



# **Viruela del mono Human Orthopox Syndrome HOPS**

**nature**

Geographical distribution of confirmed monkeypox cases in the EU/EEA, as of 31 May 2022

- >=100 cases reported
- 50-99 cases reported
- 10-49 cases reported
- 1-9 cases reported
- No reported cases
- Not included



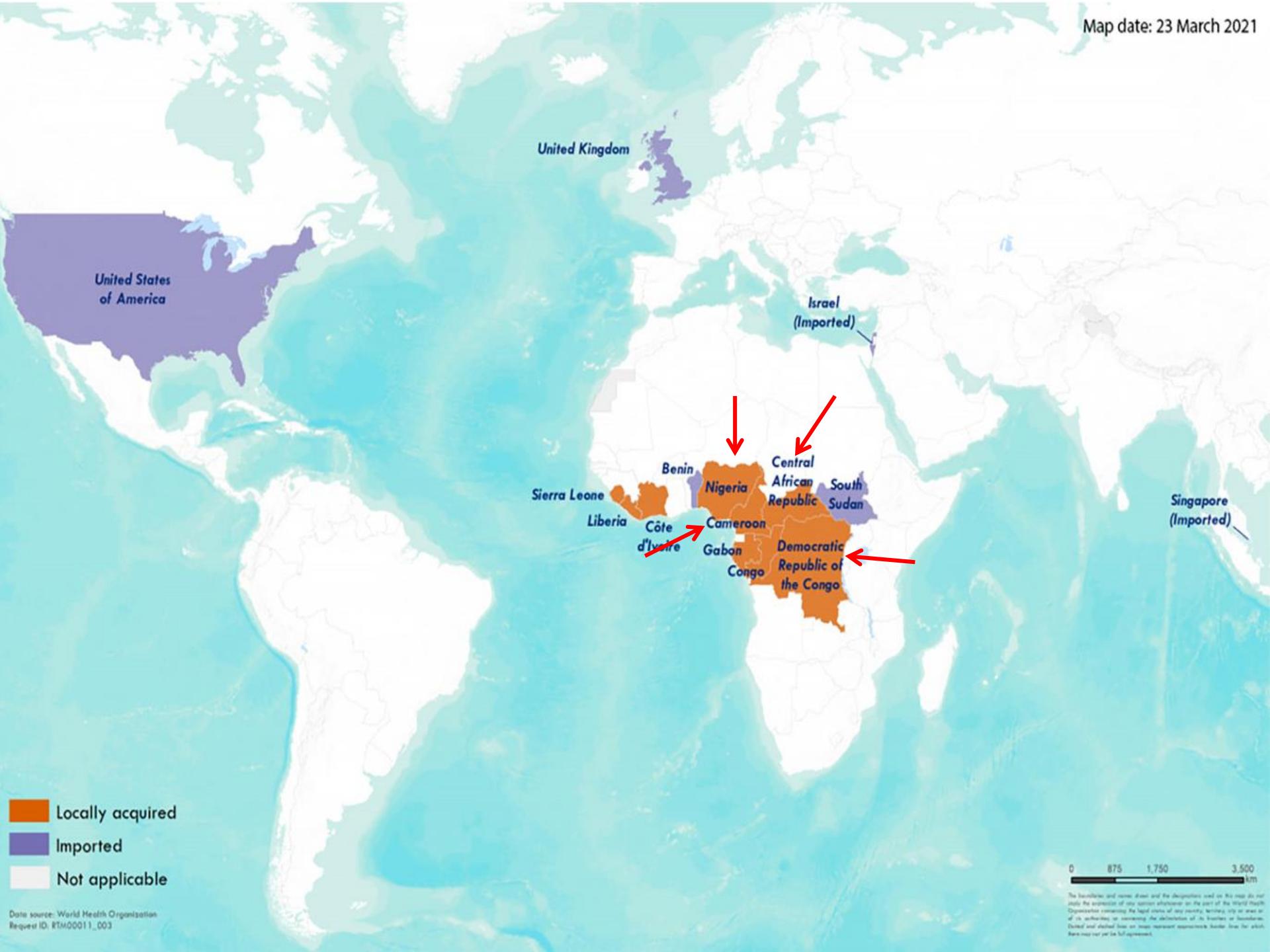
**Este brote es el primero que se propaga en la comunidad fuera de África**

