Evaluating the dietary micro-remain record in dental calculus and its application in deciphering hominin diets in Palaeolithic Eurasia

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7

Appendixes

7.1 Chapter three appendix

Appendix tables

Appendix table 1: Elemental composition of standards from EDX.

No.	Grouping	C	O	Na	Mg	Al	Si	P	Ca	F	N	K	S	Cl	Cr	Mn
Fru.1	Fructose	90.8	9.17													
Fru. 2	Fructose	92.2	7.78													
Fru. 3	Fructose	90.4	9.58													
Fru. 4	Fructose	91.4	8.62													
Fru 5	Fructose	93.2	6.8													
Suc. 1	Sucrose	90.3	9.75													
Suc. 2	Sucrose	91.8	8.21													
Suc. 3	Sucrose	89.9	10.1													
Suc. 4	Sucrose	92.9	7.15													
Suc. 5	Sucrose	92.4	7.58													
Mal. 1	Maltose	60.7	39.3													
Mal. 2	Maltose	62	38													
Mal. 3	Maltose	58	42													
Mal. 4	Maltose	62.8	37.2													
Mal. 5	Maltose	58	42													
Glu. 1	Glucose	62.3	37.7													
Glu. 2	Glucose	57.9	42.1													
Glu. 3	Glucose	57.9	42.1													
Glu. 4	Glucose	59.1	40.9													
Glu. 5	Glucose	60.1	39.9													
Corn 1	Corn starch	58	42													
Corn 2	Corn starch	61.7	38.3													
Corn 3	Corn starch	61.6	38.4													
Corn 4	Corn starch	59.2	40.8													
Corn 5	Corn starch	62.1	37.9													
Cola 3.2	Kola starch	81.8	14.3	14.9	0.3	0.5	0.2	0.17	0.3	0.67		1.4		0	0.25	
Cafr-2	Kola starch	54.8	5.28	1.51	2.02							23		4	5	4.7
Cola 2.3	Kola starch	67.5	26.2	0.24	0.88	0.4	0.2	0.67		0.51		2.4	0.59	0		
Cola 2.4	Kola starch	70	22.8	0.16	0.61	0.5	0.5	0.86		1.4		1.9	0.75	1		
Cola 2.5	Kola starch	66.1	25.9		0.7	0.2	0.3	0.76		0.13			0.7	0		
Xylia 1	Xylia starch	76.8	21.4	0.17	0.21	0.5	0.1	0.11		0.1		0.2	0.24	0		
Xylia 2	Xylia starch	78.1	21.1				0.8									
Xylia 3	Xylia starch	74.7	20.2		0.42	0.4		0.94				2.5	0.89			

Xylia 4	Xylia starch	79.7	16.2	0.62	1	0.8			0.7	0.92			
Xylia 5	Xylia starch	75.8	22.2	0.43	0.6	0.18			0.5	0.25			
Pot. 1	Potato starch	82.8	17.2										
Pot. 2	Potato starch	83.1	16.9										
Pot. 3	Potato starch	84.3	15.7										
Pot. 4	Potato starch	84.1	15.9										
Pot. 5	Potato starch	82.1	16.5				1.4						
wtfr-1	Wheat starch	86.2	13.8					6.9					
wtfr-2	Wheat starch	86.1	13.9										
wtfr-3	Wheat starch	89.9	10.1										
wheat n	Wheat starch	91	8.97										
wheat n2	Wheat starch	90.2	9.81										

Appendix table 2: Elemental composition of degraded and native starch.

No.	Grouping	C	O	Na	Mg	Al	Si	P	F	K	S	Cl	Cr	Mn
Cafr-1	Kola native	64.7	3.8	1.46	0.91					18		4.44	3.03	3.97
Cafr-2	Kola native	54.8	5.3	1.51	2.02					23		3.92	4.97	4.67
Cafr-3	Kola native	60.1	6.0	1.47	1.66					17		5.25	3.81	5.03
Cola 2 1	Kola native	65.3	29.6							5.1				
Cola 2 2	Kola native	67.8	28.5							3.7				
Cola 2 3	Kola native	67.5	26.2	0.24	0.88	0.35	0.24	0.67	0.51	2.4	0.59	0.46		
Cola 3 1	Kola native	80.8	15.3	0.32	0.56	0.3	0.08	0.21	0.55	1.5				
Cola 3 2	Kola native	81.8	14.3	0.3	0.51	0.15	0.17	0.27	0.67	1.4	0.35	0.15		
Cola 3 3	Kola native	77.5	18.0	0.28	0.62	0.26	0.18	0.43	0.47	1.8	0.3	0.13		
Csfr-1 1	Gabon nut native	75.1	24.9											
Csfr-1 2	Gabon nut native	94.9	5.1											
Csfr-1 3	Gabon nut native	94.9	5.1											
Csfr-2 1	Gabon nut native	74.5	20.3											
Csfr-2 2	Gabon nut native	69.2	25.4											
Csfr-2 3	Gabon nut native	68.4	24.8											
Csfr-3 1	Gabon nut native	65.4	28.9											
Csfr-3 2	Gabon nut native	62.6	33.7											
Csfr-3 3	Gabon nut native	65.1	30.9											
Wtfr-1 1	Wheat native	86.2	13.8											
Wtfr-1 2	Wheat native	86.1	13.9											
Wtfr-1 3	Wheat native	89.9	10.1											
Wtfr-2 1	Wheat native	67.4	32.6											
Wtfr-2 2	Wheat native	76.7	23.3											
Wtfr-2 3	Wheat native	73.1	26.2											
Wtfr-3 1	Wheat native	67.9	32.1											
Wtfr-3 2	Wheat native	68.5	31.5											
Wtfr-3 3	Wheat native	68.9	31.1											
Ca301-1	Kola 30 mins	84.4	15.6											
Ca301-2	Kola 30 mins	85.6	14.4											
Ca301-3	Kola 30 mins	86.6	13.4											

Ca302-1	Kola 30 mins	86.9	13.1
Ca302-2	Kola 30 mins	88.4	11.6
Ca302-3	Kola 30 mins	89.9	10.1
Ca303-1	Kola 30 mins	88.5	11.6
Ca303-2	Kola 30 mins	87.8	12.2
Ca303-3	Kola 30 mins	92.9	7.1
Cs301-1	Gabon nut 30 mins	90.5	9.5
Cs301-2	Gabon nut 30 mins	90.7	9.3
Cs301-3	Gabon nut 30 mins	86.7	13.3
Cs302-1	Gabon nut 30 mins	88.6	11.4
Cs302-2	Gabon nut 30 mins	87.6	12.4
Cs302-3	Gabon nut 30 mins	89.6	10.4
Cs303-1	Gabon nut 30 mins	90.0	10.0
Cs303-2	Gabon nut 30 mins	87.6	12.4
Cs303-3	Gabon nut 30 mins	89.6	10.4
Wt301-1	Wheat 30 mins	88.9	11.1
Wt301-2	Wheat 30 mins	85.7	14.3
Wt301-3	Wheat 30 mins	87.3	12.7
Wt302-1	Wheat 30 mins	84.2	15.9
Wt302-2	Wheat 30 mins	84.2	15.8
Wt302-3	Wheat 30 mins	87.6	12.4
Wt303-1	Wheat 30 mins	88.3	11.7
Wt303-2	Wheat 30 mins	87.0	13.0
Wt303-3	Wheat 30 mins	88.3	11.8
Ca901-1	Kola 90 mins	86.7	13.3
Ca901-2	Kola 90 mins	86.8	13.2
Ca901-3	Kola 90 mins	89.7	10.3
Ca902-1	Kola 90 mins	86.6	13.5
Ca902-2	Kola 90 mins	91.6	8.4
Ca902-3	Kola 90 mins	90.0	10.0
Ca903-1	Kola 90 mins	84.3	15.7
Ca903-2	Kola 90 mins	90.0	10.0
Ca903-3	Kola 90 mins	89.3	10.7
Cs901-1	Gabon nut 90 mins	90.6	9.4
Cs901-2	Gabon nut 90 mins	89.0	11.0
Cs901-3	Gabon nut 90 mins	84.9	15.1
Cs902-1	Gabon nut 90 mins	88.0	12.0
Cs902-2	Gabon nut 90 mins	89.6	10.4
Cs902-3	Gabon nut 90 mins	92.5	7.5
Cs903-1	Gabon nut 90 mins	86.0	14.0
Cs903-2	Gabon nut 90 mins	88.4	11.6
Cs903-3	Gabon nut 90 mins	90.5	9.5
Wt901-1	Wheat 90 mins	86.5	13.5
Wt901-2	Wheat 90 mins	86.1	13.9
Wt901-3	Wheat 90 mins	85.8	14.2
Wt902-1	Wheat 90 mins	82.8	17.2

Wt902-2	Wheat 90 mins	85.4	14.6
Wt902-3	Wheat 90 mins	88.7	11.3
Wt903-1	Wheat 90 mins	84.0	16.0
Wt903-2	Wheat 90 mins	84.8	15.3
Wt903-3	Wheat 90 mins	84.93	15.07

Appendix table 3: Elemental composition of calculus and microremains in calculus from EDX. T=Taï Forest Chimpanzee, C=Camino de Molino.

