AsiaTIDES: Oligonucleotide & Peptide Therapeutics

24-26 February 2020
Westin Miyako Kyoto
Kyoto, Japan

THE ONLY EVENT IN ASIA BRINGING TOGETHER SCIENCE, TECHNOLOGIES AND PARTNERS TO ACCELERATE OLIGONUCLEOTIDE AND PEPTIDE MOLECULES TO MARKET

Top Keynotes Share Strategies to Accelerate Your Therapeutics

Crossing the Barriers and Boundaries I: Towards Global Approval for Onpattro and other RNAi Therapeutics
Barry Greene,
President, Alnylam Pharmaceuticals, USA

From Constrained Peptides to Neobiologics
Hiroaki Suga, Ph.D.,
Professor of Chemistry,
School of Science,
University of Tokyo, Japan

Various Therapeutic Applications from PeptiDream: Recent Advancements of Peptide-drug Conjugates
Keiichi Masuya Ph.D.,
Executive Vice President,
PeptiDream, Japan

New Stage of DNA/RNA Heteroduplex Oligonucleotide
Takanori Yokota, M.D., Ph.D.,
Professor, Neurology & Neurological Science,
Tokyo Medical and Dental University, Japan

Crossing the Barriers and Boundaries II: Delivery of RNAi Therapeutics
Muthiah (Mano) Manoharan, Ph.D.,
Senior Vice President of Drug Discovery,
Alnylam Pharmaceuticals, USA

www.AsiaTIDESevent.com
Accelerate Your Product To Market

Hear CMC/manufacturing, discovery, delivery and clinical case studies, best practices and lessons learned from leading oligonucleotide, peptide and mRNA therapeutic developers. Ensure product approval by hearing regulatory guidance and roadmaps to successful IND/IMPD submissions from industry leaders.

Evaluate New Technologies And Services

Improve your discovery, clinical, process development, analytical and manufacturing efforts by meeting with 20+ global technology leaders in the exhibit hall. The exhibit hall also features peer-submitted posters that contain new and unpublished research from global scientists working across all phases of oligonucleotide and peptide development.

Meet Your Next Partner At AsiaTIDES

Connect with 250+ oligonucleotide, peptide and mRNA leaders across Asia, Europe and North America during networking lunches, poster sessions, dinners and cocktail receptions.
AsiaTIDES offers separate tracks covering the latest oligonucleotide and peptide development strategies from discovery, nonclinical, clinical and CMC to late-stage development and commercialization.

**OLIGONUCLEOTIDE TRACK HIGHLIGHTS**

- Alnylam’s Lessons Learned from the Global Approval for Onpattro
- GSK’s Engineering of Enzymes to Make Oligonucleotides at Large Scale in Water
- Ionis’ GalNAc Conjugation Process Development
- Dicerna’s CMC Program Strategy and Clinical Progress Update
- Toray’s Development of A Novel Method for Manufacturing a Single-stranded Long-chain RNA Oligomer
- Moderna’s Regulatory Perspectives on Personalized mRNA Medicines

**PEPTIDE TRACK HIGHLIGHTS**

- Peptidream’s Recent Advancements of Peptide-drug Conjugates
- Amgen’s Data Reduction and Visualization Technologies for the Design & Optimization of Therapeutic Peptide and Nucleic Acid Derivates
- Hiroaki Suga’s Research from Constrained Peptides to Neobiologics
- Ferring’s Treatment of Non-peptide Related Impurities in Peptide API Manufacturing
- Neon Therapeutics Development of Personal Neoantigen Cancer Vaccine NEO-PV-01
- Merck’s Macrocyclization of An All-D Linear Peptide: A Novel Stapled α-Helical Peptide Modality

**NEW THIS YEAR!**

- Expanded mRNA Therapeutics Session Featuring Moderna, BioNtech, AstraZeneca
- Expanded CMC Regulatory Session Featuring Biogen and Ionis
- Workshop on Path to a Successful IND/IMPD for Oligonucleotide Therapeutics
- Workshop on Current Topics in Peptide Discovery and Development: A Focus on Improving Peptide Properties
- Presentations from Companies who Have Never Presented at AsiaTIDES Including Ferring, GSK, Neon Therapeutics, AstraZeneca and more
- Largest Number of Exhibitors and Posters in AsiaTIDES History

www.AsiaTIDESevent.com • +44 (0)20 3377 3279
**WORKSHOP 1**

**Path to a Successful IND/IMPD for Oligonucleotide Therapeutics**

*Room: Kiku*

**Starts 09:00**

**Workshop Leaders:**
- Jennifer Lockridge, Ph.D., Senior Vice President, Program Development, Dicerna Pharmaceuticals, USA
- G. Susan Srivatsa, Ph.D., President, ElixinPharma, USA