Countries not visible  
in the main map extent

■ Malta

■ Liechtenstein





**EU: 3803**

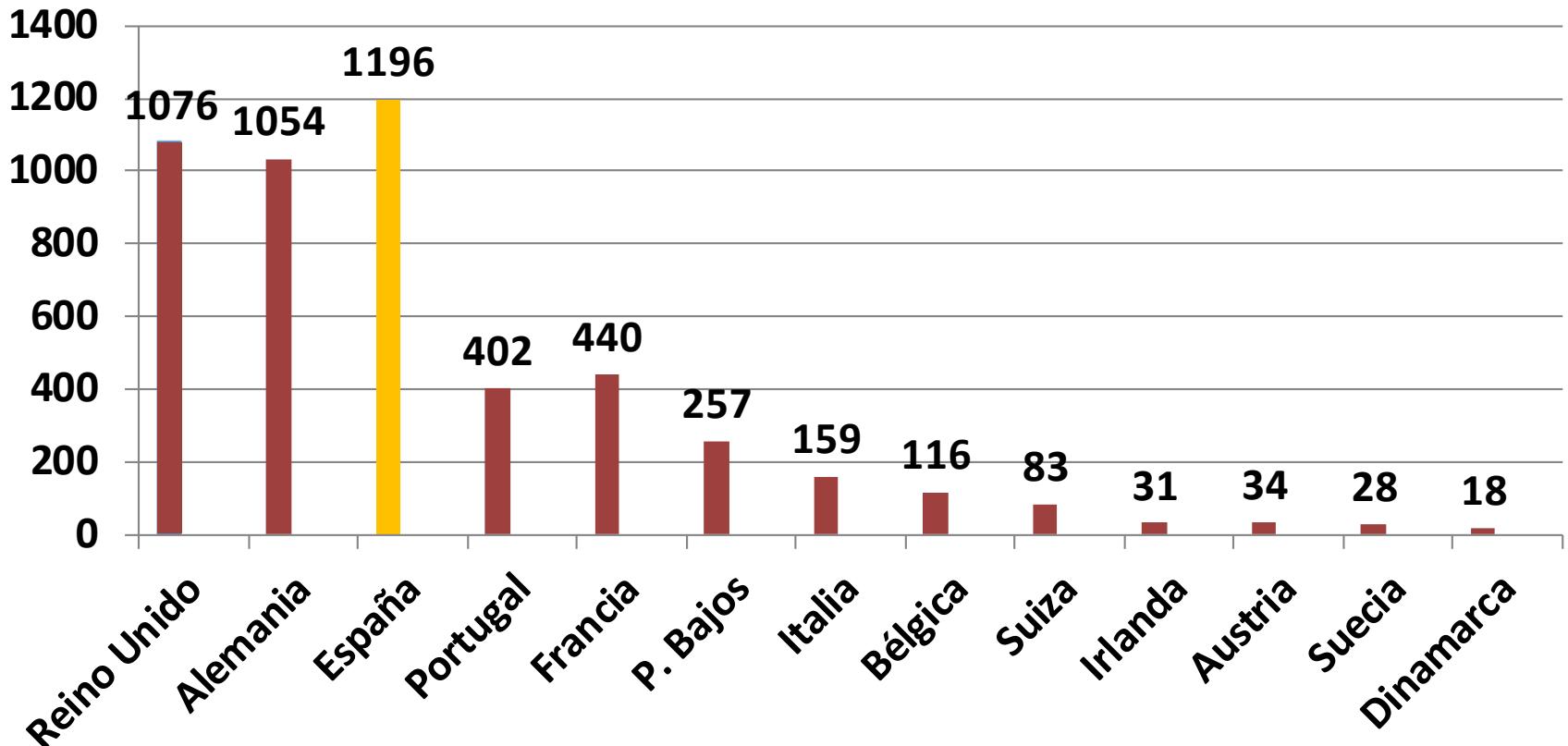
**No EU: 795**



GOBIERNO  
DE ESPAÑA

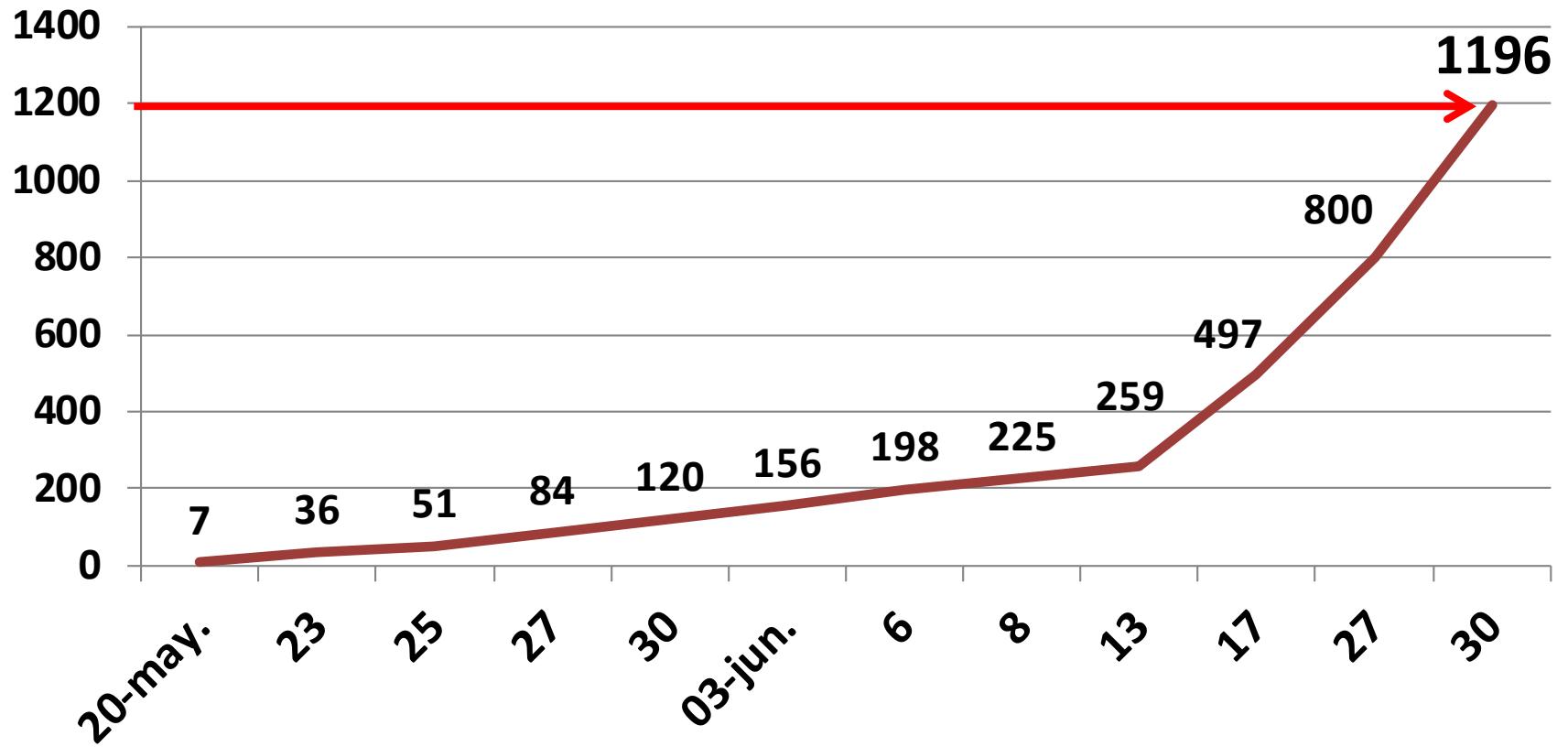
MINISTERIO  
DE SANIDAD

## CASOS CONFIRMADOS



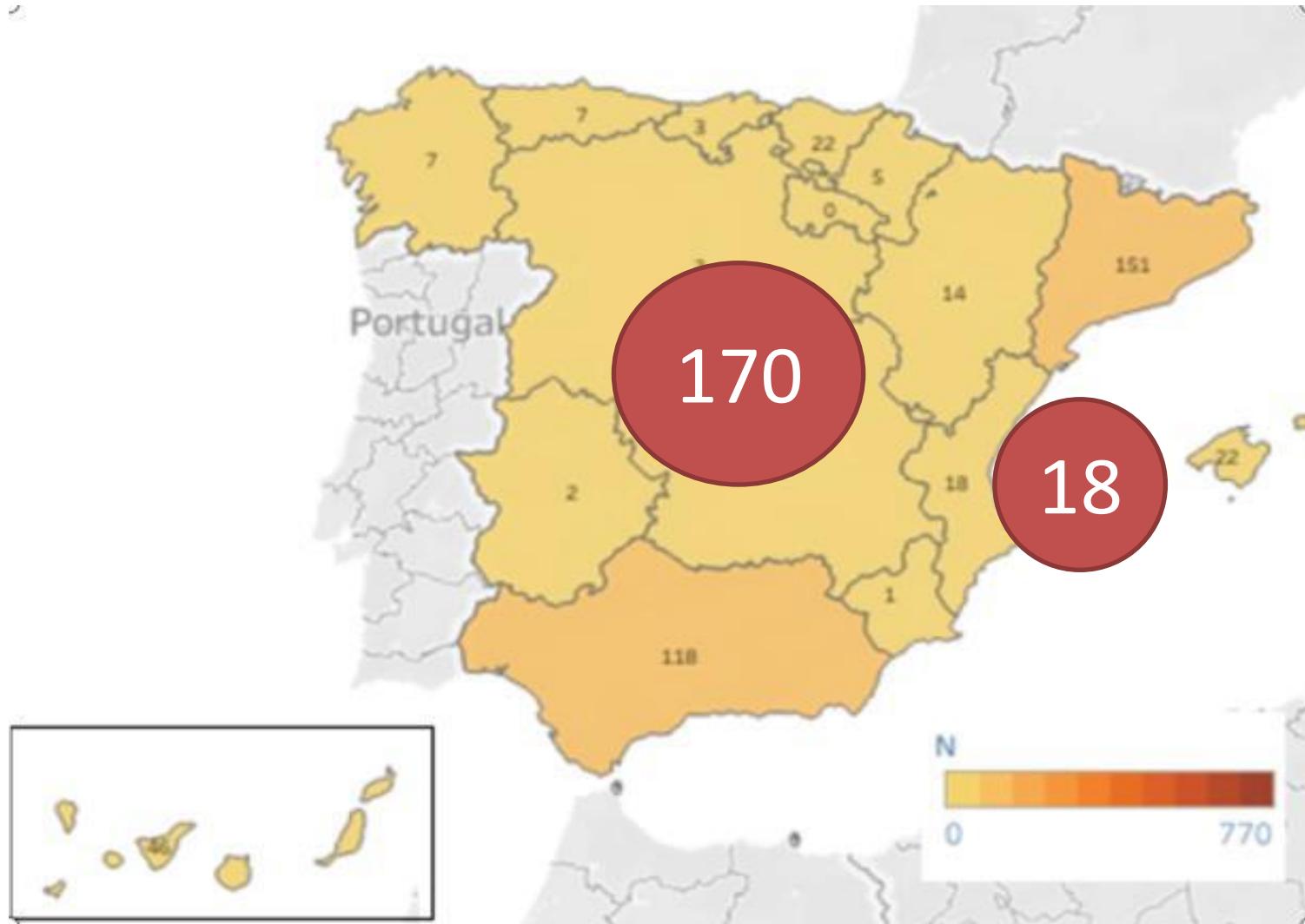
**RENAVE 30 JUNIO**

## Curva evolutiva



**RENAVE 30 JUNIO**

# RENAVE 30 JUNIO



# A POX-LIKE DISEASE IN CYNOMOLGUS MONKEYS

*By*

PREBEN VON MAGNUS, ELSE KRAG ANDERSEN,  
KNUD BIRKUM PETERSEN and AKSEL BIRCH-ANDERSEN

*Bull. Org. mond. Santé* } 1972, 46, 593-597  
*Bull. Wld Hlth Org.* }

A human infection caused by monkeypox virus  
in Basankusu Territory, Democratic Republic  
of the Congo \*

I. D. LADNYJ,<sup>1</sup> P. ZIEGLER,<sup>2</sup> & E. KIMA<sup>3</sup>

# Orthopoxvirus, *Poxviriade*

Surface layer:

