Accelerating Cancer Vaccine Development is Rallying Cry at 2003 Colloquium

Sabin Vaccine Institute Convenes Fifth Annual Meeting at Walker’s Cay

Cancer vaccines present an elusive goal, yet one that is increasingly within reach for biomedical researchers. Their hope is to offer physicians and cancer patients more and better therapy options than radiation and chemotherapy. The advancement of cancer vaccine research, from the bench to clinical trials, was the focus of the Sabin Vaccine Institute’s 5th Annual Colloquium on Cancer Vaccines and Immunotherapy held this past March 5-8 at Walker’s Cay in the Bahamas.

According to H.R. Shepherd, chairman of the Sabin Vaccine Institute, this year’s colloquium generated immense energy toward progress on cancer vaccine research and immunotherapy advances. Dr. Shepherd is a proponent of vaccines as therapeutic agents against many forms of cancer, having been treated successfully with BCG vaccine (traditionally a tuberculosis vaccine), which is a non-specific immuno-stimulant that has found a place in the treatment of bladder cancer. Colloquium participants were challenged by Dr. Shepherd’s refrain, “Why are there so few vaccines, and why does it take so long to develop them?”

Forty of the world’s leading scientists, medical researchers, and thought leaders convened for the think-tank sessions on the island where former President Richard Nixon first declared the War on Cancer in 1973. Their discussion topics ranged from underlying mechanisms of immunity, to clinical results, including such concepts as immunocompetence and immunosuppression. “Fundamental to the presentations was the idea that academia, industry, and the government can work better when working together to circulate information and produce more potent and effective cancer treatments,” said Dr. Shepherd.

The plenary lecture provided by Dr. Guido Forni from the University of Turin addressed prophylactic cancer vaccines. His proposal was both simple and fascinating: Since the stimulation of anti-tumor immune responses following vaccination seems most successful in the initial stages of cancer, is it possible to use vaccines to prevent disease? The underlying tenets of immunoprevention maintain that cancer formation occurs slowly, thus providing a window of opportunity during which a meaningful response could be induced. The capacity to induce a response lessens as cancer progresses, due to increased suppression of immune cells that correlates with tumor stage. Data Dr. Forni presented showed that survival was “barely improved” in vaccinated mice bearing tumors only 24-72 weeks old, as compared with pretreatment of normal mice.

In rounds of presentations, encouraging signs pointed to tangible progress towards a prescribable treatment therapy. Participants provided evidence that in vitro and animal models can be used to design treatment regimens and remove less promising vaccines from further development. The timing of administration and immune status of a patient are as important to achieving therapeutic

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**Weight of Science Shows No Link Between Vaccines & Autism**
—by Peter J. Hotez, MD, PhD, FAAP


As a pediatrician, vaccine researcher and the father of an autistic child, I have great concerns regarding an ongoing debate about the safety of our infant and childhood vaccines. The unfounded association that has been proposed by some between vaccines and autism is at best misleading and at worst a serious undermining of children's health.

The vaccine/autism question stems from two separate theories that are both equally unscientific and have been determined as invalid by the qualified experts in vaccine science.

The first claims autism is the result of the combination measles, mumps, rubella (MMR) vaccine. The second claims thimerosal is the autism culprit. Thimerosal is a mercury-based compound that was used in many vaccines since the 1930s, but mercury—which is what thimerosal becomes when the report was released, researchers wrote that children would likely be exposed to more mercury by eating a tuna fish sandwich than by vaccines.

More research into thimerosal is underway, though if thimerosal were the cause of what some believe is a dramatic increase in the incidence of autism, one would expect the incidence to drop dramatically since the removal of thimerosal from vaccines in 1999. But it hasn’t.

As the father of a child with autism, I know the need for parents to understand the root of this heartbreaking disorder and find something to blame. However, as a medical doctor, I believe a more constructive focus is on advancing treatment options, extending reimbursement policies, and finding a cure.

By focusing on unproven theories, we not only risk wasting our precious resources and...
Looking Back, Moving Forward
Sabin Vaccine Institute 10th Anniversary Evokes Reflection and Commitment to the Future

Ten years ago, the Sabin Vaccine Institute was founded to pursue Dr. Albert B. Sabin’s vision of a world protected from disease by vaccines. The Institute’s anniversary theme—“Looking Back, Moving Forward”—takes stock of these seasons of progress and captures the spirit of ongoing endeavors. The Institute’s projects have international scope. Their range includes vaccine policy, immunization advocacy, basic vaccine research, and recognition of achievements in vaccinology. Following is a brief retrospective and pictorial timeline.

The Sabin Vaccine Institute is the fulfillment of an idea that germinated in a series of conversations between businessman H.R. Shepherd and renowned scientist Dr. Albert B. Sabin. The two met to discuss aerosol technology, in which H.R. Shepherd had become a successful innovator, having devised a full range of products from pharmaceuticals to cosmetics to industrial lubricants. Dr. Sabin’s quest was to develop an aerosolized measles vaccine.

The series of conversations progressed through 1992 but were cut short by Dr. Sabin’s grave illness and death in March 1993. Recognizing the importance of Dr. Sabin’s work, H.R. Shepherd and a group of colleagues conferred with Mrs. Heloisa Sabin about establishing an organization to continue her husband’s legacy. With the help of a number of seasoned scientists, resourceful entrepreneurs, and trusted advisors, an organization where the ideals of the scientist would be emulated and pursued came into being. The Institute emerged in 1993 as a tribute to this noted scientist and public health hero.

In his life, Albert Sabin (1906-1993) courageously pushed the boundaries of science with his development of the oral polio vaccine (OPV), which became the primary tool in the fight against the dreaded poliomyelitis pathogen and the one used to rid the greater part of the globe from the paralyzing disease. “A scientist who is also a human being cannot rest while knowledge which might be used to reduce suffering rests on the shelf,” said Dr. Sabin. This philosophy conveys the pioneering vaccinologist’s passion for public health, and is the inspiration for the Institute that carries on his legacy. Scientific excellence, ingenuity, resourcefulness, and determination are Dr. Sabin’s hallmark as both vaccine developer and statesman.

Vaccines have become the greatest defense against preventable infectious diseases, but there still is a long list of diseases yet to be defeated. Among them, the human immunodeficiency virus presents an urgent and compelling challenge for the world. Malaria, emerging forms of tuberculosis, rotavirus, and parasitic diseases like hookworm and dengue fever also have no effective vaccine. New delivery mechanisms for vaccines require champions as well—aerosolized measles vaccine in fact provoked the initial discussion between Dr. Sabin and H.R. Shepherd. The need for more attention on vaccines has been a clear mandate for the Institute and its ongoing efforts.