Additional Speakers: TBA

**Workshop Schedule:**

- **9:00** Part 1: Nonclinical Perspective
  - Jennifer Lockridge, Ph.D., SVP Program Development, Dicerna Pharmaceuticals, Inc.
- **9:30** Q&A for Part 1
- **10:00** Networking Refreshment Break
- **10:15** Part 2: CMC Perspective
  - G. Susan Srivatsa, Ph.D., President, ElixinPharma
- **12:00** Q&A for Part 2

---

**WORKSHOP 2**

**Current Topics in Peptide Discovery and Development: A Focus on Improving Peptide Properties**

*Room: Ran*

**Workshop Overview:**

This workshop will discuss a variety of strategies and techniques to improve the drug-like properties of peptides throughout the product lifecycle from discovery through development and chemical synthesis. Developability and manufacturability considerations will also be discussed. Examples and case studies from a variety of peptide programs will be presented along with challenges encountered, successes achieved and lessons learned.

- **9:00** Workshop Moderator’s Opening Remarks
  - Bruce Morimoto, Ph.D., Vice President, Drug Development-Operations, Alkahest, USA
- **9:15** An Overview of Peptide Drug Development and Factors for Success
  - Bruce Morimoto, Ph.D., Vice President, Drug Development-Operations, Alkahest, USA
- **9:45** Introduction to General Side Reactions in Peptide Synthesis and Prediction of Peptide Drug Chemical Stability
  - Yi Yang, Ph.D., Senior Research Scientist, Chemical Development, Pharmaceutical R&D, Ferring Pharmaceuticals A/S, Denmark

- **10:45** Networking Refreshment Break
- **11:15** Prolonging Peptide Half-Life with Modifications (PEG, Lipid) or Cyclization
  - Speaker TBA
- **12:00** An Overview of Peptides and Immunogenicity
  - Brian Roberts, Ph.D., Associate Scientific Director of Protein Therapeutics, Epivax, USA
- **12:45** Close of Workshop
Monday, February 24, 2020 • Main Conference Plenary Keynote Session • 2:00pm-5:00pm
(All Main Conference Passes May Attend this Session)

Room: Mizuho B (North)

2:00 Chairperson’s Remarks
Bob D. Brown, CSO, SVP R&D, Dicerna Pharmaceuticals, USA

2:05 Crossing the Barriers and Boundaries I: Delivery of RNAi Therapeutics
Muthiah (Mano) Manoharan, Ph.D., Senior Vice President of Drug Discovery, Alnylam Pharmaceuticals, USA

2:40 Crossing the Barriers and Boundaries II: Towards Global Approval for Onpattro and other RNAi Therapeutics
Barry Greene, President, Alnylam Pharmaceuticals, USA

3:15 Networking Refreshment Break

3:50 Various Therapeutic Applications from PeptiDream: Recent Advancements of Peptide-drug Conjugates
At PeptiDream, Inc., we utilize PDPS (Peptide Discovery Platform System) which is a revolutionary next-generation hit finding platform for peptide drug discovery. In the previous TIDES conferences, we disclosed the power of PDPS technology itself, and briefly discussed how “Identified Hits” were applied toward the discovery and development of constrained peptides, small molecules, and peptide-drug conjugate therapeutics. In the current presentation, we will discuss recent progress with our peptide-drug conjugates for therapeutic applications, such as BBB-penetrating carrier peptides, carrier-peptides for RI therapeutics, and various other potential applications.
Keiichi Masuya Ph.D., Executive Vice President, PeptiDream, Japan

4:25 New Stage of DNA/RNA Heteroduplex Oligonucleotide
Takanori Yokota, M.D., Ph.D., II Professor, Neurology & Neurological Science, Tokyo Medical and Dental University, Japan

5:00 Close of Day One

Room: Mizuho B (North)

8:00 Registration and Coffee

mRNA from Discovery to Clinical: Vaccines and Therapeutics

8:25 Chairperson’s Remarks
James Thompson, Ph.D., CMC Therapeutic Area Lead, Moderna Therapeutics