No.	Type	Category	C	O	Na	Mg	Al	Si	P	Ca	F	N	K	Ba	La	T
	T	Venus exposed starch clump	95.1	5.0												
	T	Venus starch clump mantel	61.5	5.0				16.3	7.1	10.2						
	T	Castor calculus matrix	14.2	9.9	0.5	0.63	0.5	0.8	22.8	50.6						
1a	T	Castor starch cluster	63.1	8.2	1.4	1.87	0.8	0.7	12.3	11.7						
1b	T	Castor starch cluster	60.1	6.4	1.4	1.62	1.2	2.3	13.4	13.8						
3	T	Castor unknown microf	13.0	14.4	0.7	0.61	0.2	0.1	25.4	45.6						
4	T	Castor unknown microf	16.1	10.4	0.7	0.78	0.4	0.3	24.1	47.3						
5	T	Castor unknown microf	25.3	10.9	0.6	0.71	0.5	0.6	19.8	41.6						
1	T	Fanny unknown microf	13.7	10.2	0.4	0.59	1.0	1.1	22.7	50.3						
2	T	Fanny unknown particle	5.1	19.2	0.2	7.12	17.9	35.1	4.8	10.6						
3	T	Fanny unknown particle	9.4	8.7	0.5	0.63	0.6	0.6	24.3	55.2						
4	T	Fanny unknown particle	26.2	9.0	0.7	0.67	1.2	0.5	18.5	42.9						
5	T	Fanny unknown particle	6.4	15.5		0.15	0.5	71.2	2.0	4.3						
6	T	Fanny unknown microf	61.3	4.3	0.2	0.29	11	2.7	9.9	21.3						
7	T	Fanny unknown microf	79.9	7.1	0.6	0.1	0.2	3.9	2.6	5.6						
8	T	Fanny unknown microf	10.4	3.3	0.2	0.61	0.4	0.1	23.5	61.5						
9	T	Fanny unknown microf	47.3	7.8	0.4	0.8	0.4	0.5	11	31.8						
12	T	Fanny phytolith	16.3	14.2	1.2	1	0.4	31.1	11.8	23.9						
16	T	Fanny unknown microf	46.2	8.0	0.7	1.13	1.3	1.5	17.2	24.0						
17	T	Fanny unknown microf	7.2	4.5		0.47	3.2	6.3	13.7	64.7						
	T	Goma calculus matrix	6.8	9.9	0.3	1.16	2.0	2.6	24.0	51.2	0.1	1.6	0.5			
1	T	Goma phytolith	6.3	15.9	0.6	3.88	7.8	15	17.0	27.0	0.7	1.0	5			
2	T	Goma microremain	44.4	5.3	1	1.16	0.3	1	19.7	22.6		3.2	1.4			
3	T	Goma diatom	3.4	9.7	0.1	0.28	2.3	79.3	0.7	2.4		1.1	0.7			
5	T	Goma microremain	3.5	5.8	0.4	1.66	6.8	8.2	11.0	59.0	0.2	2.2	1.4			
11	T	Goma microremain	7.7	15.1	0.7	2.45		0.4	36.5	34.8		0.8	1.6			
	T	Leo calculus matrix	6.9	11.0	0.4	1.53	0.6	1.2	26.4	51.9						
1	T	Leo microremain	38	9.3	0.4	0.62	12.1	18.1	8.0	13.5						

3	T	Leo palm phytolith	7.1	20.1				7.8						
11	T	Leo invertebrate	91.7	8.3										
15	T	Leo microremain	8.0	9.5	0.8	2.21	2.3	3.7	9.5	61.0			1	2
18	T	Leo unknown		21.6				78.4						
	T	Rubra unknown	13.4	17.2	0.4	1.74			26.4	41.0				
1	T	Rubra unknown	8.7	18.1		0.54	26.2	39.8		6.7				
2	T	Rubra unknown	5.1	13.8	0.7	2.35			28.6	48.7				
4	T	Rubra diatom	41.0	11.9	0.1	0.28	0.9	20.5	7.7	17.6				
14	T	Rubra starch cluster	5.0	14.7	0.4	1.15	0.9	35.6	15.8	26.6				
15	T	Rubra diatom	4.3	12.4	0.1	0.38	19.9	57.6	1.9	3.5				
20	T	Rubra diatom	4	21.5	0.1	0.11	28.5	43.1	0.7	2.0				
	C	SJ-13-32_1 rectangle	5.6	12.1	0.8	0.76	1.8	4.6	17.1	57.9				
	C	SJ-13-32_2 unknown	7.1	13.1		9.62	16.9	41.9	1.7	4.5	3.4			2
	C	SJ-13-32_7 unknown	7.8	5.2	0.4		2.8	3	3.1	77.8				
	C	SJ-13-32_10 unknown	3.0	7.1		0.7	1			88.2				
	C	SJ-13-32_12 spicule	2.3	5.0		0.46	1.4	4.3		85.8	0.9			
	C	SJ-13-32_16 unknown	1.8	9.2		1.08	3.4	8.8		75.4	0.4			
	C	SJ-13-32_18 unknown	6.9	17.2		0.61	5.5	18.8	2.7	44.3	4.1			
	C	SJ-13-33 unknown	4.4	10.0	0.2	0.35	0.3	1	21.2	62.5				
	C	SJ-13-36 phytolith	4.1	11.6		0.27	19.9	31.2	1.4	31.6				
	C	SJ-13-39 -3 unknown	3.6	7.5			0.9	2.3	9.4	76.2				
	C	SJ-13-39 -7 spicule	2.5	9.0		0.46	0.6	1.5	6.5	79.5				
	C	SJ-13-39 -11 unknown	5.4	14.5		1.3	4.8	13.2	14.7	46.1				

7.2 Chapter four appendix

7.2.1 Study population

The chimpanzee calculus samples derive from the Taï Chimpanzee osteology collection of 77 chimpanzees curated at the Max Planck Institute for Evolutionary Anthropology (MPI-EVA) in Leipzig, Germany. The remains were collected with as many details as possible on sex, age and cause of death. All Taï Forest material and data collected complied with the requirements and guidelines of the Ministère de l'Enseignement Supérieure et de la Recherche Scientifique of Côte d'Ivoire, and adhered to its legal requirements. When possible we sampled chimpanzees who had known life histories, and ideally with comprehensive dietary records. Much of the observational data relate to chimpanzees that are not part of this osteology collection. Dietary records vary from thousands of observations over a decade to a limited number over the course of a single day. After death, these individuals were interred for defleshing and then later exhumed. Some of the skeletal material was cleaned using strong disinfectants before storage to minimise the risk of disease transmission.

It has been noted that chimpanzees produce less salivary α-amylase than humans, especially humans from agricultural societies that consume high levels of starch (Perry et al., 2007). Thus, starch entering the chimpanzee mouth may be less readily hydrolysed than in human groups, which may make it more likely for starches to enter and preserve in chimpanzee dental calculus than in human dental calculus. However, if this patterns occurs in our samples it is unclear and it cannot testable with our data.

7.2.2 Collection of calculus samples

Occasionally, chimpanzee calculus showed substantial flecks of dark material that did not resemble calculus and appeared to be sediment contamination. Chimpanzee samples where sediment contamination was suspected were omitted. All chimpanzee remains sampled are curated at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Samples from two chimpanzees (Vanessa and 13438) were omitted from analysis because their age at death was not recorded. A sample from a further chimpanzee (Loukoum) was omitted due to surface adherents on the calculus. The calculus we chose for the final complete

analysis came from molars of 24 individuals (12 males and 12 females) ranging in age from between 12 and 552 months (1 and 46 years) old (Table 8).

7.2.3 Taï Forest plant reference collection

A microremain reference collection with 119 plant species was built using the most frequently consumed chimpanzee plant foods in the Taï forest (Appendix table 4). Taï Chimpanzees consume a particularly diverse range of foods. We collected plant parts that were documented as a specific component of the diet (fruits, seeds, piths, leaves, stems, bark, flowers, and roots.) We also include fungal fruiting bodies known to be consumed. Effort was made to include other rainforest edible plants not recorded as chimpanzee foods. Although our reference collection is not exhaustive, it incorporates the most important plants foods of the Taï Chimps, achieving coverage of 89 % of the total dietary observations. Plants collected in the Taï Forest were immediately preserved onsite either by freezing or by drying in 15 or 50 ml centrifuge tubes with silica gel (Roth- T858.1 and P077.1, Karlsruhe, Germany). Additionally, we collected some plant material from the University of Leipzig Botanical Garden (marked as fresh in Appendix table 4) and analysed this material fresh for starch or dried for phytoliths. We did not make a reference collection for unsilicified plant microremains, as these microremains are unlikely to be nondiagnostic.

Starch was analysed by directly mounting finely sliced dry plant material on slides with approximately 10 µl of distilled water and 10 µl of a 25 % glycerol solution. Starches were observed at 200-640 x magnification using a Zeiss Axioscope. Phytoliths were isolated from plant material by dissolving weighed dried plant material in ≥65 % nitric acid with a heating block to expedite the reaction. Small quantities of the oxidiser potassium chlorate were added to encourage the process.

In most chimpanzee foods we observed either very few starch grains or none at all, suggesting quantities too negligible to be detected or a complete lack of starch in the plant. Plants that produced negligible numbers of starches were not analysed for the identification model, because they did not have enough starch grains to build a reference set of 50 starches. We found phytoliths were common in many species, but many morphotypes are poorly studied in morphometric studies and cannot be easily described using the variables we chose for our model (e.g. hair cells, epidermal, cylindroids, plates and tracheid phytoliths). These morphotypes were

found in a number of genera in the reference collection plant but only in low numbers.

Plants that had few phytoliths were not included. Furthermore, if microremains were found in parts of a plant that chimpanzees do not eat, the plants were not included (e.g. starch from *Beilschmedia mannii* seed). Thirteen starch- and seven phytolith-producing plants were selected for developing identification criteria. We chose to measure or quantify several variables on 50 microremains per species, focusing on variables that past studies have shown to be effective in distinguishing among starches and phytoliths (Torrence et al., 2004; Fenwick et al., 2011). Our variables include max length, max width, area, shape, surface regularity, the number of echinate spines, length of longest cross axis, type, number and length of cracks, number of facets and lamellae (Appendix table 6). If abundant starches or phytoliths were recovered, their abundance was analysed in order to assess the expected starch and phytolith contribution to dental calculus. Starch content was established by combining previous nutritional content studies (Oyebade, 1973; N'guessan, 2012). For species where this data was not available we assessed starch content per gram dried plant material colourimetrically using an Amyloglucosidase/α-amylase method with a Megazyme Total Assay Kit (AA/AMG 11/01, AOAC Method 996.11, AACC Method 76.13, ICC Standard Method No. 168). Phytolith content was estimated by calculating the total weight of sample left after nitric acid digestion.

7.2.4 Identification of microremains by classification

Statistical approaches are increasingly used for the study and classification of microremains (Wilson et al., 2010; Fenwick et al., 2011; Saul et al., 2012; Zhang et al., 2014; Coster and Field, 2015). A variety of approaches have been implemented in past studies such as image analysis (Colliot et al., 1997), linear discrimination (Torrence et al., 2004), and factor regression analysis by principal components (Fenwick et al., 2011). We used random forest-based classification because it is robust, non-parametric and easily accommodates both large number of variables and categorical data. Using this approach, we can easily see the most important variables that drive the differences among the microremain types. The most important variables in our phytolith model include length and the number of spines (Appendix table 14). In the starch random forest model, area and length were the most important variables (Appendix table 14).

7.2.5 Model design and formulae

We predicted that number of microremains should increase with age, and might vary by sex. We tested this using a negative binomial regression, with microremain count as the response, and age and sex as predictors, weighting each observation by the weight of the calculus sample (see detailed methods below). We ran separate tests for phytoliths, unsilicified remains and starches.

