



GUNS, GERMS
AND STEEL

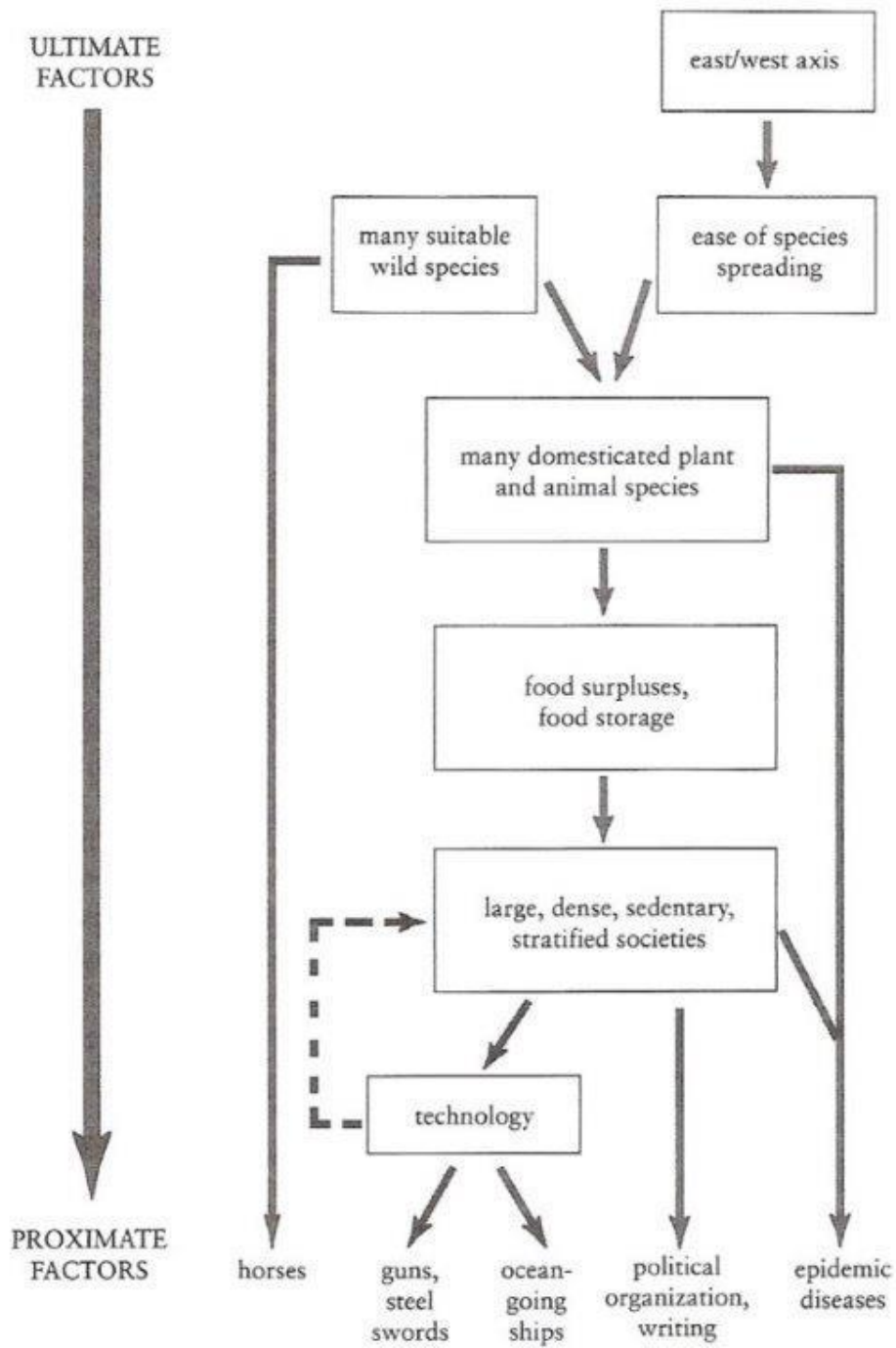
JARED DIAMOND



Cajamarca, Venerdì 15 Novembre 1532



Factors Underlying the Broadest Pattern of History



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RICHARD
DAWKINS
THE
SELFISH
GENE

