

Das Knochenmark als neuer Spieler im Feld der hämatopoetischen Stammzelltransplantation

1. Sahin AO, Buitenhuis M. Molecular mechanisms underlying adhesion and migration of hematopoietic stem cells. *Cell Adh Migr.* 2012;6(1):39-48.
2. Perlin JR, Sporrij A, Zon LI. Blood on the tracks: hematopoietic stem cell-endothelial cell interactions in homing and engraftment. *J Mol Med (Berl).* 2017;95(8):809-819.
3. Lévesque JP, Helwani FM, Winkler IG. The endosteal 'osteoblastic' niche and its role in hematopoietic stem cell homing and mobilization. *Leukemia.* 2010;24(12):1979-1992.
4. Sala-Torra O, Hanna C, Loken MR, et al. Evidence of donor-derived hematologic malignancies after hematopoietic stem cell transplantation. *Biol Blood Marrow Transpl.* 2006;12(5):511-517.
5. Aldoss I, Song JY, Curtin PT, Forman SJ. Multiple donor-derived leukemias in a recipient of allogeneic hematopoietic cell transplantation for myeloid malignancy. *Blood Adv.* 2020;4(19):4798-4801.
6. Krause DS, Scadden DT. A hostel for the hostile: the bone marrow niche in hematologic neoplasms. *Haematologica.* 2015;100(11):1376-1387.
7. Krause DS, Fulzele K, Catic A, et al. Differential regulation of myeloid leukemias by the bone marrow microenvironment. *Nature Medicine.* 2013;19(11):1513-1517.
8. Taichman RS, Reilly MJ, Emerson SG. Human osteoblasts support human hematopoietic progenitor cells in vitro bone marrow cultures. *Blood.* 1996;87(2):518-524.
9. Calvi LM, Adams GB, Weibrecht KW, et al. Osteoblastic cells regulate the haematopoietic stem cell niche. *Nature.* 2003;425(6960):841-846.
10. Zhang J, Niu C, Ye L, et al. Identification of the haematopoietic stem cell niche and control of the niche size. *Nature.* 2003;425(6960):836-841.
11. Visnjic D, Kalajzic Z, Rowe DW, Katavic V, Lorenzo J, Aguila HL. Hematopoiesis is severely altered in mice with an induced osteoblast deficiency. *Blood.* 2004;103(9):3258-3264.
12. Guezguez B, Campbell CJ, Boyd AL, et al. Regional localization within the bone marrow influences the functional capacity of human HSCs. *Cell Stem Cell.* 2013;13(2):175-189.
13. Raaijmakers MH, Mukherjee S, Guo S, et al. Bone progenitor dysfunction induces myelodysplasia and secondary leukaemia. *Nature.* 2010;464(7290):852-857.
14. Kode A, Manavalan JS, Mosialou I, et al. Leukaemogenesis induced by an activating β -catenin mutation in osteoblasts. *Nature.* 2014;506(7487):240-244.
15. Kfoury Y, Scadden David T. Mesenchymal Cell Contributions to the Stem Cell Niche. *Cell Stem Cell.* 2015;16(3):239-253.
16. Kiel MJ, Morrison SJ. Maintaining hematopoietic stem cells in the vascular niche. *Immunity.* 2006;2006:862-864.
17. Kunisaki Y, Bruns I, Scheiermann C, et al. Arteriolar niches maintain haematopoietic stem cell quiescence. *Nature.* 2013;502(7473):637-643.
18. Itkin T, Gur-Cohen S, Spencer JA, et al. Distinct bone marrow blood vessels differentially regulate haematopoiesis. *Nature.* 2016;532(7599):323-328.
19. Méndez-Ferrer S, Michurina TV, Ferraro F, et al. Mesenchymal and haematopoietic stem cells form a unique bone marrow niche. *Nature.* 2010;466(7308):829-834.
20. Comazzetto S, Murphy MM, Berto S, Jeffery E, Zhao Z, Morrison SJ. Restricted Hematopoietic Progenitors and Erythropoiesis Require SCF from Leptin Receptor+ Niche Cells in the Bone Marrow. *Cell Stem Cell.* 2019;24(3):477-486.e476.