Outer membrane

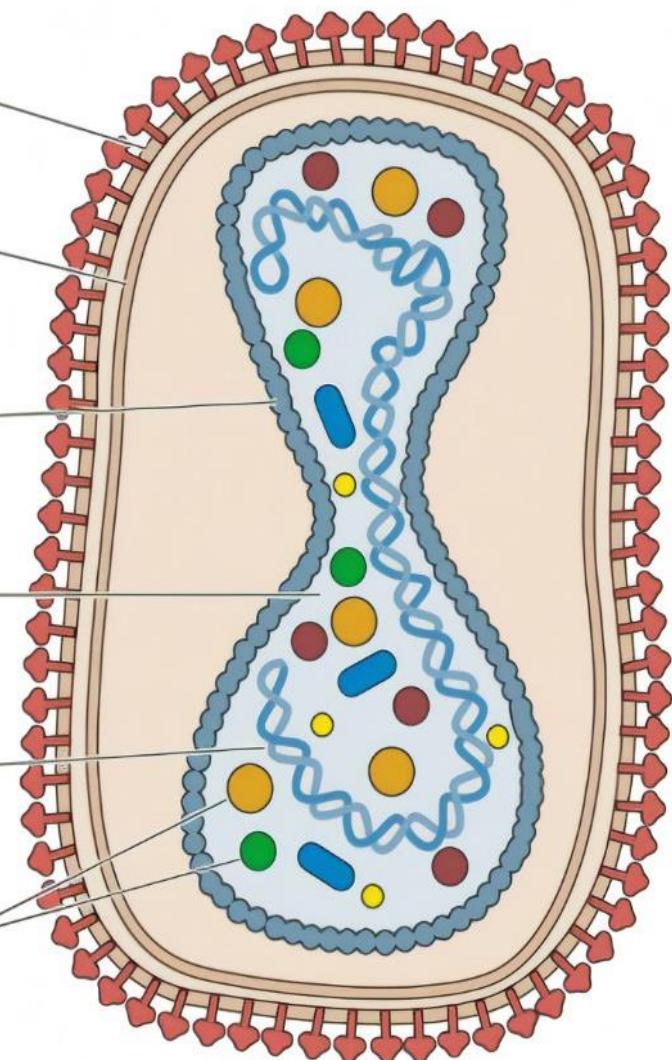
Inner membrane

Core wall

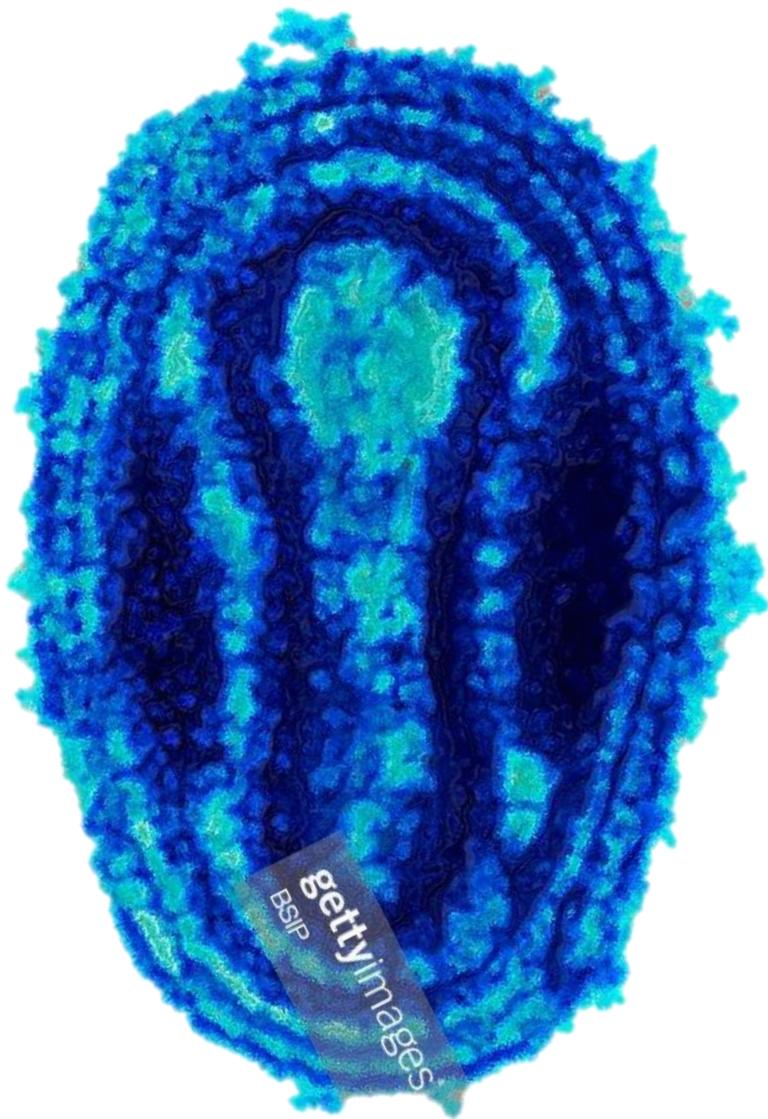
Core

DNA genome

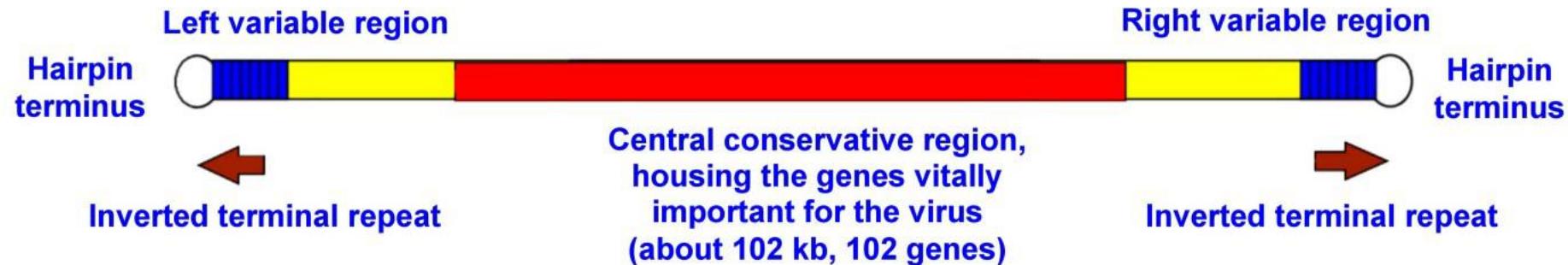
Virion enzymes



200 – 300 nm



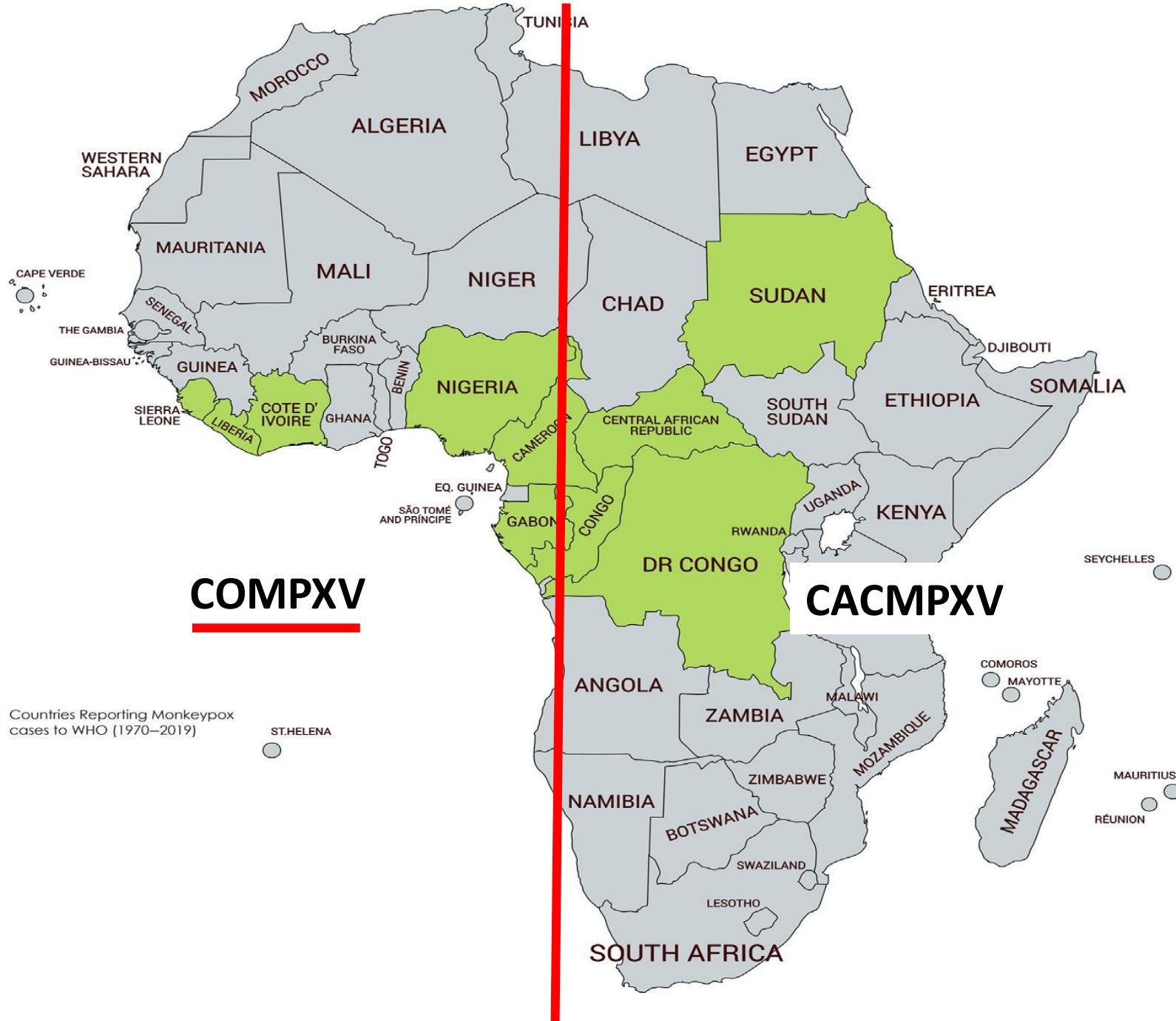
# Figure 1. Scheme of orthopoxvirus genome