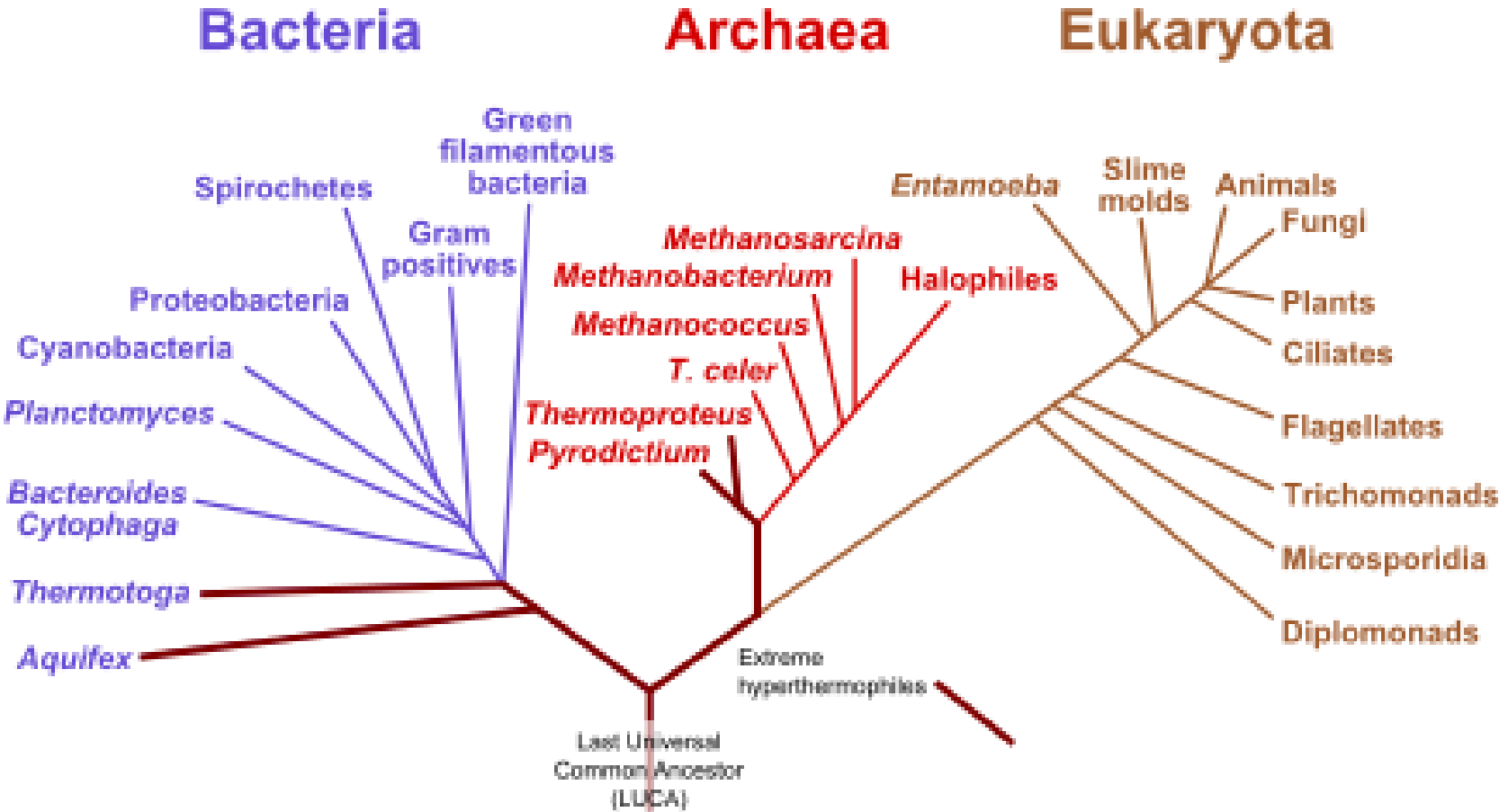
WITH A NEW INTRODUCTION
30th
Anniversary
edition
BY THE AUTHOR

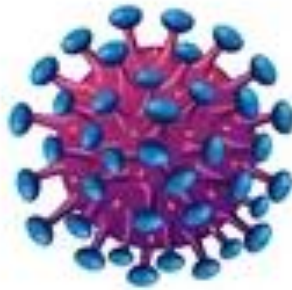


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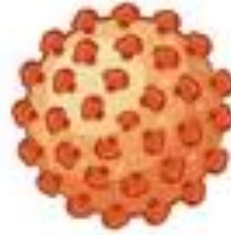


