

# AI IN PHARMA

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## S U M M I T

### Cutting Through the Hype to Successful Implementation and Impactful ROI

October 9<sup>th</sup>, 2018 – Boston, MA

Tuesday, October 9<sup>th</sup> 2018

8:00 Registration, Breakfast & Networking

#### AI in Pharma: From Hype to Realization

Adoption of AI has been well underway in pharma over the last few years but critical discussions remain about how to best implement AI and extract the maximum amount of insights and value. This opening session will take a critical look at the strategic discussions and decisions that need to be made pharma to realize the full potential of AI. Utilise this session to go beyond the hype of AI in pharma and drill into the largest challenges and opportunities that face these applications today.

9:00 Chair's Opening Remarks & Setting the Scene

- A look ahead to the day ahead - what will be the key takeaways we should achieve by the end of this event?
- Where is AI in its current lifecycle in pharma and how have we arrived at this point?

**Sebastien Lefebvre**, Senior Director, Data Analytics & Decision Support, **Alexion Pharmaceuticals**

9:10 **Keynote Presentation:** A Machine Learning Enabled Workflow in Drug Discovery

- A small unit within GSK has been exploring how AI/ML/DL methods can affect the drug discovery process in multiple dimensions.
- The unit utilizes internal capability and an integrated partnering model from pharma and non-pharma sectors to explore how these methods can expedite hypothesis testing in a specific area of biology.
- The goal of the unit is to flexibly employ multiple approaches simultaneously in its work to discover a drug. An example of how this integrated approach can be used to create an alternative pathway to drug discovery will be discussed, along with some discussion of what has worked well and not so well.

**John Baldoni**, SVP, Head of *In Silico* Drug Discovery, **GSK**

### 9:35 Building the Digital Ecosystem Required for Tomorrow's Clinical Trials

- Underlying stress conditions, from occasional acute stress through to diagnosable chronic conditions, can have a profound effect on clinical trials.
- It's vital that pharmaceutical companies fully understand individual participant's baseline stress levels in order to assess drug action and efficacy during trials.
- Cambridge Consultants is investigating the measured inputs that will allow us to build an effective, AI-driven stress monitoring system. Jaquie Finn will present the work to date and map out the ultimate vision: a full digital ecosystem for managing clinical trials.

**Jaquie Finn**, Head, Digital Health, **Cambridge Consultants**

### 10:00 Panel Discussion and Open Q&A: Implementation to Realization - How do we Accelerate AI Through its Lifecycle in Pharma?

AI and related technologies hold huge promise for pharma and biotech but critical strategic hurdles must be overcome for these to become a tangible reality in the near/mid and long-term. This exec-level panel will analyze and discuss the adoption and implementation challenges that remain but with a core focus on where a lot of pharma is right now with AI... implementation. Audience members can utilize this panel to get under the skin of leading AI champions from their respective organizations and understand how to overcome these critical hurdles:

- There has been a huge increase uptake in AI over the last twelve months but should we be managing expectations better?
- Even once adopted, how do we demonstrate value internally to peers to get more resources and buy-in for AI to become a core principle, rather than limited to pilot projects/ innovation groups?
- Do we have a chicken-and-egg scenario on our hands when it comes to AI and ROI?
- Are we still trying to figure out how AI can have a genuinely substantial impact across pharma?
- What responsibility does C-suite have for pushing the envelope and embracing emerging tech like AI more?
- Pharma are acquiring more and more data but how does pharma's infrastructure need to change for AI to extract maximum value from this data?

**Birgit Schoeberl**, Global Head, Modelling & Simulation, PK Sciences, **Novartis**

**Gayle Wittenberg**, Head, Translational Research and Precision Medicine Neuroscience Integrative Solutions & Pharma R&D IT, **Janssen**

**Eric Stahlberg**, Director, Biomedical Informatics and Data Science, **Frederick National Laboratory**

**John Baldoni**, SVP, Head of *In Silico* Drug Discovery, **GSK**

10:40

**Morning Refreshments & Networking**

## Use Case Presentations I : Where is AI Moving the Needle?

AI holds huge promise in drug discovery and development but genuine examples of where these approaches are having an impact today remain sparse. This set of case-study presentations will showcase some of the most promising areas where AI is making an impact along the pharma workflow. Utilise these examples to understand how success has been achieved in these areas and what's next for these promising research applications.

