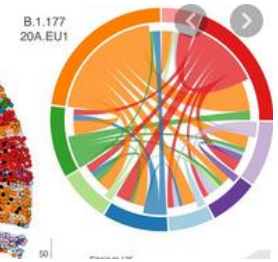
Here is a guide to novel versions of the COVID-causing virus—and genetic changes that can make them more contagious and evasive in the body

SPAIN

Names: 20A.EU1, B.1.177

Notable mutation: A222V

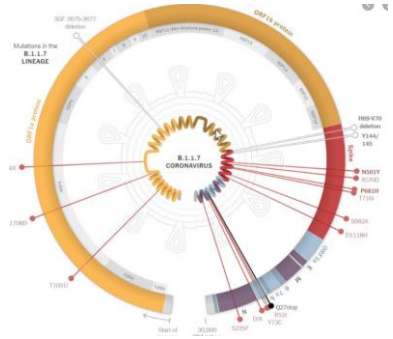




U.K.

Names: 20I/501Y.V1, VOC 202012/01, B.1.1.7

Notable mutation: N501Y



BRAZIL

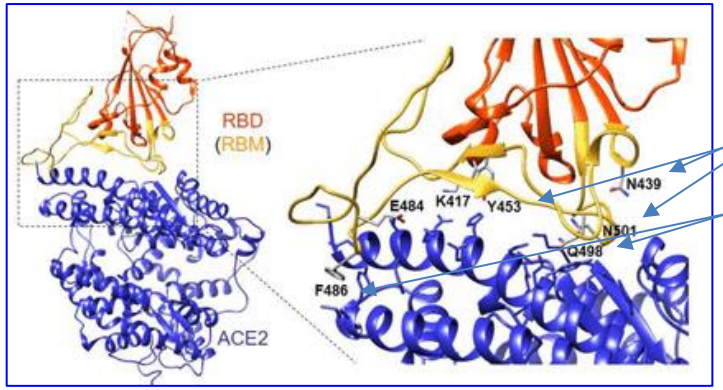
Names: B.1.1.28, VOC202101/02, 20J/501Y.V3, P.1

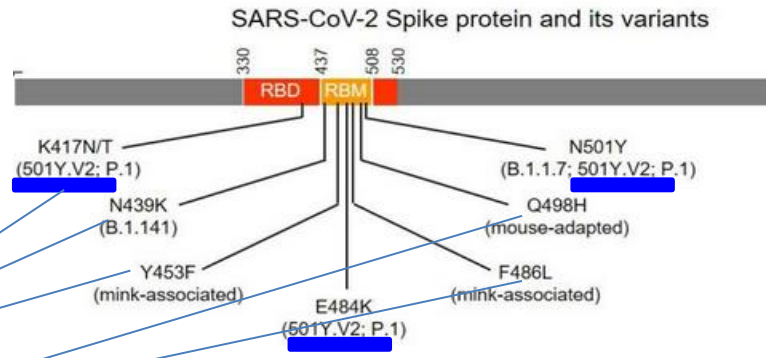
Notable mutations: E484K, K417N/T, N501Y

SOUTH AFRICA

Names: 20H/501Y.V2, B.1.351

Notable mutations: E484K, N501Y, K417N

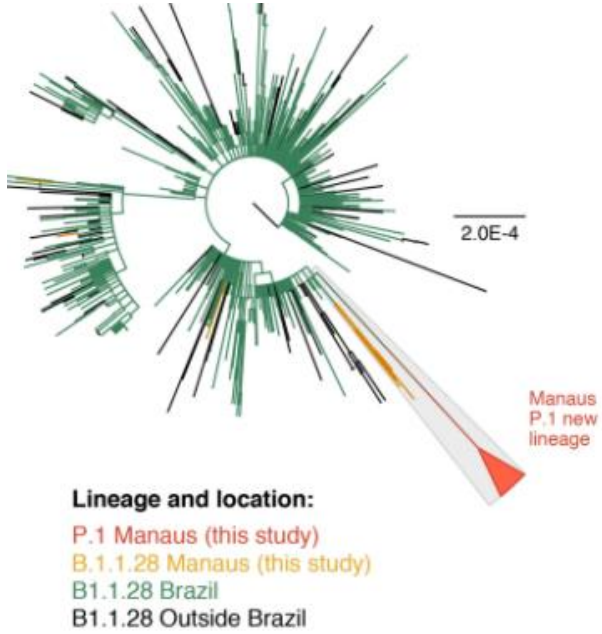




What we're seeing are **similar mutations occurring in multiple places**.. This is quite indicative that these mutations are doing something.. In particular, **they appear to help the virus transmit more readily and evade the immune system**