8:30 Pioneering Next-generation mRNA Immunotherapies for Cancer and Beyond
In the last decade mRNA has progressed into a promising new class of medicine, with the potential to treat a wide variety of diseases with high unmet medical needs. Therapeutic mRNAs have the capacity to encode a variety of different proteins allowing the broad application for effective treatment of many diseases, including cancer, infectious diseases and rare diseases. BioNTech’s mRNA pipeline employs these capacities using different technologies to address all of these therapeutic areas.
Christina Krienke, Head of Autoimmunity, BioNTech, Germany

9:00 mRNA Therapy for Rare Genetic Diseases
Messenger RNA (mRNA) is emerging as a new therapeutic modality with broad applicability including the potential to treat rare monogenic disorders. Recent advances in mRNA technology have transformed the prospect of exogenously-delivered mRNA to produce different types of therapeutic proteins as a potential enzyme replacement approach. This talk will provide an overview of preclinical proof-of-concept mRNA therapy studies for various rare genetic disorders with high unmet medical needs.
James Thompson, Ph.D., CMC Therapeutic Area Lead, Moderna Therapeutics

9:30 VEGF-A modified mRNA in Cardiovascular Disease
Anna Collin, Ph.D., Senior Project Director CVRM, IMED Biotech Unit, AstraZeneca, Sweden

10:00 Process Control of Core-Shell Structured LPP Delivery Platform for mRNA Medicine
Core-shell structured lipopolyplex (LPP) is prepared by mixing polymer and mRNA as the inner core and then encapsulating the core into a liposome shell. Factors such as salt solution, pH and mRNA chain length were investigated to control core-related parameters such as particle size, zeta potential and surface available mRNA. In addition, mixing-related parameters such as mixing rate and mixing ratio were investigated to control the preparation process of LPP.
Hangwen Li, M.D., Ph.D., Chairman and CEO, Stemirna Therapeutics, China

10:30 Networking Refreshment Break and Exhibit/Poster Viewing
Sponsored by BACHEM

5:45 AsiaTIDES NETWORKING DINNER
Please join us for a networking dinner at Tempura Endo, a restaurant in Kyoto’s famous Gion geisha district. A short (20-25 minute) introductory walking tour of Gion led by a local guide will be provided prior to the dinner. Click here for more info & to sign up.
Registration Required. There are limited spaces for this dinner (50 spaces). Please note this is first come first serve basis and non-refundable.
**Oligonucleotide Track**

**Room: Mizuho B (North)**

11:10 **Chairperson’s Remarks**

11:15 **Targeted Delivery of Antisense Oligonucleotides to Select Tissues and Cells**

- Phosphorothioate-containing antisense oligonucleotides possess protein binding properties that enhance pharmacokinetic performance and, more importantly, promote binding to cell-surface integral membrane proteins. Endocytosis of bound membrane proteins results in internalization of the ASO and, ultimately, modification of target mRNA. The liver is a major site of ASO accumulation and associated activity, however, sufficient delivery to extracellular tissues following systemic administration is challenging. Recent advances combating this challenge have shown that conjugates of ASOs to selective ligands can dramatically improve delivery to tissues that were once believed to be intractable.

- **Michael Tanowitz, Ph.D., Associate Director, Medicinal Chemistry, Ionis Pharmaceuticals, USA**

12:15 **Y-shaped Block Cation (YBC) Forms “Unit Polyion Complex” with siRNA and ASO: A Novel DDS Alternative to LNP**

- A novel approach to cancer-targeted oligonucleotide delivery using a Y-shaped block cation (YBC) comprising poly cationic amino acids and two-armed poly (ethylene glycol) (PEG) has been developed. The YBC and a single oligonucleotide are electrostatically bound to generate a dynamic ion-pair, termed as “unit polyion complex (upIC)”. Because of its improved stability in the bloodstream and small particle size (~18 nm), this DDS efficiently delivers oligonucleotides into tumor or tumor microenvironment thus exerting potent anti-tumor activity in several mice tumor models. AccuRna is developing one siRNA and one ASO using this technology. The first program is a siRNA which targets PRDM14, a transcriptional factor, highly expressing in metastatic breast cancer cells. We plan to commence an investigator-initiated Phase I clinical trial in early 2020. The second program is the ASO which silences TUG1 that is an oncogenic long noncoding RNA. TUG1 is highly expressed in glioblastoma (GBM).

