



Jason Clark

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Where We Are



'20yrs left' to halt the superbug apocalypse

Antibiotic-resistant diseases pose
'apocalyptic' threat, top expert says

Chief medical officer Dame Sally Davies tells MPs issue should
be added to national risk register of civil emergencies

Antibiotic Resistance Could Bring 'End
of Modern Medicine'

CDC warns of future catastrophic antibiotic resistance

Antibiotic resistance now 'a public
health problem of global proportions,'
researcher warns

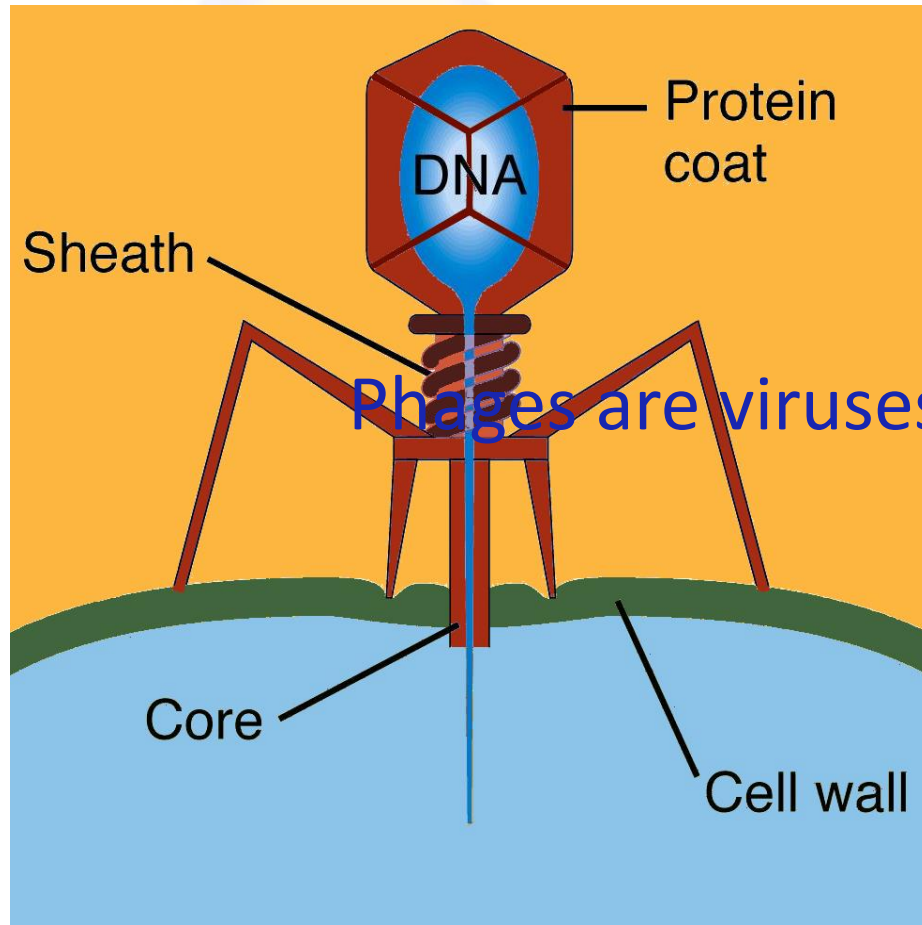
First cases of 'incurable' antibiotic resistant
gonorrhoea found in North America as CDC
warns of public health nightmare