Names: VUI202101/01, P.2

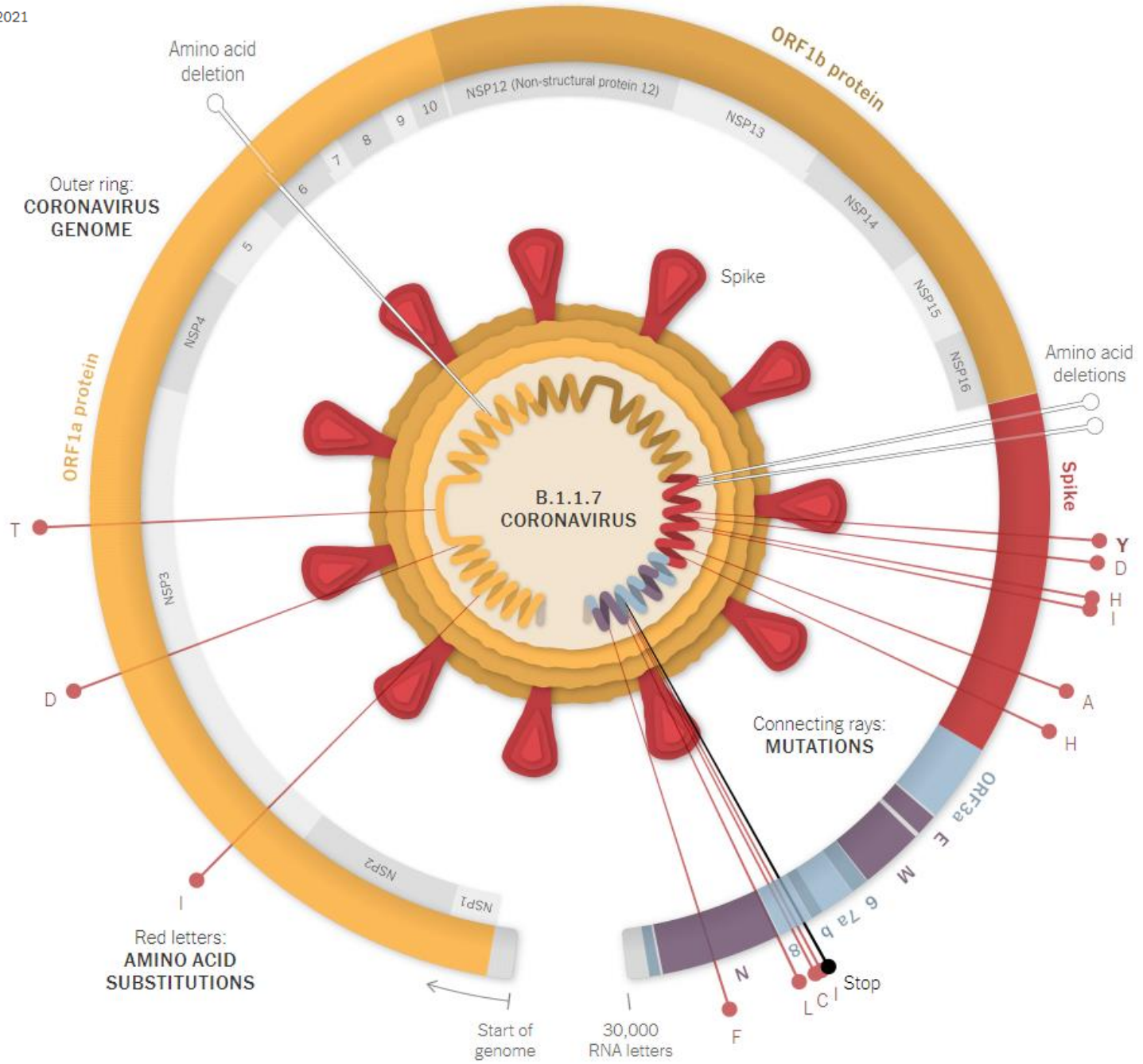
Notable mutation: E484K

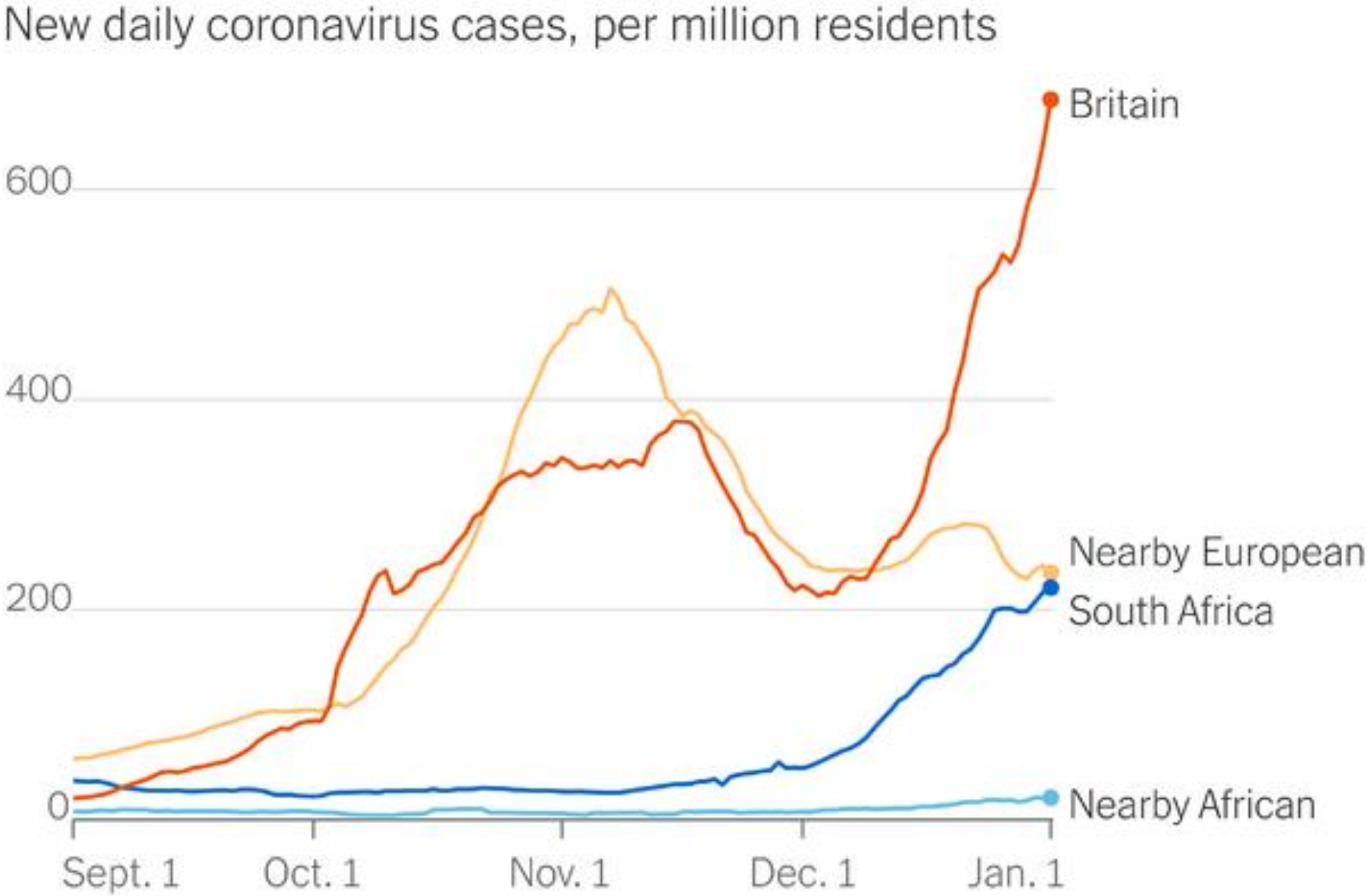


Inside the B.1.1.7 Coronavirus Variant

By Jonathan Corum and Carl Zimmer Jan. 18, 2021

Like all *RNA viruses, Coronaviruses* have a **high rate of mutations**, which **increases as the virus circulates** and is subjected to the **pressure of our immunocompetent systems,** but also of **drugs *and* vaccines**.
In the last 2 months the ***"English, South African and Brazilian" variants*** have been imposing themselves all over the world ..causing an **increase in infections** and **fear of a possible lower efficiency both of the natural immunity acquired so far and of the vaccines…**



