The Antibody Discovery and Protein Science Summit

Monday, June 1, 2009

Tutorial: Immunogenicity Prediction of Antibody and Protein Therapeutics

Please note: Simultaneous translation will not be provided for this tutorial.

Tutorial Schedule: *This session runs from 8:30 am-2:00 pm. There will be a 30 minute refreshment break at 10:15 and lunch from 11:45 am-12:45 pm.*

8:30 **Tutorial Leaders' Opening Remarks**

One of the great surprises of the biologics revolution has been the discovery that recombinant proteins, including monoclonals of human origin, can cause immune responses when administered to immune-competent subjects. Evaluation of the immunogenicity of biologics has been primarily focused on humoral immune response and as a result, the critical contribution of T cells to the development of anti-monoclonal antibodies (also known as anti-drug antibodies or ADA) has been overlooked. The contributions of effector T cells and regulatory T cells to the development of anti-drug antibodies are relevant to good biologics drug design. This review will focus on the role of T-cell-dependent (Td) immunogenicity assessment in the pre-clinical and clinical phases of drug development. Recent published studies that describe regulatory T-cell epitopes contained in the Fc and CH1 domains of IgG (monoclonals) would suggest that the role of Td immune response deserves greater emphasis in the context of immunogenicity screening and assessment for bioengineered protein therapeutics. Recommendations for Td immunogenicity screening and assessment may contribute to the development of safer protein-based drugs for human use.

You will learn about:

- T-cell dependent and T-cell independent immunogenicity
- Immunogenicity screening approaches in the pre-clinical and clinical setting
- The relevance of regulatory T-cell responses to autologous proteins in the context of immunogenicity screening
- "Best practices" for immunogenicity screening
- How to identify assays that are beginning to be requested by regulatory agencies
- Tools and techniques used in preclinical immunogenicity screening that have successfully predicted clinical outcomes.

Tutorial Leaders:

Anne S. De Groot, M.D., *Adjunct Associate Professor of Medicine, Brown University and Founder, CEO & CSO,* **EpiVax, Inc.,** *USA*

Matthew Baker, Ph.D., *Chief Scientific Officer and CEO,* **Antitope Ltd.,** *United Kingdom*

Additional Speakers/Q&A Panelists:

Immune Responses to Beta Interferon and the Effect on Clinical Efficacy

Michaela Lerner, *Senior Manager. Preclinical and Clinical Development Sciences,* **Biogen Idec, Inc.,** *USA*

Taruna Arora, Ph.D., *Principal Scientist, Protein Science,* **Amgen, Inc.,** *USA*

Catherine Wang, Ph.D., *Manager, Clinical Immunology, Biopharm R&D,* **GlaxoSmithKline**

2:00 *Close of Tutorial*

General Session

R&D Strategies to Develop Antibody-Based Therapeutics

2:00 **The New, New Things in Antibody Technology**

The therapeutic antibody market is now well established, mature and growing faster than any other pharmaceutical category. Whether starting a new program, or resurrecting an old one, there is now a wide range of discovery technologies available that need to be evaluated in light of competing, non-antibody drug development approaches.

Kevin Johnson, Ph.D., *CEO,* **PanGenetics,** *United Kingdom*

2:30 **High Affinity Therapeutic Antibody Leads from Phage Display Libraries**

Modern antibody phage display libraries, mined through automated screening approaches, can rapidly generate leads with affinities comparable to those obtained from the secondary immune response. Key aspects of this technology as applied at Dyax Corp will be overviewed, including library design considerations, high throughput methods for affinity determination, and information management challenges and solutions. The success of this technology will be highlighted through several case studies describing rapid discovery of human antibody development candidates.

David R. Buckler, Ph.D., *Director, Alliance Research,* **Dyax Corp.,** *USA*

3:00 *Poster and Exhibit Viewing Refreshment Break*

3:30 **The "ADLib® System": A Unique Platform Technology for Antibody Generation with Alternative Diversity**

The "ADLib® System" is an innovative cellular antibody library technology based on a unique mechanism of antibody diversification and gene conversion. The "ADLib® System" can provide specific antibodies recognizing unique epitopes against very tough antigens such as membrane transfer proteins and evolutionally conserved proteins. Flexible approaches to generate unique antibodies will be discussed with the "ADLib® System".

