PRISME Forum

Pharmaceutical R & D Information Systems Management Executives

PRISME Forum

TECHNICAL MEETING

Artificial Intelligence in Healthcare Part II: The Practical Application – A European Perspective

PRISME Forum Chair:

Olivier Gien, *Sanofi*

PRISME Forum Technical Meeting Chair:

Jürgen Hammer, *Roche*

May 16-17, 2018

Antony, France

Host: Sanofi

Download and stay up-to-date with our

PRISME Forum Spring 2018 Technical Meeting App:

http://my.yapp.us/PRISMETECH

Meeting Venue

The PRISME Forum Spring 2018 Technical Meeting will be hosted by Sanofi and held at:
20 Avenue Raymond Aron, 92160 Antony, France

Hotel

Novotel Paris 14 Porte d'Orleans located at 15-17-21 Boulevard Romain Rolland, 75014 Paris, France.

Contacts

Program Coordinator:		+44.77.68.173.518/jcmwise@prismeforum.org
Secretariat	Office:	+1.224.938.9523/logistics@prismeforum.org
	On site, SMS:	+1.312.622.1234

PRISME Forum Technical Meeting Advisory Committee

Rémi Chossinand
ITS Head of Clinical Digital, *Sanofi*

Edsel Calliste-David
Global Lead, Information Systems, *Astellas*

John Gregory
Director, Project & Portfolio Management Business Technology, *Pfizer*

Jürgen Hammer
Chair, *PRISME Forum* Technical Meeting
Global Head, Data Science; Pharma R&D Informatics, *Roche*

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

Laetitia Marossero
ITS R&D, GSC Clinical Digital Solutions, Domain Lead, AI and Wearables, *Sanofi*

Peter McMeekin
CEO, RD Tech Innovation Hub, *GlaxoSmithKline*

Will Pitt
Senior Principal Scientist - CADD, *UCB*

Jason Swift
Director, Early Clinical Development Innovation and Genomics IT, *AstraZeneca*

Barbara Weidgang
Market Excellence & Innovation Manager, *Bayer Business Services*

John Wise
Program Coordinator, *PRISME Forum*

PRISME Forum Host

The PRISME Forum Technical Meeting Advisory Committee would like to thank Sanofi for hosting the 2018 PRISME Forum Spring meeting.

PRISME Forum Statement of Compliance

"All meetings, working groups and communications will be open to all Members and any records thereof will be non-confidential and available for inspection by any Member. The Members acknowledge that discussing any commercially sensitive topics, including costs, volumes, inventories, sales level methods, channels of distribution, access to future products, markets, current or future prices, profitability, ***contract pricing or trading terms*** is prohibited. The Members of PRISME will strictly comply with all laws relevant to their activities, including US state and federal anti-trust laws and European competition laws."

Artificial Intelligence in Healthcare Part II:
The Practical Application – A European Perspective

Though currently very exciting, Artificial Intelligence (AI) is by no means new to Healthcare. AI applications have been around for several decades undergoing several 'Hype' cycles. After AI-based expert systems underperformed in the 1980s, AI returned to accompany the first Genomics wave during the early 2000s, e.g. Bioinformatics routinely applied AI in the analysis of high-dimensional micro-array data. However, as those AI applications were not on the critical path, they remained mostly "under the radar".

So, why the current excitement? The recent awakening of AI in Healthcare is the result of converging developments. For example:

1. AI applications – especially Deep Neural Networks (DNN) – have successfully penetrated everyday consumer products.
2. The availability and relative ease of generating large biomedical data sets enables training of DNNs.
3. Advances in computing power.
4. Investments in the Data Science workforce fueling new thinking and applications of AI in Healthcare;
5. Advanced Analytics becoming recognized as fundamental to tackling R&D efficiency gaps and innovation.

The previous PRISME Forum Technical Meeting (Fall 2017, Cambridge, MA) addressed the topic of 'The Potential of AI in Healthcare'. This Technical Meeting (Spring 2018, Paris, France) will focus on the practical application of AI in Healthcare and from a European perspective. The expectation is that sharing information about the actual deployment of AI applications will lessen the hype and promote this Technical Meeting as an excellent venue for learning and inspiring.

PROGRAM

Thursday's Technical Meeting will be held at Sanofi's Antony campus (20 Avenue Raymond Aron, 92160 Antony, France).

WEDNESDAY, May 16, 2018			
19:00	*Group Reception in Novotel Paris Porte d'Orleans (15-17-21 Boulevard Romain Rolland, 75014 Paris)*		
THURSDAY, May 17, 2018			
07:15	*Gather in the Novotel Paris 14 Porte d'Orleans hotel lobby for departure to the meeting venue;* ***prompt departure at 7:20 am***		
08:00	*Check-in and poster installation*		
08:30	**Welcome Notes & Introductions**		**Olivier Gien,** VP, Global Head Medical IT, *Sanofi*; Chair, *PRISME Forum* **Jürgen Hammer,** Global Head Data Science; Pharma R&D Informatics, *Roche;* Technical Meeting Chair, *PRISME Forum*
SESSION I A: PLENARY PRESENTATIONS AI in Biopharma R&D & Healthcare			**Chair: Jürgen Hammer,** Global Head Data Science; Pharma R&D Informatics, *Roche*; Technical Meeting Chair, *PRISME Forum*
09:00	**Plenary #1 – Machine Learning in Single Cell Genomics**		**Fabian Theis,** Head of Institute of Computational Biology and Group Leader Machine Learning, *Helmholtz Zentrum München*
09:30	**Plenary #2 - Machine Learning for Smarter Drug Discovery**		**Claus Bendtsen,** Executive Director, Data Science, *AstraZeneca*
10:00	*Coffee Break*		
SESSION II: START-UP COMPANY "PITCH" SESSION			**Chair: Barbara Weidgang,** Market Excellence & Innovation Manager, *Bayer Business Services*
10:30	*Introduction*		
10:45	**1**	**Iktos – Recent Trends in AI Technologies for De Novo Design - Iktos Approach**	**Yann Gaston-Mathé**, Co-Founder & CEO, *Iktos* **Quentin Perron**, Co-Founder & CSO, *Iktos*
11:00	**2**	**OWKIN – Machine Learning for Data Driven Biopharma R&D**	**Meriem Sefta,** Partnerships and Translational Research Manager, *OWKIN*
11:15	**3**	**Turbine – AI-in silico Experiments on a Simulated Cell**	**Szabi Nagy,** Co-Founder & CEO, *Turbine*
11:30	**4**	**Inato – AI-Powered Patient Recruitment**	**Kourosh Davarpanah**, Co-founder & CEO, *Inato*
11:45	***Conclusions***		
	****PRISME Forum Start-up Company "Pitch" Session Evaluation Panel Members:***		
	Barbara Weidgang, Market Excellence & Innovation Manager, *Bayer Business Services*		
	John Gregory, Director, R&D Project & Portfolio Management, Business Technology, *Pfizer*		
	Laetitia Marossero, ITS R&D, GSC Clinical Digital Solutions, Domain Lead, AI and Wearables, *Sanofi*		
	Peter McMeekin, CEO, RD Tech Innovation Hub, *GlaxoSmithKline*		
	Will Pitt, Senior Principal Scientist - CADD, *UCB*		

