

2015

# 8th vaccine renaissance: A creative nexus for vaccine developers

Heather Johnson

Lenny Moise  
*University of Rhode Island*

*See next page for additional authors*

Follow this and additional works at: [https://digitalcommons.uri.edu/immunology\\_facpubs](https://digitalcommons.uri.edu/immunology_facpubs)

**The University of Rhode Island Faculty have made this article openly available.  
Please let us know how Open Access to this research benefits you.**

This is a pre-publication author manuscript of the final, published article.

Terms of Use

This article is made available under the terms and conditions applicable towards Open Access Policy Articles, as set forth in our [Terms of Use](#).

## Citation/Publisher Attribution

Johnson, H., Moise, L., Menge, A., Beseme, S., & De Groot, A. S. (2015). 8th vaccine renaissance: A creative nexus for vaccine developers. *Human Vaccines & Immunotherapeutics*, 11(9), 2294-2295.  
Available at: <http://dx.doi.org/10.1080/21645515.2015.1069453>

This Article is brought to you for free and open access by the Institute for Immunology and Informatics (iCubed) at DigitalCommons@URI. It has been accepted for inclusion in Institute for Immunology and Informatics Faculty Publications by an authorized administrator of DigitalCommons@URI. For more information, please contact [digitalcommons@etal.uri.edu](mailto:digitalcommons@etal.uri.edu).

---

**Authors**

Heather Johnson, Lenny Moise, Austin Menge, Sarah Beseme, and Anne S. De Groot

See discussions, stats, and author profiles for this publication at: <http://www.researchgate.net/publication/279967023>

# 8th vaccine renaissance: A creative nexus for vaccine developers

ARTICLE *in* HUMAN VACCINES & IMMUNOTHERAPEUTICS · JULY 2015

Impact Factor: 2.37 · DOI: 10.1080/21645515.2015.1069453 · Source: PubMed

---

READS

18

5 AUTHORS, INCLUDING:



**Leonard Moise**

University of Rhode Island

96 PUBLICATIONS 1,066 CITATIONS

SEE PROFILE



**Austin Menge**

University of Rhode Island

1 PUBLICATION 0 CITATIONS

SEE PROFILE



**Anne S De Groot**

EpiVax, Inc.

213 PUBLICATIONS 3,109 CITATIONS

SEE PROFILE

This article was downloaded by: [University Of Rhode Island], [Austin Menge]

On: 16 July 2015, At: 13:10

Publisher: Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London, SW1P 1WG



## Human Vaccines & Immunotherapeutics

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/khvi20>

### 8th vaccine renaissance: A creative nexus for vaccine developers

Heather Johnson<sup>a</sup>, Lenny Moise<sup>ab</sup>, Austin Menge<sup>a</sup>, Sarah Beseme<sup>b</sup> & Anne S. De Groot<sup>ab</sup>

<sup>a</sup> Institute for Immunology and Informatics, University of Rhode Island, Providence RI USA

<sup>b</sup> EpiVax, Inc., Providence RI USA

Accepted author version posted online: 09 Jul 2015.



[Click for updates](#)

To cite this article: Heather Johnson, Lenny Moise, Austin Menge, Sarah Beseme & Anne S. De Groot (2015): 8th vaccine renaissance: A creative nexus for vaccine developers, Human Vaccines & Immunotherapeutics, DOI: [10.1080/21645515.2015.1069453](https://doi.org/10.1080/21645515.2015.1069453)

To link to this article: <http://dx.doi.org/10.1080/21645515.2015.1069453>

Disclaimer: This is a version of an unedited manuscript that has been accepted for publication. As a service to authors and researchers we are providing this version of the accepted manuscript (AM). Copyediting, typesetting, and review of the resulting proof will be undertaken on this manuscript before final publication of the Version of Record (VoR). During production and pre-press, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal relate to this version also.