The models described in R terminology are as follows:

Microremain type count~ chimpanzee age + chimpanzee sex, weights=calculus sample weight

Expressed as a mathematical formula, this analysis is written as follows:

$$y_i = Negbin(\mu_i, k)$$

$$log(\mu_j) = \beta_0 + X_j\beta_j + \varepsilon$$

where $\beta_0 = 0$

$$log(\mu_j) = \beta_0 + \sum_{j=1}^{p} [\beta_{11j}\text{chimp\_age}_j + \beta_{12j}\text{chimpanzee sex}_j] + \varepsilon_j$$

where $\beta_0 = 0$

We predicted that more frequently consumed plants should be highly represented in the chimpanzee calculus. To test this, we used an observational random effect Poisson model. The count of microremains (starches or phytoliths) belonging to a particular genus was our response variable, and the fixed predictors were: (a) minutes spent consuming each genus, and (b) chimpanzee age in months. Sex was included as a control predictor, and both calculus sample weight and successful identification rate of each genus were included as weights. We accounted for the variation in production of microremains in different genera by using microremains content as an offset. We used counts of each genus predicted to be present with the total minutes spent consuming each genus. The chimpanzee

individual was included as a random slope term, while year of death, tooth and food type were treated as random intercept terms

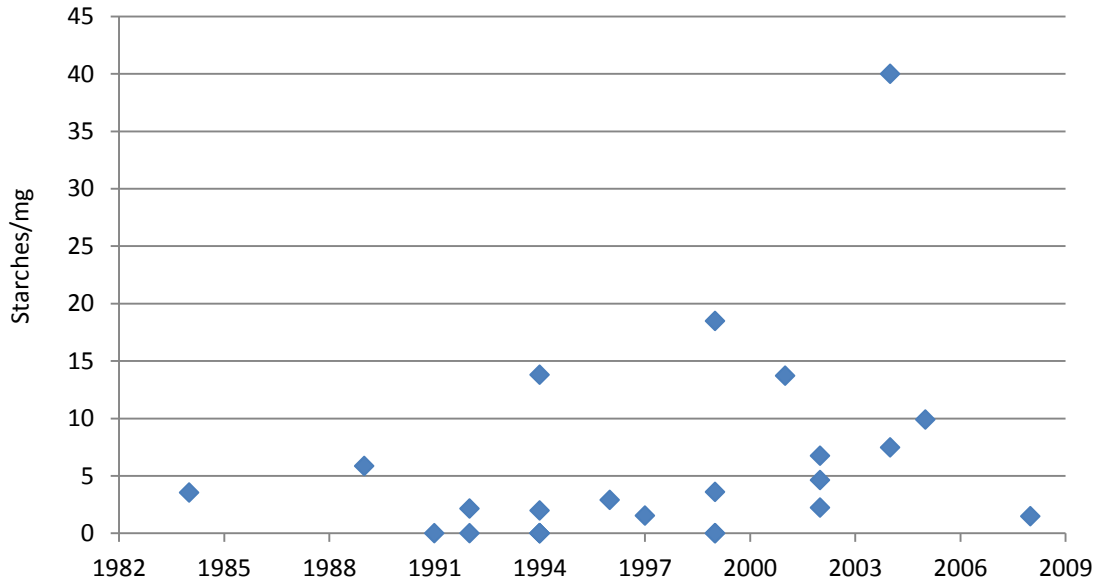
The models described in R terminology are as follows:

The observational feeding records model. Key: obs_id=observation id, plant_id=Plant genus, death_year=year that chimpanzee died, mr_content=Prevalence of starch in each plant species, wt=Milligrams in each sample, class_rate=Rate of successful identification in this species.

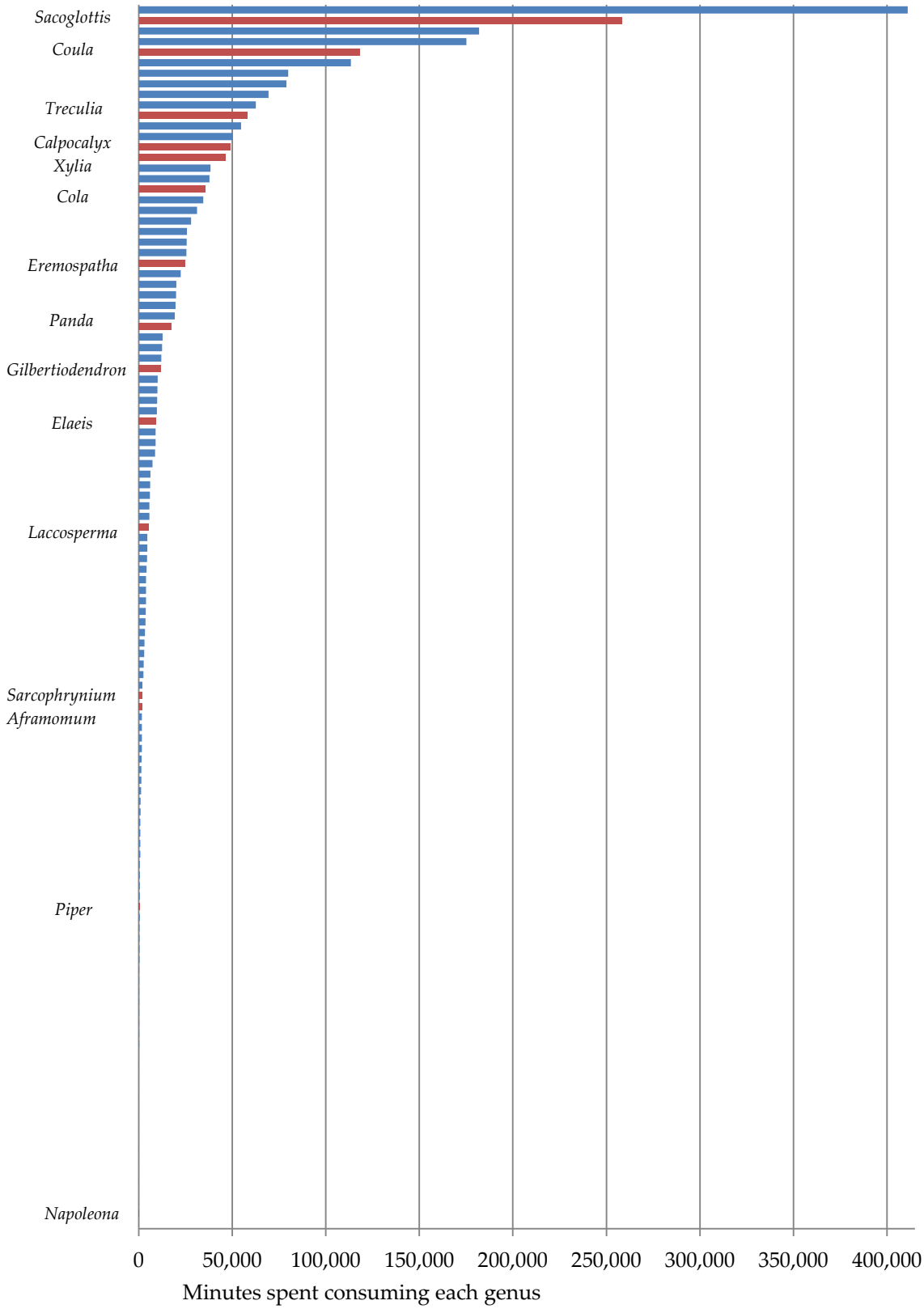
Count of each plant species~mins+age+sex+(1|obs_id)+(1|plant_id)+(1|tooth)+(1|chimp_name)+(1|death_year)+(0+mins|chimp_name)+(0+mins|tooth)+(0+mins|death_year)+(0+age|plant_id)+(0+age|tooth)+offset(log(mr_content)),
weight=class_rate+ calculus samples weight

In mathematical notation, the models are written as follows:

$$
\begin{aligned}
log_e(\lambda) = -n\lambda + log_e(\lambda) \sum_{j=1}^{p} [\, & \beta_{11j}\text{mins}_j + \beta_{12j}\text{age}_j + \beta_{13j}\text{sex}_j) + \beta_{21j} + u_{11j})\text{tooth}_j \\
& + (\beta_{22j} + u_{12j})\text{death\_year}_j + (\beta_{23j} + u_{13j})\text{plant\_id}_j + (\beta_{24j} + u_{14j})\text{age}_j \\
& - \sum_{j=1}^{p} \ln[\beta_{11j}\text{mins}_j + \beta_{12j}\text{age}_j + \beta_{13j}\text{sex}_j) + \beta_{21j} + u_{11j})\text{tooth}_j \\
& + (\beta_{22j} + u_{12j})\text{death\_year}_j + (\beta_{23j} + u_{13j})\text{plant\_id}_j + (\beta_{24j} + u_{14j})\text{age}_j] \,! \\
& + u_{01} + u_{02} + u_{03} + u_{04} + u_{05} + \varepsilon_j
\end{aligned}
$$



Appendix fig. 1: Starches per mg in each chimpanzee calculus sample and year of death. Starches/mg incudes the possible starch microremain category. Treatment of the skeletal remains and year of chimpanzee death does not predict variation of starches per mg.



Appendix fig. 2: Chimpanzee plant foods, ranked by minutes consumed. Plants in random forest model are in red and those that are not are in blue. Chart omits foods eaten for <40 minutes. Our sample includes plants that are frequently consumed (e.g. *Sacoglottis* and *Coula*) as well as those less often eaten (e.g. *Piper* and *Napoleona*).

Tables

Appendix table 4: Inventory of plants and fungi analysed in reference collection. x=no microremain found. o=microremains found and used for identification model. 1=found but not used in classification model due to their complex morphology, 2=found but not included as they are very rare, 3=found but only in parts that are not eaten. Prep=preparation. d=dried, fn=frozen and fh=fresh.