Masa Fujiwara, *President & CEO,* **Chiome Bioscience, Inc.,** *Japan*

4:00 **Considerations of Quality and Safety in Molecule Design Strategy for Antibody Therapeutics Development**

Designing the best therapeutic molecule starts with the end product profile in mind. Next generation antibodies development should take considerations of safety and manufacturability in addition to improving efficacy. Integration of product characteristics and immunogenicity risk assessment into antibody design early on helps minimize potential risks and accelerate timelines for development. Our new approach deploys a number of tools in screening, designing, and selection process of therapeutic antibody candidates.

Taruna Arora, Ph.D., *Principal Scientist, Protein Science,* **Amgen, Inc.,** *USA*

Keynote Presentations

4:30 **Keynote Introductions**

Osamu Sato, Ph.D., *Director, Head of Medical Writing Group, Clinical Data & Biostatistics Dept, R&D Division,* **Daiichi Sankyo Co., Ltd,** *Japan*

4:35 **From Cancer Genomics to Cancer Treatment: Hope to Reality**

cDNA microarray technologies enabled us to obtain comprehensive data for gene expression profiles of human cancers. We have analyzed more than 1,300 clinical cancer samples of almost of all human organs and identified dozens of candidates applicable for drug development. For example, we developed 50 cancer peptide vaccines and started translational research using some of them (nearly 300 cancer patients have been enrolled by the end of 2008). We also developed antibodies that showed growth-suppressive effect in vivo and/or in vitro. The promising mice data and clinical output of our translational research will be introduced in the meeting.

Yusuke Nakamura, M.D., Ph.D., *Director, Human Genome Center, Institute Medical Science,* **The University of Tokyo**

5:10 **Just Added Keynote: Presentation Title to Be Announced**

Abstract not available at time of print.
Please see www.ibclifesciences.com/Japan for updates.

Kentaro Yoshimatsu, Ph.D., *Senior Vice President, Research & Development,* **Eisai Co., Ltd.,** *Japan*

5:45 *Networking Reception in Poster and Exhibit Hall*

6:45 *Close of Day One*

Tuesday, June 2, 2009

8:30 **Chairperson's Welcome and Opening Remarks**

8:35 **Special FDA Presentation: FDA's Strategy for Predictive Toxicology in New Drug Development: Integrating "Omics" and In Vivo Data into a Regulatory Perspective**

The FDA's Division of Systems Toxicology supports the development of new technologies and facilitates integration of data from multiple technology platforms for application to questions associated with the FDA's Critical Path Initiative. The goals of the Division are to identify markers of adverse drug effects and diseases that can be applied in the move toward personalized medicine and to provide technical expertise and guidance for the inclusion of "omics" and in silico data into the review process. The presentation will also provide an overview of the FDA's current priorities from discovery through NDA from a regulatory perspective.

Donna L. Mendrick, Ph.D., *Director, Division of Systems Toxicology, NCTR,* **U.S. Food and Drug Administration**

Tuesday, June 2, 2009 *(continued)*

9:15 **Audience Interactive Panel Discussion: Approaches to Predicting and Understanding Drug Liabilities**

Ask your questions to the panelists who will address topics including:
Deriving appropriate study designs
Evaluating multiple "omics" data types
Use of imaging and other technologies
Biomarkers of kidney, liver and cardio-toxicity
In silico modeling

Moderator: **Donna L. Mendrick, Ph.D.,** *Director, Division of Systems Toxicology, NCTR,* **U.S. Food and Drug Administration**

Panelists: **Yi Wang, M.D.,** *Head, Preclinical Sciences,* **Alexion Pharmaceuticals, USA**

9:45 *Poster and Exhibit Viewing Refreshment Break*

The Next Wave of Antibody and Protein-Based Therapeutics

10:15 **Chairperson's Welcome and Opening Remarks**

Kevin Johnson, Ph.D., *CEO,* **PanGenetics,** *United Kingdom*

10:20 **Pharmacology of Antibodies Selected for High ADCC Activity**

The generation of monoclonal antibodies with improved effector functions is an area of intensive research. We have established a proprietary technology allowing the selection of antibodies with high contents of non-fucosylated antibodies and enhanced effector activity. In this context, the improved pharmacological properties of a fully human anti-RhD monoclonal antibody and a chimeric monoclonal antibody directed against CD20 will be discussed.

Margarita Salcedo Magguilli, Ph.D., *Director, Pharmacology and Toxicology Department,* **LFB Biotechnologies**, *France*

10:45 **Largest Comparative Study on Expression Improvement by Optimization has Applications in Early Drug Discovery: Improving Target Identification, Binding and Validation**

This presentation describes a large scale comparison of wildtype and expression-optimized versions of 100 human genes selected from the NCBI Entrez database in mammalian expression systems. In the vast majority of cases, expression optimized constructs outperform their native counterparts in protein yield with unaltered protein functionality, clearly demonstrating the benefits of sequence adaptation to the desired application compared to working with the natural sequence. Applications of this approach in drug discovery research will be discussed.

