A History of RSV Vaccine Development: 60 Years. One Goal.

1956 RSV is first isolated from a group of chimpanzees
1957 Virus identified in humans
1963 Robert Chanock isolates and characterizes the virus

1966-69 Formalin-inactivated RSV was tested in infants and young children
- The vaccine stimulated moderately high levels of serum antibodies but failed to induce resistance to infection
- Some vaccinated infants developed a more serious disease when later infected with the disease
- 2 infants died following infection with RSV

1970s SF insect cells first isolated from the ovaries of the fall armyworm (Spodoptera frugiperda)

1980s/EARLY 1990s

Early 1980s Novavax senior scientist and VP of Vaccine Development, Gale Smith, Ph. D., discovered the “Sf9" insect cell line could grow in apparent perpetuity in a special culture medium and can produce recombinant proteins upon infection with a baculovirus, a virus that infects only insects

1990s/EARLY 2000s

1994-97 MedImmune takes Palivizumab into clinical trials
1996 Palivizumab (Synagis, MedImmune) approved to treat lung disease and respiratory infections that result from RSV infection in premature infants
Early 2000s Wyeth tests a subunit RSV vaccine with purified F protein via maternal immunization
2001 Wyeth tests a third-generation purified fusion protein vaccine in children with cystic fibrosis
2007 Sanofi tests a subunit vaccine containing the RSV fusion (F), attachment (G) and matrix (M) proteins in the elderly

2000s/2010s

2009 Initial Novavax preclinical data
2010-2013 Novavax Phase 1 clinical trials with Recombinant RSV F Vaccine
- Highest immune responses observed with a single dose of vaccine combined with aluminum phosphate adjuvant
- High levels of antibodies developed within 14 days after immunization and persisted over the 91-day observation period

2014 Novavax announces positive data from Phase 2 dose-confirmatory trial of RSV F Vaccine in women of childbearing age
- Significant anti-F IgG antibody response across all vaccine doses
- Novavax initiates Phase 2 dose-confirmatory trial of RSV F Vaccine in women of childbearing age

2015-2018 MedImmune/NIH/NIAD Phase 1 with recombinant live-attenuated vaccine in adults, children and infants

2018-2019 MedImmune/NIH/NIAD testing recombinant live-attenuated vaccines in Phase 1 with infants and children

2019 Reithera Srl in Phase 1 with vaccine based on the RSV viral proteins F, N and M1-2 encoded by Simian Adenovirus (Panu33-RSV) and Modified Vaccinia Virus Ankara (MVa-RSV) in healthy and older adults

2020-2021 Novavax announces positive data from Phase 2 dose-confirmatory trial of RSV F Vaccine in adults
- GSK Phase 1 clinical trial of recombinant RSV vaccine in healthy men

REFERENCES:
5. https://clinicaltrials.gov/ct2/show/NCT01459198