Chae-Ok Yun â?? Founder, CEO & CTO, GeneMedicine

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Founder, CEO and CTO Dr Chae-Ok Yun introduces GeneMedicine, a pioneer of the oncolytic virus approach in gene therapy. Dr Yun outlines the significance of a recent capital injection, ongoing clinical trials, and the complementarity of oncolytic virus with other gene therapies such as CAR-T.

In 2019, GeneMedicine received a significant investment of USD 15 million. Who are your investors and how will you use this capital?

Series A funding was mostly raised by investors of South Korea-based venture capitalists that have a strong and proven track record in the Korean biotech/pharma investment sectors. The capital was used for setting up the organization and corporate operations as well as being invested in clinical trials in key pipelines that are projected to begin in early 2021.

GeneMedicine is a pioneer of the oncolytic virus (OV) approach in gene therapy. What are the benefits and opportunities inherent in this technology?

Despite the recent success of targeted cancer therapeutics and immunotherapeutics, tumour recurrence and metastasis are eventually observed even in patients who initially responded well to these treatments. Additionally, only a small subset of patients respond well toward immunotherapy. These apparent limitations in advanced cancer therapeutics necessitate the development of novel therapeutics that can address these unmet needs of cancer patients.

To this end, the OV, which replicates and selectively destroys cancer cells, can be a promising alternative. Importantly, OV-mediated destruction of cancer cells induces a systemic antitumor immune response which is capable of destroying metastasized cancer cells at distal sites, making oncolytic viruses promising next-generation cancer therapeutics. Additionally, OVs in combination with conventional cancer therapeutics (chemo- or radiotherapy) as well as cancer immunotherapeutics can elicit a synergistic antitumor effect.

What makes GeneMedicine a leader in OV technologies?

GeneMedicine has a great deal of experience in the development of systemically deliverable OV. Late-stage cancer patients who need a new treatment option must be injected systemically to get rid of all the metastatic tumour cells.

In addition to these technologies, we have also developed several potent combinations of therapeutic genes that can concurrently be delivered via a single OV, thus maximizing OVâ??s therapeutic index.

We have several pioneering technologies which allow our OVs to exert potent anticancer effects in a highly cancer-specific manner with minimal off-target toxicity in normal tissues.

How complementary can the OV approach be with CAR-T and other advanced therapies?

OV is not necessarily a competitor of standard therapies that are already present in the market such as CAR-T or checkpoint inhibitors. OV works synergistically with those technologies and, if used together, can significantly enhance therapeutic efficacy. We have a lot of proprietary data, as well as data from other companies, demonstrating the strong synergistic potential of OV in combination with other immunotherapeutics.

For example, phase II clinical trials of the immune checkpoint inhibitor, Keytruda, in combination with commercialized oncolytic herpes simplex virus was shown to significantly improved patient outcome.

What is the key to building a successful R&D team in cell and gene therapy?

To build a successful R&D team, there needs to be a solid technology base. Good technology cannot be mimicked in a short period of time. In the past, some pharma companies have identified OV as a technology that can easily and quickly be appropriated using public files. However, there is a lot of know-how in the lab and it cannot easily be mimicked. There needs to be a very good understanding to the functionality of OVs and the unmet need of cancer patients.

We have spent over 20 years developing our technologies. This is one of the main reasons why so many VCs have been drawn to the company.

GeneMedicine has clinical trials planned both domestically and internationally. Why did you choose China and a collaboration with WuXi AppTec?

Although not as big as the US, China is a very large market, experiencing rapid growth and is already mature in several aspects.

We struck a strategic partnership with WuXi because WuXi is not just a Chinese company anymore. They are an internationally recognized entity with a big and capable GMP facility. A deep partnership with a company of this calibre is a good way to penetrate the Chinese market.

China differs from other countries in that all therapies tested in China must be put forward through collaborations with Chinese companies. Without a local partner, we could not enter the Chinese market.

How do you see GeneMedicine scaling up? What will your models of collaboration look like in the future?

When discussing potential collaborations or licensing-out deals, I always ask potential partners to keep us involved. Without sufficient experience in OV, the development process can be challenging. While we are happy to transfer out our technology, we need to be involved for a certain period of time to help them understand OV and provide our expertise them, ultimately aiming to aid our collaborators to successfully develop our OV at their facilities.

GeneMedicine does not have an in-depth experience handling later stages of clinical trials, nor financial capacity to launch them as a small company. We want to collaborate with big commercial companies after Phase I or II clinical trials. These experienced entities could provide resources to complete late stage clinical trials. Upon completion of our initial clinical trials, we will be working on licensing out our technology or acquiring investment from the pharmaceutical firms or international investment banks.

What is your final message for our international audience on GeneMedicine?

We have a very strong knowledge base and over 20 years of experience in the development of OV technologies. We are able to make OV extremely potent and safe. Additionally, our proprietary technologies regarding systemically administrable OV platform could be of great importance in addressing some of the inherent limitations of locoregional delivery, which remains preferred delivery route of OVs in clinical trial to date.

For the development of really successful OV therapy, we need a strong collaboration with a good pharmaceutical company. We are looking for the right opportunity!

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