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

## **8th vaccine renaissance: A creative nexus for vaccine developers**

Heather Johnson<sup>1</sup>, Lenny Moise<sup>1,2</sup>, Austin Menge<sup>1</sup>, Sarah Beseme<sup>2</sup>, Anne S. De Groot<sup>1,2\*</sup>

<sup>1</sup>Institute for Immunology and Informatics, University of Rhode Island, Providence RI  
USA

<sup>2</sup>EpiVax, Inc., Providence RI USA

\*Corresponding to: Anne S. De Groot; Email: dr.annie.degroot@gmail.com

The Institute for Immunology and Informatics (iCubed) at the University of Rhode Island held its 8<sup>th</sup> Annual Vaccine Renaissance on October 13-16, 2014. The conference serves as an annual nexus for conversations related to vaccine design, discovery, and vaccine acceptance. The annual event strives to provide a unique, interactive forum for the discussion of cutting-edge vaccine research, including the design and use of new tools and techniques for accelerating vaccine discovery. The conference also provides academic researchers, vaccine industry leaders and students of vaccinology with an opportunity to foster new professional relationships. Furthermore, the organizers of the 8<sup>th</sup> Annual Vaccine Renaissance are committed to extending attendance and presentation opportunities to young scientists and ‘scientific minorities,’ such as women, students from historically black colleges and universities (HBCUs), and individuals not native to the United States. The conference organizing committee invites such participants to present their research as a poster, and has organized “meet-the-expert” roundtable discussions as a way of conferring with experts.

Participants contributed to reports about developing vaccines against emerging infectious diseases and research updates on the effect of the human microbiome in responses to

vaccines. Field experts also described new cancer vaccine designs, provided overviews on the current state of animal vaccine research, and reported on HPV vaccine acceptance by at-risk populations. The four-day symposium included a one-day pre-conference, in which participants discussed their research involving the JanusMatrix tool developed by De Groot and colleagues [1]. The last day of the event provided opportunities for attendees gain hands-on experience in a variety of laboratory techniques as well as training on the iVAX suite of bioinformatics tools.

Nearly 100 individuals from industry, academia, and federal agencies such as the Walter Reed Army Institute of Research (WRAIR), the United States Army Medical Research Institute of Infectious Diseases (USAMRIID), the Department of Agriculture (USDA), and the National Institutes of Health (NIH) attended the conference. In addition to luminaries such as Bruno Guy (Sanofi Pasteur), Polly Matzinger (Laboratory of Immunogenetics, National Institute of Allergy and Infectious Disease), Thomas Nutman (Laboratory of Parasitic Diseases, NIH), Amy Rosenberg (Food and Drug Administration), Edward T. Ryan (Massachusetts General Hospital, Harvard Chan School of Public Health). Papers were presented by John Julias (United States Department of Homeland Security), Kimberly A. Kraynyak (Inovio Pharmaceuticals), Steve Meshnick (Department of Epidemiology, UNC Gillings School of Global Public Health) and Peter B. McGarvey (Innovation Center for Biomedical Informatics, Georgetown University Medical Center). Presenters represented a variety of affiliations as well as health-related interests, which stimulated participants to draw inferences and conceive connections between their colleagues' novel ideas and their individual research programs.

After the conference, presenters are invited to submit a manuscript related to their presentation, to the peer-review journal Human Vaccines & Immunotherapeutics (HV&I). Five speakers have accepted the invitation to submit, and their articles can be found within the current issue of HV&I. In this 8<sup>th</sup> compendium of papers, we are pleased to offer a selection of reports that focus on the means to rapidly develop safer, more effective vaccines. In sequential order of authors and their topics is as follows: Moise *et al.* [2] describes the iVAX suite of tools along with their applications for the design of vaccines for Tularemia, Smallpox, H. Pylori, Burkholderia, HCV, Lassa virus or H1N1 and H7N9. Eickhoff *et al.* describe the immunoinformatic strategy and *in vivo* validation of the identification of 30 epitopes that could be used in the design of Chagas disease vaccine [3]. Rose *et al.* discuss the choice of the adjuvant during vaccine design and demonstrate that while the adjuvants do increase the innate response in mice injected with *piggyBac* plasmids, no adjuvant increases the level of transfection of the antigen [4]. Carjaval-Yepes *et al.* developed a cellular model of IFNAR1-knocked-down avian cells that can produce H1N1 viruses and HA protein, and propose an alternative method of production of Influenza vaccines [5]. Lastly, Jamieson discusses the genetic and environmental factors that influence response to vaccination, with a special emphasis on the microbiome [6].