During the first five years of the Sabin Vaccine Institute’s existence, many people lent their time, expertise, support, and reputation to building a strong collection of programs. Mrs. Heloisa Sabin was a co-founder, along with Robert

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Cancer Vaccines and Immunotherapy Colloquium
Progress on Vaccine Studies Reported at Walker’s Cay Meeting

The colloquium targeted five themes of investigation, focusing on why so many patients do not respond to treatment as well as on data supporting why some respond more successfully. The themes were:

- Models for Cancer Vaccines and Strategies to Enhance the CD8+ T Cell Tumor Response
- Immune Response to Tumors
- Developing New Targets and Constructs for Cancer Vaccines
- Clinical Trials and Immune Monitoring
- Escape from Immunological Destruction

The 40 colloquium participants included approximately 20 from biomedical research departments at several of the nation’s leading universities as well as from Italy and Canada; 10 pharmaceutical industry researchers; members of biological research institutes and government research laboratories; and independent researchers.

This year’s colloquium was co-chaired by W. Martin Kast, PhD, professor of microbiology and immunology and pharmacology at Loyola University Chicago; and Malcolm S. Mitchell, MD, program leader, Biological Therapy, Karmanos Cancer Institute, Wayne State University, Detroit.

More of this year’s speakers had clinical trials underway or under concerted development. A continuous pipeline of vaccines into clinical trials is essential, since proof-of-principle in cancer patients is essential if these biologics are to be approved by regulatory agencies and made available as alternatives to chemotherapy and radiation. If the cancer vaccine development described at Walker’s Cay is even partially successful, the day will come sooner when a doctor no longer need tell a cancer patient, “There is nothing more we can do.”

—by Michael Salgaller, PhD
The Sabin Vaccine Institute has named disease eradication champion Ciro A. de Quadros, MD, MPH to lead its international programs. Dr. de Quadros is a distinguished international public health diplomat, having this year completed an eight-year term as director of the Division of Vaccines and Immunization for the Pan American Health Organization (PAHO). Dr. de Quadros will pursue international immunization advocacy for the Sabin Vaccine Institute, with a special emphasis on the Latin American region.

“Dr. de Quadros has devoted his entire career to disease prevention and public health and has achieved tremendous results in immunization coverage for the Americas,” said H.R. Shepherd, chairman of the Sabin Vaccine Institute. “The Institute will be energized by Ciro’s role in current programs and new international initiatives because of his expertise and the high esteem in which he is regarded in the international public health community.” A staunch supporter of the Institute’s efforts through the years, Dr. de Quadros was recognized in 2000 with the Albert B. Sabin Gold Medal for his achievements in vaccinology.

“We have an opportunity to take the international programs of the Sabin Vaccine Institute to a new level, since vaccines for the developing world are a critical aspect of both public health and social development,” said Dr. de Quadros. “The Institute is in a unique position to encourage countries to make their vaccine programs a key priority, for all children and the entire society.” He added, “The Institute has truly embraced the legacy of Dr. Albert B. Sabin, whom I knew as a great believer in the ability of vaccines to prevent human suffering due to preventable diseases.”

At the outset of his activities as director of international programs, Dr. de Quadros will head up an advocacy initiative to call attention to the burden of two diseases with devastating health impact—rotavirus and rubella. Rotavirus is the most common cause of diarrheal deaths among children in developing countries. Each year, it claims the lives of 600,000 children, with at least 18,000 deaths occurring in Latin America and the Caribbean region. The Sabin Vaccine Institute anticipates the day when a second-generation rotavirus vaccine is available. Such a vaccine will have a tremendous impact not only in improving health, but also in furthering the social development of the countries in which the disease has the greatest hold.

“Encouraging the search for a rotavirus vaccine is a high priority of both the World Health Organization and the Pan American Health Organization,” Dr. de Quadros said. “The availability of such a vaccine will be a major contributor to the survival of children around the world.”

Rubella and congenital rubella syndrome (CRS) account for several thousand cases of congenital disabilities each year such as blindness, deafness, and heart disease. Several countries in the Americas, following their successful efforts to eradicate measles, have now launched campaigns to eliminate rubella and CRS. “The interruption of transmission of rubella will have an immediate impact in eliminating the burden of CRS,” Dr. de Quadros said.

Dr. de Quadros received his medical degree from the Catholic School of Medicine, Porto Alegre, Brazil and his master in public health degree from the National School of Public Health, Rio de Janeiro. He subsequently participated in the organization of the first National Epidemiology Center in his native Brazil. There he was involved in the development of the surveillance and containment strategies for smallpox eradication in Parana State, Brazil. In 1970, Dr. de Quadros was appointed chief epidemiologist for the Smallpox Eradication Program in Ethiopia by the World Health Organization. Following the global eradication of smallpox, Dr. de Quadros joined the Pan American Health Organization to initiate the Expanded Program on Immunization for the region of the Americas. He led the PAHO team in the successful eradication of poliomyelitis from the Western Hemisphere, declared in 1991.

In addition to disease eradication leadership, Dr. de Quadros has overseen general immunization programs for PAHO. Regional vaccine campaigns save the lives of more than 200,000 children in Latin America and the Caribbean each year, according to Dr. de Quadros, and over 80 percent of children in the Americas under one year old are vaccinated against diphtheria, pertussis (whooping cough), tetanus, poliomyelitis, measles and tuberculosis. In his international public health work Dr. de Quadros has highlighted the important role played by immunization programs. “I know from my experience with smallpox eradication in Brazil and the Horn of Africa, with polio eradication and now the measles eradication initiative in the Americas, that well-run immunization programs do help strengthen health infrastructures in the countries where they are properly implemented.”

Dr. de Quadros is associate adjunct professor, Department of International Health, School of Hygiene and Public Health at the Johns Hopkins University; adjunct professor, Department of Epidemiology and Biostatistics, School of Medicine, Case Western Reserve Uni-

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SVR Dr. de Quadros, what are the factors that make rotavirus such a dangerous disease?

CdQ Rotavirus is the most severe of all the diarrheal diseases of children. Unlike many diseases that affect children only in developing countries, rotavirus is a democratic virus and affects children worldwide—rich and poor, black and white—without distinction. Consequently, every child is affected in the first few years of life. Why this first infection is so severe is unknown, but while most rotavirus diarrhea is mild, about ten percent of cases lead to dehydration requiring a doctor visit, and in developing countries one in 250 children will die from this dehydration.

SVR What factors make it so prevalent?

