# BIG PHARMA AND BIG TECH:
## WHEN TWO WORLDS COLLIDE

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# Big Pharma and Big Tech: When two worlds collide

## As the chasm between the pharmaceutical industry and the technology industry closes, to what extent and to what end is Silicon Valley encroaching on Big Pharma?

It's no secret that major tech players have ambitions in the multi-billion pharmaceutical and healthcare industry. According to the market and consumer data website, Statista, as of end-2020, the total global pharmaceutical market was valued at about 1.27 trillion US dollars. And the flurry of recent partnerships and acquisitions between the two industries is telling that Big Tech want a piece of the very lucrative pie.

In 2019, Sanofi and Google announced a partnership to establish a virtual Innovation Lab with the 'ambition to radically transform how future medicines and health services are delivered by tapping into the power of emerging data technologies'. The collaboration has three key objectives: to better understand patients and diseases, to increase Sanofi's operational efficiency, and to improve the experience of Sanofi's patients and customers.

By leveraging deep analytics across sets to better understand key diseases and extract related patient insights, Sanofi hopes to research, develop, and offer more and better personalised treatment, optimising patient care and reducing healthcare costs.

In the same year, Novartis and Microsoft also announced a multi-year alliance to leverage data and artificial intelligence (AI) 'to transform how medicines are discovered, developed, and commercialised.' By launching an AI Innovation Lab, Novartis hopes to empower employees to leverage AI at all opportunities.

PillPack, an online pharmacy with a rapid growth trajectory, was acquired by Amazon in 2018 in a bid for the tech retail giant to break into the prescription medication market, spending of which in the US is approaching £500 billion a year. Two years later, in 2020, Amazon further expands into the US healthcare sector by launching Amazon Pharmacy. Using a secure pharmacy profile, customers can add their insurance information, manage prescriptions, and choose payment options before checking out.

Early in 2021, Boehringer Ingelheim and Google announced their partnership in pharmaceutical research and development (R&D). The collaborative agreement between the pharmaceutical company and Google Quantum AI intends to research and implement cutting edge use-cases for quantum computing.

There are many similar examples of Big Tech quietly collaborating with the pharma industry, Samsung being another. Their already well-established Samsung Biologics is the first phase for the tech giant making ambitious inroads into the pharma and healthcare industry.

At the face of it, this partnership between the two industries promises exciting new innovations of the kind our imaginations are too limited to conceive. But to what end is it being formed and what is the impact on how Big Pharma seeks skilled talent to tackle digital disruption?

### WHY IS BIG TECH INTERESTED IN HEALTHCARE?

The pharmaceutical and healthcare industry is an extremely lucrative market on a positive growth trajectory, which has been compounded by the COVID-19 pandemic. Many different players want a slice of the pie, but Big Tech has the money and resources to infiltrate it.

A study by EY in 2020 found that between 2013 and 2017 Alphabet (Google's parent company), Microsoft, and Apple had filed over 300 health related patents between them, showcasing the investment technology giants are making in health care.

## DATA, DATA, DATA

"Data is the new oil", "data – the next gold rush", "data, the world's most valuable asset" – whatever the expression, it has been well documented that businesses able to harness the insight of Big Data are likely to be more profitable. Data-rich insight enables businesses to make product and customer experience iterations which influence purchasing behaviour.
And the pharmaceutical industry is an untapped data source. By joining forces, the two industries can combine technological tools with pharma's scientific skills to capture and analyse the data. Leveraging AI and machine learning (ML) capabilities to mine Big Data, create and train algorithms which will lead to improved diagnosis, prognosis and outcomes. Which, of course, will have very lucrative end results.

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"This changes the business model dramatically. We are moving away from developing blockbuster drugs for large populations to developing more individualised drugs, which obviously involves much smaller numbers of potential patients.

"The current development timelines are therefore just not sustainable. We have to do things differently, hence using AI/ML to disrupt and innovate existing approaches and processes."

