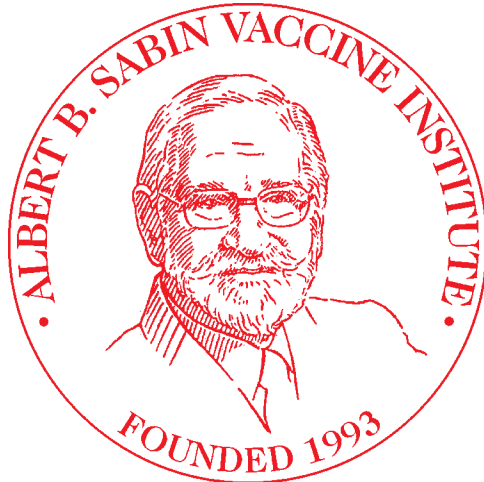


**Recognition of Excellence
in Vaccinology
and Global Immunization**

**Addresses by:
George R. Siber, M.D.
and John B. Robbins, M.D.**



On the Occasion of the
Presentation of the
Albert B. Sabin Gold Medal
to John B. Robbins, M.D.

April 23, 2001 – Crystal City, Virginia



John B. Robbins, M.D.

The Albert B. Sabin Vaccine Institute gratefully acknowledges the generous support of: Aventis Pasteur, Aviron, Baxter International, MedImmune, Merck & Co., Glaxo SmithKline, and Wyeth Lederle Vaccines for unrestricted grants used to underwrite the 2001 Albert B. Sabin Gold Medal ceremony and this publication.

Introduction

*By H. R. Shepherd
Chairman*

Albert B. Sabin Vaccine Institute

Each year the Sabin Vaccine Institute and the entire vaccine community gathers to salute an exemplary leader in the field of vaccinology. With the Albert B. Sabin Gold Medal, we recognize an individual who embodies the spirit and dedication of Dr. Sabin, who touched the lives of most human beings alive today through his oral polio vaccine.


Thanks to vaccines, polio was eradicated from the United States in 1975 and from the entire Western Hemisphere in 1991. Polio will soon join smallpox as a subject in history, wiped out by a global effort involving multiple partnerships among public and private agencies of all nations and ideologies, who have come together in a common cause, armed with the disease fighting weapon invented by Dr. Sabin.

Sabin was both a physician and a scientist. He was driven by a passion to transform scientific knowledge into practical tools to benefit humankind, what we now call translational research. In addition to conquering polio, Sabin developed vaccines for encephalitis and dengue fever. He was a trailblazer, investigating links between viruses and cancer, a field of great excitement and promise in today's understanding of molecular biology.

John B. Robbins, M.D., is an extraordinary physician, scientist, and public servant. His entire career has been devoted to continuing Albert Sabin's quest to conquer disease with vaccines and immunization. His research

has concentrated on protecting infants and children from disease, most notably meningitis and pertussis. Millions of people worldwide owe their good health to his work.

Dr. Robbins shares with Albert Sabin not only a passion for vaccines, but also a common training ground, having obtained his medical degree from the New York University Medical School in 1959—twenty-eight years after Sabin obtained his. In that regard, the awarding of the Sabin Gold Medal this year to John Robbins also reflects on the excellence of the academic institution which prepared both of these men for their illustrious careers of science in service to humanity.

Dr. Robbins is already the recipient, along with his colleague Dr. Rachel Schneerson, of two of medicine's most prestigious awards: the Pasteur and Lasker Awards. In view of his achievements, it is most fitting that we ask him to leave his beloved laboratory on this occasion to present him with the Albert B. Sabin Gold Medal. 

Tribute to John B. Robbins, M.D.

*By George R. Siber, M.D.
Senior Vice President and Chief Scientific Officer
Wyeth Lederle Vaccines*

John Robbins shares with Albert Sabin a deep passion for vaccines, for all aspects — from basic research on microbial pathogenesis and antigenic analytical methods, to characterizing the immune response, to implementing immunization programs, and to ensuring that all those who need vaccines get them.