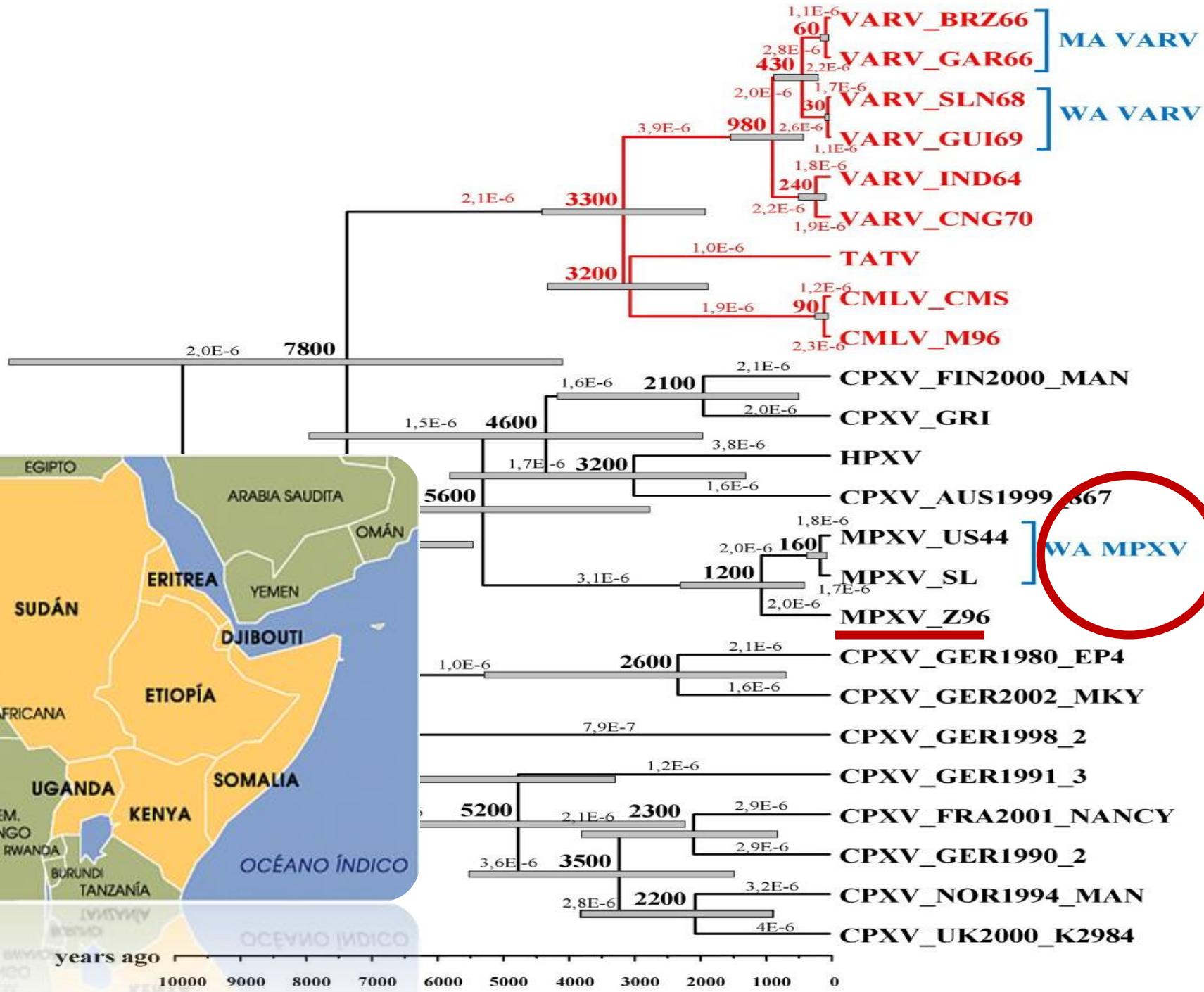


<b>Poxvirus</b>	<b>190 kb</b>
Coronavirus	30 kb
VHC	10. kb
VHB	3,2 kb
VIH	10 kb
Influenza	13,5 kb
Varicela	125 kb

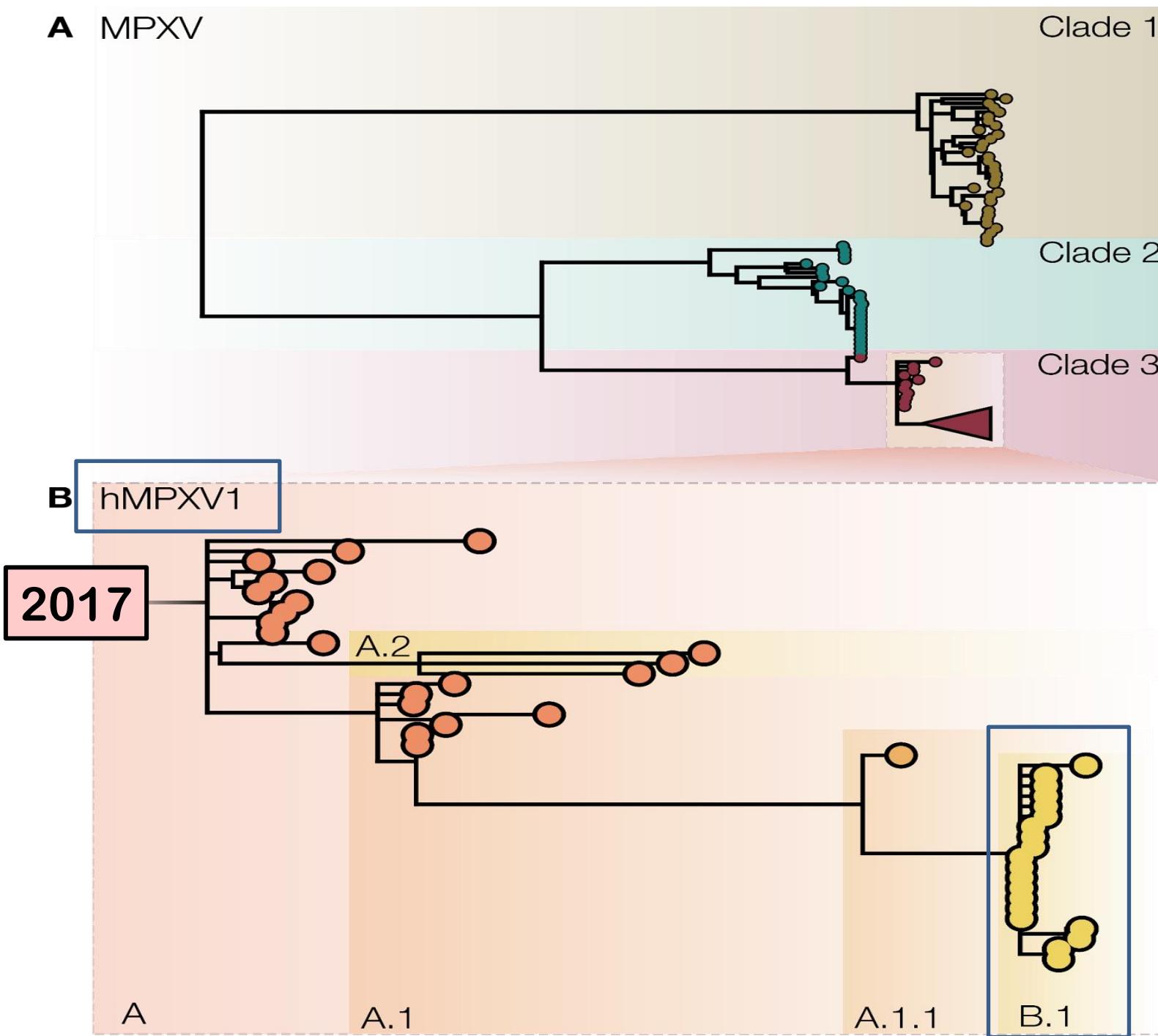
**viruses**

ISSN 1999-4915





**A** MPXV



Urgent need for a non-discriminatory and  
non-stigmatizing nomenclature for  
monkeypox virus.VIROLOGICAL





