

AIDS Vaccine Research Subcommittee (AVRS) Consultation: Early-Life Immunization Strategies against HIV Acquisition

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ABSTRACT This report summarizes a consultation meeting convened by the National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health (NIH), on 12 September 2017 to discuss the scientific rationale for selectively testing relevant HIV vaccine candidates in early life that are designed to initiate immune responses for lifelong protective immunity. The urgent need to develop interventions providing durable protective immunity to HIV before sexual debut coupled with the practicality of infant vaccine schedules supports optimizing infant HIV vaccines as a high priority. The panelists discussed the unique opportunities and challenges of testing candidate HIV vaccines in the context of distinct early-life immunity. Key developments providing rationale and grounds for cautious optimism regarding evaluation of early-life HIV vaccines include recent studies of early-life immune ontogeny, studies of HIV-infected infants demonstrating relatively rapid generation of broadly neutralizing antibodies (bNAbs), discovery of novel adjuvants active in early life, and cutting-edge sample-sparing systems biology and immunologic assays promising deep insight into vaccine action in infants. Multidisciplinary efforts toward the goal of an infant HIV vaccine are under way and should be nurtured and amplified.

IMPORTANCE Young adults represent one of the highest-risk groups for new HIV infections and the only group in which morbidity continues to increase. Therefore, an HIV vaccine to prevent HIV acquisition in adolescence is a top priority. The introduction of any vaccine during adolescence is challenging. This meeting discussed the opportunities and challenges of testing HIV vaccine candidates in the context of the infant immune system given recent advances in our knowledge of immune ontogeny and adjuvant design and studies demonstrating that HIV-infected infants generate broadly neutralizing antibodies, a main target of HIV vaccines, more rapidly than adults. Considering the global success of pediatric vaccines, the concept of an HIV vaccine introduced in early life holds merit and warrants testing.

KEYWORDS HIV, broadly neutralizing antibody, early life, immune ontogeny, vaccine

EARLY-LIFE IMMUNIZATION AGAINST HIV

The implementation of pediatric vaccines against multiple infectious diseases, supported by the WHO Expanded Program on Immunization (EPI), markedly benefits global health by significantly decreasing childhood mortality and morbidity (1, 2). Major progress toward reducing pediatric AIDS has been achieved mainly by scaling up HIV treatment and prevention programs in women, but as the number of children and

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Aids Vaccine Research

Vassil St. Georgiev



Aids Vaccine Research:

HIV Vaccine Handbook Bill Snow,1999 **The Search for an AIDS Vaccine** Christine Grady,1995-05-22 The book is a balanced and comprehensive treatment of an important social issue It is accessible to the general reader and belongs in public as well as academic libraries Religious Studies Review Painsstaking analysis of the knotty ethical problems involved in human subjects research and a well thought out proposal for a community approach to conducting field trials for an HIV vaccine Highly recommended for medical ethicists and anyone concerned about the AIDS epidemic and how HIV research is conducted Kirkus Reviews a carefully reasoned account of how research for and trial of a preventive vaccine differ from the methods used to discover a therapy Booklist I highly recommend reading this book which I would attest to be a thrilling ethically challenging and informative descent into the allopathic solution Ryan Hosken Bastyr University Library Newsletter As the scientific effort to produce an efficacious vaccine continues Grady s work provides an ethical compass that will guide us well regardless of where phase III HIV vaccine trials ultimately occur Journal of the American Medical Association Highly recommended AIDS Book Review Journal A remarkable treatment of a most difficult and complex subject Grady s book is of special merit because it is simple readable and understandable while conveying in depth perceptions that are critical to the reader A useful and essential reference work for those who would engage in the initiative to bring about a resolution of a mighty human health problem Maurice R Hilleman Ph D D Sc Director Merck Institute for Therapeutic Research Dr Grady s important study captures the complexity of the search for an AIDS vaccine with startling clarity Her insights into the full range of forces that shape our national response to AIDS vaccine development should read like signposts to vaccinologists AIDS community activists and most importantly the Public Health Service An impressive contribution Derek Hodel Gay Men s Health Crisis This book is recommended to medical ethicists those involved in non HIV vaccine trials and all persons involved in HIV vaccine trials including investigators sponsors study subjects and communities at risk Journal of Health Politics Policy and Law The creation of a vaccine now seems the best hope for controlling AIDS Yet developing and testing an HIV vaccine raises a host of difficult ethical issues These concerns are the focus of this timely and important book Essential reading for everyone interested in ethics and the conduct of HIV vaccine research **Vaccine Research and Development** Wayne C. Koff,Howard R. Six,2024-11-01 Serving as a complementary series to AIDS Research Reviews edited by Drs Wayne C Koff Flossie Wong Staal and Ronald C Kennedy Marcel Dekker Inc this new series reviews significant advances in immunization research and addresses scientific and public policy challenges for moving candidate vaccines from the laboratory to the population Exploring recent progress in immunology vaccine development and improvement and clinical trials Vaccine Research and Developments analyzes the capacity of lipophilic components to chemically modify peptide and protein antigens and augment their immunogenicity discusses the potential of noninfectious packaging mutants to serve as prototype vaccines provides a novel presentation system for peptide vaccines through the multiple antigen peptide approach examines