Both men applied volcanic energy to their work. Both had broad interests but are best known for their singular and crowning achievements: the development of oral polio vaccine for Albert Sabin and the development of *Haemophilus* type b conjugate vaccine for John Robbins. It is thus most fitting that John Robbins be the ninth recipient of the **Albert B. Sabin Gold Medal**.

Now, many of us in this room know John Robbins, and know that he is not a very formal person. Indeed, this may be the first time I've ever seen John wear a tie. So I think it's appropriate before mentioning John's many scientific accomplishments, to tell you a little bit about the person behind them.

You may not know that John is an expert in many areas besides vaccines. For example, he has an encyclopedic knowledge of baseball, and in particular of the Brooklyn Dodgers. This is a result of many visits to Ebbet's Field during his childhood years growing up in post-depression Brooklyn. The trolley ride was a nickel, and admission a quarter. Often John would walk the six miles to save that nickel and spend it on a

couple of knishes instead. Those times appear to have left John forever hungry, which perhaps explains his voracious appetite, not only for knowledge but also for food. It's fair to say that John has a deeply omnivorous expertise in all cuisines but particularly in Chinese, Thai, and Jewish deli.

Another area of expertise is in Oriental rugs. His long time colleague Rachel Schneerson recounts a story which illustrates the extraordinary intensity with which John pursues his passions. During a formal visit to the State Department, John became absorbed in a wonderful Persian runner, and while examining it with minute care, followed it through a door into a well-appointed gilt-mirrored room. Here he was promptly accosted by a female security guard who demanded to know in stentorian tones whom he was looking for in the ladies' room.

Returning to medicine, you may also not know that John Robbins, early in his career, was this country's first clinical expert in *Pneumocystis carinii* pneumonia. While at the University of Florida in Gainesville, he made the first microbiologic diagnosis of pneumocystis by silver stain in a patient with agammaglobulinemia and treated the patient successfully with pentamidine, the first such therapy in the US. This patient was described in a 1965 publication in the *New England Journal of Medicine* and subsequently John wrote a half dozen papers on pneumocystis and its clinical management.

The major portion of John's prodigious scientific efforts have, however, been directed to vaccines, and in particular to bacterial polysaccharides and polysaccharide conjugate vaccines. I think it's fair to say that John Robbins has never met a polysaccharide he didn't like. He approaches each new sugar molecule with an

appraising glint in his eye to see if it might have vaccine potential.

And I might mention parenthetically that he seems to approach people in the same way. If they share his passion for vaccines and have potential to contribute to vaccinology, they become his friends for life.

The people who most influenced John, his mentors and closest colleagues, were not only superb scientists but also great vaccinologists, people like Chandler Stetson and Lewis Thomas at NYU, Margaret Pittman at FDA, Emil Gotschlich at Rockefeller University and Bob Austrian at the University of Pennsylvania.

With those who share his commitment, John is extraordinarily generous with his time and ideas. There have been many, many guest workers from all over the world who have spent time in his lab, from Sweden, Finland, France, China, India, Africa, Czechoslovakia, Indonesia, Egypt and Israel and many other countries. John has also been extraordinarily generous to many of us with his supply of valuable reagents. Many years ago, John devised a scheme for raising high antibody titers in equines. Those of us who worked on Hib are likely to have received aliquots of hyperimmune serum from Burro 132, who literally had grams of anti-PRP antibody coursing through its veins. Over the years, John tells me that he distributed 173 liters of serum from this remarkable beast and many hundreds of liters of serum from Horse 46, an enormous Clydesdale who was hyperimmunized with meningococcus B.

Despite an early love affair with IgM class antibodies, which John described as especially talented, powerful, and versatile in killing *Salmonella* in an important 1965 publication in the *Journal of Experimental Medicine*, he eventually concluded that the

real workhorse of vaccine-induced immunity was IgG class antibody. IgG is not only highly protective and faithfully persistent, but also seeps out of the bloodstream into mucosal surfaces to neutralize the pathogenic inoculum and protect there as well. He challenged humoral and cellular immunologists to demonstrate that mucosal IgA antibodies and cellular immune mechanisms are truly important primary mediators of the protection conferred by the currently available vaccines. Arguably, this challenge has yet to be convincingly answered.