- **Shiro Akinaga, Ph.D., CEO, AccuRna, Japan**

12:15 **CRO/CMO Company Showcase**

12:15 Each company will present for 10 minutes on their science and capabilities followed by a 5-minute Q&A. Presenting Companies:

- Enabling Kilo-Scale Manufacturing of Several Locked Nucleic Acid Analogues
  - **Paidi Yella Reddy**, President and CEO, Sapala Organics Pvt. Ltd., India

- State-of-the-Art Disposable Bioprocess for Production of In Vitro Transcription Enzymes
  - **John Ackroyd, Ph.D., Business Development Manager**, Thermo Fisher Scientific, United Kingdom

- Mass-Production of Target RNA by Microorganism
  - **Shuhei Hashiro**, Research Scientist, Research Institute for Bioscience Products & Fine Chemicals, Ajinomoto Co., Inc., Japan

**Networking Luncheon with Poster and Exhibit Viewing**

12:45 **Networking Luncheon with Poster and Exhibit Viewing**

Sponsored by **BACHEM**

**Peptide Track**

**Room: Mizuho B (East)**

11:10 **Chairperson’s Remarks**

- **El Djouhar Rekai, Ph.D., Head of Development & Manufacturing Process, PolyPeptide Group, Belgium**

11:15 **Improving Process Development and Manufacturing Efficiency of Peptide APIs**

- The peptide API manufacturing industry is challenged from many angles. Increasing demands for quality, cost control, green approaches and efficient timelines appear to pull in different directions. With case studies, this presentation will demonstrate approaches to handle the increasing complexity of process development and manufacturing of Peptide APIs.

- **Jon H. Rasmussen, Ph.D., Director Global Development, PolyPeptide Group, Sweden**

11:45 **CMC Development Concept for Synthetic Peptides**

- Bachem’s modular concept for CMC development is based on experience with a wide range of customers. The concept covers the complete API life cycle and will be discussed with emphasis on milestones and deliverables commensurate to the clinical development phases.

- **Ralph Schönleber, Ph.D., Vice President R&D, Bachem AG, Switzerland**

12:15 **Commercial Manufacturing of Disulfide-rich Peptides**

- Peptides without some type of stabilizing element exist as an equilibrium between multiple conformational states. One of the principle means of stabilizing peptides in nature has been different cyclic motifs. The most common of these motifs is the disulfide bond. Peptides with less than 60 residues with multiple disulfide bonds are often referred to as “disulfide-rich peptides” (DRP). Examples of these peptides which have entered into clinical development and ultimately to commercially approved drug products include: insulin (multiple anagls), ziconotide (u-conotoxin), aprotinin (bovine pancreatic trypsin inhibitor), laniclatide (heat-stable enterotoxin, plecanatide (Glu4-uroguanylin). Numerous other DRPs are in clinical development. These include: dalazatide (Shk peptide analog), tozulisteride (dy-labeling chlorotoxin), hepcidin and α-conotoxin RgIa. Commercial manufacturing of these peptide API’s requires a combination of a robust synthetic production which may involve total SPPS or a combination of hybrid methods as well as an optimized folding procedure to generate the desired disulfide bonding pattern. Amphiaborm’s approach to manufacturing of several examples: epo-fibatide (1 disulfide bond), plecanatide (2 disulfide bonds), laniclatide (3 disulfide bonds) and chlorotoxin (4 disulfide bonds) of DRPs will be provided.

- **Michael Pennington, Ph.D., Chief Scientific Officer, AmbioPharm, USA**

12:45 **Networking Luncheon with Poster and Exhibit Viewing**

Sponsored by **BACHEM**

1:55 **Chairperson’s Remarks**

- **El Djouhar Rekai, Ph.D., Head of Development & Manufacturing Process, PolyPeptide Group, Belgium**

2:00 **Investigation on the Fate of Non-related Peptide Impurities in Peptide API Manufacturing**

- Traditionally, peptide API is subject to analyses like RP-HPLC to find and quantify the “detectable” non-peptide related impurities. Nonetheless, not all non-related impurities could be detected by a uniform analytical method. Moreover, the applied analytical method might not have been sufficiently validated for the quantification of non-peptide related impurities wrt. specificity, linearity, accuracy, LOD, LOQ, etc. In the subject talk, a methodology will be introduced by predicting the formation of non-related impurities in the process of corresponding peptide API manufacturing. On top of such prediction, transformation of the non-related impurities through the whole manufacturing process will be subject to investigation. Depending on the stage of impurity formation and the toxicity assessment, treatment will be rationally deployed and dedicated analytical methods will be developed to quantify the contents of selected non-related impurities in the final API.

