Vaccination contre le virus de la mpox

Olivier Epaulard
Infectiologie
CHU de Grenoble, France
30 janvier 2025

Liens / conflit d'intérêt

- Aucun à déclarer

- Membre de la commission technique des vaccinations
  de la Haute Autorité de Santé (France)

viruses

MDPI

Article

Classification of Cowpox Viruses into Several Distinct Clades and Identification of a Novel Lineage

Annika Franke [1,†], Florian Pfaff [1,†], Maria Jenckel [1], Bernd Hoffmann [1], Dirk Höper [1], Markus Antwerpen [2], Hermann Meyer [2], Martin Beer [1,*] and Donata Hoffmann [1]

Orthopoxviridae

Vaccine

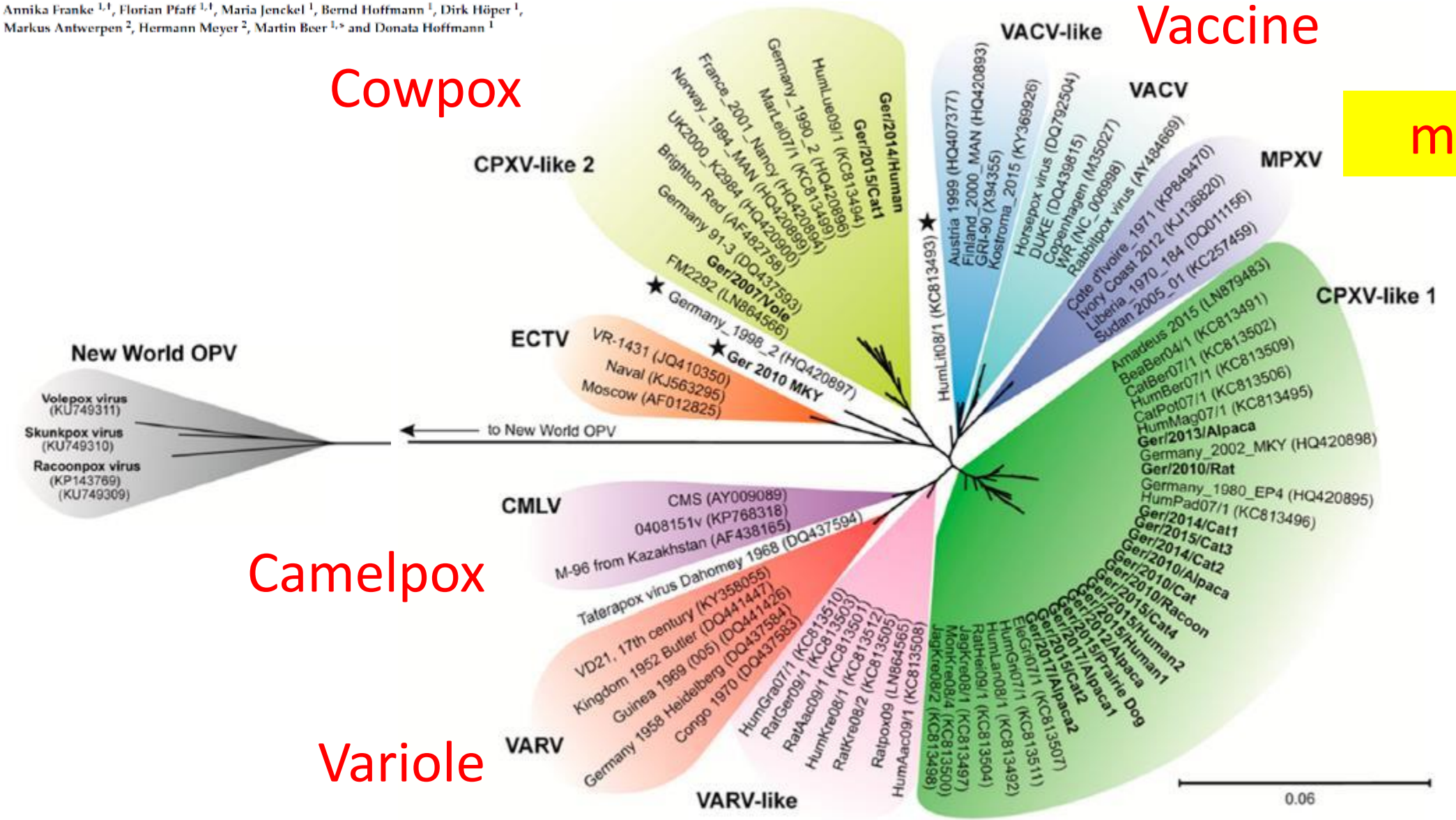
Cowpox

mpox

Cowpox

Camelpox

Variole

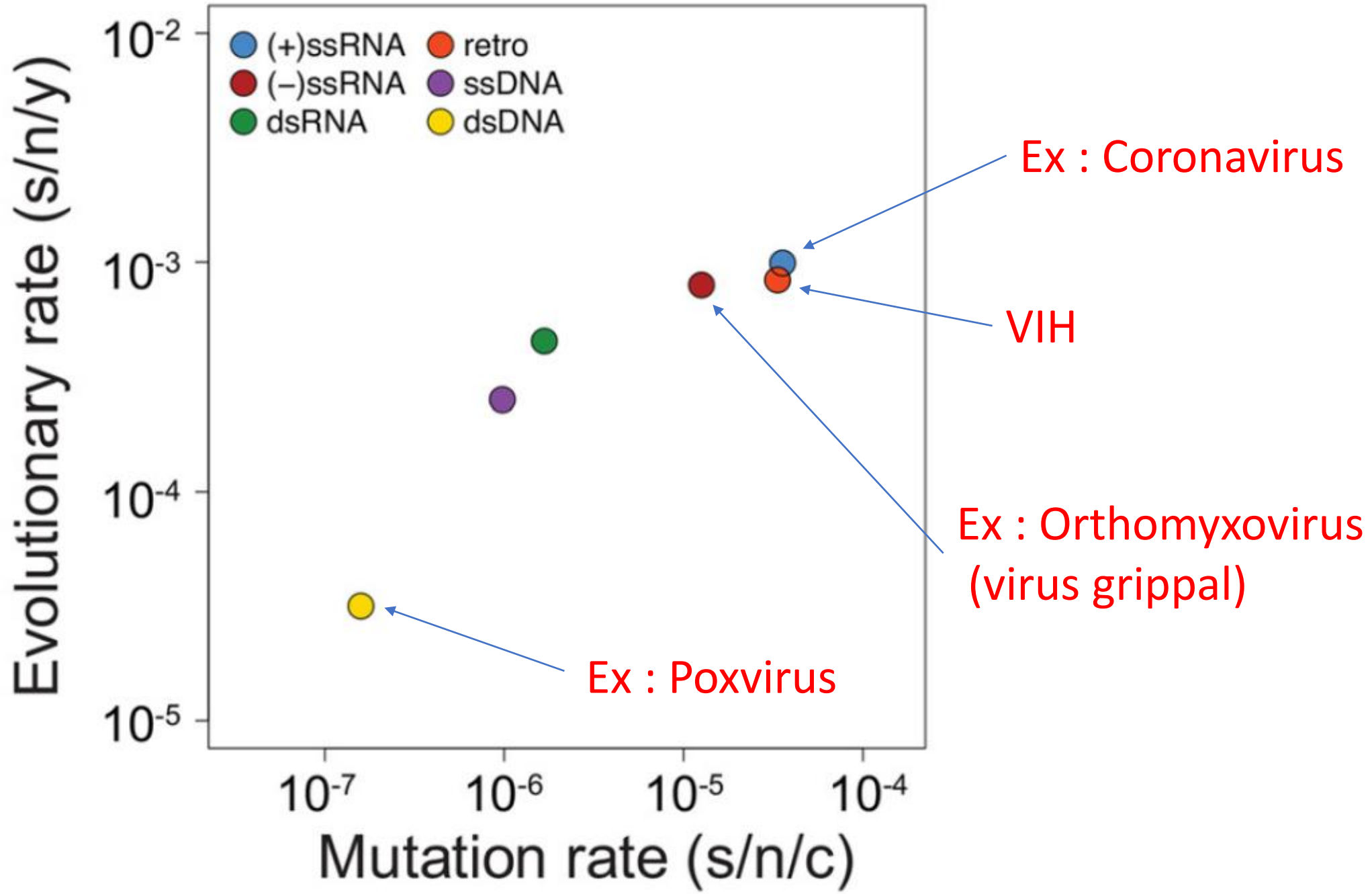


Complexities of Viral Mutation Rates

Kayla M. Peck,[a] Adam S. Lauring[a,b]

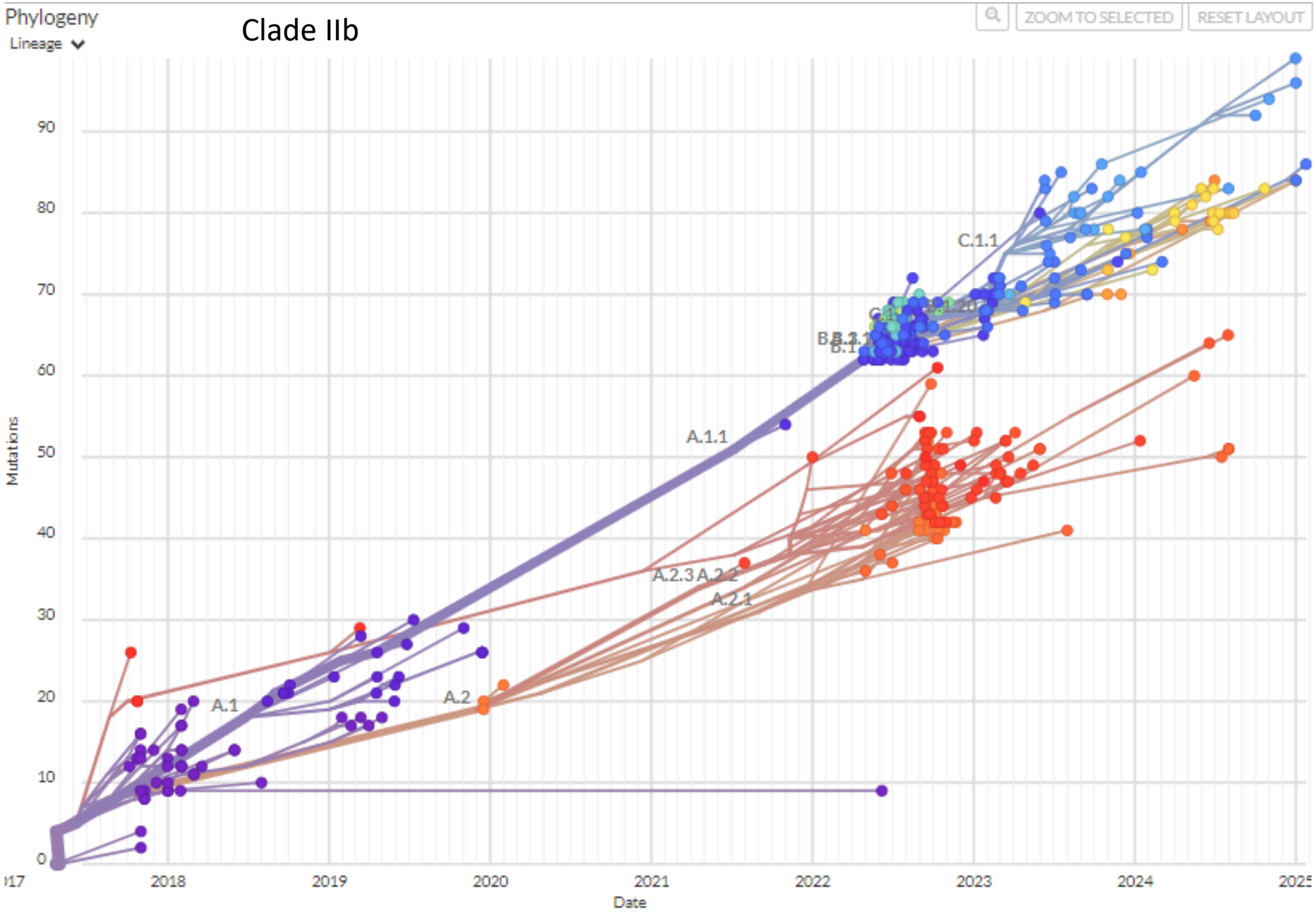
[a]Division of Infectious Diseases, Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan, USA

[b]Department of Microbiology and Immunology, University of Michigan, Ann Arbor, Michigan, USA



