# Artur Kadurin – CEO, Insilico Medicine Taiwan

***AI is the future of the industry that has all the potential to transform and combat the complex drug discovery process.***

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*Arthur Kadurin, CEO of Insilico Medicine Taiwan, tells us how artificial intelligence can change drug discovery process using the innovative generative adversarial networks (GANs) approach.*

**Please tell us about your role in the company? Could you also elaborate on your background?**

My background is from computer science. Before joining Insilico Medicine, I was the Chief of AI in a large European company, working in media analysis. Working with such a large amount of data gave me a strong base in machine learning and deep learning.

Three years ago, when I met Alex Zhavoronkov, the Founder and CEO of Insilico Medicine, we had a discussion on applying modern AI methods to drug discovery processes. Together, we launched a proof-of-concept project and published the first paper on AI drug discovery using the Generative Adversarial Networks (GANs) approach. After this success, I joined Insilico in 2017 as the Chief of AI, launching several projects.

**What are Insilico Medicine's drug discovery capabilities?**

Insilico Medicine is focused on the pre-clinical stages of the drug discovery process, starting from target identification using omics data. Once a protein target is identified, we use our deep learning algorithm to design molecular structures with desired physical-chemical properties. This is a brand

new approach to drug design. The traditional method is to screen existing molecule libraries against specific targets, then improve identified molecules using a chemical approach. The traditional machine learning approach emerged decades ago and was aimed at using AI to reduce the number of tested compounds by predicting the outcome of screening, but now we don't need to work with existing libraries. We can create our own focused libraries for each biological target.

There are several companies that are very efficient in screening. However, Insilico Medicine uses generative approach to design novel molecules with the desired set of molecular properties.

**How well received is AI technology in the pharma industry?**

The pharmaceutical industry is very conservative. We spent a lot of time trying to convince companies to adapt this technology, and our efforts have paid off with time. Last year we launched a pilot project together with WuXi AppTec to perform a series of experiments creating and testing molecular candidates for complex targets. Together, Insilico Medicine and WuXi AppTec are creating more proposals for pharma and biotech companies, to generate new clients. We have already secured several contracts around Taiwan, and are currently negotiating with several biotech companies overseas.

**What is your assessment of the competitive landscape of the sector? and how would you describe Insilico's current position?**

There are several prominent players in drug discovery that have closed deals with the pharmaceutical and biotech companies, but they are mostly using the traditional predictive screening model. One of our key advantages is our validated science. Insilico has published about 100 scientific papers so far and we strive to announce every achievement we make. We want to be very transparent and honest in showing that our methodology and our solutions really work. Most AI companies offering similar services barely have a few released papers or a proof of concept derived from their technology.

**Why was Taiwan chosen to be the location for Insilico's R&D center?**

When we decided to enter the Greater China market, we chose Taipei as our entry point for several reasons. Because of the network of collaborators that we already have in place, it made sense to stay close to the ecosystem. Taiwan has an attractive environment for healthcare and life sciences industries and the government has been very supportive. The Development Center for Biotechnology (DCB) has been making a strong push incubating biotech companies. Taiwan has a comprehensive and highly efficient biomedical value chain that spans from research,

drug discovery, development to manufacturing.

**How challenging is it to not only recruit but retain talent in such a highly competitive field next to IT giants like Google and Microsoft?**

From my experience, the corporate culture in startups is very different from the one in larger companies. At Insilico Medicine, we are trying to solve real-world problems, and what matters most – we see the impact our work has on the pharma industry. Additionally, as a startup, we have a lot of opportunities to contribute to the professional development of our employees. We are playing an active role in building the AI community in Taiwan.

**What is your future vision of Insilico's AI drug discovery progress?**

Insilico Medicine is working with the AI-based tools to meet specific needs, which is a new concept in the industry. Our vision is to create a fully automated end-to-end pipeline to eliminate bottlenecks, maximize efficiency and streamline early drug discovery. AI is the future of the industry that has all the potential to transform and combat the complex drug discovery process.

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