**Primary hosts:**  
Rodents  
(squirrels, rats)



**Incidental hosts:**  
Non-human primates  
(low prevalence)

## Monkeypox Transmission Cycle in Central Africa (zoonotic disease)



Bushmeat hunting



Humans

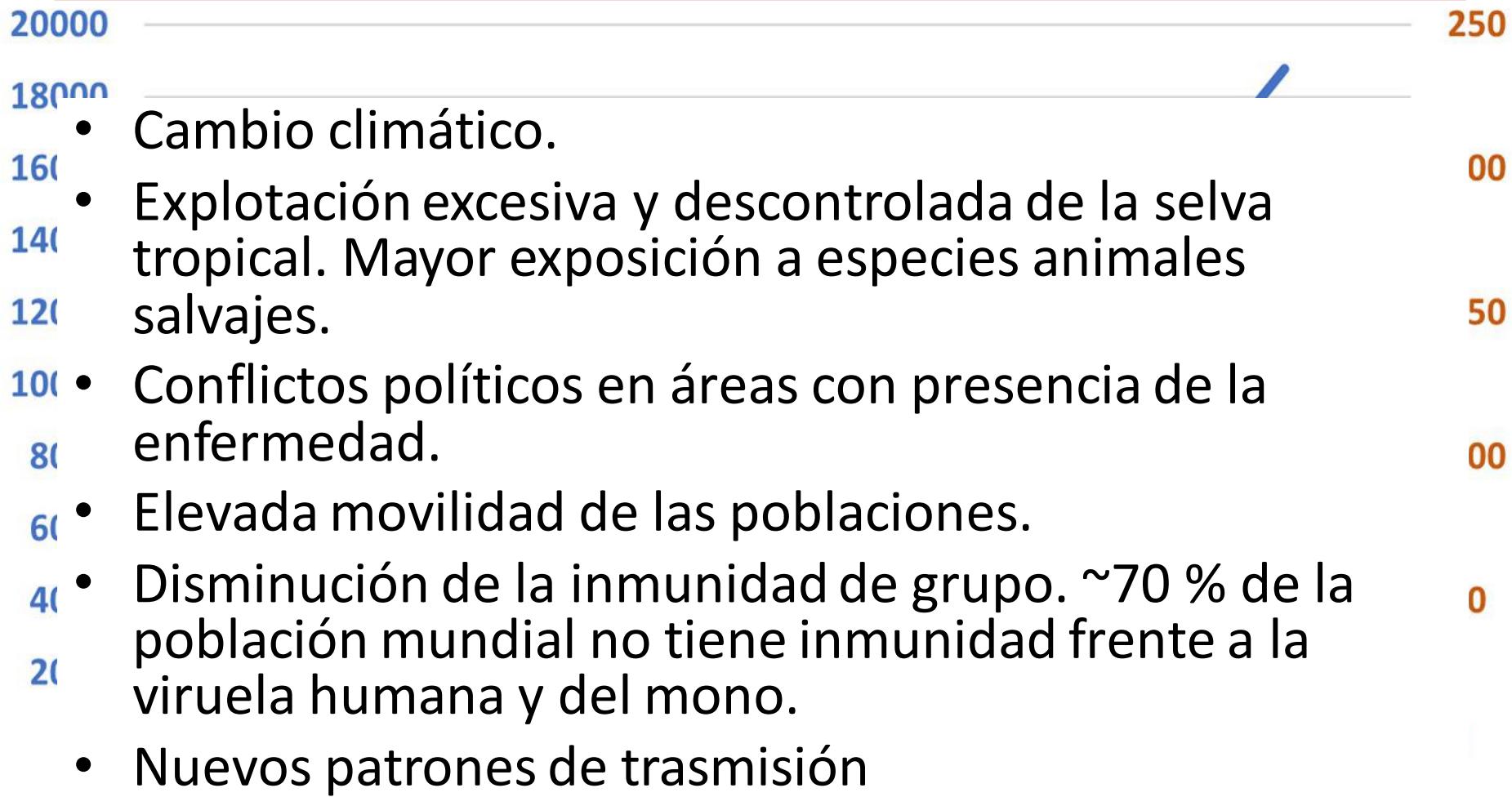


Humans



Secondary transmission  
→ Other humans

# La viruela del mono: una infección con una epidemiología cambiante



— Central African clade (N)

— West African clade (N)

# La viruela del mono: una infección con una epidemiología cambiante

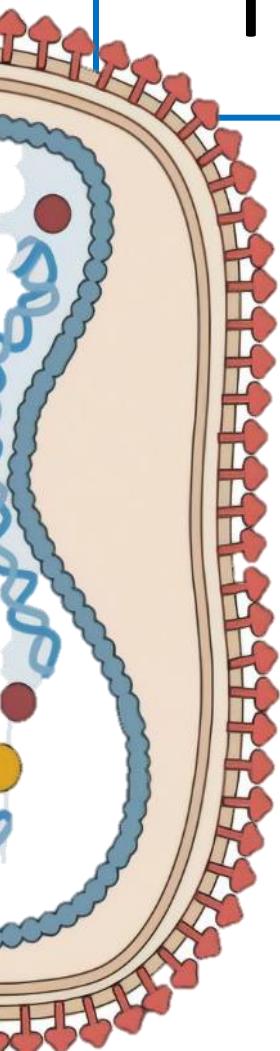
- 
- Cambio climático.
- Algunos autores advirtieron que , una infección tropical desatendida , puede transformarse en un problema de salud pública de interés global  
**(Bunge EM, PLoS Negl Trop Dis. 2022).**
- Disminución de la inmunidad de grupo. 70 % de la población mundial no tiene inmunidad frente a la viruela humana y del mono.
- Nuevos patrones de trasmisión

— Central African clade (N)

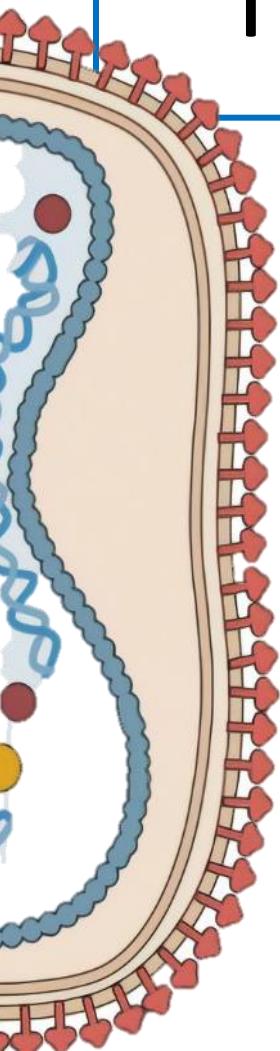
— West African clade (N)

# Transmisión persona a persona

- gotas respiratorias grandes (5-10 µm)
- fluidos y secreciones corporales
- objetos contaminados (<2 d – meses)
- transmisión vertical
- transmisión sexual?
- inicio primeros síntomas



# Transmisión persona a persona



- «limitada»
- «sin riesgo de pandemia» (0 µm)
- 
- 
- «La OMS no considera el brote de viruela del mono una emergencia sanitaria internacional» 25 junio
- inicio primeros síntomas

Periodo  
de incubación  
7-8 d  
(5-21 d)



Fase pre-eruptiva  
1-5 d  
80% 1-3 d

transmisión

Fiebre  
Adenomegalias  
Cefalea  
Mialgias

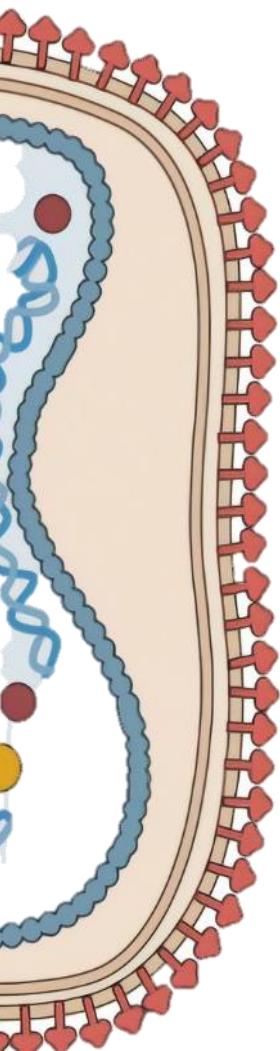


Fase eruptiva-resolución  
2-4 semanas

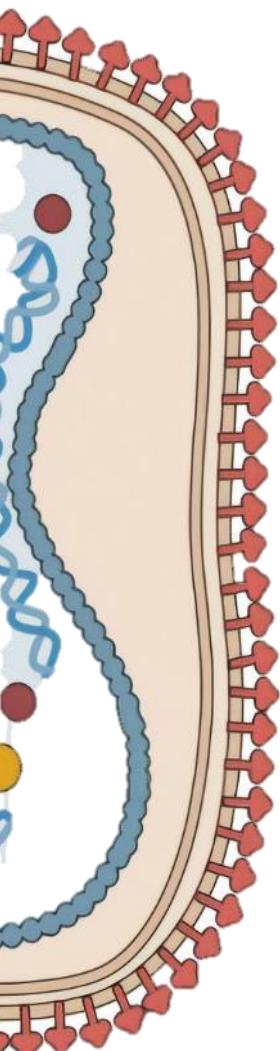
rash*	adenomegalia
variceloide	<u>&gt; 2 áreas</u>
centrifugo	<u>cuello/submaxilar</u>
palmas / plantas	generalizada 60%
~ ½ cm	1-4 cm
mucosas 70%	dolorosa
genitales 25%	abceso
confluente 20%	2-3 d. fiebre
no hemorrágico	
1-3 d. fiebre	

WHO: mild, **<25 lesions**; moderate, **26–100 lesions**; **severe, 101–250 lesions**; and serious, **>250 lesions (cytokine storm)**

	RDC 282 casos 1980-1985 clado AC	US 2003 clado occidental
rash	100%	97%
nº lesiones	> 100-miles	<100
fiebre	100%	85%
cefalea	100%	65%
adenopatía	85%	71%
mialgia	n.d.	60%
letalidad	7%	0
	<i>J Infect Dis 1987</i>	<i>Clin Infect Dis 2005</i>



<b>N: 406 (España)</b>	
<b>V/M</b>	<b>792/8</b>
<b>Edad M</b>	<b>37 años (3 – 67)</b>
<b>Transmisión (273 casos)</b>	<b>93,4% CERSx</b>
Exantema anogenital	65%
Fiebre	56%
Exantema otras localizaciones	54%
Astenia	41%
Adenopatía localizada	41%
Mialgia	30%
Dolor garganta	27%
Cefalea	26%
Exantema orobucal	18%
Adenopatía generalizada	10%



<b>N: 406 (España)</b>	
V/M	<b>792/8</b>
Edad M	<b>37 años (3 – 67)</b>
Transmisión (273 casos)	<b>93,4% CERSx</b>
<b>Complicaciones</b>	<b>Infecciones bacterianas Úlceras bucales</b>
<b>Hospitalización</b>	<b>24 (6%)</b>
<b>Fallecimientos</b>	<b>0</b>
Mialgia	50%
Dolor garganta	27%
Cefalea	26%
Exantema orobucal	18%
Adenopatía generalizada	10%







# Transmission of monkeypox virus through sexual contact – A novel route of infection



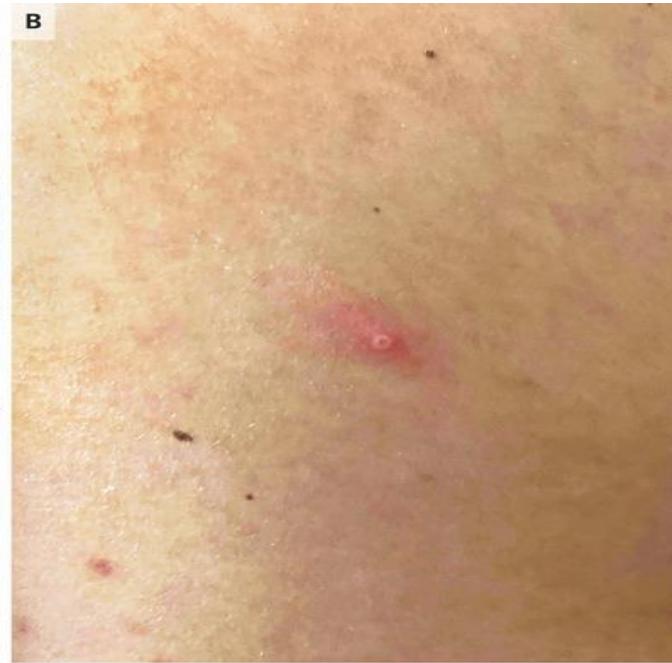
A 31-year-old man with well-controlled infection with the human immunodeficiency virus and a history of a painless sore throat. Three days earlier, he had intercourse with a homeless man. Tests for syphilis, chancroid, and lymphogranuloma venereum were negative.