CdQ The fact that rotavirus affects children worldwide, in the United States and Bangladesh, for example, indicates that improvements in water and sanitation will not change the incidence of disease, but it is likely spread by other routes, such as airborne droplets or contact. It is highly infectious in low dose and spreads rapidly among children without prior exposure.

SVR Besides a vaccine, what precautions, if any, can be taken to prevent rotavirus?

CdQ We know of no way to prevent rotavirus infection but we do know that the disease can be made less severe if children are begun on treatment with oral rehydration when the first signs of vomiting and diarrhea begin. This strategy of early oral rehydration therapy will work for all acute diarrheal illness regardless of etiology, so while we can’t prevent rotavirus, we can prevent the development of severe disease that could lead to hospitalization or a fatal outcome.

SVR Who needs the rotavirus vaccine?

CdQ Every child in the world will be infected with rotavirus in the first few years of life and every child could benefit from a vaccine. In developed countries, rotavirus leads to doctor visits, hospitalization, lost parent workdays, and economic expense. In developing countries, the consequences of rotavirus can be fatal. A vaccine will serve to prevent severe disease in any setting—fatalities in developing countries, or hospitalizations and economic problems in developed countries.

SVR Your career in public health and disease eradication is impressive. What has been your experience with implementing efforts to address the rotavirus disease burden?

CdQ We have been working to assess the burden of rotavirus diarrhea in Latin America. Many studies of the importance of rotavirus have been conducted throughout Latin America over the past 20 years that indicate rotavirus is a major problem. Efforts are being initiated to set up sentinel hospital surveillance for rotavirus in many countries of Latin America, so the full extent of the disease burden can be further ascertained.

SVR Can you describe the general formulation of the vaccines that could potentially effectively prevent rotavirus? How will it be a better vaccine than the one that was used from 1998 to 1999?

CdQ Two vaccines to prevent rotavirus diarrhea are currently under development: one by GlaxoSmithKline (GSK) and another by Merck. The GlaxoSmithKline vaccine is based on a single strain of rotavirus isolated from a human with diarrhea and attenuated by repeated passaging in cell culture. It would be given as a live, oral vaccine in two or three doses to children at the time of their routine immunizations. The Merck vaccine will be based on a bovine strain of rotavirus that has been reassorted and combined to provide protection against the four main serotypes of rotavirus in circulation, plus another outer capsid protein that is the most common target for virus neutralization. This vaccine, a live, oral vaccine as well, would be given in three doses.

SVR How would the vaccine be administered?

CdQ Both vaccines are live oral vaccines that would be administered orally at the time of the other routine childhood immunizations—to children 6, 10, and 14 weeks of age.

SVR We’ve heard about the small number of cases of bowel obstructions, or intussusception, that prompted the withdrawal of the previous vaccine. Is this the main hurdle to be overcome in developing the second-generation vaccine?

CdQ Early studies with the rhesus vaccine that was given to nearly one million children demonstrated that the vaccine was highly effective and relatively safe. It was withdrawn because of the rare adverse event of intussusception. In studying new vaccines, we would like to know that their risk of intussusception is less than the risk posed by the rhesus vaccine. This safety profile is the biggest hurdle to overcome in testing the next generation of vaccines. It requires that tests be conducted in more than 60,000 children to ensure that the rate of intussusception is less than one in 11,000. It also requires that investigators conducting trials have in place a

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Samuel L. Katz, MD, to Receive 2003 Sabin Gold Medal

Co-developer of Measles Vaccine to Be Honored at May Ceremony

Samuel L. Katz, MD, the Wilburt Cornell Davison Professor and chairman emeritus of pediatrics at Duke University, will be this year’s recipient of the Sabin Gold Medal. The award recognizes exemplary leadership in the field of vaccinology. Dr. Katz is contributor to numerous vaccine discoveries, including collaboration to develop the measles vaccine in use today.

“Samuel Katz exemplifies a rare sort of commitment and perseverance that culminates in life-saving medical discoveries,” said H.R. Shepherd, chairman of the Sabin Vaccine Institute. “The global benefit of the measles vaccine alone is tremendous and can be realized even further with amplified immunization rates.” In addition to development of the measles vaccine, Dr. Katz worked extensively on a range of other vaccines, including vaccinia (used as smallpox vaccine), polio, rubella, influenza, pertussis (whooping cough), Haemophilus influenzae b conjugates, and HIV.

His selection by the Sabin Gold Medal Advisory Committee of the Albert B. Sabin Vaccine Institute places Dr. Katz among a prestigious fraternity of 10 previous recipients. The award will be presented at 7:30 pm on May 6 at the Crystal City Marriott Hotel in Arlington, Virginia. The medal ceremony is planned during the 6th Annual Conference on Vaccine Research, a meeting of several hundred of Dr. Katz’s fellow scientists that is co-organized by the Sabin Vaccine Institute and sponsored by the National Foundation for Infectious Diseases.

“This award is especially meaningful,” Dr. Katz said. “I am thrilled to be selected as the 2003 recipient of the Sabin Gold Medal and there are so many reasons, including the esteem in which I hold all the former Medal recipients.”

According to Peter Hotez, MD, chairman of the Institute’s Scientific Advisory Council, “Since the measles vaccine was implemented widely through the Expanded Program on Immunization in 1974, the number of childhood deaths from measles decreased from roughly 7 million deaths per year to now less than 800,000 deaths per year.” Dr. Hotez noted that the six million young lives conceivably saved by the vaccine every year since 1974—150 million total—is in number greater than the estimated toll from all wars during the 20th century.

Dr. Katz’s early career included an internship at Beth Israel Hospital, a residency in pediatrics at the Massachusetts General Hospital and the Boston Children’s Hospital, followed by a research fellowship in virology and infectious diseases. He became a staff member at Children’s Hospital, working with Nobel Laureate John F. Enders to develop the attenuated measles virus vaccine.

For 22 years, Dr. Katz was chairman of Duke University’s Department of Pediatrics. In addition to mentoring two decades of students and residents, he established an exchange program with Oxford University and provided training for an annual succession of residents from the American University of Beirut. Having relinquished the chairmanship in 1990, his activities continue with vaccines and pediatric AIDS. He participates in the clinical research trials of the NIH, serves on their Committee for AIDS Vaccines and devotes time to the care of children with HIV infection. Dr. Katz currently co-chairs the India-U.S. Vaccine Action Program and the National Network for Immunization Information, in addition to his consultancies with the National Institutes of Health, Centers for Disease Control, Food and Drug Administration and World Health Organization.

