Stanford

Daniel Dever

Instructor, Pediatrics - Stem Cell Transplantation

Bio

BIO

Dr. Daniel Dever is a Research Instructor in the laboratory of Dr. Matthew Porteus at Stanford University, in the Department of Pediatrics, Division of Stem Cell Transplantation and Regenerative Medicine. He completed his PhD in molecular toxicology at the University of Rochester where he studied the mechanisms of the aryl hydrocarbon receptor in mediating cerebellar transcriptional programs. During his postdoctoral work in the Porteus group, he (with others) developed a CRISPR/Cas9-based beta-globin (HBB) gene editing by homologous recombination methodology (gene targeting) in CD34+ hematopoietic stem cells as a potential therapeutic strategy to treat severe sickle cell disease. Dr. Dever (along with collaborators) has now successfully used this methodology to efficiently target >15 genes in primary blood cells that are associated with hematopoiesis, hematopoietic genetic diseases, hematopoietic malignancies, or safe harbor sites. Dr. Dever's primary research interests are to continue to leverage CRISPR/Cas9-based genome editing technologies to study the molecular mechanisms of gene targeting in human hematopoietic stem cells with the ultimate goal of optimizing and further developing novel cell and gene therapies for disease of the blood and the immune system. Currently, he is leading IND-enabling preclinical efficacy, feasibility, safety and tumorigenicity studies for FDA approval of a first-in-human clinical trial at Stanford in 2018 for the treatment of severe sickle cell disease using CRISPR/Cas9-based HBB gene targeting in autologous hematopoietic stem cells.

ACADEMIC APPOINTMENTS

- Instructor, Pediatrics - Stem Cell Transplantation

PROFESSIONAL EDUCATION

- Doctor of Philosophy, University of Rochester , Toxicology (2014)

Publications

PUBLICATIONS

- **CRISPR/Cas9 Genome Engineering in Engraftable Human Brain-Derived Neural Stem Cells.** *iScience*
  Dever, D. P., Scharenberg, S. G., Camarena, J., Kildebeck, E. J., Clark, J. T., Martin, R. M., Bak, R. O., Tang, Y., Dohse, M., Birgmeier, J. A., Jagadeesh, K. A., Bejerano, G., Tsukamoto, et al
  2019; 15: 524–35

- **CRISPR/Cas9 genome editing in human hematopoietic stem cells.** *Nature protocols*
  Bak, R. O., Dever, D. P., Porteus, M. H.
  2018; 13 (2): 358–76

- **A high-fidelity Cas9 mutant delivered as a ribonucleoprotein complex enables efficient gene editing in human hematopoietic stem and progenitor cells.** *Nature medicine*
  Vakulskas, C. A., Dever, D. P., Rettig, G. R., Turk, R., Jacobi, A. M., Collingwood, M. A., Bode, N. M., McNeill, M. S., Yan, S., Camarena, J., Lee, C. M., Park, S. H., Wiebking, et al
  2018; 24 (8): 1216–24

- **Priming Human Repopulating Hematopoietic Stem and Progenitor Cells for Cas9/sgRNA Gene Targeting** *Molecular Therapy Nucleic Acids*
  Charlesworth, C. T., Camarena, J., Cromer, M. K., Vaidyanathan, S., Bak, R. O., Carte, J. M., Potter, J., Dever, D. P., Porteus, M. H.
  2018; 12: 89-104

- **Multiplexed genetic engineering of human hematopoietic stem and progenitor cells using CRISPR/Cas9 and AAV6.** *eLife*
  Bak, R. O., Dever, D. P., Reinisch, A., Cruz Hernandez, D., Majeti, R., Porteus, M. H.
  2017; 6

- **CRISPR/Cas9 ß-globin gene targeting in human haematopoietic stem cells.** *Nature*
  Dever, D. P., Bak, R. O., Reinisch, A., Camarena, J., Washington, G., Nicolas, C. E., Pavel-Dinu, M., Saxena, N., Wilkens, A. B., Mantri, S., Uchida, N., Hendel, A., Narla, et al
  2016