Nextstrain.org

Clade IIb

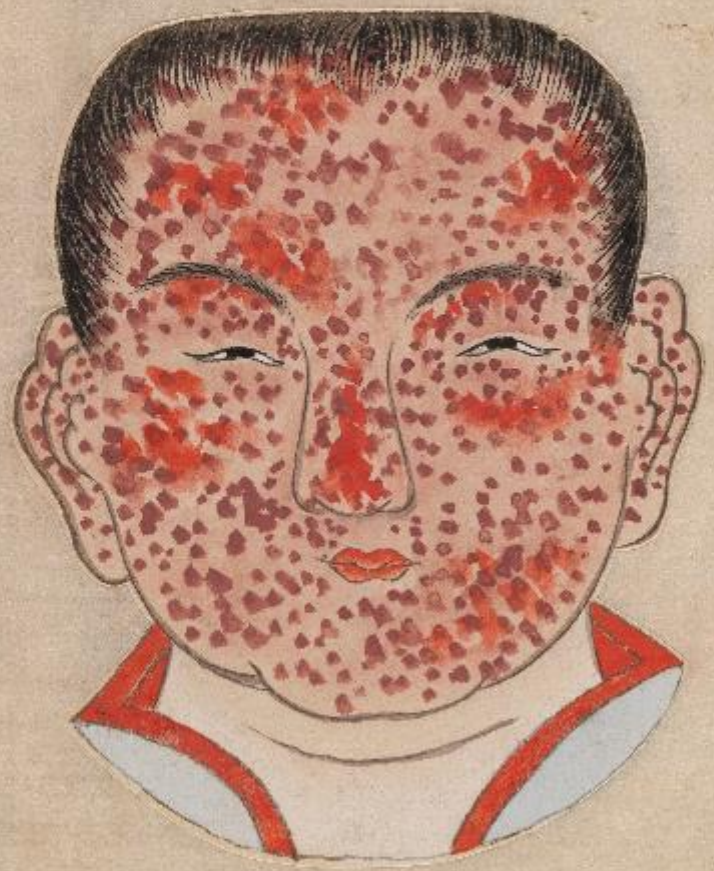


Variolisation, vaccination : prévention des Poxvirus

- Constatation depuis l'antiquité : **on ne fait qu'une seule fois la variole**

- Technique de la **variolisation** au XVIème siècle en Chine :
  - exposer les personnes indemnes de variole à des croûtes ou habits de malades de la variole
  - Perfectionnement progressif, adoptions successives vers l'Ouest
    - Inoculation cutanée de pus de vésicule

腎瘡膚膿泛瘡圖



凡此瘡雖漸起脹至期不全起如前所圖也其根脚散而似瘡瘤者發黑疔而死〇或瘡平與奐神者潮血而死〇或又有空瘡有膿瘡有九焦瘡皆是腎瘡之變共不治也

AFRANUM

179

AN

Hiſtorical ACCOUNT

OF THE

SMALL-POX

INOCULATED

IN

NEW ENGLAND,

Upon all Sorts of Perſons, *Whites*, *Blacks*, and of all Ages and Conſtitutions.

With ſome Account of the Nature of the Infection in the NATURAL and INOCULATED Way, and their different Effects on HUMAN BODIES.

With ſome ſhort DIRECTIONS to the UNEXPERIENCED in this Method of Practice.

Humbly dedicated to her Royal Highneſs the Princeſs of WALES,

By *Zabdiel Boylſton*, F. R. S.

The Second Edition, Corrected. 78136

LONDON:

Printed for S. CHANDLER, at the Croſs-Keys in the *Poultry*. M. DCC. XXVI.

Re-Printed at BOSTON in N. E. for S. GERRISH in *Cornhil*, and T. HANCOCK at the Bible and Three Crowns in *Annſtreet*. M. DCC. XXX.

2

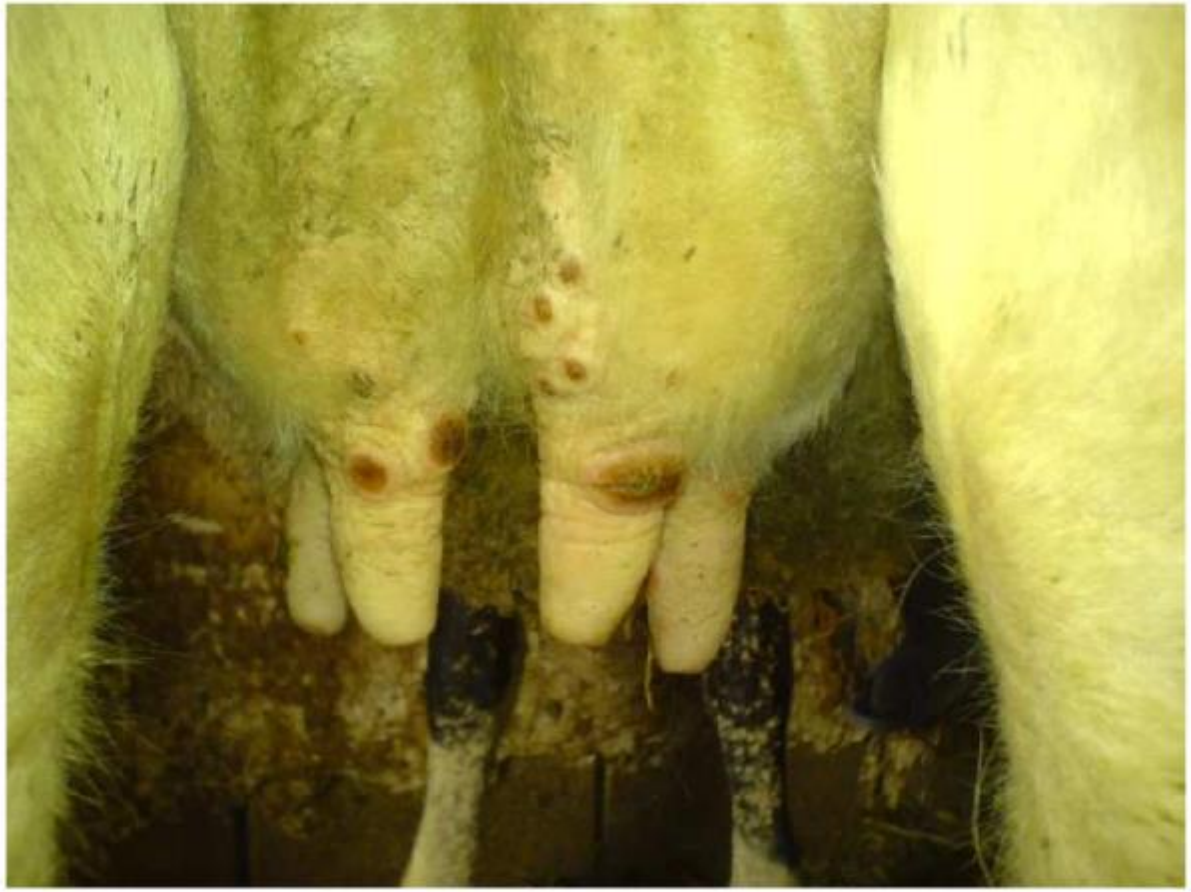
Onesimus

Variolisation, vaccination : prévention de la variole

- Constatation depuis l'antiquité : **on ne fait qu'une seule fois la variole**

- Technique de la **variolisation** au XVIème siècle en Chine :
  - exposer les personnes indemnes de variole à des croûtes ou habits de malades de la variole
  - Perfectionnement progressif, adoptions successives vers l'Ouest
    - Inoculation cutanée de pus de vésicule

- Fin du XVIIIème siècle, en Angleterre :
  - Les personnes travaillant avec les vaches peuvent attraper une zoonose, la vaccine
  - Ces mêmes personnes ne font ensuite jamais la variole
  - D'où l'idée de **Jenner** d'inoculer non pas des extraits de lésion de variole (**variolisation**) mais des extraits de lésions de vaccine (**vaccination**)



Sarah Nelmes

Jenner inocule la vaccine au petit James Phipps

à partir des vésicules de la trayeuse S. Nelmes

AN

INQUIRY

INTO

THE CAUSES AND EFFECTS

OF THE

VARIOLÆ VACCINÆ,

A DISEASE

Discovered in some of the western counties of England,

PARTICULARLY GLOUCESTERSHIRE,

And known by the name of

THE COW POX.

BY *EDWARD JENNER*, M. D. F. R. S. &c.

——— Quid nobis certius ipsis
Sensibus esse potest, quo vera ac falsa notemus,
LUCRETIUS.

FROM THE SECOND LONDON EDITION.

SPRINGFIELD:
RE-PRINTED FOR DR. *SAMUEL COOLEY*,
BY ASHLEY & BREWER,
1802.

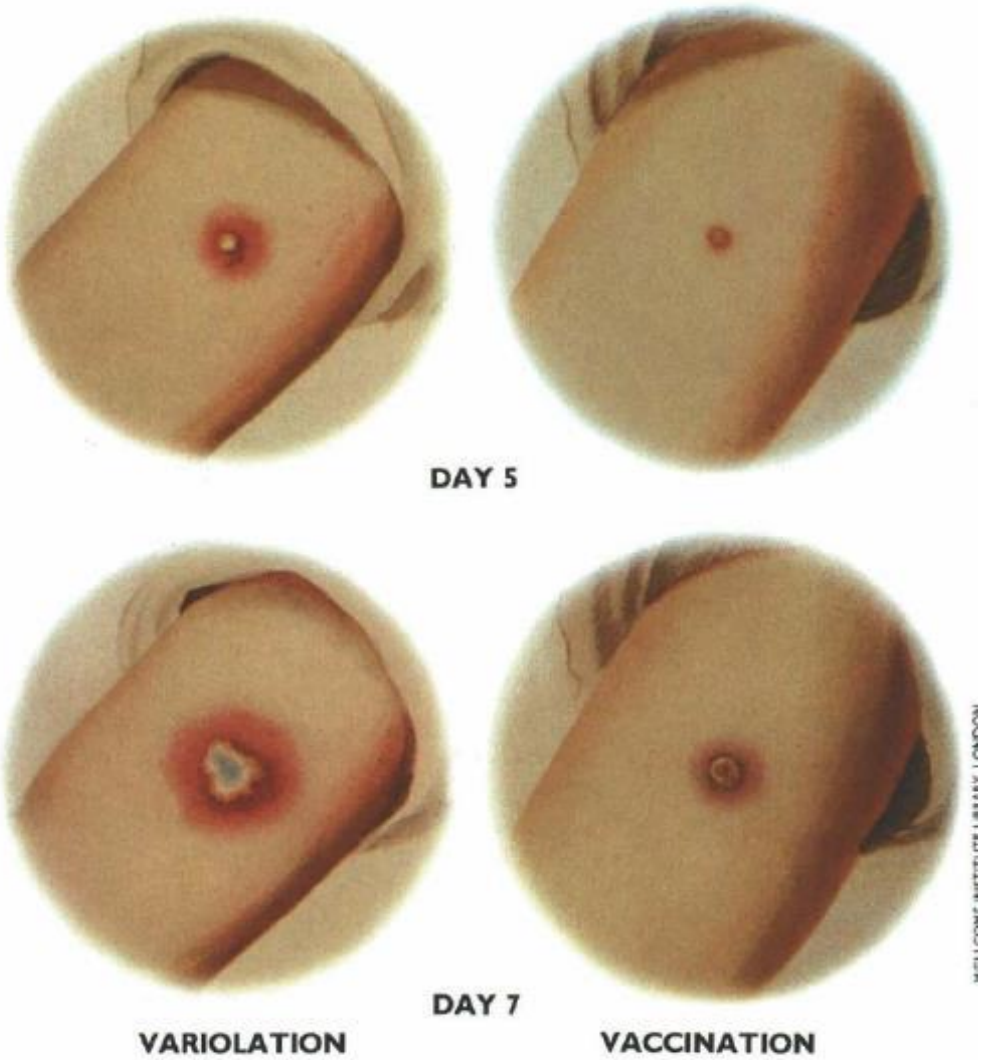


Plate 6.1. Engravings by George Kirtland of coloured drawings made in 1801 by Captain C. Gold, showing the appearance of the local lesions at various times after variolation and vaccination. They were published by Kirtland in 1806 and independently reproduced from the original drawings in the Jenner Centenary Number of the *British medical journal*, published on 23 May 1896. Variolation and vaccination are represented on the 5th and 7th days after inoculation.

