
Female scientists and vaccine research



Elizabeth Wynn
She/her
24/6/21

Lady Mary Montagu and smallpox

- 15 May 1689 – 21 August 1762
- English aristocrat and writer
- Her brother died of smallpox in 1713
- Contracted and survived smallpox in 1715
- Moved to the Ottoman Empire in 1716



Lady Mary Montagu and smallpox

- Variolation
 - China – 15th century
 - India, Sudan and Ottoman Empire – 18th century
- Introduction to UK
 - Montagu children
 - Newgate Prison
 - Princes Octavius and Alfred
- Replaced by Jenner's vaccine

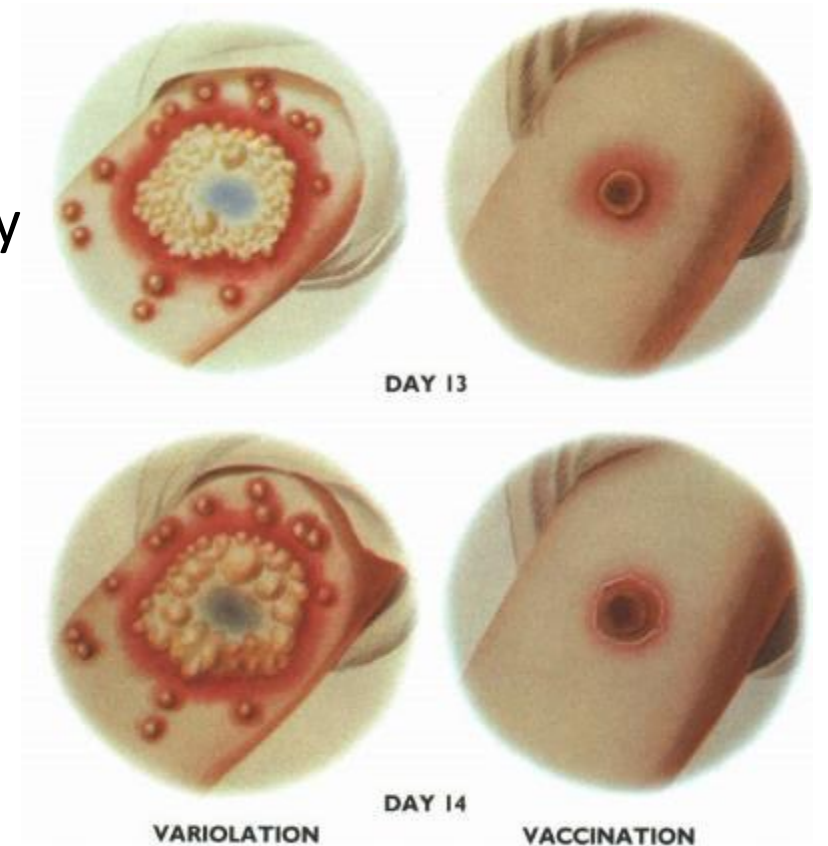


Plate 6.3. The Gold-Kirtland drawings. Variolation and vaccination on the 13th and 14th days after inoculation.

Pearl Kendrick, Grace Eldering, Loney Gordon and pertussis

Pearl Kendrick (24 August 1890 – 8 October 1980)

- Started working as a researcher at the Michigan Department of Health in 1919
- Gained her PhD in bacteriology in 1934

Grace Eldering (5 September 1900 – 31 August 1988)

- Joined the Michigan Department of Health in 1928
- Gained her PhD in bacteriology in 1942
- Started developing a whooping cough (*B. pertussis*) vaccination in 1932
- Low funding so they relied on volunteers and community involvement
- Small scale vaccine production started in 1933 and a large vaccine trial in 1934



Pearl Kendrick, Grace Eldering, Loney Gordon and pertussis

Loney Clinton Gordon (October 8 1915 – 16 July 1999)

- Chemist who joined the Michigan Department of Health in 1944
- Tested '1000s' of culture plates to discover the best medium for growing *B. pertussis*
- Developed first combined DTP (diphtheria, tetanus, and pertussis) vaccine in 1949



Dorothy Horstmann, Isabel Morgan and polio

Dorothy Horstmann

- 2 July 1911 – 11 January 2001
- Became a doctor in 1940, first specialising in internal medicine before switching to infectious diseases
- Studied poliovirus transmission and pathogenesis
- Showed poliovirus is present in the blood before the nervous system
- Continued to research infectious diseases including rubella and measles
- The first female professor at Yale School of Medicine (1961) and later the first woman at Yale University to hold an endowed chair (1969)



Dorothy Horstmann, Isabel Morgan and polio

Isabel Morgan

- 20 August 1911 – 18 August 1996
- Gained her PhD in bacteriology in 1938
- Identified the three serotypes of poliovirus
- Performed successful killed-virus vaccine trials in monkeys in 1948
- Left research in 1949 to become a homemaker
- Retrained as a biostatistician in the 1960s



