

Immune Epitope Database NEWSLETTER

Volume 3, Issue 2

<http://www.immuneepitope.org>

April 2006

IEDB Public Beta

The Immune Epitope Database and Analysis Resource (IEDB) was released to the public in a beta version (Release 1.0) on February 15, 2006. A subsequent release with enhancements and bug fixes was made available a month later (Release 1.1). Further releases are planned on a monthly basis for the foreseeable future as the website functionality is revised and augmented. Epitope data continues to be added on a daily basis. As of April 4, the IEDB contained over 1800 literature references accounting for almost 15,000 distinct epitopes. There are an additional 9000 molecular structures in the IEDB for which no positive binding response was measured. The inclusion of such “negative” data will be valuable

to developers of epitope prediction tools. The NIAID Category A-C priority pathogens have been the focus of the curation effort since June 2005, and the curation team anticipates having this segment of the literature complete and up-to-date in the IEDB in the next several months, after which they will begin curating epitope papers related to the NIAID list of emerging and re-emerging infectious diseases. Users can visit our homepage to provide recommendations for improving the IEDB website by using the “Submit Feedback” option found under the “Support” tab.

The IEDB Flu Epitope Analysis Presented at Keystone Symposia

The IEDB project team presented a poster summarizing the Influenza A epitopes curated into the IEDB, at the recent Keystone Symposia held March 28 – April 2 in Steamboat Springs, Colorado. The subject matter was very topical and timely, and generated significant interest. In order to perform this analysis, all available Influenza A references written in English and appearing in PubMed as of 28 February 2006 were curated. The poster abstract is reproduced below:

Antibody and T Cell Epitopes of Influenza A – What Do We Know and What Do We Still Need to Know?

Huynh-Hoa Bui¹, Bjoern Peters¹, Muthuraman Sathiamurthy¹, Erika Assarsson¹, Randi Vita¹, Innocent Mbawuike², Howard Grey¹ and Alessandro Sette¹

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BIODEFENSE AND EMERGING INFECTIONS RESEARCH RESOURCES REPOSITORY

One biodefense research resource program provided by the National Institute of Allergy and Infectious Diseases (NIAID) is a research resource repository called BEI Resources. NIAID established this program to provide unique and quality-assured biodefense and emerging infections related reagents and resources to the scientific community for use in basic research and product development applications. BEI Resources is used to acquire, authenticate, and produce reagents that scientists need to carry out basic research and develop improved diagnostic tests, vaccines, and therapies. Some of the available or upcoming resources include: viruses, bacteria, peptide libraries and monoclonal antibodies. The BEI Resources web page can be found at <http://www.beiresources.org/>.

Principal investigators, laboratory directors, or equivalent in a public or academic institution, and directors of research or equivalent in a private or for-profit institutions from an established institution with appropriate facilities and safety programs can register with BEI Resources to view the full web site and catalog and to request materials.

The American Type Culture Collection (ATCC), has extensive experience in producing and shipping biological materials and was awarded a seven year contract in September 2003 to manage this program. The BEI Resources program reflects a coordinated effort between NIAID, CDC, USDA, and ATCC.

The National Institute of Allergy & Infectious Disease provides other resource programs that are available to the scientific community to use. Please visit page 4 for the web addresses to these other laboratory and biodefense resources.

Journals & Articles

Recommended Reading

Journal of Virology

2005 Jun;79(12):7402-9.

PubMed ID: 15919896

Parker TD, Kitamoto N, Tanaka T, Hutson AM, Estes MK

Department of Molecular Virology and Microbiology, Baylor College of Medicine, One Baylor Plaza, Mail Stop BCM-385, Houston, TX 77030, USA

Identification of Genogroup I and Genogroup II broadly reactive epitopes on the norovirus capsid.