Fenner 1988

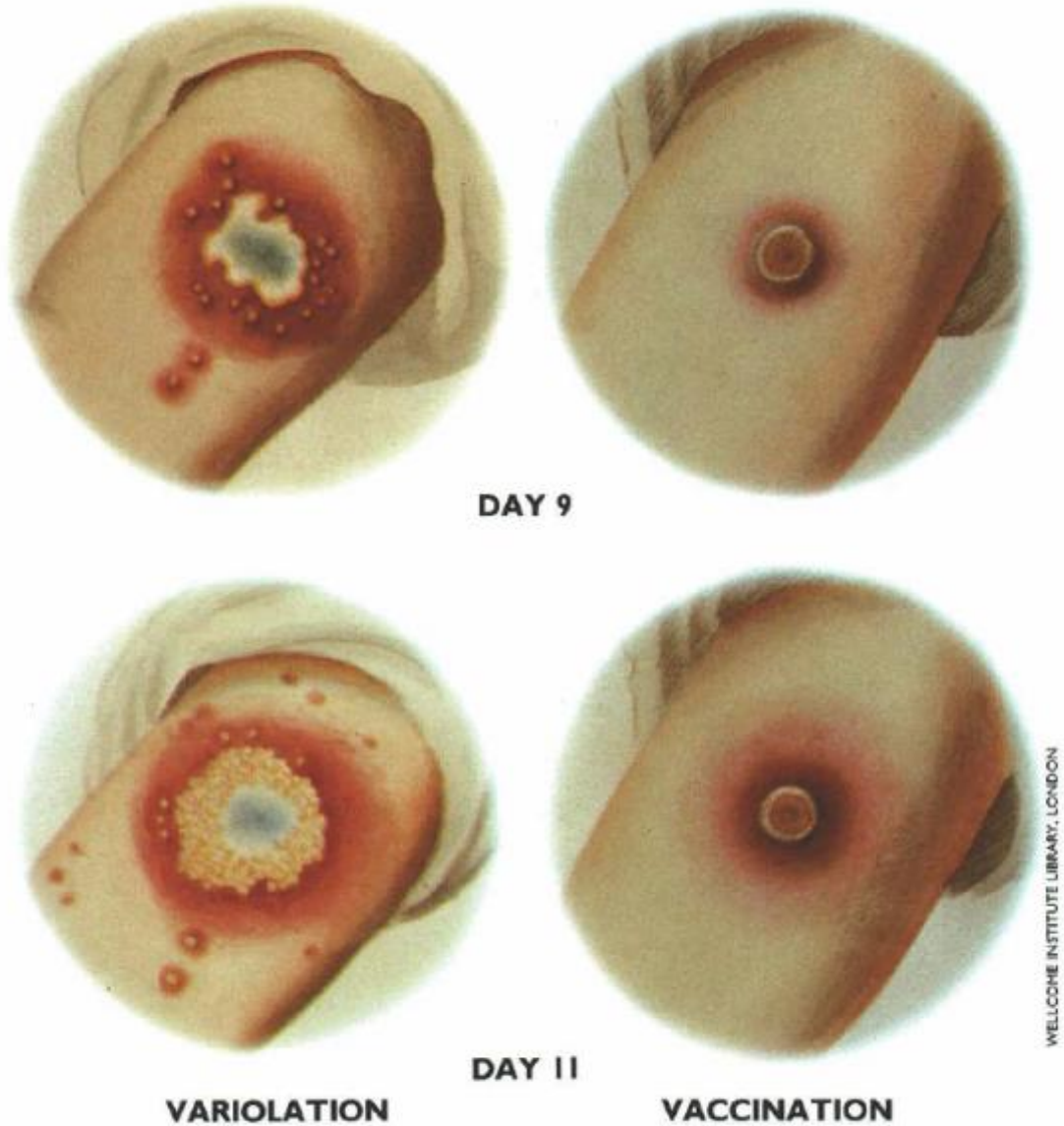


Plate 6.2. The Gold-Kirtland drawings. Variolation and vaccination on the 9th and 11th days after inoculation.

Fenner 1988

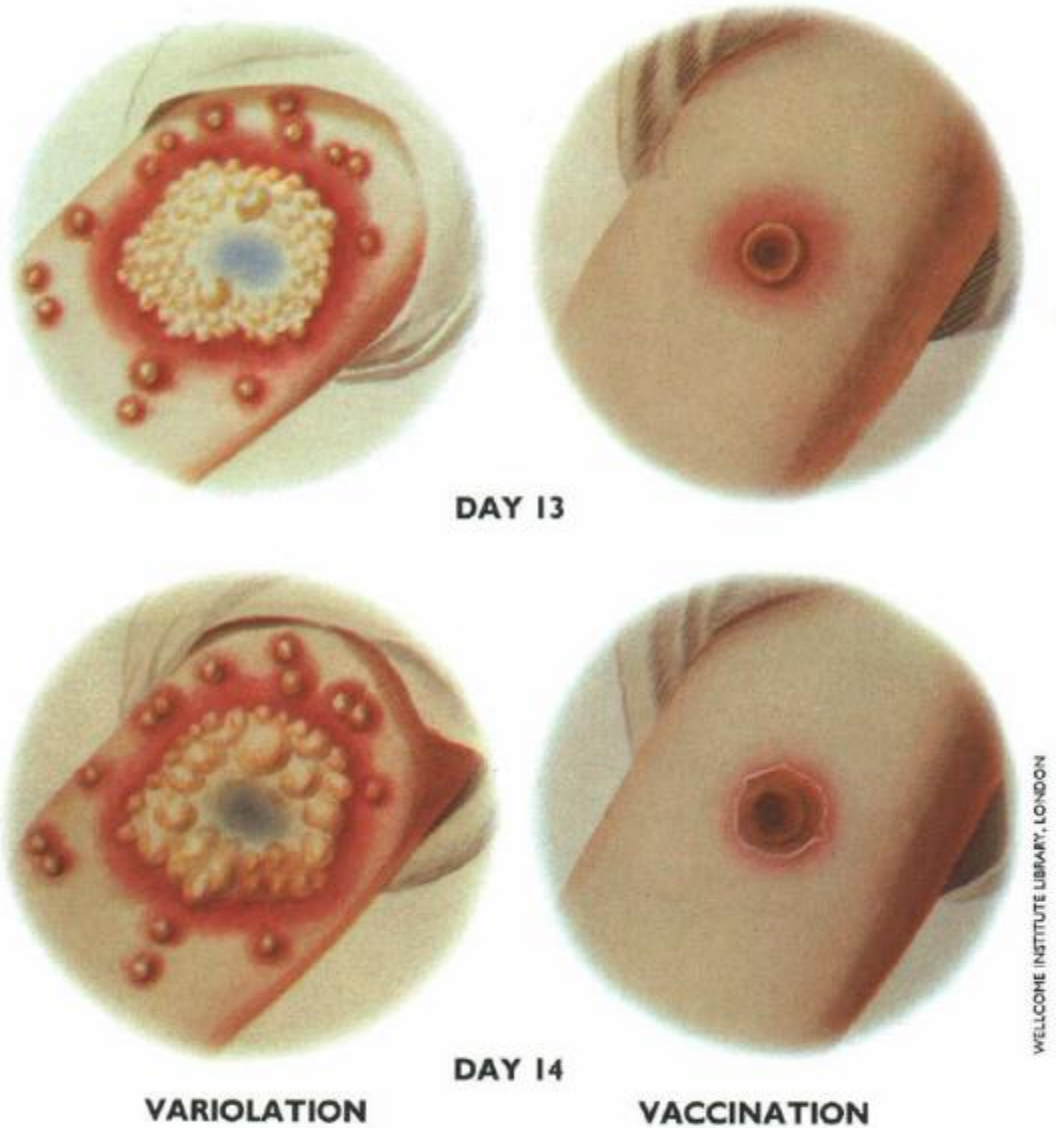
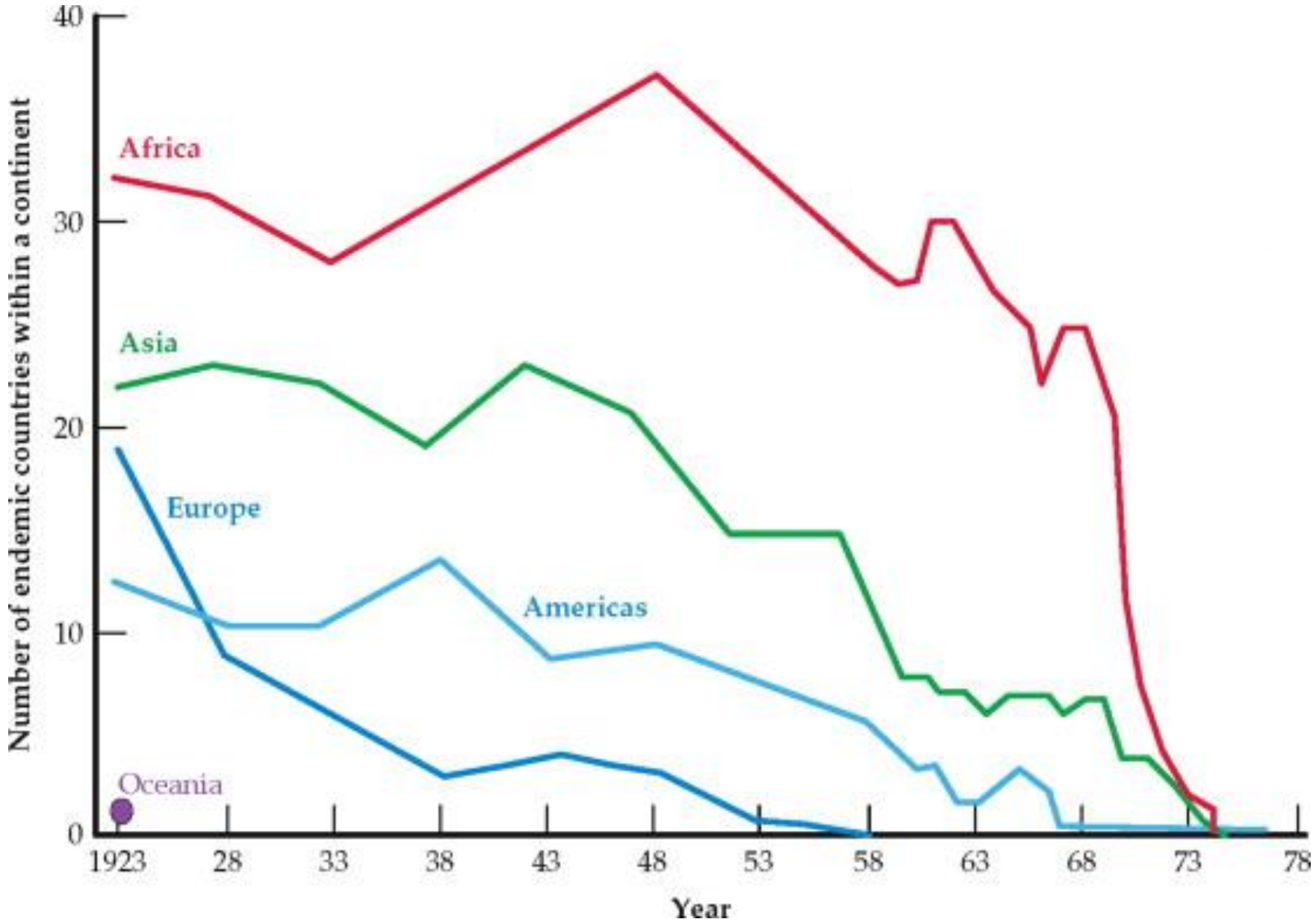


Plate 6.3. The Gold-Kirtland drawings. Variolation and vaccination on the 13th and 14th days after inoculation.

Fenner 1988


OPENING MIXTURE
VACCINE POCK not from a COW
The Cow-Pock — or — the Wonderful Effects of the New Inoculation! — Vide... the Publications of y Anti-Vaccine Society.

Conséquences du vaccin de vache!


Number of endemic countries within a continent
40
30
20
10
0
Africa
Asia
Europe
Americas
Oceania
1923
28
33
38
43
48
53
58
63
68
73
78
Year

Fenner 1988

Vaccins historiques et actuels contre la variole

- Historiquement : prélèvement de lésions bovines pour inoculation
  - Virus de la vaccine
- Vaccin de 1ère génération
  - Recueil sur bovin infecté au laboratoire par la vaccine
  - Dryvax®, Pourquier®, Aventis-Pasteur™…
- Vaccins de 2ème génération
  - Mêmes souches du virus de la vaccine
  - Mais produites sur cultures cellulaires
  - ACAM®, Aventis-Pasteur™…
- Vaccin de 3ème génération :
  - Souches modifiées pour atténuation
  - En particulier souche *modified vaccine Ankara* (MVA) (1968) : non répliquante
  - Imvanex®/Jynneos® de Bavarian Nordic™

Souche MVA : *modified vaccine Ankara*

- Souche du virus de la vaccine
  - "Cultivée" sur des ânes et des veaux à Ankara pour produire du vaccine antivariole en 1950
- Atténuation obtenue par cultures successives sur tissus / lignées cellulaires de poulet
  - 1968 : 576 cycles !
- Perte de la capacité à se répliquer en cellules mammifères
  - Peut initier les premières étapes de l'infection d'une cellule
  - Mais pas de production de nouvelles particules virales
- Utilisation majoritaire dans 3 axes :
  - Vecteur vaccinal (en particulier : études vaccinales anti-VIH et anti-cancer)
  - Vecteur de délivrance de gènes
  - Vaccin anti-poxvirus

