

Supplementary Table I. Primers and probes.

Reagent	Sequence (5' → 3')
Subcutaneous biodistribution study	
Human-specific	
Forward primer Cr17_1a	GGGATAATTTTCAGCTGACTAAACAG
Reverse primer Cr17_4b	AAACGTCCACTTGCAGATTCTA
Probe TMsatex_probe	6FAM-CACGTTTGAACACTCTTTTTGCAGGATC-TAMRA
Mouse-specific	
Forward primer PTGER2hmf	TACCTGCAGCTGTACGCCAC
Reverse primer PTGER2r	GCCAGGAGAATGAGGTGGTC
Probe MOUQ01	VIC-CCTGCTGCTTATCGTGGCTG-NFQ
Intravenous biodistribution study	
Human-specific	
Forward primer ACC-25	GGGATAATTTTCAGCTGACTAAACAG
Reverse primer ACC-26	AAACGTCCACTTGCAGATTCTA
Probe ACC-27	FAM-CACGTTTGAACACTCTTTTTGCA-BHQ-1
Mouse-specific	
Forward primer ACC-28	TACCTGCAGCTGTACGCCAC
Reverse primer ACC-29	GCCAGGAGAATGAGGTGGTC
Probe ACC-30	TAMRA-CCTGCTGCTTATCGTGGCTG-BHQ-2

Supplementary Table II. Body weight (alive) and selected organ weights of NOD-*scid* mice following three subcutaneous injections of 1×10^5 , 1×10^6 or 1×10^7 ABCB5⁺ MSCs/animal or vehicle without cells on day 1, 29 and 57.

	Vehicle	1×10^5 MSCs/animal	1×10^6 MSCs/animal	1×10^7 MSCs/animal
Males				
Body weight (alive), g				
Baseline	25.7 (1.6) (n = 15)	26.0 (1.4) (n = 10)	25.8 (1.4) (n = 10)	25.9 (1.9) (n = 15)
12 weeks	32.7 (1.4) (n = 13)	33.2 (1.4) (n = 10)	32.8 (1.8) (n = 10)	33.1 (1.5) (n = 15)
16 weeks	33.8 (0.8) (n = 5)	n/a	n/a	33.2 (3.6) (n = 5)
Organ weight, g				
12 weeks	n = 8 (thymus: n = 6)	n = 10 (spleen: n = 9; thymus: n = 7)	n = 10 (thymus: n = 6)	n = 10 (thymus: n = 9)
Brain	0.482 (0.010)	0.478 (0.016)	0.482 (0.014)	0.475 (0.021)
Heart	0.167 (0.015)	0.174 (0.010)	0.170 (0.027)	0.174 (0.023)
Kidneys	0.501 (0.044)	0.509 (0.040)	0.493 (0.041)	0.516 (0.045)
Liver	1.478 (0.135)	1.447 (0.106)	1.438 (0.156)	1.456 (0.134)
Spleen	0.048 (0.010)	0.045 (0.007)	0.045 (0.010)	0.037 (0.010)*
Testes	0.286 (0.029)	0.281 (0.021)	0.280 (0.030)	0.279 (0.015)
Thymus	0.051 (0.059)	0.008 (0.004)*	0.022 (0.021)	0.009 (0.006)*
16 weeks	n = 5			n = 5
Brain	0.490 (0.013)	n/a	n/a	0.479 (0.026)
Heart	0.169 (0.016)	n/a	n/a	0.172 (0.032)
	0.552	n/a	n/a	0.514 (0.056)

Kidneys	(0.047)			
Liver	1.803 (0.043)	n/a	n/a	1.611 (0.146)
Spleen	0.064 (0.011)	n/a	n/a	0.051 (0.011)
Testes	0.272 (0.014)	n/a	n/a	0.275 (0.031)
Thymus	0.096 (0.188)	n/a	n/a	0.013 (0.006)

Females

Body weight, g

Baseline	19.5 (1.6) (n = 15)	19.6 (1.2) (n = 10)	19.9 (1.1) (n = 10)	19.6 (1.5) (n = 15)
12 weeks	23.6 (2.1) (n = 12)	24.1 (1.6) (n = 10)	24.7 (1.7) (n = 10)	24.5 (1.5) (n = 15)
16 weeks	23.8 (1.3) (n = 4)	n/a	n/a	23.6 (1.7) (n = 5)