Russell's Review: The Norwalk virus is the prototype member of the genus Norovirus that is responsible for 98% of all nonbacterial acute epidemic outbreaks of gastroenteritis ("stomach flu") in the United States including the widely publicized outbreaks on cruise ships. In this paper, the authors identify the epitopes in the C-terminal region of the Norwalk virus capsid protein for two distinct monoclonal antibodies that are used in a commercially available ELISA-based diagnostic kit.

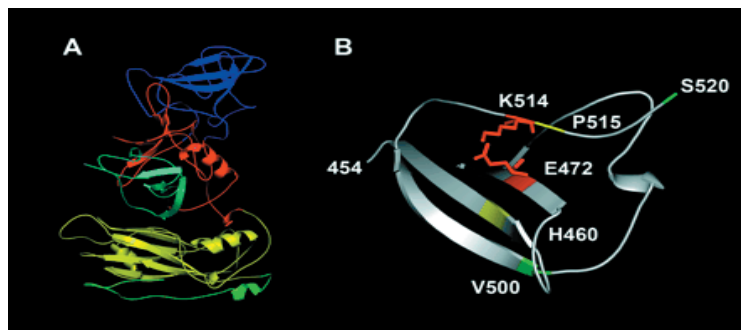


FIG. 3. Location of critical residues within the MAb NV3901 and MAb NV3912 binding region. (A) Ribbon diagram of the complete VP1 monomer with residues 454 to 520 shown in cyan. (B) Magnified minimal binding region. Residues that are essential for binding of MAb NV3901 and MAb NV3912 are shown in red (K514 and E472), residues that enhance binding are shown in yellow (H460 and P515), and residues that do not affect binding are shown in green (V500 and S520). Positions within the NV sequence are indicated.

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American Association of Immunologists 2006 Annual Meeting

May 12-16, 2006
Hynes Convention Center
Boston, Massachusetts

As part of our efforts to promote the IEDB, Bjoern Peters, Kerrie Vaughn, and Nima Salimi will be attending the annual meeting of the American Association of Immunologists as our booth exhibitors. Stop by booth #122 in the northwest corner of the exhibit hall at your convenience to ask questions and receive information on the database. If you have wondered how to conduct a query or use the analysis tools, how information is curated into the IEDB, how to submit epitope information, or have other questions, this is a good chance to get them answered as well as meet members of our staff.

For those of you who are unable to stop by our booth, remember that you can always email us at contact@immuneepitope.org.

Conferences & Meetings

Presentations by IEDB Staff

Bioinformatics Resource Centers & Inter-Operability
Working Group Meeting
“IEDB Tools”
February 6-7, 2006

ASM Biodefense Research Meeting
“A Roadmap for the Immunomics of Category A-C
Pathogens”
February 15-18, 2006

Ontology Workshop: Focus on Immunology
“Data Representation in the IEDB”
March 21-22, 2006

The Immune Epitope Database and Analysis Resource (IEDB) was recently developed to capture epitope related data, and is publicly available at www.immuneepitope.org. An analysis resource linked to the database hosts various bioinformatics tools which can be used to identify novel epitopes as well analyze and visualize existing epitope data. Herein we report the results of a comprehensive analysis of antibody and T cell epitopes of influenza A virus. Although a great amount of knowledge is available, results from the current analysis identified five areas of knowledge gaps including: 1) Determination of protective antibody and T cell epitopes (only a few were reported in the literature), 2) Paucity of antibody epitopes in comparison to T cell epitopes, 3) Limited number of animal hosts from which the epitopes were studied, 4) Limited number of epitopes reported for avian influenza strains/subtypes, and 5) Besides HA and NA proteins, there was relatively fewer epitopes reported for the other eight proteins. As a step in preparing for possible pandemic influenza outbreaks, the knowledge gaps identified here would be a useful guide for future research directions in influenza A virus immune epitope identification studies.