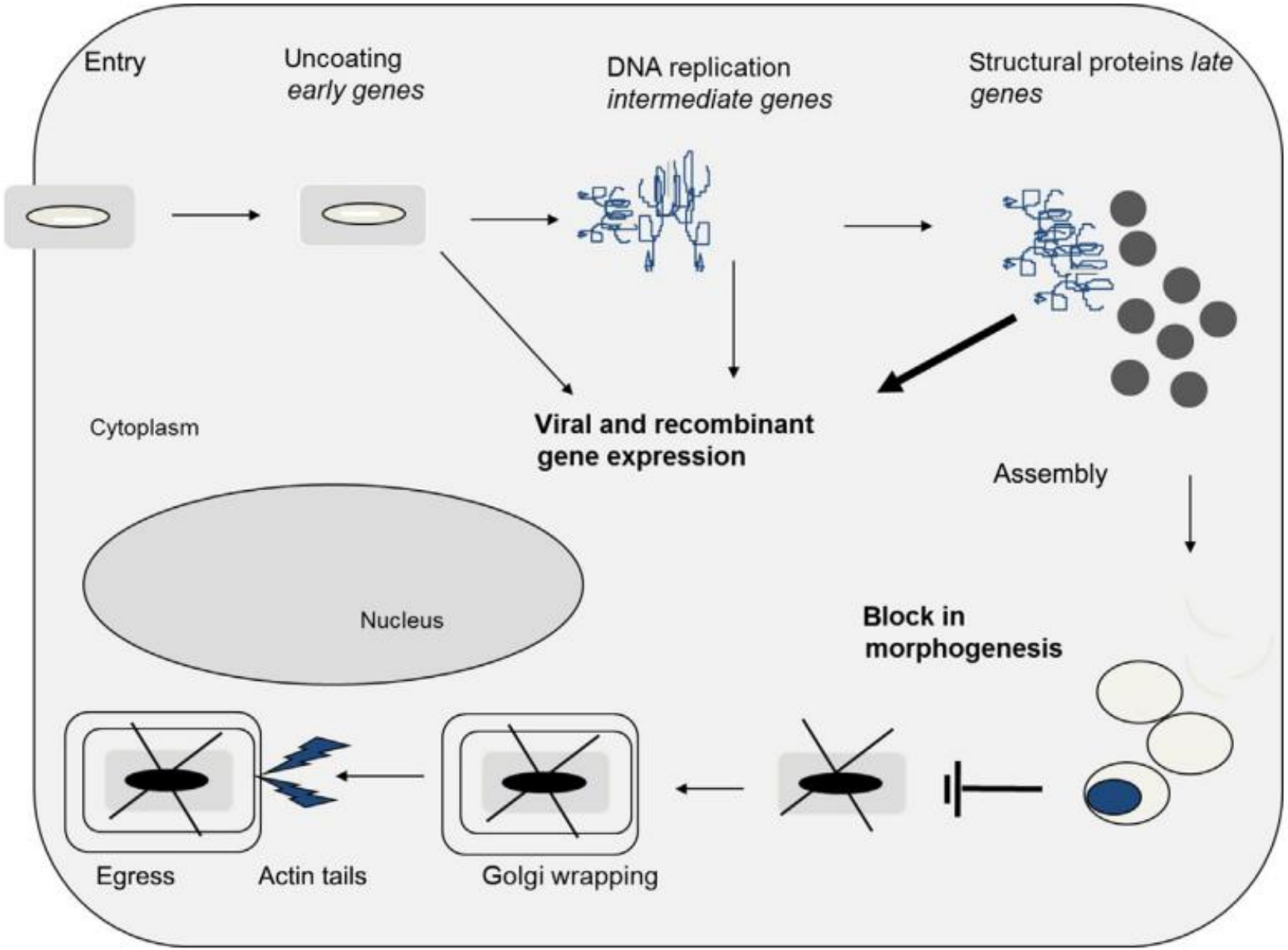


Fig. 2 Schematic representation of the nonpermissive life cycle of MVA in cells of mammalian origin.

Volz 2017

Utilisation de MVA comme vecteur pour des vaccins anti-infection

Table 3
Clinical studies using recombinant MVA vector as prophylaxis or therapeutic vaccines against viral, bacterial and parasitic diseases (until 2010).

Target disease	Antigen	Clinical trial (number of trials)
HIV	HIVA (HIV-1 clade A-derived p24/17 gag)	Phase I (4)
HIV	HIVA (HIV-1 clade A-derived p24/17 gag)	Phase I/II (1)
HIV	HIV-1-LAI nef (clade B)	Phase I/II (1)
HIV	HIV-1-LAI nef (clade B)	Phase II (1)
HIV	Env/gag/pol (clade CRF_A/E)	Phase I (1)
Malaria	ME-TRAP	Phase I (5)
Malaria	ME-TRAP	Phase IIa (1)
Malaria	ME-TRAP	Phase IIb (1)
Malaria	ME-TRAP/CS	Phase I (2)
Malaria	CS	Phase I (1)
Smallpox	–	Phase I (1)
Smallpox	–	Phase I/Ib (1)
Tuberculosis	85A	Phase I (6)
Tuberculosis	85A	Phase I/IIa (1)

CS: circumsporozoite protein; TRAP: thrombosporin related adhesion protein; ME: multiple epitope.

Utilisation de MVA comme vecteur pour des vaccins anti-cancer

Table 4
Clinical studies using recombinant MVA vectors for prevention and treatment of cancer (until 2010).

Target disease	Antigen	Clinical trial	Reference
Cervical cancer	Transcriptional activator HPV E2	Phase I/II	[69]
Cervical cancer	Transcriptional activator HPV E2	Phase II	[70]
Melanoma	Human tyrosinase	Phase I/II	[71]
Melanoma	Tyrosinase	Phase I	[72]
Melanoma	7 Melanoma tumour antigen cytotoxic T lymphocyte (CTL) epitopes	Phase I	[73]
Breast cancer	MUC1	Phase I	[74]
Breast cancer	Oncogenic growth factor receptor HER-2	Phase I	[75]
Colorectal cancer	Tumour antigen 5T4	Phase I/II	[76]
Colorectal cancer	Tumour antigen 5T4	Phase II	[77]
Prostate cancer	MUC1/IL2	Phase II	[78]
Lung cancer	MUC1/IL2	Phase II	[79]
Renal cell carcinoma	Tumour antigen 5T4	Phase II	[80]

C. Verheust et al. / Vaccine 30 (2012) 2623–2632

Available online at www.sciencedirect.com
ScienceDirect
Virology 366 (2007) 73–83
VIROLOGY
www.elsevier.com/locate/yviro

2007

Utilisation de MVA comme vaccin anti-mpox chez l'animal

DNA/MVA HIV-1/AIDS vaccine elicits long-lived vaccinia virus-specific immunity and confers protection against a lethal monkeypox challenge

Pragati Nigam [a], Patricia L. Earl [b], Jeffrey L. Americo [b], Sunita Sharma [a], Linda S. Wyatt [b], Yvette Edghill-Spano [c], Lakshmi S. Chennareddi [a], Peter Silvera [c], Bernard Moss [b], Harriet L. Robinson [a], Rama Rao Amara [a,*]

Table 1
Monkeypox viral DNA and number of skin pocks

	MPXV genomes/ml blood, log 10 on day							Skin pocks on day	
	0	2	5	8	13	16	23	8	16
DNA/MVA									
RHz7	<3.7	<3.7	<3.7	<3.7	4.1	<3.7	<3.7	>200	0
RAg7	<3.7	<3.7	4.3	5.1	3.9	<3.7	<3.7	>200	0
RRz7	<3.7	<3.7	<3.7	3.9	4.2	<3.7	<3.7	0	0
RJe7	<3.7	<3.7	<3.7	3.7	<3.7	<3.7	<3.7	>200	0
Dryvax									
00222	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	0	0
00260	<3.7	<3.7	4.5	<3.7	<3.7	<3.7	<3.7	>200	0
Control									
00278	<3.7	4.5	4.6	8.2	**	**	**	>200	**
Rhg8	<3.7	4.5	4.6	6.5	**	**	**	>200	**

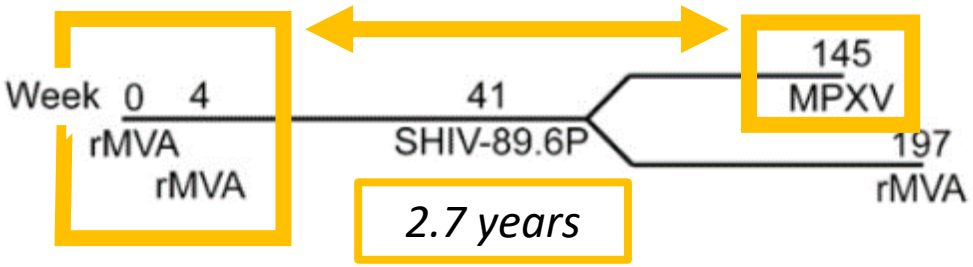
**=Euthanized.

Available online at www.sciencedirect.com
ScienceDirect
Virology 366 (2007) 84–97
VIROLOGY
www.elsevier.com/locate/yviro
ELSEVIER
2007

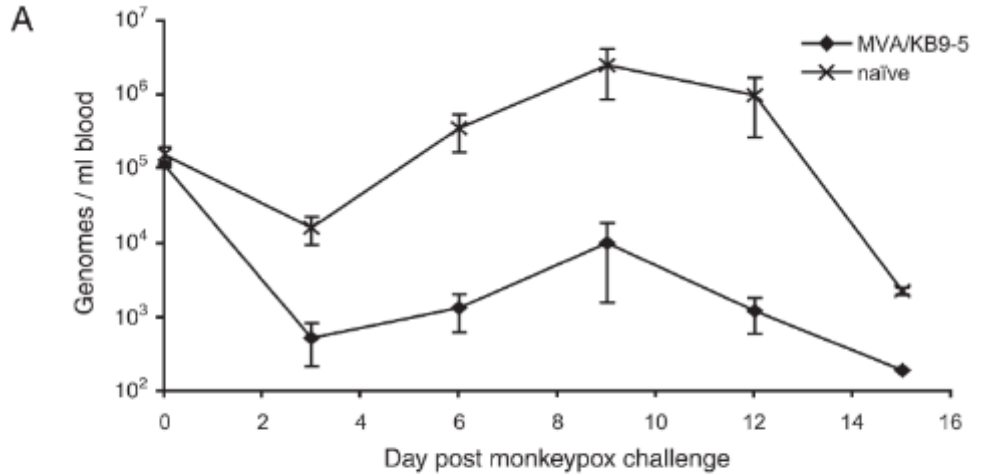
Utilisation de MVA comme vaccin anti-mpox chez l'animal

Recombinant modified vaccinia virus Ankara provides durable protection against disease caused by an immunodeficiency virus as well as long-term immunity to an orthopoxvirus in a non-human primate

Patricia L. Earl [a,*], Jeffrey L. Americo [a], Linda S. Wyatt [a], Leigh Anne Eller [b], David C. Montefiori [c], Russ Byrum [d], Michael Piatak [c], Jeffrey D. Lifson [c], Rama Rao Amara [f], Harriet L. Robinson [f], John W. Huggins [g], Bernard Moss [a]



IV challenge with 5.10^7 pfu



Blood viral load

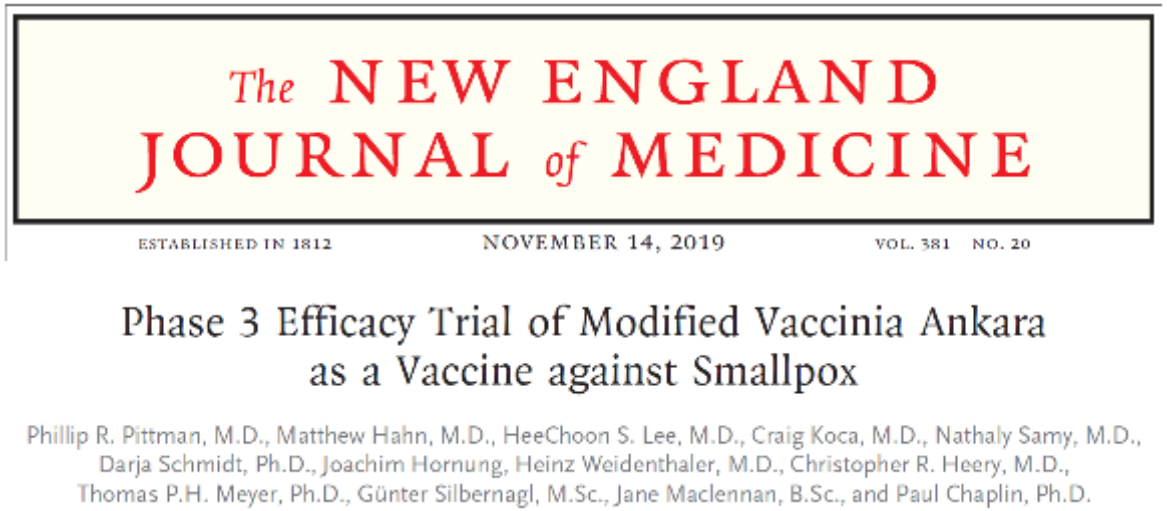
B

		Day post monkeypox challenge					
		0	3	6	12	15	22
MVA/KB9-5	H642 (PT)	0	0	7	38	16	0
	H646 (PT)	0	0	0	0	0	0
	H602 (ID)	0	0	0	8	2	0
	H650 (ID)	0	0	0	14	22	0
	H609 (IM)	0	0	0	18	18	0
	H641 (IM)	0	0	0	0	0	0
naïve	CJ84	0	0	50	734	325	0
	CK5X	0	0	25	241	167	0

Number of lesions

Fig. 7. MPXV challenge. (A) Following challenge with MPXV, the number of MPXV genomes per milliliter of blood was determined by quantitative TaqMan PCR. Average values for MVA-immunized and naive groups are shown. (B) The number of lesions induced by MPXV challenge was enumerated every 3 days for 2 weeks after challenge. The number of lesions found on each animal is shown.