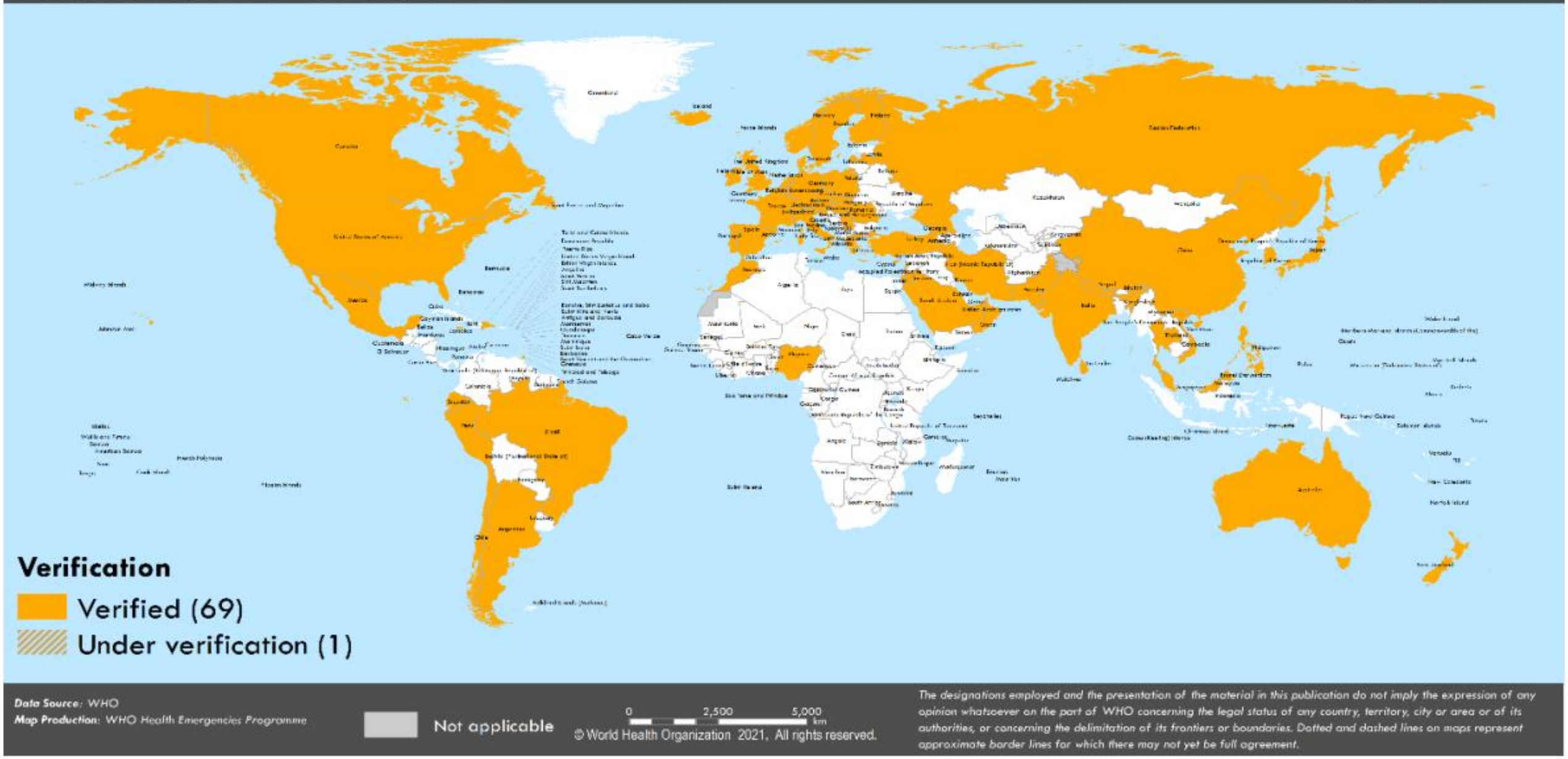


The **variant, known as B.1.1.7., has not been known to lead to more severe cases** of Covid-19, but its **circulation is likely to portend more infections and more hospitalizations…**

More than 30 other countries, including the U.S., have diagnosed cases with the variant, which appears to be **between 10 percent and 60 percent more transmissible** than the original version.
It could soon become the dominant form of the virus

Countries/territories/areas reporting VOC 202012/01 variant (situation as of 25 January 2021)

World Health Organization



Data Source: WHO
Map Production: WHO Health Emergencies Programme

Variant of concern B.1.1.7. The Government of the United Kingdom of Great Britain and Northern Ireland; 2021. Available at: https://www.gov.uk/government/publications/nervtag-paper-on-covid-19-variant-of-concern-b117 **Declared emerging in December 2020**, **the peak of cases was reached in late January**. **Thanks to the containment measures in recent weeks the trend has been decreasing**

Countries/territories/areas reporting 501Y.V2 variant (situation as of 25 January 2021)

World Health Organization

Data Source: WHO
Map Production: WHO Health Emergencies Programme

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Variant of concern 501Y.V2 (first identified in South Africa in December 2020) **Declared emerging in December 2020**, **the peak of cases was reached in late January**. **Thanks to the containment measures in recent weeks the trend has been decreasing** It may **escape, in some cases, the neutralizing antibody response** caused both by a previous natural infection, and by Moderna and Pfizer-BioNTech Vaccines (preliminary *in vitro* studies)