- **Highly Efficient and Marker-free Genome Editing of Human Pluripotent Stem Cells by CRISPR-Cas9 RNP and AAV6 Donor-Mediated Homologous Recombination** *CELL STEM CELL*
  Martin, R. M., Ikeda, K., Cromer, M., Uchida, N., Nishimura, T., Romano, R., Tong, A. J., Lemgart, V. T., Camarena, J., Pavel-Dinu, M., Sindhu, C., Wiebking, V., Vaidyanathan, et al
  2019; 24 (5): 821-+

- **Identification of preexisting adaptive immunity to Cas9 proteins in humans.** *Nature medicine*
  Charlesworth, C. T., Deshpande, P. S., Dever, D. P., Camarena, J., Lemgart, V. T., Cromer, M. K., Vakulskas, C. A., Collingwood, M. A., Zhang, L., Bode, N. M., Behlke, M. A., Dejene, B., Cieniewicz, et al
  2019

- **Global Transcriptional Response to CRISPR/Cas9-AAV6-Based Genome Editing in CD34+ Hematopoietic Stem and Progenitor Cells.** *Molecular therapy : the journal of the American Society of Gene Therapy*
  Cromer, M. K., Vaidyanathan, S., Ryan, D. E., Curry, B., Lucas, A. B., Camarena, J., Kaushik, M., Hay, S. R., Martin, R. M., Steinfeld, I., Bak, R. O., Dever, D. P., Hendel, et al
  2018

- **Priming Human Repopulating Hematopoietic Stem and Progenitor Cells for Cas9/sgRNA Gene Targeting.** *Molecular therapy. Nucleic acids*
  Charlesworth, C. T., Camarena, J., Cromer, M. K., Vaidyanathan, S., Bak, R. O., Carte, J. M., Potter, J., Dever, D. P., Porteus, M. H.
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- **Technical Considerations for the Use of CRISPR/Cas9 in Hematology Research.** *Experimental hematology*
  Gundry, M. C., Dever, D. P., Yudovich, D., Bauer, D. E., Haas, S., Wilkinson, A. C., Singbrant, S.
  2017

- **The changing landscape of gene editing in hematopoietic stem cells: a step towards Cas9 clinical translation.** *Current opinion in hematology*
  Dever, D. P., Porteus, M. H.
  2017

- **Aryl hydrocarbon receptor deletion in cerebellar granule neuron precursors impairs neurogenesis** *DEVELOPMENTAL NEUROBIOLOGY*
  Dever, D. P., Adham, Z. O., Thompson, B., Genestine, M., Cherry, J., Olschowka, J. A., Dicicco-Bloom, E., Opanashuk, L. A.
  2016; 76 (5): 533-550

- **The Aryl Hydrocarbon Receptor Contributes to the Proliferation of Human Medulloblastoma Cells** *MOLECULAR PHARMACOLOGY*
  Dever, D. P., Opanashuk, L. A.
  2012; 81 (5): 669-678

- **Subchronic Polychlorinated Biphenyl (Aroclor 1254) Exposure Produces Oxidative Damage and Neuronal Death of Ventral Midbrain Dopaminergic Systems** *TOXICOLOGICAL SCIENCES*
  Lee, D. W., Notter, S. A., Thiruchelvam, M., Dever, D. P., Fitzpatrick, R., Kostyniak, P. J., Cory-Slechta, D. A., Opanashuk, L. A.
  2012; 125 (2): 496-508

- **2,3,7,8-tetracholorodibenzo-p-dioxin exposure disrupts granule neuron precursor maturation in the developing mouse cerebellum** *TOXICOLOGICAL SCIENCES*
  Collins, L. L., Williamson, M. A., Thompson, B. D., Dever, D. P., Gasiewicz, T. A., Opanashuk, L. A.
  2008; 103 (1): 125-136