Performance de la souche MVA comme vaccin anti-vaccine chez l'humain



The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 NOVEMBER 14, 2019 VOL. 381 NO. 20

Phase 3 Efficacy Trial of Modified Vaccinia Ankara as a Vaccine against Smallpox

Phillip R. Pittman, M.D., Matthew Hahn, M.D., HeeChoon S. Lee, M.D., Craig Koca, M.D., Nathaly Samy, M.D., Darja Schmidt, Ph.D., Joachim Hornung, Heinz Weidenthaler, M.D., Christopher R. Heery, M.D., Thomas P.H. Meyer, Ph.D., Günter Silbernagl, M.Sc., Jane Maclennan, B.Sc., and Paul Chaplin, Ph.D.

- Protocole expérimental :
  - Injection de MVA
  - Puis injection d'un vaccin anti-variole (*donc une souche de vaccine*) de 2nde génération, ACAM2000
  - Étude de l'intensité de la lésion cutanée donnée par ce vaccin vivant

Imvanex® ou Jynneos® selon le pays

Table 2. Assessment of Major Cutaneous Reactions after ACAM2000 Vaccination (Per-Protocol Population).*

Visit and Measurement	MVA Group (N=165)		ACAM2000-Only Group (N=161)		Area Attenuation Ratio or Diameter Attenuation Ratio (95% CI)†
	Median (95% CI)	Range	Median (95% CI)	Range	
Lesion area — mm^2					
Days 6–8‡	0 (0–1)	0–96	37 (33–42)	0–133	95.2 (93.8–96.2)
Days 13–15	0 (0–0)	0–99	75 (69–85)	0–368	98.2 (97.7–98.4)
Maximum area‡	0 (0–2)	0–99	76 (70–87)	0–368	97.9 (96.6–98.3)
Lesion diameter — mm					
Days 6–8‡	0 (0–2)	0–12	8 (8–9)	0–16	80.0 (77.8–85.7)
Days 13–15	0 (0–0)	0–12	10 (10–11)	0–25	88.9 (87.5–90.0)
Maximum diameter‡	0 (0–2)	0–12	11 (10–11)	0–25	87.5 (83.3–88.9)

- AMM européenne du vaccin MVA de Bavarian Nordic : 2013

Efficacité du MVA-BN contre la mpox :

Données produites à l'occasion de la poussée extra-africaine de 2022

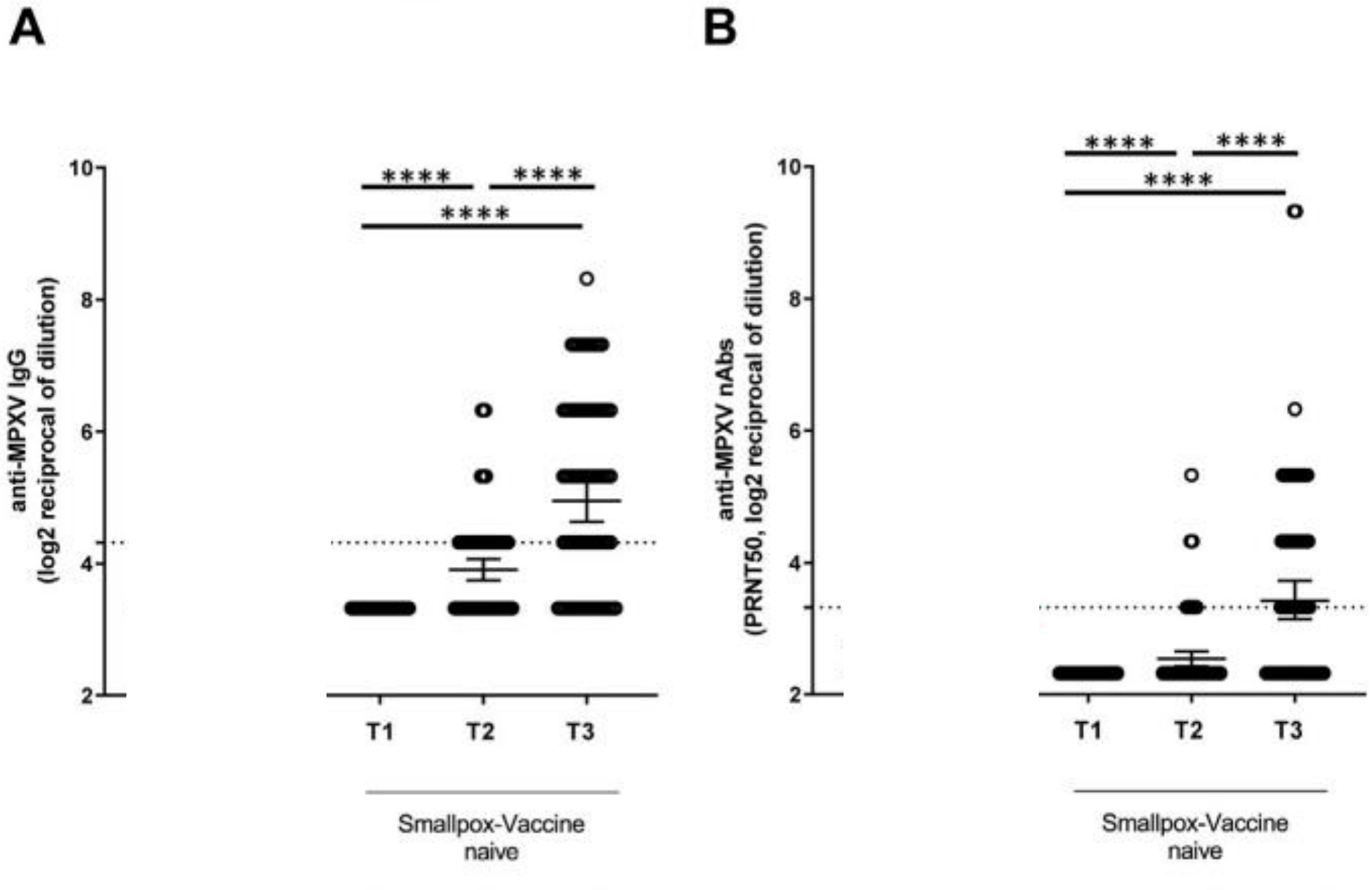
Immunogenicity and reactogenicity of modified vaccinia Ankara pre-exposure vaccination against mpox according to previous smallpox vaccine exposure and HIV infection: prospective cohort study

2024

Valentina Mazzotta,[a,b,*] Alessandro Cozzi Lepri,[c] Giulia Matusali,[d] Eleonora Cimini,[e] Pierluca Piselli,[f] Camilla Aguglia,[a,g] Simone Lanini,[a] Francesca Colavita,[d,b] Stefania Notari,[e] Alessandra Oliva,[a] Silvia Meschi,[d] Rita Casetti,[e] Vanessa Mondillo,[h] Alessandra Vergori,[a,b] Aurora Bettini,[d] Germana Grassi,[e] Carmela Pinnetti,[a] Daniele Lapa,[d] Eleonora Tartaglia,[e] Paola Gallì,[h] Annalisa Mondi,[a] Giulia Montagnari,[a,g] Roberta Gagliardini,[a] Emanuele Nicastri,[a] Miriam Lichtner,[i] Loredana Sarmati,[g] Enrica Tamburrini,[j,k] Claudio Mastroianni,[l] Christof Stingone,[m] Andrea Siddu,[n] Alessandra Barca,[o] Carla Fontana,[p] Chiara Agrati,[q] Enrico Girardi,[r] Francesco Vaia,[n] Fabrizio Maggi,[d] and Andrea Antinori,[a] the Mpox Vaccine Lazio Study Group

