









# THANK YOU!

## NCICP Planning Committee

- Molly Gatto
- Stephanie Mihailescu
- Lisa Robertson
- Heather Mercer
- Julie Murphy
- Michele Slafkosky
- Ericha Stewart
- LJ Tan
- Mackenzie Melton
- Amber Tirmal
- Erin Babe
- Synovia Moss
- Amy Pisani
- Breyana Williams
- Karen Ernst
- Beth Till
- Serese Marotta
- Tom McCleaf
- Molly Kellum
- Sarah Grubb
- PA-AAP







# Scavenger Hunt Winners





“Health Care is vital to all of us some of the time,  
but public health is vital to all of us all of the time.”

*C. Everett Koop*







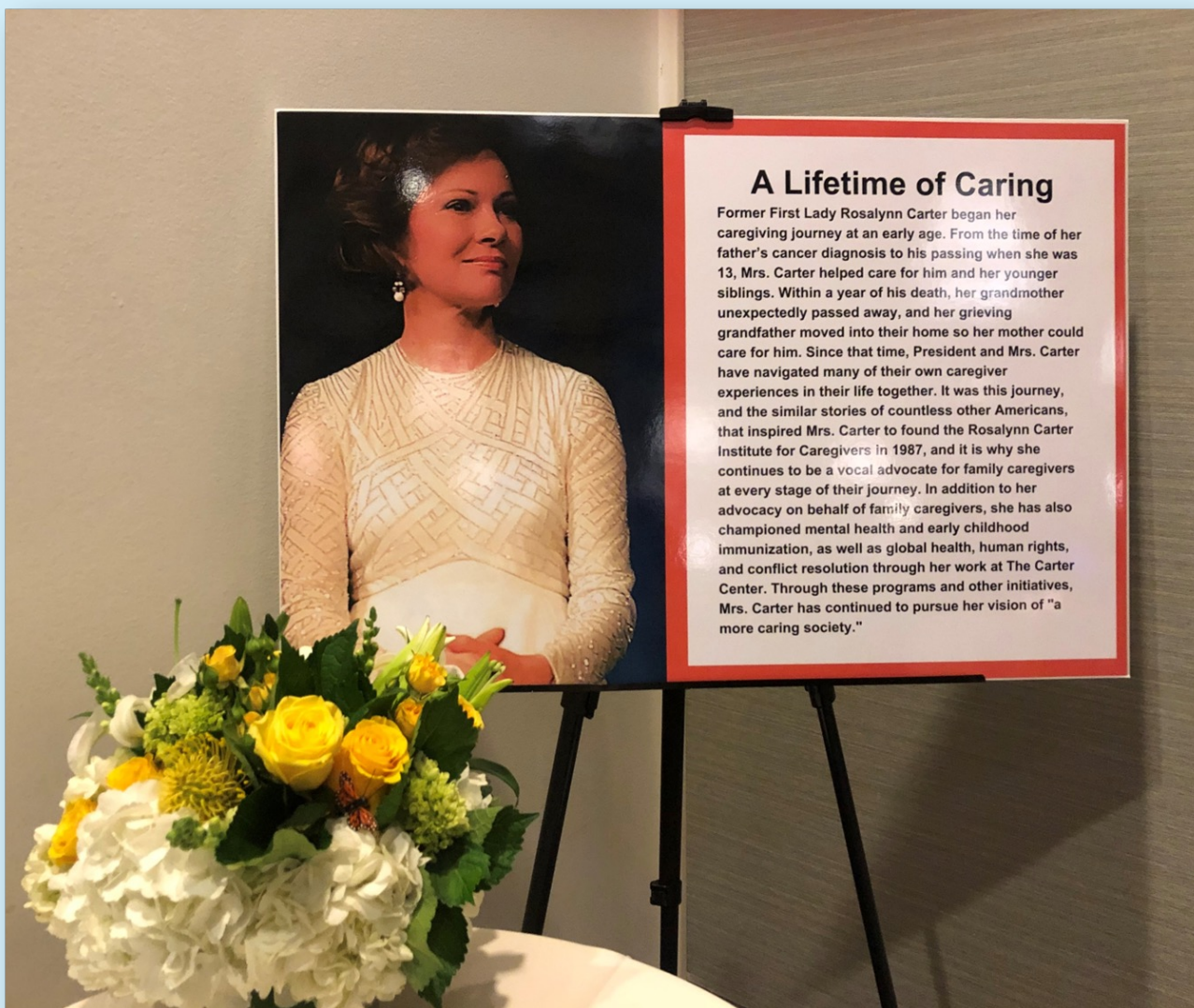
# Congratulations Winners!











## A Lifetime of Caring

Former First Lady Rosalynn Carter began her caregiving journey at an early age. From the time of her father's cancer diagnosis to his passing when she was 13, Mrs. Carter helped care for him and her younger siblings. Within a year of his death, her grandmother unexpectedly passed away, and her grieving grandfather moved into their home so her mother could care for him. Since that time, President and Mrs. Carter have navigated many of their own caregiver experiences in their life together. It was this journey, and the similar stories of countless other Americans, that inspired Mrs. Carter to found the Rosalynn Carter Institute for Caregivers in 1987, and it is why she continues to be a vocal advocate for family caregivers at every stage of their journey. In addition to her advocacy on behalf of family caregivers, she has also championed mental health and early childhood immunization, as well as global health, human rights, and conflict resolution through her work at The Carter Center. Through these programs and other initiatives, Mrs. Carter has continued to pursue her vision of "a more caring society."



**Rosalynn Carter &  
Betty Bumpers**



**VYF Co-founders – Building Immunization  
Coalitions since the 1970s**





Governor's Mansion  
LITTLE ROCK, ARKANSAS

May 8, 1991

Dear Betty:

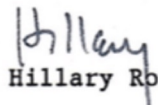
I enjoyed our too-short visit and hope we can prolong it the next time you are in the State. I am enclosing a copy of a letter that a friend of yours and a new acquaintance of mine, Carrol J. Howard, sent to me and asked that I forward on to you. It is a beautiful letter and certainly conveys many of the thoughts and feelings that I have about the sorts of obligations we are meant to fulfill here on earth. I will look for an opportunity to visit with Mrs. Howard and thank her in person.

We have now scheduled the meeting about immunization for the Governor's Mansion on Friday, May 24, from 2:00 to 4:00 in the afternoon. If there were any way you were planning to be in the State around that time, we would love to have you attend.

I am ready to do whatever you want me to do on revving up the immunization drive. Dale told me when I saw him at Mary Ann Campbell's event recently that you and Rosalyn Carter have gotten very little support and help [REDACTED] So, what else is new? Please let me know how I can help.

With best regards, I am

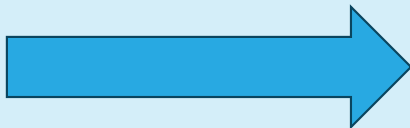
Sincerely yours,

  
Hillary Rodham Clinton



# Summer 1993 Every Child By Two Newsletter

VFC



© Vaccinate Your Family, 2024

Shots by  
age two if  
they're  
important  
to you.

## FOR EVERY CHILD

Every Child By Two  
The Carter/Bumpers Campaign for Early Immunization

Summer 1993

Volume 2, Number 2

### *Tipper Gore, Betty Bumpers Promote National Preschool Immunization Week*

To draw attention to the need for timely vaccinations, Vice Presidential Spouse Tipper Gore joined Betty Bumpers for a visit to Massachusetts during National Preschool Immunization Week. They visited with parents and providers at Boston City Hospital, discussed immunization with public health officials at the Massachusetts Medical Society, and toured the Massachusetts Department of Public Health Biologic Laboratories, where DTP vaccine is manufactured. Tipper Gore called the state's program a "model for the nation."

Massachusetts is one of a small number of states committed to universal vaccine distribution. Since the state has a limited public health system, over eighty percent of the needed vaccines are distributed through the private sector. The remaining shots are delivered at public sites such as local boards of health, community health centers, public hospitals, and visiting nurses associations.

With this universal program, the success is better than average. The 1992 retrospective survey of children entering kindergarten showed that 65% of Massachusetts

children had completed the basic immunization series. This puts the state among the top four in the nation for immunizing preschool children (the others are Rhode Island, Tennessee, and New Hampshire).