- **Yi Yang, Ph.D., Senior Research Scientist, Chemical Development, Pharmaceutical R&D, Ferring Pharmaceuticals A/S, Denmark**
Chairperson’s Remarks
Michael Tanowitz, Ph.D., Associate Director, Medicinal Chemistry, Ionis Pharmaceuticals, USA

Development of Efficient Delivery Systems for mRNA Therapeutics
mRNA therapeutics have great potential in settings such as the treatment of rare diseases caused by a missing or faulty protein by utilizing cells’ natural translation apparatus to produce the desired protein from an introduced mRNA template, or to enable gene editing approaches by introducing mRNA coding for gene editing enzymes to target cells. To do this, the mRNA must be efficiently delivered, intact and without activating immune defenses. Lipid nanoparticles (LNPs) have been used in research to deliver a variety of nucleic acid (NA) payloads, protecting the NA from degradation and facilitating uptake into target cells and subsequent endosomal release. LNPs also enable the only approved siRNA therapeutic, patisiran, for the treatment of polyneuropathy caused by a type of hereditary amyloidosis. This presentation describes the optimization of LNP components for the purpose of mRNA delivery, including lipid ratios and physicochemical features leading to a discussion of critical quality attributes.

Peter Lutwyche, Ph.D., Chief Technology Officer, Genevant Sciences Corp., Canada

Exon Skipping Therapeutic Strategy Using 2'-O,4'-C-ethylene-bridged Nucleic Acid (ENA™) Oligonucleotides
Modified antisense oligonucleotides are widely utilized for the identification of gene functions and the regulation of genes involved in disease for therapeutics. This presentation will describe exon skipping therapeutic strategy using ENA® oligonucleotides for genetic disease such as DMD and so on.

Makoto Koizumi, Ph.D., Senior Director, Modality Research Laboratories, Biologics Division, Daiichi Sankyo Co., Ltd., Japan

Networking Refreshment Break with Poster and Exhibit Viewing
Sponsored by BACHEM

Characterization and Optimization of In-Situ Process for GalNAc Conjugation of Oligonucleotides
GalNAc conjugation to oligonucleotides offers many challenges at the manufacturing scale. A new highly efficient protocol has been developed to streamline the process of conjugation affording improved yields and production times.

Christopher Gabriel, Ph.D., Senior Scientist, Process Organic Chemistry, Ionis Pharmaceuticals, USA

siRNA Moves towards Revolutionizing the Treatment of Chronic Diseases Related to the Liver
With the approval of the first siRNA drug, development of this category of drugs will step into an era where it moves faster than any other drug categories in the past to grab the lion’s share in the therapeutic market due to its super-long-lasting efficacy, and much broader target gene coverage (especially in the non-druggable gene space), and speed of development as a consequence of digital drug design on background of complete genomic knowledge & modular drug manufacture. China is becoming a significant player in the siRNA drug sector with enhanced task forces, great technology and development progresses and speeding regulatory process.

Zicai Liang, Chairman and CEO, Suzhou Ribo Life Science Co. Ltd., China

Nedosiran (DCR-PHXC) Development to Treat Primary Hyperoxaluria
Bob D. Brown, CSO, EVP R&D, Dicerna Pharmaceuticals, USA

Networking Cocktail Reception with Poster and Exhibit Viewing
Sponsored by BACHEM

Peptide Discovery and Development

Data Reduction and Visualization Technologies for the Design & Optimization of Therapeutic Peptide and Nucleic Acid Derivatives
Les Miranda, Ph.D., Executive Director Research, Amgen, USA

Risk of Immunogenicity for Peptide Drugs and Their Impurities: A Case Study (Taspoglutide)
The rapidity and simplicity of peptide syntheses has raised concern about the potential for impurities that are introduced during the synthesizing process to induce unexpected and unwanted immune responses. The case study of Taspoglutide will illustrate why drug manufacturers need to carefully identify manufacturing-related impurities and assess them for their immunogenic potential.

Brian Roberts, Ph.D., Associate Scientific Director of Protein Therapeutics, Epivax, USA

Long-acting Injectable Peptide Formulations Based on Biodegradable Silica
Drug delivery systems overcome many challenges for administration of injectable peptide drugs. Biodegradable silica is a promising new delivery matrix that has not yet been used in commercial peptide products. The technology enables development of high payload and long-acting peptide products. This presentation shows several new applications of silica matrix on peptide drug delivery.