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Journal of Immunology

1999 Jun 15;162(12):7578-83
PubMed ID: 10358215

Julie Jameson, John Cruz, Masanori Terajima and Francis A. Ennis

Center for Infectious Disease and Vaccine Research,
Univ. of Massachusetts Medical Center, Worcester
01655, USA

*Human CD8+ and CD4+ T Lymphocyte Memory to
Influenza A Viruses of Swine and Avian Species*

Nima's Review: This paper presents data demonstrating human CD8+ and CD4+ CTL cytotoxicity against avian- and swine-derived influenza A viruses, including the 1997 H5N1 influenza A virus isolated in Hong Kong and found to be similar to avian H5N1 viruses.

Laboratory Resources

Title	Description	URL
Biodefense and Emerging Infections Research Resources Repository (BEI Resources)	BEI Resources was established by NIAID to acquire, authenticate, and produce reagents that scientists need to carry out basic research and develop improved diagnostic tests, vaccines, and therapies related to Category A, B, and C priority pathogens and emerging infectious disease agents.	http://www.beiresources.org/
Mutant Mouse Regional Resource Centers (MMRRC)	A repository of mouse stocks and ES cell line collections serving the world-wide genetics and biomedical research community for the benefit of human health.	http://www.mmrrc.org/
NIAID Taconic Exchange Program/Taconic's Emerging Models Program	To foster increased availability to the scientific community of immunologically-related, gene-targeted mouse strains, the NIAID supports the NIAID Exchange Program with Taconic Farms, Inc, as part of their Emerging Models Program. The costs of the Exchange are partially underwritten by NIAID funds to provide the research community with ready access to emerging mouse models. Twenty-one mouse strains currently are available through the Exchange.	http://www.taconic.com/emerging/listing.htm
International Mouse Strain Resource (IMSR)	The IMSR is a searchable online database of mouse strains and stocks available worldwide, including inbred, mutant, and genetically engineered mice. The goal of the IMSR is to assist the international scientific community in locating and obtaining mouse resources for research.	http://www.imsr.org

Biodefense Resources

Title	Description	URL
NIAID Biodefense Research	This site contains biodefense-related information for biomedical researchers, the public, and the media.	http://www3.niaid.nih.gov/biodefense/

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Avian Influenza (Bird Flu) and Food Safety

U.S. Food and Drug Administration (US FDA)
Center for Food Safety and Applied Nutrition

With the current concern of the bird flu virus, one can't help but wonder if humans can be infected by consuming eggs or other poultry products from infected birds. The US FDA has posted extensive information on their website regarding the bird flu topic and they can help us answer this question.

The US FDA states that if eggs and other poultry products are cooked properly, even if they were derived from infected birds, there is no evidence that people can be infected with the Asian bird flu or other bird flu viruses. Food cooked to 165 degrees Fahrenheit or 74 degrees Celsius will kill any trace of the bird flu virus. Also, a severely infected hen will not lay eggs.

Close contact with infected birds have been the primary cause of infection. However, people can play active roles in preventing infections and other foodborne diseases by following these guidelines:

- * Wash your hands with soap and water after handling raw meat and meat products
- * Wash countertops, knives, cutting boards, and other utensils with hot soapy water to prevent cross-contamination
- * Follow recommended cooking times and temperatures. Refrigeration and freezing does not kill the influenza virus
- * For recipes that call for raw or undercooked eggs, use eggs that have been treated to destroy Salmonella or use pasteurized egg products.

For more info on bird flu safety, visit the US FDA website at <http://www.foodsafety.gov/~dms/avfluqa.html>

The Immune Epitope Database is supported by a contract from the National Institute of Allergy & Infectious Disease, NIH, DHHS (Contract #HHSN266200400006C). The newsletter is distributed four times a year. We welcome communication from the users of the IEDB database and invite suggestions for articles in future issues. Upon deployment of the database, we will actively solicit tool and epitope submissions. To subscribe to the IEDB newsletter or contact project staff, send your email information to the email address below.

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