

AI PHARMA INNOVATION

July 25 – 27, 2017 Boston, MA
www.ai-pharma.com

Metaphor Laden Look at AI in the Pharmaceutical Industry

A Letter from Ben Carrington, AI Pharma Innovation Programme Director

Unsustainable. The one word frequently used to describe the current state of traditional R&D. Over the past couple of months I've been digging into what can be done to change the stale and rigid state of pharmaceutical drug development. That "what" being Artificial Intelligence. More specifically, **how AI can be the catalyst for change; forging a path to an R&D utopia**, opening the pressure valve on the dam of drug innovation, assuming the role of defibrillator for our metaphorical R&D flat line....

As with any "disruptive" technology, the bubble often bursts and the technology rarely manifests itself as the real deal. This could perhaps be true of say RNAi, especially in comparison with the continued fervour around CRISPR. **All too often scientific technologies and tools announce themselves as the next greatest revolution**, surfing their way to the peak of inflated expectation, confetti cannons ablaze, before stagnating in the trough of disillusionment like some turgid swine. Ultimately fading into the background of experimental process, sturdy and reliable, without the razzmatazz. Like the happy camper's spork. Useful? Yes. Revolutionary? Never.

AI (as an umbrella term) however, does not appear to subscribe to such stereotypes, offering the genuine potential to expedite timelines, identify better drug candidates and de-risk development. Ultimately, AI does indeed appear to be the real deal to greatly improve R&D productivity. **In speaking with R&D, IT/Analytics and Innovation executives from the Novartis', Pfizers, GSKs, Takedas, Genentechs (etc...) of this world, it is clear that the long term applicability and power of this technology to make real change is being taken seriously.** To many this comes without surprise, given the advancement and success of machine/deep learning in alternative industries. Even within the pill business, the likes of Berg, Numerate and Cloud Pharmaceuticals have embedded AI at the very core of their DNA, pinning their R&D Jolly Rogers to the AI mast.

Despite a vested interest in the theory (as is often the case), large pharma have been moving slowly over recent years. However, with the AI buzz being almost inescapable in any pop-science journalism and simultaneously being placed firmly atop of the healthcare agenda, it feels like **2017 is the year that pharma, reluctant or not, open their arms to embrace artificial intelligence.** Synonymous to days gone past at university/college, pharma has just walked through the door of their friends-friends party, clutching two bottles of tepid, cheap chardonnay, having been promised a life defining evening. It is very

much a "what to do" and "where to go" conversation to move beyond proof of concept and start deriving genuine value from this technology. Having personally just finished researching and launching a new conference focusing on AI Innovation in Pharma, I believe the challenge ahead is twofold over the next year: strategic adoption and effective application.

Adoption. From personal experience producing events focused on the integration of a precision medicine and diagnostic strategy into R&D, the ability of large pharma to be adaptable, moving quickly with agility to adopt a novel approach is often slow. A major barrier to adoption lies in the fear of change. Especially when the change in question is born out of a completely alien universe, seemingly from the scriptures of science fiction. For pharma leaders raised, educated and well practiced in the traditional R&D paradigm, the bullish advance of AI can appear to be a lot like Slipknot and Sonny Moore headlining the Queen's 90th in the picturesque gardens of Windsor Castle. Bewildering and scary, with all relevance lost on the audience. The abstract and mysterious aura of AI can to some hide its potential symbiosis with traditional R&D, often painting a picture of scepticism as to whether this technology can be truly integrated with well established scientific protocols and procedures. In the conversations I've had, **this scepticism can manifest itself as genuine fear. This fear relates to both scenarios of the technology working or not working, and the impact downstream on R&D process at large.**