		Leaf	Fruit pulp	Seed	Stem	Pith	Shell	Flower	USO	Bark	Leaf	Fruit pulp	Seed	Stem	Pith	Shell	Flower	USO	Bark	Prep
Plant genus	Plant species	Starch									Phytoliths									
Aframomum	*exscapum* (Sims) Hepper	x		x																d
Aframomum	*cereum* (Hook.f.) K.Schum.										X		x							d
Afzelia	*bella* Harms										1									d
Agaricus	*bispourus* (J.E.Lange) Emil J. Imbach				x															d
Anchomanes	*difformis* (Bl.) Engl.													x						fn
Antiaris	*toxicaria subsp. welwitschii* (Engl.) C.C.Berg		x	2																d
Auricularia	*auricula-judae.* (Bull.) J.Schröt.				x									x						d
Beilschmiedia	*mannii* (Meisn.) Benth. & Hook.f.			2																d
Bombax	*buonopozense* P.Beauv.			x																d
Bombax	*ceiba* L.	x									2									fh
Calpocalyx	Sp.		o																	d
Calpocalyx	*aubrevillei* Pellegr.	x									X									d
Canarium	*schweinfurtii* Engl.		x	x																fn
Castanola	*paradoxa* (Gilg) Schellenb.											x	x							d
Chrysophyllum	*taiense* Aubrév. & Pellegr.	x	x	x							X	x	x							d
Cola	*nitida* (Vent) Schott & Endl.	x	x	x							1	x	x							d, fh
Cola	*heterophylla* (P Beauv.) Schott. & Endl.	x	x	x							1	x	x							d
Cola	*laterita* K Schum.											x	x							d
Cordia	*platythyrsa* Baker		x	x								x	x							d
Coula	*edulis* Baill.	x		x			x				1		x			1				d
Dacryodes	*klainaea* (Pierre) H.J.Lam		x									x								fn
Desplatsia	*chrysochlamys* (Mildbr. & Burret) Mildbr. & Burret	x									X									d
Detarium	*senegalense* J.F.Gmel.											x	x							d

Dialium	*aubrevillei* Pellegr.	x	x							X	x								d
Dialium	*dinklagei* Harms		x	x															d
Dichapetalum	*heudelotii* (Planch.) Baill.	x								X									d
Dioscorea	*burkilliana* J.Miège																	x	d
Diospyros	*chevalieri* De Wild.										x								d
Diospyros	*manii Hiern*		x							X	1								d
Diospyros	*sanza minika* A Chev.										x								d
Diospyros	*soubreana* F.White									X									d
Drypetes	*aubrevillei* Léandri					x						x			x				d
Duboscia	*viridifolia* (K.Schum.) Mildbr.		x																d
Duguetia	*staudtii* (Engl. & Diels) Chatrou		3	3															d
Elaeis	*guineenis* Jacq.	x	x							O	o		o						d, fh
Entandrophragma	*angolense* (Welw.) C. DC.		x	x															d
Eremospatha	*macrocarpa* H.Wendl.				o									o					d
Erythrophleum	*ivorensis* A.Chev											x							fn
Ficus	*barteri* Sprague									1									d
Ficus	*elastica* Roxb.		x							1									fh
Ficus	*elasticoides* De Wild		x																d
Ficus	*lutea* Vahl		x																d
Ficus	*polita* Vahl									1									d
Gilbertiodendron	*splendidum* (Hutch. & Diels) J. Léonard		o	o							x	x							d
Glyphaea	*brevis* (Spreng.) Monach.	x								3									d
Grewia	*biloba* (Bunge.)Hand. Mazz.		x	x							x	x							d
Grewia	*malacocarpa* Mast.		x	x															d
Guibourtia	*tessmannii* (Harms) J.Léonard															x			d
Halopegia	*azurea* (K.Schum.) K.Schum.				x		x			X	x			x		x			d
Harungana	*madagascariensis* Lam. ex Poir.		x	x															fn
Heisteria	*parvifolia* Sm.			x															d
Hexalobus	*crispiflorus* A.Rich			x															fn
Hypselodelphys	*violacea* (Ridl.) Milne-Redh				x									1					d
Irvingia	*gabonensis* (Aubry-Lecomte ex O'Rorke) Baill.		x	x															d
Irvingia	*grandifolia* (Engl.) Engl.		x																d
Keayodendron	*bridelioides*		x																d

	(Gilg & Mildbr. ex Hutch. & Dalziel) Leandri															
Klainedoxa	*gabonensis* Pierre		3													fn, d
Laccosperma	*secundiflorum* (P.Beauv.) Kuntze				x							x				d
Laccosperma	*opacum* Drude				x							x				d
Landolphia	*dulcis* (Sabine ex G.Don) Pichon		x							x					x	fn
Magnistipula	*butayei* DeWild		x													d
Mammea	*africana* Sabine		x							x						d
Manilkara	*obovata* (Sabine & G.Don) J.H.Hemsl.		x	x												fn
Manniophyton	*fulvum* Müll.Arg.	x														d
Memecylon	Sp.		x													fn
Musanga	Sp.		x							1	1					d
Myrianthus	Sp.							x								fn
Myrianthus	*arboreus* P.Beauv.		x													fn
Napoleona	*leonensis*			o												d
Napoleonaea	*vogelii* Hook. & Planch	x							X		x					fh
Nauclea	*diderrichii* (De Wild. & T.Durand) Merr.ill		x													d
Nauclea	*xanthoxylon*		x							x						d
Pachira	*cubensis* (A.Robyns) Fern.Alonso	x														fh
Palisota	*barteri* Hook.f.		2	2						x	x	x				d
Palisota	*bracteosa* C.B.Clarke		x	x												d
Palisota	*hirsuta* (Thunb.) K.Schum.											x				d
Panda	*oleosa* Pierre	x		o					X		x					d
Parinari	*excelsea* Sabine	x	x						1	x						fn
Parkia	*bicolor* A.Chev.		x							x						fn
Pentaclethra	*macrophylla* Benth					x										d
Pentaclethra	*macrophylla* Benth					x							x			d
Pentadesma	*butyracea* Sabine		x													fn, d
Piper	*betle* L.	x				x			1				1			fh
Piper	*guineense* Schumach. & Thonn.		o	o												d
Piper	*longum* L.		x	x												d
Piper	*arboreum* Aubl.	x							1							fh
Piper	*ornatum* N.E.Br.	x														fh
Pouteria	*pierrei* (A.Chev.)		x	x						x	x					d

	Baehni														
Pseudospondias	Sp.		x	x											fn
Pseudospondias	*microcarpa* Engl		x	x											d
Psychotria	*bacteriophila* Valeton		x	x											d
Pycnanthus	*angolensis* (Welw.) Warb.		x												d
Raphia	*sudanica* A.Chev.												x		d
Rhodognaphalon	*brevicuspe* (Sprague) Roberty		x	x											d
Rudgea	*ciliata* (Ruiz & Pav.) Spreng.	x	x	x					X						d
Sacoglottis	*gabonensis* (Baill.) Urb.	x	o						1	1					d
Sarcocephalus	*pobeguinii* Hua ex Pobég		x												d
Sarcophrynium	*prionogonium* (K.Schum.) K.Schum.		o	o						o	x				d
Scottellia	*coriacea* A.Chev. & al.		x												d
Scytopetalum	*tieghemii* Hutch. & Dalziel	x													d
Strombosia	*glaucescens* Engl.									x					d
Strychnos	*aculeata* Soler.	x	x						X	x	x				d
Syzygium	*guineensis* (Willd.) DC.			3											fh
Syzygium	*paniculatum* Gaertn.	x	2	2			x		1		1				fh
Tamitia	*utilis*								X						d
Treculia	*africana* Decne. ex Trécul	x	x						X	2	x				d
Trichophyton	*Sp.*						x								d
Trichoscypha	*arborea* (A.Chev.) A.Chev.		x	3											d
Triclisia	*macrophylla* (Baill.) Diels		x							1					d
Tristemma	*hirtum* P.Beauv.		x												d
Uapaca	*corbisieri* DeWild.	x	x						X	x					d
Uapaca	*guineensis* Müll.Arg.									x					fn
Uvariastrum	*pierreanum* Engl. & Diels		x	x						1					d
Vitex	*doniana* Sweet		x	x											fn
Xylia	*evansii Hu*tch.	x		o					1						d
Xylopia	*quintas*		x	x											d
Xylopia	*villosa* Chipp							x							d
Zanha	*golungensis* Hiern		x	x											d
Fungus															
Agaricus	*bispourus* (J.E.Lange)				x										d
Auricularia	*auricula-judae.* (Bull.) J.Schröt.				x							x			d

Appendix table 5: Additional details of Chimpanzee calculus samples. Recovered plant microremains, both in the full sample and per milligram of calculus with cause of death of the sampled chimpanzees, colour and condition of their dental calculus and skeleton treatment during curation. Cur: Curation a) Buried for unknown duration, cleaned and dried (1984-1994, 1996-2004 b) Necropsy, burial for 1 year, possible boiling and dried (1994-1996) and c) Necropsy, burial for 1 year, disinfection with chlorine, 10 % formalin and dried (2004- onwards).

Name	Phytolith		Starch		Unsilicified Remains		Cause of death	Colour	Cur
	Total	/mg	Total	/mg	Total	/mg			
Ophelia	0	0	1	40	0	0	Pneumonia	White	C
Leonardo	0	0	0	0	0	0	Starvation	White/grey	A
Bambou	0	0	0	0	1	7.41	Tree fall	White	A
Piment	0	0	0	0	0	0	Ebola	White	B
Oreste	40	74.63	4	7.46	1	1.87	Pneumonia	Grey	C
Hector	24	34.83	2	2.9	6	8.71	Anthrax	Orange	A
Noah	47	52.51	2	2.23	32	35.75	Unknown	Brownish	A
Lefkas	19	31.93	11	18.49	13	21.85	Pneumonia	White	A
Tina	29	21.21	8	5.85	6	4.39	Leopard	Brownish	A
Dorry	159	214.29	5	6.74	4	5.39	Unknown	White	A
Zerlina	147	167.43	0	0	9	10.25	Ebola?	Moderate	B
Clyde	27	23.87	4	3.54	3	2.65	Poacher	White	A
Agathe	94	15.47	13	2.14	22	3.62	Ebola?	Brown/creamy	A
Bijou	87	17.26	10	1.98	22	4.36	Unknown disease	Brownish	A
Leo	126	116.13	5	4.61	9	8.29	Unknown	Brownish	A
Castor	65	9.31	25	3.58	6	0.86	Pneumonia	White	A
Fanny	109	27.84	54	13.79	11	2.81	Ebola?	White brown	B
Kendo	233	235.59	0	0	25	25.28	Ebola?	Grey	B
Venus	96	59.26	16	9.88	2	1.23	Unknown	Brownish	C
Goma	98	7.42	181	13.7	17	1.29	Anthrax	White	A
Rubra	120	17.78	10	1.48	30	4.44	Anthrax?	Mixed/white	C
Ondine	26	17	0	0	10	6.54	Ebola?	Brown/ green	A
Mkubwa	11	33.95	0	0	1	3.09	Unknown	Whitish green	A
Brutus	161	49.6	5	1.54	25	7.7	Unknown	Brownish	A

Appendix table 6: Metrics of reference phytoliths and starches. Phytoliths=first part of table. Starches=second part of table.