The most remarkable achievement in a lifetime of intense, creative work is that John Robbins, together with Rachel Schneerson and a small number of coworkers, developed and tested in man an extraordinarily large number of bacterial vaccines. The list of these, most of which are polysaccharides or polysaccharide conjugates, includes: the Hib polysaccharide and Hib conjugate, type 6B pneumococcal conjugate, O-acetyl negative Meningococcus C conjugate, the Salmonella Vi polysaccharide and recently a Vi conjugate which has just been shown to have 92 percent efficacy in field trials in Vietnamese children, *Salmonella paratyphi* LPS conjugate, *E. coli* 0157 conjugate designed to prevent hemorrhagic colitis and its most serious complication, hemolytic uremic syndrome, *Staphylococcus aureus* type 5 and 8 conjugates recently shown effective in hemodialysis patients, group B strep conjugates, cryptococcal conjugate, cholera LPS Inaba conjugate, non-typable haemophilus LPS conjugate, *Shigella flexneri* and *sonnei* conjugates, the latter of which was shown efficacious in Israeli soldiers; and the list goes on!

John and his colleagues have been the pointers of the vaccine hunt. They have led the chase many times, shown what is possible for the first time not just in animals but in humans, and thus led the way for

commercial companies to take up the vaccine's development and market a commercial product. John's work has led directly to at least three licensed vaccines: the Hib tetanus toxoid conjugate, the Vi-polysaccharide based typhoid vaccine, and the pertussis toxoid vaccine. His work has also contributed in a major way to the meningococcal C conjugate vaccines introduced in the UK in 1999, and to the pneumococcal conjugate which became available to all US children last year and is now being introduced in Europe.

Of all these achievements, the Hib conjugate is John's crowning accomplishment. Hib was the most important cause of bacterial meningitis, with terrible complications of hearing loss, paralysis, mental retardation, and death. When many of us began our training, it was one of the most common and serious infections for which babies were hospitalized. The disease has now essentially disappeared in every country that has introduced the vaccine.


For this accomplishment John Robbins and his colleague Rachel Schneerson, together with Porter Anderson and David Smith, were awarded the Lasker Clinical Medical Research Award in 1996 and the World Health Organization/Children's Vaccine Initiative's Pasteur Award.

John's passion and strength of conviction have become legendary. He has never run from controversy. He loves a good fight. A prime example of this is the single component pertussis toxoid vaccine developed in his lab. Despite the prevailing dogma that multiple components are needed for an effective vaccine, John and his colleagues in Goteborg, Sweden, persisted and demonstrated the efficacy of pertussis toxoid, and most recently are showing that this vaccine, once it is widely used in a geographic area, can essentially eradicate the

disease not only in children but in all age groups.

Like all great scientific controversies, it may turn out that both sides are right; yes, pertactin and fimbriae may demonstrably contribute protection in a setting of strong epidemic pressure of disease; and yes, pertussis toxoid, like diphtheria toxoid, is sufficient for population immunity when there is high vaccine uptake.

Since this pertussis toxoid vaccine is the simplest and arguably the safest acellular pertussis vaccine, it may yet have its day in this age when vaccine safety is becoming of paramount concern.

It's safe to predict that this is not the last controversial position that John Robbins will take. My advice to you all, even if you disagree with him, is always to take his arguments seriously and consider them thoughtfully, because John Robbins's record shows - and I am borrowing one of his own favorite phrases - John Robbins's record shows that he has made "a habit of being right".

Remarks Upon Acceptance of the Albert B. Sabin Gold Medal

*by John B. Robbins, M.D.
National Institutes of Health
Bethesda, MD*

I would like to express thanks to the Committee, recognition to my family and Rachel, special thanks to my colleagues at the Laboratory of Developmental and Molecular Immunity, National Institutes of Health, the Center for Biologics Evaluation and Research and Centers for Disease Control including Louis D. Rodrigues, J.C. Parke, Osmar Barrera, Ann Sutton, William Egan, and Willie Vann. In addition, I wish to thank our special gurus: Meir Wilchek, Porter Anderson, Robert Austrian and Emil C. Gotschlich.