Antibiotics resistance 'as big a risk as
terrorism' - medical chief

One Solution

We are developing bacteriophages to treat antibiotic resistant infections

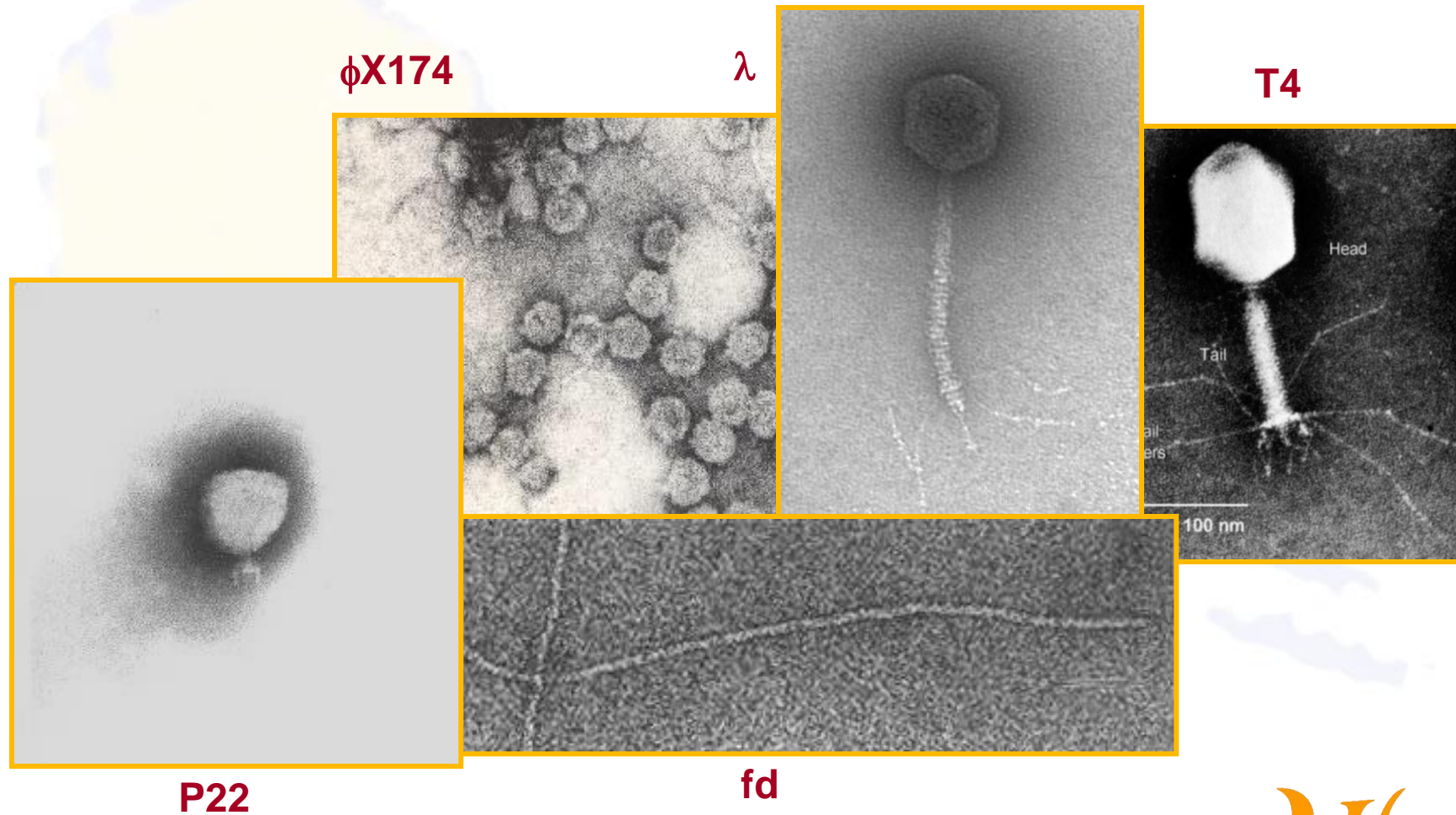
Bacteriophages



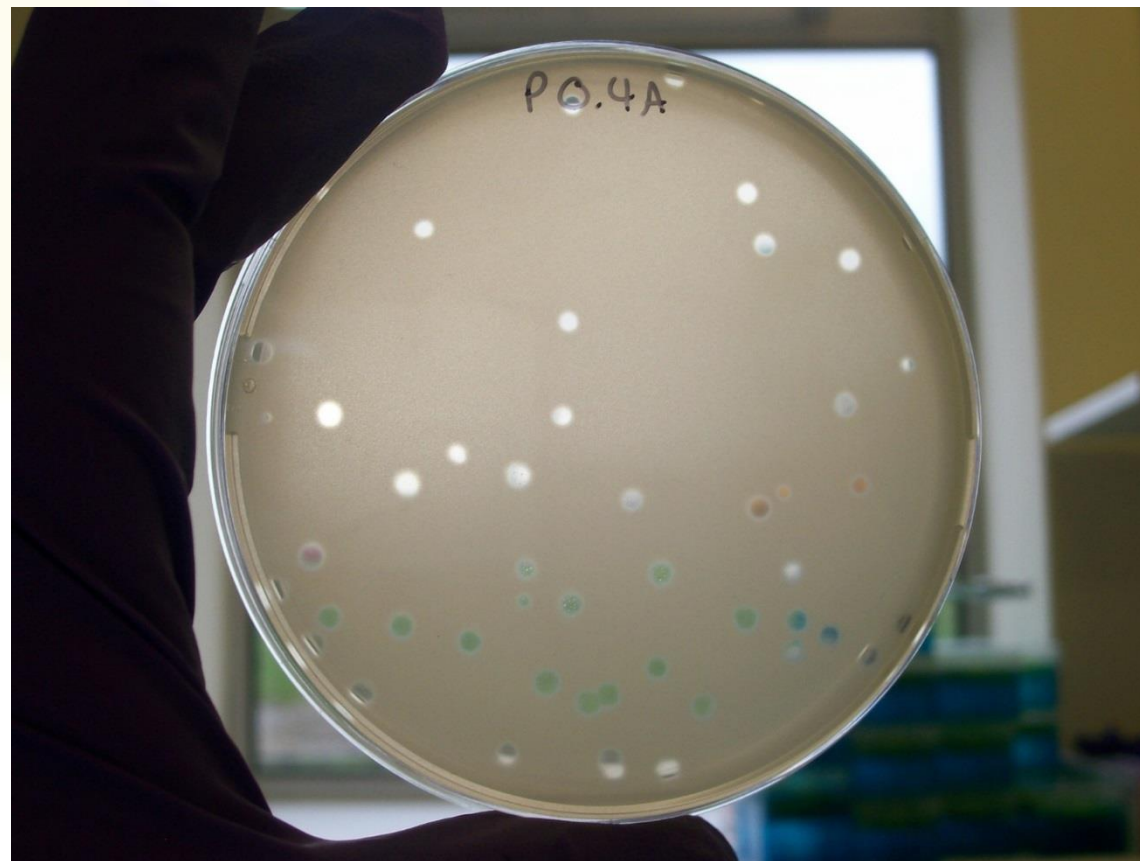