**Five days after the onset of symptoms,** the patient returned with vesiculopustular lesions on his penis.



A 31-year-old man with no immunocompetence or history of drug use had a sore throat and tender lymph nodes in the interscapular region. Tests showed a positive antinuclear antibody titer and elevated serum lactate dehydrogenase.

**Five days later,** he developed vesicular lesions on his hands and feet.



Human immunodeficiency virus was detected in the cerebrospinal fluid. The patient was hospitalized and treated with

# **Complicaciones**

**Infecciones bacterianas piel y partes blandas**

**Gastroenteritis, deshidratación**

**Neumonía bacteriana**

**Neumonía vírica**

**Distrés respiratorio**

**Keratitis y ulceración corneal**

**Cytokine storm /FMO**

**Encefalitis**

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# Emerging Viral Infections of the Central Nervous System



*Arch Neurol.* 2009;66(9):1065-1074



# Diagnóstico diferencial

Viruela

Zoster diseminado

Vaccinia generalizada

Eccema herpético

Herpes simple diseminado

Sífilis secundaria / gonococemia

Otras treponematosis tropicales (pian, frambesia...)

Sarna vesicular

Rickettsialpox

Sarampión

Varicela

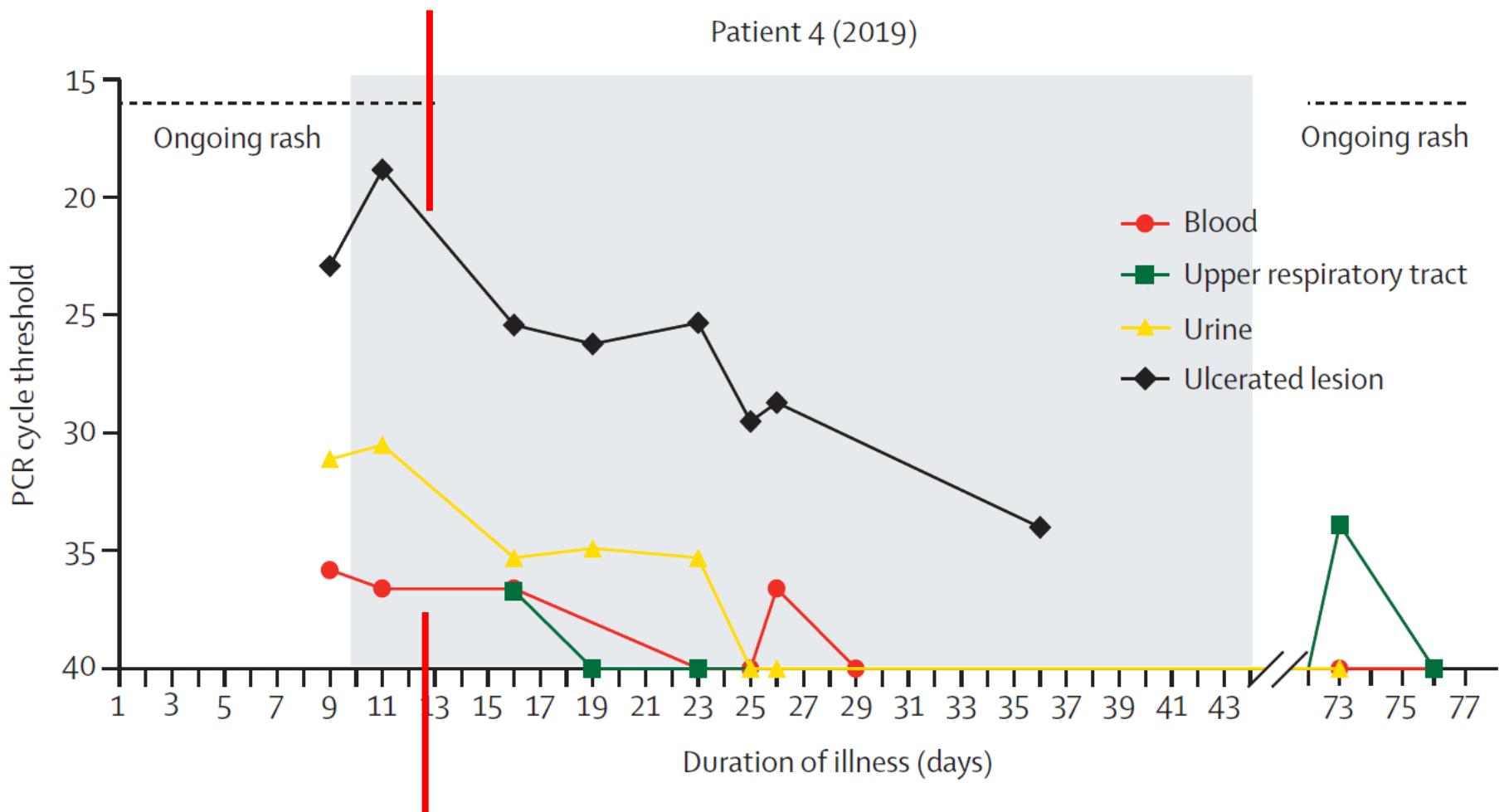
Erupción por fármacos

# Tasa de ataque secundario

Viruela del mono	Viruela	SARS-CoV-2
<b>0,3 – 10,2%</b> <b>(50%</b> <b>convivientes)</b>	<b>50-60%</b>	<b>0,7-75%</b>