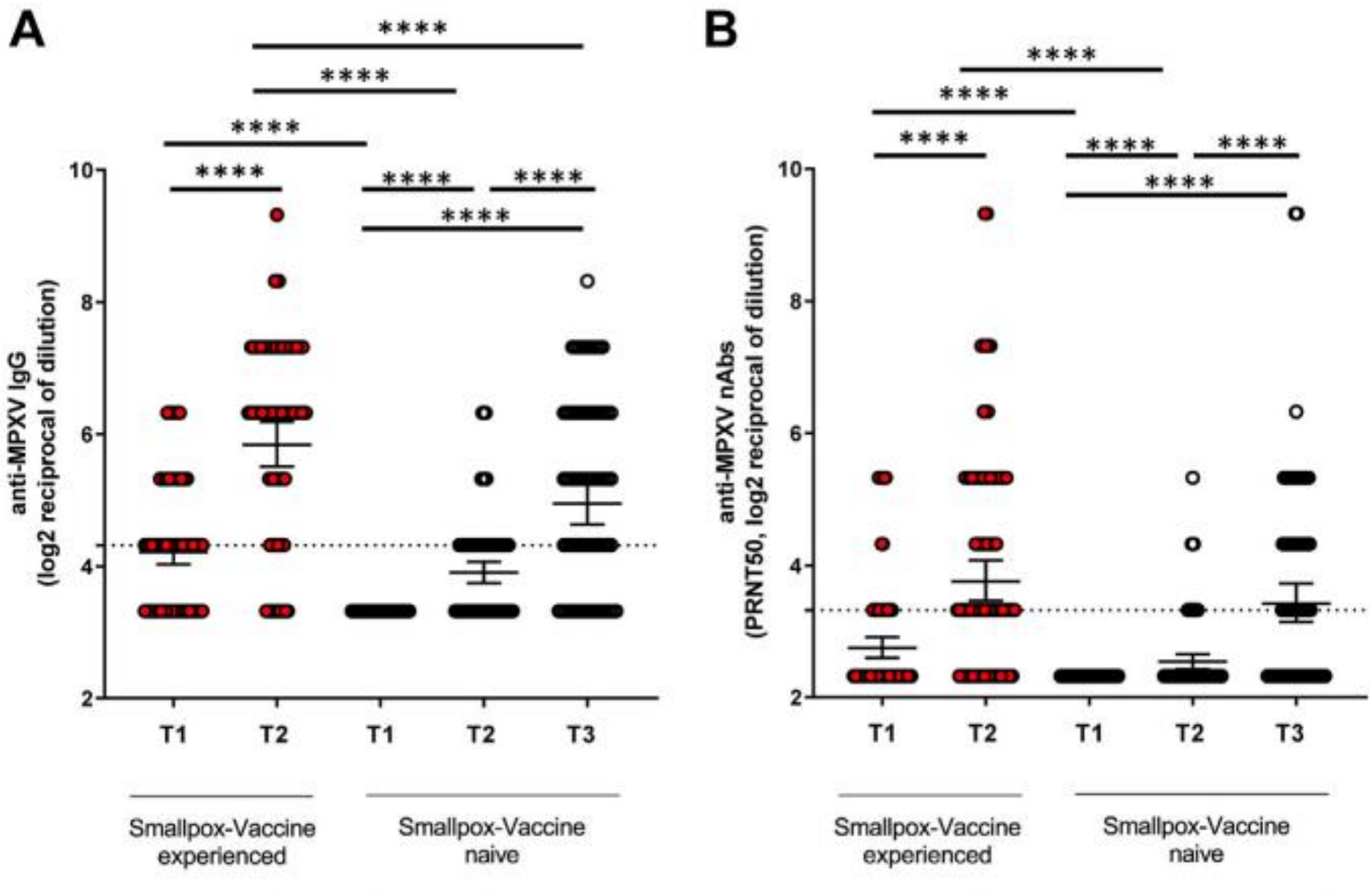
Anticorps totaux

Anticorps neutralisants



Anticorps totaux

Anticorps neutralisants



nature medicine

Article

https://doi.org/10.1038/s41591-023-02229-3

Real-world effectiveness of a single dose of mpox vaccine in males

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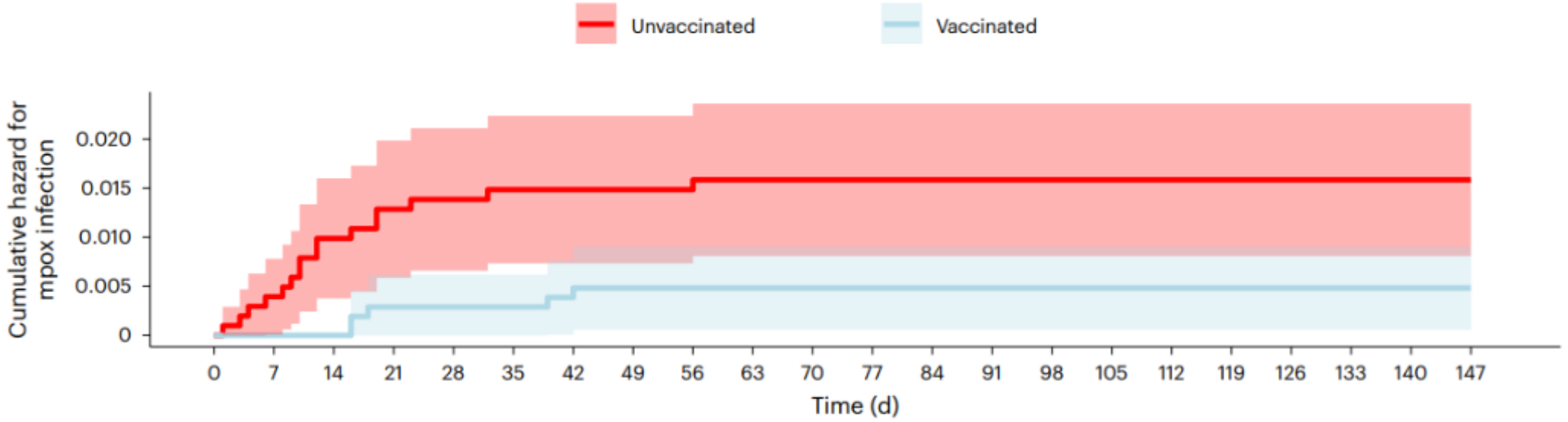
Yael Wolff Sagy[1,12], Roy Zucker[2,3,12], Ariel Hammerman[2,12], Hila Markovits[4], Noa Gur Arieh[4], Wiessam Abu Ahmad[1,5], Erez Battat[1], Noga Ramot[1], Guy Carmeli[6], Avner Mark-Amir[7], Gal Wagner-Kolasko[7], Hadar Duskin-Bitan[2,6,8], Shlomit Yaron[2], Alon Peretz[2,9], Ronen Arbel[2,10,13] ✉, Gil Lavie[1,11,13] & Doron Netzer[2,13]



Number at risk

Unvaccinated	1,017	1,013	1,007	1,004	1,003	1,002	1,002	1,002	1,002	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001	1,001
Vaccinated	1,037	1,037	1,037	1,034	1,034	1,034	1,033	1,029	1,026	1,024	1,018	1,013	996	932	875	830	787	739	689	617	504	76

Cumulative number of events

Unvaccinated	0	4	10	13	14	15	15	15	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Vaccinated	0	0	0	3	3	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Fig. 1 | Cumulative hazard for mpox infection (95% CIs). For unvaccinated participants, time zero corresponds to 31 July 2022, when the vaccination campaign was initiated. For vaccinated participants, time zero corresponds to the date of vaccine uptake. The shaded areas indicate the 95% CIs.

Efficacité d'une dose : 86% (95% CI 59–95)

Effectiveness of Modified Vaccinia Ankara-Bavaria Nordic Vaccination in a Population at High Risk of Mpox: A Spanish Cohort Study

2024

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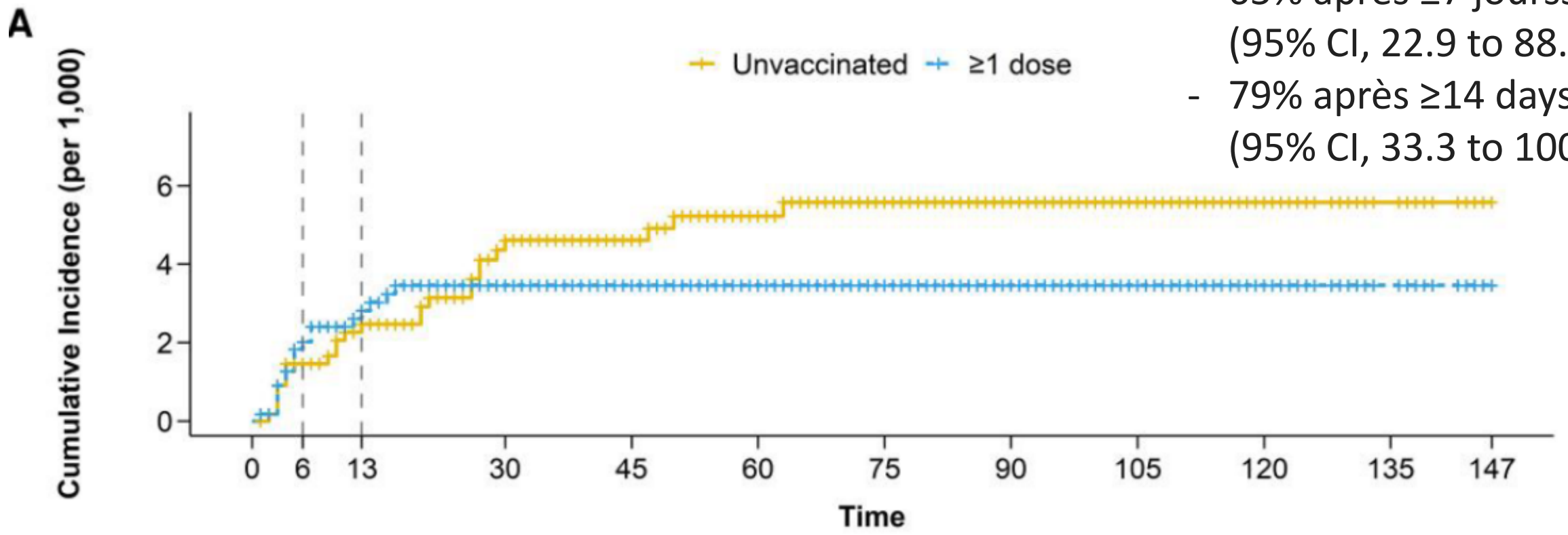
Efficacité après 1 dose :

- 65% après ≥7 jourss (95% CI, 22.9 to 88.0)
- 79% après ≥14 days (95% CI, 33.3 to 100.0)



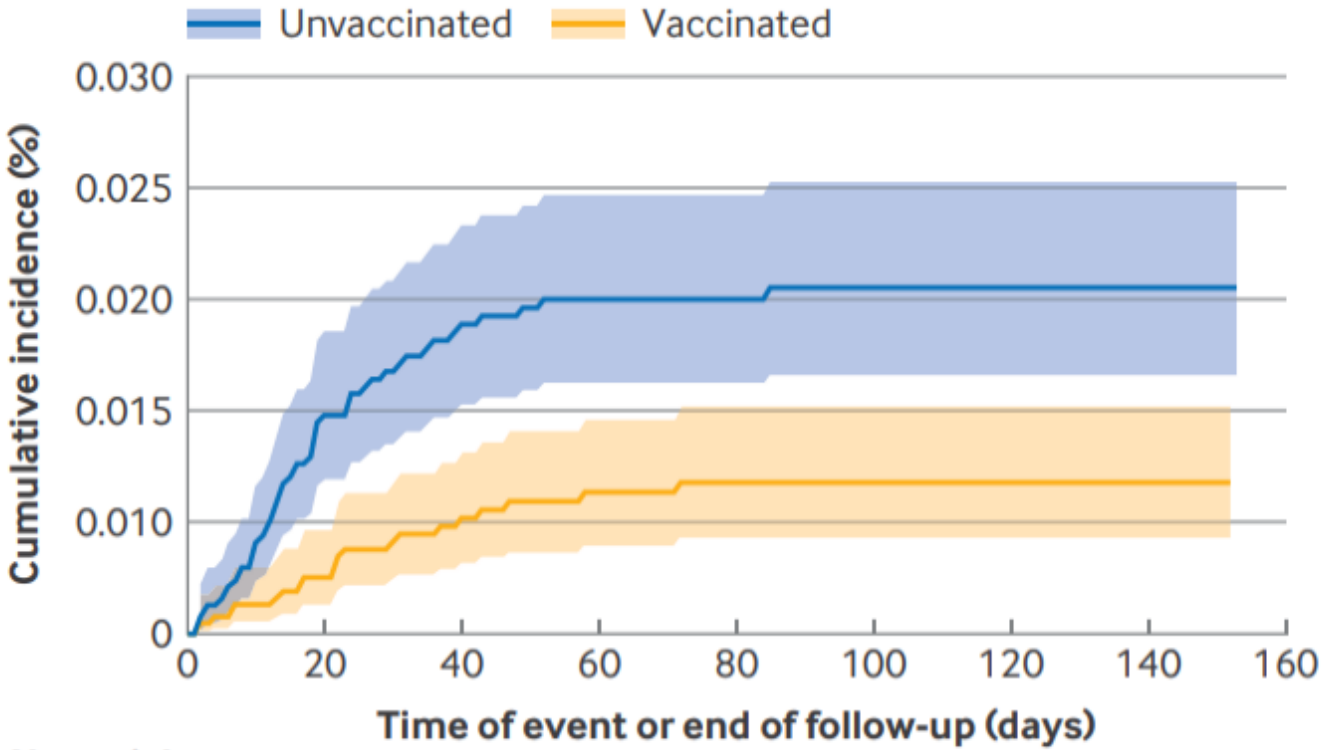
2024

Effectiveness of modified vaccinia Ankara-Bavarian Nordic vaccine against mpox infection: emulation of a target trial

Christine Navarro,[1,2,3] Cindy Lau,[4] Sarah A Buchan,[1,2,3,4] Ann N Burchell,[2,4,5,6] Sharifa Nasreen,[2,4,7] Lindsay Friedman,[1] Evaezi Okpokoro,[8] Peter C Austin,[4,9] Darrell H S Tan,[6,9,10,11] Jonathan B Gubbay,[1,12] Jeffrey C Kwong,[1,2,3,4,5,11,13] Sharmistha Mishra[2,4,6,9,10,11]; on behalf of the Canadian Immunization Research Network Provincial Collaborative Network Investigators

Efficacité d'une dose de vaccine : 58%

(95% CI 31-75)



No at risk

Unvaccinated	3204	2618	2243	2007	1747	1222	670	340
Vaccinated	3204	2644	2264	2010	1714	1184	617	281

Cumulative No of events

Unvaccinated	0	35	47	48-52*	48-52*	52	52	52
Vaccinated	0	9	18	19-23*	23	23	23	23

Vaccine effectiveness of 3rd generation mpox vaccines against mpox and disease severity: A systematic review and meta-analysis

2024

Lauren Pischel [a,*], Brett A. Martini [b], Natalle Yu [c], David Cacesse [b], Mahder Tracy [d], Kolambi Kharbanda [d], Noureen Ahmed [d], Kavin M. Patel [a], Alyssa A. Grimshaw [e], Amyn A. Malik [d], George Goshua [f,g], Saad B. Omer [d]

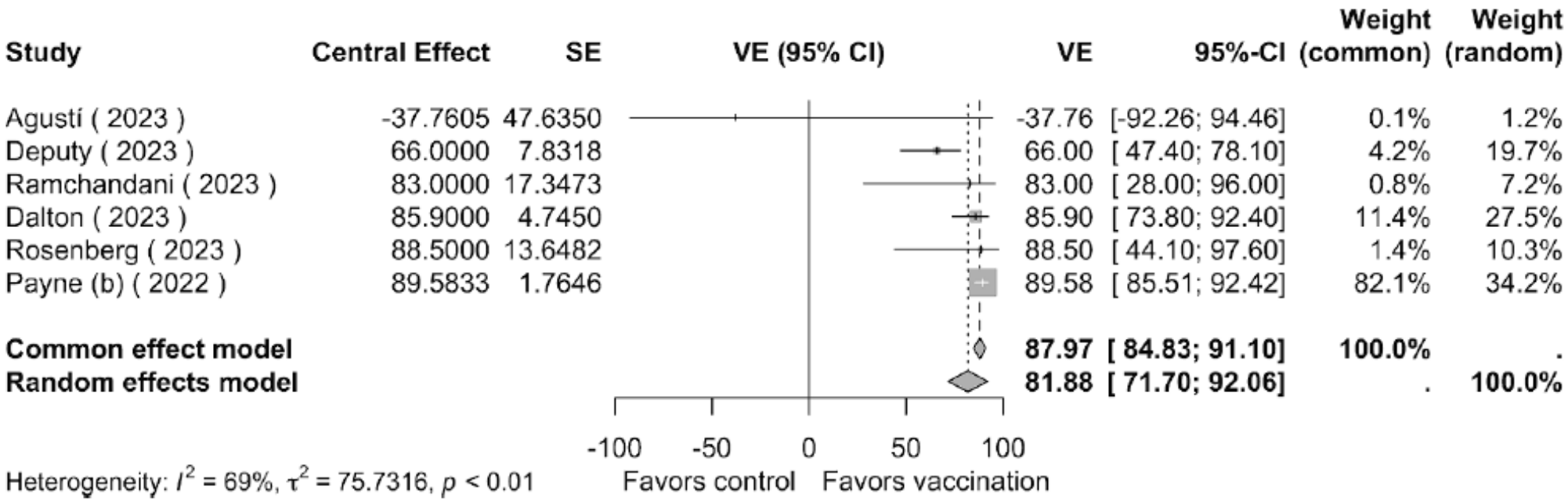


Fig. 3. Meta-analysis of 2 doses of MVA-BN vaccine effectiveness for mpox.

