Korea Drug Development Fund
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Investing in innovative approaches to oncology

The Korea Drug Development Fund (KDDF), through its investment and support of the biopharma sector, translates cutting-edge science into patient benefits and market opportunities.

The Korea Drug Development Fund (KDDF) is the largest public funder of drug research and development (R&D) in Korea, investing more than $150 million a year in over 100 promising projects from early discovery to the clinical-trial stage, as well as providing business-development support. Here, KDDF presents its ADCaptain project to fuel the development of next-generation antibody–drug conjugate therapies, and four of the Korean company's oncology programs (Fig. 1).

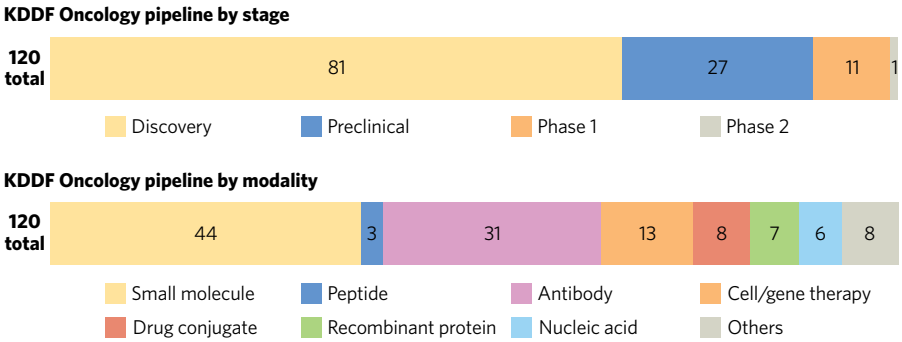

Fig. 1 | KDDF's oncology development pipeline by stage and modality.

ADCaptain

KDDF has funded numerous companies with clinical-stage antibody programs against novel targets, as well as those developing new payload-linker technologies. To advance the development of next-generation antibody–conjugate drugs, KDDF is creating a consortium to bring together the expertise and technologies of three companies in the creation of new therapies with higher efficacy and lower toxicity and will provide non-dilutive investment for R&D to the consortium. KDDF also seeks opportunities for partnerships with global pharma companies.

AbClon

AbClon specializes in chimeric antigen receptor T cell (CAR-T), antibody and bispecific-antibody development through two proprietary technology platforms: the Novel Epitope Screening Technology (NEST) platform for the selective design of antibodies that bind to new epitopes (applied successfully to a human epidermal growth factor receptor 2 (HER2) antibody, which has been out-licensed as a treatment for gastric cancer); and AffiMab for the development of bispecific antibodies incorporating affibody technology.

AbClon's most advanced asset, AT101, is a cluster of differentiation 19 (CD19)-targeting CAR-T therapy comprising antibodies engineered with NEST. AT101 stands out from the currently approved CD19 CAR-T therapies by binding to a novel epitope, and is currently in phase 1/2 trials, supported by KDDF, for the treatment of hematologic malignancies.

FutureChem

FutureChem is a leading developer and producer of radiopharmaceuticals—drugs that contain a radioactive isotope—for diagnostics and therapeutic applications. FutureChem commercialized the world's first diagnostics for Parkinson's disease, and is currently developing novel anticancer radiopharmaceuticals.

Lu-177-ludotadipep is a prostate cancer therapy currently in phase 2 trials that targets and binds to prostate-specific membrane antigen (PSMA), and delivers a cell-killing dose of radioactive lutetium-177. Lu-177-ludotadipep also contains an albumin-binding motif, which promotes uptake by prostate cancer cells as well as rapid excretion from normal organs.

In phase 1 trials, Lu-177-ludotadipep resulted in 1.63-times higher levels of lutetium-177 in prostate cancer than Novartis' approved radiopharmaceutical Pluvicto (177Lu-PSMA-617), despite using half the amount of lutetium-177, and demonstrated a significantly higher objective-response rate and disease-control rate. These highly positive results formed the basis of the phase 2 trial currently ongoing in Korea and the United States, which is exploring Lu-177-ludotadipep administered up to six times at 8-week intervals. FutureChem seeks a partner for phase 3 clinical trials, or for a global out-licensing deal.

Lemonex

Lemonex develops safe and effective gene therapies and messenger RNA (mRNA) vaccines using its proprietary porous nanoparticles, DegradaBALL, which can carry and protect active pharmaceutical ingredients (APIs) of various types within the pores, and efficiently deliver the loaded API into cells. DegradaBALL overcomes the major limitations of existing liquid nanoparticle (LNP)-based systems, such as formulation instability, rapid systemic exposure, and liver accumulation. This new system offers unparalleled localization and durability of therapeutic effects, providing a safer and more effective platform for mRNA vaccines and RNA therapy.

Lemonex is developing LEM-S403, a novel, first-in-class, dual-acting RNA immunotherapeutic agent that combines a cytosine-phosphodiester-guanine oligodeoxynucleotide (CpG-ODN) agonist of Toll-like receptor 9 (TLR9), which induces an anticancer immunity, with a small-interfering RNA (siRNA) for indoleamine 2,3-dioxygenase 1 (IDO1). CpG-ODN has been reported to induce unexpected IDO1 expression, which leads to poor clinical outcomes by suppressing immune surveillance in the tumor microenvironment. However, LEM-S403 inhibits regulatory T cell (T_{reg}) development and anergy in the tumor microenvironment by suppressing the CpG-ODN-induced IDO1 expression.

In preclinical studies, LEM-S403 showed superior anti-tumor efficacy in combination with checkpoint inhibitors, and good laboratory practice-toxicology (GLP-Tox) studies were completed with the support of KDDF. Lemonex seeks partnerships not only for LEM-S403 but also for the DegradaBALL platform.

Curigin

Curigin has developed a bispecific RNA interference (RNAi) platform in which both strands of an RNAi therapeutic simultaneously suppress two different genes, with minimized off-target effects as there is no passenger-RNA strand.

Curigin's bispecific RNAi assets, designed and constructed through proprietary bioinformatics technology, are delivered through both viral and non-viral delivery platforms, making them suitable for both local and systemic administration. For viral delivery, vectors are engineered to contain a modified capsid protein to avoid immune surveillance, enabling them to be injected systemically and repeatedly.

Curigin's lead pipeline asset, CA102, is a uniquely designed bispecific RNAi therapeutic delivered in a modified oncolytic adenovirus that suppresses two pivotal oncogenes: mammalian target of rapamycin (mTOR); and signal transducer and activator of transcription 3 (STAT3). CA102's safety and oncolytic efficacy have been confirmed through preclinical studies in bladder, pancreatic, and head and neck cancer models in which mTOR and STAT3 are highly expressed. Curigin is currently preparing an IND filing for a trial of CA102 in non-muscle bladder cancer.

CONTACT
Business Development Team
Korea Drug Development Fund (KDDF)
Seoul, Korea
Tel: +82 2 6379 3075
Email: kddf_bd@kddf.org