Dr. Katz provided professional leadership as president of the American Pediatric Society and of the Association of Medical School Pediatric Department Chairmen. His published studies include numerous original scientific articles, chapters in textbooks, abstracts, commentaries, editorials, and reviews. He is co-editor of Infectious Diseases of Children, a textbook now in its 11th edition.
The National Partnership for Immunization and 27 other sponsoring organizations, including the Sabin Vaccine Institute, hosted a briefing on vaccine safety at the U.S. Capitol in Washington, DC on Thursday, January 23, 2003. “Vaccines: Our Children Are Worth a Shot” gave attendees the opportunity to view the new video, Vaccines and Your Baby, produced by the Vaccine Education Center at the Children’s Hospital of Philadelphia.

The video screening was followed by a question and answer period with Paul Offit, MD, director of the Vaccine Education Center, and Peter Hotez, MD, PhD, FAAP, chairman of The George Washington University Department of Microbiology and Tropical Medicine and Sabin senior fellow. Walter Orenstein, MD, director of the CDC’s National Immunization Program, was also available to field the questions posed by Hill staff members and others attending.

The issues raised during the meeting included the efficacy of the Vaccine Adverse Events Reporting System (VAERS) for new vaccines; the apparent increase in the number of break-through cases of varicella (chickenpox) disease; the most recent information regarding thimerosal; parents’ noncompliance because of their misperception that there is no disease risk; how cultural barriers are being addressed when dealing with minority populations to reduce disparities in immunization; delay of vaccination until mandated for school entry; vaccines in the pipeline; and the parameters and cost-benefit of developing new vaccines.

The initiative was intended to inform the policy making process. By encouraging questions and dialogue, the briefing delivered the public health messages familiar to the immunization community regarding vaccine safety.

The following congressional members were represented at the briefing, Vaccines: Our Children Are Worth A Shot:

- Senator Jeff Bingaman, D-NM
- Senator Christopher Bond, R-MO
- Senator Barbara Boxer, D-CA
- Senator John B. Breaux, D-LA
- Senator Hillary Rodham Clinton, D-NY
- Senator Christopher J. Dodd, D-CT
- Senator Richard J. Durbin, D-IL
- Senator John Edwards, D-NC
- Senator James M. Inhofe, R-OK
- Senator Jack Reed, D-RI
- Senator John D. “Jay” Rockefeller, D-WV
- Congressman Dan Burton, R-IN
- Congressman Jim Cooper, D-TN
- Congressman James C. Greenwood, R-PA
- Congressman Ralph Regula, R-OH
- Congressman Henry A. Waxman, D-CA

Sixth Annual Conference on Vaccines Research, May 5-7, 2003

The National Foundation for Infectious Diseases (NFID), in collaboration with the Sabin Vaccine Institute and a number of other organizations, will host the Sixth Annual Conference on Vaccine Research on May 5-7, at the Crystal Gateway Marriott in Arlington, Virginia. Expert faculty from various disciplines will present the latest vaccine-related scientific data, results, and issues via symposia and panel discussions. The program includes symposia on the Long-term Impact of Vaccination Strategies on Disease Epidemiology; Vaccines and Biodefense; Vaccine Supply: Global Crisis; Regulatory/Suppressor T Cells: Implications for Vaccinology; Vaccines Against Nosocomial Infections; Vaccines for Zoonotic Diseases; Malaria Vaccines; and Hot Topics in Immunology.

The 2003 conference will include a keynote address on Effector and Memory T Cells featuring Antonio Lanzavecchia, MD, director of the Institute for Research in Biomedicine in Bellinzona, Switzerland.

The 2002 conference was attended by more than 500 scientists, physicians, and veterinarians from around the world, including epidemiologists, microbiologists, immunologists, molecular biologists, vaccine researchers, and public health officials. Attending physicians can register for continuing medical education credits.

For registration information, contact the National Foundation for Infectious Diseases at (301) 656-0003 x19, or by e-mail at vaccine@nfid.org, or you may visit the conference website at www.nfid.org/conferences.
Looking Back, Moving Forward
*The Sabin Vaccine Institute at 10 Years*

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Chanock, MD, a close friend and contemporary of Dr. Sabin. Maj. Gen. Philip K. Russell, MD (USA Ret.), an expert on infectious diseases and biological warfare, stepped forward to serve as the Institute’s founding president. Many others whose backgrounds exemplified the enormous potential of vaccines worked to get the Institute off the ground and into a position of influence amidst the vaccine research, public health, and global community. The entire cast of founding organizers kept the Institute on track despite its broad focus on the many aspects of vaccine advocacy that urgently presented themselves from the start.

Today, with national and global recognition, an $18 million Bill and Melinda Gates Foundation grant to develop a hookworm vaccine, and global and domestic projects, the Sabin Vaccine Institute has established a strong record of successful initiatives. The pictorial on these two pages shows various highlights of a vital research and advocacy activities organized by the Sabin Vaccine Institute in the critically important vaccine field.

### 1993-1998

H.R. Shepherd, Sabin Vaccine Institute Chairman, addresses attendees at 1998 reception at George-town University in Washington, D.C.

Sabin Vaccine Institute Trustees Carol Ruth Shepherd, left, and Heloisa Sabin confer during a 1998 celebration in Washington, D.C.

Scientific forums on vaccine topics quickly became the trademark of the Sabin Vaccine Institute. At a 1997 forum, above, Robert Gallo, MD, co-discoverer of the HIV virus that causes AIDS, confers with H.R. Shepherd.

### 1999

**Education**

From 1999 to 2001, the Institute sponsored prizes in infectious disease research to high school students convened at the Intel International Science and Engineering Fair.

**Recognizing Achievement and Humanitarianism**

Since 1996, Steuben glass eagles have been presented annually by the Sabin Vaccine Institute to Lifetime Achievement Award and Humanitarian Award recipients.

Dr. Philip K. Russell (center) recipient of the 1999 Albert B. Sabin Gold Medal, is flanked by Sabin Vaccine Institute Chairman H.R. Shepherd and Dr. Sue Bailey, Assistant Secretary of Defense for Health Affairs. Dr. Bailey praised Dr. Russell’s contributions to disease research and vaccine development as a major general and Commander of the U.S. Army Medical Research and Development Command.
2000

Research

Peter J. Hotez, MD, MPH, depicted here with a Honduran child, is principal investigator for the Sabin Institute’s Hookworm Vaccine Initiative. The work is funded by an $18 million research grant awarded in 2000 from the Bill and Melinda Gates Foundation and is being conducted at The George Washington University, where Dr. Hotez is chairman of the Department of Microbiology and Tropical Medicine. He also is chairman of the Institute’s Scientific Advisory Council.