Phages are viruses which kill bacteria



Example Bacteriophages

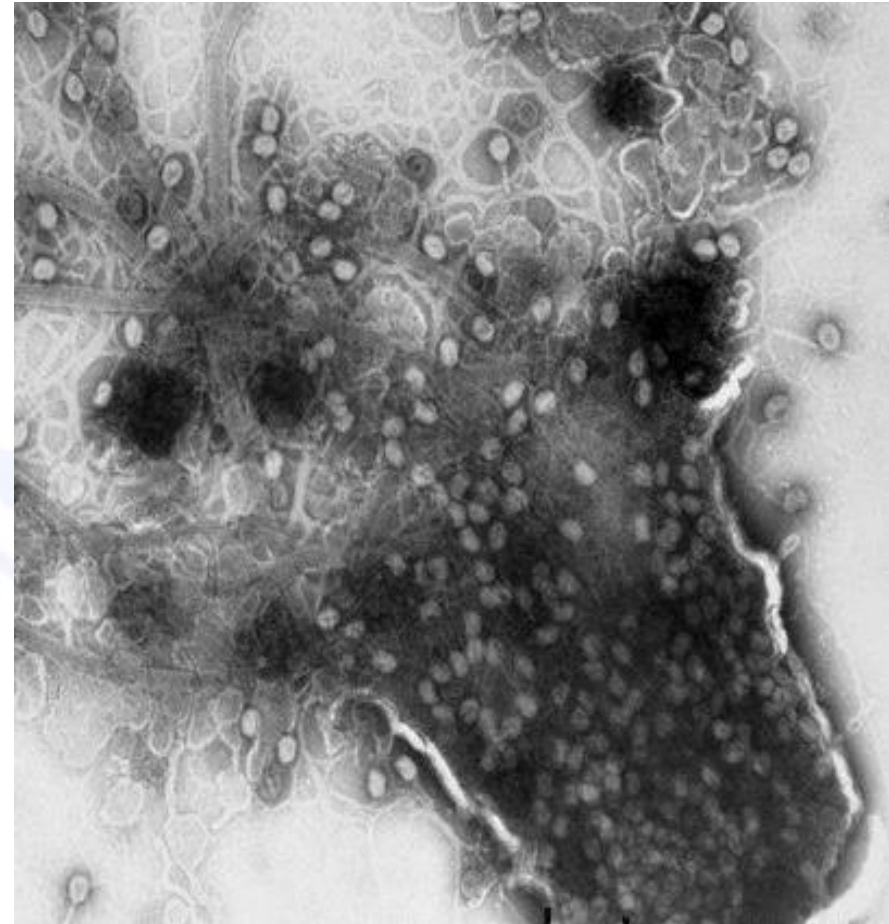


Phage Example



Phage Therapy

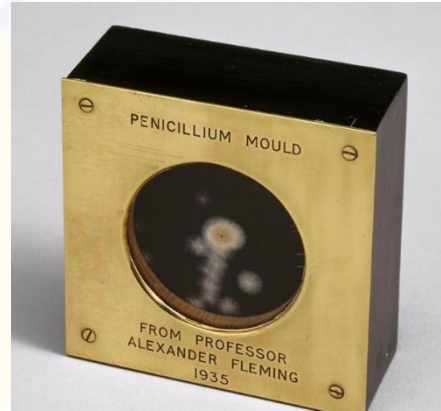
The use of phages for therapy or prophylaxis



