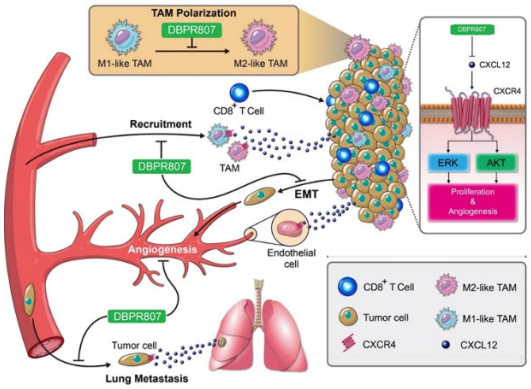
DBPR807: A CXCR4-Targeted Antagonist

Drug Introduction

- DBPR807 is a novel oxazole-based CXCR4 antagonist developed for HCC, AMI, mTBI, and AMD.
- It shows high specificity, safety, and strong potential in combination therapies, particularly enhancing the effects of Sorafenib and PD-1 inhibitors in HCC models.

Drug Mechanism

- DBPR807 blocks the CXCL12/CXCR4 axis, suppressing angiogenesis and normalizing the tumor microenvironment.
- It enhances CTL infiltration and synergizes with Sorafenib and PD-1 antibodies by inhibiting hypoxia-driven signaling and restoring anti-tumor immune responses, offering dual vascular and immunologic benefits.



Drug Comparison

- DBPR807 outperforms AMD3100 and AMD11070 in tumor reduction.
- Its combination with Sorafenib or PD-1 antibody yields far greater tumor suppression than monotherapy, confirming superior efficacy and synergy in targeting angiogenesis and immune evasion in HCC treatment models.

In Vivo Experimental / Preclinical Data

- In vivo HCC models show DBPR807 combined with Sorafenib or PD-1 antibody achieves 83%–95% tumor reduction.
- It also reduces cardiac infarction by 43% in rats and improves heart function in mini-pigs, confirming efficacy across cancer and cardiovascular indications.

Key Business Takeaways

- First-in-class CXCR4 antagonist in HCC (combination with sorafenib or PD-1 antibody) and AMI.
- Addresses large unmet needs in oncology and cardiovascular markets.
- Strong synergy potential with existing therapies (sorafenib, PD-1 inhibitors).
- Multi-indication development strategy covering oncology and cardiology.

Intellectual Properties

- TWI664174, US10882854, AU2018208366, JP6982716, CA3047146, NZ754272, RU2756055C2, KR102335082, IN379503, CN110381949, HK40010586, J/007920, BR112019013493-0

Publications

- A highly selective and potent CXCR4 antagonist for hepatocellular carcinoma treatment. Proc Natl Acad Sci USA. 2021; 118 (13): e2015433118. https://doi.org/10.1073/pnas.2015433118
- Protective Effect of CXCR4 antagonist DBPR807 against ischemia-reperfusion injury in a rat and porcine model of myocardial infarction: potential adjunctive therapy for percutaneous coronary intervention. Int J Mol Sci. 2022, 23(19), 11730. https://doi.org/10.3390/ijms231911730

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