21. Ding L, Saunders TL, Enikolopov G, Morrison SJ. Endothelial and perivascular cells maintain haematopoietic stem cells. *Nature.* 2012;481(7382):457-462.
22. Ding L, Morrison SJ. Haematopoietic stem cells and early lymphoid progenitors occupy distinct bone marrow niches. *Nature.* 2013;495(7440):231-235.
23. Zhang B, Li M, McDonald T, et al. Microenvironmental protection of CML stem and progenitor cells from tyrosine kinase inhibitors through N-cadherin and Wnt-beta-catenin signaling. *Blood.* 2013;121 (10):1824-1838.
24. Schepers K, Pietras EM, Reynaud D, et al. Myeloproliferative neoplasia remodels the endosteal bone marrow niche into a self-reinforcing leukemic niche. *Cell Stem Cell.* 2013;13(3):285-299.
25. Verma D, Zanetti C, Fontenay M, Krause DS. Bone Marrow Niche-Derived Extracellular Matrix-Degrading Enzymes Influence the Progression of B-Cell Acute Lymphoblastic Leukemia. *Blood.* 2018;132(390).

26. Méndez-Ferrer S, Bonnet D, Steensma DP, et al. Bone marrow niches in haematological malignancies. *Nat Rev Cancer*. 2020;20(5):285-298.
27. Krause DS, Lazarides K, von Andrian UH, Van Etten RA. Requirement for CD44 in homing and engraftment of BCR-ABL-expressing leukemic stem cells. *Nat Med*. 2006;12(10):1175-1180.
28. Jin L, Hope KJ, Zhai Q, Smadja-Joffe F, Dick JE. Targeting of CD44 eradicates human acute myeloid leukemic stem cells. *Nat Med*. 2006;12(10):1167-1174.
29. Barbier V, Erhani J, Fiveash C, et al. Endothelial E-selectin inhibition improves acute myeloid leukaemia therapy by disrupting vascular niche-mediated chemoresistance. *Nat Commun*. 2020;11(1):2042.
30. Godavarthy PS, Kumar R, Herkt SC, et al. The vascular bone marrow niche influences outcome in chronic myeloid leukemia via the E-selectin - SCL/TAL1 - CD44 axis. *Haematologica*. 2020;105(1):136-147.
31. Hur J, Choi JI, Lee H, et al. CD82/KAI1 Maintains the Dormancy of Long-Term Hematopoietic Stem Cells through Interaction with DARC-Expressing Macrophages. *Cell Stem Cell*. 2016;18(4):508-521.
32. Verma D, Kumar R, Pereira R, et al. Vitamin K-antagonism impairs the bone marrow microenvironment and hematopoiesis *Blood*. 2019;134(3):227-238.
33. Christopher MJ, Rao M, Liu F, Woloszynek JR, Link DC. Expression of the G-CSF receptor in monocytic cells is sufficient to mediate hematopoietic progenitor mobilization by G-CSF in mice. *J Exp Med*. 2011;208(2):251-260.
34. Winkler IG, Sims NA, Pettit AR, et al. Bone marrow macrophages maintain hematopoietic stem cell (HSC) niches and their depletion mobilizes HSCs. *Blood*. 2010;116(23):4815-4828.
35. Chow A, Lucas D, Hidalgo A, et al. Bone marrow CD169+ macrophages promote the retention of hematopoietic stem and progenitor cells in the mesenchymal stem cell niche. *J Exp Med*. 2011;208(2):261-271.
36. Kaur S, Raggatt LJ, Millard SM, et al. Self-repopulating recipient bone marrow resident macrophages promote long-term hematopoietic stem cell engraftment. *Blood*. 2018;132(7):735-749.
37. Zhou BO, Yu H, Yue R, et al. Bone marrow adipocytes promote the regeneration of stem cells and haematopoiesis by secreting SCF. *Nat Cell Biol*. 2017;19(8):891-903.
