

How technology companies are leveraging the pharmaceutical ecosystem

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In conversation with Pek Lum, Co-founder and CEO at Auransa, Palo Alto, California, US.



The pharmaceutical industry is an old industry, with some of the current largest pharmaceutical companies, such as Merck & Co and Pfizer, being founded more than 100 years ago. Drug development is also highly regulated and specialized, full of educated scientists conducting specific work. To many people, especially those not familiar with the sector, drug development is an industry that seems to be hard to break into.

Fast forward 100 years and it is clear that there are many more companies in the industry, with biotechs and smaller 1-2 drug companies in the mix. In addition, there are even technology-driven semi-virtual companies popping up in the industry. What has been the key factor that drove the diversity and numbers over the last 70 years in this traditionally-homogeneous industry?

The pharmaceutical industry has typically been an insulated industry where most of the work was kept in-house rather than outsourced. However, that has slowly begun to change, starting in the 1950s when contract research organizations (CROs) started to emerge. Pharmaceutical companies have started to partner with CROs such as Charles River, Quintiles and Covance for certain parts of the drug discovery and development process: such as high throughput screening, assay development, manufacturing and even running clinical trials.

As the realization that partnering out some parts of drug development has merits to the industry, as well as a sustainable business, CROs began to increase in numbers and variety. The number of CROs grew in APAC as well. APAC countries

began developing a large and educated workforce to feed the ecosystem. China soon has key players in the CRO industry. Most notably, the Chinese CRO Wuxi AppTec has become one of the most important players in the pharmaceutical ecosystem used by many drug discovery and development companies across the globe today.

One of the world's largest sequencing facilities is also in APAC. The BGI group (Beijing Genomics Institute), founded in 1999, has been making great strides in sequencing in both cost and speed. Other APAC countries such as Singapore and India are not too far behind. Singapore's Biopolis, established in the early 2000s, quickly became a top tier research hub and attracted talent from all over the world. India's SAI Life Sciences, founded in 1999, is an established chemistry CRO, with a very recent expansion to also cover life sciences services in the US.

The pharmaceutical ecosystem has really taken off, starting with CROs playing an important role in the industry. The expansion of the ecosystem has democratized drug discovery and development, enabling technology-driven companies to play a huge role.

In recent days, the pharmaceutical ecosystem has allowed technology companies to make drugs. A similar metamorphosis happened at [Auransa](#) which is a software-driven drug discovery company with a "killer app" leveraged into both the pharmaceutical and technology ecosystem. The "killer app" drug discovery and development in coordination with novel pharmacology, orders and manages key wet bench experiments remotely and even put together a toxicology package for IND filing. Auransa's core team in Silicon Valley focuses on a compelling and innovative drug pipeline, with a first-in-class liver cancer compound getting ready to go into IND filing and to the clinic this year.

Auransa's software-driven drug discovery and development ecosystem creates an AI-driven drug discovery platform and already has a compound that protects the heart from chemotherapy's assault. With an internal contract management system (CMS) every CDA, MSA, SOW is logged, with a built-in approval process and managed through software with over 40 vendors and CROs globally, with many of them in APAC.

Even though the pharmaceutical ecosystem is mainly carried by CROs, many other relationships are also forming, strengthening the whole ecosystem. Within the ecosystem, technology-driven companies in the pharmaceutical industry can establish partnerships with other biotech companies or research institutes, with each party contributing complementary skills and tools necessary to drive drug discovery and development together under a shared goal. Recently Singapore's EDDC (A*STAR) and Auransa have [joined forces](#) to tackle COVID-19 and other viruses with complementary approaches.

In addition to contributing tools to the industry, there are also opportunities for a technology-driven company to contribute their compounds to the drug pipelines of pharmaceutical companies. We can expect to see more of these types of relationships in the ecosystem as the demand for drugs with novel pharmacology increases.

Some needs for new treatments are geographically needed. There may be a need for novel therapeutics in certain geographic regions given the patient population. Essentially today's technology companies can also function on the supply side of the pharmaceutical ecosystem. The ecosystem allows technology companies such as Auransa to discover and develop drugs up to a certain stage, feed assets into the collective industry drug pipeline, and allow partners to continue development. Relationships between technology companies in the US and the biotech industry in APAC are especially important when local expertise is needed to navigate approval for countries in APAC.

Technology companies are leading the next wave in the pharmaceutical industry, riding and expanding on an ecosystem that is already playing a massive part in the change. With technology being used from discovery to clinical trials, we can expect faster developmental cycles of novel products coming out of the pipeline. The face of the pharmaceutical industry and the landscape will be quite different as this industry continues to evolve.