## A TWO-WAY STREET

Similarly, the pharma industry is also buying into technology, particularly in the biotech space. Earlier this year, Sanofi acquired biotech company Tidal Therapeutics to expand their research capabilities in both immuno-oncology and inflammatory diseases. In July, 2021, Eli Lilly announced the acquisition of Protomer Technologies to enhance their diabetes pipeline with "the company's innovative technology".

The headline-grabbing Roche acquisition of Flatiron Health, a clinical intelligence data platform developer, is a perfect example of how having the access to the right technologies can support pharmaceutical companies to mine patient data for determining appropriate treatment.

## SPEED TO MARKET

The pharmaceutical industry, already notoriously cautious operating under heavy regulations and bearing the responsibility as gatekeepers of sensitive patient data, has been slow to enter the era of digital transformation. Sceptics of the partnership fear a fragmentation of standards, data ownership and patient consent.

Although the partnership between the two industries is looked upon with some unease, the premise that certain technological capabilities like artificial intelligence and machine learning can accelerate life sciences innovation, speeding up drug discovery, clinical trials and data interpretation is certainly compelling.

Cost-cutting is also sited as a motivator for accelerating the capabilities between the two industries. Drug development, from discovery through to going-to-market, is a lengthy and expensive process. The appeal of getting life-changing or life-saving innovations to the patient faster is boosted by the potential positive financial implications that this might have.

"Anything that can ultimately reduce drug development, the time that it takes from a new entity being put out there to a product reaching the patient saves time, money and lives," says Jay Webster, Executive Account Director, Life Sciences, Aerotek.

"If you can bring drug development down from 12 years, to 11 years, to 10 years, to nine, to eight – just those four years can have an extraordinary impact across the board."

## HOW IS THIS TREND TOWARDS DIGITAL IMPACTING HIRING WITHIN THE PHARMA INDUSTRY?

"We continue to make the quality, clinical or regulatory placements that face off with the health authorities," says Jay. "But the biggest change has been this exponential rise in demand for data skills. Experience in pharma is no longer a prerequisite.

Our clients are looking for technology backgrounds. And increasingly, they are looking for backgrounds in disruptive technology, where they can adopt that technology in the pharma setting."

"I am currently recruiting for roles that didn't exist in the pharma industry five years ago – data scientists, managers of data scientists, data project managers, meta data leads, data quality leads, data governance leads, data release leads, semantic data leads, molecular data leads, and the list goes on."

This trend towards digital skills, particularly in data, that Jay is observing, is reflected in research conducted by Aerotek earlier this year.

We surveyed our candidates to understand worker attitudes within the pharmaceutical industry towards disruptive technologies and how they are planning to future-proof their careers in the face of them. When asked how they believe emerging technologies will disrupt their careers, 44% responded positively seeing value in improved efficiencies, new opportunities and technology acting as a driver to remain ahead of the skill curve. On the flipside, an alarming 32% expressed concern that the threat of automation will lead to loss of jobs.

Further, we found that an overwhelming majority of 55% of respondents are planning to upskill in IT skills or in both IT skills and soft skills. Data, automation and artificial intelligence were the most commonly cited skills.

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"This increase in requests for data scientists suggests that pharma is taking their demand for data expertise up a level in order to be able to interpret data into usable information across the board," reflects Jay.

Being able to use patient data quicker and more effectively will enable pharma to make incremental innovations over time. By nurturing this relationship with Big Tech and using existing, proprietary technology competently will speed that process up. The result will be the faster improvement of a patient's life.

However, it's early days and this foray into the digital world is still in experimental phase as the industry continues to grapple with just how data-driven decision-making and digital products can add true and durable value.

## ABOUT THE CONTRIBUTORS

**Jay Webster, Executive Account Director, Life Sciences**

Jay Webster is the Executive Account Director within the Life Sciences division of Aerotek. He is responsible for operational management, business development and strategic account management. Jay is hugely passionate about the Life Sciences industry and prides himself on offering excellent customer experience to meet the expectations of his clients and candidates. Jay's team operate within fixed verticals allowing them to offer consultative expertise within staffing solutions. These areas include disruptive medical technology, drug development, and consumer health. Our device experience includes combination, orthopaedic and wearable tech.