Table S1: Parameters determined in cortical and trabecular bone using μ-CT analysis (derived from Bouxsein et al.[16])

Characteristic	Abbreviation	Bone Type	Unit	Description	Desirability in relation to bone health
Bone volume	BV	Cortical	mm3	Volume of the region identified as bone within the area assessed	↑ Desirable
Bone surface	BS		mm2	Surface area of the region identified as bone within area assessed	
Bone surface to volume ratio	BS/BV		mm2/mm3	Ratio between the surface of the area identified as bone and the total volume of that area	
Bone surface density	BSD		mm2/mm3	Ratio between the region identified as bone to the total volume of the region assessed	
Number of pores	PN		number	Total number of all closed pores within the area assessed	
Volume of pores	PV		mm3	Total volume of all closed and closed pores within the area assessed	↑ Undesirable
Percentage porosity	P %		%	The volume of all closed as a percent of the total volume assessed	
Bone volume	BV/TV	Trabecular	%	Volume of the region identified as bone within the area assessed	↑ Desirable
Bone surface density	BS/TV		mm2/mm3	Ratio between the region identified as bone to the total volume of the region assessed	
Bone surface to volume ratio	BS/BV		mm2/mm3	Ratio between the surface of the area identified as bone and the total volume of that area	
Trabecular pattern factor (fragmentation index)	Tb.Pf		N/A*	An inverse measure of connectivity within the trabecular bone	↑ Undesirable
Trabecular thickness	Tb.Th		mm	Mean thickness of trabeculae	↑ Desirable
Trabecular separation	Tb.Ts		mm	Mean distance between trabeculae	
Trabecular number	Tb.N		1/mm	The average number of trabeculae in a given length of bone	
Degree of anisotropy	DA		N/A*	A measure of measure of 3D symmetry from 1 to infinity with 1 means full isotropic (homogenous) characteristic and infinity full anisotropic characteristics	↑ Undesirable
Fractional Dimension	FD		N/A*	Indicator of surface complexity	↑ Desirable

* Unit-less measurement

Table S2: ICP-MS detection limits

Element	Detection limit (mg/kg)
Ag	0.05
Al	10
As	0.1
Ba	0.04
Ca	200
Cd	0.1
Ce	0.02
Co	0.04
Cr	0.3
Cs	0.02
Cu	0.2
Dy	0.02
Er	0.01
Eu	0.01
Fe	2
Gd	0.03
Ho	0.005
K	120
La	0.01
Lu	0.01
Mg	44
Mn	0.1
Mo	0.04
Na	40
Nd	0.02
Ni	0.1
P	100
Pb	0.1
Pr	0.01
Rb	0.04
Sb	0.04
Se	0.2
Sm	0.04
Sr	0.04
Tm	0.01
U	0.02
V	0.3
Y	0.02
Yb	0.01
Zn	20

Table S3: Macro-composition of the components of diets fed to rats (percentage composition, wet weight) [#]

Fraction	AIN-93M diet[*]	CM**	SM**
Protein	14	3.59	5.65
Lipids	4	5.27	7.07
Carbohydrates	76	-	-
Lactose	-	4.38	5.37

*The macro-composition of the AIN-93M diet as reported by the supplier. **The lipid and total nitrogen content of the milk samples was determined using the methods of the Association of Official Analytical Chemists [23, 24], the lactose content was determined using a Milkoscan[TM]. [#] As reported in Burrow et al.[22]. CM= cow milk, and SM= undiluted sheep milk

Table S4: Trabecular characteristics of rat femora determined by µ-CT scanning and analysis (mean ± standard deviation).

Diet Parameter	Unit	CM	DM	SM
BV/TV	%	53.8±1.82	53.5±2.10	52.5±1.44
Tb.Pf	N/A*	-19.1±3.90	-15.3±4.00	-16.7±2.00
Tb.N	mm	1.59±0.43	1.80±0.28	1.84±0.19
Tb.Ts	1/mm	0.24±0.07	0.22±0.03	0.20±0.02
FD	N/A*	2.55±0.03	2.50±0.06	2.53±0.06
DA	N/A*	1.69±0.27	1.63±0.26	1.59±0.17

* Unit-less measurement. CM= cow milk, DM= sheep milk diluted to have the same concentration of milk solids as raw cow milk, and SM= undiluted sheep milk

Table S5: Cortical characteristics of rat femora determined by µ-CT scanning and analysis (mean ± standard deviation).

Diet Parameter	Unit	CM	DM	SM
BV	mm^3	9.36±0.45	10.3±0.28	10.3±0.62
BS	mm^2	95.5±5.44	108±3.14	108±7.36
BS/BV	mm^2/mm^3	10.2±0.34	10.4±0.24	10.5±0.26
BSD	mm^2/mm^3	4.75±0.17	4.85±0.12	4.81±0.13
PN	number	72.5±7.83	68.6±11.9	61.3±7.44
PV	mm^3	0.006±0.001	0.006±0.001	0.008±0.003
P %	%	0.06±0.01	0.05±0.01	0.07±0.03

CM= cow milk, DM= sheep milk diluted to have the same concentration of milk solids as raw cow milk, and SM= undiluted sheep milk