But the state is not resting on its laurels—the Massachusetts Immunization Program recently hired five regional immunization nurses, who will provide technical assistance in implementing the Standards for Pediatric Immunization Practices, help assess immunization levels in clinics, and conduct education and training about vaccinations and vaccine management.

Information about this and other model programs is contained in ECBT's "Model Immunization Program" packet. See order form enclosed.



Tipper Gore feeds a contented infant, Trevor Carrington, during the ECBT visit to Boston City Hospital's pediatric unit. (Photo by Renee Dekona)

### *Immunization Bill Moves Forward*

Legislation that encapsulates President Clinton's vaccine initiative has now been reviewed and voted on. Neither the House nor the Senate version retained the President's original universal vaccine purchase proposal, which would have established federal purchase of free vaccines for all children. Both however, retain a broad approach to improve and institutionalize the nation's immunization delivery system. Components include a national immunization tracking program

and increased funding for infrastructure, education, and outreach.

The House and Senate versions of the bill differ as to which children would receive free vaccinations as well as to what extent and for which children states would be able to purchase additional vaccines at the federal contract price.\* In the House version, vaccines would be provided free for all children who do not have insurance that covers immunizations, while in the Senate version, only children on Medicaid

would receive the free vaccines. The Senate version however, would freeze the public price for vaccines for five years, whereas the House version would not.

Other provisions, such as a requirement for sufficient reimbursement to private physicians who administer immunizations to children on Medicaid, were not included in the Senate-approved version of the legislation. In addition, the Senate version did not include a requirement for negotia-

Cont. bottom page 2



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Centers for Disease Control  
and Prevention (CDC)  
Atlanta GA 30333

August 12, 1999

Mrs. Betty Bumpers  
Every Child by Two  
666 11th Street, N.W., Suite 262  
Washington, D.C. 20001

Dear Mrs. Bumpers:

On behalf of U.S. Surgeon General, Dr. David Satcher, we invite you to join us for a working luncheon to formulate a strategy to sustain the nation's success in childhood immunization. We need your expertise to help us develop a strategy that will prevent a resurgence of vaccine-preventable diseases among children. At least twice before, our Nation made aggressive efforts to raise immunization levels—and then let down its guard. The result in each case was epidemics or outbreaks of preventable diseases in children.

This meeting will bring together a small number of nationally-recognized leaders from medicine, public health, the insurance industry, large employers, and e-commerce to help us design a private-public collaboration for childhood immunization. The three-hour meeting will take place at a to-be-determined date and time in the coming months in Washington, D.C.

As you know, vaccines are the most effective and cost-efficient means of preventing infectious disease. Thanks to current vaccines, children can be protected against 11 serious diseases. The nation has exceeded its goal of having 90% or more of U.S. children receive the most critical doses of recommended vaccines by age two, but the challenge of maintaining such levels is ongoing. We must keep in mind that:

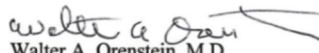
- 11,000 babies are born every day, with each child needing 15-19 doses of vaccine by age two.
- An increasing proportion of children have health insurance that includes vaccines, but insurance coverage alone does not ensure high immunization rates. Provider and parent education programs are vital—as are information systems that enable health care providers to accurately track vaccine histories and remind parents of needed immunizations.
- Immunization rates in many U.S. communities and neighborhoods are so low that they are vulnerable to future disease outbreaks.


## 1999 – ECBT/CDC/NVPO Meet to Develop Strategies to Sustain Success

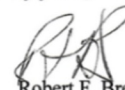
Implementing these “*Strategies to Sustain Success*” requires leadership and participation beyond the public sector. Your vision can help us attain that involvement and set a new direction for childhood immunization programs in the United States. With your help, we hope to ensure that no child in this country dies from, or suffers with, a vaccine-preventable disease.


We hope you will accept Dr. Satcher's invitation to be a part of this Public Health Service initiative. Kay Johnson, who is coordinating the upcoming meeting, will be contacting you in the near future to confirm your willingness and ability to participate. She is also interested in learning which dates you would be available to come to Washington, D.C. In the meantime, if you have any questions about this initiative or the upcoming meeting, please call Kay Johnson at 802-482-3005.

Sincerely yours,

  
Walter A. Orenstein, M.D.  
Director  
National Immunization Program

  
Georges Peter, M.D.  
Chair  
National Vaccine Advisory Committee

  
Robert F. Breiman, M.D.  
Director  
National Vaccine Program Office

  
Patricia Whitley-Williams, M.D.  
Chair  
Subcommittee on Coverage  
National Vaccine Advisory Committee







THE WHITE HOUSE  
WASHINGTON

May 22, 2000

Mrs. Rosalynn Carter  
The Carter Center  
One Copenhill  
Atlanta, Georgia 30307

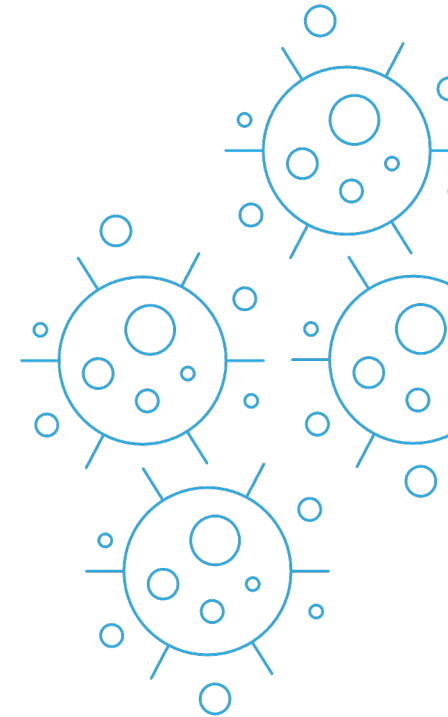
Dear Rosalynn:

Thank you for your letter seeking an executive order to boost immunization rates among children and adolescents. I have shared your letter as well as Dr. Cook's with my health care advisor, Chris Jennings, and asked him to respond to you directly.

As you may know, my fiscal 2001 budget proposes almost \$1 billion for childhood immunizations, including the Vaccines for Children program and CDC's discretionary immunization program. My Administration is working hard to ensure that all our nation's children are protected against preventable diseases, and I was glad to get your ideas on how we can further advance this crucial goal.

I'm glad to know that you enjoyed your time at the White House -- I loved seeing all the kids! Hillary and I hope to see you again soon, and we send our best.

Sincerely,



**Shots by  
age two if  
they're  
important  
to you.**

## Every Child By Two

The Carter/Bumpers Campaign For Early Immunization

July 20, 2001

Bill Clinton  
c/o The Honorable Hillary Rodham Clinton

Dear Mr. President,

I am writing to ask you to help me institutionalize childhood immunization, something I've been working on for 30 years.

Rosalynn Carter and I spent a lot of our time through the seventies getting state laws passed that made immunization mandatory for school entry. Many parents thought immunizations could be safely delayed until their kids reached school age. We founded Every Child By Two to awaken parents to the dangers their children were facing.

You can help make this initiative work by visiting a WIC site. In my experience as the spouse of a governor and senator, I found that WIC welcomes high profile visitors. WIC staff and the children both benefit from our attention. And you can convey the information you glean from these visits to make a difference in the lives of low-income children. Rosalynn and I have paid countless visits to WIC sites around the country, and we always leave with powerful messages for Washington and a restored faith that mothers want to protect their children.