the current status and future prospects for contraceptive vaccines and offers perspectives for improving pertussis vaccines furnishes a comprehensive update of vaccine clinical trials and describes the legal policy aspects involved in developing HIV vaccines. Containing over 915 useful references, *Vaccine Research and Developments* is for immunologists, microbiologists, and virologists, molecular and cell biologists, infectious disease specialists, pharmacologists, government and industry drug regulatory personnel, and graduate level students in these disciplines.

Paradigm Changes Are Required in HIV Vaccine Research Marc H. V. Van Regenmortel, 2015-12-08

In his 1962 book *The Structure of Scientific Revolutions*, Thomas Kuhn famously argued that researchers in every field of scientific enquiry always operate under a set of presuppositions known as paradigms that are rarely explicitly stated. In the field of HIV vaccine research, several prevailing paradigms led scientists for many years to pursue unfruitful lines of investigations that impeded significant progress. The uncritical acceptance of reigning paradigms makes scientists reluctant to abandon their mistaken assumptions even when they obtain results that are not consistent with the paradigms. The following five paradigms, which disregard the degeneracy of the immune system, were particularly harmful:

1. There is a primary and intrinsic epitope specific for each B cell receptor and for the corresponding monoclonal antibody. In reality, there is no single intrinsic or real epitope for any antibody, but only a diverse group of potential ligands.
2. Reactions with monoclonal antibodies are more specific than the combined reactivity of polyclonal antibodies. In reality, a polyclonal antiserum has greater specificity for a multiepitopic protein because different antibodies in the antiserum recognize separate epitopes on the same protein, giving rise to an additive specificity effect. By focusing vaccine design on single epitope Mab pairs, the beneficial neutralizing synergy that occurs with polyclonal antibody responses is overlooked.
3. The HIV epitope identified by solving the crystallographic structure of a broadly neutralizing Mab HIV Env complex should be able, when used as immunogen, to elicit antibodies endowed with the same neutralizing capacity as the Mab. Since every anti-HIV bnMab is polyspecific, the single epitope identified in the complex is not necessarily the one that elicited the bnMab. Since hypermutated Mabs used in crystallographic studies differ from their germline-like receptor version present before somatic hypermutation, the identified epitope will not be an effective vaccine immunogen.
4. Effective vaccine immunogenicity can be predicted from the antigenic binding capacity of viral epitopes. Most fragments of a viral antigen can induce antibodies that react with the immunogen, but this is irrelevant for vaccination since these antibodies rarely recognize the cognate intact antigen and even more rarely neutralize the infectivity of the viral pathogen that harbors the antigen.
5. The rational design of vaccine immunogens using reverse vaccinology is superior to the trial and error screening of vaccine candidates able to induce protective immunity. One epitope can be designed to increase its structural complementarity to one particular bnMab, but such antigen design is only masquerading as immunogen design because it is assumed that antigenic reactivity necessarily entails the immunogenic capacity to elicit neutralizing antibodies. When HIV Env epitopes engineered to react with a bnMab are used to select from human donors rare memory B cells secreting bnAbs, this represents antigen

