



Orly R. Klein, MD

Clinical Associate Professor, Pediatrics - Stem Cell Transplantation

CLINICAL OFFICE (PRIMARY)

- **Pediatric Stem Cell Transplantation**

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**

Elizabeth Alarcon - Administrative Associate

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Bio

CLINICAL FOCUS

- Hematopoietic Stem Cell Transplantation
- Pediatric Hematology-Oncology
- Acute Lymphoblastic Leukemia
- Acute Myeloblastic Leukemia
- Myelodysplastic Syndromes

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Pediatrics - Stem Cell Transplantation

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chair, Medical Committee, Camp Ramah Darom (2018 - present)
- Medical Advisory Board, Rally Foundation for Childhood Cancer (2017 - present)

PROFESSIONAL EDUCATION

- Board Certification: Pediatric Hematology-Oncology, American Board of Pediatrics (2017)
- Fellowship: Johns Hopkins Medicine Pediatric Hematology and Oncology Program (2016) MD
- Fellowship, National Institutes of Health, National Cancer Institute Pediatric Oncology Branch , Pediatric Hematology-Oncology (2015)
- Board Certification: Pediatrics, American Board of Pediatrics (2012)
- Residency: Icahn School of Medicine at Mount Sinai Pediatric Residency (2012) NY
- Medical Education: Icahn School of Medicine at Mount Sinai (2009) NY

Research & Scholarship

CLINICAL TRIALS

- BMT 390 aB-depleted-HSCT-KT, Recruiting

- Phase 3 Unrelated Donor vs HLA-Haploidentical Related in AL or MDS, Not Recruiting
- Phase II/III Posoleucel vs Placebo in Prevention of Infection/Disease in High Risk After Allogeneic HCT, Not Recruiting
- Phase III Posoleucel (ALVR105) in Adenovirus Infection Treatment in SoC Following Allogeneic HCT, Not Recruiting

Publications

PUBLICATIONS

- **Defibrotide modulates pulmonary endothelial cell activation and protects against lung inflammation in pre-clinical models of LPS-induced lung injury and idiopathic pneumonia syndrome** *FRONTIERS IN IMMUNOLOGY*
Klein, O. R., Ktena, Y. P., Pierce, E., Fu, H., Haile, A., Liu, C., Cooke, K. R.
2023; 14: 1186422
- **Transplant for non-malignant disorders: an International Society for Cell & Gene Therapy Stem Cell Engineering Committee report on the role of alternative donors, stem cell sources and graft engineering.** *Cytotherapy*
Klein, O. R., Bonfim, C., Abraham, A., Ruggeri, A., Purtill, D., Cohen, S., Wynn, R., Russell, A., Sharma, A., Ciccocioppo, R., Prockop, S., Boelens, J. J., Bertaina, et al
2023
- **Reduced Intensity Bone Marrow Transplantation with Post-Transplant Cyclophosphamide for Pediatric Inherited Immune Deficiencies and Bone Marrow Failure Syndromes** *JOURNAL OF CLINICAL IMMUNOLOGY*
Klein, O. R., Bapty, S., Lederman, H. M., Younger, M. M., Zambidis, E. T., Jones, R. J., Cooke, K. R., Symons, H. J.
2021; 41 (2): 414-426
- **Myeloablative haploidentical BMT with posttransplant cyclophosphamide for hematologic malignancies in children and adults** *BLOOD ADVANCES*
Symons, H. J., Zahurak, M., Cao, Y., Chen, A., Cooke, K., Gamper, C., Klein, O., Llosa, N., Zambidis, E. T., Ambinder, R., Bolanos-Meade, J., Borrello, I., Brodsky, et al
2020; 4 (16): 3913-3925
- **T-allo10 Cell Addback Post-Abdepleted-HSCT Drives Lasting Leukemia-Free Survival with Distinct Immune Regulation Biomarkers**
Bertaina, A., Bacchetta, R., Shyr, D. C., Saini, G., Lee, J., Agarwal, R., Klein, O. R., Wang, G., Margittai-Gotesman, D., Al Dakheel, A., Barbarito, G., Oppizzi, L., Limaye, et al
ELSEVIER SCIENCE INC.2026: S99
- **THERAPEUTIC DOSES OF T-ALLO10 IMMUNOTHERAPY POST-ABDEPLETED HSCT ENHANCE IMMUNE RECONSTITUTION AND ACHIEVE 100% LEUKEMIA-FREE SURVIVAL IN PEDIATRIC AND YOUNG ADULT PATIENTS WITH HEMATOLOGIC MALIGNANCIES**
Bertaina, A., Bacchetta, R., Cepika, A., Shyr, D., Barbarito, G., Oppizzi, L., Chen, P., Saini, G., Lee, J., Kristovich, K., Agarwal, R., Klein, O., Melsop, et al
SPRINGER NATURE.2025: 74-75
- **Pre-transplant CAR T-cell therapy is associated with inferior survival and increased non-relapse mortality in pediatric B-ALL: A single-center retrospective analysis**
Chok, R., Huang, M., Aftandilian, C., Schultz, L., Shyr, D., Lacayo, N., Shah, A., Saab, R., Gruber, T., Mackall, C., Bertaina, A., Davis, K., Klein, et al
ELSEVIER.2025: 6077-6078
- **COVID-19 Vaccine Response in Pediatric Oncology Patients.** *Pediatric blood & cancer*
Kam, B., Wang, Y., Qin, F., Long, A. H., Klein, O. R., Aftandilian, C.
2025: e31572
- **Restrictive Defibrotide Prophylaxis Guidelines Decrease Expenditure and Do Not Affect Clinical Outcomes in Pediatric Patients at High Risk of Venoocclusive Disease**
Hiroshima, L., Chok, R., Asistores, C., Boehlke, K., Chong, A., Klein, O. R., Bertaina, A., Shyr, D. C.
ELSEVIER SCIENCE INC.2025: S544-S545
- **T-allo10 Immunotherapy Results in Enhanced Early Immune Reconstitution and Reduced GvHD with Excellent Clinical Outcomes Post Aβ-Depleted HSCT in Pediatric and Young Adult Hematologic Malignancy Patients**
Bertaina, A., Bacchetta, R., Cepika, A., Shyr, D. C., Barbarito, G., Oppizzi, L., Chen, P., Saini, G., Lee, J., Kristovich, K., Agarwal, R., Klein, O., Melsop, et al
ELSEVIER.2024: 3525-3526