### 11:10 **Use Case 1:** Integrating Protein Motion and Machine Learning into the Drug Discovery Workflow

- Protein motion affords opportunities to approach drug targets in new ways
- Machine learning provides the capability to move beyond “observational molecular dynamics”
- Machine learning can enable the effective integration of large public databases with proprietary information

**Pat Walters**, Vice President, Computation, **Relay Therapeutics**

### 11:35 **Use Case 2:** The Use of AI in Early Clinical Development

- Understand how AI and ML are reimagining the way Genentech think about drug discovery and pre-clinical work
- Case studies from the pre-clinical arena will be showcased and discussed

**Kim Branson**, Head of A.I, Early Clinical Development Informatics, **Genentech**

### 12:00 **Use Case 3:** In Silico Predictions & In Vivo Correlations: The importance of Data Quality and Integrity in Driving AI Empowered Discovery

- Bioactive In Silico predictions require high quality, reproducible data to be effective- “rubbish in-rubbish out”
- In Silico Predictions require wet Lab validation – the importance of the “fully Integrated approach”
- Next Gen therapeutics discoveries need stronger alliances between tech and Bio Pharma to fully realise AI potential

**Nora Khaldi**, Founder & Chief Scientific Officer, **Nuritas**

12:25 **Use Case 4:** Can we Accelerate the Adoption of AI in Pharma by Learning from Experiences in other Industries?

- Advances in AI have until now been driven by digital natives, where innovation in data-driven decision-making is core to the business. AI is now rippling out to other industries, with pharma rapidly exploiting a new wave of AI innovations.
- Hear how AI-driven innovation in pharma is not only borrowing proven technologies from other domains but also stimulating the development of novel techniques, tailored to the challenges in pharma
- In order to gain maximum value from cutting-edge AI, and avoid the many pitfalls, it's time to start looking beyond the hype towards rigorous engineering and governance principles. We will discuss the best practices and guidelines developed from our experiences.

**Sam Genway**, Principal AI Solutions Engineer, **Tessella**

12:50

### Long-Table Lunch & Networking

### Interactive Workshops

1:50 During these intimate breakout sessions, attendees will discuss some of the key questions surrounding AI and machine learning in pharma. Through deep-dive discussions, examples and peer-to-peer learning, these interactive workshops will allow attendees to uncover answers to questions that are not possible through presentations and panels... The topics in session A and B will remain the same; giving you the opportunity to participate in two sessions. You are spoilt for choice!

#### Workshop 1A:

#### Collaborating to Accelerate Drug Discovery: Lessons for Pharma and the promise of AI in the Discovery of Next Generation Therapeutics

Nuritas will run an interactive workshop with an insightful panel discussion on the topic

**Vanita D. Sood**, Global Head of Drug Structure, Prediction & Design, **EMD Serono, Inc.**  
**Agam Sheth, PhD**, Director Enabling Technologies, Merck Research Laboratories, **Merck & Co., Inc.**  
**Alan Kopin**, Director, **Molecular Pharmacology Research Center** | Professor, **Tufts University School of**

#### Workshop 2A:

#### Practical & Relevant applications of Artificial Intelligence

Why do so many companies fail in delivering AI & Machine Learning tools to the Pharma? Learn about some key elements to consider when considering the use of AI and ML in Pharma including some high level, practical use cases.

- Understand what specific differences need to be considered for Pharma when it comes to practical applications of Artificial Intelligence
- Gain clarity and perspective on how to balance the make and / or buy question for advanced analytics.

<p><b>Medicine</b>   Professor, <b>Sackler School of Graduate Biomedical Sciences</b></p> <p><b>Lina Williamson, DVM PhD</b>, Director, Entrepreneurship &amp; Innovation   Translational Accelerator, <b>Brigham and Women's Hospital (Harvard University)</b></p> <p><b>John Baldoni</b>, SVP, Head of <i>In Silico</i> Drug Discovery, <b>GSK</b></p> <p><b>Nora Khaldi</b>, Founder &amp; Chief Scientific Officer, <b>Nuritas</b></p> <p><b>Emmet Browne</b>, CEO, <b>Nuritas</b></p>	<ul style="list-style-type: none"> <li>Lawrence Ganti, who comes with 18 years of practical operating experience in Pharma, will outline what really matters and showcase case studies of real world problems which have been solved using AI</li> </ul> <p><b>Lawrence Ganti</b>, CEO of Life Sciences, <b>Innoplexus</b></p>
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2:30 Workshop Sessions B: Time to switch!