Not commonly known was that Dr. Sabin was elected to the National Academy of Sciences before he developed poliovirus vaccine, based upon his work on dengue fever and toxoplasmosis. Albert Sabin was also a president of the United Bialystockers, an organization of immigrants and refugees from Bialystock, Poland that collected money to bring friends and relatives from their town to the United States. Fund raising was difficult in those years, because most immigrants from eastern Europe were poor and their kinsmen in Poland were in precarious condition.

The formalin-inactivated poliovirus vaccine developed by Salk and his colleagues, licensed in 1954, induced less than optimal immunity, and production was marginal. Sabin's orally-administered vaccine became available in 1965. Routine vaccination with the attenuated poliovirus was soon implemented in the US,

Canada, and most of the developed countries in the late 1960s. But, paralytic polio continued to occur in most of Central and South America, Africa, and Southeast Asia. The inability to vaccinate all children against polio was blamed largely upon the limited personnel and funds available to public health programs. Stimulated by the failure of many developing countries to achieve universal polio vaccination, Sabin campaigned for concentrating resources by supplementing public health personnel with volunteers, to focus nation-wide publicity to a short period each year.

This approach was successful in several countries including Brazil and Cuba. In the late 1980s, Sabin's scheme was adopted by the Pan American Health Organization under the direction of Dr. Ciro de Quadros, who received the Sabin Gold Medal Award last year for eliminating wild-type poliovirus from the Americas. Sabin's approach to eliminating poliovirus infection was ultimately adopted in the 1990s. Although delayed by conflicts in parts of Africa and Asia, elimination of paralytic polio will be achieved, but only about half a century after polio vaccine became available. Notable was the fact that the World Health Organization initially opposed Mass Polio Vaccination Days, stating that these could interfere with existing routine vaccination programs. The success of Polio Mass Vaccination strengthened rather than weakened programs for immunization of children. As it has been said, "Nothing smells sweeter than the sweet smell of success."

My remarks tonight are not directed towards the development of *Haemophilus influenzae* type b conjugate-its successes are well known. My best recollections about those years are the wonderful people I met and the help and advice given to Rachel and me by our colleagues.

Rather than dwell on old hat, I will speak about a current problem of vaccination that shames our profession - - that of group A meningococcal meningitis in Africa. My presumption in presenting this topic was stimulated by the experience of Dr. Albert Sabin and his colleagues in bringing polio vaccine to all children.

Dr. Rachel Schneerson of our Laboratory and Dr. Emil C. Gotschlich of the Rockefeller University and I have encountered similar inertia on the part of the World Health Organization, to recommend routine immunization against endemic and epidemic group A meningococcal meningitis in the “meningitis belt” of Africa. Their recommendation for epidemic control only is based upon distortions of both the immunologic data and clinical experience with group A polysaccharide, and is claimed to be justified by the slightly different schedule required for group A polysaccharide vaccine, which would compromise existing programs.

Meningococci are capsulated: three capsular polysaccharides denoted as group antigens, A, B, and C comprise most of the cases. Each has unique immunologic properties that distinguish them from all other medically important bacterial polysaccharides. Group A meningococci have caused epidemics throughout the world during the past century. Unlike any other polysaccharide, Group A induces a booster response between 3 months and 2 years of age. This regime induced protective levels of antibodies and prevented meningitis in infants and young children in Finland and New Zealand. Groups B and C cause endemic meningitis and occasionally acute and protracted outbreaks. Group B polysaccharide is non-immunogenic. Group C polysaccharide does not induce protective antibody levels up to the age of 2 years, and reinjection induces suppression in this age group. In older children and

young adults, a single injection of groups A, C, W135 and Y polysaccharides elicits a protective serum antibody response that is probably lifelong.

The problem of epidemic group A meningococcal meningitis has been described by the WHO. Reported cases of meningococcal disease in African countries in the 10 year period 1988 - 1997 total 704,000, a figure which is likely to be a significant underestimate of the true number. About 100,000 people have died as a result of the disease during this period. In 1996, an epidemic involving more than 180,000 reported cases took place, the largest epidemic ever recorded. Epidemics on this scale cannot be ignored. In addition to epidemics, group A meningococci regularly cause about 30,000 cases of meningitis annually. This "endemic" rate is considered epidemic in industrialized countries. The mortality is at least 10 percent. At least 30 percent of "cured" patients, even under optimal conditions, suffer permanent central nervous system damage including impairment or loss of hearing, mental retardation, seizures, and blindness. Despite antibiotics and other supportive therapy, meningococcal meningitis remains a serious disease. Obviously, prevention is preferred to treatment.