Species	Length	Width	LW Ratio	Brea	Area	Irregular	Spinelen	Spineno	Spineang	Shape	Conjoined
Elaeis	13.0	10.9	1.2	10.9	108.3	1	0.96	24	81	prolate	1
Elaeis	8.5	6.1	1.4	6.1	35.7	1	0.76	13	80	ovoid	1
Elaeis	10.4	9.2	1.1	9.2	71.4	2	1.2	17	98	prolate	1
Elaeis	9.3	8.6	1.1	8.6	50.8	3	0.9	14	75	spherical	1
Elaeis	12.5	10.3	1.2	10.3	105.8	2	0.95	16	80	spherical	1
Elaeis	13.3	10.5	1.3	10.5	115.5	2	1.2	19	78	prolate	1
Elaeis	8.4	7.7	1.1	7.7	45.8	1	0.68	18	83	spherical	1
Elaeis	12.7	10.0	1.3	10.0	100.0	4	1	16	95	spherical	1
Elaeis	17.8	16.7	1.1	16.7	246.0	3	1.74	18	96.25	spherical	1
Elaeis	15.5	15.0	1.0	15.0	210.1	2	2	13	94	spherical	1
Elaeis	8.6	8.6	1.0	8.6	59.0	3	1.05	14	85	spherical	1
Elaeis	11.7	8.1	1.4	8.1	75.7	4	1.2	20	90	ovoid	1
Elaeis	10.8	7.9	1.4	7.9	70.2	4	1.02	14	80.59	ovoid	1
elaeis	12.1	11.2	1.1	11.2	125.6	4	1.33	24	83	spherical	1
elaeis	7.3	6.5	1.1	6.5	46.0	4	1.13	11	103	ovoid	1
elaeis	11.0	8.3	1.3	8.3	84.6	3	1.23	17	84.43	prolate	1
elaeis	13.2	11.5	1.1	11.5	107.4	2	1.74	11	103	prolate	1
elaeis	7.8	7.2	1.1	7.2	47.1	4	1.74	10	64	spherical	1
elaeis	6.5	5.6	1.1	5.6	29.8	8	0.63	10	85	ovoid	1
elaeis	11.2	8.4	1.3	8.4	82.0	3	1.19	13	80.86	prolate	1
elaeis	13.2	11.4	1.2	11.4	125.4	3	1.17	11	82	prolate	1
elaeis	11.2	9.5	1.2	9.5	87.8	4	1.23	20	83.97	prolate	1
elaeis	8.6	7.1	1.2	7.1	45.6	5	0.92	13	99.37	ovoid	1
elaeis	9.3	6.9	1.4	6.9	49.5	4	0.79	12	69.05	prolate	1
elaeis	10.6	9.0	1.2	9.0	75.6	3	1.3	14	75.56	spherical	1
elaeis	7.8	6.2	1.2	6.2	33.0	4	0.89	14	102	ovoid	1
elaeis	5.4	5.3	1.0	5.3	22.5	4	1.1	6	96	polygon	1
elaeis	7.8	5.9	1.3	5.9	33.4	2	1.03	14	85	ovoid	1
elaeis	7.1	4.8	1.5	4.8	20.0	4	0.8	11	93	polygon	1
elaeis	7.3	3.5	2.1	3.5	17.2	4	0.84	3	50	elongate	1
elaeis	3.3	2.2	1.5	2.2	5.4	4	0.37	3	94	polygon	1
elaeis	5.7	4.1	1.4	4.1	18.4	5	0	0	0	polygon	1
elaeis	7.5	5.6	1.3	5.6	29.6	3	0.94	8	84.36	polygon	1
elaeis	6.7	4.2	1.6	4.2	20.7	4	0.6	10	70	polygon	1
elaeis	6.3	4.5	1.4	4.5	15.5	4	0.9	12	93	elongate	1
elaeis	6.5	5.8	1.1	5.8	34.4	2	0.89	12	110	polygon	1
elaeis	5.5	3.1	1.8	3.1	12.6	2	0.77	14	80	elongate	1
elaeis	7.4	3.1	2.4	3.1	16.4	3	0.78	7	81	elongate	1
elaeis	11.0	8.6	1.3	8.6	66.6	4	1.28	8	71	polygon	1
elaeis	7.4	4.1	1.8	4.1	21.3	2	0.63	10	95	prolate	1

elaeis	7.4	5.0	1.5	5.0	24.9	4	0.92	10	86	polygon	1
elaeis	9.4	8.0	1.2	8.0	54.6	1	1.1	16	108	prolate	1
elaeis	8.0	6.1	1.3	6.1	34.2	3	0.6	13	115	prolate	1
elaeis	7.5	5.5	1.4	5.5	30.7	3	0.72	13	98	ovoid	1
elaeis	9.1	6.3	1.4	6.3	41.8	4	0.94	12	75.83	elongate	1
elaeis	5.7	4.0	1.4	4.0	16.0	5	0.87	11	77	polygon	1
elaeis	8.3	6.4	1.3	6.4	36.4	4	0.7	11	102	polygon	1
elaeis	8.7	7.1	1.2	7.1	54.1	4	0.87	19	101	ovoid	1
elaeis	8.3	7.3	1.1	7.3	51.0	4	0.62	9	101	polygon	1
elaeis	6.8	6.2	1.1	6.2	33.0	4	0.92	15	82.61	ovoid	1
eremo	7.8	7.6	1.0	7.6	41.4	1	1	9	70	spherical	1
eremo	6.9	6.5	1.1	6.5	36.2	2	0.7	10	115	spherical	1
eremo	6.3	5.6	1.1	5.6	25.1	3	0.7	6	96	prolate	1
eremo	7.5	7.2	1.0	7.2	37.2	1	0.87	10	90	spherical	1
eremo	8.2	6.1	1.3	6.1	40.7	2	0.78	8	82	ovoid	1
eremo	7.5	7.3	1.0	7.3	42.6	1	0.87	9	78	prolate	1
eremo	6.2	6.1	1.0	6.1	27.5	4	0.82	5	86	spherical	1
eremo	5.5	5.1	1.1	5.1	22.4	2	0.5	6	90	spherical	1
eremo	8.1	6.3	1.3	6.3	38.1	3	0.6	9	81	prolate	1
eremo	7.0	6.0	1.2	6.0	35.0	2	0.94	10	70	prolate	1
eremo	7.8	7.6	1.0	7.6	40.1	2	1.7	8	90	spherical	1
eremo	5.9	4.4	1.3	4.4	23.1	4	0.88	6	89	ovoid	1
eremo	6.7	6.6	1.0	6.6	31.0	2	0.92	9	79	spherical	1
eremo	5.4	4.3	1.3	4.3	17.9	2	0.5	2	112	prolate	1
eremo	6.6	6.2	1.1	6.2	25.0	2	0.64	7	110	spherical	1
eremo	6.6	5.4	1.2	5.4	27.0	2	0.68	12	0.96	spherical	1
eremo	6.2	5.4	1.1	5.4	24.2	1	0.79	8	109	spherical	1
eremo	6.2	4.9	1.3	4.9	21.3	2	0.63	8	99	triangular	1
eremo	4.9	4.1	1.2	4.1	12.6	5	0.51	4	104	triangular	1
eremo	7.6	7.1	1.1	7.1	33.8	1	1.6	8	80	spherical	1
eremo	7.1	6.3	1.1	6.3	36.0	2	0.88	9	99	spherical	1
eremo	4.5	4.2	1.0	4.2	16.3	1	0.41	7	110	spherical	1
eremo	7.4	6.1	1.2	6.1	34.3	3	0.68	10	105	polygon	1
eremo	5.5	5.2	1.1	5.2	22.8	2	0.61	5	86	spherical	1
eremo	7.5	7.5	1.0	7.5	38.2	2	0.94	8	62.81	spherical	1
eremo	5.9	5.6	1.1	5.6	27.6	2	1.02	8	91	spherical	1
eremo	6.5	4.8	1.3	4.8	21.1	4	0.83	9	114	ovoid	1
eremo	5.6	5.1	1.1	5.1	22.1	3	0.72	3	111	spherical	1
eremo	6.0	5.0	1.2	5.0	25.6	4	0.94	9	91	spherical	1
eremo	5.9	5.9	1.0	5.9	26.2	3	0.92	9	99	spherical	1
eremo	3.7	3.6	1.0	3.6	12.6	3	0.61	4	127	spherical	1
eremo	6.2	6.2	1.0	6.2	34.7	3	1.02	12	99.69	spherical	1
eremo	6.5	4.8	1.4	4.8	28.1	3	0.83	8	95	prolate	1
eremo	7.9	6.7	1.2	6.7	44.2	3	0.94	13	84.53	spherical	1
eremo	6.1	4.0	1.5	4.0	19.2	3	0.69	8	122.88	prolate	1
eremo	6.8	6.1	1.1	6.1	33.5	4	1.02	6	110	polygon	1