- **Effect of Rabbit ATG PK on Outcomes after TCR- $\alpha\beta$ /CD19-depleted Pediatric Haploidentical HCT for Hematologic Malignancy.** *Blood advances*
Dvorak, C. C., Long-Boyle, J. R., Holbrook-Brown, L., Abdel-Azim, H., Bertaina, A., Vatsayan, A., Talano, J. A., Bunin, N. J., Anderson, E. J., Flower, A., Lalefar, N. R., Higham, C. S., Kapoor, et al
2024
- **Model based ATG in $\alpha\beta$ haplo-HSCT facilitates engraftment, expedites T-cell recovery, and mitigates the risk of acute GvHD.** *Transplantation and cellular therapy*
Giulia, B., Lyndsie, H., Linda, O., Gopin, S., Karen, K., Orly, K., Kinga, H., Kylan, B., Aditi, G., Devin, M., David, S., Jan, B. J., Alice, et al
2024
- **T-ALLO10 INFUSION AFTER A.DEPLETED-HSCT IN CHILDREN AND YOUNG ADULTS WITH HEMATOLOGIC MALIGNANCIES: IMPROVED IMMUNE RECONSTITUTION IN THE ABSENCE OF SEVERE GVHD**
Bertaina, A., Bacchetta, R., Shyr, D., Saini, G., Lee, J., Kristovich, K., Agarwal-Hashmi, R., Klein, O., Melsop, K., Tate, K., Barbarito, G., Oppizzi, L., Chen, et al
SPRINGERNATURE.2023: 232-234
- **Precision Delivery of Steroids as a Rescue Therapy for Gastrointestinal Graft-versus-Host Disease in Pediatric Stem Cell Transplant Recipients.** *Journal of clinical medicine*
Levitte, S., Ganguly, A., Frolik, S., Guevara-Tique, A. A., Patel, S., Tadas, A., Klein, O., Shyr, D., Agarwal-Hashmi, R., Beach, L., Callard, E., Weinacht, K., Bertaina, et al
2023; 12 (13)
- **Precision Delivery of Steroids as a Rescue Therapy for Gastrointestinal Graft-versus-Host Disease in Pediatric Stem Cell Transplant Recipients** *Journal of Clinical Medicine*
Levitte, s., Ganguly, A., Frolik, S., Guevara-Tique, A., et al
2023; 12 (4229)
- **Volumetric modulated arc therapy total body irradiation in pediatric and adolescent/young adult patients undergoing stem cell transplantation: Early outcomes and toxicities.** *Pediatric blood & cancer*
Marquez, C., Hui, C., Simiele, E., Blomain, E., Oh, J., Bertaina, A., Klein, O., Shyr, D., Jiang, A., Hoppe, R. T., Kovalchuk, N., Hiniker, S. M.
2022: e29689
- **Outcomes of pediatric patients with oncologic disease or following hematopoietic stem cell transplant supported on extracorporeal membrane oxygenation: The PEDECOR experience** *PEDIATRIC BLOOD & CANCER*
Steppan, D. A., Coleman, R. D., Viamonte, H. K., Hanson, S. J., Carroll, M. K., Klein, O. K., Cooke, K. R., Spinella, P. C., Steiner, M. E., Loftis, L. L., Bembea, M. M., Pediat Acute Lung Injury Sepsis In, ELSO
2020; 67 (10): e28403
- **Reduced-Intensity Haploidentical Bone Marrow Transplantation with Post-Transplant Cyclophosphamide for Solid Tumors in Pediatric and Young Adult Patients** *BIOLOGY OF BLOOD AND MARROW TRANSPLANTATION*
Llosa, N. J., Chen, A. R., Gamper, C. J., Klein, O. R., Zambidis, E. T., Lubner, B., Rosner, G., Siegel, N., Holuba, M., Robey, N., Hayashi, M., Jones, R. J., Fuchs, et al
2017; 23 (12): 2127-2136
- **Adoptive immunotherapy for primary immunodeficiency disorders with virus-specific T lymphocytes** *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY*
Naik, S., Nicholas, S. K., Martinez, C. A., Leen, A. M., Hanley, P. J., Gottschalk, S. M., Rooney, C. M., Hanson, I., Krance, R. A., Shpall, E. J., Cruz, C. R., Amrolia, P., Lucchini, et al
2016; 137 (5): 1498-+
- **Idiopathic pneumonia syndrome following hematopoietic stem cell transplantation** *JOURNAL OF PEDIATRIC INTENSIVE CARE*
Klein, O. R., Cooke, K. R.
2014; 3 (3): 147-157