THURSDAY, May 17, 2018 (cont.)			
SESSION III A: POSTERS			**Chair: Jason Swift,** Director, Early Clinical Development Innovation and Genomics IT, *AstraZeneca*
11:55	*Introduction*		
12:00	*Poster Rotations (Four 15-minute rotations)*		
	P1	**Nephro-oncology: Closer Monitoring of Patient Renal Function in Early-Phase Oncology Clinical Trials**	**Laura Hutchinson**, Business Analyst, *Cancer Research UK*
	P2	**Deep Learning in Imaging for Increased Efficiency in Drug Discovery**	**Fabian Schmich,** Senior Data Scientist, *Roche*
	P3	**Meet Bob! The Co-Bot Writer**	**Laetitia Marossero,** ITS R&D, GSC Clinical Digital Solutions, Domain Lead, AI and Wearables, *Sanofi* **Arden Manning,** Senior Vice President Marketing, *yseop*
	P4	**Modeling and Simulation: Clinical Pharmacometrics**	**Angeli Möller,** Head of IT Business Partnering Research, *Bayer*
	P5	**Artificial Intelligence in Pharmacovigilance**	**Armen R. Kherlopian,** Chief Science Officer, *Genpact* **Eric Sandor,** PVAI Business Leader, *Genpact*
	P6	**Evaluation and Implementation of RPA in GSK R&D**	**Megan Bell,** Chief Technology Officer, RD Tech Innovation Hub, *GlaxoSmithKline*
	P7	**Applications of AI and Machine Learning in Drug Design**	**Adrian Stevens,** Director, Product Management Predictive Sciences, *Dassault Systèmes BIOVIA* **Mathias Ganz**, R&D Industry Life Sciences Strategy Director, *Dassault Systèmes*
13:00	*Lunch*		
SESSION III B: POSTERS			**Chair: Jason Swift**, Director, Early Clinical Development Innovation and Genomics IT, *AstraZeneca*
14:00	*Poster Session (Remaining three 15-minute rotations)*		
SESSION I B: PLENARY PRESENTATIONS **AI in Biopharma R&D**			**Chair: Jürgen Hammer,** Global Head Data Science; Pharma R&D Informatics, *Roche*; Technical Meeting Chair, *PRISME Forum*
14:45	**Plenary #3 - Applications of Deep Learning in Computational Pathology**		**Geert Litjens,** Assistant Professor, *Radboud University Nijmegen Medical Center*
15:15	**Plenary #4 - Improving Clinical Outcome Assessments Using Robotic Devices and Machine Learning and Other Scattered Thoughts on Healthcare Technology, AI, and Hype**		**Dimitris Agrafiotis,** Chief Data Officer and Head of Technology Products, *Covance/LabCorp*
SESSION IV: BREAK-OUTS, READOUTS & COFFEE			**Chair: Rémi Chossinand,** ITS Head of Clinical Digital, *Sanofi*
15:45	**Breakout Session –** Members and meeting guests will be divided into four groups led by co-captains		**Co-captains:** **Group A: Barbara Weidgang, *Bayer*, Yann Gaston-Mathé and Quentin Perron, *Iktos*** **Group B: John Gregory, *Pfizer* and Meriem Sefta, *Owkin*** **Group C: Laetitia Marossero, *Sanofi*, and Szabi Nagy, *Turbine*** **Group D: Peter McMeekin, *GSK*, Kourosh Davarpanah, *Inato* and Will Pitt, *UCB***
16:15	**Plenary Session –** Readouts from breakout groups		
SESSION V: MEETING SUMMARY, AWARDS & RECEPTION			**Chair: Jürgen Hammer,** Global Head Data Science; Pharma R&D Informatics, *Roche*; Technical Meeting Chair, *PRISME Forum*
16:45	Meeting Summary		
17:00	Awards & Networking Reception		
18:00	*Return to the hotel*		

BIOS AND ABSTRACTS

PRISME Forum Chair: Olivier Gien

VP, Global Head Medical IT, *Sanofi*

Olivier Gien, PhD, was elected as PRISME's Chairman in November 2014 and re-elected in November 2016.

He is a Chemical Engineer by training and holds a PhD in Organic Chemistry. His PhD work focused on leveraging Artificial Intelligence technologies and retro-synthetic analysis to build a system helping chemists in the design of synthetic routes.

Dr. Gien started his career in the Exploratory Unit of Sanofi's Hungarian affiliate in Budapest then took charge of Information Systems for Industrial Chemical development at Sanofi's Sisteron site. He then led Global Discovery Research Information Systems at Sanofi-Synthelabo, followed by Sanofi-Aventis in Montpellier, before taking on the roles of Global Head, R&D IT in 2010, Global Head, Clinical IT in 2015 and finally, Global Head, Medical IT in 2017.

PRISME Forum Technical Meeting Chair: Jürgen Hammer

Global Head, Data Science; Pharma R&D Informatics, *Roche*

Jürgen Hammer, PhD, MBA, MS, has been Global Head of Data Science at Roche Pharmaceuticals since 2014. Jürgen joined Roche in Europe as group leader in Autoimmune Diseases. In the late-90s he moved to the US to build and lead Roche's Functional Genomics function. He became Head of Genetics, Genomics and Global Bioinformatics, and later Global Head of Research IM.

Jürgen has also been Informatics Site Head for Research and Early Development at the Roche NJ and NYC Sites. Additionally, Jürgen founded and led the global In Silico Sciences Function between 2005 and 2009, a precursor to Data Science combining computational disciplines to directly support drug projects via advanced analytics.

Jürgen earned an MS at the University of Heidelberg, a PhD at the Max Planck Institute for Immunology, and an MBA at the Fuqua School of Business, Duke University. After spending a year at the University of Zürich, Jürgen completed his Master's thesis at Yale. Jürgen is author of 80+ publications and developed the original TEPITOPE algorithm.

INTRODUCTORY NOTES:

Dr. Hammer will frame the meeting's theme of AI Applications in Pharma R&D, beginning with an incursion into the use of AI in Immunology 20 years ago and exemplifying the rich history of AI in Pharma Research. This will be followed by the introduction and discussion of the often-cited converging developments that enable AI in modern Drug Development. Special emphasis will be given to the promise of Deep Learning, and the ingredients required to fuel a step change in future. A recent "experiment" within Roche revealing and unleashing AI advanced analytics workforce capabilities will be discussed. Furthermore, we will argue that the "AI Hype" has contributed significantly to recent advancements. The segment will conclude by highlighting some of the recent examples of AI applications along the drug development pipeline, making especially reference to our TM Faculty contributions throughout the day.