eremo	5.6	5.1	1.1	5.1	21.9	3	0.74	6	92	spherical	1
eremo	4.9	4.4	1.1	4.4	17.5	2	0.5	8	89	spherical	1
eremo	4.6	4.4	1.0	4.4	20.2	5	0.83	5	95	polygon	1
eremo	7.9	6.2	1.3	6.2	35.6	4	0.83	10	102	polygon	1
eremo	5.5	5.2	1.1	5.2	22.1	3	0.52	7	124	spherical	1
eremo	6.1	5.5	1.1	5.5	30.9	4	0.95	7	92	polygon	1
eremo	3.9	3.3	1.2	3.3	10.1	3	0.74	2	94	prolate	1
eremo	6.9	6.7	1.0	6.7	38.8	4	1.17	10	90.68	spherical	1
eremo	5.8	4.7	1.2	4.7	26.1	4	0.83	6	75	polygon	1
eremo	3.9	3.3	1.2	3.3	10.6	5	0.62	7	85	polygon	1
eremo	4.5	3.4	1.3	3.4	13.7	4	0.66	2	107	polygon	1
eremo	6.2	5.3	1.2	5.3	27.1	3	0.66	8	87.47	prolate	1
eremo	6.5	6.1	1.1	6.1	36.2	3	0.8	11	36.22	spherical	1
eremo	6.5	4.1	1.6	4.1	24.4	5	0.72	6	91.39	polygon	1
aframomum	10.9	9.9	1.1	9.9	85.0	3	0.6	6	0	ovoid	1
aframomum	11.4	10.2	1.1	10.2	86.6	3	0	0	0	spherical	1
aframomum	10.5	7.6	1.4	7.6	66.5	4	0.55	5	0	ovoid	1
aframomum	8.4	7.5	1.1	7.5	70.7	4	0	0	0	quadrangular	1
aframomum	9.1	6.0	1.5	6.0	50.0	3	0	0	0	prolate	1
aframomum	10.0	6.1	1.6	6.1	48.6	3	0	0	0	prolate concave-convex	1
aframomum	11.4	10.4	1.1	10.4	94.5	4	0	0	0	spherical	1
aframomum	10.1	9.5	1.1	9.5	83.7	3	0	0	0	spherical	1
aframomum	14.2	9.7	1.5	9.7	14.2	4	0.5	10	0	ovoid	1
aframomum	9.9	6.6	1.5	6.6	52.5	3	0	0	0	quadrangular	1
aframomum	10.4	6.1	1.7	6.1	53.9	3	0	0	0	quadrangular	1
aframomum	11.9	10.2	1.2	10.2	96.3	3	0.55	14	0	spherical	2
aframomum	12.5	7.4	1.7	7.4	82.7	4	0.6	11	0	prolate	1
aframomum	8.5	5.5	1.5	5.5	47.8	4	0	0	0	polygon	2
aframomum	9.5	7.3	1.3	7.3	62.0	4	0	0	0	prolate concave-convex	1
aframomum	10.5	5.2	2.0	5.2	53.4	5	0	0	0	prolate concave-convex	1
aframomum	7.2	3.5	2.1	3.5	28.2	2	0	0	0	polygon concave	1
aframomum	9.6	6.3	1.5	6.3	43.1	4	0.75	9	0	prolate	1
aframomum	8.8	6.6	1.3	6.6	54.4	0	0	0	0	polygon concave	1
aframomum	7.4	4.7	1.6	4.7	31.0	0	0	0	0	polygon	1
aframomum	8.1	6.3	1.3	6.3	39.7	0	0	0	0	polygon	1
aframomum	11.0	9.6	1.1	9.6	83.5	4	0.5	15	0	spherical	1
aframomum	9.1	6.6	1.4	6.6	48.2	5	0.6	5	0	prolate concave-convex	1
aframomum	9.1	7.9	1.2	7.9	55.0	5	0.7	7	0	ovoid	1
aframomum	9.0	8.1	1.1	8.1	52.4	5	0	0	0	ovoid	1
aframomum	5.7	4.9	1.1	4.9	20.7	3	0.6	3	47	spherical	1
aframomum	7.3	6.1	1.2	6.1	35.4	3	1	11	41	spherical	1
aframomum	7.2	6.3	1.1	6.3	37.3	4	0.9	8	59	spherical	1
aframomum	6.0	6.0	1.0	6.0	30.2	3	1	6	64.88	spherical	1
aframomum	7.0	5.0	1.4	5.0	22.2	4	0.4	6	99	spherical	1
aframomum	5.3	4.1	1.3	4.1	20.4	4	0.4	3	47	spherical	1
aframomum	5.2	5.1	1.0	5.1	22.6	4	0.4	2	41	quadrangular	1

aframomum	5.5	4.7	1.2	4.7	20.7	1	0.26	1	54	spherical	1
aframomum	6.0	5.7	1.0	5.7	26.2	3	0.5	5	89	spherical	1
aframomum	5.8	4.6	1.3	4.6	23.5	4	0	0	0	spherical	1
aframomum	5.6	4.2	1.3	4.2	12.9	3	0.6	4	47	spherical	1
aframomum	5.5	5.0	1.1	5.0	28.8	4	0.72	8	64	spherical	1
aframomum	9.4	7.1	1.3	7.1	44.4	3	0	0	0	angularpoint	1
aframomum	6.0	5.1	1.2	5.1	20.2	0	0	0	0	spherical	1
aframomum	6.9	4.4	1.6	4.4	26.2	5	0	0	0	spherical	1
aframomum	6.4	4.3	1.5	4.3	21.6	4	0.55	6	66	spherical	1
aframomum	6.0	5.6	1.1	5.6	28.3	3	0.6	6	82	spherical	1
aframomum	5.9	5.4	1.1	5.4	28.0	3	0.4	7	70	spherical	1
aframomum	6.1	3.5	1.7	3.5	34.5	4	0.7	10	53	spherical	1
aframomum	6.8	6.0	1.1	6.0	33.0	3	0.7	8	82	spherical	1
aframomum	6.6	5.8	1.1	5.8	30.0	3	0.52	7	77	spherical	1
aframomum	5.8	4.9	1.2	4.9	22.2	5	0.83	5	41	spherical	1
aframomum	6.4	5.7	1.1	5.7	22.1	5	0.83	4	42	polygon	1
aframomum	6.5	5.5	1.2	5.5	30.2	3	0.9	8	78	spherical	1
aframomum	7.2	6.3	1.1	6.3	40.0	4	0.5	6	100	ovoid	1
ancistrophy	6.0	6.0	1.0	6.0	27.8	2	0.7	7	116	spherical	1
ancistrophy	5.4	4.2	1.3	4.2	18.9	4	0.55	4	105	ovoid	1
ancistrophy	4.9	4.8	1.0	4.8	21.2	2	0.58	4	116	spherical	1
ancistrophy	3.7	3.2	1.2	3.2	10.2	2	0	0	0	polygon	1
ancistrophy	5.9	4.4	1.3	4.4	19.8	4	0.46	3	191	ovoid	1
ancistrophy	3.2	2.5	1.3	2.5	7.2	4	0	0	0	polygon	1
ancistrophy	4.8	4.5	1.1	4.5	18.0	3	0.51	3	90	polygon	1
ancistrophy	5.8	5.7	1.0	5.7	22.9	4	0.75	4	108.06	polygon	1
ancistrophy	5.0	4.1	1.2	4.1	15.4	3	0.52	3	120.35	polygon	1
ancistrophy	4.9	2.9	1.7	2.9	12.4	5	0	0	0	elongate	1
ancistrophy	3.5	2.8	1.3	2.8	8.2	5	0	0	0	polygon	1
ancistrophy	3.2	2.3	1.4	2.3	5.3	5	0	0	0	polygon	1
ancistrophy	5.8	5.0	1.2	5.0	18.8	4	0.51	7	0	spherical	1
ancistrophy	4.9	4.2	1.2	4.2	16.8	3	0.32	3	95.28	prolate	1
ancistrophy	4.1	3.3	1.2	3.3	11.7	5	0.5	4	91	polygon	1
ancistrophy	4.7	3.7	1.3	3.7	13.3	4	0	0	0	prolate	1
ancistrophy	4.5	3.6	1.2	3.6	11.5	3	0.4	3	118	polygon	1
ancistrophy	5.2	3.5	1.5	3.5	16.3	5	0.62	4	87	ovoid	1
ancistrophy	3.6	2.8	1.3	2.8	8.1	4	0	0	0	ovoid	1
ancistrophy	3.4	2.8	1.2	2.8	7.5	4	0	0	0	spherical	1
ancistrophy	5.1	3.9	1.3	3.9	15.3	4	0.55	3	109	polygon	1
ancistrophy	4.3	3.9	1.1	3.9	13.4	3	0.4	3	116	spherical	1
ancistrophy	3.6	2.9	1.3	2.9	8.0	5	0	0	0	polygon	1
ancistrophy	3.8	2.9	1.3	2.9	9.6	5	0	0	0	polygon	1
ancistrophy	4.9	3.8	1.3	3.8	13.5	5	0.3	4	111	polygon	1
ancistrophy	7.2	4.2	1.7	4.2	27.3	4	0.62	9	27.27	prolate	1
ancistrophy	5.6	5.3	1.0	5.3	24.0	2	1.07	5	61.83	spherical	1
ancistrophy	7.3	6.5	1.1	6.5	43.5	1	1.2	8	83.46	spherical	1

ancistrophy	8.9	7.6	1.2	7.6	53.5	1	1.1	12	85.57	spherical	1
ancistrophy	6.1	5.8	1.0	5.8	29.5	3	1.27	8	82	spherical	1
ancistrophy	5.3	4.3	1.2	4.3	20.2	4	1.25	8	76.85	spherical	1
ancistrophy	7.2	5.2	1.4	5.2	34.2	2	1.05	9	79.57	prolate	1
ancistrophy	7.5	5.0	1.5	5.0	29.1	4	0.88	6	73.5	ovoid	1
ancistrophy	8.5	7.2	1.2	7.2	44.5	1	1.11	10	86.09	spherical	1
ancistrophy	5.8	5.4	1.1	5.4	24.9	3	0.88	9	106	spherical	1
ancistrophy	7.5	5.9	1.3	5.9	38.1	3	1.23	9	85	spherical	1
ancistrophy	7.5	6.5	1.2	6.5	36.8	3	1.2	7	81	spherical	1
ancistrophy	6.3	5.8	1.1	5.8	32.5	3	1.11	7	84.33	spherical	1
ancistrophy	5.9	5.4	1.1	5.4	27.4	3	0.97	9	69.85	ovoid	1
ancistrophy	7.0	4.9	1.4	4.9	31.0	5	0.65	7	96	spherical	1
ancistrophy	9.7	8.8	1.1	8.8	82.7	2	1.64	11	92	spherical	1
ancistrophy	7.6	7.1	1.1	7.1	47.5	2	1.25	9	86.23	spherical	1
ancistrophy	8.8	6.2	1.4	6.2	49.3	3	1.33	10	82.53	prolate	1
ancistrophy	6.5	6.2	1.0	6.2	35.8	3	1.02	8	84.17	spherical	1
ancistrophy	7.0	6.6	1.1	6.6	35.3	4	1.24	6	88.91	spherical	1
ancistrophy	6.8	5.8	1.2	5.8	30.9	3	0.97	6	97	spherical	1
ancistrophy	5.6	5.6	1.0	5.6	24.5	3	0.55	7	115	spherical	1
ancistrophy	5.4	3.8	1.4	3.8	17.9	4	0.92	5	77	prolate	1
ancistrophy	8.9	6.9	1.3	6.9	57.3	3	1.2	2	72	prolate	1
ancistrophy	7.9	5.8	1.4	5.8	37.5	4	1.5	10	84	spherical	1
sarcoph	17.5	6.6	2.7	6.6	87.8	4	0	0	0	angularpoint	1
sarcoph	15.5	6.1	2.6	6.1	63.0	3	0	0	0	angularpoint	1
sarcoph	16.5	6.3	2.6	6.3	81.6	3	0	0	0	angularpoint	1
sarcoph	16.3	7.6	2.2	7.6	82.0	3	0	0	0	angularpoint	1
sarcoph	14.4	7.2	2.0	7.2	55.6	4	0	0	0	angularpoint	1
sarcoph	14.7	7.4	2.0	7.4	73.3	5	0	0	0	angularelongate	1
sarcoph	19.8	7.5	2.6	7.5	108.6	5	0	0	0	angularpoint	1
sarcoph	19.4	7.2	2.7	7.2	70.0	4	0	0	0	angularpoint	1
sarcoph	19.3	7.3	2.6	7.3	92.5	4	0	0	0	angularpoint	1
sarcoph	14.3	5.3	2.7	5.3	66.5	3	0	0	0	angularpoint	1
sarcoph	14.2	6.7	2.1	6.7	83.5	3	0	0	0	quadrangular	1
sarcoph	14.8	12.9	1.1	12.9	133.9	5	0	0	0	triangular	1
sarcoph	15.9	5.7	2.8	5.7	76.7	4	0	0	0	angularpoint	1
sarcoph	14.1	8.7	1.6	8.7	89.1	4	0	0	0	angularpoint	1
sarcoph	16.1	6.2	2.6	6.2	87.1	4	1.68	1	40	angularpoint	1
sarcoph	16.7	6.4	2.6	6.4	92.0	4	0	0	0	angularpoint	1
sarcoph	15.0	7.8	1.9	7.8	82.2	4	0	0	0	angularpoint	1
sarcoph	11.8	7.6	1.6	7.6	57.4	5	0	0	0	angularpoint	1
sarcoph	16.2	6.3	2.6	6.3	80.8	5	0	0	0	angularelongate	1
sarcoph	11.6	5.1	2.3	5.1	56.8	4	0	0	0	angularpoint	1
sarcoph	10.3	7.6	1.3	7.6	49.5	4	0	0	0	angularpoint	1
sarcoph	16.4	6.6	2.5	6.6	95.1	4	0	0	0	angularelongate	1
sarcoph	19.3	6.3	3.1	6.3	74.7	4	0	0	0	angularelongate	1
sarcoph	20.4	7.6	2.7	7.6	136.4	4	0	0	0	angularelongate	1

