

**Supplemental Table 1. Hematopoietic parameters and lineages of peripheral blood**

Genotype	RBC, 10 <sup>6</sup> cells/ $\mu$ l	HGB, g/ deciliter	HCT, percent	PLT, 10 <sup>3</sup> cells/ $\mu$ l	MCV, femto- liter	MCH, picogram	WBC, 10 <sup>3</sup> cells/ $\mu$ l	MON, 10 <sup>3</sup> cells/ $\mu$ l	EOS, 10 <sup>3</sup> cells/ $\mu$ l	BAS, 10 <sup>3</sup> cells/ $\mu$ l
B6 +/+ (n = 17)	10 ( $\pm$ 0.3)	15 ( $\pm$ 0.7)	46 ( $\pm$ 1.5)	1220 ( $\pm$ 42)	45 ( $\pm$ 0.3)	15 ( $\pm$ 1.0)	11 ( $\pm$ 0.4)	0.12 ( $\pm$ 0.007)	0.20 ( $\pm$ 0.02)	0.03 ( $\pm$ 0.002)
<i>W-v</i> /+ (n = 16)	9.1* ( $\pm$ 0.3)	15 ( $\pm$ 0.4)	43 ( $\pm$ 1.7)	1205 ( $\pm$ 60)	48 $\dagger$ ( $\pm$ 0.5)	17 ( $\pm$ 0.5)	9.5 ( $\pm$ 0.5)	0.09 $\ddagger$ ( $\pm$ 0.007)	0.14 $\ddagger$ ( $\pm$ 0.01)	0.03 ( $\pm$ 0.002)
<i>W-41</i> /+ (n = 16)	9.7 ( $\pm$ 0.2)	16 ( $\pm$ 0.2)	46 ( $\pm$ 1.2)	1152 ( $\pm$ 50)	48 $\dagger$ ( $\pm$ 0.3)	16 ( $\pm$ 0.3)	9.6 ( $\pm$ 0.4)	0.09 $\ddagger$ ( $\pm$ 0.005)	0.12 $\ddagger$ ( $\pm$ 0.009)	0.02* ( $\pm$ 0.002)
<i>W-41/W-41</i> (n = 16)	8.1 $\dagger$ ( $\pm$ 0.3)	13 ( $\pm$ 0.8)	38* ( $\pm$ 2.0)	1001 $\ddagger$ ( $\pm$ 41)	51 $\dagger$ ( $\pm$ 0.3)	17 ( $\pm$ 1.2)	9.5 ( $\pm$ 0.6)	0.1 ( $\pm$ 0.01)	0.14 $\ddagger$ ( $\pm$ 0.02)	0.03 ( $\pm$ 0.002)
<i>W-42</i> /+ (n = 16)	7.5 $\dagger$ ( $\pm$ 0.4)	14 ( $\pm$ 0.5)	39* ( $\pm$ 2.6)	1317 ( $\pm$ 101)	52 $\dagger$ ( $\pm$ 0.7)	19* ( $\pm$ 1.6)	9.3 ( $\pm$ 0.5)	0.1 (0.008)	0.14 $\ddagger$ ( $\pm$ 0.01)	0.03 ( $\pm$ 0.003)

Data are from males and females, 3–5 months old, and were analyzed with Jmp software. RBC = red blood cells, HGB = hemoglobin, HCT = hematocrit, PLT = platelet, MCV = mean corpuscular volume, MCH = mean corpuscular height, WBC = white blood cells, MON = monocytes, EOS = eosinophils and BAS = basophils. Values significantly different from +/+ are indicated as follows: \* $P < 0.05$ ,  $\ddagger P < 0.01$ ,  $\dagger P < 0.0001$ .

**Supplemental Table 2. *Kit* mutant effects on cell numbers at each HSC stage of differentiation**

Donor	Differentiation Stage:					
	HSC	MPP	CLP	CMP	MEP	GMP
B6 +/+	0.02	44.5	0.04	0.08	25.3	59.5
<i>W-v</i> /+	0.03	45.4	0.04	0.06	31.4	50.5
<i>W-42</i> /+	0.01	53.3	0.03	0.04	32.2	51.6
<i>W-41</i> / <i>W-41</i>	0.01	48.1	0.05	0.08	47.3	43.3

HSC include both LT and ST HSC, while the other precursor types are defined in Figure 1.

Total cell numbers in both femurs and tibias were:

B6 =  $4.37 \times 10(7)$  cells/ml

*W-v*/+ =  $4.29 \times 10(7)$  cells/ml

*W-42*/+ =  $3.68 \times 10(7)$  cells/ml

*W-41*/*W-41* =  $4.02 \times 10(7)$  cells

**Supplemental Figure 1. Stage-specific competitive repopulation**

Legend: Six million competitor and donor bone marrow cells were mixed before transplanting into each irradiated recipient. Six mice were analyzed per genotype at each time point. All data points are given as mean  $\pm$  standard error (SE). RU values were calculated from mean percentages of donor and competitor cells. (A) Percentages of KSL (total HSC and MPP) cells from each donor are shown at 1 and 4 months post transplantation. The dotted line indicates the 50% mark. (B) RU values calculated from percentages of donor and competitor KSL cells in A are given. (C & D) Percentages of donor-derived ST- and LT-HSC were determined with Flk2. ST-HSC are Flk2<sup>+</sup>, while LT-HSC are Flk2<sup>-</sup>.

