

Technology/ Title	DBPR215: Development of Stem Cell Mobilizers in Cell-Based Therapy	
Technology Type	<input type="checkbox"/> Biotechnology	<input type="checkbox"/> Device/Diagnostics
	<input checked="" type="checkbox"/> Pharmaceutical	<input type="checkbox"/> Others: _____ -
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Link	N/A	
Technology Description	<p>This invention provides a novel cell based therapy, in which diverse populations of stem cells can be mobilized by small chemical molecules from bone marrow, enter into the peripheral blood, and targeting to injured tissue regions for self-repair or further harvested for autologous transplantation. These small chemical molecules (also called stem cell mobilizers) act as CXCR4 antagonists that can compete with SDF-1 ligand, leading to the release of CXCR4-expressed stem cells. We have successfully developed a series of triazole-based stem cell mobilizers with excellent binding affinity and functional activity toward CXCR4. Among them, drug candidate DBPR215 is a potential best-in-class drug in that it exhibited better efficacy and therapeutic index than Mozobil™ in an animal model of peripheral blood stem cell transplantation (PBSCT).</p>	

Intellectual Property	<p>Patent title: Heterocyclic compounds and use thereof</p> <p><b>Granted</b></p> <p>USA (US9862703B2); Taiwan, ROC (I5938348)</p> <p><b>Pending</b></p> <p>PCT (application No. PCT/US2015/051143)</p>
Key Publications	<p>1. C. H. Wu; C. P. Chang; J. S. Song; J. J. Jan; M. C. Chou; Y. H. Shih; S. H. Wu; K. C. Yeh; Y. C. Wong; C. J. Hsieh; T. T. Kao; S. Y. Wu; C. T. Chen; C. T. Tseng; Y. S. Chao and K. S. Shia*: "Discovery of Novel Stem Cell Mobilizers That Target the</p>

	<p>CXCR4 Receptor," <i>ChemMedChem</i>, <b>2012</b>, 7, 209-212.</p> <p>2. C. H. Wu; J. S. Song; K. H. Chang; J. J. Jan; C. T. Chen; M. C. Chou; K. C. Yeh; Y. C. Wong; C. T. Tseng; S. H. Wu; C. F. Yeh; C. Y. Huang; M. H. Wang; A. A. Sadani; C. P. Chang; C. Y. Cheng; L. K. Tsou and K. S. Shia*: "Stem Cell Mobilizers Targeting Chemokine Receptor CXCR4 : Renoprotective Application in Acute Kidney Injury," <i>J. Med. Chem.</i>, <b>2015</b>, 58, 2315-2325.</p> <p>3. C. H. Wu; C. J. Wang; C. P. Chang; Y. C. Cheng; J. S. Song; J. J. Jan; M. C. Chou; Y. Y. Ke; J. Ma; Y. C. Wong; T. C. Hsieh; Y. C. Tien; E. A. Gullen; C. F. Lo; C. Y. Cheng; Y. W. Liu; A. A. Sadani; C. H. Tsai; H. P. Hsieh; L. K. Tsou* and K. S. Shia*: "Function-oriented development of CXCR4 antagonists as selective Human Immunodeficiency Virus (HIV)-1 entry inhibitors," <i>J. Med. Chem.</i>, <b>2015</b>, 58, 1452-1465.</p> <p>4. K.J. Wu, S.J. Yu, K.S. Shia, <b>C.H. Wu</b>, J.S. Song, H.H. Kuan, K.C. Yeh, C.T. Chen, E. Bae, and Y. Wang: "A novel CXCR4 antagonist CX549 induces neuroprotection in stroke brain," <i>Cell Transplantation</i>, <b>2017</b>, 26, 571–583.</p> <p>5. <b>C.H. Wu</b>, J.S. Song, H.H. Kuan, S.H. Wu, M.C. Chou, J.J. Jan, L.K. Tsou, Y.Y. Ke, C.T. Chen, K.C. Yeh, S.Y. Wang, T.K. Yeh, C.T. Tseng, C.L. Huang, M.H. Wu, P.C. Kuo, C.J. Lee and K.S. Shia*: "Development of stem cell mobilizing agents targeting CXCR4 receptors for peripheral blood stem cell transplantation and beyond," <i>J. Med. Chem.</i>, <b>2018</b>, 61, 818–833.</p> <p>6. L.K. Tsou, Y.H. Huang, J.S. Song, Y.Y. Ke, J.K. Huang, and <b>K.S. Shia*</b>: "Harnessing CXCR4 antagonists in stem cell mobilization, HIV infection, ischemic diseases and oncology," <i>Med. Res. Rev.</i>, <b>2018</b>, 38, 1188-1234.</p>
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Business Opportunity	<p>Peripheral blood stem cell transplantation (PBSCT):</p> <p>Mozobil™ (Sanofi) is the only one marketed stem cell mobilizer worldwide. The annual sales were 150, 160, and 170 million EUR in the past three years (2016-2018). The clinical needs for this cell-based therapy increases steadily by a 7% growth rate. In the PBSCT animal model, DBPR215 showed better efficacy than Mozobil™ as well as Burixafor (Taigen, Phase II), and is expected to provide cancer patients a best choice.</p>