Countries/territories/areas reporting P.1 variant (situation as of 25 January 2021)

World Health Organization

Data Source: WHO
Map Production: WHO Health Emergencies Programme

The Variant P.1 was first reported in January in Japan and Korea in **travelers arriving from Brazil**. It is **unrelated** to variants 501Y.V2 and VOC 202012/01 and has 11 spike protein mutations, 3 of which i n RBD. **Greater transmissibility and propensity for reinfection are hypothesized**

Covid, variante inglese come uragano «di forza 5». Osterholm mette in guardia Biden

Covid, la variante inglese fa tremare gli Stati Uniti. «Ci vorrà più di un vaccino per tenere a bada questa mutazione e non avere un'impennata di infezioni nelle prossime settimane. È come se ora fossimo seduti su una spiaggia con 20 gradi al sole, un cielo blu e una brezza perfetta, ma io vedo un uragano in lontananza ed è difficile convincere la gente ad evacuare adesso, con questo cielo. Ma l'uragano sta arrivando». Parla così il celebre epidemiologo americano **Michael Osterholm**, direttore del dipartimento di Malattie infettive dell'università del Minnesota e consigliere del presidente Biden per la lotta alla pandemia, che ha paragonato i rischi della variante inglese del virus SarsCoV2 a «un uragano di categoria 5» in arrivo, in grado di causare «una marea in salita di nuovi casi». Parlando con i media americani, Osterholm ha lanciato l'allarme:

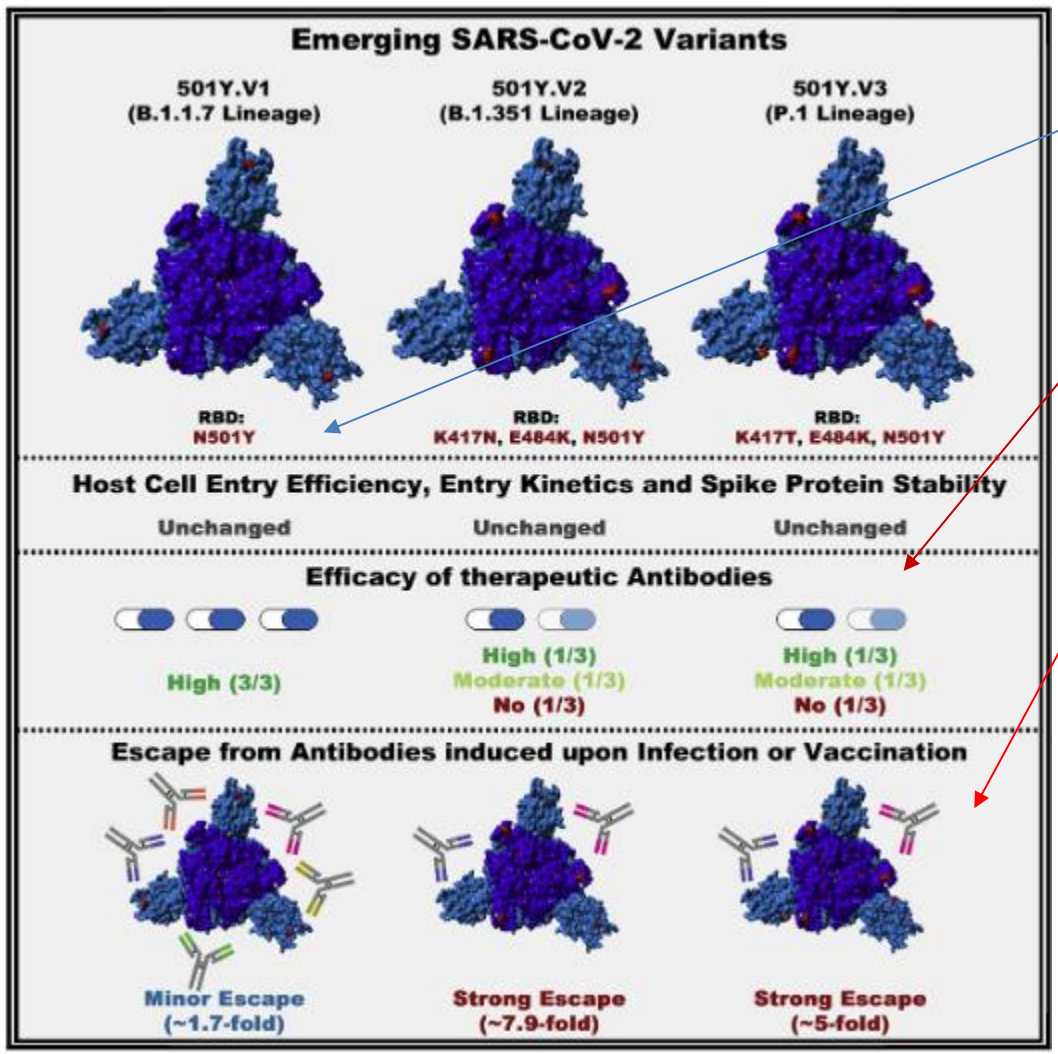
Contagi Covid risalgono, allarme scuole. Cauda: «Da riaperture +15% casi serve stop and go»

FOTO
LA MOSTRA
Con disegni, mappe e foto inedite ha riaperto l'esposizione "Dall'Italia...

ARTICOLO
MONDO
Zone rosso scuro Bolzano e Friuli Venezia Giulia (uniche aree italiane): le nuove mappe Ue

UK VOC 202012/01, B.1.1.7 with 7 amino acid substitutions	69-70 del	144-145 del	N501Y	A570D D614G	P681H T716I	S982A D1118H
South Africa VOC 501Y.V2, B.1.351 IC-0433 with 7 amino acid substitutions	D80A	242-245 del R246I	K417N E484K N501Y	D614G A701V		
Isolate from travelers from Brazil, B.1.1.248 IC-0561 with 12 amino acid substitutions	L18F T20N P26S	D138Y R190S	K417T E484K N501Y	D614G H655Y		T1027I V1176F

SARS-CoV-2 variants B.1.351 and P.1 escape from neutralizing antibodies



B.1.1.7, B.1.351, and P.1 do not show augmented host cell entry

B.1.351 and P.1 can escape from therapeutic antibodies

B.1.351 and P.1 evade antibodies induced by infection and vaccination

Entry inhibitors under clinical evaluation block all variants

…. our findings indicate that the **B.1.351 and P.1 variants might be able to spread in convalescent patients or BNT162b2-vaccinated individuals** and thus constitute an **elevated threat to human health**.