sarcoph	14.4	6.8	2.1	6.8	81.0	3	0	0	0	angularelongate	1
sarcoph	14.7	8.6	1.7	8.6	87.8	3	0	0	0	angularelongate	1
sarcoph	14.7	8.6	1.7	8.6	71.7	4	0	0	0	angularelongate	1
sarcoph	23.6	21.7	1.1	21.7	294.8	3	5	12	40.2	spherical	1
sarcoph	14.0	6.9	2.0	6.9	89.5	3	0	0	0	quadrangular	1
sarcoph	21.3	8.8	2.4	8.8	130.9	4	0	0	0	angularpoint	1
sarcoph	13.3	7.2	1.8	7.2	75.9	5	0	0	0	angularelongate	1
sarcoph	19.5	8.4	2.3	8.4	114.5	5	0	0	0	angularpoint	1
sarcoph	11.5	4.6	2.5	4.6	37.9	3	0	0	0	angularpoint	1
sarcoph	13.8	7.6	1.8	7.6	71.4	4	0	0	0	angularpoint	1
sarcoph	15.2	6.5	2.3	6.5	84.9	4	0	0	0	quadrangular	1
sarcoph	15.3	9.3	1.6	9.3	127.6	3	0	0	0	quadrangular	1
sarcoph	11.5	6.6	1.8	6.6	51.2	4	0	0	0	angularpoint	1
sarcoph	13.8	6.2	2.2	6.2	56.3	4	0	0	0	angularpoint	1
sarcoph	11.4	6.6	1.7	6.6	56.1	3	0	0	0	quadrangular	1
sarcoph	16.8	6.0	2.8	6.0	78.3	4	0	0	0	angularpoint	1
sarcoph	19.7	6.2	3.2	6.2	94.7	4	0	0	0	angularpoint	1
sarcoph	13.8	6.7	2.0	6.7	74.2	5	0	0	0	angularpoint	1
sarcoph	17.6	9.4	1.9	9.4	94.9	4	0	0	0	angularpoint	1
sarcoph	13.8	8.4	1.6	8.4	105.4	3	0	0	0	quadrangular	1
sarcoph	17.3	6.6	2.6	6.6	70.2	4	0	0	0	angularpoint	1
sarcoph	16.6	9.3	1.8	9.3	91.9	4	2.3	1	58	angularpoint	1
sarcoph	15.2	7.5	2.0	7.5	89.7	3	0	0	0	angularpoint	1
sarcoph	16.5	7.7	2.1	7.7	101.4	5	0	0	0	angularpoint	1
sarcoph	20.2	7.8	2.6	7.8	118.8	5	0	0	0	angularpoint	1
sarcoph	12.2	6.5	1.9	6.5	57.2	5	0	0	0	angularpoint	1

Metrics of reference starches.

Species	Length	Width	LW Ratio	Brea	Area	Shape	Facets	Striaelen	Striaeno	Type	Lam	Dist
cola	27.82	23.59	1.18	18.9	515	ovoid	0	6.48	1	1	3	12.19
cola	21.85	20.68	1.06	13	396.24	elongate conovoid	0	5.86	2	2	3	10.24
cola	13.13	8.4	1.56	8.4	70.65	pyriform	0	0	0	1	2	6.56
cola	11.87	8.54	1.39	8.54	82.8	elongate conovoid	0	0	0	2	2	6.04
cola	11.16	8.61	1.3	8.61	75.1	elongate conovoid	0	0	0	2	2	4.72
cola	3.42	3.42	1	2.39	7.52	oblate conovoid	0	0	0	2	0	1.13
cola	22.39	17.83	1.26	12.3	300.88	ovoid	0	4.36	1	1	2	8.33
cola	9.19	7.6	1.21	7.6	61.36	prolate	1	0	0	1	0	3.25
cola	8.41	6.67	1.26	6.67	42.84	prolate	1	0	0	1	0	2.59
cola	11.68	8.94	1.31	7.65	79.98	triangular	0	0	0	1	0	4.65
cola	12.73	9.8	1.3	9.8	88.7	prolate	1	2.62	1	1	0	5.02
cola	5.86	4.51	1.3	4.51	20.95	oblate conovoid	2	0	0	2	0	2.06
cola	13.18	9.99	1.32	9.99	105.93	ovoid	0	0	0	1	0	5.88

cola	6.04	4.92	1.23	4.92	25.57	ovoid	1	0	0	1	0	2.62
cola	4.18	3.21	1.3	3.21	15.26	ovoid	1	0	0	1	0	1.23
cola	7.62	7.62	1	6.69	103.45	oblate conovoid	2	0	0	2	0	4.09
cola	4.75	3.69	1.29	3.69	21.38	prolate	1	0	0	1	0	1.79
cola	3.57	3.57	1	2.7	9.79	oblate conovoid	1	0	0	2	0	1.35
cola	11.59	9.34	1.24	9.34	83.96	ovoid	0	0	0	1	0	4.61
cola	8.78	7.92	1.11	7.92	58.53	ovoid	0	0	0	1	0	3.71
cola	4.85	4.08	1.19	4.08	18.63	polygon	3	0	0	2	0	1.33
cola	6.4	4.42	1.45	4.42	22.9	ovoid	2	0	0	1	0	1.85
cola	27.23	19.54	1.39	18	402	ovoid	0	8	4	1	2	11.84
cola	26.46	17.45	1.52	17.5	346.76	ovoid	0	7	5	1	0	15.59
cola	14.34	12.99	1.1	12.99	143.36	prolate	0	0	0	1	2	6.18
cola	20.34	14.36	1.42	14.4	226.29	ovoid	0	7.8	4	1	0	9.62
cola	26.75	19.64	1.36	19.64	408.6	ovoid	0	9.87	3	1	3	15.02
cola	14.7	11.69	1.26	11.69	144.5	elongate	0	2.27	1	2	2	7.62
cola	10.22	8.71	1.17	8.71	68.55	conovoid prolate	0	0	0	1	0	2.91
cola	9.52	7.2	1.32	7.2	64.07	ovoid	0	0	0	1	2	2.97
cola	8.26	6.45	1.28	6.45	42.47	ovoid	0	0	0	1	0	2.46
cola	10.59	7.91	1.34	7.91	76.69	ovoid	0	0	0	1	2	4.12
cola	11.43	8.14	1.4	8.14	73.02	pyriform	0	0	0	1	0	4.16
cola	8.91	6.6	1.35	6.6	48.02	ovoid	1	0	0	1	0	2.69
cola	7.45	5.73	1.3	5.73	39.98	ovoid	0	0	0	1	0	2.67
cola	5.6	3.7	1.51	3.7	18.25	prolate	0	0	0	1	0	1.37
cola	6.52	4.86	1.34	4.86	45	polygon	3	0	0	2	0	1.83
cola	14.55	14.55	1	10.4	119.07	elongate	0	2.9	2	2	2	7.89
cola	8.7	6.15	1.41	6.15	39.45	conovoid ovoid	0	0	0	1	0	3.8
cola	12.24	9.38	1.3	9.38	89.29	ovoid	0	1.62	2	1	0	1.85
cola	12.82	10.55	1.22	10.55	120.54	prolate	0	0	0	1	0	4.51
cola	6.6	5.03	1.31	5.03	25.85	ovoid	0	0	0	1	0	2.46
cola	6.65	5.36	1.24	5.36	50.82	triangular	0	0	0	1	0	1.84
cola	15.39	9.32	1.65	9.32	99.78	pyriform	0	0	0	1	0	3.69
cola	4.5	3.69	1.22	3.69	16.32	spherical	0	0	0	1	0	2.15
cola	14.47	12.81	1.13	12.81	130.47	prolate	0	0	0	1	0	3.07
cola	3.6	3.08	1.17	3.08	11.8	spherical	0	0	0	1	0	1.45
cola	7.32	5.32	1.38	5.32	33.19	oblate conovoid	2	0	0	1	0	1.65
cola	13.82	10.61	1.3	10.61	104.83	ovoid	0	0	0	1	0	2.97
cola	16.98	11.45	1.48	11.45	128.62	triangular	0	0	0	1	0	2.46
aframomum	2.86	2.73	1.05	2.73	4.95	hemispherical	1	0	0	3	0	1.43
aframomum	2.36	2.1	1.12	2.1	3.87	spherical	0	0	0	3	0	1.18
aframomum	2.39	2.18	1.1	2.18	3.71	spherical	1	0	0	3	0	1.195
aframomum	2.32	1.99	1.17	1.99	4.08	spherical	0	0	0	3	0	1.16
aframomum	3.13	2.83	1.11	2.83	4.7	spherical	0	0	0	3	0	1.565
aframomum	2.47	2.18	1.13	2.18	4.1	spherical	0	0	0	3	0	1.235
aframomum	3.26	2.85	1.14	2.85	7.5	spherical	1	0	0	3	0	1.63
aframomum	2.88	2.57	1.12	2.57	5.59	spherical	1	0	0	3	0	1.44