Lasse Leino, Ph.D., Chief Executive Officer and Adjunct Professor, DelSiTech Ltd., Finland

Networking Cocktail Reception with Poster and Exhibit Viewing
Sponsored by BACHEM

Close of Day Two
PEPTIDE TRACK

Room: Mizuho B (East)

10:55 Chairperson’s Remarks
Yogesh Sanghvi, Ph.D., President, Rasayan, USA

Constrained and Cyclic Peptides: Synthesis and Manufacturing

11:00 FEATURING PRESENTATION: From Constrained Peptides to Neobiologics
This lecture presents recent advances in cyclic peptide therapeutics and novel biomolecules, referred to as neobiologics.
Hiroaki Suga, Ph.D., Professor of Chemistry, School of Science, University of Tokyo, Japan

11:30 New Methods and Strategies for Protein Chemical Synthesis/Modification and Peptide Cyclization
Over the past decade at the University of Hong Kong, our laboratory has developed several innovative methods for the synthesis of cyclic peptides, including Serine/Threonine Ligation (SPL) for protein chemical synthesis, P-B desulfurization for chemoselective peptide desulfurization, OPA bioconjugation for protein modification, and OPA chemoselective peptide cyclization. These methods have been successfully applied for the synthesis of cyclic cyclic peptides, including daptomycin and teixobactin.
Xuechen Li, Ph.D., Professor, The University of Hong Kong

12:00 Challenges for State-of-the-Art Manufacturing Technology in Peptide APIs
There is a market need for the peptide CDMO that can deliver peptide APIs at a lower cost. On the other hand, since constrained peptides have relatively complex structures and may include expensive non-natural amino acids in their structures, there remains substantial room for improvement in terms of manufacturing cost. By leveraging a wide array of technologies and methodologies, PeptiStar offers competitive manufacturing strategies with various properties on various scales.
Shinichiro Fujii, Director, Executive Officer, PeptiStar, Japan

12:30 Networking Luncheon with Poster and Exhibit Viewing
Sponsored by BACHEM

OLIGONUCLEOTIDE TRACK

Room: Mizuho B (North)

10:55 Chairperson’s Remarks
Yogesh Sanghvi, Ph.D., President, Rasayan, USA

Oligonucleotide CMC and Analytical

11:00 Delivering Answers Through Innovation
Over the past 16 years the oligo therapeutic field has seen continued growth in many areas. The number of companies has increased from 40 to 142 and programs from 121 to 468 meaning more than 180 specific diseases are being targeted by therapeutic oligo programs today. This presentation will introduce Agilent Nucleic Acid Solutions Division (NASD) newest facility in Frederick, CO that will more than double our commercial manufacturing capacity to meet the increasing global demand today & in the future.
Alun Garner, Business Development Manager, Nucleic Acid Solutions Division, Agilent Technologies, USA

Yogesh Sanghvi, Ph.D., President, Rasayan, USA

12:00 SHORT ORAL POSTER PRESENTATIONS
Accelerate Oligonucleotide Drug Discovery by Versatile Oligo Conjugation Capability
Jun Zhou, Assistant Director, WuXi AppTec, China

Recent Regulatory Experiences with Early and Late Stage Oligonucleotide-based Therapeutics in Global Clinical Trials
Susanne Kindermann, Pharma Technical Regulatory, F. Hoffmann-La Roche AG, Switzerland

Networking Luncheon with Poster and Exhibit Viewing
Sponsored by BACHEM
CMC Strategies and Novel Production Methods for Oligonucleotides

2:45 Oligonucleotide CMC Project/Case Study
James Powell, Vice President, Manufacturing, Dicerna Pharmaceuticals, USA

3:15 Networking Luncheon with Poster and Exhibit Viewing
Sponsored by BACHEM

3:45 The Enzymatic Synthesis of Oligonucleotides in Water
In order to address the challenges of large-scale oligonucleotide synthesis, namely scalability, sustainability and cost, we are developing an enzyme catalyzed approach to oligonucleotide manufacture. Short oligonucleotides are synthesized from simple nucleotide based starting materials by the sequential enzyme catalysed addition of nucleotides. The short oligonucleotides are subsequently assembled in a single templated, convergent step to generate the final product oligonucleotide. This assembly and product separation process eliminates the need for any chromatography. All processes are run in aqueous solution improving both scalability and sustainability. The convergent approach improves overall process yields while the templating removes impurities such as ‘N-1’ sequences from the final product.