Organ weight, g

12 weeks	n = 8 (thymus: n = 7)	n = 10 (thymus: n = 8)	n = 10	n = 9
Brain	0.480 (0.027)	0.468 (0.024)	0.484 (0.017)	0.478 (0.016)
Heart	0.125 (0.014)	0.116 (0.007)	0.130 (0.040)	0.125 (0.008)
Kidneys	0.276 (0.044)	0.268 (0.016)	0.283 (0.026)	0.285 (0.018)
Liver	1.004 (0.107)	1.056 (0.104)	1.031 (0.078)	0.987 (0.053)
Spleen	0.038 (0.015)	0.072 (0.082)	0.051 (0.019)	0.038 (0.008)
Thymus	0.016 (0.007)	0.076 (0.169)	0.029 (0.033)	0.034 (0.060)
Uterus	0.171 (0.052)	0.161 (0.040)	0.154 (0.040)	0.122 (0.018)
16 weeks	n = 4			n = 5
Brain	0.497 (0.015)	n/a	n/a	0.483 (0.030)

Heart	0.119 (0.008)	n/a	n/a	0.112 (0.016)
Kidneys	0.286 (0.014)	n/a	n/a	0.264 (0.026)
Liver	1.073 (0.050)	n/a	n/a	1.004 (0.081)
Spleen	0.058 (0.019)	n/a	n/a	0.063 (0.019)
Thymus	0.010 (0.004)	n/a	n/a	0.016 (0.007)
Uterus	0.159 (0.057)	n/a	n/a	0.132 (0.037)

Values are means (SD); **P* < 0.05 versus vehicle group, Dunnett's test based on pooled variances. n/a, not applicable. Animals were followed up for 12 weeks. The vehicle and high-dose groups included additional five male and five female mice that were followed up for 16 weeks. Animals that were found dead or were prematurely euthanized due to spontaneous lymphoma development are excluded.

Supplementary Table III. Selected hematology, clinical chemistry and urinalysis parameters of NOD-*scid* mice following three subcutaneous injections of 1×10^5 , 1×10^6 or 1×10^7 ABCB5⁺ MSCs/animal or vehicle without cells on day 1, 29 and 57.

	Vehicle	1×10^5 MSCs/animal	1×10^6 MSCs/animal	1×10^7 MSCs/animal
Males				
Hematology	n = 13	n = 10	n = 10	n = 15
Hematocrit, %	43.5 (1.1)	43.2 (0.6)	42.8 (1.7)	45.1 (1.0)**
Hemoglobin, g/dL	13.8 (0.3)	13.5 (0.3)	13.4 (0.6)	14.3 (0.4)**
WBCs, $\times 10^9/L$	3.70 (2.27)	2.90 (0.96)	2.21 (1.05)	4.99 (2.08)
Neutrophils, $\times 10^9/l$	2.71 (1.90)	1.85 (0.70)	1.47 (0.91)	3.55 (1.67)
Lymphocytes, $\times 10^9/l$	0.88 (0.38)	0.91 (0.32)	0.66 (0.23)	1.32 (0.44)**
Monocytes, $\times 10^9/l$	0.00 (0.01)	0.01 (0.02)	0.00 (0.00)	0.01 (0.01)
Eosinophils, $\times 10^9/l$	0.10 (0.04)	0.13 (0.06)	0.08 (0.03)	0.11 (0.03)
Clinical chemistry	n = 5 (Na ⁺ , n = 3)	n = 5	n = 5	n = 5
AST, U/L	423.12 (225.85)	703.58 (320.14)	618.34 (254.42)	510.14 (195.72)
ALP, U/L	24.40 (4.04)	24.80 (9.04)	32.80 (5.45)	38.80 (5.12)**
Urea, mmol/L	15.56 (1.69)	10.88 (1.02)***	10.73 (1.77)***	12.02 (1.77)**
Cholesterol, mmol/L	2.05 (0.22)	2.44 (0.32)	2.13 (0.17)	2.12 (0.17)
Triglycerides, mmol/L	1.39 (0.50)	1.03 (0.21)	0.64 (0.13)**	0.86 (0.21)*
Glucose, mmol/L	12.00 (1.78)	11.83 (1.30)	9.80 (1.30)	12.10 (1.06)
Na ⁺ , mmol/L	155.67 (2.31)	153.00 (3.67)	152.40 (2.61)	154.00 (1.58)
K ⁺ , mmol/L	6.95 (1.44)	6.62 (0.60)	6.15 (1.39)	6.44 (0.50)
Ca ²⁺ , mmol/L	2.47 (0.17)	2.43 (0.20)	2.46 (0.06)	2.55 (0.13)
Albumin, g/L	33.34 (2.02)	33.16 (1.92)	33.74 (1.30)	33.86 (1.21)
Total protein, g/L	49.06 (3.35)	50.66 (3.42)	49.24 (1.50)	51.14 (1.81)
Urinalysis	n = 5	n = 5	n = 3–5	n = 4–5
Erythrocytes, cells/ μ L	6.0 (5.5)	12.0 (21.7)	12.0 (21.7) (n = 5)	12.0 (21.7) (n = 5)
Urobilinogen, μ mol/L	38.5 (19.2)	35.0 (0.0)	56.9 (56.0) (n = 4)	38.5 (19.2) (n = 5)
Bilirubin, μ mol/L	0.0 (0.0)	3.4 (7.6)	0.0 (0.0)	0.0 (0.0)