SESSION IA: PLENARY PRESENTATIONS:
AI in Biopharma R&D & Healthcare

Session Chair: Jürgen Hammer

Global Head Data Science; Pharma R&D Informatics, *Roche*
Technical Meeting Chair, *PRISME Forum*

Fabian Theis

Head of Institute of Computational Biology and Group Leader, Machine Learning, *Helmholtz Zentrum München*

Fabian Theis, PhD, received doctoral degrees in Physics and Computer Science in 2002 and 2003, respectively. After working as a postdoc in Regensburg, Tokyo and Tallahassee, he took up a position as a Bernstein fellow at the Max-Planck Institute for Dynamics and Self-Organisation at Göttingen. He later joined the Helmholtz Zentrum München, first as a group leader and since 2013, as director of the Institute of Computational Biology. Fabian is also full professor for Biomathematics at the Department of Mathematics of the Technical University of Munich.

His research interests include machine learning applied to biological questions, in particular for modeling single cell heterogeneities, and multi-omics data integration in the context of systems medicine.

Machine Learning in Single Cell Genomics

Single-cell technologies are on the verge of revolutionizing molecular biology. While single-cell analyses have previously been focused on proof of concept studies, the technology is now sufficiently robust to enable a broad range of applications, including basic biology and in health and disease. Prime examples include data being generated for different tissues in the context of the Human Cell Atlas, an international effort that aims to profile hundreds of millions of cells from human organs. The scale at which single-cell data is being generated raises a series of computational challenges, from robust preprocessing to high-dimensional visualization and efficient comparison across subgroups and conditions.

In this talk, I will show how machine learning can help solve some of these challenges at each step, from integrating data sets via deep learning to visualization based on diffusion processes and lineage estimation by graph-based methods. I will finish by briefly discussing computational challenges in upscaling to "big data" scRNAseq across multiple conditions such as time points and replicates.

Claus Bendtsen

Executive Director, Data Science, *AstraZeneca*

Claus Bendtsen, PhD, heads Quantitative Biology as part of Discovery Sciences within AstraZeneca. His department provides global support in areas of informatics, mathematical modelling, image analytics and non-clinical statistics.

Prior to joining AstraZeneca, Claus held positions at Novartis and Merck & Co. Earlier in his career, he co-founded three start-ups and worked in academia.

Claus holds a PhD in applied mathematics and an MBA.

Machine Learning for Smarter Drug Discovery

Advances in machine learning is now having a real impact on how drug discovery is done. A deeper understanding of the quality of our predictions, together with the ability to integrate diverse sources of information to form accurate predictions, is allowing us to be more effective in early R&D at AstraZeneca.
In this session, we will show how we use machine learning to:

- Make better decision on which experiments to perform
- Reduce costs by learning from our historical data
- Discover new biology through analytics

SESSION II: Start-Up Company "Pitch" Session

Barbara Weidgang

Market Excellence & Innovation Manager, *Bayer Business Services*

Start-up Company "Pitch" Session Evaluation Panel Members:

Barbara Weidgang

Market Excellence & Innovation Manager, *Bayer Business Services*

Barbara Weidgang works in the R&D IT environment since 1989 in various positions. In her current position as Market Excellence and Innovation Manager she is exploring new terrains for her R&D (IT) colleagues in terms of technology and ways of working. Defining a handful of technology topics to focus on for internal and external collaborations and systematically setting up employee developments and information exchange sessions are some of her core activities.

To be a good advisor many of her former experiences in global positions and with her own teams in R&D IT help to find matching suggestions that are shaping our work environment for the future.

John Gregory

Director, R&D Project & Portfolio Mgmt, Business Technology, *Pfizer*

John Gregory has been at Pfizer for 17 years and is a Director within the R&D BT organization, leading the Project & Portfolio Management (PPM) BT group. In this capacity, he is responsible for project and portfolio management technologies across WRD and the Business Units (early discovery through post-LOE).

John most recently led Pfizer's implementation of IBM Watson Drug Discovery for Immuno-Oncology.

Laetitia Marossero

ITS R&D, GSC Clinical Digital Solutions, Domain Lead, AI and Wearables, *Sanofi*

Laetitia Marossero, PhD, holds a doctorate in Pharmacy and a Master's degree in Computer Science. She is a pharma R&D professional with 16 years of experience in pharma IS project management at Servier and Sanofi, working as senior IS project manager in major pharma projects and program implementation (eCRF, clinical Data-warehouse/datamarts, reporting and BI).

Since 2017, Laetitia has been managing a team within the clinical digital solution center. Her team is working on very different projects to implement AI technologies, using NLG engines to automate clinical study reports, as well as wearables' usage in clinical trials and intelligent project management tools to drive decision making from study start up to study closure.

Peter McMeekin

CEO, RD Tech Innovation Hub, *GlaxoSmithKline*

Peter McMeekin, PhD, MSc, received his doctorate in chemistry from Queens University, Belfast and his Master's in computer modelling from the University of London.

He has spent over 30 years in the Pharmaceutical industry applying analytical methods to data in order to improve decision making.

Dr. McMeekin currently leads the RD Tech Innovation Hub for GlaxoSmithkline and is Director of IT for Galvani Bioelectronics.

Will Pitt

Senior Principal Scientist, *UCB*

Will Pitt, PhD, is a Senior Principal Scientist in Computer-Aided Drug Discovery group of UCB Pharma, based at their research site in Slough, UK. His role is to accelerate early discovery programs, primarily through the application of computational techniques. He has over 20 years' experience of doing this, first at Wyeth and then at Chiroscience, which eventually became part of UCB.

Will holds a PhD in Molecular Modelling from Birkbeck, University of London. He was recently made a Fellow of the Royal Society of Chemistry.

The session's objective is to provide a constructive yet relaxed activity to encourage interaction between PRISME Forum members and five start-up companies with a value proposition relevant to the context of the meeting's theme, i.e., AI in biopharma, R&D and Healthcare.

The rationale, in particular, is that:

- the PRISME Forum members get introduced earlier than they otherwise would to relevant life science R&D/healthcare AI-based business propositions.
- the start-up companies have an opportunity to interact with members of the PRISME Forum and get some constructive feedback about their business propositions.

In terms of structure, the session will begin with the co-chairs' overview followed by four 15-minunte "pitches" delivered by the four start-ups showcased below. Each of these four segments will allow the Panel to ask questions. The session will end with the co-chairs' summary and concluding notes.

