Humanigen Secures Exclusive Worldwide License for the Prevention of GvHD through GM-CSF Neutralization from the University of Zurich

- ***Expands Humanigen's extensive intellectual property portfolio to include prevention of Graft-versus-Host Disease (GvHD)***
- ***Strengthens Humanigen's leadership position and platform in granulocyte macrophage-colony stimulating factor (GM-CSF) neutralization to include allogeneic hematopoietic stem cell therapy (HSCT)***
- ***GM-CSF neutralization has the potential to break the efficacy/toxicity linkage associated with allogeneic HSCT***

Burlingame, CA, July 22, 2019 – Humanigen, Inc., **(HGEN)** ("Humanigen") announced that it has secured an exclusive worldwide license agreement from the University of Zurich (UZH) for technology used to prevent GvHD through GM-CSF neutralization. The technology was recently featured in a publication in Science Translational Medicine entitled "Graft-versus-host disease, but not graft-versus-leukemia immunity, is mediated by GM-CSF-licensed myeloid cells"[1]. The Humanigen license covers various patent applications filed by UZH which complement and broaden Humanigen's leadership position in the application of GM-CSF and expand Humanigen's development platform to include improving allogeneic HSCT.

Allogeneic HSCT is a potentially curative therapy for patients with hematological cancers. However, between 40-60% of patients experience acute or chronic GvHD, carrying a 50% mortality rate. Donor-derived T cells are responsible for mediating the beneficial graft-versus-leukemia (GvL) effect but have also been linked to destruction of healthy tissue such as skin, gut, and liver resulting in GvHD. Depleting donor grafts of T cells can prevent or reduce the risk of GvHD. However, this results in a reduced GvL effect and increased relapse rates. There is a significant unmet medical need for an agent that can uncouple the beneficial GvL effect from harmful GvHD and there are currently no approved agents for the prevention of GvHD.

In the Science Translational Medicine article, the authors demonstrated in a murine model of GvHD, that donor T cell-derived GM-CSF drives GvHD through activation, expansion, and trafficking of myeloid cells but has no effect on the GvL response. Neutralization of GM-CSF (either using a neutralizing antibody or through GM-CSF gene knock-out) was able to uncouple the myeloid-mediated immunopathology resulting in GvHD from the T cell-mediated control of leukemic cells (GvL). This discovery provides a clear mechanistic proof-of-concept for neutralizing GM-CSF to prevent GvHD without compromising, and potentially improving, the GvL effect in patients undergoing allogeneic HSCT.

The strong link between T cell-mediated efficacy and myeloid cell mediated toxicity mirrors the findings that have been reported with CAR-T cell therapies where T cell-produced GM-CSF has emerged as a key driver of the myeloid inflammatory cascade resulting in neurotoxicity and cytokine release syndrome and potentially impairing improved CAR-T efficacy through effects on myeloid-derived suppressor cells. GM-CSF neutralization has the potential to eliminate or reduce the off-target inflammatory cascade while preserving the on-target efficacy of T cell therapies, thereby breaking the efficacy/toxicity linkage.

"Humanigen has pioneered the strategy of neutralizing GM-CSF to improve the safety and efficacy of T cell therapies," stated Dr. Cameron Durrant, CEO of Humanigen. "This license agreement builds on our leadership position aimed at breaking the efficacy/toxicity barrier that currently exists for T cell

therapies, including allogeneic HSCT. The agreement broadens our already extensive GM-CSF neutralization intellectual property portfolio to include prevention of GvHD in allogeneic HSCT."

1. Tugues et al., Sci.Transl.Med. 28 November 2018: Vol. 10, Issue 469, eaat8410

About Humanigen, Inc.

Humanigen, Inc. is developing its portfolio of Humaneered® monoclonal antibodies to address cutting-edge CAR-T optimization and the need for new oncology drugs that provide safer, better, and more effective cancer therapies. Derived from the company's Humaneered platform, lenzilumab, ifabotuzumab, and HGEN005 are monoclonal antibodies with first-in-class mechanisms. Lenzilumab, which neutralizes human GM-CSF, is in development as a potential biologic therapy to make CAR-T and allogeneic HSCT safer and more effective, as well as a potential treatment for hematologic cancers. Ifabotuzumab, which targets the Eph type-A receptor 3 (EphA3), is being investigated as a potential treatment for a range of solid tumors, both as an optimized naked antibody and as part of an antibody-drug conjugate, as well as a backbone for a novel CAR-T construct, and a bispecific antibody platform. HGEN005 which selectively targets the eosinophil receptor EMR1 is being explored as a potential treatment for a range of eosinophilic diseases including eosinophilic leukemia both as an optimized naked antibody and as the backbone for a novel CAR-T construct. For more information, visit www.humanigen.com

Forward-Looking Statements

This release contains forward-looking statements. Forward-looking statements reflect management's current knowledge, assumptions, judgment and expectations regarding future performance or events. Although management believes that the expectations reflected in such statements are reasonable, they give no assurance that such expectations will prove to be correct and you should be aware that actual events or results may differ materially from those contained in the forward-looking statements. Words such as "will," "expect," "intend," "plan," "potential," "possible," "goals," "accelerate," "continue," and similar expressions identify forward-looking statements, including, without limitation, statements regarding our expectations for future development of lenzilumab to help CAR-T reach its full potential or to deliver benefit in preventing GvHD. Forward-looking statements are subject to a number of risks and uncertainties including, but not limited to, the risks inherent in Black Horse Capital and its affiliates owning more than 50% of our outstanding common stock, including their ability to control the company; our lack of profitability and need for additional capital to operate our business as a going concern; the uncertainties inherent in the development and launch of any new pharmaceutical product; the outcome of pending or future litigation; and the various risks and uncertainties described in the "Risk Factors" sections and elsewhere in the Company's periodic and other filings with the Securities and Exchange Commission.

All forward-looking statements are expressly qualified in their entirety by this cautionary notice. You should not place undue reliance on any forward-looking statements, which speak only as of the date of this release. We undertake no obligation to revise or update any forward-looking statements made in this press release to reflect events or circumstances after the date hereof or to reflect new information or the occurrence of unanticipated events, except as required by law.

CONTACT:

Investors:
Al Palombo
650-243-3181
ir@humanigen.com

Media:
Chris Bowe
646-662-7628
cbowe@humanigen.com