Phylogenetic Tree of Life





HIV



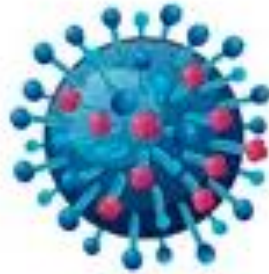
Hepatitis B



Ebola Virus



Adenovirus



Influenza



Rabies Virus



Bacteriophage



PaPillomavirus

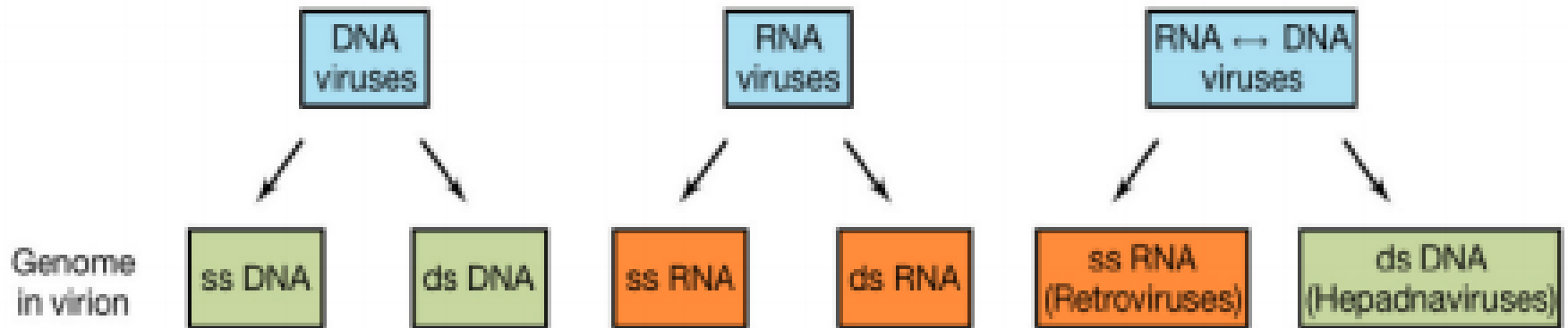


Rotavirus

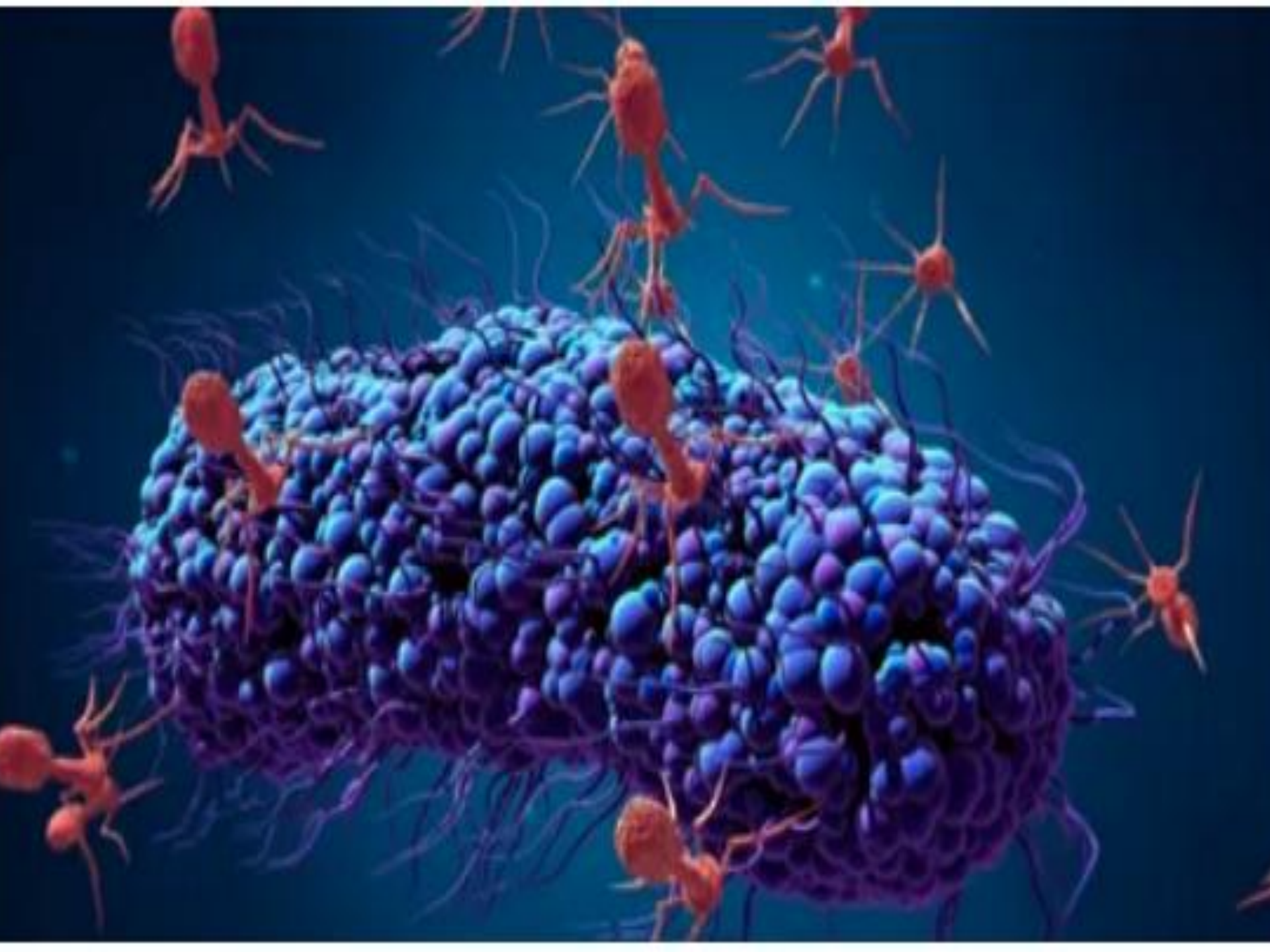


Herpes Virus

ss = single strands = filamento singolo
ds = double strand = filamento doppio



Il genoma più grande - batteriofago G - con $6,7 \cdot 10^5$ basi
simile a quello di batteri endocellulari



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A history of notable pandemics