Start-up #1: Iktos

Yann Gaston-Mathé, Co-Founder & CEO

Yann Gaston-Mathé, MS, is a seasoned Pharma R&D professional, strategy consultant and biotech entrepreneur with 20+ years of experience in pharma (Servier, Ipsen), molecular diagnostics (IntegraGen) and strategy consulting (Capgemini Consulting, BearingPoint, Cepton). Yann is also a skilled data scientist with several patents and publications in the field of biostatistics and biomarkers discovery and validation.

Since 2016, Yann is the co-founder and CEO of Iktos, a start-up company which develops innovative AI solutions for ligand-based de novo drug design, leveraging the recent developments of deep learning technology. Yann holds a MS Degree from Ecole Polytechnique and a MS Degree in genetics from AgroParisTech.

Quentin Perron, Co-Founder & CSO

Quentin Perron, PhD, is a medicinal chemist by training and has held several positions in academia (University of Geneva, UCLA) and industry (Servier). He has turned towards data science and computational chemistry (Quinten) before he co-founded Iktos. He is now the CSO of the company.

Quentin holds a PhD from University of Geneva.

Recent Trends in AI Technologies for De Novo Design - Iktos Approach

The stupendous progress of Artificial Intelligence and its disruptive potential in many application domains is now reaching Drug Discovery. Thanks to deep learning technologies, the massive amount of data generated in Pharma and academia over the last decades may at last contribute to a paradigm change in Drug Discovery processes, and enable the productivity gains that are needed for a sustainable investment in Drug Discovery and Development.

Among recent important innovations, the development of deep learning generative models to chemical structures data is bringing major changes to De novo drug design, i.e., the automatic generation of promising molecules in silico, that was until now intrinsically limited, because of the gigantic size of the chemical space compared to computing capacities. Since the publication of the first paper by Gomez-Bombarelli et al. in 2016, the field has been growing very fast and different types of molecular representations, deep learning architectures or methodologies have been published. However, much remains to be investigated and developed to make these technologies useful to computational and medicinal chemists in the various stages of drug design projects from hit discovery, to hit-to-lead and late stage lead optimization. Several "AI for drug discovery" start-up companies have emerged and are getting traction (Atomwise, Insilico Medicine, Exscientia, BenevolentAI, twoXAR, etc.), and there is an important hype in the field, making it difficult to distinguish between different technologies, applications, and business models.

Since late 2015, Iktos has been a pioneer in the development of deep learning technologies applied to ligand-based de novo design for multi-parameter optimization, and has been developing and improving its technologies ever since. Iktos technology is already in use to support Drug discovery projects at several pharmaceutical companies, and the first "real life" results appear as very promising. Iktos is positioning themselves as a technology provider and is developing a soon to be released SaaS platform that will make the technology accessible to all computational and medicinal chemists.

Yann and Quentin will give a short overview of the field and the different concepts, technologies, applications and actors, then will focus on Iktos technology and its deliverables for clients through a concrete example.

Start-up #2: OWKIN

Meriem Sefta, Partnerships and Translational Research Manager

Meriem Sefta, PhD, is responsible for academic partnerships and translational research at Owkin. Prior to joining Owkin, Meriem was a Strategy Consultant for biopharmas at AEC Partners.

She received her MSc in Biological Engineering from MIT, and her PhD in Computational Cancer Biology from Institut Curie.

Machine Learning for Data Driven Biopharma R&D

OWKIN's goal is to improve drug discovery and development with artificial intelligence trained on real world data. To this end, OWKIN works in parallel with leading hospitals and pharmaceutical companies. We support clinical research in hospitals by augmenting their predictive capacity and transfer this knowledge to help advance pharma's molecule development.

Our company focuses its technology on the creation of interpretable biological models on all types of data. Driven by our respect for patient data privacy, we assure that data never goes on the cloud thanks to our unique distributed learning tool.

OWKIN was created in June 2016 by Gilles Wainrib, a former professor of applied mathematics at ENS, and Thomas Clozel, a former professor in oncology and hematology.

Start-up #3: Turbine

Szabolcs (Szabi) Nagy, Co-Founder & CEO

Szabi Nagy is the CEO of Turbine, the startup building AI-guided, simulated models of human cells to predict how compounds impact patients.

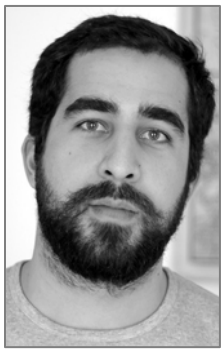
Prior to taking Turbine from the lab to partnering with top pharma, Szabi gained experience in bringing deep tech to success while launching Tresorit, a cryptography platform enabling secure data exchange through the cloud. His interest in helping patients developed while building a platform for managing chronic conditions with the Medical Futurist, the world's leading thinker on digital health.

AI-in Silico Experiments on a Simulated Cell

With over a decade of research, Turbine has built an AI-powered human cell model which predicts how drugs work before costly experiments and trials. A year after leaving academic research behind, the company is already working with some of the largest pharma companies in the world. From molecular biomarkers to resistance mechanisms and rational combinations, Turbine's simulated cells helped uncovered several dozen novel, validated findings to fight cancer more effectively.

Start-up #4: Inato

Kourosh Davarpanah, Co-founder & CEO



Kourosh Davarpanah is cofounder and CEO of Inato, a startup which helps pharmaceutical companies accelerate patient recruitment by identifying the best sites and investigators for a given trial.

Before founding Inato, he worked in the blockchain space and cofounded a startup in the transportation industry.

Kourosh is a graduate of Ecole Polytechnique and Columbia University.

Inato – AI-Powered Patient Recruitment

Inato is Paris-based clinical research startup. It has built an AI-augmented platform that speeds up patient recruitment for clinical trials, cross-checking dozens of sources to produce actionable insights. The company is already working with leading pharma companies on major international clinical trials, and recently closed a funding round to accelerate their growth.

Session Chair: Jason Swift

Director, Early Clinical Development Innovation and Genomics IT, *AstraZeneca*

Jason Swift, PhD, has 22 years' experience in Pharmaceutical R&D. He has a scientific background with a PhD in computational molecular biology (before it was called Bioinformatics) from Leeds University in the UK. He has held a number of technical and Scientific IT leadership roles in AstraZeneca across multiple scientific, clinical and therapeutic domains. Jason has held roles in the UK and US focused on Informatics and IT capability build and transformation.

Jason's current role is split between AstraZeneca Pharmaceuticals and CRUK MI. Within AstraZeneca, Jason has responsibilities for driving innovation in Early Clinical Development and building a Global Genomics IT program to support AstraZeneca's strategy to leverage data from 2 million Genomes. Within CRUK MI, Jason is responsible for the build of a Clinical Trial Informatics and Data Science capability as part of a £11.2M collaboration between AstraZeneca, The University of Manchester Institute of Cancer Sciences, The CRUK Manchester Institute Centre for Cancer Biomarker Sciences, and the Christie NHS Foundation Trust Research Division.