design and not immunogen design The aim of this Research Topic is to replace previous misleading paradigms by novel ones that better fit our current understanding of immunological specificity and will help HIV vaccine development *Hope for the Future : Developing an Hiv/aids Vaccine , HIV Vaccine Research and Development* International AIDS Vaccine Initiative (IAVI),2006-12-01 *AIDS Vaccine Research and Clinical Trials* Scott D. Putney,Dani Bolognesi,1990 Viruses are not cells they are parasites at the genetic level bringing into the cells a genetic apparatus that is directed to producing more virus Vaccination is the best hope for control of the HIV virus the cause of AIDS These 23 research reports and summaries review progress in understanding the virus and its interactions with host target cells the identification of target epitopes for humeral and cellular immune responses to the virus tests that have been conducted on animal models with candidate immunogens and the initial trials in humans Annotation c 2003 Book News Inc Portland OR booknews com **AIDS Bibliography** ,1995-06 **The AIDS Research Program of the National Institutes of Health** Institute of Medicine,Committee to Study the AIDS Research Program of the National Institutes of Health,1991-02-01 This book written at the request of the National Institutes of Health NIH to assist its AIDS program office in planning future directions contains a series of recommendations for ensuring that AIDS research is a well organized well planned and comprehensive long range program leading to the control and eventual eradication of the disease The recommendations are intended to strengthen the planning evaluation and coordination of AIDS research activities ensure their quality and cost effectiveness stimulate further development of promising research areas increase the level of support for AIDS research so that researchers can carry out a comprehensive program and provide the personnel and facilities at NIH needed to conduct and manage an effective efficient AIDS research program The book also identifies barriers in the delivery and financing of health care that are outside NIH s responsibility but that adversely affect its AIDS clinical research efforts and urges federal action to eliminate them **2005 AIDS Vaccine International Conference, Montreal, Canada, September 6-9, 2005** United States. Congress. Senate. Committee on Foreign Relations,2006 *Ethical Considerations in HIV Preventive Vaccine Research* ,2000 This document highlights from UNAID S perspective some of the critical elements that must be considered in HIV vaccine development activities *Biomedical Index to PHS-supported Research* ,1993 *National Institute of Allergy and Infectious Diseases, NIH* Vassil St. Georgiev,2009-07-06 National Institute of Allergy and Infectious Diseases NIH Volume 2 Impact on Global Health covers the scientific aspects of the entire portfolio of NIAID including microbiology and infectious disease HIV AIDS and immunology and vaccines All major diseases and the relevant immunology and vaccine development are described in detail In addition all major NIAID programs initiatives and clinical trials are discussed and illustrate the global involvement of NIAID in biomedical research and its impact on public health worldwide By providing this information the global scientific community will be able to access and benefit from these programs and initiatives **NIAID AIDS Agenda** National Institute of Allergy and Infectious Diseases (U.S.),1995 *Hiv/vaccine Needs - Proceedings Of The Internaional Seminar On*

Planetary Emergencies, 24th Session Richard C Ragaini, 2000-11-07 Contents Opening Session T D Lee K M B Siegbahn A Zichichi D Schlessinger B Simeone L Montagnier W A Sprigg HIV Aids Vaccine Needs W Makgoba R C Gallo S Osmanov M Schechter S Sempala P Thongcharoen D Bix M I Johnston H Wolf S Berkley U Bertazzoni J A Gayle Biotechnology B M Iler Hill R Braun P Campbell M Hughes A Aguzzi Neuropathologies B Ghetti M Rostor P Brown Development Sustainability Focus Africa G Farmer C A Reynolds M Diop S Schmeidl Climate and Weather Predictions P Uhler G Tallia S Nickovic W Thiaw L Wood R Clark M E Abdalla Energy A Skirsky A Gagarinski A Rosenfeld P K Iyengar D Morrison J Ongena Y P Huo Water S Sorooshian Weapons of Mass Destruction J Holzrichter Closing Session A Zichichi Permanent Monitoring Panel Reports C Hutchinson P Brown R Ragaini H Schubert S Sorooshian W Sprigg HIV AIDS Vaccine Needs for Developing Countries Think Tank Workshop G de Th D L Bix F M Buonaguro R Gallo P Thongcharoen G Hunsmann H Wolf S Sempala Fertility Problems Technological and Ethical Issues Workshop D Schlessinger A Serra D Neri Readership AIDS researchers immunologists biotechnologists meteorologists ecologists physicists and social scientists