			(n = 4)	(n = 5)
Ketones, mmol/L	1.0 (1.4)	1.0 (1.4)	1.3 (1.4) (n = 4)	1.5 (1.4) (n = 5)
pH	8.4 (0.9)	8.6 (0.9)	7.5 (1.3) (n = 3)	8.8 (0.5) (n = 4)
Specific gravity	1.0060 (0.0022)	1.0050 (0.0000)	1.0083 (0.0058) (n = 3)	1.0063 (0.0025) (n = 4)

Females

Hematology	n = 12	n = 10	n = 10	n = 15
Hematocrit, %	45.2 (3.1)	43.6 (2.6)	41.5 (2.3)**	43.9 (3.4)
Hemoglobin, g/dL	14.5 (1.2)	13.6 (0.9)	12.9 (1.0)**	13.8 (1.1)
WBCs, $\times 10^9/L$	1.94 (2.70)	2.04 (2.85)	1.43 (1.06)	1.42 (1.13)
Neutrophils, $\times 10^9/L$	1.32 (2.44)	0.72 (0.62)	0.79 (0.68)	0.72 (0.73)
Lymphocytes, $\times 10^9/L$	0.48 (0.20)	1.12 (2.23)	0.49 (0.26)	0.54 (0.51)
Monocytes, $\times 10^9/L$	0.01 (0.02)	0.09 (0.26)	0.02 (0.02)	0.07 (0.28)
Eosinophils, $\times 10^9/L$	0.13 (0.12)	0.10 (0.11)	0.14 (0.20)	0.09 (0.10)
Clinical chemistry	n = 4 (Na ⁺ , K ⁺ , n = 2)	n = 5	n = 5	n = 5
AST, U/L	332.90 (258.10)	882.08 (530.38)	472.78 (223.97)	555.94 (249.24)
ALP, U/L	70.75 (20.76)	164.20 (253.47)	59.40 (17.70)	74.20 (22.77)
Urea, mmol/L	8.98 (0.93)	8.31 (1.31)	9.16 (2.44)	8.99 (0.96)
Cholesterol, mmol/L	1.62 (0.24)	1.49 (0.30)	1.64 (0.05)	1.49 (0.22)
Triglycerides, mmol/L	0.83 (0.15)	0.72 (0.20)	0.89 (0.25)	0.66 (0.16)
Glucose	11.38 (0.87)	12.71 (1.77)	12.82 (1.98)	11.12 (0.29)
Na ⁺ , mmol/L	155.50 (0.71)	162.80 (1.30)**	159.60 (1.82)	162.60 (3.78)**
K ⁺ , mmol/L	5.68 (0.08)	6.43 (1.17)	5.66 (0.76)	5.76 (0.26)
Ca ²⁺ , mmol/L	2.50 (0.11)	2.60 (0.16)	2.48 (0.08)	2.37 (0.07)
Albumin, g/L	35.20 (0.98)	35.06 (1.08)	34.82 (2.25)	33.60 (1.38)
Total protein, g/L	49.05 (2.41)	47.78 (2.92)	46.66 (2.47)	46.84 (2.53)
Urinalysis	n = 2–4	n = 3–5	n = 4–5	n = 5
Erythrocytes, cells/ μL	0.0 (0.0) (n = 2)	0.0 (0.0) (n = 4)	12.5 (25.0) (n = 4)	10.0 (22.4)
Urobilinogen,	43.8 (37.1)	17.5 (0.0)	30.6 (8.8)	21.0 (7.8)