To combat this terrible problem, the WHO strategy attempts to predict an epidemic by detecting the number of meningitis cases to be $>15/100,000$ per week for two weeks in several villages. When this information is confirmed, mass vaccination is initiated with one injection of bivalent groups A and C meningococcal polysaccharide vaccine to the "at-risk" population. This sentinel strategy failed to prevent the worst recorded epidemic of group A meningococcal meningitis in 1996. Again in 1997, Sudan endured an epidemic of 32,000 cases and 2,200 deaths, and Ghana of 18,703 cases and about 1,400 deaths. The WHO vaccination campaign

in Ghana was tardy, despite five weeks of warning from an epidemic in adjacent Togo. Had mass vaccination in Ghana started 6 months earlier, there would have been no epidemic. But even with optimal detection and mobilization of personnel and resources, all authorities agree that at best, the WHO strategy will prevent only 50% of cases during an epidemic.

We and African workers have proposed that mass vaccination of the entire population, followed by routine vaccination of infants with group A polysaccharide will prevent both epidemic and endemic meningococcal meningitis. Two examples are cited.

First, vaccination with group A polysaccharide was started in 3 northern provinces of Benin, with about 50 percent coverage between 1993 and 1996. During that period, Benin had no epidemics in this area, whereas neighboring Burkina Faso and Togo suffered epidemics in 1996 and 1997.

Second are the severe epidemics of group A meningococcal meningitis which were reported in China in 1957, 1966, and 1976. Thereafter, routine vaccination of infants and school children was initiated in 1980. Since then there have been relatively few cases and no epidemics. The situation was different in adjacent Mongolia. As in China, in 1976 a severe epidemic in Mongolia was halted by a trial of group A polysaccharide vaccine. But there was no follow-through of immunization. Mongolia experienced a severe epidemic in 1995 through 1997, with an overall attack rate of 1 percent. Only after the worst part of the epidemic occurred did the WHO initiate mass vaccination.

The keystone of the WHO's failure to recommend this safe, stable, inexpensive, available, and highly effective vaccine for routine vaccination is justified

largely in a report in the *Lancet*, July 20th, 1985. Because it is so pivotal to the discussion, I summarize this report and urge all of you to read it.

The West African country of Burkina Faso has endured epidemics about every 8 to 12 years throughout the 20th century. During the first 3 months of 1981, 3,800 cases of group A meningococcus meningitis were reported. This prompted wide-scale vaccination with one dose of bivalent group A and C vaccine; about 103,000 children were vaccinated. In its capital city, approximately 48,000 children, between the ages of 7 and 12 years were vaccinated or approximately 98 percent of children who were in school. Approximately 45 percent of the estimated 55,000 younger children between the ages of 3 months and 6 years were vaccinated once. Because of logistical constraints, vaccination cards were given to only some of the vaccinees, making future evaluation of the vaccine's effect difficult. In 1983, another 25,000 doses were given mainly to unvaccinated schoolchildren. Incomplete records were kept, because the number of vaccinees is expressed as approximate in thousands rather than in exact numbers.

The nature of and who conducted the surveillance is not described. About half of the confirmed cases in the capital's main hospital were discarded from the analysis.

There were no serologic studies.

In 1982, one year after the main vaccination program, the CDC evaluated the efficacy of the vaccine using a case control method.

Three years after vaccination, the efficacy was 92 percent in the 4 to 7 year-olds and 75 percent in

the 8 to 16 year-olds: the difference between the age groups was not statistically significant. As expected from the extensive studies of group A polysaccharide, the efficacy in 1 to 3 year-olds after one year was 89 percent, which declined to about 22 percent after three years.