Evolution of Phage Therapy



1915



1928



1943



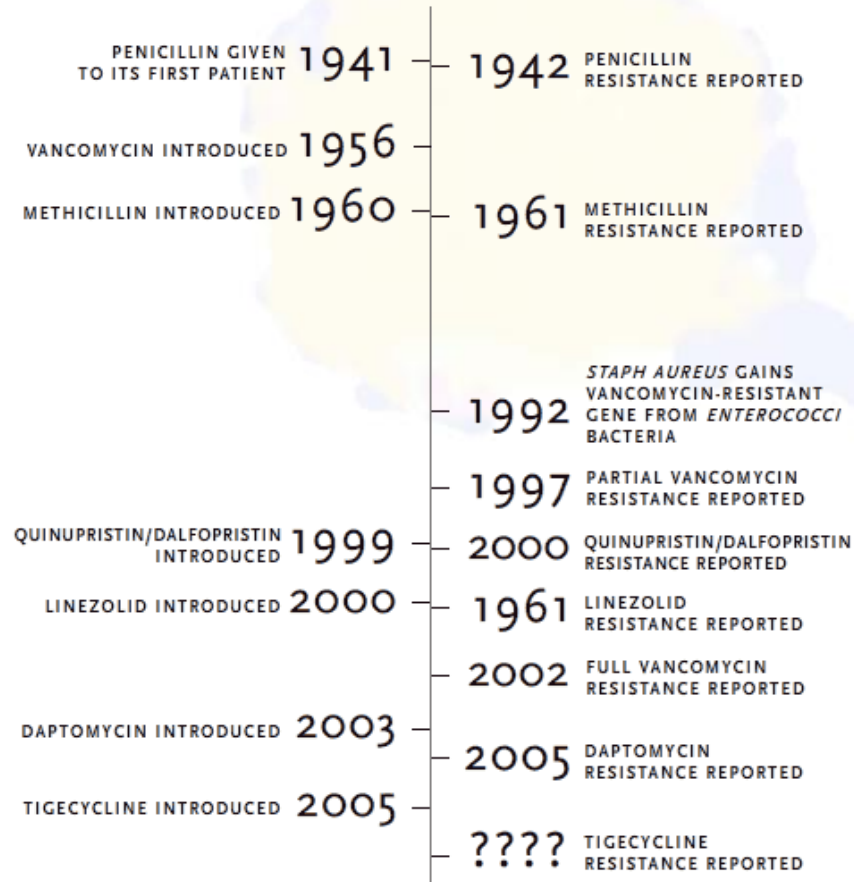
2013

1917

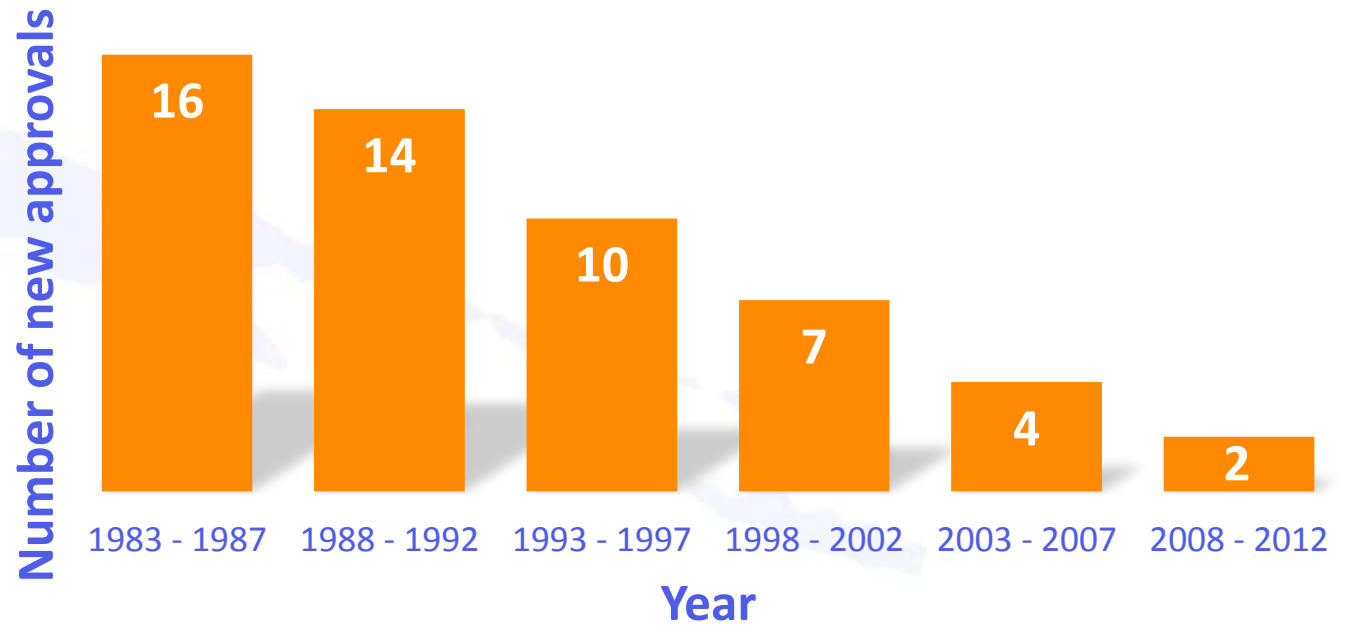
1930s - 1978



Why Now?



Number of new antibiotics approved by the FDA from 1983 to 2012



Brief Examples?



Phage Therapy in Poland

1307 patients

Phage have been administered topically, orally and systemically.

Success rate of 86% with *E.coli*, *Klebsiella*, *Proteus*, *Enterobacter*, *P. aeruginosa* & *S. aureus*.



Hirsfeld Institute

Phage Therapy in Texas

Treatment of venous leg ulcers

Pseudomonas infection

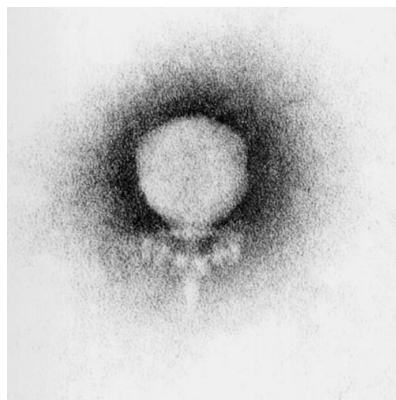
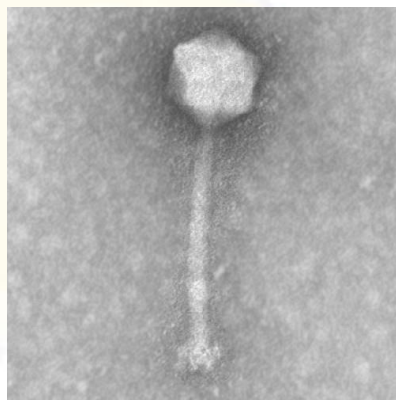


First Product

NOVO12 is a bacteriophage treatment for the nasal decolonisation of *S. Aureus*



Novo12



Kills 93% worldwide clinical isolates

IP protected

Proprietary gel matrix

Superior to Mupirocin in *ex vivo* model system

Novo12



Product Development

Produced in a scalable GMP process

Pre-clinical tox successfully completed

Ethical approval granted for phase I clinical trial

All issues raised by MHRA addressed

Closing Thoughts

What is needed for phage therapy to be successful?

Opportunity

Knowledge

Acceptance

Funding

Regulation