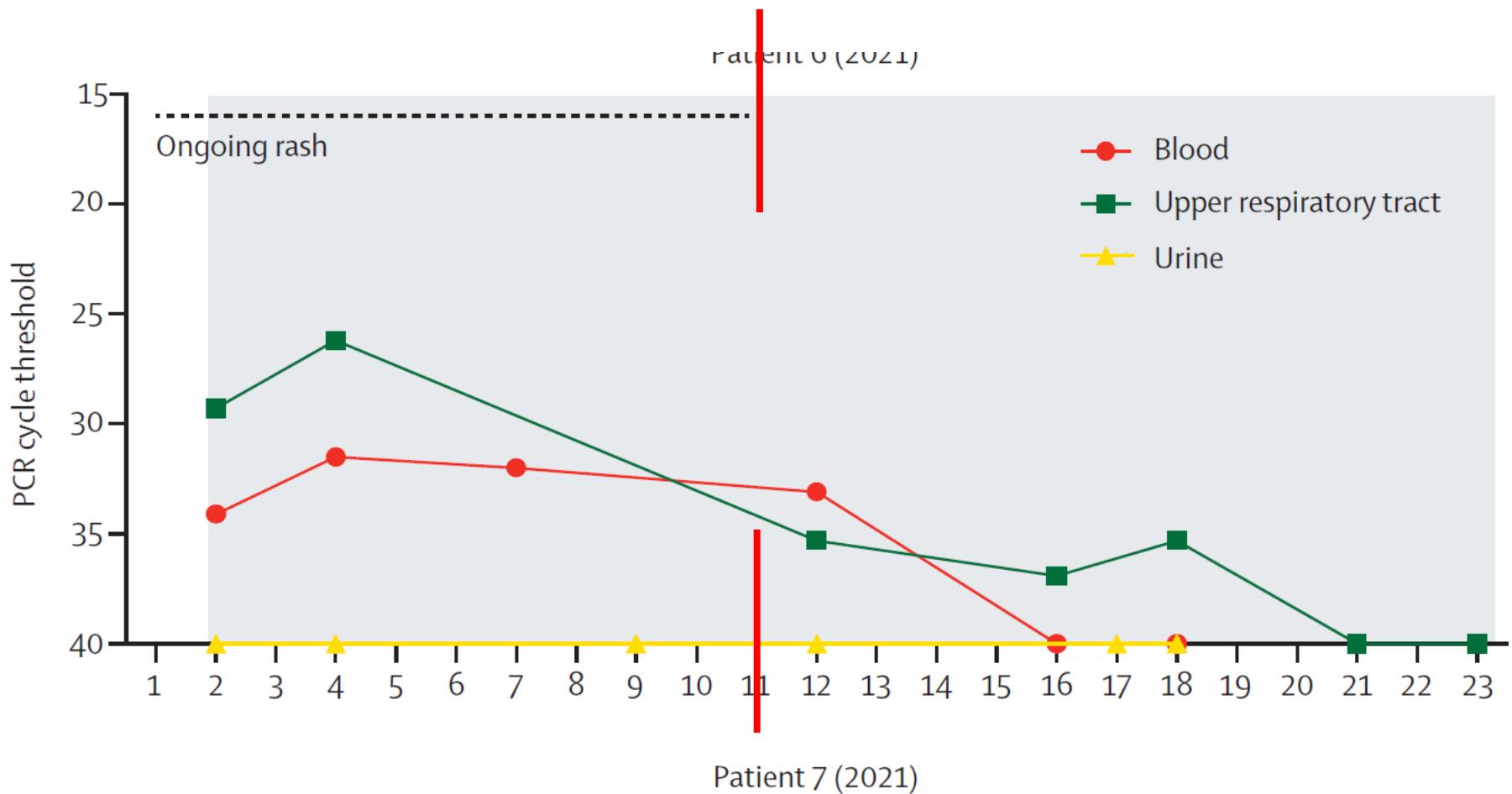
# Letalidad

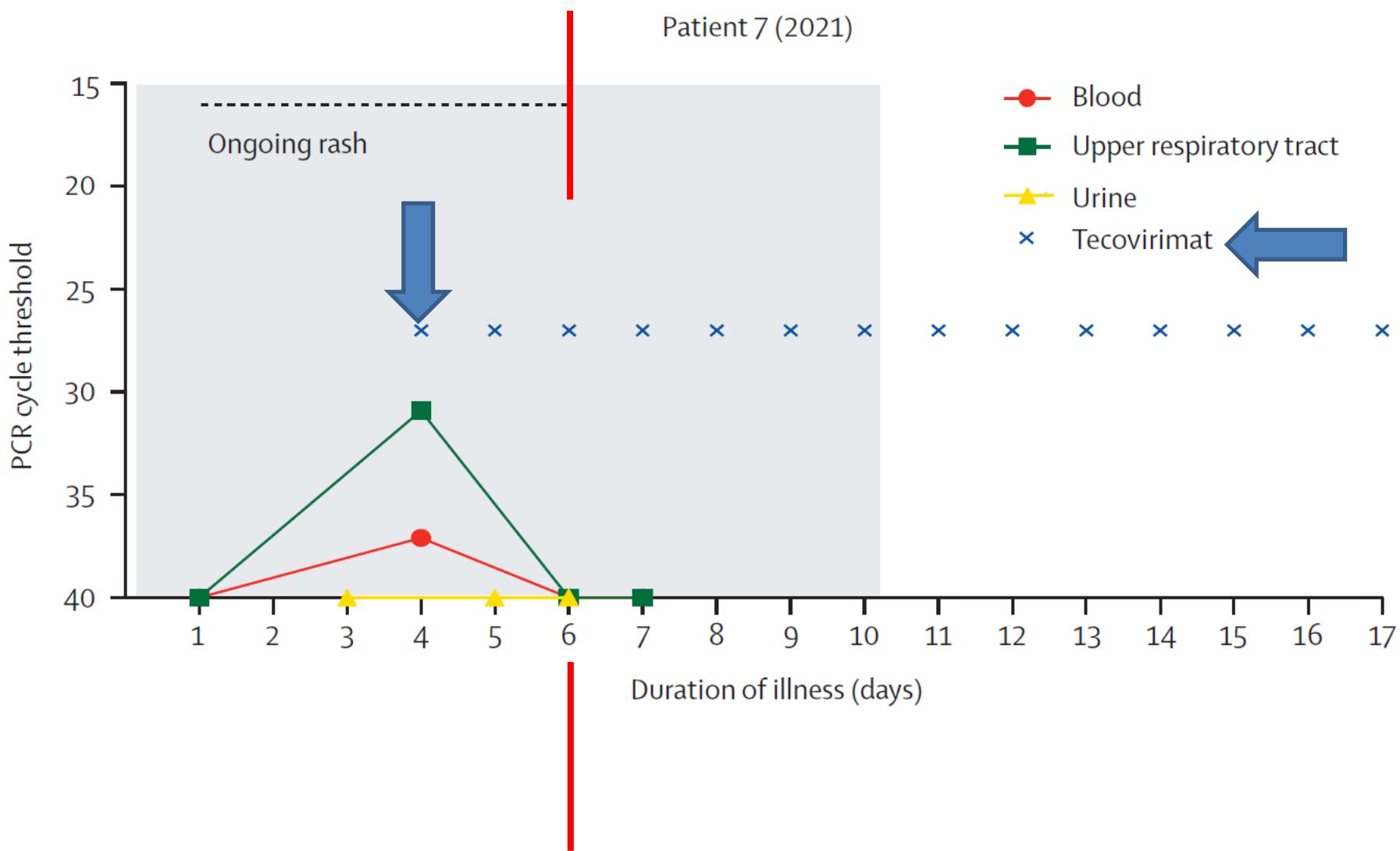
Viruela del mono	Viruela	SARS-CoV-2
<b>8,7%</b> <b>10,6 CAC</b> <b>(8,4-13,3%)</b> <b>3,6% CAO</b> <b>(1,7-6,8%)</b>	<b>30%</b> <b>100% (FH)</b>	<b>0,9%</b> <b>11,5-0,15%</b>

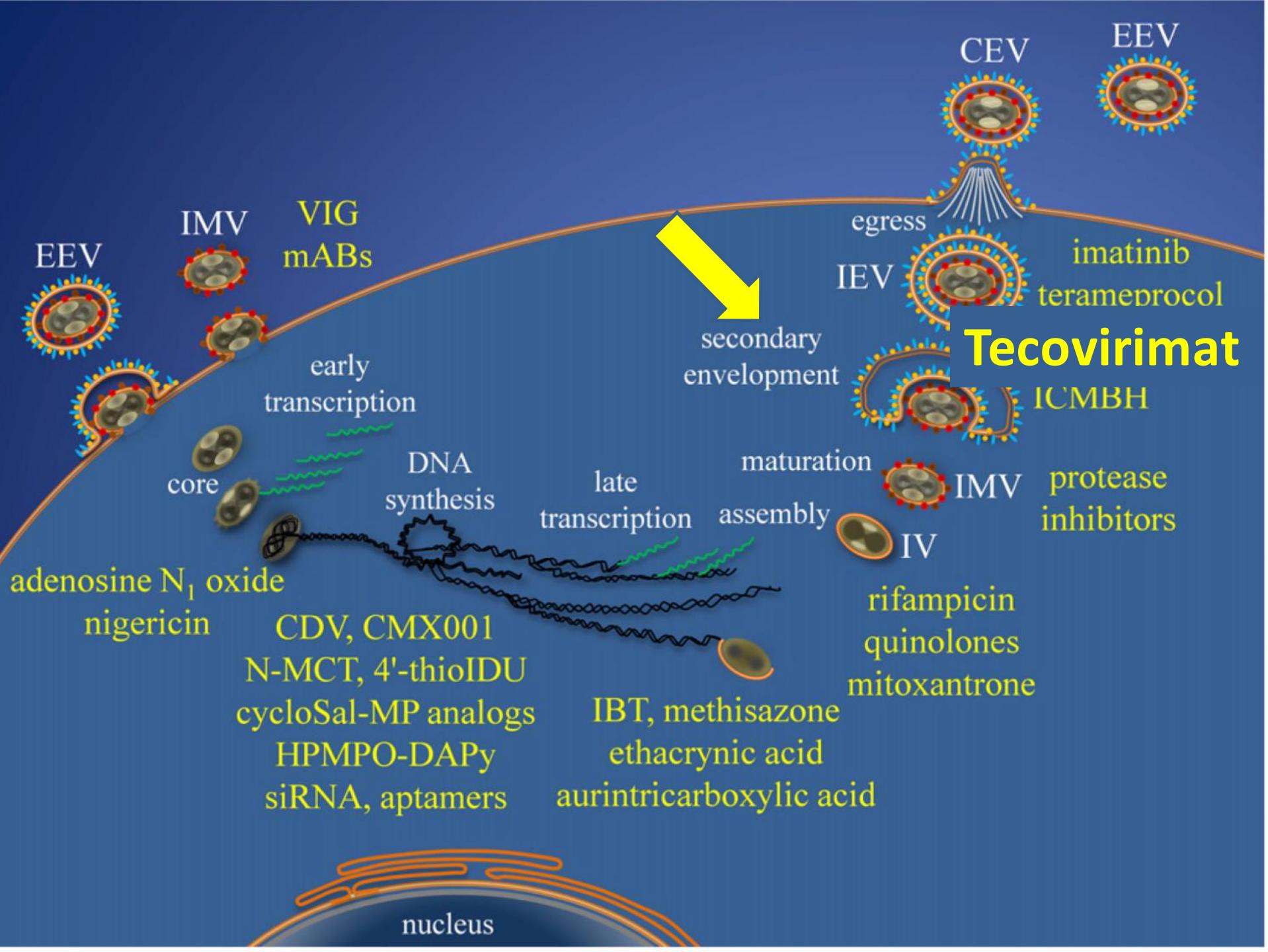


www.thelancet.com/infection Published online May 24, 2022

[https://doi.org/10.1016/S1473-3099\(22\)00228-6](https://doi.org/10.1016/S1473-3099(22)00228-6)







► Preclinical studies initiated (Jan)

► US FDA approves IND application and grants fast track status (Dec)

► Phase I studies initiated (May)

► US FDA grants orphan drug status for the post-exposure prophylaxis and treatment of smallpox (Dec)

## FDA: «animal rule»

► US FDA accepts NDA and grants priority review status (Feb)

► Positive opinion by US FDA ADAC (May)