Cold Spring Harbor was the site for the 2000 Colloquium of the Sabin Vaccine Institute, attended by, from left, Carol Nacy, PhD, Sequella; Karin Holm, IPPH Global Health Research; and Philip Russell, MD, SVI Founding President.

Sabin Vaccine Institute Colloquia at Cold Spring Harbor Laboratory, 1994-2003

2002

H.R. Shepherd was recognized in 2001 with an honorary DSc degree from The George Washington University.

Guests revel at the 2002 Awards Dinner at The Pierre Hotel in New York City.

2003 . . .

Ciro de Quadros, MD, heads up International Programs for the Institute, including projects addressing rotavirus and rubella. Dr. de Quadros was a leader in both the smallpox and polio eradication programs.
President Details *Project BioShield*

*SVI’s Philip Russell, MD Provides Expertise on Defense Against Bioterrorism*

In his State of the Union Address in late January, President Bush announced *Project BioShield*, which the White House calls “a comprehensive effort to develop and make available modern, effective drugs and vaccines to protect against attack by biological and chemical weapons or other dangerous pathogens.” He included *BioShield* in the Federal FY04 Budget request now being considered by Congress.

*Project BioShield* was conceived to ensure that resources are available to pay for “next-generation” medical countermeasures. The novel program will allow the government to buy improved vaccines and drugs to treat such bioterror agents as smallpox, anthrax, and botulinum toxin. Use of this authority is currently estimated to be $6 billion over ten years. Funds would also be available to develop countermeasures to protect against other dangerous pathogens, such as Ebola and plague.

“The president’s *BioShield* Initiative is basically a legislative initiative on the part of the administration freeing obstacles to very rapid development of biological products,” said Maj. Gen. Philip K. Russell, MD (USA Ret.), special advisor on vaccine development and production, Office of the Assistant Secretary for Public Health Emergency Preparedness, U.S. Department of Health and Human Services. “In order to manufacture this large list of products in very large volume we need special procurement authority.”

The new initiative would strengthen development capabilities at the National Institutes of Health (NIH) to accelerate research and development on medical countermeasures based on the most promising recent scientific discoveries. It would also give the Food and Drug Administration (FDA) the authority to rapidly approve promising investigational treatments for emergency situations. FDA can judiciously use its new authority to make the newest treatments widely available to patients who need them in a crisis.

According to the White House, the national stockpile of medical countermeasures is extensive and it can be accessed more rapidly than ever before. Additional diagnostic tests, drugs, and vaccines are under development. However, the medical treatments for some types of bioterrorist attacks have seen little recent improvement. *BioShield* will bring researchers, medical experts, and the biomedical industry together in a new and focused way to develop treatment breakthroughs for bioterrorism.

“As we worked through the budget process we garnered the very strong support of the Office of the Vice President,” Dr. Russell said. “The vice president also asked what other initiatives can help this process along. So we included in the final legislation an initiative for streamlining the current processes at NIH and a legislative initiative for FDA work.”

NIH’s usual methods for supporting research and development on conventional diseases, while extremely effective in those areas, may not always be suited to meet the urgent demands posed by the risk of terrorism. Under the *BioShield* authority, technical experts could be rapidly hired and NIH could more quickly execute research grants and contracts.

How would the special authority to engage *BioShield* be invoked? The Secretary of Homeland Security and the Secretary of Health and Human Services will collaborate to identify critical medical countermeasures by evaluating potential threats. New biomedical research initiatives will be developed in view of public health requirements and appropriate NIH programs would be created to speed research and development for medical countermeasures.

“The strategy we put in place is to overlap several of the activities we usually do end to end,” Dr. Russell said. “For instance, with the smallpox vaccine the manufacturing will be completed prior to completion of a Phase II trial. For all of these products, we expect to have them in the stockpile while the regulatory process is underway and they go through testing for effectiveness and safety on their way to licensure.”

New FDA “emergency use authorization” would also be implemented for promising medical countermeasures under development. Some of the most promising treatments for a terrorist agent may still be under formal FDA review when an attack occurs. *BioShield* would permit the effective use of such treatments in an emergency, if alternative treatments are not available. This will improve access to a potentially beneficial treatment in an emergency situation, when it is most likely to save lives, even if it has not yet been proven to be suitable for routine general use or has not completed the formal process for full FDA licensure.

The extraordinary authorization is carefully written not to undermine existing FDA licensing processes. *BioShield* would supplement the traditional FDA licensing process, ensuring that the government could respond effectively in a crisis with a medical countermeasure. These countermeasures would be deemed by experts to be safe and effective, even though they have not completed the formal FDA review process. This authority is very narrowly focused and targeted only at drugs and vaccines under the direct control of the U.S. government. It would only be invoked after certain certifications had been made, and civilian use of the treatments would be voluntary.

The *BioShield* program provides a stable funding source for the pharmaceutical industry to produce drugs and vaccines for the national stockpile. “The really exciting thing about this to me is that it produces a mechanism for the government to assure a financial incentive,” Dr. Russell said. “We need a solid manufacturing base to build the vaccines. For a long time there was a problem showing long-term support.”

(This article draws upon White House press statements and Dr. Russell’s presentation at the National Vaccine Advisory Council meeting on February 5, 2003.)
New Leaders Take the Helm at PAHO and WHO

In the past few months, two international organizations that coordinate and conduct public health activity around the globe have chosen new leaders to govern their international programs. The Pan American Health Organization (PAHO) and the World Health Organization (WHO) both conduct vaccine purchase and immunization programs that reach millions around the world.

Dr. Mirta Roses Sets Commitments as New Director of the Pan American Health Organization

Renewing her commitment to work for public health in the Americas, Dr. Mirta Roses Periago was sworn in January 31 as the new director of the Pan American Health Organization (PAHO), becoming the first Argentine and first woman to lead the Organization. “We are committed to health for all, to the strategy of primary health care strategy, to health promotion, and to the reduction of inequities and social exclusion,” Dr. Roses said. PAHO works with all the countries of the Americas to improve the health and living standards of all their peoples. It also serves as the Regional Office for the Americas of the World Health Organization.

In her inaugural speech, Dr. Roses recalled her first paid public health job as a door-to-door vaccinator in the smallpox eradication campaign of 1965. “I feel very moved after 38 years to continue serving health in the Americas,” she said. “The focus of my attention will be working in and with the countries. Faithful to my profession as an epidemiologist, I will seek contact with the communities and observe the projects in the field.”