Laura Hutchinson

Business Analyst, *Cancer Research UK*

P1

Laura Hutchinson, PhD, is a business analyst at Cancer Research UK Manchester Institute. Her main focuses within the Digital Experimental Cancer Medicine Team are on data visualization and designing and implementing digital solutions to improve clinical trials.

Laura received her PhD in Pharmacy and Pharmaceutical Sciences from the University of Manchester, where her research focused on the role of lactate in prostate cancer and involved using high-throughput metabolomics screens to identify potential new drug combination targets.

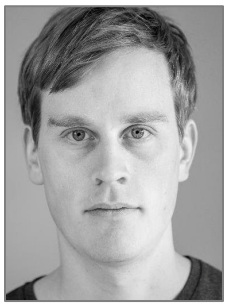
P1: Nephro-oncology: Closer Monitoring of Patient Renal Function in Early-Phase Oncology Clinical Trials

Current clinical trial eligibility criteria exclude patients with reduced kidney function leading to a trial population that may not be representative of the whole patient population. To address these issues, clinical trial sponsors must scrutinise eligibility criteria and endeavour to broaden them where it is reasonable and safe to do so. One way that sponsors may achieve this, while maintaining safety for patients, is through the utilisation of additional monitoring systems. The digital Experimental Cancer Medicine Team (digitalECMT) have developed one such monitoring system to provide evidence to challenge the renal exclusion criteria where an eGFR level of >40ml/min is often required for inclusion on the majority of trials.

The nephro-oncology monitoring system uses a point of care device which patients can use to measure whole blood serum creatinine level (an indicator of kidney function) in the home. Patients are then able to submit readings via a mobile application and measurements are transferred to the cloud for processing through a risk algorithm. Where necessary, the algorithm outcome then triggers an alert to a clinician. As a result of this project, our aim is to make it possible to include patients on trials who would otherwise be excluded due to renal impairment.

Fabian Schmich
Senior Data Scientist, *Roche*

P2



Fabian Schmich, PhD, works as a Senior Data Scientist at the Roche Innovation Center Munich. His research is focused on Machine Learning, data mining and applied statistics in the context of cancer immunotherapy.

Fabian studied computer science, mathematics and biology in Munich, Toronto, and London and received his diploma degree in bioinformatics from Technical University Munich in 2011. In 2016, Fabian received his PhD in computational biology from ETH Zürich, where he developed computational tools and probabilistic models for the analysis of genetic perturbation data.

P2: Deep Learning in Imaging for Increased Efficiency in Drug Discovery

Fabian Schmich, Laura Woltering, Tobias Scherzinger

[Acknowledgement: Jan Woerner, Michael Feigl]

Several decision points in Roche's drug discovery value chain are based on imaging data. With a steady increase in the amount and complexity of imaging data, the interpretation and decisions by human experts become more time-consuming, expensive and error prone. In the context of cell line development for antibody production at Roche, for each portfolio project, the clonality of up to 25,000 cell lines has to be assessed based on up to five images per cell line. Using state-of-the-art automated high-throughput microscopy with proprietary vendor software, this is currently achieved at a false positive detection rate of 4 – 6%, calling for a considerable investment in manual visual re-assessment.

Leveraging recent advances in deep learning that revolutionized the field of computer vision, we developed a convolutional neural network and trained the model on an extensive set of historical data to predict monoclonality from fluorescent and brightfield microscopic images of cells. Cutting down error rates in the automated pipeline, our classifier allows to reduce manual visual assessment monoclonality in future portfolio projects to approximately 10% of the original manual workload and hence increases efficiency and reproducibility in one of Roche's key drug discovery platforms.

Laetitia Marossero

ITS R&D, GSC Clinical Digital Solutions, Domain Lead, AI and Wearables, *Sanofi*

P3

Laetitia Marossero, PhD, holds a doctorate in Pharmacy and a Master's degree in Computer Science. She is a pharma R&D professional with 16 years of experience in pharma IS project management at Servier and Sanofi, working as senior IS project manager in major pharma projects and program implementation (eCRF, clinical Datawarehouse/datamarts, reporting and BI).

Since 2017, Laetitia is managing a team within the clinical digital solution center. Her team is working on very different projects to implement AI technologies, using NLG engines to automate clinical study reports, as well as wearables' usage in clinical trials and intelligent project management tools to drive decision making from study start up to study closure.

Arden Manning

Senior Vice President Global Marketing, *Yseop*

Arden Manning often speaks on the intersection of innovative technology and the workplace of the future. With an international background having worked in France, the UK, and the US, in technology and marketing, along with work at the highest levels of the US political system including the *unparalleled* 2008 Obama campaign. Arden's background gives him a unique perspective of how businesses are (and are not) adopting technology and change management on both sides of the Atlantic.

Today he serves as SVP Marketing at Yseop, where he manages the team that sets and implements strategy to bring Yseop's software to the market. Arden has been working with Yseop since 2013 and has served as SVP of Global Marketing since the beginning of 2015.

P3: Meet Bob! The Co-Bot Writer

Within clinical development, it takes in average seven months to get the clinical study report approved from clinical study Database lock. This was identified as one of the bottleneck of the development process to optimize to reduce time to market by two months.

The goal of the AI4CSR project is to leverage AI technologies to produce a first draft of the CSR to the medical writers' communities by automating biostatistic summary tables description in human-like drafted text. One of the main challenge is to provide high quality text which can be acceptable in terms of clinical meaning for different category of reviewers: medical writers who will complete the resulting CSR draft, Clinicians in charge of the product development, Biostatisticians and pharmacovigilants. The goal is to save up to 50% of the writing time from database lock. By combining both AI and content re-use technologies, the final objective is to cover 80% of the CSR body first draft automation to the medical writers who will focus on clinical interpretation and higher value activities based on their product knowledge. This disruptive approach will change the document authoring ecosystem and will rely on change management.

Angeli Möller

Head of IT Business Partnering Research, *Bayer*

P4

Angeli Möller, PhD, began her career at a small CRO in Berlin, after which she was awarded a doctoral scholarship by Cancer Research UK. Upon completing her PhD, she accepted a postdoctoral position at the Max Delbrück Centrum (MDC). During her four years at the MDC she modeled the human chemical synapse, combining both in silico and wet-lab experiments. She was then recruited by Thomson Reuters as a data scientist and worked on projects for five large pharma companies.

In 2016 she then moved into pharma, accepting a position as an IT Business Partner, and was responsible for the digital strategy in clinical sciences and translational medicine oncology at Bayer. In 2018 she was then promoted to her current position, the head of IT Business Partnering Research.

