Table S1. Dental microwear texture parameter descriptions. Standard and units according to ISO 25178, motif, furrow, texture direction, texture isotropy, and flatness (ISO 12781) analysis and scale-sensitive fractal analysis (SSFA). Functional group has been assigned by the authors for easier reference to similar parameters.

Parameter	Description (condition)	Standard	Functional group	Unit
Sda	Closed dale area	ISO 25178	Area	μm^2
Sha	Closed hill area	ISO 25178	Area	μm^2
mea	Mean area	Motif	Area	μm^2
Sdr	Developed interfacial area ratio	ISO 25178	Complexity	%
nMotif	Number of motifs	Motif	Complexity	no unit
Asfc	Area-scale functional complexity	SSFA	Complexity	
Sal	Auto-correlation length (s = 0.2)	ISO 25178	Density	µm
Spd	Density of peaks	ISO 25178	Density	$1/\mu m^2$
medf	Mean density of furrows	Furrow	Density	cm/cm^2
Std	Texture direction	ISO 25178	Direction	–
Str	Texture aspect ratio (s = 0.2)	ISO 25178	Direction	no unit
Tr1R	First direction	Direction	Direction	–
Tr2R	Second direction	Direction	Direction	–
Tr3R	Third direction	Direction	Direction	–
IsT	Texture isotropy	Isotropy	Direction	%
epLsar	Anisotropy	SSFA	Direction	
S10z	Ten-point height	ISO 25178	Height	µm
S5p	Five-point peak height	ISO 25178	Height	µm
S5v	Five-point valley height	ISO 25178	Height	µm
Sa	Arithmetic mean height or mean surface roughness	ISO 25178	Height	µm
Sku	Kurtosis of the height distribution	ISO 25178	Height	no unit
Sp	Maximum peak height, height between highest peak and mean plane	ISO 25178	Height	µm
Sq	Standard deviation of the height distribution, or RMS surface roughness	ISO 25178	Height	µm
Ssk	Skewness of the height distribution	ISO 25178	Height	no unit
Sv	Maximum pit height, depth between the mean plane and the deepest valley	ISO 25178	Height	µm
Sxp	Peak extreme height difference between p = 50% and q = 97.5%	ISO 25178	Height	µm
Sz	Maximum height, height between the highest peak and the deepest valley	ISO 25178	Height	µm
meh	Mean height	Motif	Height	µm
madf	Maximum depth of furrows	Furrow	Height	µm
metf	Mean depth of furrows	Furrow	Height	µm
FLTt	Peak to valley flatness deviation of the surface (Gaussian Filter, 0.025 mm)	ISO 12781	Height	µm
FLTp	Peak to reference flatness deviation (Gaussian Filter, 0.025 mm)	ISO 12781	Height	µm
FLTv	Reference to valley flatness deviation (Gaussian Filter, 0.025 mm)	ISO 12781	Height	µm
FLTq	Root mean square flatness deviation (Gaussian Filter, 0.025 mm)	ISO 12781	Height	µm
Spc	Arithmetic mean peak curvature	ISO 25178	Peak sharpness	1/µm
Smc	Inverse areal material ratio (p = 10%)	ISO 25178	Plateau size	µm
Smr	Areal material ration, bearing area at given height (c= 1 µm under the highest peak)	ISO 25178	Plateau size	µm
Sdq	Root mean square gradient	ISO 25178	Slope	no unit
Sdv	Closed dale volume	ISO 25178	Volume	μm^3
Shv	Closed hill volume	ISO 25178	Volume	μm^3
Vm	Material volume at a given material ratio (p = 10%)	ISO 25178	Volume	$\mu m^3/\mu m^2$
Vmp	Material volume of the peaks	ISO 25178	Volume	$\mu m^3/\mu m^2$
Vmc	Material volume of the core at given material ratio (p = 10%, q = 80%)	ISO 25178	Volume	$\mu m^3/\mu m^2$
Vv	Void volume at a given material ratio (p = 10%)	ISO 25178	Volume	$\mu m^3/\mu m^2$
Vvc	Void volume of the core (p = 10%, q = 80%)	ISO 25178	Volume	$\mu m^3/\mu m^2$
Vvv	Void volume of the valley at a given material ratio (p = 80%)	ISO 25178	Volume	$\mu m^3/\mu m^2$

Table S2. General linear models for natural diets with the variables Diet and Tooth, as well as the interaction between them, as fixed effects. Lf = lucerne fresh, Ld = lucerne dry, Gf = grass fresh, Gd = grass dry, Bf = bamboo fresh, Bd = bamboo dry. *ranked data, °log-transformed data. Please see separate supplementary excel file.

Click here to download Table S2

Table S3. General linear models for pelleted diets with the variables Diet and Tooth, as well as the interaction between them, as fixed effects. IsoL = lucerne pellet, C = abrasive-free control pellet, 4sS 4% small quartz, 8sS 8% small quartz, 4lS 4% large quartz, 4lVA 4% large volcanic ash. *ranked data, °log-transformed data. Please see separate supplementary excel file.

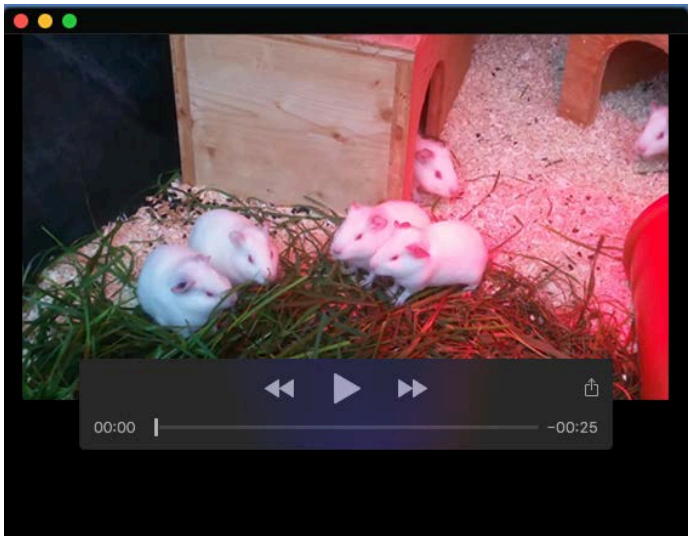
Click here to download Table S3

Table S4. Random draws comprising either 25% or 75% of all teeth from natural diet groups. [a]Number of random draws differs from 10000 because random samples that did not cover all 6 diets were discarded. [b]Spearman's rank correlation coefficient of the diet ranking based on 100% of available teeth compared to the diet ranking based on a subsample. [c]Proportion of comparisons of the subsample diet ranking with the 100% diet ranking that produced significant correlations (at $P < 0.05$). Parameters with a proportion of ≥0.70 set in **bold**. Please see separate supplementary excel file.

Click here to download Table S4

Table S5. Random draws comprising either 25% or 75% of all teeth from pelleted diet groups. [a]Number of random draws differs from 10000 because random samples that did not cover all 6 diets were discarded. [b]Spearman's rank correlation coefficient of the diet ranking based on 100% of available teeth compared to the diet ranking based on a subsample. [c]Proportion of comparisons of the subsample diet ranking with the 100% diet ranking that produced significant correlations (at $P < 0.05$). Parameters with a proportion of ≥0.70 set in **bold**. Please see separate supplementary excel file.

Click here to download Table S5



Movie 1. Guinea pigs feeding on fresh grass. Note the continuous ingestion of grass blades ('conveyor belt' feeding strategy).