Biomedical Index to PHS-supported Research: pt. A. Subject access A-H, 1994

World Health Report 2012 World Health Organization, The World Health Report 2012 the biannual flagship report of the World Health Organization focuses for the first time in its history on the theme of research for better health Decisions on healthcare are still made without a solid grounding in research evidence and an impetus is required for this state of affairs to change Aimed at ministers of health the report provides new ideas innovative thinking and pragmatic advice on how to strengthen health research systems WHO and PLoS have launched an initiative to encourage researchers to complement and substantiate the key messages in World Health Report 2012 by creating a special WHO PLoS Collection PLoS invited the submission of papers especially from low and middle income countries on topics related to strengthening of key functions and components of national health research systems The World Health Report 2012 focuses on eight specific areas discussed in the editorial within the theme of No Health Without Research We highlight below some examples of articles previously published in PLoS journals in these specific areas of interest Now iMedPub brings this collection to you within a book *Public Health Aspects of HIV/AIDS in Low and Middle Income Countries* David Celentano, Chris Beyrer, 2008-09-11 It has now been 25 years since the apocryphal report in the CDC Morbidity and Mortality Weekly Report dated June 5 1981 entitled Pneumocystis Pneumonia Los Angeles which announced what was to become HIV AIDS HIV has now affected virtually all countries that have looked for it and has had a devastating impact on the public health and medical care infrastructure around the world HIV AIDS has also disproportionately affected nations with the least capacity to confront it especially the developing world nations in Sub Saharan Africa South and Southeast Asia and the emerging republics of Eastern and Central Asia The pandemic unlike any other disease of our time has had profound impacts on the practice of public health itself bringing affected communities into decision making demanding North South partnerships and collaborations and changing the basic conduct of clinical and prevention trials

research While much has been written in scholarly publications for medical epidemiologic and disease control specialists there is no comprehensive review of the public health impact and response to HIV AIDS in the developing world This edited volume seeks to systematically describe the emergence and form of the epidemics epidemiology the social community and political response and the various measures to confront and control the epidemic with varying levels of success Of particular importance are strategies that appear to have been useful in ameliorating the epidemic while contrasting the situation in a neighboring country or region where contrasting prevention or care initiatives have had a deleterious outcome Common to all responses has been the international multi sectoral response represented by the Global Fund for HIV AIDS Malaria and Tuberculosis the President s Emergency Plan for AIDS Relief and the Gates Foundation among others to promote HIV pharmacologic therapy in resource poor settings The chapter authors will explore the political challenges in meeting HIV AIDS prevention and care in concert with the public health realities in specific country and regional context *Report of the Advisory Committee on Research on Women's Health* United States. Advisory Committee on Research on Women's Health, 2001 **AIDS: The Biological Basis** Benjamin S. Weeks, I. Edward Alcamo, 2009-02-02

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Table of Contents Aids Vaccine Research

1. Understanding the eBook Aids Vaccine Research
 - The Rise of Digital Reading Aids Vaccine Research
 - Advantages of eBooks Over Traditional Books
2. Identifying Aids Vaccine Research
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Aids Vaccine Research
 - User-Friendly Interface
4. Exploring eBook Recommendations from Aids Vaccine Research
 - Personalized Recommendations
 - Aids Vaccine Research User Reviews and Ratings
 - Aids Vaccine Research and Bestseller Lists
5. Accessing Aids Vaccine Research Free and Paid eBooks

- Aids Vaccine Research Public Domain eBooks
- Aids Vaccine Research eBook Subscription Services
- Aids Vaccine Research Budget-Friendly Options
- 6. Navigating Aids Vaccine Research eBook Formats
 - ePub, PDF, MOBI, and More
 - Aids Vaccine Research Compatibility with Devices
 - Aids Vaccine Research Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Aids Vaccine Research
 - Highlighting and Note-Taking Aids Vaccine Research
 - Interactive Elements Aids Vaccine Research
- 8. Staying Engaged with Aids Vaccine Research
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Aids Vaccine Research
- 9. Balancing eBooks and Physical Books Aids Vaccine Research
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Aids Vaccine Research
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Aids Vaccine Research
 - Setting Reading Goals Aids Vaccine Research
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Aids Vaccine Research
 - Fact-Checking eBook Content of Aids Vaccine Research
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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