Post-exposure vaccine effectiveness and contact management in the mpox outbreak, Madrid, Spain, May to August 2022

Laura Montero Morales[1,*], José Francisco Barbas del Buey[1,*], Marcos Alonso García[1,*], Noelia Cenamor Largo[1], Alba Nieto Juliá[1], María C Vázquez Torres[1], Susana Jiménez Bueno[1], Andrés Aragón Peña[1], Elisa Gil Montalbán[1], Jesús Íñigo Martínez[1], María Alonso Colón[1], Araceli Arce Arnáez[1], on behalf of Madrid Surveillance Network and Vaccination Centre of Madrid Region[2]

1. Directorate General of Public Health, Regional Ministry of Health of Madrid, Madrid, Spain
2. The members of the networks are acknowledged at the end of the article.

TABLE 4

Univariate and multivariate analysis of mpox vaccine effectiveness (one dose) in close contacts of mpox cases, Madrid, Spain, May–August 2022

Variable	Vaccine effectiveness (n = 484)					
	Person-days	Events	Crude %[a]	95% CI[a]	Adjusted %	95% CI
Overall vaccine effectiveness						
Unvaccinated	5,774	49	Reference		Reference	
Vaccinated	6,099	8	84.4	66.4 to 92.8	88.8	76.0 to 94.7
Time from exposure to vaccination						
Unvaccinated	5,774	49	Reference		Reference	
0–6 days	1,152	2	81.1	20.6 to 95.5	85.5	39.3 to 96.6
7–13 days	3,233	4	85.7	59.6 to 95.0	90.2	72.5 to 96.5
14–20 days	1,595	2	82.0	24.6 to 95.7	86.7	44.0 to 96.9
21–25 days	119	0	100	NA[b]	100	NA[c]

Efficacité vaccinale en post-exposition

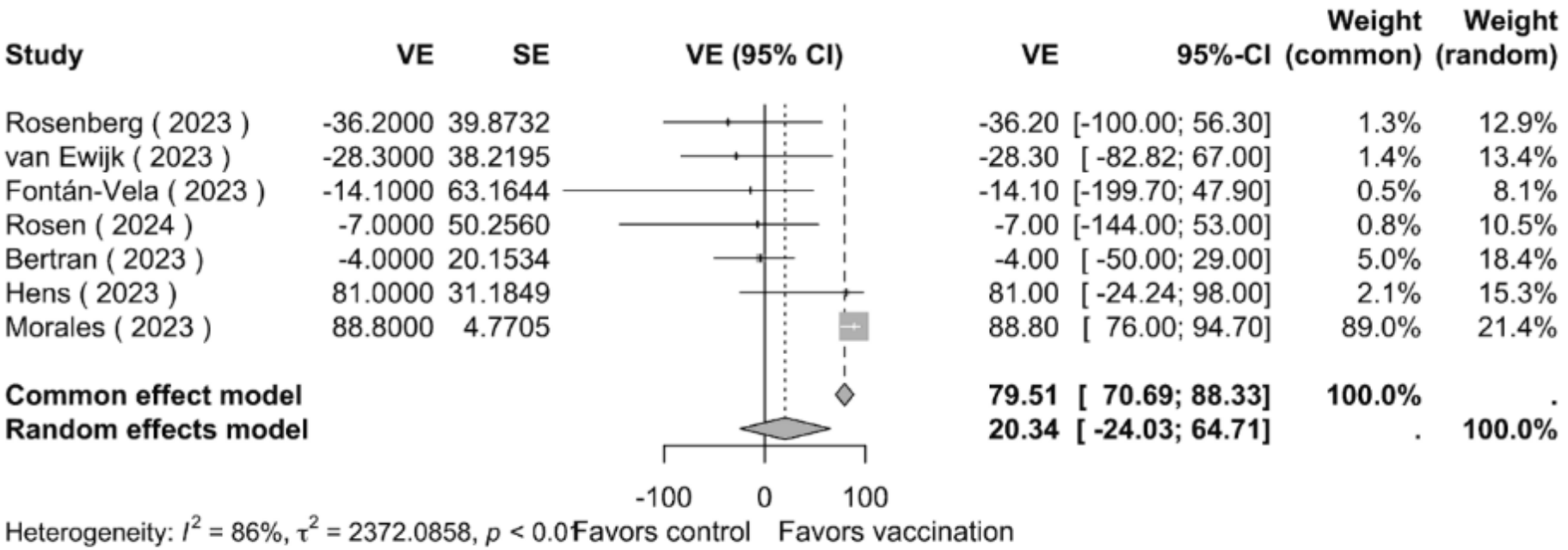


Fig. 4. Meta-analysis of PEP vaccine effectiveness for mpox.

JOURNAL ARTICLE CORRECTED PROOF

Mpox in People With Human Immunodeficiency Virus: Predictors of Diagnosis, Outcomes, and Vaccine Effectiveness in a Multisite Cohort

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Clinical Infectious Diseases, ciae464, https://doi.org/10.1093/cid/ciae464

Published: 08 October 2024 **Article history** ▾

- Efficacité d'une dose (au moins) de vaccin mpox chez les PVVIH :
  - 71%
  - 86% ou plus si CD4 ≥350 ou si CV VIH indétectable

Quelle durée de protection ?

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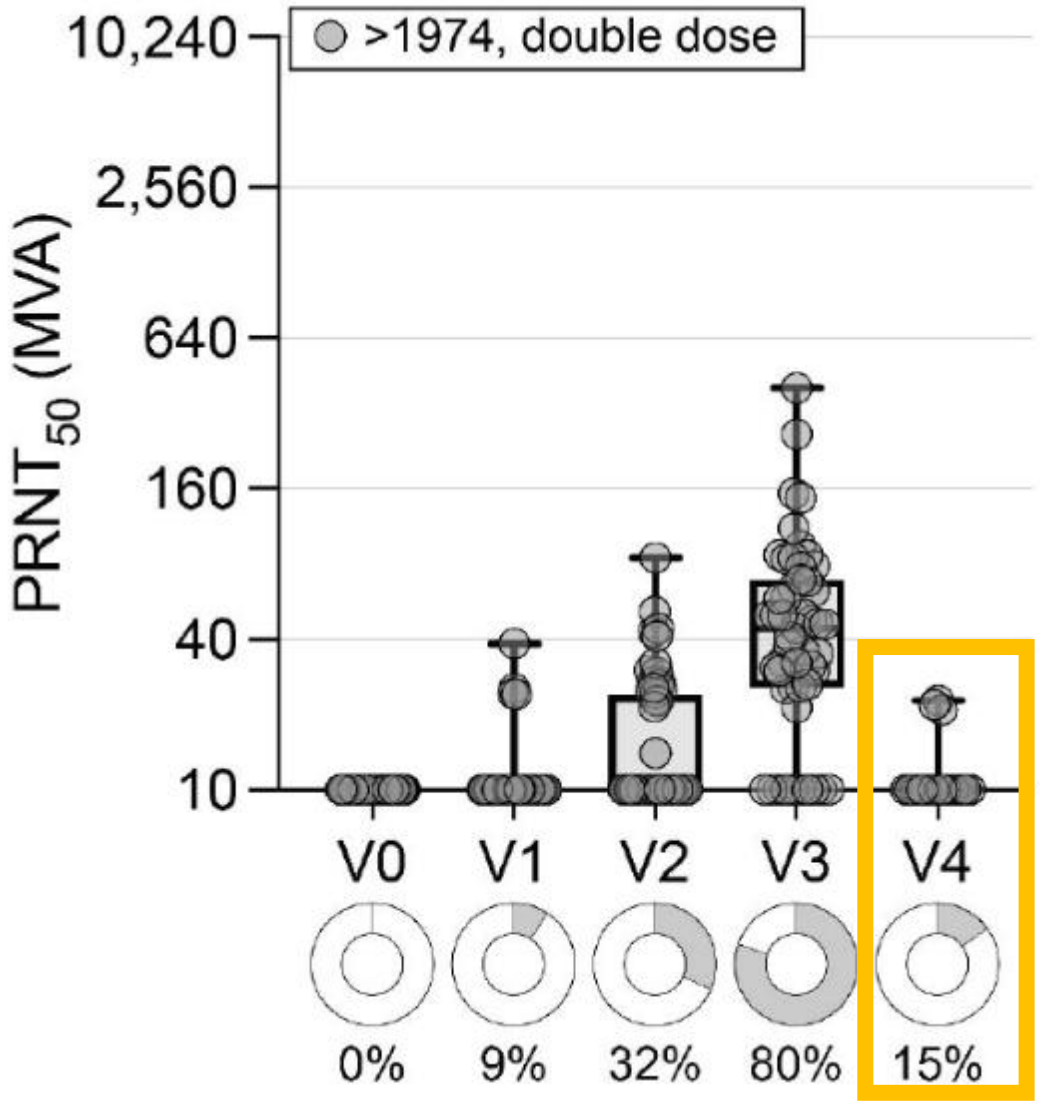
Orthopoxvirus-specific antibodies wane to undetectable levels one year after MVA-BN vaccination of at-risk individuals

Leanne P. M. van Leeuwen, Marc C. Shamier, Babs E. Verstrepen, Hannelore M. Götz, Katharina S. Schmitz, Najlae Akhiyate, Koen Wijnans, Susanne Bogers, Martin E. van Royen, Eric C. M. van Gorp, Marion P. G. Koopmans, Rory D. de Vries, Corine H. GeurtsvanKessel, Luca M. Zaeck

doi: https://doi.org/10.1101/2024.08.13.24311601

V0 = baseline
V1 = 14 days after first dose
V2 = 28 days after first dose
V3 = 28 days after second dose
V4 = 1 year follow-up

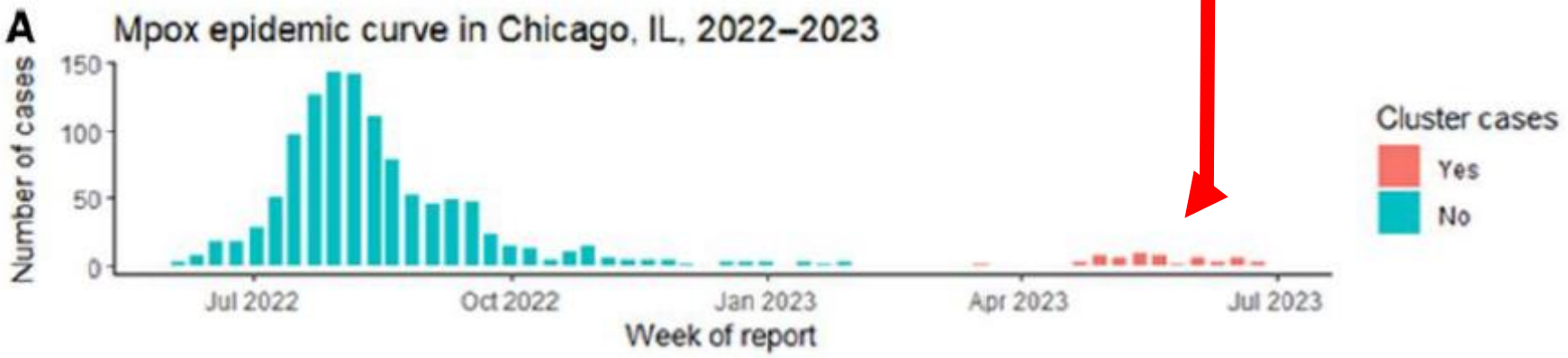


Investigation of an Mpox Outbreak Affecting Many Vaccinated Persons in Chicago, Illinois—March 2023–June 2023