The
Plague
Doctor

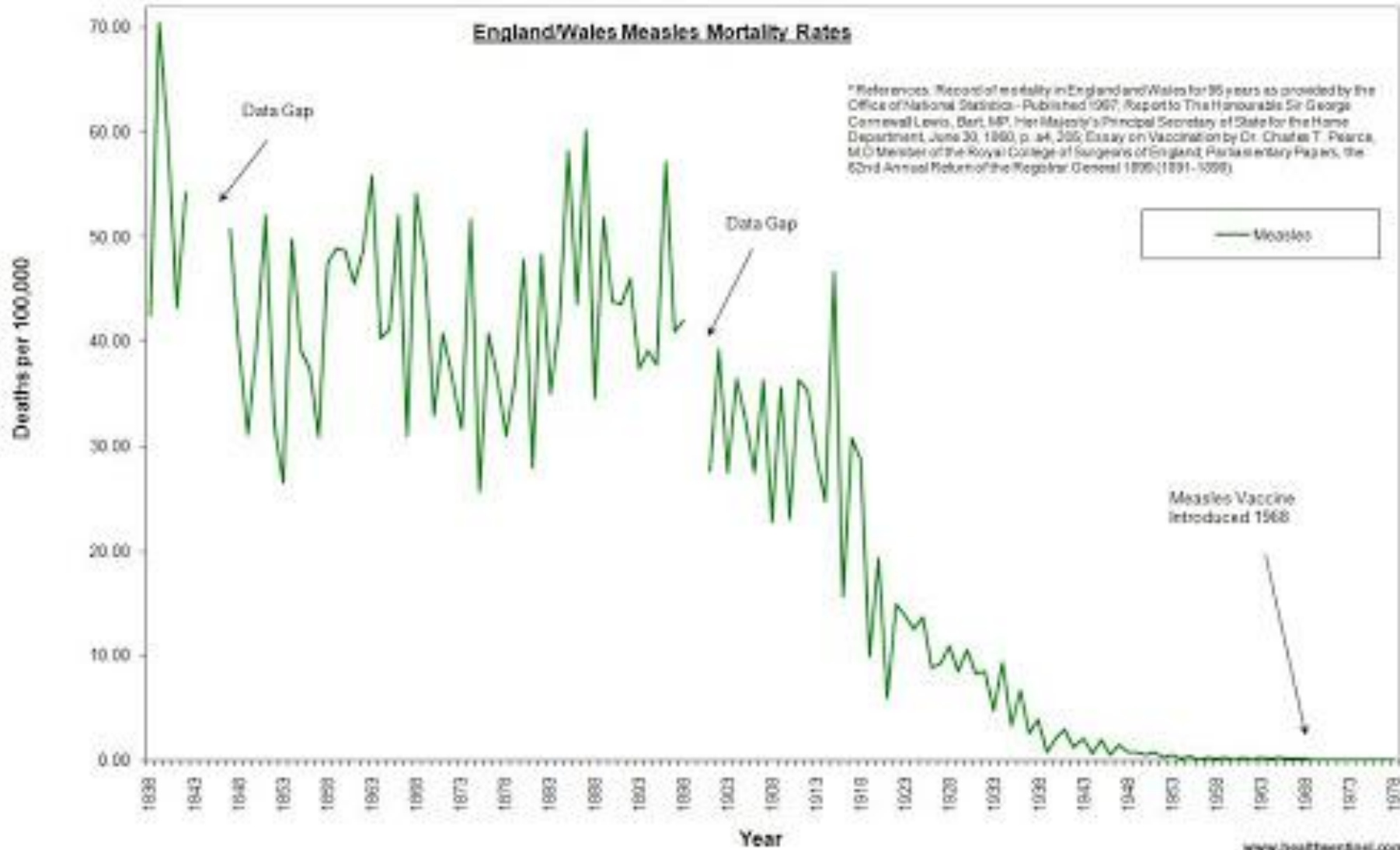
Dr. Doctor Schmalzel von Rom



Ho Creditu ab me fidel
 quod scribam remedium abbas
 de hant de contagion
 et autem quam loco dicitur
 Celeriter fuit et ea fides
 gleich in der Corvus auf der Maier
 Ah Creditu. also nicht der hin
 dem Romer regnet die Regen

Qui non deberet jure
 fugisse Turbulas jure
 que loquatur ab me et
 und dicit jure contulit
 Wenenen Credit et
 de die fente en jure
 Maripum hie jure H
 und autem de jure j