Sincerely,



Betty Bumpers

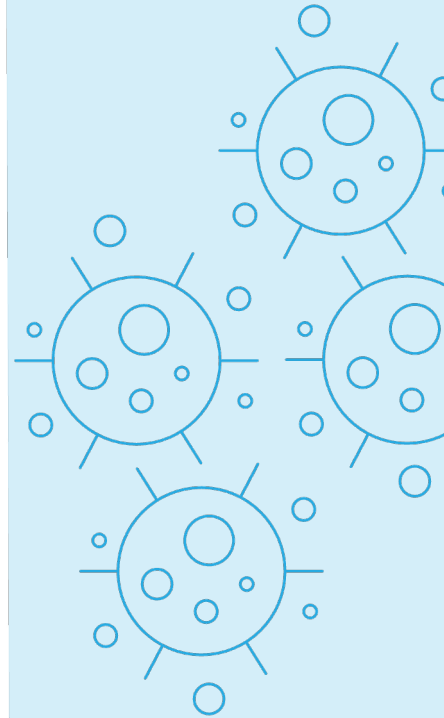
Co-Founders:  
Rosalynn Carter  
Betty F. Bumpers

Executive Director:  
Amy A. Pizani, MS

666 11<sup>th</sup> Street NW  
Suite 202  
Washington, DC 20001-4542

Tel: (202) 783-7035  
Fax: (202) 783-7042

E-mail: [info@ecbt.org](mailto:info@ecbt.org)  
Website: [www.ecbt.org](http://www.ecbt.org)



Clinton issues  
Executive  
Order  
mandating  
children's  
immunization  
record review  
for all WIC  
Children







Photo credit:  
Mother Jones  
2015

## Bumpers/Clintons Partnering for Peace & Children's Health



### Peace Links Gala

Mother Jones. 2015



*First ladies, health advocates give  
New Mexico a much-needed booster shot*



Luis Sánchez Saturno/The New Mexican

**Former first lady Rosalynn Carter, right, and New Mexico's first lady Barbara Richardson, left, talk with 9-year-old Edwin Amador of Santa Fe while he waits for his mom at La Familia's southside clinic. The first ladies helped kick off a campaign to boost immunization of children under 2 years old.**

ISSUE REPORT

## CLOSING THE VACCINATION GAP: A Shot in the Arm for Childhood Immunization Programs



AUGUST 2004

PREVENTING EPIDEMICS.  
PROTECTING PEOPLE.