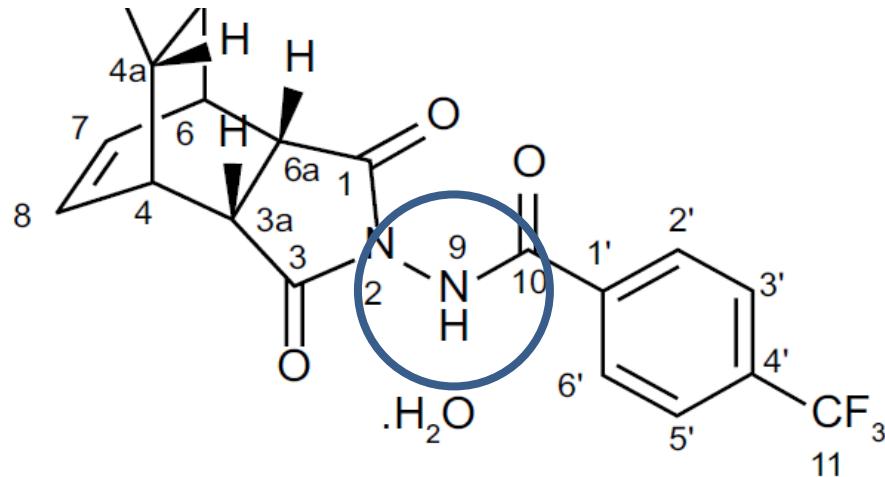
► US FDA grants approval for use (Jul)



Phase II trial (NCT00907803)

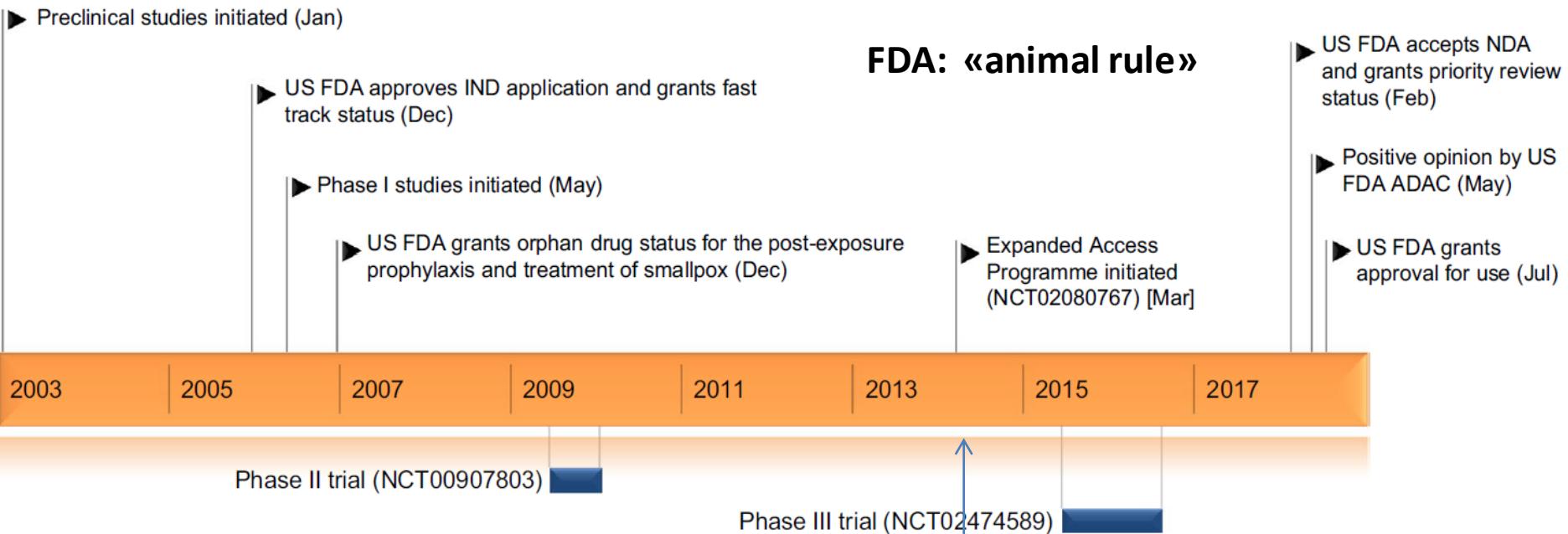
Phase III trial (NCT02474589)

NCT02080767 → 2021



Glucorononconjugación  
Inductor débil CYP3A4

Tecovirimat (TPOXX®) SIGA



## Indicaciones:

- ✓ ≥ 100 lesiones
- ✓ Neumonitis/DRA, encefalitis, sepsis
- ✓ Gestantes, niños < 10 años, inmunodeprimidos
- ✓ ≤ 5 días del inicio

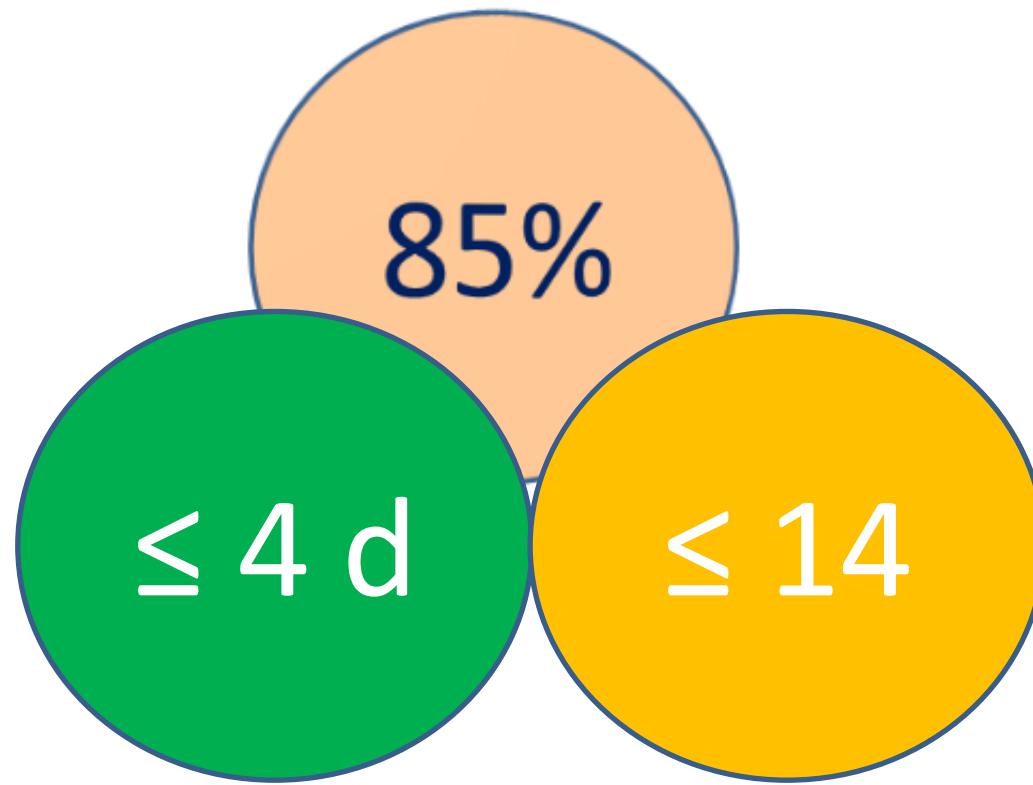
Tecovirimat (TPOXX®) SIGA

**Imvanex®  
Jynneos®**

**Virus vaccinia  
modificado**

**Dos dosis  
0 – 28 d subc**

**1 dosis  
refuerzo**



**The Transmission Potential of Monkeypox Virus in Human Populations .**  
*International Journal of Epidemiology, 17 (3), 1988, 643 – 650*

**Imvanex®  
Jynneos®**

**Virus vaccinia  
modificado**

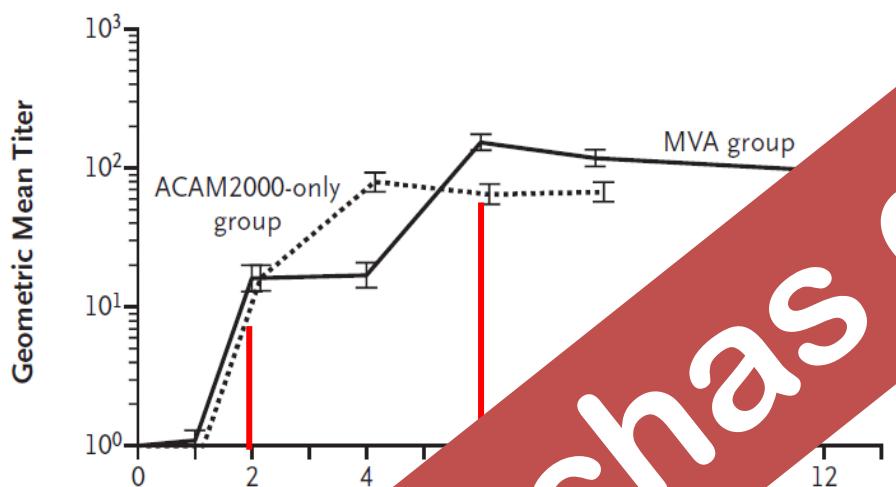
**Dos dosis  
0 – 28 d subc**

**1 dosis  
refuerzo**

- ✓ Contactos estrechos
- ✓ Personal sanitario expuesto
- ✓ Personal de laboratorio
- ✓ ¿Grupos de riesgo?
- ✓ No se contempla PrEP

Muchas gracias

A Antibody Response on PRNT



B Antibody Response on PRNT