Several aspects of this report should be mentioned. First, there was no comment on the usefulness of the vaccine for the 5 to 16 year-olds, the very age group with the highest attack rate of meningitis in this and all other epidemics in Africa. Second, the authors failed to mention that the package insert recommended that two injections, spaced several months apart, should be given during 3 month to 2 years of age, with an additional booster about one year later. The authors' conclusion about the limited degree and extent of immunity conferred by one injection of group A meningococcal polysaccharide to infants and young children, therefore, is invalid. Would we discuss the immunity to diphtheria, tetanus, and pertussis conferred by one injection of DTP? Of course not!

Lastly, the authors state, "Although routine vaccination of children at four years of age might increase the duration of protection and hence might have an impact on this pattern of disease, the cost and logistic problems involved in instituting such a programme may be prohibitive." The authors state that a group A meningococcal polysaccharide conjugate vaccine is needed for routine vaccination of Africa. We can hardly be accused of ignoring the potential of polysaccharide conjugate vaccine. But a conjugate will not be widely available for at least five years, its cost will be considerably higher than the polysaccharide, and as with all conjugates, it must be administered more than once during the first year of life. Thus, conjugates will increase the cost of

routine vaccination against group A meningococcal meningitis compared to that of the polysaccharide alone. What will the WHO do then?

This article describes the hasty response of a nation reacting to epidemic meningococcal meningitis by mass vaccination and not a scientifically designed and meticulously executed study. This study certainly should not be used to formulate an international policy for prevention of this serious, poorly treated, and common disease. Nevertheless, the authors extracted data from this trial that showed a high level of efficacy in older children and a rate of protection for infants and children that, as predicted from previous data, declined rapidly. Our conclusions from this study are exactly opposite from those drawn by the WHO--group A meningococcal polysaccharide, when administered as directed, would be an effective method for preventing both endemic and epidemic group A meningococcal meningitis. The recommendation that group A meningococcal polysaccharide should be used for epidemic control only is not based upon sound data, experience, or logic. It is based upon what the WHO and CDC think can be done, rather than on what should be done.

Although there are as yet only incomplete data, in January and April of this year, severe outbreaks in Ethiopia, Sudan, Benin, Burkina Faso, Cameroon, Chad, Nigeria, and Niger have been reported -- another epidemic may have occurred this year.

During the next five years, at least 125,000 African children will contract group A meningococcal meningitis if there is only endemic disease -- the number could double or triple if there is an epidemic. Without exception, data from all over the world gathered over the past 25 years allows the prediction

that endemic and epidemic meningococcal meningitis in Africa can be prevented now by mass vaccination followed by routine vaccination with group A meningococcal polysaccharide vaccine.

Our plea is simple. Dr. Albert Sabin's experience with the WHO should not be lost. We urge the vaccine community and those interested in the care of African children to read the references on this subject and to urge the Director of the WHO to review and reconsider her failed program. With such a review, we predict that the WHO will recommend prevention by routine vaccination rather than the control of epidemic meningitis. 🍷

John B. Robbins was born in Brooklyn in 1932. He graduated from New York University College and Medical School. He was an intern and resident in pediatrics at the Massachusetts General Hospital. In 1970, after nine years in academia at the University of



Florida, the Weizmann Institute of Science in Rehovot, Israel and the Albert Einstein College of Medicine, Dr. Robbins was appointed Clinical Director of the National Institute of Child Health and Human Development in Bethesda, Maryland. In 1973, he became Director of Bacterial Vaccines at the Food and Drug Administration. He returned to the National Institute of Child Health and Human Development in 1983 as Chief of the Laboratory of Development and Molecular Immunity. Dr. Robbins prides

himself on having never served on a committee during his career.

Initially under the guidance of Dr. Richard T. Smith at the University of Florida, Dr. Robbins worked along with Drs. Joseph A. Bellanti and John J. Cebra on the problems of immunity in infants. He concentrated on developing vaccines for diseases of infants and children. He has worked together with Dr. Rachel Schneerson since 1968 on vaccine development. Both Drs. Robbins and Schneerson credit Drs. Robert Austrian, Emil C. Gotschlich, William Egan, and Willie Vann for their advice and guidance.