<p style="text-align: center;"><b>Workshop 1B:</b></p> <p style="text-align: center;"><b>Collaborating to Accelerate Drug Discovery: Lessons for Pharma and the promise of AI in the Discovery of Next Generation Therapeutics</b></p> <p>Nuritas will run an interactive workshop with an insightful panel discussion on the topic</p> <p><b>Vanita D. Sood</b>, Global Head of Drug Structure, Prediction &amp; Design, <b>EMD Serono, Inc.</b></p> <p><b>Agam Sheth, PhD</b>, Director Enabling Technologies, Merck Research Laboratories, <b>Merck &amp; Co., Inc.</b></p> <p><b>Alan Kopin</b>, Director, <b>Molecular Pharmacology Research Center</b>   Professor, <b>Tufts University School of Medicine</b>   Professor, <b>Sackler School of Graduate Biomedical Sciences</b></p> <p><b>Lina Williamson, DVM PhD</b>, Director, Entrepreneurship &amp; Innovation   Translational Accelerator, <b>Brigham and Women's Hospital (Harvard University)</b></p> <p><b>John Baldoni</b>, SVP, Head of <i>In Silico</i> Drug Discovery, <b>GSK</b></p> <p><b>Nora Khaldi</b>, Founder &amp; Chief Scientific Officer, <b>Nuritas</b></p> <p><b>Emmet Browne</b>, CEO, <b>Nuritas</b></p>	<p style="text-align: center;"><b>Workshop 2B:</b></p> <p style="text-align: center;"><b>Practical &amp; Relevant applications of Artificial Intelligence</b></p> <p>Why do so many companies fail in delivering AI &amp; Machine Learning tools to the Pharma? Learn about some key elements to consider when considering the use of AI and ML in Pharma including some high level, practical use cases.</p> <ul style="list-style-type: none"> <li>Understand what specific differences need to be considered for Pharma when it comes to practical applications of Artificial Intelligence</li> <li>Gain clarity and perspective on how to balance the make and / or buy question for advanced analytics.</li> <li>Lawrence Ganti, who comes with 18 years of practical operating experience in Pharma, will outline what really matters and showcase case studies of real world problems which have been solved using AI</li> </ul> <p><b>Lawrence Ganti</b>, CEO of Life Sciences, <b>Innoplexus</b></p>
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3:10 **Afternoon Refreshments & Networking**

**Use Case Presentations II: Where is AI Moving the Needle?**

AI holds huge promise in drug discovery and development but genuine examples of where these approaches are having an impact today remain sparse. This set of case-study presentations will showcase some of the most promising areas where AI is making an impact along the pharma workflow. Utilise these examples to understand how success has been achieved in these areas and what's next for these promising research applications.

3:40 **Use Case 5:** Deep Learning Applied to Crystal Structural Imaging

- AI is moving the needle for imaging in pharma and this presentation will showcase how deep learning is by rapidly analyzing crystal structural images
- Results from recent projects will be analyzed and discussion will focus around how these projects are being rolled-out internally

**Vijay Bulusu**, Head, Data & Digital Innovation, **Pfizer**

4:05 **Use Case 6:** AI in Action: Four Ways We're Using AI Right Now in Pharma

- Automating the extraction of patient and drug safety data from unstructured text
- Determining an optimal submission date or date range for Regulatory dossiers
- Reducing production defect rates
- Rescuing clinical trials that have gone off track

**Rupen Mehta**, Life Sciences Expert, **PA Consulting Group**

**Willem van Asperen**, Global Capability Lead AI & Data Analytics, **PA Consulting Group**

### Looking Ahead and Critical Questions

4:30 **Panel Discussion and Open Q&A:** How and Where Should we Invest our Efforts Moving Forward?

With many learnings from this summit and a vast number of options moving forward, it is crucial that pharma takes a critical look at how to utilize AI moving forward. This closing panel session will focus on the crucial questions pharma needs to ask itself and collaborators in relation to where and how to best invest efforts and resources. Utilize this session to finalize genuine takeaways from the event around the crucial challenges/opportunities that remain:

- What can we realistically expect to change to enable pharma to utilize the full potential of AI?
- If the real value is in the data, how should we address the translation gaps to link approaches and workflows together?
- When coming up against colleagues with "old-school" mindsets, how do we best demonstrate the value of what AI can deliver?

- Will the real kicker be when AI has come up with an optimized molecule and it translates successfully into the clinic?
- Are pharma companies being ruthless enough when deciding how and where to invest their efforts with AI?
- From this summit, what has given you encouragement for the future?

**Don Van Dyke**, Chief Operating Officer, **Cloud Pharmaceuticals**

**Slava Akmaev**, Senior Vice President & Chief Analytics Officer, **Berg Health**

**Kim Branson**, Head of A.I, Early Clinical Development Informatics, **Genentech**

**Rachel Sha**, Vice President, Digital Business Development, **Sanofi**

5:10 Chair's Closing Remarks

- What have been the key learnings from today?
- Summary message of how best to implement these learnings moving forward

**Sebastien Lefebvre**, Senior Director, Data Analytics & Decision Support, **Alexion Pharmaceuticals**