38. Naveiras O, Nardi V, Wenzel PL, Hauschka PV, Fahey F, Daley GQ. Bone-marrow adipocytes as negative regulators of the haematopoietic microenvironment. *Nature*. 2009;460(7252):259-263.
39. Katayama Y, Battista M, Kao W-M, et al. Signals from the sympathetic nervous system regulate hematopoietic stem cell egress from bone marrow. *Cell*. 2006;124:407-421.
40. Zanetti C, Krause DS. "Caught in the net": the extracellular matrix of the bone marrow in normal hematopoiesis and leukemia. *Exp Hematol*. 2020;89:13-25.
41. Witkowski MT, Dolgalev I, Evensen NA, et al. Extensive Remodeling of the Immune Microenvironment in B Cell Acute Lymphoblastic Leukemia. *Cancer Cell*. 2020;37(6):867-882.e812.
42. Zanetti C, Kumar R, Ender J, et al. The age of the bone marrow microenvironment influences B-cell acute lymphoblastic leukemia progression via CXCR5-CXCL13. *Blood*. 2021;138(19):1870-1884.
43. Arranz L, Sanchez-Aguilera A, Martin-Perez D, et al. Neuropathy of haematopoietic stem cell niche is essential for myeloproliferative neoplasms. *Nature*. 2014;512(7512):78-81.
44. Boyerinas B, Zafrir M, Yesilkanal AE, Price TT, Hyjek EM, Sipkins DA. Adhesion to osteopontin in the bone marrow niche regulates lymphoblastic leukemia cell dormancy. *Blood*. 2013;121(24):4821-4831.
45. Ma Z, Zhao X, Huang J, et al. A critical role of periostin in B-cell acute lymphoblastic leukemia. *Leukemia*. 2017;31(8):1835-1837.
46. Kumar R, Pereira RS, Zanetti C, et al. Specific, targetable interactions with the microenvironment influence imatinib-resistant chronic myeloid leukemia. *Leukemia*. 2020;34(8):2087-2101.
47. Bensinger WI. Should we purge? *Bone Marrow Transplant*. 1998;21(2):113-115.
48. de Fabritiis P, Amadori S, Petti MC, et al. In vitro purging with BCR-ABL antisense oligodeoxynucleotides does not prevent haematological reconstitution after autologous bone marrow transplantation. *Leukemia*. 1995;9:662.

49. Kinstrie R, Horne GA, Morrison H, et al. CD93 is expressed on chronic myeloid leukemia stem cells and identifies a quiescent population which persists after tyrosine kinase inhibitor therapy. *Leukemia*. 2020;34(6):1613-1625.
50. Haubner S, Perna F, Köhnke T, et al. Coexpression profile of leukemic stem cell markers for combinatorial targeted therapy in AML. *Leukemia*. 2019;33(1):64-74.
51. Uj GL, Rettig MP, Motabi IH, et al. A phase 1/2 study of chemosensitization with the CXCR4 antagonist plerixafor in relapsed or refractory acute myeloid leukemia. *Blood*. 2012;119(17):3917-3924.
52. Passaro D, Di Tullio A, Abarrategi A, et al. Increased Vascular Permeability in the Bone Marrow Microenvironment Contributes to Disease Progression and Drug Response in Acute Myeloid Leukemia. *Cancer Cell*. 2017;32(3):324-341.e326.
53. Ben-Batalla I, Schultze A, Wroblewski M, et al. Axl, a prognostic and therapeutic target in acute myeloid leukemia mediates paracrine crosstalk of leukemia cells with bone marrow stroma. *Blood*. 2013;122(14):2443-2452.
54. Waizenegger JS, Ben-Batalla I, Weinhold N, et al. Role of Growth arrest-specific gene 6-Mer axis in multiple myeloma. *Leukemia*. 2015;29(3):696-704.
55. Bunse M, Pfeilschifter J, Bluhm J, et al. CXCR5 CAR-T cells simultaneously target B cell non-Hodgkin's lymphoma and tumor-supportive follicular T helper cells. *Nat Commun*. 2021;12(1):240.