The said, the fear is being overcome. **As the technology matures, early adopters begin to show success and those with tech, analytics and innovation backgrounds within pharma champion AI's use.** The more pressing questions that present major hurdles to adoption surround talent resourcing and retention, hierarchical team organisation and alignment and building the networks, systems and processes to promote the seamless integration of AI into R&D programs and workflows. The role of company culture in adoption should never be underestimated. Within my own company of circa. 100 people, the recent integration of a new internal messaging service was met with a rabble of balaclavaed, drunken colleagues burning effigies of our technology overlords outside of the CEO's office. The processes and diligence needed to implement such fundamental change at a company of any size should not be underestimated. Whilst many may look pessimistically at pharma's

[VIEW FULL EVENT GUIDE](#)

To find out more visit www.ai-pharma.com



willingness to bring AI on board, given perhaps the industry's track record with embracing change, it is apparent to me that the desire to pull the trigger and invest in AI programs is bubbling away at the surface. To that extent, pharma are leaning left on the scale of “free loving hippy” to “tight laced square”. Ultimately, the need for change and the value of getting it done and getting it done right vastly supersedes the difficulty of implementing the change. The juice, in this sense, is definitely worth the squeeze.

Application. As obvious as it sounds, the application of machine learning, deep learning and cognitive algorithms is what everyone cares about. Moreover it's about the real-world, tangible benefit that AI is providing now to R&D programs. There is such a breadth in the potential verticals within a pharmaceutical company where AI can provide benefit: from early molecular drug design, scientific research mining and drug re-purposing to clinical trial enhancement, patient recruitment and selection, sales and marketing business intelligence. A metaphor about a candy shop springs to mind... **The real excitement is in the types of questions we can now ask of our data because of this technology.** Further still, what's most fascinating is not the repertoire of questions we can ask now, but the questions that (right now) we don't even know can be asked. These are the most intriguing and this is where AI will earn its weight in gold.

To say biological data (of any kind) is a fickle, complex, noisy and diverse beast is an understatement. There is a murmuring of uncertainty for some in the life sciences field about streamlining the intersection of these two powerhouse industries. Like a salsa dancer and a rodeo meeting to perform their first jitterbug, it may be more step-on-toes than twinkle toes. Language barriers will exist and teething problems there may well be, but nothing that screams complete incompatibility.

The convergence of these two industries is, and will continue to be, captivating. **The impact and influence that AI will have on drug development in 5 years is an extremely enthralling narrative. Will it fundamentally change the way we do R&D?** Will those companies defiant in their need to utilize such a technology fall by the wayside? Will it turn out to be all bark and no bite? Wherever we stand in 5 years time, the key to the success of AI will lie in strategic adoption and effective application, like ying and yang, both working cyclically to drive the other. I, for one, have my popcorn at the ready to watch this blockbuster unfold. I suggest you take your seat as well.

If you're interested in discussing this further, join me at AI Pharma Innovation Summit. Take a look at the [full event program](#) to view full agenda and speaker line-up.

I hope to see you soon in Boston, July 18-20,

Kind Regards,

Ben

[VIEW FULL EVENT GUIDE](#)

THE AI PHARMA INNOVATION 2017 EXPERIENCE:

Are you assessing the potential impact of AI in pharma?

Is your AI program in its infancy or taking full flight?

The AI Pharma Innovation Summit will provide you with a discussion led and collaborative platform to understand the fundamentals that are critical to ensure you harness and optimize AI to achieve sustainable levels of innovation.

Learn what AI actually is and what it means for the future of Pharmaceutical drug development:

- Understand the differences and value of multiple AI algorithms with insight from Numerate and Sanofi
- Scope the potential benefit that these different algorithms can bring to numerous facets along the R&D pipeline to accelerate, de-risk and make drug discovery and development more cost effective
- Discover how AI is being applied by fellow drug developers
- Access real world case studies and lessons learned from discovery through to clinical development from the likes of Genentech, BERG, MSD, Biogen and Boehringer Ingelheim
- Understand how AI can revolutionize the value of “big data”, unravel complexities in disease biology, optimize clinical trial operations and streamline the regulatory approval process
- Understand which AI technology you need right now to succeed
- Assess and evaluate the right AI technology for your specific application and build the network to succeed