

Supplemental Table S1 - Sample size and inclusion criteria across BMDCS studies

Study (PMID)	Genetic Exposure	Discovery (N)	Replication (N)	Ancestry	Ancestry Definition	Siblings
Chesi (26041818)	GWAS	1371	481	All	N/A	Included
Mitchell (25762182)	63 BMD variants	603	0	European	PC (± 4.0 SD)	Older excluded
Mitchell (26572781)	Genetic Risk Scores	794 – 819*	0	European	PC (>50% ADMIX)	Older excluded
Mitchell (NA)	EN1 & SOX6	932	486	European	PC (>50% ADMIX)	Included**

*Sample size dependent on data available for calculating genetic risk scores

**Older excluded in sex-combined analyses to test for SNP-sex interactions

Supplemental Table S2 - Variants near *ENI* and *SOX6* and associations with pediatric bone Z-scores (adjusting for 10 principal components)

SNP (Effect Allele)	EAF	Nearest Gene	Site	Both Sexes (N=1,301) ^a			Females (N=730)			Males (N=684)		
				Beta	95% CI	P-value	Beta	95% CI	P-value	Beta	95% CI	P-value
rs11692564 (T)	0.01	<i>ENI</i>	Total Hip	0.59	(0.23,0.95)	0.001	0.86	(0.48,1.24)	9.7x10⁻⁶	-0.12	(-0.58,0.35)	0.625
rs11692564 (T)	0.01	<i>ENI</i>	Fem Neck	0.54	(0.13,0.95)	0.010	0.77	(0.32,1.22)	8.5x10⁻⁴	-0.25	(-0.84,0.34)	0.402
rs11692564 (T)	0.01	<i>ENI</i>	Spine	0.22	(-0.17,0.61)	0.277	0.42	(0.01,0.82)	0.043	-0.39	(-0.94,0.15)	0.159
rs11692564 (T)	0.01	<i>ENI</i>	Radius	0.01	(-0.38,0.41)	0.949	0.43	(0.01,0.85)	0.043	-0.45	(-0.98,0.07)	0.087
rs11692564 (T)	0.01	<i>ENI</i>	TBLH	0.19	(-0.09,0.46)	0.184	0.36	(0.11,0.62)	0.005	-0.27	(-0.78,0.24)	0.295
rs188303909 (T)	0.01	<i>ENI</i>	Total Hip	0.42	(0.03,0.82)	0.036	0.66	(0.22,1.11)	0.004	0.04	(-0.43,0.50)	0.878
rs188303909 (T)	0.01	<i>ENI</i>	Fem Neck	0.35	(-0.03,0.74)	0.074	0.52	(0.12,0.93)	0.012	-0.06	(-0.66,0.54)	0.840
rs188303909 (T)	0.01	<i>ENI</i>	Spine	-0.04	(-0.41,0.33)	0.834	0.10	(-0.27,0.47)	0.597	-0.27	(-0.80,0.27)	0.327
rs188303909 (T)	0.01	<i>ENI</i>	Radius	-0.25	(-0.67,0.17)	0.251	0.24	(-0.22,0.70)	0.308	-0.38	(-0.92,0.17)	0.180
rs188303909 (T)	0.01	<i>ENI</i>	TBLH	0.09	(-0.14,0.32)	0.447	0.23	(0.04,0.41)	0.016	-0.07	(-0.55,0.41)	0.772
rs6542457 (C)	0.07	<i>ENI</i>	Total Hip	0.1	(-0.03,0.23)	0.129	0.13	(-0.05,0.32)	0.152	0.01	(-0.16,0.18)	0.927
rs6542457 (C)	0.07	<i>ENI</i>	Fem Neck	0.11	(-0.03,0.24)	0.119	0.18	(-0.01,0.37)	0.062	-0.04	(-0.21,0.13)	0.659
rs6542457 (C)	0.07	<i>ENI</i>	Spine	0.07	(-0.05,0.20)	0.262	0.20	(0.02,0.38)	0.029	-0.16	(-0.33,0.001)	0.060
rs6542457 (C)	0.07	<i>ENI</i>	Radius	0.1	(-0.02,0.21)	0.102	0.13	(-0.02,0.29)	0.098	0.06	(-0.09,0.21)	0.412
rs6542457 (C)	0.07	<i>ENI</i>	TBLH	0.04	(-0.05,0.14)	0.396	0.09	(-0.04,0.22)	0.197	-0.04	(-0.17,0.08)	0.489
rs55983207 (C)	0.06	<i>ENI</i>	Total Hip	0.13	(-0.03,0.30)	0.107	0.11	(-0.10,0.32)	0.301	0.18	(-0.05,0.41)	0.121
rs55983207 (C)	0.06	<i>ENI</i>	Fem Neck	0.12	(-0.03,0.27)	0.113	0.12	(-0.08,0.32)	0.237	0.16	(-0.05,0.37)	0.128
rs55983207 (C)	0.06	<i>ENI</i>	Spine	0.16	(0.01,0.31)	0.033	0.05	(-0.14,0.24)	0.605	0.25	(0.04,0.46)	0.020
rs55983207 (C)	0.06	<i>ENI</i>	Radius	0.05	(-0.10,0.21)	0.505	0.02	(-0.21,0.25)	0.872	0.05	(-0.15,0.25)	0.629
rs55983207 (C)	0.06	<i>ENI</i>	TBLH	0.1	(-0.02,0.21)	0.093	0.04	(-0.11,0.18)	0.640	0.14	(-0.02,0.29)	0.092
rs11024028 (G)	0.19	<i>SOX6</i>	Total Hip	0.12	(0.03,0.22)	0.009	0.07	(-0.05,0.19)	0.253	0.15	(0.02,0.28)	0.020
rs11024028 (G)	0.19	<i>SOX6</i>	Fem Neck	0.13	(0.04,0.22)	0.003	0.11	(-0.02,0.23)	0.091	0.13	(0.01,0.25)	0.035
rs11024028 (G)	0.19	<i>SOX6</i>	Spine	0.1	(0.01,0.20)	0.036	0.01	(-0.11,0.13)	0.932	0.20	(0.07,0.33)	0.002
rs11024028 (G)	0.19	<i>SOX6</i>	Radius	0.03	(-0.06,0.11)	0.552	0.07	(-0.04,0.18)	0.226	-0.03	(-0.16,0.09)	0.607
rs11024028 (G)	0.19	<i>SOX6</i>	TBLH	0.09	(0.02,0.16)	0.008	0.06	(-0.02,0.14)	0.169	0.11	(0.01,0.20)	0.029

Abbreviations: EAF, effect allele frequency; Fem Neck, femoral neck; TBLH, total body less head. Beta coefficients, 95% confidence intervals and *P*-value are from linear mixed effects models adjusted for age, Tanner stage, body mass index *Z*-score, physical activity, dietary calcium, and 10 principal components (and sex in the sex combined analyses). The *P*-values in bold survived correction for multiple testing of the 5 single nucleotide polymorphisms (SNPs). The participants had repeated bone *Z*-score measures, with up to 7 annual study visits. ^aOpposite sex siblings are included in the Bone Mineral Density in Childhood Study (BMDCS); the older siblings were removed for the sex combined analyses (N=113).