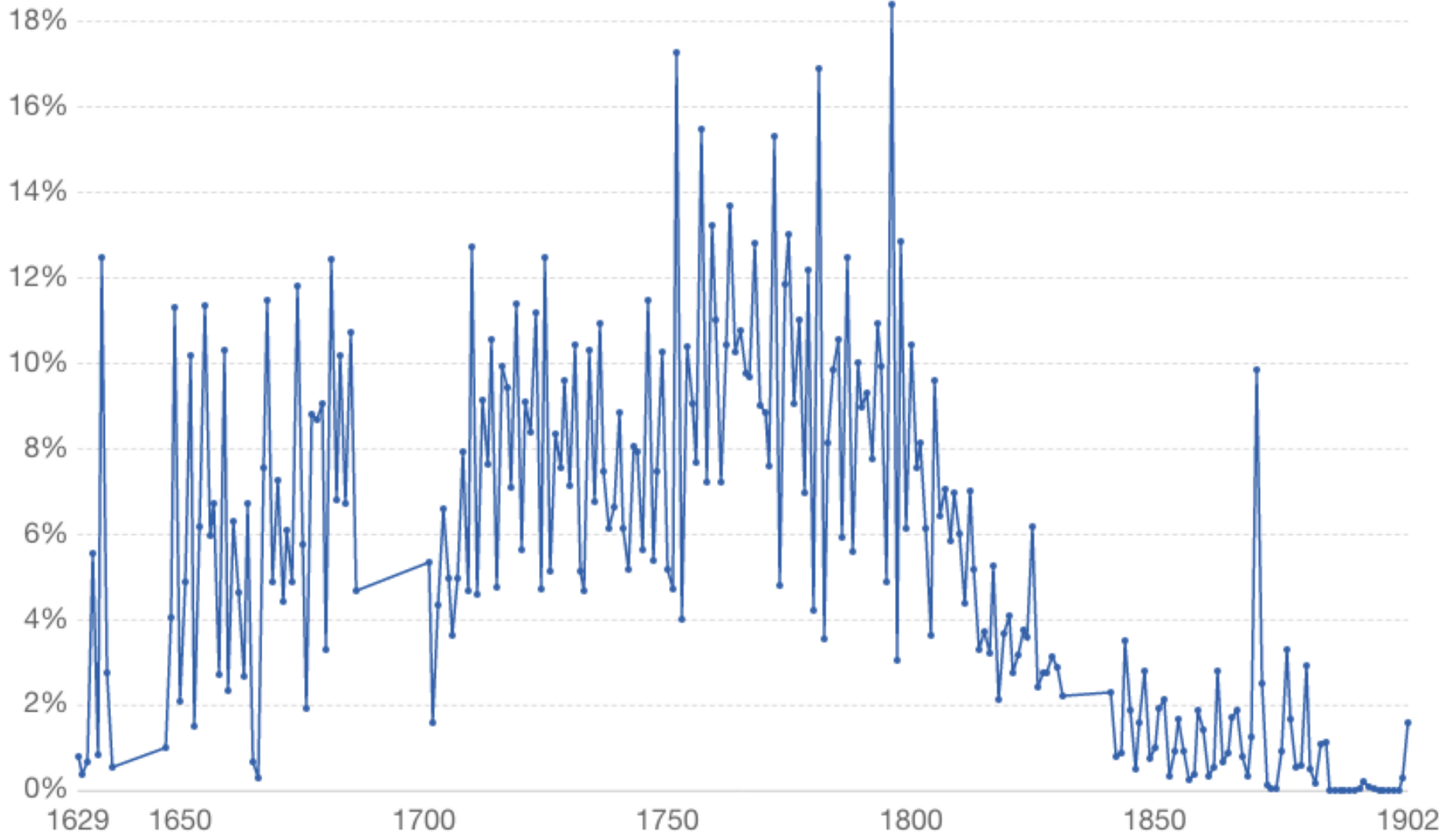
England/Wales Measles Mortality Rates



*References: Record of mortality in England and Wales for 95 years as provided by the Office of National Statistics - Published 1997; Report to The Honourable Sir George Cornwall Lewis, Bart, MP, Her Majesty's Principal Secretary of State for the Home Department, June 30, 1860, p. 44, 205; Essay on Vaccination by Dr. Charles T. Pearce, M.D. Member of the Royal College of Surgeons of England, Parliamentary Papers, the 62nd Annual Return of the Registrar General 1896 (1891-1898).

Deaths caused by smallpox as a share of all deaths in London

In London in the 18th century around 1 in every 13 deaths was caused by smallpox, the majority of which were young children.