Containment of these variants by non-pharmaceutic interventions is an important task

Cell

Article

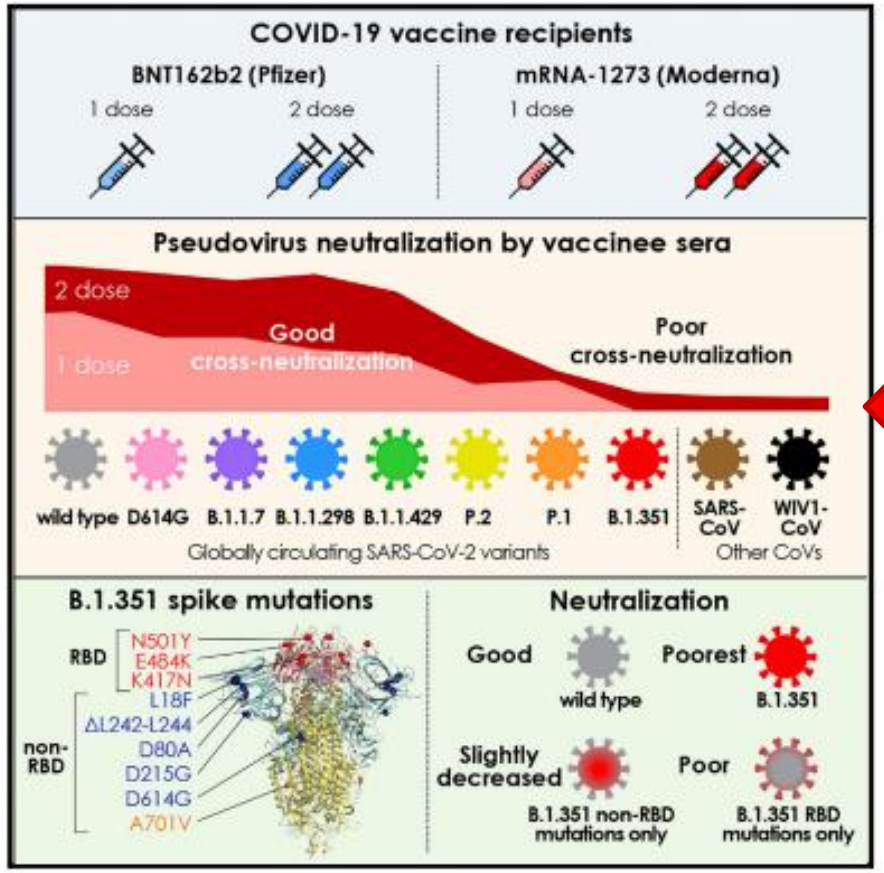
Multiple SARS-CoV-2 variants escape neutralization by vaccine-induced humoral immunity

Authors

Wilfredo F. Garcia-Beltran, Evan C. Lam, Kerri St. Denis, ..., A. John Iafrate, Vivek Naranbhai, Alejandro B. Balazs

Correspondence

abalazs@mgh.harvard.edu



Numerous variants of SARS-CoV-2-harboring mutations in spike have arisen globally

mRNA vaccines elicit potent neutralizing activity against homologous pseudovirus

Cross-neutralization of strains with receptor-binding domain (RBD) mutations is poor

Both RBD and non-RBD mutations mediate escape from vaccine-induced humoral immunity

In brief

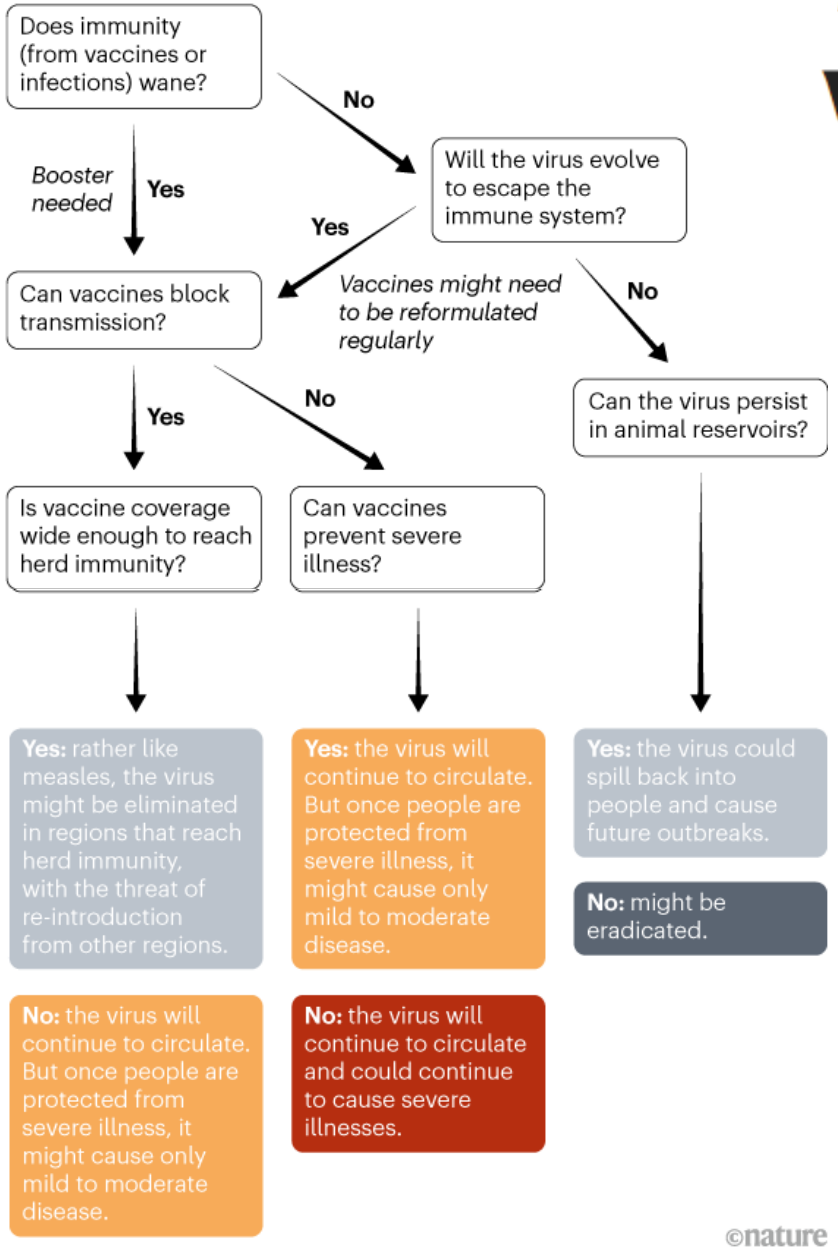
Analyses of sera from individuals vaccinated with one or two doses of mRNA vaccines against 10 circulating variants of SARS-CoV-2 show that P.1 and B.1.351 in particular exhibit limited neutralization by vaccine-induced humoral immunity. This escape was found to be largely mediated by mutations in the receptor-binding domain of SARS-CoV-2 spike.