Max Muehlig-Versen, Ph.D., *Vice President Asia-Pacific Operations,* **GENEART AG,** *Germany*

11:15 **Human B-lymphocytes as an Excellent Source of High-affinity Antibodies**

Evec has a technology to generate fully human antibodies utilizing the growth promoting activity of Epstein-Barr virus (EBV) for B-lymphocytes. The antibodies generated have high affinities ~10-12M, because they are derived from naturally immunized human B-lymphocytes. The EBV technology should become a major technology for antibody generation in the future.

Kenzo Takada, M.D., Ph.D., *Chairman,* **Evec, Incorporated,** *Japan*

11:45 **Discovery and Production of Human Therapeutic Antibody Mixtures from Single Clonal Cells**

Preclinical and clinical evidence indicates that mixtures of therapeutic antibodies (mAbs) provide improved efficacy; however, the developmental and regulatory complexity and manufacturing cost of developing multiple mAbs poses a barrier to their use. To address these issues, we developed the Oligoclonics™ Technology, a platform for the production of mixtures of mAbs by single clonal cell lines.

John de Kruif, Ph.D., *Chief Scientific Officer,* **Merus Biopharmaceuticals,** *The Netherlands*

12:15 *Networking Luncheon in Poster and Exhibit Hall*

1:15 **From Pre-clinical to Clinical DARPins**

DARPins are a novel class of tailor-made binding proteins with several advantages over monoclonal antibodies. Recent progress with DARPins in pre-clinical programs underlines their potential as therapeutics with optimal PK and low immunogenicity.

Michael T. Stumpp, Ph.D., *Chief Scientific Officer*, **Molecular Partners,** *Switzerland*

1:45 **Treatment of Cancer by BiTE-activated T cells**

Residual tumor cells as are left after standard cancer therapy pose a high risk for relapse and lethal metastasis. Here, we show that this 'minimal residual disease' can be effectively treated with BiTE antibody blinatumomab, which can eliminate residual tumor cells in the bone marrow of patients with acute B-lymphoblastic leukemia. Blinatumomab is also effective in treating bulky disease of patients with non-Hodgkin's lymphoma.

Patrick Baeuerle, Ph.D., *Chief Scientific Officer, SVP of R&D,* **Micromet AG,** *Germany*

2:15 **Technology Workshop**

IBC's technology workshops offer suppliers and service companies the opportunity to present their exciting technologies in drug discovery and development during the conference sessions. For more information on presenting a technology workshop at this meeting, please contact Michael Keenan at mkeenan@ibcusa.com

2:45 **Accelerating Drug-Like Antibody Fragments to the Clinic**

ESBATech is developing single-chain Fv antibody fragments as therapeutics for topical application. Our platform technology allows us to make drug-like antigen specific fragments against any given target. By using these scaffolds we generated an anti-TNF antibody that is currently in early clinical development for the therapy of acute anterior uveitis by application in eye drops. This case study will show how we generated and improved this anti-TNF scFv with excellent drug-like properties and good efficacy by applying a novel approach in protein engineering.

David Urech, Ph.D., *Head of Research and Preclinical Development,* **ESBATech,** *Switzerland*

3:15 *Poster and Exhibit Viewing Refreshment Break*

3:45 **Developing a Novel anti-TNF Therapy Incorporating Domain Antibodies**

Domain antibodies (dAbs) are the smallest functional antibody-based units. dAbs offer potential advantages over full-size antibodies including formatting flexibility, reduced immunogenicity and improved production yields and tissue penetration. ART621 is an anti-TNF molecule that contains 2 identical human framework dAbs directed against human TNF linked to a human Fc region. ART621 is the first dAb-based product to enter clinical trials and is currently in Phase II trials for psoriasis and rheumatoid arthritis. The presentation will summarize key pre-clinical and clinical data and the challenges of developing a new type of biologic therapeutic product.