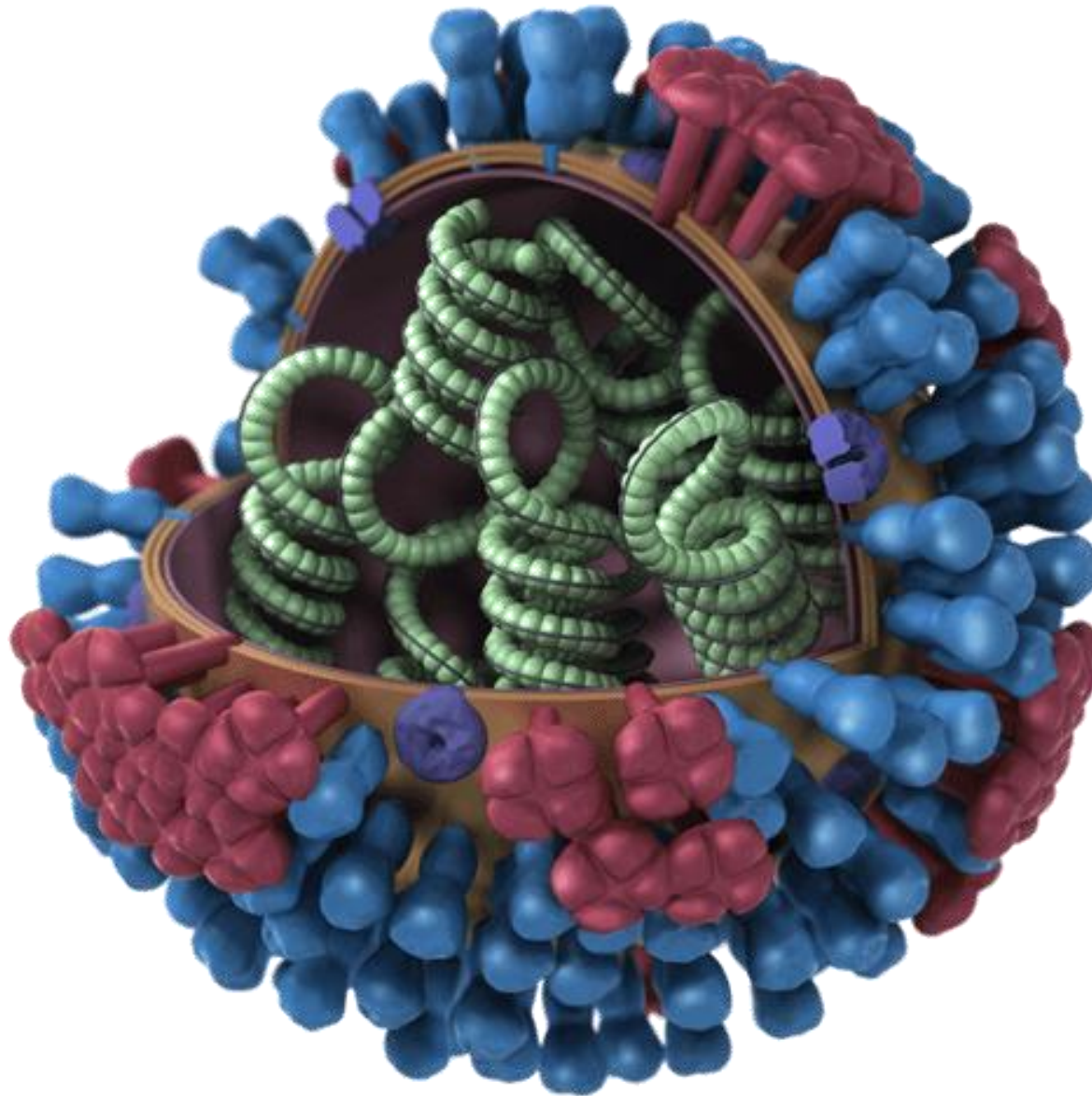


Source: Our World in Data (2017)

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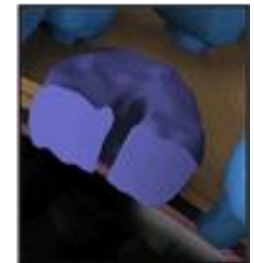
INFLUENZA A VIRUS