Garcia-Beltran et al., 2021, Cell *184*, 1–12
April 29, 2021
https://doi.org/10.1016/j.cell.2021.03.013

CellPress

CORONAVIRUS: HERE TO STAY?

SARS-CoV-2 has spread so far around the world that it is very unlikely to be eradicated. Here are some of the key factors that are likely to lead to it becoming endemic.



©nature

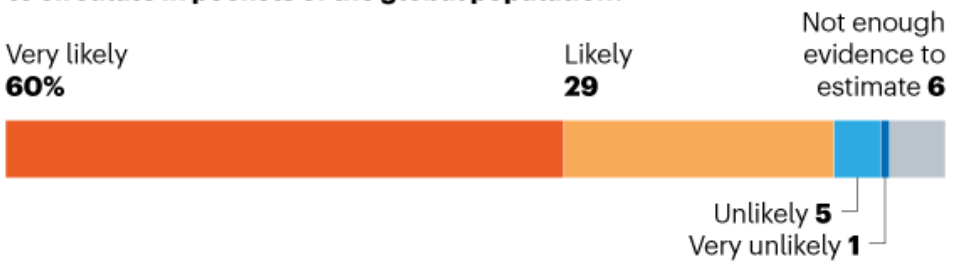
NEWS FEATURE · 16 FEBRUARY 2021

The coronavirus is here to stay — here's what that means

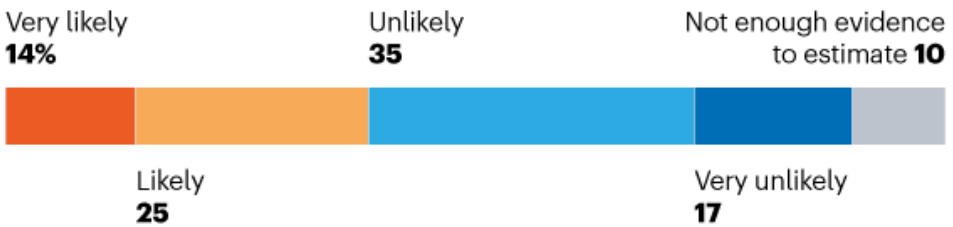
ENDEMIC FUTURE

In a *Nature* poll, 89% of scientists felt that SARS-CoV-2 was either very likely or likely to become an endemic virus.

How likely do you think it is that SARS-CoV-2 will become an endemic virus: that is, one that continues to circulate in pockets of the global population?



How likely do you think it is that SARS-CoV-2 can be eliminated from some regions?



119 immunologists, infectious-disease researchers and virologists from 23 countries. Percentages do not add up to 100% because of rounding.

©nature

Many scientists expect the **virus that causes COVID-19 to become endemic**, but it could pose less danger over time.

By Harriet Constable 27th April 2020

BBC

The new coronavirus has spread rapidly in cities around the globe. How might the virus make us think differently about urban design in the future?

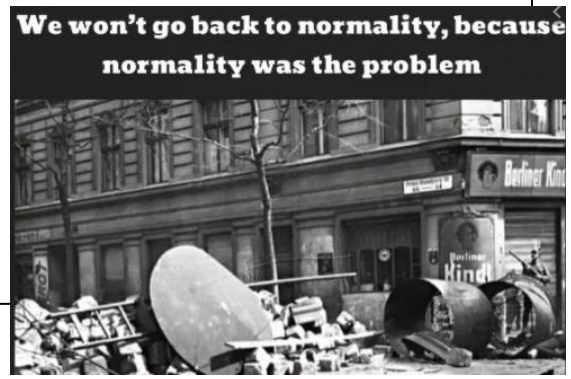
FUTURE

How do you build a city for a pandemic?

The 21st Century has so far seen Sars, Mers, Ebola, bird flu, swine flu and now Covid-19. If we have indeed entered an **era of pandemics**, how might we design the cities of tomorrow so that the outdoors doesn't become a no-go zone, but remains a safe and habitable space?