 Trust for  
America's Health  
WWW.HEALTHYAMERICANS.ORG











Donna Shalala –  
Immunization  
Advocate















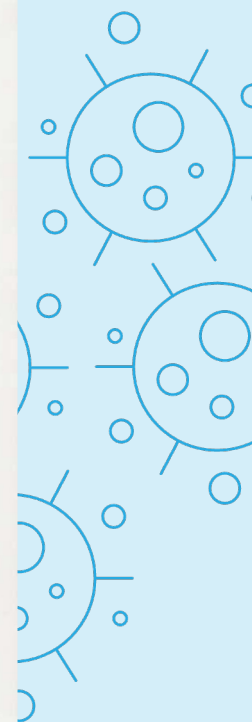






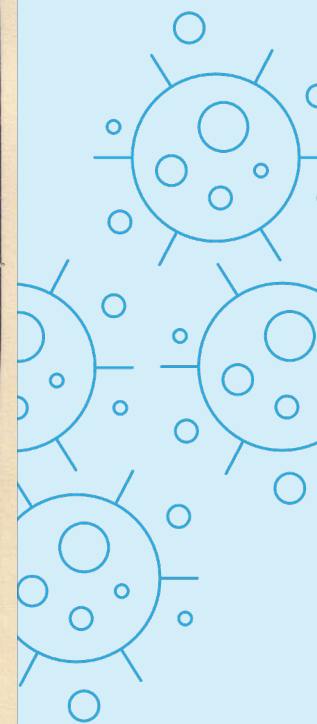




























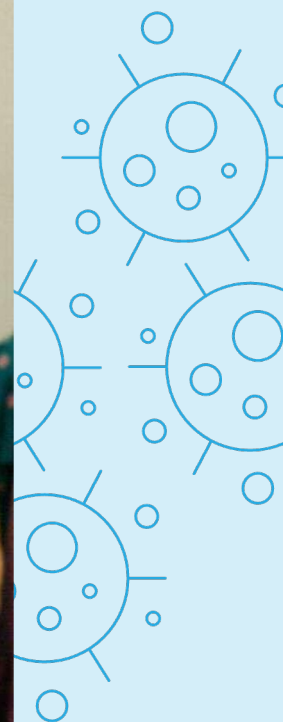




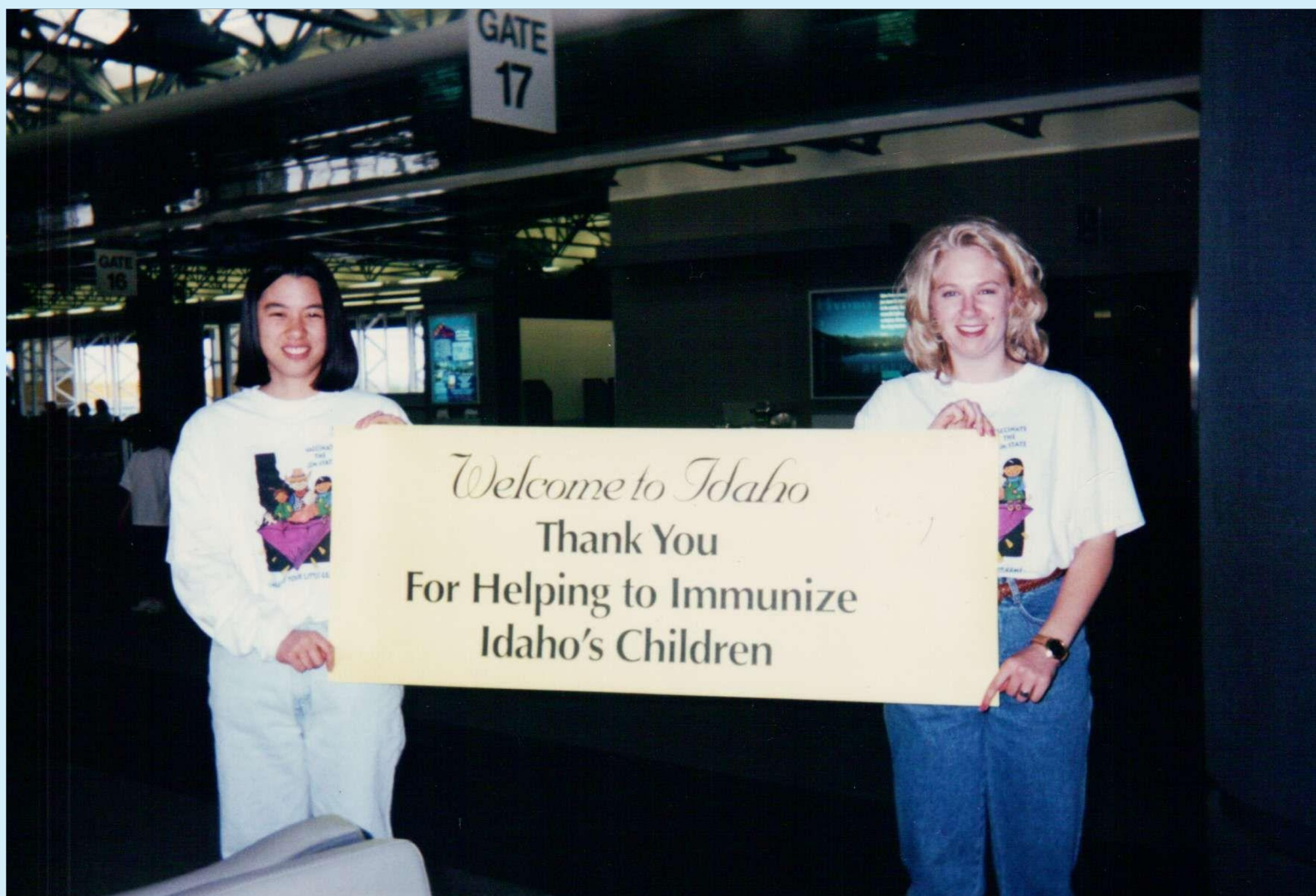




























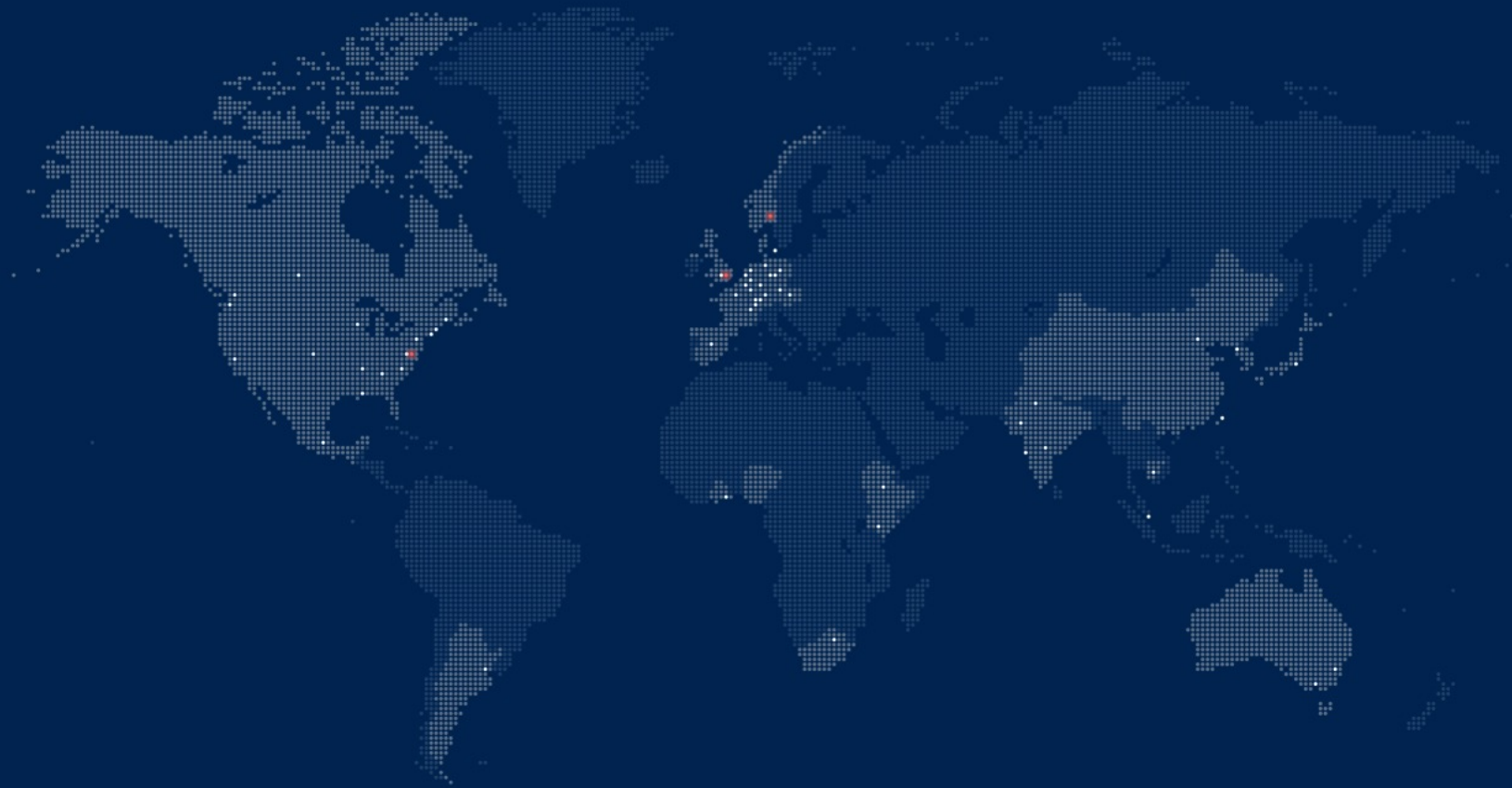












# The State of the Vaccine World

## Stanley A. Plotkin, MD

NCICP 2024 April 5, 2024



# Conflicts of Interest

I am a consultant to numerous vaccine developers, including Sanofi, Merck, GSK, Valneva, Moderna, Janssen, AstraZeneca, and others.





## Epidemics of the Past

430 B.C.	Plague of Athens
160 A.D.	Plague of Antinonine
542 A.D.	Plague of Justinian
1340 A.D.	The Medieval Plague
1500 A.D.	Plague of the Incas
1665 A.D.	Great Plague of London
1793 A.D.	Yellow Fever
1832 A.D.	Cholera
1918 A.D.	Influenza
20-21 <sup>st</sup> Century	Ebola, HIV, Swine Flu, Chikungunya, Zika



**“The impact of vaccination on the health of the world’s peoples is hard to exaggerate. With the exception of safe water, no other modality has had such a major effect on mortality reduction and population growth.”**

Susan and Stanley Plotkin  
A Short History of Vaccination, in *Vaccines* 1<sup>st</sup> Edition, 1988

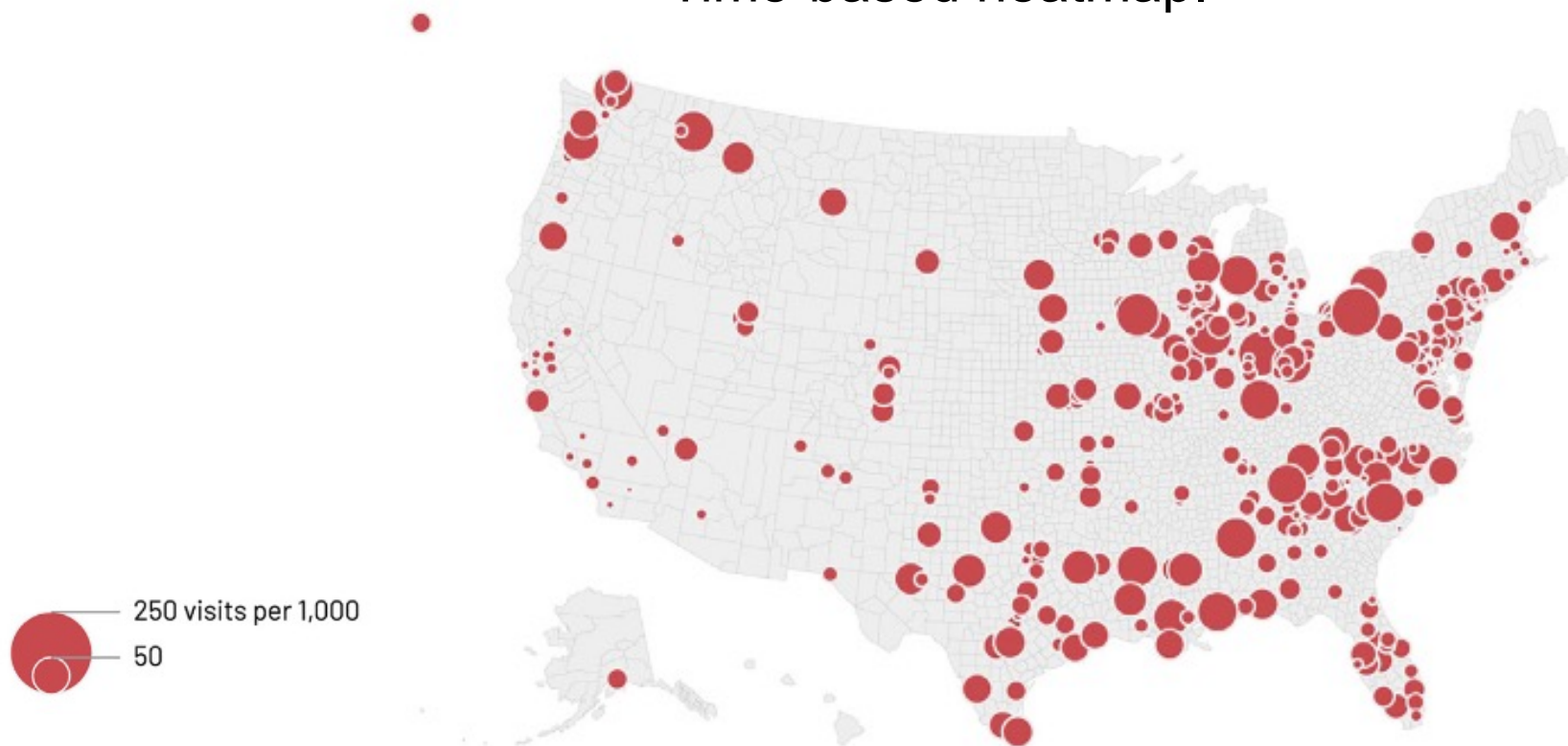




# Rotavirus

2006 total: 5.4 visits per 1,000

Time-based heatmap.