P4: Modeling and Simulation: Clinical Pharmacometrics

The pharmacometrics modeling and simulation environment at Bayer enables both population and physiology based pharmacokinetic analysis using nonmem, R and matlab in the cloud. The entire platform is validated (GxP compliant) and maintained by a dedicated DevOps team.

Armen Kherlopian

Chief Science Officer, *Genpact*

P5

Armen Kherlopian, PhD, serves as Chief Science Officer at Genpact, which was spun out of GE and currently has over 75,000 staff in over 20 countries. During his career, Dr. Kherlopian has provided high impact Data Science advisory for Global Fortune 100 companies and government organizations such as NASA.

He is a co-author of the Field Guide to Data Science, which has 25,000 copies in circulation. Also, Dr. Kherlopian is an awardee of the U.S. National Science Foundation Graduate Research Fellowship, U.S. Department of Energy Computational Science Graduate Fellowship, and is a Lindau Nobel Laureate Fellow. He holds a BS and MS in Biomedical Engineering with a focus on Algorithms from Columbia University, a PhD in Biophysics with a focus on Machine Learning from Cornell University, and completed a fellowship in High Performance Computing and Artificial Intelligence at Princeton University.

Eric Sandor

PVAI Business Leader, *Genpact*

Eric Sandor has more than 24 years of experience and deep expertise within the Pharmacovigilance domain. Previously a Global Managing Partner in Accenture's Health and Life Sciences practice, he founded and led Accenture's Pharmacovigilance Services business globally. During that time, he led the transformation program at the MHRA that delivered business change and the Sentinel system across the entire regulatory lifecycle, as well as working with several big pharmaceutical companies to transform their PV operations.

At Genpact he has mobilized a team of over 100 dedicated staff including R&D Specialists and Client Service Professionals. The team is working to transform the industry's Pharmacovigilance operating model by developing a next-generation technology, with ground-breaking and low-risk automation capability, to support public health missions around the world.

P5: Artificial Intelligence in Pharmacovigilance

In many industry areas, whether it be insurance, finance, or supply chain, it is paramount to balance risk and benefit. In Pharmacovigilance this principle is central, where the benefits of medical products are continually assessed against the risk represented by adverse drug reactions. Every year pharmaceutical companies and industry regulators handle increasing volumes of possible adverse drug reaction cases, which despite significant investment in current generation technology leads to an increasing strain on resources, data quality, and compliance. The current approach of manual case processing is neither sustainable nor scalable. By innovating with Artificial Intelligence (AI), Genpact has developed PVAI (Pharmacovigilance Artificial Intelligence) to help pharmaceutical companies and regulators improve compliance, boost operational efficiency and better protect public health. For PVAI we have leveraged investments in the Cora platform as per advanced research, strategic acquisitions and a strong partner ecosystem to help redefine the next generation in pharmacovigilance technology. Currently, PVAI has set a new standard against all known academic and industry benchmarks for automated Adverse Event (AE) data extraction performance.

During this seminar, attendees will learn about supporting AI technologies such as Natural Language Processing (NLP), Computer Vision (CV), and Machine Learning (ML) as applied to PV, and in particular, how safety data quality can be improved with human and computer interaction.

Megan Bell

Chief Technology Officer, RD Tech Innovation Hub, *GlaxoSmithKline*

P6

Megan Bell is a highly experienced technology professional with almost twenty years of professional experience in high performance OLTP systems architecture, project and team management, database development with administration and internet platform development. She possesses an extremely broad understanding of modern internet technologies across hardware, software and networking, and their best use-cases.

Megan has an excellent commercial understanding of both large scale corporate and smaller pure-play business models.

Her previous work includes off-shore (India and Bulgaria) development teams while on international platform developments she has built effective skills in integrating geographically diverse resources. Interests beyond these core capabilities include science, technology, business and finance.

P6: Evaluation and Implementation of RPA in GSK R&D

Overview of the lean and rapid initial RPA product evaluations and the implementation of a robust production grade internal service.

Adrian Stevens

Director, Product Management Predictive Sciences, *Dassault Systèmes BIOVIA*

P7

Adrian Stevens is Director of Product Management at Dassault Systèmes BIOVIA, responsible for the development of predictive science applications in support of Life Sciences research.

Prior to joining BIOVIA in 2008, he spent over 12 years working in computational chemistry and biology within the pharmaceutical industry.

Adrian has published approximately 20 papers and is named on three patents.

Mathias Ganz

R&D Industry Life Sciences Strategy Director, *Dassault Systèmes*

Mathias Ganz, PhD, is currently R&D Industry Life Sciences Strategy Director at Dassault Systèmes. He holds a PhD in Physical Chemistry after studies of Chemistry at the University of Würzburg in Germany.

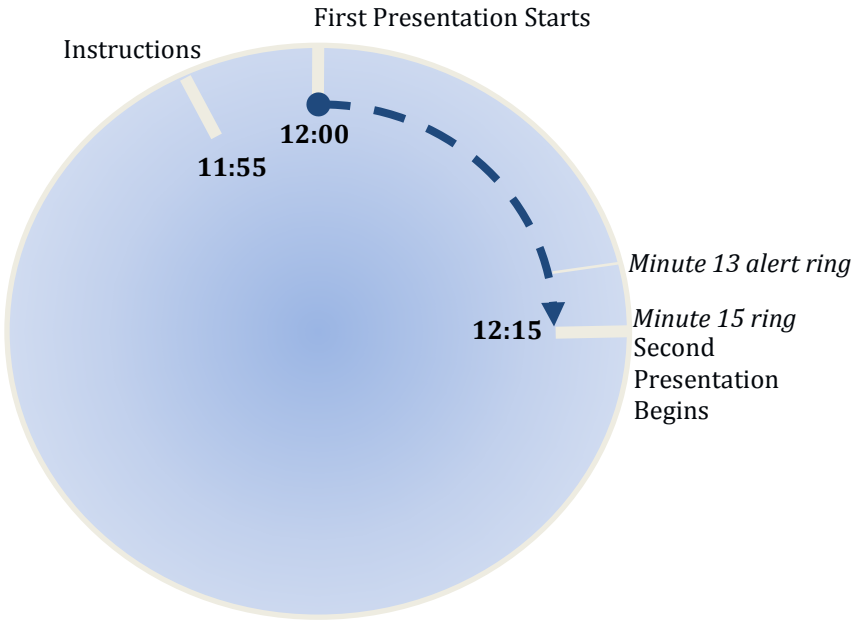
Prior to that, Dr. Ganz held different positions within R&D IT in the Pharmaceutical Industry. He was Vice President Research & Development IT at Ipsen Pharma and was responsible for developing and implementing innovative IT solutions throughout the R&D organization covering as well the aspect of translational medicine as well as Clinical and Regulatory topics. Before, he was working at Sanofi Pasteur as IT Project manager and Portfolio Manager for Regulatory Affairs solutions and at IBM as a Project Manager.