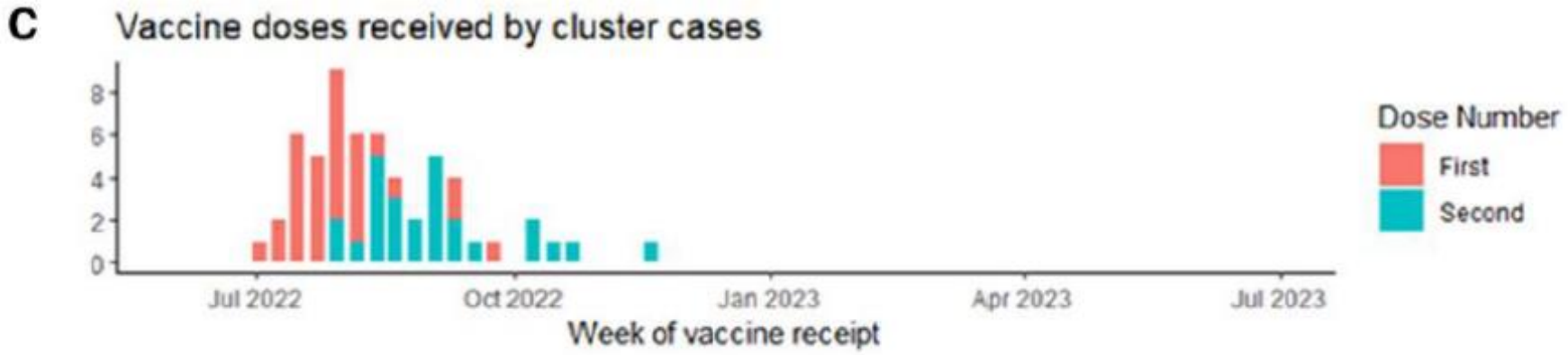
2024

Emily A. G. Faherty,[1,2,a] Taylor Holly,[2,a] Yasmin P. Ogale,[1] Hillary Spencer,[1,2] Ashley M. Becht,[2] Gordon Crisler,[2] Michael Wasz,[2] Patrick Stonehouse,[2] Hannah J. Barbian,[3] Christy Zelinski,[2] Alyse Kittner,[2] Dorothy Foulkes,[2] Kendall W. Anderson,[2] Tiffany Evans,[2] Lavinia Nicolae,[4] Amber Staton,[5] Carla Hardnett,[4] Michael B. Townsend,[6] William C. Carson,[6] Panayampalli S. Satheshkumar,[6] Christina L. Hutson,[6] Crystal M. Gigante,[6] Laura A. S. Quilter,[4] Susan Gorman,[7] Brian Borah,[2] Stephanie R. Black,[2] Massimo Pacilli,[2] David Kern,[2] Janna Kerins,[2] Andrea M. McCollum,[6] Agam K. Rao,[6,b] and Irina Tabidze[2,b]

49 cas de mpox
57% vaccinés 2 doses



Temps médian depuis la dernière dose :
9 mois (IQR: 8–9.5)



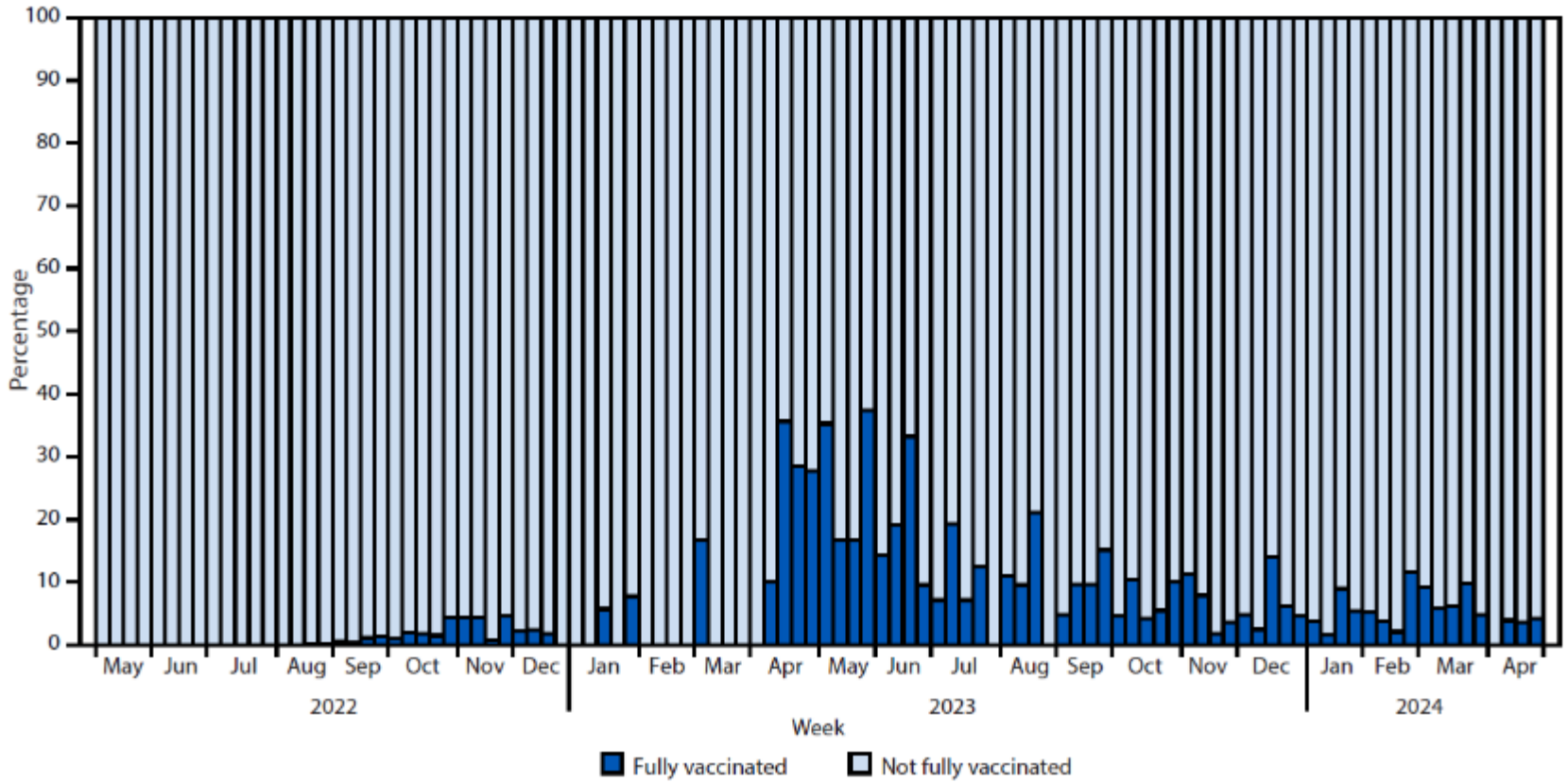
Morbidity and Mortality Weekly Report

2024

Monkeypox Virus Infections After 2 Preexposure Doses of JYNNEOS Vaccine — United States, May 2022–May 2024

Sarah Anne J. Guagliardo, PhD[1]; Ian Kracalik, PhD[1,2]; Rosalind J. Carter, PhD[1]; Christopher Braden, MD[1]; Rebecca Free, MD[1]; Mukesh Hamal, PhD[1]; Alexandra Tuttle, MPH[1,2]; Andrea M. McCollum, PhD[1,2]; Agam K. Rao, MD[1,2]

FIGURE. Proportion of fully vaccinated mpox cases* among all mpox cases, by epidemiologic week — United States, May 2022–May 2024



* Probable or confirmed cases in persons who received 2 JYNNEOS doses, with the most recent dose received ≥14 days before illness onset and with vaccination dates occurring since May 2022.

Morbidity and Mortality Weekly Report

Monkeypox Virus Infections After 2 Preexposure Doses of JYNNEOS Vaccine — United States, May 2022–May 2024

Sarah Anne J. Guagliardo, PhD[1]; Ian Kracalik, PhD[1,2]; Rosalind J. Carter, PhD[1]; Christopher Braden, MD[1]; Rebecca Free, MD[1]; Mukesh Hamal, PhD[1]; Alexandra Tuttle, MPH[1,2]; Andrea M. McCollum, PhD[1,2]; Agam K. Rao, MD[1,2]

271 cas de mpox parmi des personnes complètement vaccinées

Médiane : 266 jours après la 2nde dose de vaccine JYNNEOS (IQR = 64–420 jours)

- *après 2 doses sous-cutanées : 263 jours (IQR = 47–334)*
- *après 2 doses intradermiques : 363 jours (IQR = 221–444)*

nature communications

Article

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Predicting vaccine effectiveness for mpox

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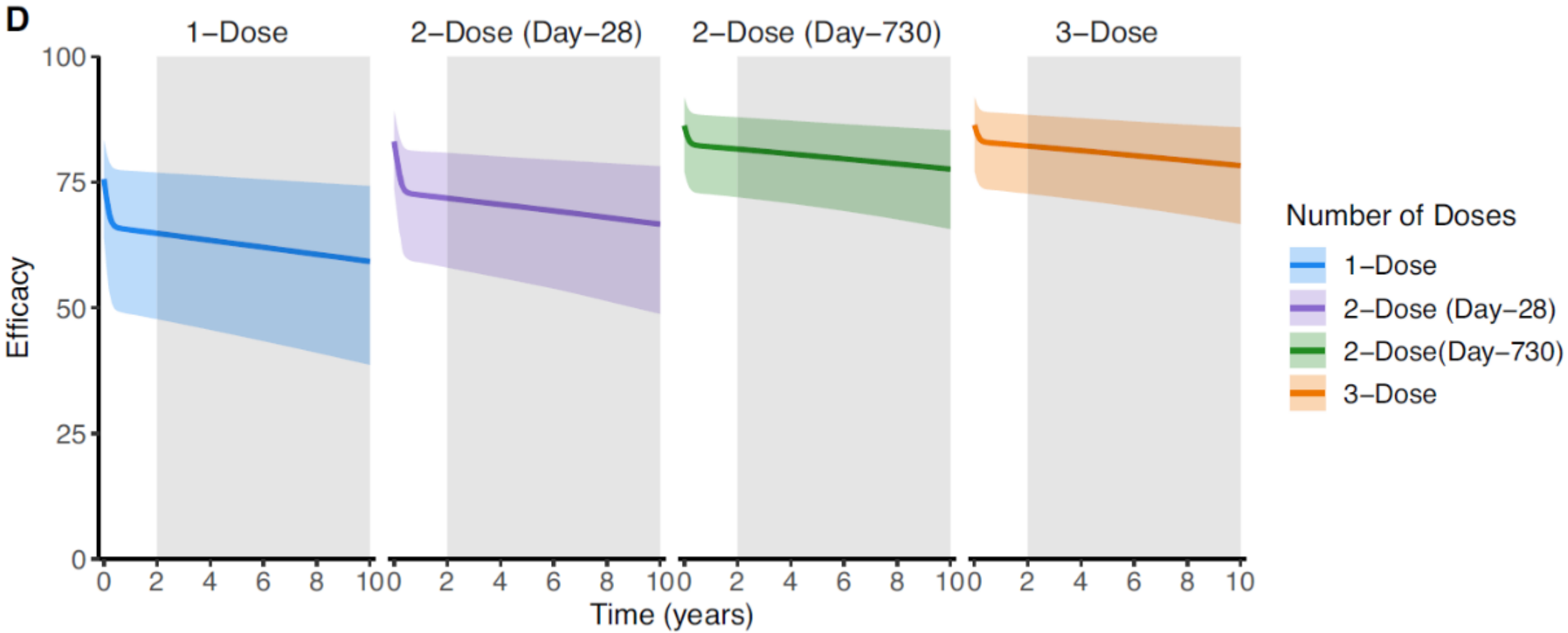
Matthew T. Berry[1], Shanchita R. Khan[1], Timothy E. Schlub[1,2], Adriana Notaras[1], Mohana Kunasekaran[1], Andrew E. Grulich[1], C. Raina MacIntyre[1,3], Miles P. Davenport[1] & David S. Khoury[1]


D
1–Dose
2–Dose (Day–28)
2–Dose (Day–730)
3–Dose
Efficacy
100
75
50
25
0
0 2 4 6 8 100 2 4 6 8 100 2 4 6 8 100 2 4 6 8 10
Time (years)
Number of Doses
1–Dose
2–Dose (Day–28)
2–Dose(Day–730)
3–Dose

Recommandations actuelles (HAS, France)

- Vacciner les personnes à risque sexuel
  - HSH multipartenaires et trans multipartenaires
  - Travailleurs/euses du sexe
  - Professionnel.le.s des lieux de rencontre sexuelle

- En l'absence de vaccination anti-variole (avant 1980) :
  - 2 doses séparées de 1 mois
  - Ou 3 doses si immunodéprimé
  - Puis rappel à 2 ans (la France est le seul pays à le recommander …)

- Si vaccination anti-variole par le passé (avant 1980) :
  - 1 seule dose
  - (pas appliqué chez l'ID)

Recommandations actuelles (HAS, France)

Tableau résumé des différents schémas de vaccination à effectuer chez les personnes éligibles à la vaccination en fonction des antécédents d'infection et de vaccination

Personnes éligibles à la vaccination	Schéma de vaccination à effectuer			
	Immunocompétentes		Immunodéprimées	
	Vaccinées dans l'enfance (avant 1980)[a]	Non vaccinées dans l'enfance (avant 1980)	Vaccinées dans l'enfance (avant 1980)[a]	Non vaccinées dans l'enfance (avant 1980)
N'ayant jamais été vaccinées avec un vaccin MVA-BN	1 dose de rappel	2 doses	3 doses	3 doses
Ayant reçu une seule dose de vaccin de MVA-BN	Aucun	1 dose	2 doses	2 doses
Avec un schéma complet de vaccination de MVA-BN	Aucun	1 dose de rappel*	1 dose de rappel*	1 dose de rappel*
Ayant contracté le mpox entre 2022 et aujourd'hui	Aucun	Aucun	Aucun	Aucun

a *Vaccin antivariolique reçu avant 1980*

** La dose de rappel doit être administrée à distance de la primovaccination et idéalement deux ans ou plus après la dernière dose. Les personnes éligibles à une dose de rappel ayant été primovaccinées en 2022 peuvent donc être revaccinées.*