David Tew, Project Leader and GSK Senior Fellow, Advanced Manufacturing Technology, GlaxoSmithKline, United Kingdom

An efficient and generally applicable synthetic method will be described to provide single-stranded long-chain RNA oligomers at high yield. A single-stranded long-chain RNA oligomer of 51 bases and 2 proline derivatives, TRK-250 in phase 1 clinical study, selectively suppress expression of the transforming growth factor-β1 (TGF-β1) protein, a key growth factor involved in lung fibrosis, through sequence-specific gene silencing. Most nucleic acid medicines are 20-30mer oligonucleotides and are manufactured almost exclusively using solid-phase synthesis. However, if long-chain RNA oligomers were synthesized with common TBDMS phosphoramidite, using this method, a high yield could be expected. Therefore, a special amidite having a ribose 2’-OH protecting group that is different from that of TBDMS is needed to synthesize long-chain RNA oligomers with high yield, which increases cost. The purpose of this study is to develop a method for manufacturing single-stranded long-chain RNA oligomers without using a special phosphoramidite. First, two short single-stranded RNA oligomers, which span the target single-stranded long-chain RNA oligomer, were synthesized by a common solid-phase synthesis method with TBDMS phosphoramidite. Next, these two short single-stranded RNA oligomers were annealed and ligated using a catalytic amount of RNA ligase. We have accomplished the synthesis of TRK-250 in more than 95% purity and more than a 90% ligation yield. This novel enzymatic ligation method enables the production of many single-stranded long-chain RNA oligomers at a high purity and in high yield at a lower cost compared to that of common methods.

Hideaki Inada, Senior Research Associate, Pharmaceutical Research Laboratories, Toray Industries, Japan

4:45 Close of Conference

OLIGONUCLEOTIDE TRACK

1:40 Chairperson’s Remarks
Yogesh Sanghvi, Ph.D., President, Rasayan, USA

1:45 Study of Analysis for Oligonucleotides Using Orthogonal HPLC Methods
There are various impurities contained in chemically synthesized oligonucleotides, but it is difficult to separate and analyze them by one HPLC separation mode. Although analyses with two distinct columns are helpful, anion-exchange HPLC cannot be used for LC/MS because it contained salts in the mobile phase. Therefore, we are now examining an on-line two-dimensional LC/MS in which columns are combined.

Hirokazu Nankai, Ph.D., General Manager, Research & Development Division, Ajinomoto Bio-pharma Services, GeneDesign, Inc., Japan

2:15 Interesting Characters – How High Resolution Mass Spectrometry Improves Oligonucleotide Impurity Characterization
Brian Kile, Ph.D., Associate Director, Analytical Development, Nitto Denko Avecia, USA

2:45 Peptide Development and Manufacturing

1:45 How CordenPharma Can Help the Patients with an Integrated Solution - Bridging Drug Product and Drug Substance Worlds
Matthieu Giraud, Ph.D., Director, Global Peptides, Lipids & Carbohydrates Platform, Corden Pharma, Germany

2:15 Macrocyclization of An All-D linear Peptide Improves Target Affinity and Imparts Cellular Activity: A Novel Stapled α-Helical Peptide Modality
Peptides composed entirely of D-amino acids are hyper-resistant to proteolysis, robustly inhibit protein-protein interactions but lack membrane permeability. We addressed this latter deficiency through the first example of macrocyclic α-helical-D-peptides to increase α-helicity, improved target binding, maintain proteolytic stability and, most notably, impart cellular activity.

Anthony Partridge, Ph.D., Senior Principal Scientist, Early Discovery Pharmacology, Translational Medicine Research Centre, Merck Sharp & Dohme, Singapore

2:15 Development of Personal Neoantigen Cancer Vaccine NEO-PV-01
Neon Therapeutics, a clinical-stage immuno-oncology company developing neoantigen-based therapeutics, has pioneered a proprietary neoantigen platform to develop a personal cancer vaccine, NEO-PV-01. The neoantigen-targeting peptides in the vaccine are intended to engage the immune system to precisely and selectively attack tumors. Our objective is to create and deepen anti-tumor immune responses and broaden the range of cancers treatable via immuno-oncology approaches. Immune and clinical data from our first clinical trial NT-001 will be summarized. In addition, the manufacturing process for NEO-PV-01 will be discussed including the automated and scalable peptide production that we believe provide advantages in both turnaround times and manufacturing capacities.

Jesse Z. Dong, Ph.D., Vice President, Peptide Chemistry, Neon Therapeutics, USA

3:15 Networking Luncheon with Poster and Exhibit Viewing
Sponsored by BACHEM

3:45 CBP501 Clinical Trials: Twists, Turns and Updates
CBP501 is a synthetic peptide that regulates calmodulin functions and induces tumor immunogenic cell death, suppresses M2 macrophages, reduces cancer stem cells, and suppresses epithelial-to-mesenchymal transition. Promising signs of activities were seen in the combination clinical studies with cisplatin and cisplatin plus anti-PD1 antibody in a variety of cancer types.