Mast, T., et al, *Vaccine* 202 .



Potential hotspots: Counties mapped in dark red have both low vaccination rates and high rotavirus rates in a single month, 2015-2017





# New Strategies for Vaccine Discovery

## Attenuated vaccines:

- Temperature-sensitive mutations and reassortment
- Viral recombinants and deletion mutants
- Codon de-optimization
- Vectors that present genes from pathogens



# New Strategies for Vaccine Discovery

## Inactivated vaccines:

- Protein conjugated capsular polysaccharides
- Antigen identification by genetic analyses “Reverse vaccinology”
- Structural analysis
- Development of new adjuvants (including cytokines)
- DNA plasmids
- mRNA and Self-Amplifying RNA





# Additional Protective Immune Mechanisms Besides Neutralization and Cytotoxic T Lymphocytes

- Binding antibodies that prevent attachment (Ebola)
- Th17 cells that attract PMN's and prevent carriage (pneumococcal, TB?)
- Antibody Dependent Cellular Cytotoxic antibody (HIV)
- Stimulation of CD4+ T helper cells that secrete cytokines (pertussis)



# Influenza Vaccines

- Both live and inactivated vaccines are available, but inactivated is less effective in children and the elderly.  
Live is ineffective in the elderly.
- Both types less effective if circulating virus changed from previous year.
- Vaccine efficacy is only moderate at best.





# Influenza Vaccines as Examples of Complexity of Correlates of Protection

HAi titer is usually used as correlate of protection

but

Microneutralization may be better

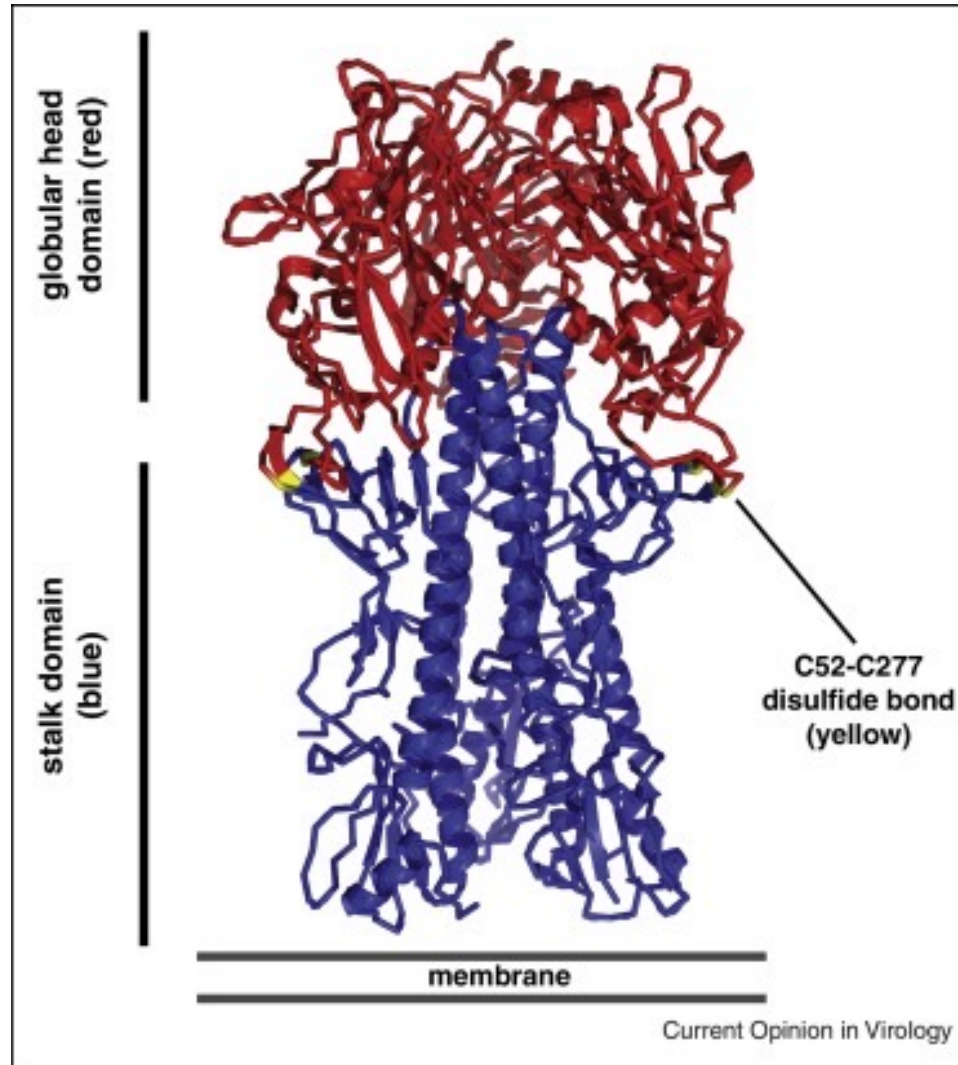
Antibodies to neuraminidase contribute

ADCC antibodies also contribute to natural killer cell function

Mucosal IgA helps, at least for LAIV

CD8+ T cell function important in the elderly







Value of Structural Biology:

RSV



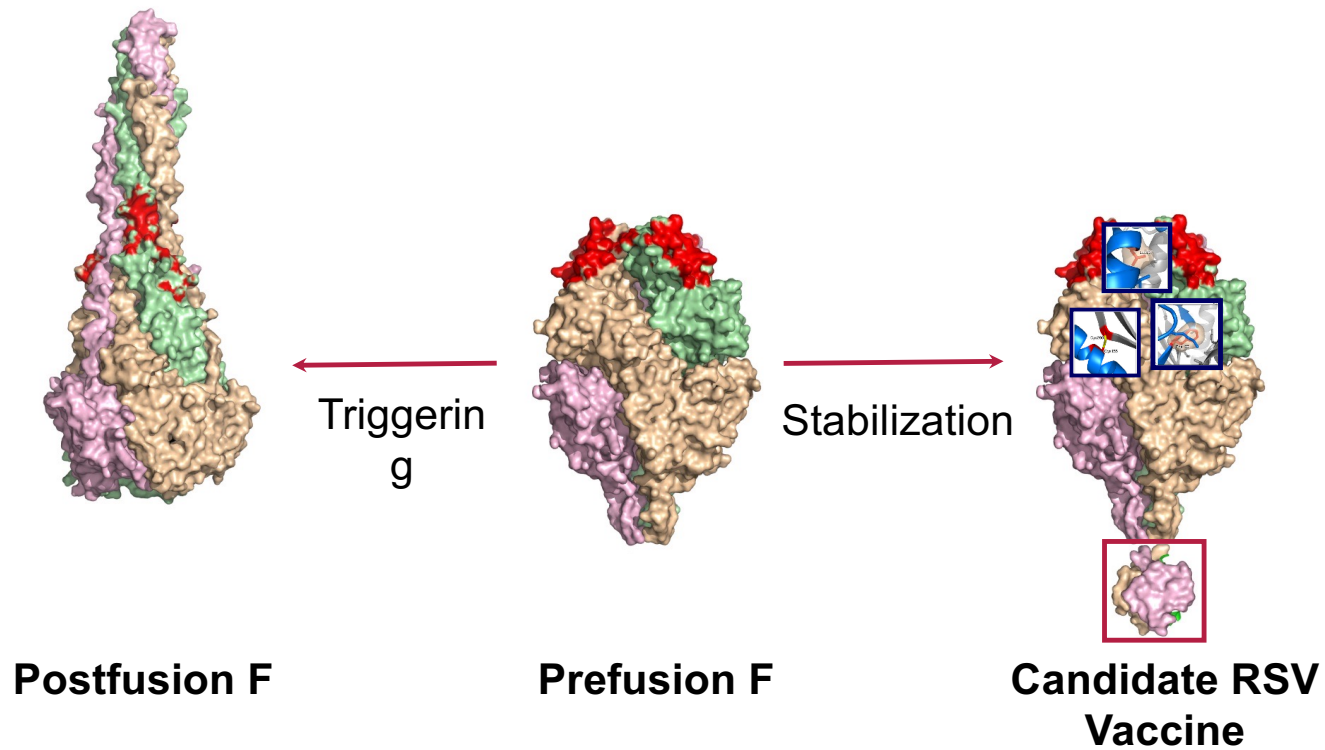
# Respiratory Syncytial Virus

- Number one respiratory infection of infants (0-2 yrs)
- Also important in elderly second to influenza
- Prior inactivated vaccine worsened disease because Fusion antigen of virus was altered, leading to formation of immune complexes
- Live viruses insufficiently attenuated