You might also like:

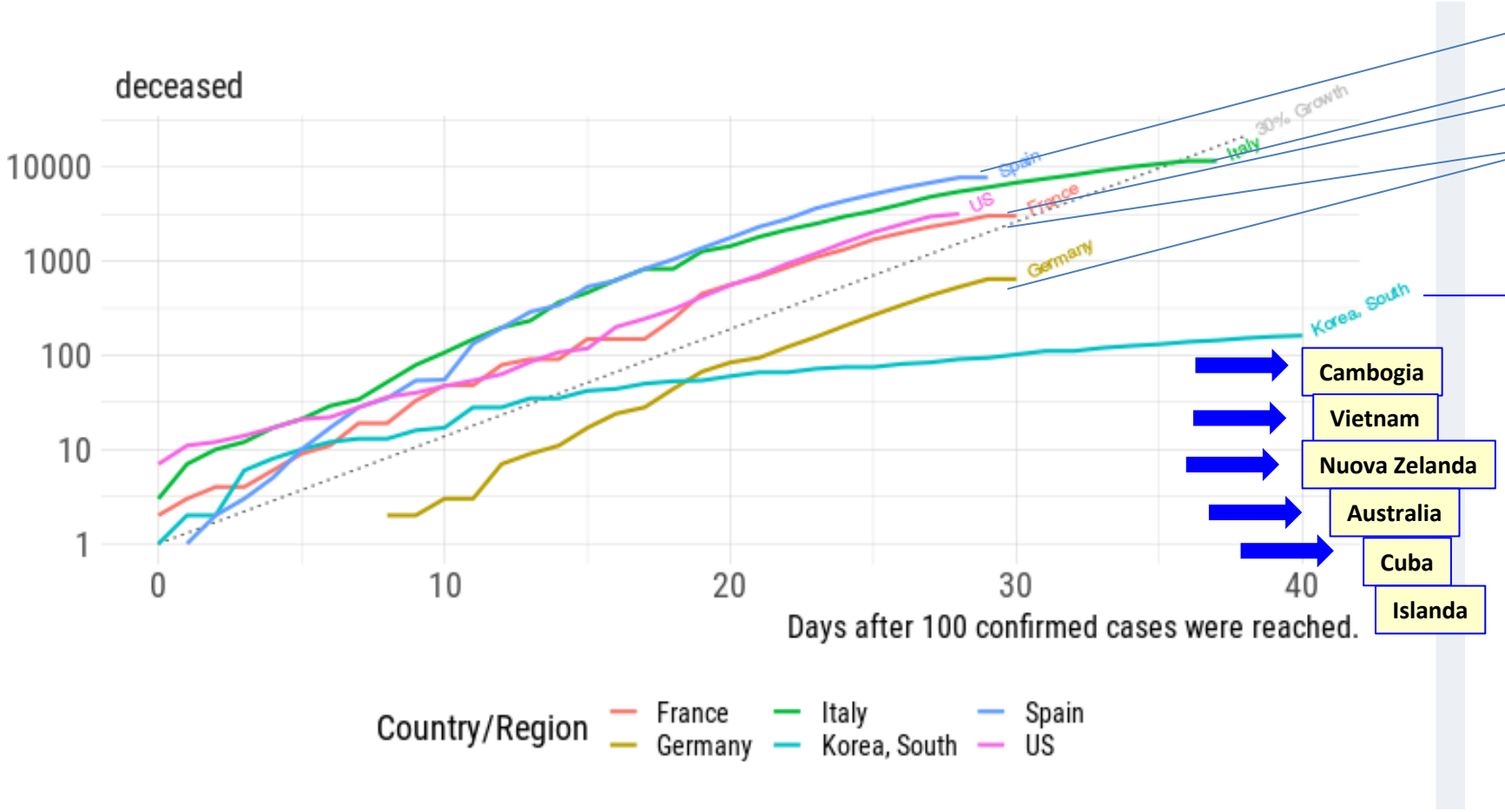
- **Why we can never go back to "normal"**
- **How global outbreaks are contained**
- **Should we use phones to track Covid-19**



… How to face the ***Era of Pandemics***

The Chinese authorities were able to build a 1,000-bed hospital in Wuhan from the ground up in just 10 days

II wave…..?



Cambogia

Vietnam

Nuova Zelanda

Australia

Cuba

Islanda

The GLOBAL DEVIDE between Asian and Western countries, (which have not been able to stop the virus since the early days) appears **equally evident after the first month.**

Yet, another confirmation of the validity of **the rule that during epidemics, every lost day implies an exponential growth in cases and deaths…**

The global divide. Asian versus Western Countries. **The diffusion patterns of SARS-CoV-2 deaths number growth in different countries** are outlined. Cumulative number of deceased is considered from the first day with 100 recognized cases. **South Korea is taken as example of a country accustomed to dealing with this type of emergency and "sensitized" by SARS/2002 related pandemic warnings.** Taken from Ernesto Burgio: ***COVID-19: the Italian Drama*** https://wsimag.com/science-and-technology/61967-covid-19-the-italian-drama

Inoltre abbiamo sottolineato come queste contromisure sarebbero state necessarie anche **per impedire che il virus**

-entrasse nuovamente negli **ambulatori** e negli **ospedali**;

-mettesse a rischio la vita dei nostri **colleghi medici e paramedici**;

-dilagasse nelle strutture **sanitarie e parasanitarie (RSA ecc.)** creando **catene di contagi** che sono per definizione le più pericolose e difficili da bonificare e mettendo a rischio la vita non solo degli affetti da COVID, ma anche degli altri pazienti ed ospiti delle strutture suddette.

A questo punto dobbiamo sottolineare:

- che le nostre valutazioni non sono in alcun modo finalizzate a rilevare sottovalutazioni e carenze, ma sono di carattere eminentemente **tecnico**, finalizzato a **richiedere in modo più incisivo e condiviso** l'analisi e 'adozione delle proposte su elencate
- che purtroppo la temuta **seconda ondata** è arrivata e presumibilmente si rivelerà altrettanto e forse più drammatica della prima (non foss'altro che perché estesa a tutto il territorio nazionale) e che con ogni probabilità solo un **periodo di *lockdown*** potrà permetterci di fermare nuovamente le catene di contagio e di **predisporre finalmente un sistema di medicina territoriale adeguato** (molte delle **sopra accennate soluzioni strategiche non essendo attuabili nel corso di un'ondata epidemica**: in particolare il monitoraggio che è possibile solo per numeri di casi e contatti relativamente contenuto)
- che recentemente anche su *Lancet* è comparso un articolo molto ben argomentato a sostegno della tesi che **solo i paesi asiatici hanno dimostrato di essere in grado di bloccare la pandemia**, appunto perché hanno messo in atto con grande tempestività ed efficacia la suddetta organizzazione territoriale (Burki T. ***China's successful control of COVID-19***. Lancet Infect Dis 2020; 20: 1240–41).