“This Director and her team will be defending your health,” Dr. Roses declared in her first address as director. She said she will give special importance to the fight against the AIDS epidemic, focusing on the countries of the Caribbean, and to improvements in health conditions in priority countries, particularly Haiti, she said.

After thanking outgoing Director Dr. George Alleyne and a host of well-wishing dignitaries, Dr. Roses said, “I reaffirm my commitment with emotion and pride as the first woman to assume the direction of this centenary and prestigious Organization and to guide it at the beginning of this new Millennium.”

Ciro de Quadros to Direct International Programs for SVI

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Ciro de Quadros to Direct International Programs for SVI

University; and adjunct professor in the Department of Microbiology and Tropical Medicine at The George Washington University.

Dr. de Quadros is a member of the American Public Health Association, American Association for the Advancement of Science, National Council for International Health, American Society of Tropical Medicine and Hygiene, and the New York Academy of Sciences. Among his awards are the World Health Organization’s Order of the Bifurcated Needle, for his contribution to smallpox eradication; the International Child Survival Award from UNICEF and the Carter Center, for personal contribution to polio eradication; the Prince Mahidol Award of Thailand, for his contribution to polio eradication in the Americas; the Order of Rio Branco of Brazil, for contributing to improving the health of the peoples of the world; and this past February he received the Order of Public Health from the Government of Bolivia. He is the recipient of numerous other honors.

Jong-Wook Lee, MD Begins New Role as Director-General of the World Health Organization

The Executive Board of the World Health Organization nominated Dr Jong-Wook Lee to become the organization’s director-general this coming July. The post is WHO’s chief technical and administrative office and Dr. Lee will be charged with setting the policy for the Organization’s international health work.

Dr. Lee received his medical degree from Seoul National University and a master of public health degree from the University of Hawaii. During the past 19 years with WHO, he held technical, managerial and policy positions, notably leading the fight against two of the greatest challenges to health and development: tuberculosis and vaccine preventable diseases of children. After heading the WHO Global Programme for Vaccines and Immunization and serving as a senior policy advisor, in 2000 he became director of the Stop TB program, a coalition of more than 250 international partners including WHO member states, donors, non-governmental organizations, industry and foundations.

Dr. Lee, a South Korean national, will succeed Dr. Gro Harlem Brundtland, a former Norwegian prime minister, who is stepping down following a single term. Dr. Lee will begin a five-year term on 21 July 2003. His nomination is expected to be approved at the 56th World Health Assembly scheduled to meet in Geneva from May 19-28, 2003.
Genetics and genomics are cutting-edge research fields today, offering enormous medical potential and opportunity for therapeutic innovations. Just 50 years ago, the structure of DNA was hardly understood and a new discovery offered a breakthrough of immense proportions. Dr. James Watson and Dr. Francis Crick determined how deoxyribose nucleic acid (DNA) is structured and governed and launched a sort of scientific revolution.

At the time of their landmark discovery in 1953, the chemical structure of DNA was known, as were its bases—GCAT, their pairing—G=C and A=T, and that they were strung along polyphosphate chains. Still to be discovered was how they were arranged into strands to make chromosomes, the basic building blocks of life. Using x-ray crystallography and chemical bonding information, Dr. Watson and Dr. Crick were able to describe the double helical structure. Their discovery won for them the Nobel Prize and publication in such leading journals as Nature. This discovery opened the window into the three-dimensional double helix structure, therefore making it possible to understand the function of genes and their mutations.

This year, the Cold Spring Harbor Laboratory on Long Island, New York, celebrates this landmark discovery along with the role the Laboratory has played as a research base for investigations in genetics. A featured scientific meeting of the anniversary commemoration was the conference on Biology of DNA, held from February 26 to March 2, 2003.

The conference featured noted speakers, including Nobel laureates, who recounted their discoveries, including developments on the enzymatic and structural processes involved in DNA replication, translocation and expression (see list). The impact on subsequent research illustrated the progression in science that has led up to modern sophisticated technologies and techniques in the field. Those scientists who came more recently to the field also participated. Computer graphics, fluorescence techniques, and molecular modeling created a staggering depiction of the cellular and molecular events associated with DNA and chromosomal synthesis and replication, and ultimately expression.

The degree of sophistication among techniques in the field was on display at the meeting. Researchers can boast an understanding of how three billion base pairs are linked to make life as we know it. With the accumulation of the base compositions of the 30,000 human genes elucidated by the Human Genome Project, it has become possible to envision an “encyclopedia” containing the determination of how we are uniquely different from plants and other forms of life.

The impact of the Human Genome Project on molecular biology is outstanding. The technical achievement to assess the base sequences of a number of species is itself remarkable…such that millions of base sequences can be calculated per day and fed into “public” databases to be analyzed by all scientists. This information has spawned a new field of informatics, which scans large libraries of data to derive new discoveries.

Take for example, the comparison of genome homology of gorillas, chimpanzees, Neanderthals and humans—this analysis can yield not only the sequence of evolution but also determine the millions of years between each evolutionary deviation that occurred. Similarly by comparing genomic homology amongst Africans, Europeans, and Asians, the tree of human life can be established and the spread of the human race timed. Non-genetic DNA in the chromosome (80 percent of the total) and in mitochondria also may be very important in dictating human variation.

The events surrounding the 50th year celebration showcased senior researchers who were part of the early discoveries in the genetics field as well as the promise of new discoveries in the field assured by a new generation of investigators.

For those anticipating an impact of genetics discoveries on the vaccine field, significant understanding has already been gleaned from the concepts elucidated by Dr. Watson and Dr. Crick. DNA defines “self.” It is this characteristic that enables the nervous system and the immune system to recognize what is “self” and what is the “other,” and to react appropriately. Immunologic response is rooted in this concept, and the immune system, in defense of self, conveys vaccine-induced protection from pathogen challenge.

—by John W. Hadden, MD
mechanism to identify children with symptoms that might represent intussusception, which can be assessed and treated by a quality-care facility.

Since the new generation vaccines being tested are both live, oral vaccines, one might question whether it will be any better than the rhesus vaccine that was licensed in 1998. In fact, we won’t know the safety profile of these two vaccines until 60,000 children have been immunized and we can assess whether these children develop intussusception. Nonetheless, for the GSK vaccine, we have no evidence that natural human rotavirus is implicated as a cause of intussusception, so we hope that this holds for the vaccine as well. For the Merck vaccine, the bovine strains replicate less than the rhesus strains and cause less fever than the rhesus strains, meaning they are more attenuated. We hope that these milder infections will also be associated with fewer adverse events.