P7: Applications of AI and Machine Learning in Drug Design

Pharmaceutical companies can gain a huge competitive advantage if they can successfully reduce timelines in in the discovery phase as it typically takes around four years and in the case of small molecule therapeutics, requires many thousands of compounds to be synthesized and screened to find a lead compound.

BIOVIA has the ambitious goal of reducing this time to less than two years, requiring less than 10% of the compounds to be synthesized in the lab. The envisioned approach applies artificial intelligence techniques to design, test and optimize a drug lead compound rapidly in the computer, before any compound is created. This saves numerous slow iterative cycles of synthesis and screening of compounds in the laboratory.

POSTER SESSION ROTATIONS



INSTRUCTIONS @11:55am

- Session Chair will invite participants to take their seats.
- Chair will open the session by introducing the presenters, their posters, along with the session structure and flow.
- PRISME Forum staff will ring the bell on each rotation (minute 13 of each presentation and then minute 15 at which time the presentation must end).
- Delegates are invited to identify the color of their lanyard and match to rotation called out by staff: "Rotation 1, 2, …n".
- Rotations will involve shift of participants' groups to the next poster on their right.

FIRST SET OF ROTATIONS:

ROTATION 1 – 12:00	ROTATION 2 – 12:15	ROTATION 3 – 12:30	ROTATION 4 – 12:45
P1 – Orange	P1 – Gray	P1 – Green	P1 – Yellow
P2 – Blue	P2 – Orange	P2 – Gray	P2 – Green
P3 – Red	P3 – Blue	P3 – Orange	P3 – Gray
P4 – Purple	P4 – Red	P4 – Blue	P4 – Orange
P5 – Yellow	P5 – Purple	P5 – Red	P5 – Blue
P6 – Green	P6 – Yellow	P6 – Purple	P6 – Red
P7 – Gray	P7 – Green	P7 – Yellow	P7 – Purple

BREAK FOR LUNCH

SECOND SET OF ROTATIONS:

ROTATION 5 – 14:00	ROTATION 6 – 14:15	ROTATION 7 – 14:30
P1 – Purple	P1 – Red	P1 – Blue
P2 – Yellow	P2 – Purple	P2 – Red
P3 – Green	P3 – Yellow	P3 – Purple
P4 – Gray	P4 – Green	P4 – Yellow
P5 – Orange	P5 – Gray	P5 – Green
P6 – Blue	P6 – Orange	P6 – Gray
P7 – Red	P7 – Blue	P7 – Orange

POSTER ROTATIONS *(lanyard colors)*

ORANGE	
Dimitris Agrafiotis	*Covance/LabCorp*
Alastair Binnie	*BMS*
Yann Gaston-Mathé	*Iktos*
Birgitte Mathiesen	*Novo Nordisk*
Maritza Osorio	*Celgene*
Will Pitt	*UCB*
Jean-Luc Schmidt	*Sanofi*
Jason Swift	*AstraZeneca*

BLUE	
Andrew Allen	*Regeneron*
Christian Baber	*Shire*
David Christie	*CSL Behring*
Prashaant Huria	*AstraZeneca*
Quentin Perron	*Iktos*
Benoit Poupin	*Ipsen*
Carol Rohl	*Merck*
Meriem Sefta	*Owkin*
Jens Noack Skærbæk	*Novo Nordisk*

RED	
Claus Bendtsen	*AstraZeneca*
James Cronin	*Alexion*
Matteo di Tommaso	*Sanofi*
Peter McMeekin	*GSK*
Arun Nayar	*Amgen*
Tatsuyuki Takahashi	*Mitsubishi Tanabe*
Sandra Tremps	*Merck*
Ashok Upadhyay	*Otsuka*

PURPLE	
Joel Ekstrom	*Ionis*
Martin Erkens	*Roche*
Kourosh Davarpanah	*Inato*
Pete Dhillon	*Daiichi-Sankyo*
John Gregory	*Pfizer*
Agnes Huot	*Ipsen*
Sylvain Nicolas	*Sanofi*
David Sedlock	*Takeda*

YELLOW	
Massimo de Francesco	*UCB*
Lars Greiffenberg	*AbbVie*
Sylvain Grivel	*Sanofi*
Jürgen Hammer	*Roche*
Klaus Hofenbitzer	*Celgene*
Scott Oloff	*Boehringer Ingelheim*
Etienne Van Der Elst	*Sanofi*
Barbara Weidgang	*Bayer Business Services*

GREEN	
Olivier Gien	*Sanofi*
Andreas Friese	*Bayer*
Aditi Kumar	*Amgen*
Roy Ladd	*AbbVie*
Bruno Larmurier	*Servier*
Geert Litjens	*Radboud University*
Patrick Middag	*BMS*
Szabi Nagy	*Turbine*
Prateek Peres-da-Silva	*Knowledgent*

GRAY	
John Apathy	*Celgene*
Michael Cassidy	*Regeneron*
Dan Chapman	*UCB*
Rémi Chossinand	*Sanofi*
Andrea de Souza	*Lilly*
Haibo Jiang	*Santen*
Tomoyuki Matsunaga	*Takeda*
Fabian Theis	*Helmholtz Zentrum München*
Ari Yacobi	*Knowledgent*

SESSION IB: PLENARY PRESENTATIONS (cont.): AI in Biopharma R&D

Session Chair: Jürgen Hammer

Global Head Data Science; Pharma R&D Informatics, *Roche*
Technical Meeting Chair, *PRISME Forum*

Geert Litjens

Assistant Professor, *Radboud University Nijmegen Medical Center*

Geert Litjens, PhD, studied Biomedical Engineering at Eindhoven University of Technology. Subsequently, he completed his PhD on computer-aided detection of prostate cancer in multi-parametric MRI (in the Diagnostic Image Analysis Group). He spent 2015 as a postdoctoral researcher at the National Center for Tumor Diseases in Heidelberg, Germany on an Alexander von Humboldt Society Postdoctoral Fellowship.

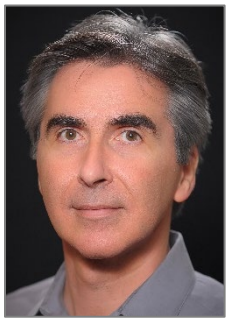
In 2016 he was awarded a Young Investigator Award by the Dutch Cancer Society. He is currently Assistant Professor in Computational Pathology and co-chairs a group of 15 researchers in the Department of Pathology at the Radboud University Medical Center.

Applications of Deep Learning in Computational Pathology

Nowadays, deep learning seems to be everywhere, from self-driving cars to medical imaging. In this presentation, I will cover several applications of novel deep learning techniques to the field of computational pathology. The focus will be on applications which directly apply to patient care but also applications related to biomarker or drug research. I will try to both indicate the possibilities and the current limitations of these techniques and provide an outlook for the near future.