Hemagglutinin



Neuraminidase



M2 Ion Channel



RNP

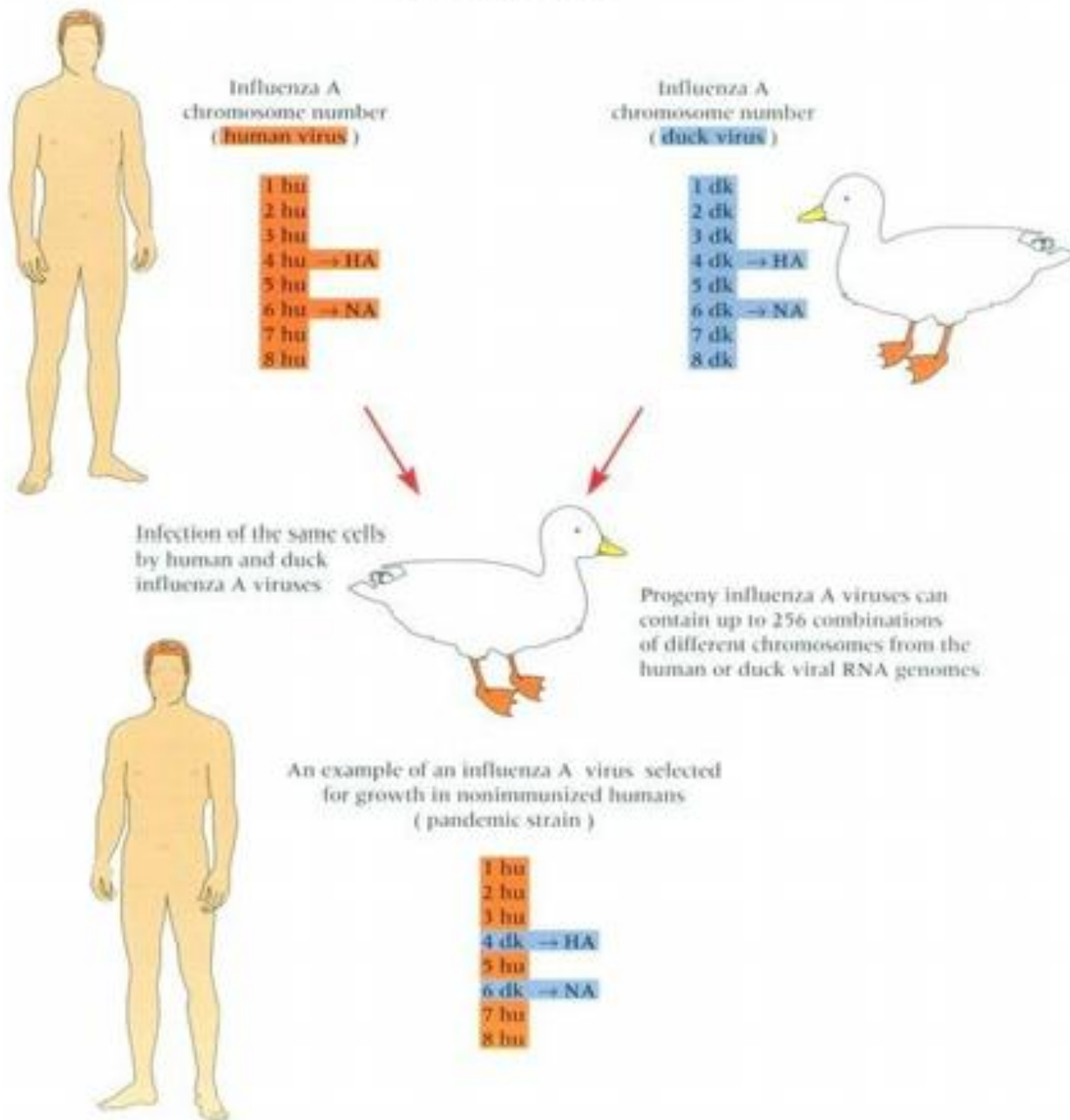
Hemagglutinin and Neuraminidase

Subtypes of Influenza A Virus

Subtype	Species of origin			
	Human	Swine	Horse	Bird species
H1	PR/8/34	Sw/1a/15/30		Dk/Alb/33/76
H2	Sing/1/57			Dk/Ger/1213/73
H3	HK/1/68	Sw/Taiwan/70	Eq/Miami/1/63	Dk/Ukr/1/63
H4				Dk/Cz/56
H5				Tern S.A./61
H6				Ty/Mass/3740/65
H7			Eq/Prague/1/56	FPV/Dutch/27
H8				Ty/Ont/6118/68
H9				Ty/Wis/1/66
H10				Ck/Ger/N49
H11				Dk/Eng/56
H12				Dk/Alb/60/76
H13				Gull/Md/704/77
H14				Mall/Gurjev/ 263/82
N1	PR/8/34	Sw/1a/15/30		Ck/Scot/59
N2	Sing/1/57	Sw/Taiwan/70		Ty/Mass/3740/65
N3				Tern S.A./61
N4				Ty/Ont/6118/68
N5				Sh/Austral/1/72
N6				Dk/Cz/56
N7			Eq/Prague/1/56	FPV/Dutch/27
N8			Eq/Miami/1/63	Dk/Ukr/1/63
N9				Dk/Mem/546/74



ANTIGENIC SHIFT



Le altre pandemie causate nella popolazione umana dai virus dell'influenza.

- **1968 Hong Kong: 750.000 vittime**
- **1957 Asiatica: 1 milione di vittime**
- **1997-2006 aviaria ?:** le vittime sono state poco più di un centinaio, prevalentemente nel Sudest asiatico.