SVR There has been some controversy over the withdrawal of the 1998 vaccine because intussusception cases were few and the cases of children who die as a consequence of rotavirus are tremendously greater in number—between 600,000 and 800,000 per year. How does this dilemma impact the urgency of making a rotavirus vaccine available? Is the rotavirus vaccine a good case study on rethinking the benefit versus risk of vaccines, in general?

CdQ The risk-benefit analysis of rotavirus is quite different in developed and developing countries. In the United States, few children die of rotavirus and the disease is generally mild. Consequently, a vaccine with any adverse event poses an unacceptable risk. In developing countries where one in 250 children die of rotavirus, even a vaccine with a small risk of an adverse event could still be effective in preventing this most common cause of death in children. This is a true dilemma in vaccine delivery, with many economic, political and cultural overtones. However, with the trials ongoing and new vaccines preparing for future tests, we can develop a vaccine that is as effective as the first vaccine, but with a safer profile and fewer adverse events.

SVR I’ve heard that there can be different strains or serotypes of rotavirus. Are these different serotypes distributed geographically so that different kinds of cases would appear in say Latin America, than Africa or North America?

CdQ There are four or five main serotypes of rotavirus found worldwide. The vaccine—to be effective—must cover these principal serotypes. At the same time, the common serotypes in the United States are also common in Latin America and worldwide; however, in some countries like Brazil, unusual serotypes have emerged, perhaps from contact with cows or pigs, which also have rotavirus. Some evidence exists that genes of rotavirus of animal origin can reassort and infect humans. These situations appear to be rare, but will require some monitoring of strains over time. Trials of the new vaccines are about to be conducted in many countries of Latin America, Asia, and the United States and Europe. At the same time, a vaccine has already been licensed in China and several other new vaccines could be licensed in India and Indonesia in five to seven years.

SVR How would this differentiation be addressed in a new vaccine?

CdQ The only way to know if a new vaccine will work against the main serotypes of rotavirus is to conduct large-scale field trials in a variety of settings. These studies are planned and will be ongoing shortly, and should give us an answer to these important questions in a couple of years.

SVR What about the clinical trials for a new vaccine? What will they entail?

CdQ Trials need to be large, with active follow-up for intussusception, and are relatively costly. It is unfortunate with rotavirus that we have no good proxy for protection from vaccine. Consequently, the only way to assess the efficacy of a new vaccine is through a large-scale clinical trial. Large-scale clinical trials of both the GSK and Merck vaccines are ongoing, so it conceivable that these vaccines could be licensed in two to four years.

SVR What is the global outlook for a vaccine once it is licensed?

CdQ Our hope for the global agenda is that in 10 years, we would be able to immunize 80 percent of the world’s children against rotavirus and decrease rotavirus mortality by 60 percent.

SVR Do you imagine rotavirus ultimately will be on the recommended childhood immunization schedule?

CdQ Absolutely, yes!
The Sabin Vaccine Institute Board of Trustees elected Lance Gordon, PhD, to its membership during its meeting this past February. Dr. Gordon is chief executive officer of VaxGen, Inc., the California-based biopharmaceutical company whose AIDS vaccine trials were so closely followed the world over this past year.

“Lance Gordon’s name is virtually synonymous with cutting-edge vaccine development and we’re entirely pleased that he is now a member of the Institute’s board of trustees,” said H.R. Shepherd, chairman. “He’s been in the vaccine business, making progress in an industry that has struggled to stay alive. He understands the critical importance of vaccines in modern health care and his name is the first to come to mind regarding the current state of the art in vaccines.”

Dr. Gordon is an expert vaccine scientist and entrepreneur who has held a number of senior executive management roles in biopharmaceuticals. Prior to joining VaxGen in 2001, he served two years as North American director for Peptide Therapeutics Group. He was the founding president and chief executive officer of OraVax from 1990 though 1999.

In the late 1980s, Dr. Gordon led Selcore Laboratories, Inc., as CEO, as well as its successors, American Vaccine Corporation and North American Vaccine, Inc. He was associate director, Infectious & Inflammatory Diseases, Clinical Pharmacology—Drug Medical Affairs, of E.R. Squibb & Sons, Inc., pharmaceutical company. He was research director with Connaught Laboratories for six years in the early and mid 1980s, before its merger with Pasteur Mérieux, which later emerged as Aventis Pasteur.

During his seven years with Connaught, Dr. Gordon was responsible for both bacterial and viral vaccine research and development programs as well as for scientific support of licensed products. He was also the inventor and project director of the Connaught Haemophilus influenzae type b conjugate vaccine, ProHibit®. Dr. Gordon serves on the advisory board of BioSciences Contract Production, a private biopharmaceutical services company. He is a member of the Scientific Advisory Council of the Sabin Institute and is a Fellow of the U.S. Medicine Institute. He is a consultant on vaccine related issues to the Partnership for Appropriate Technologies in Health, the United Nations Children’s Fund, and the World Bank.

Dr. Gordon is a graduate of the University of California at Humboldt and from the University of Connecticut, where he received his PhD in biomedical science. Dr. Gordon completed his postdoctoral fellowship with the Howard Hughes Medical Institute at Washington University Medical School in St. Louis, Missouri.

The Iditarod—The Last Great Race

Famous Sled Dog Race Reenacts Heroic Effort in 1925 to Arrest Diphtheria Outbreak

An epidemic of the disease diphtheria loomed over the small town of Nome, Alaska in 1925. A serum was needed to inoculate the townspeople but it was in short supply. Bad weather in the area kept airplanes from Fairbanks on the ground. The serum was instead rushed from Nenana to Nome—about 675 miles—by dog teams. The medicine was relayed the distance in just 127.5 hours.

The Iditarod Trail Sled Dog Race is run to commemorate the historic serum run. The race begins in Anchorage during the first weekend in March and ends about 10 days later in Nome.}

The name “Iditarod” refers to an Athabaskan term for their inland hunting ground—“the distant place.” A trail from Nome through Iditarod and on to Seward, the major seaport in southern Alaska, originally called the Seward Trail, later became known as the Iditarod Trail.

The Iditarod is also called the “Last Great Race on Earth.” Today competitors navigate across 1049 miles of the Alaska’s roughest terrain, including jagged mountain ranges, frozen rivers, dense forests, desolate tundra, and miles of windswept coast. Each team of 12 to 18 dogs and their musher endures temperatures far below zero, winds that can cause a complete loss of visibility, long hours of darkness, and treacherous climbs.