Female scientists and COVID-19

Kizzmekia Corbett

- American viral immunologist at the Vaccine Research Center where she is the scientific lead on their coronavirus team
- Central to the development of the Moderna mRNA vaccine and the Eli Lilly therapeutic monoclonal antibody



Female scientists and COVID-19

Kizzmekia Corbett

Sarah Gilbert

- English vaccinologist who is Saïd Professor of Vaccinology at the University of Oxford and co-founder of Vaccitech
- Co-developed the Oxford–AstraZeneca COVID-19 vaccine



Female scientists and COVID-19

Kizzmekia Corbett

Sarah Gilbert

Kathrin Jansen

- Head of Vaccine Research and Development at Pfizer
- Worked on the Pfizer–BioNTech COVID-19 mRNA vaccine



Female scientists and COVID-19

Kizzmekia Corbett

Sarah Gilbert

Kathrin Jansen

Katalin Karikó

- Co-founder and former CEO of RNARx before becoming senior vice president of BioNTech
- Her patent on nucleoside modifications relating to RNA-mediated immune activation was licensed for both the Moderna and BioNTech vaccines



Female scientists and COVID-19

Kizzmekia Corbett

Sarah Gilbert

Kathrin Jansen

Katalin Karikó

Nita Patel

- Indian-American physician and vaccinologist who leads vaccine development at Novavax
- Oversaw the development of the Novavax COVID-19 vaccine by an all women team



Female scientists and COVID-19

Kizzmekia Corbett

Sarah Gilbert

Kathrin Jansen

Katalin Karikó

Nita Patel

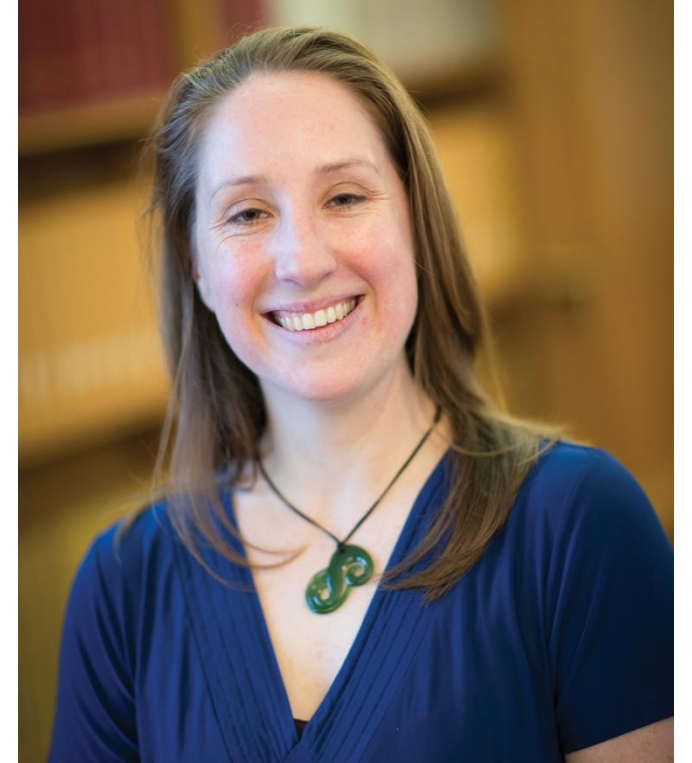
Özlem Türeci

- Co-founder and chief medical officer of BioNTech
- Using the profits from their COVID-19 vaccine, BioNTech plans to pursue its original goal of creating an mRNA-based cancer vaccine



Michelle Linterman and work at BI

- Michelle Linterman
 - PhD in Immunology from the Australian National University, Canberra
 - Joined the Babraham Institute in 2013 and awarded tenure in 2019
- Research
 - Immune system response to vaccines and the effects of ageing
 - Germinal centre response defects that occur with ageing can be corrected
 - Altering vaccine adjuvants can be used to enhance antibody responses for long term immunity
 - Oxford/AstraZeneca COVID-19 vaccine demonstrated that older mice have an impaired immune response to the vaccine which can be corrected by a second dose



Michelle Linterman and work at BI

- Patricia Amé-Thomas
- Alice Denton
- Sigrid Fra-Bido
- Xin Ge
- Danika Hill
- Silvia Innocentin
- Jia Le Lee
- Marisa Stebegg
- Ine Vanderleyden
- Louise Webb

Discussion time

Further reading

- [How One Daring Woman Introduced the Idea of Smallpox Inoculation to England](#)
- [Pearl Kendrick, Grace Eldering, and the Pertussis Vaccine](#)
- [Whooping Cough Killed 6,000 Kids a Year Before These Ex-Teachers Created a Vaccine](#)
- [The Unsung Women in the Race for the Polio Vaccine](#)
- [Women in science who are making a difference during the pandemic](#)
- [Meet the women leading the fightback against COVID-19](#)
- [Michelle Linterman – Babraham Institute](#)