Takumi Kawabe M.D., Ph.D., Chief Executive Officer, Canbas, Japan

4:15 Development of Sugar Chain Somatostatin Analog and First-in-Human Challenge
We have succeeded in developing a sugar chain somatostatin analog with activity similar to native. This peptide is a unique compound with affinity for all five receptors of somatostatin. We conducted a first-in-human test of this peptide and confirmed its high safety, and we will report the results.

Hiroaki Asai, CEO, Glytech, Japan

4:45 Close of Conference

PEPTIDE TRACK

1:40 Chairperson’s Remarks
Anthony Partridge, Ph.D., Senior Principal Scientist, Early Discovery Pharmacology, Translational Medicine Research Centre, Merck Sharp & Dohme, Singapore

1:45 Peptide Development and Manufacturing

2:15 Macrocyclization of An All-D linear Peptide Improves Target Affinity and Imparts Cellular Activity: A Novel Stapled α-Helical Peptide Modality
Peptides composed entirely of D-amino acids are hyper-resistant to proteolysis, robustly inhibit protein-protein interactions but lack membrane permeability. We addressed this latter deficiency through the first example of macrocyclic α-helical-D-peptides to increase α-helicity, improved target binding, maintain proteolytic stability and, most notably, impart cellular activity.

Anthony Partridge, Ph.D., Senior Principal Scientist, Early Discovery Pharmacology, Translational Medicine Research Centre, Merck Sharp & Dohme, Singapore

2:15 Development of Personal Neoantigen Cancer Vaccine NEO-PV-01
Neon Therapeutics, a clinical-stage immuno-oncology company developing neoantigen-based therapeutics, has pioneered a proprietary neoantigen platform to develop a personal cancer vaccine, NEO-PV-01. The neoantigen-targeting peptides in the vaccine are intended to engage the immune system to precisely and selectively attack tumors. Our objective is to create and deepen anti-tumor immune responses and broaden the range of cancers treatable via immuno-oncology approaches. Immune and clinical data from our first clinical trial NT-001 will be summarized. In addition, the manufacturing process for NEO-PV-01 will be discussed including the automated and scalable peptide production that we believe provide advantages in both turnaround times and manufacturing capacities.

Jesse Z. Dong, Ph.D., Vice President, Peptide Chemistry, Neon Therapeutics, USA

3:15 Networking Luncheon with Poster and Exhibit Viewing
Sponsored by BACHEM

3:45 CBP501 Clinical Trials: Twists, Turns and Updates
CBP501 is a synthetic peptide that regulates calmodulin functions and induces tumor immunogenic cell death, suppresses M2 macrophages, reduces cancer stem cells, and suppresses epithelial-to-mesenchymal transition. Promising signs of activities were seen in the combination clinical studies with cisplatin and cisplatin plus anti-PD1 antibody in a variety of cancer types.

Takumi Kawabe M.D., Ph.D., Chief Executive Officer, Canbas, Japan

4:15 Development of Sugar Chain Somatostatin Analog and First-in-Human Challenge
We have succeeded in developing a sugar chain somatostatin analog with activity similar to native. This peptide is a unique compound with affinity for all five receptors of somatostatin. We conducted a first-in-human test of this compound and confirmed its high safety, and we will report the results.

Hiroaki Asai, CEO, Glytech, Japan

4:45 Close of Conference
BECOME A SPONSOR AND EXHIBITOR

PLATINUM SPONSOR

Nitto

Avecia

GOLD SPONSORS

Agilent

Ajinomoto

BIO-PHARMA SERVICES

PolyPeptide GROUP

SILVER SPONSORS

APi

BACHEM

CordenPharma

Intertek

PeptiStar

LANYARD SPONSOR

Nitto

Avecia

EXHIBITORS

Agilent

Ajinomoto

BACHEM

Bachem Biomedical

CordenPharma

ChemGenes CORPORATION

Alabiochem

Emp Biotech

Gore

Hongene Biotech

Intertek

Kinovate Life Sciences

LGC Accelerating Biopharmaceutical Therapeutics

LGC Biosearch Technologies

Neuland

Nitto

Avecia

PeptiStar

PolyPeptide GROUP

RiboBio

Sapala

ThermoFisher Scientific

Tosoh Bioscience

TriLink

Yamasa

A wide variety of options are available to help you meet your company objectives before, during and after the conference. We provide flexible and tailored solutions to optimize your investment. To get involved and begin building your custom sponsorship package today, contact: Michael Dunnet, Phone: +1 (617) 960-6173, E-mail: Michael.Dunnet@informa.com