Two additional papers not included in this compendium have been accepted for publication and will be published out soon after the printing of this compendium. In those two manuscripts, Hoffmann *et al.* present their pre-clinical work on the development of a cancer vaccine targeting survivin expressing tumor cells. HIVax peptides expressed in Fowlpox vectors activate antigen-specific CD4<sup>+</sup> and CD8<sup>+</sup> T cells in healthy donors,

providing a rationale to move on to the clinical stage of the vaccine development [7]. Liu *et al.* present an immunoinformatics analysis of H7N9 T cell epitopes, providing a possible explanation for immune resistance to inactivated H7 HA vaccines. The results demonstrate that HA epitopes containing TCR facing residues identical to self-proteins can activate FoxP3<sup>+</sup> Tregs, thus inducing immune tolerance and H7N9 “camouflage” from the immune response [8].

The variety of topics and expertise contained within the following reports is an accurate representation of the Vaccine Renaissance and its attendees. Qualitative exit surveys suggest that participants appreciate the interactive and interdisciplinary nature of the Vaccine Renaissance. The 9<sup>th</sup> Annual Vaccine Renaissance is scheduled to be held November 4-6, 2015 in Providence, Rhode Island, with informatics training held on Friday, November 6<sup>th</sup>. Please visit [www.immunome.org](http://www.immunome.org) for a list of speakers and to view the schedule of events.

Accepted Manuscript



## References

1. Moise L, Gutierrez AH, Bailey-Kellogg C, Terry F, Leng Q, Abdel Hady KM, VerBerkmoes NC, Sztejn MB, Losikoff PT, Martin WD, Rothman AL, De Groot AS. The two-faced T cell epitope: examining the host-microbe interface with JanusMatrix. *Hum Vaccin Immunother*. 2013 Jul;9(7):1577-86.
2. Moise L, Gutierrez A, Kibri F, Martin R, Tassone R, Liu R, Terry F, Martin B, De Groot AS. iVAX: an integrated toolkit for the selection and optimization of antigens and the design of epitope-driven vaccines
3. Eickhoff CS, Van Aartsen D, Terry FE, Meymandi SK, Traina MM, Hernandez S, Martin WD, Moise L, De Groot AS, Hoft DF. An immunoinformatic approach for identification of *Trypanosoma cruzi* HLA-A2-restricted CD8+ T cell epitopes
4. Rose AH, Hoffmann FW, Hara JH, Urschitz J, Moisyadi S, Hoffmann PR, Bertino P. Adjuvants may reduce in vivo transfection levels for DNA vaccination in mice leading to reduced antigen-specific CD8+ T cell responses.
5. Carvajal-Yepes M, Sporer KRB, Carter JL, Colvin CJ, Coussens PM. Enhanced production of human influenza virus in PBS-12SF cells with a reduced interferon response
6. Jamieson AM. Influence of the microbiome on response to vaccination
7. Hoffmann PR, Panigada M, Soprana E, Terry F, Bandar IS, Napolitano A, Rose AH, Hoffmann FW, Ndhlovu LC, Belcaid M, Moise L, De Groot AS, Carbone M, Gaudino G, Matsui T, Siccardi A, Bertino P. Preclinical development of HIvax: human survivin Highly Immunogenic vaccines. *Hum Vaccin Immunother*. 2015 Jun 4:0. [Epub ahead of print]
8. Liu R, Moise L, Tassone R, Gutierrez AH, Terry FE, Sangare K, Ardito MT, Martin WD, De Groot AS. H7N9 T-cell epitopes that mimic human sequences are less immunogenic and may induce Treg-mediated tolerance. *Hum Vaccin Immunother*. 2015 Jun 19:0. [Epub ahead of print]