# Stabilizing Prefusion RSV F Results in a Candidate Vaccine



## Vaccines Against F Protein of Respiratory Syncytial Virus

Pfizer RSV Vaccine – Efficacy: serious disease 86%; overall 67%  
**Elderly**

GSK RSV Vaccine – Efficacy: serious disease 94%; overall 83%  
**Elderly**

For pregnant women (to protect against postnatal infection):

Pfizer Vaccine

Astra Zeneca monoclonal antibody – Nirsevimab (and neonates)





## Age groups

n=31-35



11M

24M

46M

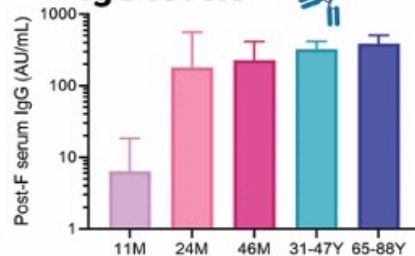
31-47Y

65+Y

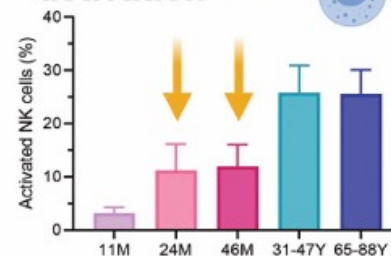


RSV-specific serum  
antibodies

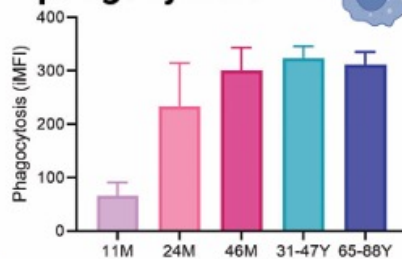
## Serum IgG levels



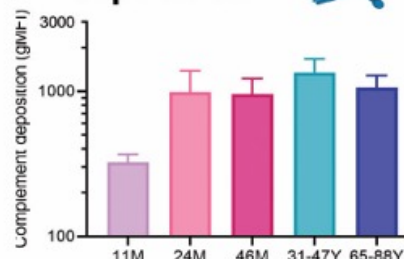
## NK cell activation



## Monocyte phagocytosis



## Complement deposition



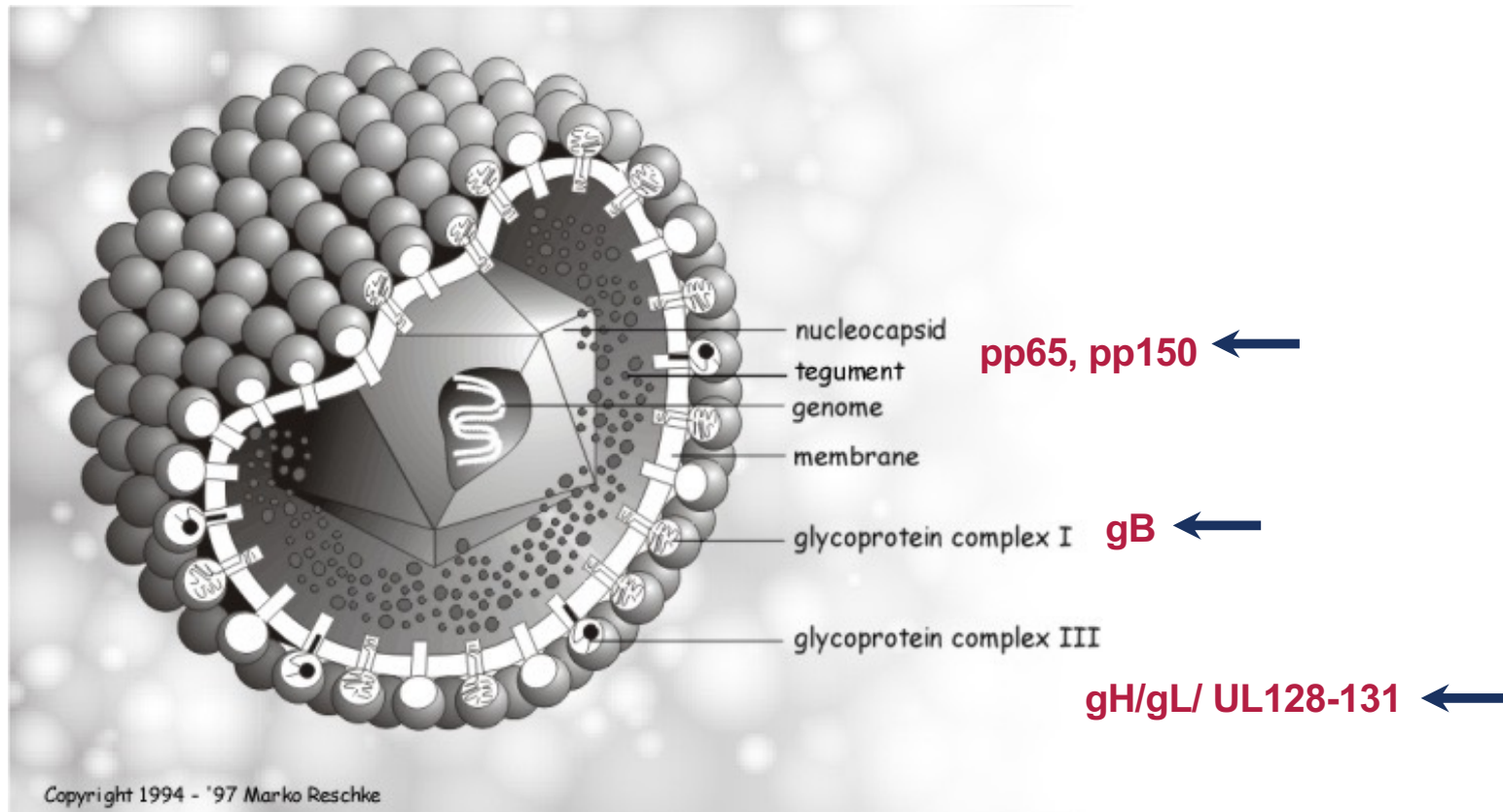
Multiple Protective Responses:

# Cytomegalovirus

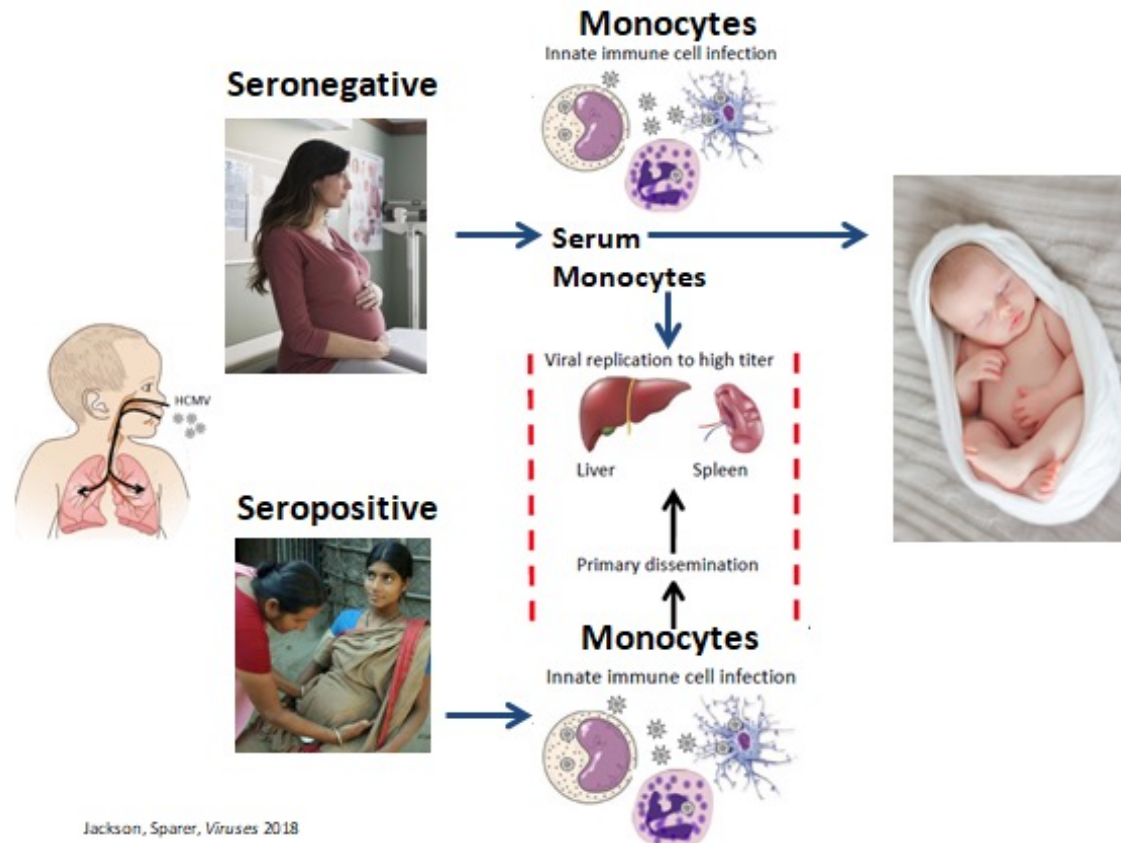


# Cytomegalovirus

## Non-structural Protein: IE1







Proposed scheme for CMV infection in pregnancy. Women are often exposed to toddlers excreting CMV. Both seronegative and seropositive women can be exposed, particularly the latter if they live in countries where children are often infected. The CMV infection in both cases rapidly becomes intracellular, although first infections in seronegative women are likely to include cell-free virus in the serum. In both types of women, CMV spreads to multiple organs. In seronegative women, spread to the placenta cells and on to the fetus is likely, whereas in seropositive women who are repeatedly infected the placenta usually but not always remains virus-free. Thus, seropositivity is a relative protective factor.

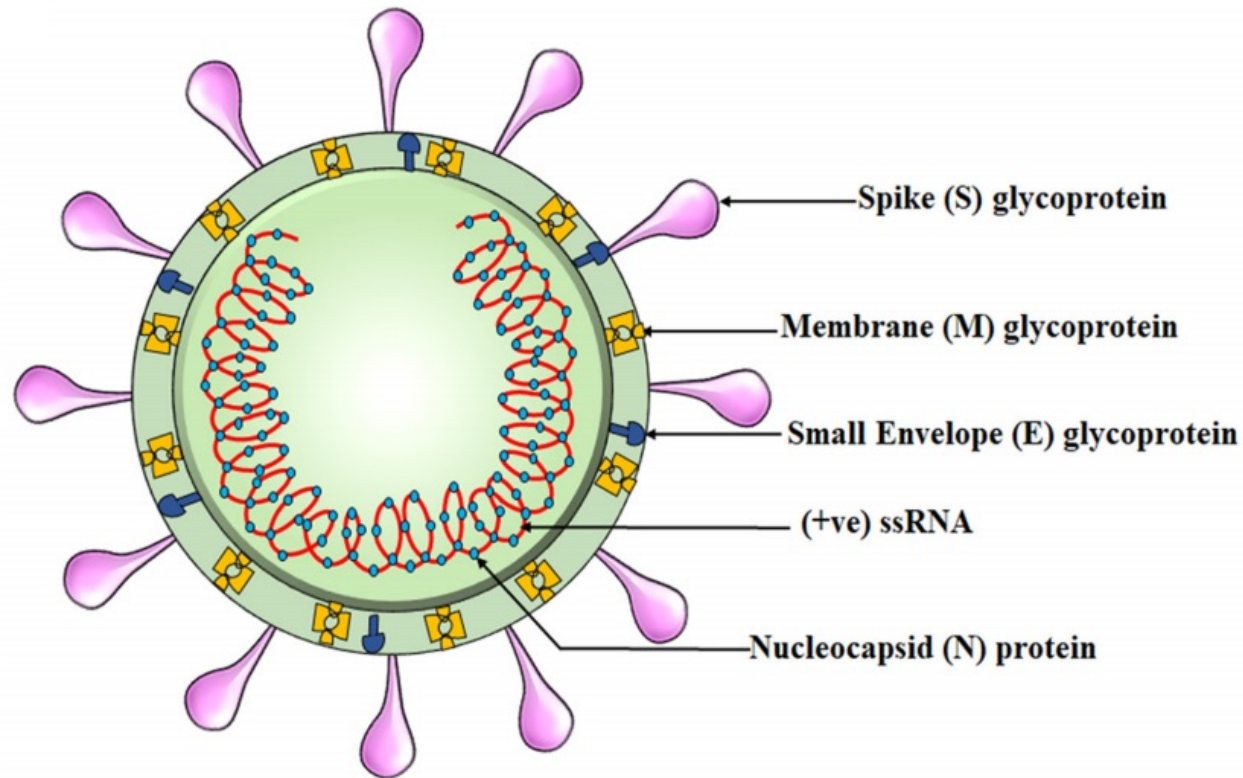


# Candidate CMV Vaccines in Development

Sponsor	Type	Stage	Target
<b>Moderna</b>	gB, pentamer mRNA	Phase 1	Cong
<b>Sanofi</b>	gB, pentamer subunit	Preclinical	Cong
<b>City of Hope</b>	MVA presenting pp65, IE1, IE2	Phase 2	Txp
<b>GSK</b>	gB, pentamer subunit, adjuvant	Preclinical	Cong
<b>Merck</b>	Live, replication-defective	Phase 2	Cong
<b>Hookipa</b>	LCMV Vector gB, p65	Phase 1	Txp
<b>Variations Bio</b>	gB	Phase 1	Cong
<b>Serum Inst. India</b>	Dense bodies	Preclinical	Txp
<b>Queensland Inst/ Dynavax</b>	gB, pp65, p50 Polypeptide with TLR-9 adjuvant	Preclinical	Cong
<b>Novartis</b>	gB Nanoparticle	Preclinical	Cong