Their novel acellular vaccine for pertussis, composed of pertussis toxoid only, has been licensed in the U.S. and in several countries in Europe. Recently, Drs. Robbins, Schneerson, Shousun Szu, and Kimi Lin and their colleagues developed a new vaccine for typhoid fever that achieved a 92 percent efficacy in two-year old children. Currently, their group is developing vaccines for non-typhoidal *Salmonella*, *Shigella*, *Escherichia coli* 0157, *Clostridium difficile*, and anthrax. Based on the success of their pupil, Dr. Ali Fattom, who developed their *Staphylococcus aureus* vaccine for preventing bacteremia in hemodialysis patients, this group is planning to develop a vaccine for opportunistic pathogens. They were instrumental in the development of the *Haemophilus influenzae* type B (Hib) conjugate vaccine that is used throughout the world. The use of this vaccine has dramatically reduced meningitis among infants and children, as well as other systemic infections such as osteomyelitis and pneumonia.

Drs. Robbins and Schneerson gratefully acknowledge the inspiration and contributions of the late Dr. Margaret Pittman to their research program. ❧

George R. Siber, MDCM joined Wyeth Lederle Vaccines as Vice President and Chief Scientific Officer in August, 1996. He was named Senior Vice President in August, 1999. In this capacity, Dr. Siber is responsible for discovery



research in bacterial vaccines, viral vaccines, immunology and genetic vaccines, process development, clinical development, project management and scientific affairs for Wyeth Lederle Vaccines.

Prior to joining Wyeth, Dr. Siber was Director of the Massachusetts Public Health Biologic Laboratories and Associate Professor of Medicine with the Harvard Medical School and Dana Farber Cancer Institute. During this time Dr. Siber oversaw research on acellular pertussis and Hib vaccines, the development and licensing of Cytomegalovirus (CMV) Immune Globulin (Cytogam®) and Respiratory Syncytial Virus (RSV) Immune Globulin (Respigam®) and the production of DTP vaccines and immunoglobulins.

Dr. Siber's research interests have included the evaluation of the human immune response to polysaccharide and protein antigens, the development of vaccines and immuno globulins against Hib, pneumococci, meningococci, pertussis, RSV, and maternal immunization to prevent perinatal and early neonatal infections. Dr. Siber has authored more than 200 scientific articles, abstracts, book chapters, and reviews.

Dr. Siber received a B.Sc. degree from Bishop's University and a MDCM degree from McGill University, both in Quebec, Canada. Dr. Siber trained as a medical intern and resident at Rush Presbyterian Medical Center in Chicago, and as a senior resident and infectious disease specialist at Beth Israel Hospital and Children's Hospital in Boston. ❧

ALBERT B. SABIN VACCINE INSTITUTE

Mission

The Albert B. Sabin Vaccine Institute's mission is to save lives by stimulating development of new vaccines and increasing immunization rates.

The nonprofit institute was founded in 1993 to carry on Albert Sabin's quest to prevent human suffering and economic hardship. Dr. Sabin developed the world's first oral vaccine, which simplified immunization and sped the eradication of polio in most of the world. He was a tireless advocate for vaccines as the most humane and cost-effective form of medical intervention ever devised.

The Sabin Vaccine Institute has successfully advocated for intensified HIV/AIDS vaccine research; accelerated the development of vaccines to treat and prevent cancer; brought together global leaders to devise new immunization strategies for developing countries; and raised public awareness of the safety, benefits, and value of vaccines.

ALBERT B. SABIN GOLD MEDAL

The **Albert B. Sabin Gold Medal** recognizes and honors those who have made extraordinary contributions to the field of vaccinology.

Honorees include:

Donald A. Henderson, M.D., M.P.H., 1994

Robert M. Chanock, M.D., 1995

Joseph L. Melnick, Ph.D., D.Sc., 1996

(1914-2001)

Maurice R. Hilleman, Ph.D., D.Sc., 1997

Myron M. Levine, M.D., D.T.P.H., 1998

Allen C. Steere, M.D., 1998

Philip K. Russell, M.D., 1999

Ciro A. de Quadros, M.D., M.P.H., 2000

John B. Robbins, M.D., 2001



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