The original Iditarod was a race against time and the ravages of a deadly disease. One can only imagine the relief and satisfaction of the mushers in 1925, whose efforts averted the progress of the diphtheria epidemic by transporting the vital serum. This year’s winner, Robert Sorlie of Norway, was the first European musher to continue the tradition and cross the Iditarod finish line. He finished the race in 9 days, 15 hours, 47 minutes and 36 seconds.
Deborah Wexler, MD believes in being well informed. Her work, her passion, and her life is seeing to it that healthcare providers—along with an often misinformed public—are well informed about immunizations and the catastrophes that can result when complacency sets in on this health topic.

Dr. Wexler is the founder and executive director of the Immunization Action Coalition (IAC), a nonprofit organization she started from grassroot efforts to boost immunization rates and thus prevent disease. Today it is an information clearinghouse helping healthcare providers to stay abreast of immunization requirements, benefits, and breakthroughs. The information published by IAC is available on the organization’s website www.immunize.org and includes pediatric and adult immunization schedules and practical vaccine information and guidelines not only for physicians but for the public as well. In fact, some of the information has been translated into 29 languages!

Dr. Wexler graduated from the University of Minnesota with an undergraduate degree in biology in 1975 and a medical degree in 1982. As a medical resident in the University of Wisconsin Madison’s Department of Family Medicine and Practice, she trained at the community-based program in Eau Claire, Wisconsin. There she became interested in hepatitis B prevention as she treated refugees from Southeast Asia, where there is a high rate of hepatitis B infection. She developed a clinic-wide tracking system to ensure that these refugees received vaccinations against hepatitis B or were followed for liver disease.

In 1988, while working at a community health center in St. Paul, Minnesota, she again treated refugees regularly and discovered that most of the refugees and their children citywide were not getting screened for or vaccinated against hepatitis B.

Because of this, Dr. Wexler and other public health and healthcare professionals formed the Hepatitis B Coalition. The Hepatitis B Coalition promotes hepatitis B vaccination for all children up to 18 years of age, screening for all pregnant women, testing and vaccination for high-risk groups, and education and treatment for people who are chronically infected with hepatitis B. In 1994, the Hepatitis B Coalition became an official program of IAC when IAC was granted tax exempt status.

IAC has grown from having just one staff member to an operation of eight full-time and two part-time employees, with several consultants who assist in program development, grant writing, and web site development. Today the IAC has a $1 million budget.

A major focus of the IAC is its publication of three newsletters twice a year which provide helpful, practical immunization information for health professionals and the public. NEEDLE TIPS (illustrated by Dr. Wexler’s children) is a 28-page newsletter mailed to 200,000 health professionals; VACCINATE ADULTS! is mailed to 180,000 adult medicine specialists; and VACCINATE WOMEN is mailed to 35,000 obstetrician/gynecologists and others who are concerned with women’s health issues.

All IAC’s information is available on the main web site, www.immunize.org, which provides links to the other websites maintained by the IAC, www.vaccineinformation.org, www.izcoalitions.org, as well as www.hepprograms.org.

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**SAVE THE DATE**

**Wednesday, May 14, 2003**

**Sabin Vaccine Institute Annual Awards Dinner**

*The Pierre Hotel*  
*New York City*
not finding the real cause of autism, but we also risk parents losing confidence in vaccines, resulting in fewer children being immunized. This would leave our youngest vulnerable to diseases that we have only read about in history books, reversing one the world’s most successful public health programs.

A proposed link between autism and vaccines is a distraction that focuses attention away from the real needs of parents of autistic children, namely finding respite care, searching for a child psychiatrist who accepts health insurance, and getting quality special education through public school systems.

Ireland and parts of the U.K. are a case study of what happens when the fear spreads through the media; fears of the “MMR jab” have led to a significant drop in the immunization rate, resulting in a dramatic increase in the number of measles and mumps cases. We often forget that measles is still the single leading killer of children in the world.

With today’s ease of travel, these diseases can quickly be imported into the United States, putting children who are unprotected at great risk of contracting the disease.

Every parent has to decide: is it worth protecting my child from a real, deadly threat or protecting him from a hypothetical, scientifically unproven leap of logic? I chose the former and I am confident I made the right decision.

Peter J. Hotez, MD, PhD is professor and chair of the Department of Microbiology and Tropical Medicine, The George Washington University, and senior fellow of the Albert Sabin Vaccine Institute. He is also visiting professor of the Institute of Parasitic Diseases of the Chinese Academy of Preventive Medicine in Shanghai.

**VIEWPOINT:**
Science Confirms Vaccine Safety

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**SABIN CALENDAR**

**APRIL 2003**

23-25 Boston, Massachusetts

2nd Annual Conference on Advances in Designing Cancer Vaccines

Hilton Boston Back Bay

www.knowledgepress.com/events/10311228.htm

30 - May 2 Bethesda, Maryland

Ninth National Symposium: Basic Aspects of Vaccines

Walter Reed Army Institute of Research

wrair-www.army.mil/News&Events/9symposia/dmbsym.htm

symposium@na.amedd.army.mil

**MAY 2003**

5-7 Arlington, Virginia

Sixth Annual Conference on Vaccine Research

Crystal Gateway Marriott

www.nfid.org/conferences

6 Arlington, Virginia

Albert B. Sabin Gold Medal Award to Samuel L. Katz, MD

Crystal Gateway Marriott

veronica.korn@sabin.org

7-11 New York, New York

8th Conference of the International Society of Travel Medicine (CISTM8)

Marriott Marquis Hotel

istm_europ@csi.com

www.talley.com/ISTM/istm.html

14 New York, New York

Sabin 2003 Awards Celebration

The Pierre Hotel

sabin@sabin.org

19-22 Amsterdam, Netherlands

Phacilitate Vaccine Forum Spring 2003

The Grand Hotel Krasnapolsky

www.phacilitate.co.uk/pages/spring_vaccine/home.html

28-30 Phoenix-Scottsdale, Arizona

The Fifth National Conference on Immunization Coalitions

Westin Kierland Resort and Spa

hsc.usf.edu/publichealth/conted/iz03.html

**JUNE 2003**

2-4 Washington, DC

Biodefense Vaccines, Therapeutics and Diagnostics: Policy, Funding, Development, Testing, Production, and Distribution

www.infocastinc.com/Biodefhome.htm

3-5 Alexandria, Virginia

Chlamydia Vaccine Development

Hilton Alexandria Mark Center

veronica.korn@sabin.org

4-6 Dublin, Ireland

Modern Vaccine Adjuvants & Delivery Systems

The Alexander Hotel

www.meetingsmanagement.com/mvads_2003