Ribadiamo che è estremamente urgente procedere in questa direzione, anche perché sarebbe **assurdo e pericoloso (anche sul piano economico e sociale/politico) dover procedere ad altri *lockdown*, di fatto di per sé insufficienti a fermare la pandemia se non associati ad un'organizzazione territoriale come quella suddescritta.**

THE LANCET
Infectious Diseases

NEWSDESK | VOLUME 20, ISSUE 11, P1240-1241, NOVEMBER 01, 2020

China's successful control of COVID-19

Talha Burki

Published: October 08, 2020 • DOI: https://doi.org/10.1016/S1473-3099(20)30800-8

While the world is struggling to control COVID-19, China has managed to control the pandemic rapidly and effectively. How was that possible? Talha Burki reports.

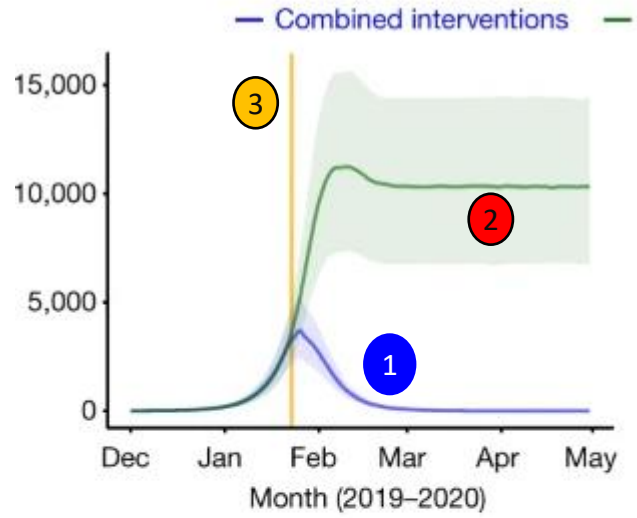
On Sept 22, 2020, US President Donald Trump gave a combative address to the UN General Assembly referring to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as the "China virus". He demanded that China was held accountable for "unleash[ing] this plague onto the world". Chinese President Xi Jinping, who addressed the General Assembly after Trump, urged nations affected by COVID-19 to "follow the guidance of science…and launch a joint international response to beat this pandemic". He added that "any attempt of politicising the issue or stigmatisation must be rejected". 9 days later, Trump tested positive

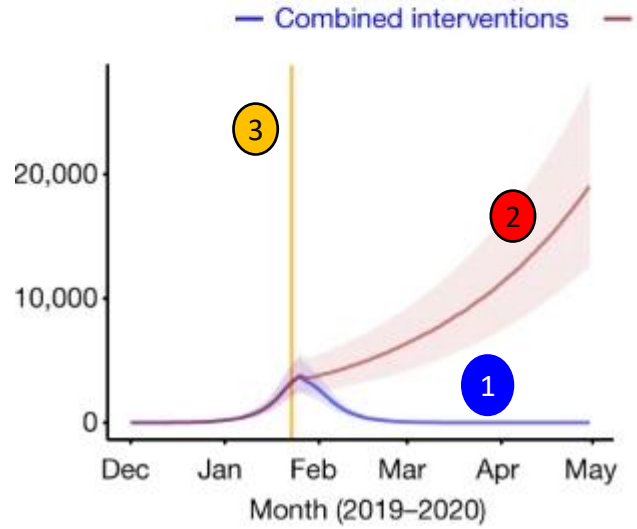
nature 04 May 2020 Nature 585, 410–413(2020)

Effect of non-pharmaceutical interventions to contain COVID-19 in China

Shengjie Lai, Nick W. Ruktanonchai, Liangcai Zhou, Olivia Prosper, Wei Luo, Jessica R. Floyd, Amy Wesolowski, Mauricio Santillana, Chi Zhang, Xiangjun Du, Hongjie Yu & Andrew J. Tatem

- in primo luogo, sono state utilizzate **restrizioni agli spostamenti interurbani** per prevenire l'ulteriore disseminazione del virus …
- in secondo luogo, è stata data **la priorità all'identificazione precoce e all'isolamento dei casi, compreso il miglioramento dello screening, dell'identificazione, della diagnosi, dell'isolamento, della segnalazione e del tracciamento dei contatti delle persone sospettate o confermate** di avere la malattia
- in terzo luogo, sono state implementate **restrizioni ai contatti e misure di allontanamento sociale, insieme ad azioni di prevenzione personale**
- il governo cinese ha incoraggiato le persone a rimanere a casa il più possibile, ha annullato o **rinviato grandi eventi pubblici e raduni di massa** e ha **chiuso biblioteche, musei e luoghi di lavoro**; le **vacanze scolastiche sono state estese**
- l'implementazione di questi **NPI (Non Pharmacological Interventions)** ha coinciso con un **rapido calo del numero di nuovi casi in tutta la Cina, sebbene a costi economici e sociali elevati**





Le **linee blu** rappresentano **la trasmissione stimata con NPI combinati** e **le altre linee colorate rappresentano lo scenario senza un tipo di intervento.** ..
Le linee verticali arancioni indicano la data in cui è iniziato il blocco di Wuhan (23 gennaio 2020).

1
2
3

Original Investigation ONLINE FIRST

April 6, 2021

Comparison of Estimated Effectiveness of Case-Based and Population-Based Interventions on COVID-19 Containment in Taiwan

Ta-Chou Ng, BSc[1]; Hao-Yuan Cheng, MD, MSc[2,3]; Hsiao-Han Chang, PhD[4]; et al

Author Affiliations | Article Information

JAMA Intern Med. Published online April 6, 2021. doi:10.1001/jamainternmed.2021.1644

1978- Alma Ata Declaration-I.

- Health for All
- Primary Health Care
- Health a Fundamental Human Right
- Equity
- Appropriate Technology
- Inter-sectoral Development
- Community Participation.

Alma Ata, 1978:

The International Conference on Primary Health Care calls for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world by the year 2000.


Fauci
PHARMA
LSTERIN G