Dimitris Agrafiotis

Chief Data Officer and Head of Technology Products, *Covance/LabCorp*



Dimitris Agrafiotis, PhD, FRSC, is Chief Data Officer and Head of Technology Products at Covance. Prior to joining Covance in 2013, he spent 10 years at Johnson & Johnson where he served as VP of Informatics and Research IT. Dr. Agrafiotis received his PhD in Theoretical Chemistry from Imperial College London in 1988, and held postdoctoral fellowships at the UC Berkeley and Harvard, where he worked with Nobel laureate EJ Corey. In 1991, he joined Parke-Davis as a Senior Scientist in the computational drug design group, and in 1994 he moved to 3-Dimensional Pharmaceuticals as a founding member of its scientific staff, responsible for building the company's informatics and computational drug design capabilities. Following a successful IPO and the acquisition of the company by Johnson & Johnson in 2003, he was appointed Senior Research Fellow and Team Leader of Molecular Design and Informatics, a position he held until 2006 when he was appointed global head of Informatics and Research IT. His work is documented in more than 90 peer-reviewed publications and book chapters and 18 issued US patents. He is a member of the Covance Global Operating Committee and the Covance Science Council, and holds two adjunct faculty appointments. In 2012 he was elected Fellow of the Royal Society of Chemistry for his contributions to chemical and pharmaceutical research, and in 2016 he was named in Computerworld's Premier 100 Technology Leaders for his technology leadership and innovative approaches to business challenges.

Improving Clinical Outcome Assessments Using Robotic Devices and Machine Learning and Other Scattered Thoughts on Healthcare Technology, AI, and Hype

This talk consists of two parts. First, we provide a concrete clinical application of AI by demonstrating how robotic devices combined with machine learning algorithms can introduce greater consistency in measuring clinical endpoints compared to human raters. Our work addresses one of the greatest challenges in clinical trial design, namely, dealing with the subjectivity and variability introduced by human raters when measuring clinical endpoints, and suggests that it is possible to derive robotic biomarkers that can significantly reduce the sample size required to power future clinical trials in stroke, spinal cord injury, and other diseases involving loss of motor function. The second part of the talk will include some personal thoughts on the history and evolution of AI in an attempt to debunk its dystopian portrayals in science fiction and the entertainment industry and reveal its enormous potential to improve human health, safety, and productivity. The talk will end with a word of caution against the abuse of this term for cheap marketing gains.

SESSION IV: BREAKOUT SESSION

Session Chair: Rémi Chossinand

ITS Head of Clinical Digital, *Sanofi*

Rémi Chossinand, MSc, leads Clinical Digital effort in Sanofi towards incorporation of Digital approaches and technologies into Clinical Trial design and executions. Main drivers for this collective effort are operational efficiency, value for patients and better demonstration of therapeutic solution outcomes.

Rémi joined Sanofi ITS Clinical and Regulatory organization in 2016. He was previously Principal with Capgemini Consulting, involved across industry on large Business-IT transformation programs and on digital projects. He holds a MSc in Aeronautical and Space engineering from Supaero University, France.

Objective: Create a follow-on paper – from the Fall 2017 paper – on the topic of "Artificial Intelligence in Healthcare Part II: The Practical Application – A European Perspective"

Methodology: Use the Technical Meeting as a primary information source for the paper.
Use the different breakout groups to examine in details different aspects of the Technical Meeting.
Provide the paper's authors with sufficient detail to write the framework of the paper.

GROUP A - SESSION II: Start-up Pitches
Co-captains: Barbara Weidgang, *Bayer*, Yann Gaston Mathé and Quentin Perron, *Iktos*

Massimo de Francesco (UCB)
Pete Dhillon (Daiichi-Sankyo)
Joel Ekstrom (Ionis)
Mathias Ganz (Dassault Systemes)
Haibo Jiang (Santen)
Geert Litjens (Radboud University)
Arden Manning (Yseop)
Patrick Middag (BMS)
Jens Noack Skærbæk (Novo Nordisk)
Maritza Osorio (Celgene)
Jean-Luc Schmidt (Sanofi)
David Sedlock (Takeda)
Etienne Van Der Elst (Sanofi)

GROUP B - SESSION IA: Plenary Presentations 1 & 2
Co-captains: John Gregory, *Pfizer* and Meriem Sefta, *Owkin*

Dimitris Agrafiotis (Covance/LabCorp)
John Apathy (Celgene)
Claus Bendtsen (AstraZeneca)
Alastair Binnie (BMS)
Dan Chapman (UCB)
Rémi Chossinand (Sanofi)
Andrea de Souza (Lilly)
Martin Erkens (Roche)
Armen Kherlopian (Genpact)
Aditi Kumar (Amgen)
Roy Ladd (AbbVie)
Scott Oloff (Boehringer Ingelheim)
Prateek Peres-da-Silva (Knowledgent)
Benoit Poupin (Ipsen)
Carol Rohl (Merck)
Adrian Stevens (Dassault Systèmes BIOVIA)

GROUP C - SESSION III: Poster Presentations
Co-captains: Laetitia Marossero, *Sanofi* and Szabi Nagy, *Turbine*

Christian Baber (Shire)
Michael Cassidy (Regeneron)
David Christie (CSL Behring)
Matteo di Tommaso (Sanofi)
Andreas Friese (Bayer)
Sylvain Grivel (Sanofi)
Jürgen Hammer (Roche)
Agnes Huot (Ipsen)
Klaus Hofenbitzer (Celgene)
Tomoyuki Matsunaga (Takeda)
Eric Sandor (Genpact)
Jason Swift (Astra Zeneca)
Tatsuyuki Takahashi (Mitsubishi Tanabe)
Sandra Tremps (Merck)

GROUP D - SESSION IB: Plenary Presentations 3 & 4
Co-captains: Peter McMeekin, GSK, Kourosh Davarpanah, *Inato* and Will Pitt, *UCB*

Andrew Allen (Regeneron)
Megan Bell (GSK)
Olivier Gien (Sanofi)
Lars Greiffenberg (AbbVie)
Prashaant Huria (AstraZeneca)
Laura Hutchinson (Cancer Research UK)
Bruno Larmurier (Servier)
Birgitte Mathiesen (Novo Nordisk)
Angeli Möller (Bayer)
Arun Nayar (Amgen)
Sylvain Nicolas (Sanofi)
Fabian Schmich (Roche)
Fabian Theis (Helmholtz Zentrum München)
Ashok Upadhyay (Otsuka)
Ari Yacobi (Knowledgent)

SESSION V: MEETING SUMMARY & AWARDS

Session Chair: Jürgen Hammer
Global Head, Data Science; Pharma R&D Informatics, *Roche*
Technical Meeting Chair, *PRISME Forum*