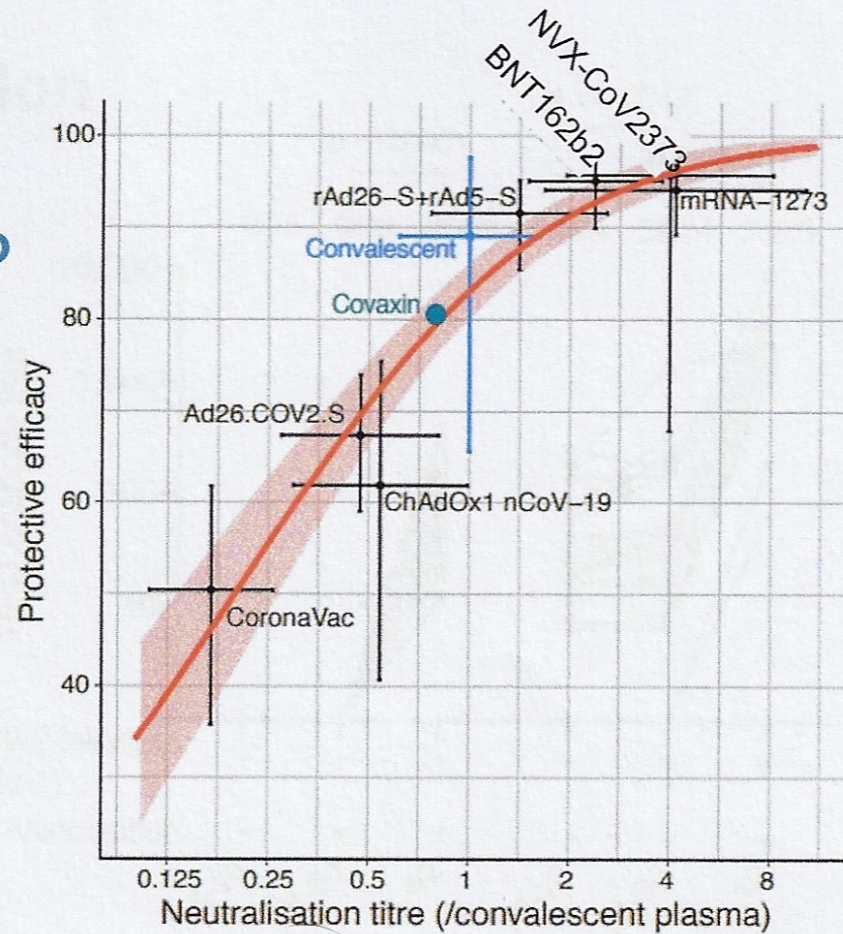


# SARS-2 VIRUS: Cause of COVID-19





## Vaccine Efficacy Relative to Neut Ab



**Immunity** 2021, 54:1257

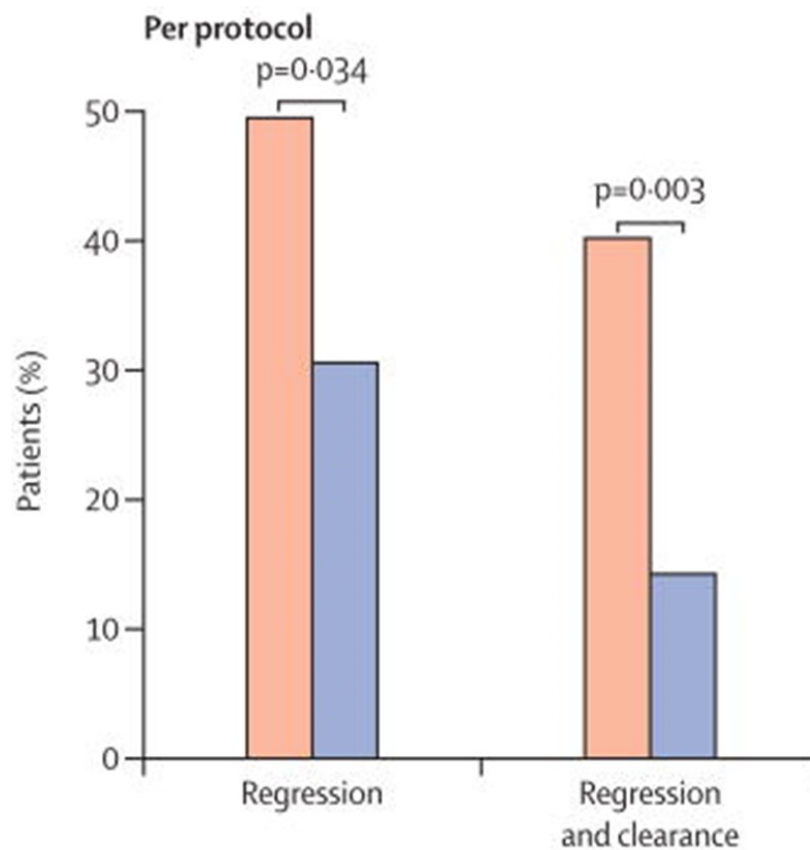
## **Longitudinal analysis reveals that delayed bystander CD8<sup>+</sup> T cell activation and early immune pathology distinguish severe COVID-19 from mild disease**

Laura Bergamaschi, Federica Mescia,  
Lorinda Turner, ..., John R. Bradley,  
Paul A. Lyons, Kenneth G.C. Smith

- Longitudinal analysis of COVID-19 patients with a range of disease severity
- Early bystander CD8<sup>+</sup> T cell and plasmablast responses characterize mild disease
- Pronounced systemic inflammation evident at first presentation in more severe COVID-19



# Regression of Cervical Cancer After E6/E7 DNA Vaccination



Trimble et al, *Lancet* 2015



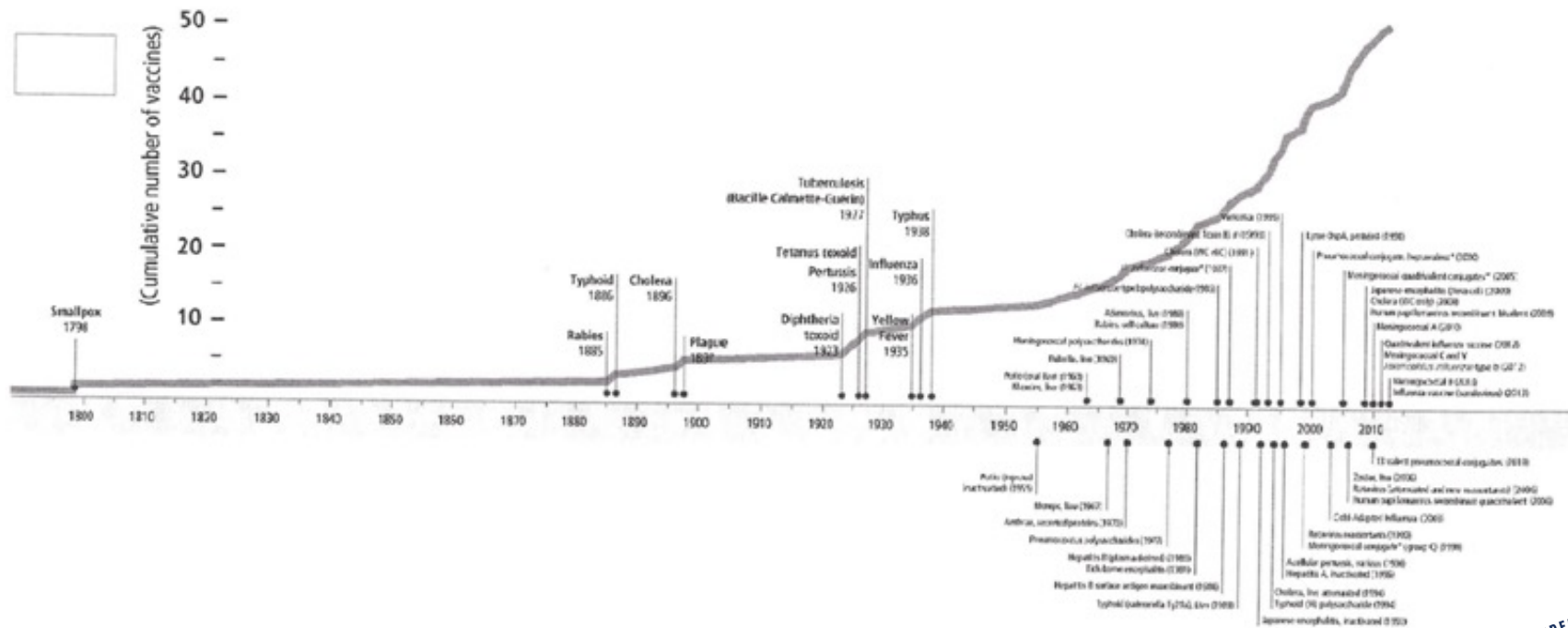


# The Big Scientific Problems in Vaccinology of the 21st Century

- Immaturity and post-maturity of the immune system
- Maintenance of immune memory, both central and effector
- Adjuvants capable of selectively stimulating cell types: Dendritic, B, Th1, Th2, Th17, CD4+, CD8+ or Tregs
- More protective antigens against complex bacteria
- Mucosal immunization with non-replicating antigens
- Conserved antigens to cope with antigenic variability



# Cumulative Number of Vaccines Developed



# Rate Of New Vaccine Licensure

Rate of new vaccines, per decade, in each century

<b>18<sup>th</sup> Century</b>	<b>0.1</b>
<b>19<sup>th</sup> Century</b>	<b>0.5</b>
<b>20<sup>th</sup> Century</b>	<b>3.4</b>
<b>21<sup>th</sup> Century</b>	<b>6.5</b>





# The Problem of Increasing Number of Vaccines

Convincing people to take a vaccine against a disease without high mortality which they don't necessarily know about

---

Confusion of people about need for multiple vaccines

---

Even if serious reactions are rare for each vaccine, they add up in the public mind, and the more vaccines there are, the more public discussion

---

Assuming that vaccines are given by parenteral injections, that means more injections.

---

The need for multiple medical visits.



# Need for Combination Vaccines

## NEED FOR

Decreasing Vaccine Dates

Better Vaccine Education