µmol/L	(n = 2)	(n = 4)	(n = 4)	
Bilirubin, µmol/L	0.0 (0.0) (n = 2)	8.8 (17.5) (n = 4)	8.8 (17.5) (n = 4)	3.4 (7.6)
Ketones, mmol/L	0.0 (0.0) (n = 2)	0.0 (0.0) (n = 4)	0.0 (0.0) (n = 4)	0.0 (0.0)
pH	8.5 (0.7) (n = 2)	8.7 (0.6) (n = 3)	8.5 (0.6) (n = 4)	8.0 (1.0)
Specific gravity	1.0100 (0.0000) (n = 2)	1.0117 (0.0029) (n = 3)	1.0100 (0.0041) (n = 4)	1.0090 (0.0022) (n = 5)

Values are means (SD); * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$ vs. vehicle group. Hematology was assessed on day 84 (males) and day 85 (females); clinical chemistry and urine were assessed on day 91 (males) and day 92 (females).

Supplementary Table IV. Histopathology findings in NOD-*scid* mice following three subcutaneous injections of 1×10^7 ABCB5⁺ MSCs/animal or vehicle without cells on day 1, 29 and 57.

Organ/tissue and findings	Number of affected/examined animals ^a			
	Vehicle		1 × 10 ⁷ MSCs/animal	
	12 weeks	16 weeks	12 weeks	16 weeks
Males				
Systemic neoplasms				
Lymphoma, malignant	0/8	1/5	0/10	0/5
Injection site				
Inflammation, chronic, slight	0/7	0/5	1/10	1/5
Kidneys				
Cyst	0/8	0/5	1/10	0/5
Dilatation, pelvis, slight	0/8	1/5	0/10	0/5
Lacrimal glands				
Inflammation, slight	0/8	1/5	0/10	0/5
Lung				
Congestion, slight	0/8	0/5	1/10	0/5
Popliteal lymph nodes				
Degeneration, moderate	0/8	0/5	0/10	1/5
Preputial glands				
Inflammation, chronic, active, marked	0/8	1/5	0/10	0/5
Prostate gland				
Hemorrhage, marked	0/8	1/5	0/10	0/5
Skin/subcutis				
Hemorrhage, focal, slight	0/8	0/5	1/9	0/5
Spleen				
Congestion, diffuse, moderate	0/8	0/5	1/10	0/5
Thymus				
Atrophy, slight	0/4	0/1	1/5	2/13
Atrophy, moderate	3/5	0/1	1/5	0/3
Atrophy, marked	0/4	0/1	2/5	0/3
Neoplasm, metastatic	0/4	1/1	0/5	0/3

Females				
Systemic neoplasms				
Lymphoma, malignant	0/8	0/4	1/9	2/5
Eyes				
Inflammation, chronic, unilateral, moderate	0/8	1/4	0/9	0/5
Kidneys				
Fibrosis, cortex, slight	1/8	0/4	0/9	0/5
Lacrimal glands				
Inflammation, chronic, unilateral, slight	0/8	1/4	0/9	0/5
Inflammation, chronic, moderate	0/8	1/4	0/9	0/5
Lung				
Hemorrhage, slight	0/8	0/4	1/9	1/5
Neoplasm, metastatic	0/8	0/4	1/9	1/5
Thymus				
Atrophy, slight	1/8	0/4	2/9	1/4
Atrophy, moderate	2/8	0/4	0/9	0/4
Hyperplasia, slight	0/8	0/4	1/9	1/4
Neoplasm, metastatic	0/8	0/4	1/9	1/4

Animals were followed up for 12 or 16 weeks. Animals that were found dead or were prematurely euthanized due to spontaneous lymphoma development are excluded.

^aNot all tissues were available from all animals for histopathological examination.