David Fuller, M.D., *Chief Medical Officer,* **Arana Therapeutics Ltd.,** *Australia*

4:15 **Audience Interactive Panel Discussion**

Antibodies and the Next Wave: Building a Biologics Franchise

Ask your questions to the panelists who will address topics including:

- How to position your company's market entry into biologics
- Blockbusters or personalized medicine: Where are the opportunities?
- What are the best market opportunities for technologies and therapeutics
- Taking antibodies to market
- Developing an antibody IP strategy
- Regulatory viewpoints and guidances on biologics
- How to avoid the pitfalls and challenges of biologics

Moderator: **Davis Farmer,** *Chairman,* **MSM Protein Technologies,** *USA*

Panelists:
Tatsumi Yamazaki, Ph.D., *Executive Vice President, Member of the Board,* **Chugai Pharmaceutical Co., Ltd.,** *Japan*
Judith Hills, Ph.D., *Vice President,* **Bristol-Myers Squibb Company,** *United Kingdom*
Kevin Johnson, Ph.D., *CEO,* **PanGenetics,** *United Kingdom*

Featured Presentations

4:45 **Takeda's Global Business Development Activity: Current and Future**

Takeda's global business development strategy for the future is based on acquisitions and research/product alliances in order to maximize Takeda's international presence moving towards 2015 and beyond. This presentation will discuss our experiences to date and strategy for the future.

Toshikazu Ban, *General Manager, Global Licensing and Business Development,* **Takeda Pharmaceutical Company Ltd.,** *Japan*

5:15 **R&D Globalization Strategy: Challenges for Efficiency**

To succeed in pharmaceutical development and remain competitive with global mega-pharmas in an environment of decreasing productivity and efficiency in drug development globally, a new strategy is required. Alliance and partnering activities are essential combined with the use of innovative scientific technologies and internal process improvements. This presentation will discuss some of the endeavors currently underway at Shionogi.

Takuko Yamada Sawada, *Corporate Officer, Executive General Manager, Pharmaceutical Development Division,* **Shionogi & Co., Ltd.,** *Japan*

5:45 **Networking Dinner in Tokyo**

Join fellow attendees and speakers for an evening out in Tokyo. Space is limited and an additional fee applies. Check box on registration form to sign up.

The Antibody Discovery & Protein Science Summit

Registration Form

Part of

IBC's 4th Annual International Conference
DRUG DISCOVERY & DEVELOPMENT JAPAN

www.IBCLifeSciences.com/Japan

5 EASY WAYS TO REGISTER

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Registration Fees	On or before March 6, 2009	On or before April 3, 2009	On or before May 1, 2009	Standard Rate After May 1, 2009
The Antibody Discovery and Protein Summit (June 1-2)	☐ USD1199	☐ USD1299	☐ USD1399	☐ USD1499
3 Day Conference (June 1-3)	☐ USD1499	☐ USD1599	☐ USD1699	☐ USD1799
Immunogenicity Tutorial ***Only*** (June 1)				☐ USD750
RNAi as a Therapeutic Modality ***Only*** (June 3)				☐ USD750

Present a Poster ☐ USD100 - Commercial ☐ FREE - Academic

Attend Networking Dinner ☐ USD100 (June 2, 5:45pm)

Academia/Government Discounts

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Please tell us which sessions you will primarily attend (You have access to both sessions on days you are registered)

June 1: ☐ R&D Strategies ☐ Antibody/Protein Summit ***June 2:*** ☐ From Discovery to POC ☐ Antibody/Protein Summit

☐ Yes! I/We will attend **Drug Discovery & Development of Innovative Therapeutics JAPAN • Keio Plaza Hotel • Tokyo, Japan** R9162ADPS

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Fee includes luncheons, cocktail refreshments and complete set of documentation. It does not include the cost of accommodation and travel.

CANCELLATIONS/SUBSTITUTIONS:
If you are unable to attend, a substitute delegate will be very welcome in your place. If this is not suitable, a 10% service charge will be payable. Registrations cancelled less than seven days before the event must be paid in full.

Speakers are subject to change without notice.

Venue & Hotel Information

Keio Plaza Hotel Shinjuku

2-2-1 Nishi-Shinjuku • Shinjuku-ku, Tokyo • 160-8330 Japan

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Conference Registration Details

TEAM DISCOUNTS: Register 3 at the Standard Rate and the 4th goes FREE! Save up to USD1799. When three members from the same company register and pay for the conference at the same time, the fourth attends for FREE. This discount is valid only based on the standard rate (after May 1, 2009). For more information on the group rates or to register your group, please contact customer service at register@ibcasia.com.sg

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Attendance will only be permitted upon receipt of full payment. Participants wishing to register at the door are responsible to ensure all details are as published. IBC Asia will not be responsible for any event re-scheduled or cancelled.

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