aframomum	4.81	4.45	1.08	4.45	16	spherical	2	0	0	3	0	2.405
aframomum	3.52	3.4	1.04	3.4	7.18	spherical	2	0	0	3	0	1.76
aframomum	2.57	2.46	1.04	2.46	4.36	spherical	1	0	0	3	0	1.285
aframomum	2.46	2.15	1.14	2.15	3.5	spherical	1	0	0	3	0	1.23
aframomum	3.25	2.4	1.35	2.4	5.67	ovoid	0	0	0	3	0	1.625
aframomum	2.9	2.1	1.38	2.1	4.91	spherical	1	0	0	3	0	1.45
aframomum	2.54	2.21	1.15	2.21	4.31	spherical	2	0	0	3	0	1.27
aframomum	2.73	2.63	1.04	2.63	5.54	spherical	2	0	0	3	0	1.365
aframomum	2.5	2.2	1.14	2.2	5.99	spherical	3	0	0	3	0	1.25
aframomum	2.15	2.02	1.06	2.02	3.8	spherical	2	0	0	3	0	1.075
aframomum	2.95	2.16	1.37	2.16	5.55	spherical	1	0	0	3	0	1.475
aframomum	3.71	3.56	1.04	3.56	10	spherical	2	0	0	3	0	1.855
aframomum	3.49	2.98	1.17	2.98	6.23	spherical	2	0	0	3	0	1.745
aframomum	3.69	3.69	1	3.69	9.25	spherical	1	0	0	3	0	1.845
aframomum	3.49	3.19	1.09	3.19	9.97	spherical	2	0	0	3	0	1.745
aframomum	1.99	1.87	1.06	1.87	2.71	spherical	1	0	0	3	0	0.995
aframomum	3.04	2.58	1.18	2.58	5.08	spherical	0	0	0	3	0	1.52
aframomum	5.65	5.45	1.04	5.45	21.99	spherical	2	0	0	3	0	2.825
aframomum	3.85	2.82	1.37	2.82	8.69	spherical	2	0	0	3	0	1.925
aframomum	2.66	2.05	1.3	2.05	4.82	hemispherical	1	0	0	3	0	1.33
aframomum	2.86	2.21	1.29	2.21	4.96	hemispherical	2	0	0	3	0	1.43
aframomum	2.83	2.53	1.12	2.53	6.78	spherical	2	0	0	3	0	1.415
aframomum	3.11	2.88	1.08	2.88	9.42	spherical	3	0	0	3	0	1.555
aframomum	1.9	1.68	1.13	1.68	3	spherical	3	0	0	3	0	0.95
aframomum	3.58	3.38	1.06	3.38	9.45	spherical	1	0	0	3	0	1.79
aframomum	1.78	1.54	1.16	1.54	1.8	spherical	1	0	0	3	0	0.89
aframomum	2.05	1.64	1.25	1.64	2.22	spherical	2	0	0	3	0	1.025
aframomum	2.78	2.36	1.18	2.36	3.99	spherical	2	0	0	3	0	1.39
aframomum	1.81	1.69	1.07	1.69	2.57	spherical	0	0	0	3	0	0.905
aframomum	5.12	4.5	1.14	4.5	16.4	spherical	1	0	0	3	0	2.56
aframomum	2.57	1.96	1.31	1.96	3.89	spherical	1	0	0	3	0	1.285
aframomum	2.73	2.32	1.18	2.32	5.95	polygon	4	0	0	3	0	1.365
aframomum	4.27	4.08	1.05	4.08	14	polygon	4	0	0	3	0	2.135
aframomum	2.02	1.7	1.19	1.7	3.5	hemispherical	1	0	0	3	0	1.01
aframomum	2.82	2.67	1.06	2.67	6.37	spherical	1	0	0	3	0	1.41
aframomum	3.09	2.15	1.06	2.15	5.59	polygon	4	0	0	3	0	1.02
aframomum	3.49	2.87	1.06	2.87	8.31	polygon	4	0	0	3	0	1.45
aframomum	3.18	3.08	1.06	3.08	8.34	spherical	0	0	0	1	0	1.13
aframomum	4.3	3.28	1.06	3.28	11.5	spherical	1	0	0	1	0	1.13
aframomum	2.27	1.64	1.06	1.64	3.4	spherical	1	0	0	1	0	1.21
aframomum	5.03	3.18	1.06	3.18	12.83	polygon	3	0	0	3	0	1.5
aframomum	3.41	3.24	1.06	3.24	7.96	polygon	4	0	0	3	0	1.6
piper	5.15	3.8	1.36	3.8	14.67	polygon	7	0	0	3	0	2.36
piper	2.58	2.25	1.15	2.25	3.61	polygon	6	0	0	3	0	1.3
piper	4.18	2.84	1.47	2.84	9.52	polygon	5	0	0	3	0	2
piper	3.86	3.4	1.14	3.4	7.37	hemispherical	4	0	0	3	0	1.9

piper	3.4	2.7	1.26	2.7	7.49	polygon	7	0	0	3	0	1.7
piper	3.21	2.79	1.15	2.79	8.9	polygon	6	0	0	3	0	1.6
piper	3	2	1.5	2	10	polygon	6	0	0	3	0	1.5
piper	3.98	3.28	1.21	3.28	15	polygon	7	0	0	3	0	1.49
piper	3.95	3.58	1.1	3.58	13.99	polygon	7	0	0	3	0	1.49
piper	3.18	2.9	1.1	2.9	10.17	polygon	6	0	0	3	0	1.64
piper	3.32	3.11	1.07	3.11	9.15	polygon	6	0	0	3	0	1.67
piper	3.04	2.58	1.18	2.58	6.68	polygon	7	0	0	3	0	1.52
piper	3.25	2.27	1.43	2.27	9.73	polygon	7	0	0	3	0	1.63
piper	4.98	3.92	1.27	3.92	14.44	polygon	6	0	0	3	0	2.5
piper	4.87	4.82	1.01	4.87	17.68	hemispherical	5	0	0	3	0	2.3
piper	5.94	3.62	1.64	3.62	11.91	polygon	7	0	0	3	0	2.8
piper	4.45	3.98	1.12	3.98	16	oblate conovoid	4	0	0	3	0	2.2
piper	4.33	3.9	1.11	3.9	12.22	oblate conovoid	4	0	0	3	0	2.15
piper	2.84	2.17	1.31	2.17	5.07	polygon	6	0	0	3	0	1.4
piper	5.33	5.24	1.02	3	19	hemispherical	3	0	0	3	0	2.6
piper	4.66	3.92	1.19	3	16.72	hemispherical	3	0	0	3	0	2.33
piper	3.7	2.56	1.45	2.56	10.55	polygon	5	0	0	3	0	1.8
piper	2.95	2.25	1.31	2.25	8.38	oblate conovoid	3	0	0	3	0	1.8
piper	4.23	3.11	1.36	3.11	18.74	polygon	6	0	0	3	0	2.1
piper	4.41	3.75	1.18	3.75	10.84	oblate conovoid	5	0	0	3	0	2.2
piper	3.52	2.62	1.34	2.62	18	polygon	6	0	0	3	0	1.75
piper	4.17	3.12	1.34	3.12	11.77	polygon	6	0	0	3	0	1.07
piper	3.15	2.43	1.3	2.43	18.55	quadrangular	6	0	0	3	0	1.6
piper	3.49	2.93	1.19	2.93	10.6	polygon	7	0	0	3	0	1.7
piper	2.98	2.53	1.18	2.53	7.22	polygon	7	0	0	3	0	1.5
piper	3.71	3.41	1.09	3.41	10.94	polygon	7	0	0	3	0	1.87
piper	3.47	2.33	1.49	2.33	8.52	oblate conovoid	3	0	0	3	0	1.72
piper	4.03	3.33	1.21	3.33	8.55	polygon	6	0	0	3	0	2
piper	5.82	5.82	1	3.62	16.57	hemispherical	2	0	0	3	0	2.8
piper	5.41	5.41	1	3.91	18.7	hemispherical	2	0	0	3	0	2.7
piper	6.01	6.01	1	5.07	18.37	oblate conovoid	3	0	0	3	0	3
piper	3.92	3.85	1.02	3.85	11.54	polygon	7	0	0	3	0	1.95
piper	5	3.85	1.3	3.85	15.22	polygon	7	0	0	3	0	1.65
piper	3.39	3.12	1.09	3.12	13.91	quadrangular	6	0	0	3	0	2.9
piper	3.82	2.07	1.85	2.07	6.73	oblate conovoid	5	0	0	3	0	1.35
piper	2.71	2.27	1.19	2.27	4.84	oblate conovoid	5	0	0	3	0	1.35
piper	3.58	2.76	1.3	2.76	7.99	polygon	7	0	0	3	0	1.79
piper	2.27	2.05	1.11	2.05	6.1	polygon	6	0	0	3	0	1.13
piper	4.16	3.75	1.11	3.75	15.12	polygon	4	0	0	1	0	1.64
piper	4.23	3.85	1.1	3.85	14.17	polygon	4	0	0	3	0	2.15
piper	2.77	2.13	1.3	2.13	4.12	polygon	2	0	0	3	0	0.87
piper	4.57	3.27	1.4	3.27	15.01	polygon	4	0	0	3	0	1.85
piper	3.84	3.61	1.06	3.61	14.88	polygon	6	0	0	3	0	1.88

piper	3.34	3.25	1.03	3.25	7.88	polygon	5	0	0	3	0	1.54
piper	2.25	2.06	1.09	2.06	4.78	polygon	4	0	0	3	0	1.13
sacog	5.99	4.77	1.26	3	21.57	polygon	3	0	0	2	0	1.77
sacog	5.55	4.03	1.38	2	18.73	polygon	2	0	0	2	0	1.74
sacog	6.96	5.88	1.18	3.4	36.03	oblate conovoid	3	0	0	2	0	1.71
sacog	5.03	4.18	1.2	3	16.51	quadrangular	3	0	0	1	0	1.77
sacog	5.74	5.3	1.08	5.3	32.7	polygon	3	0	0	1	0	1.77
sacog	6.06	5.69	1.07	5.69	34	polygon	3	0	0	1	0	2.46
sacog	6.93	6.02	1.15	6.02	30.27	polygon	2	0	0	1	0	2.79
sacog	6.49	6.49	1	4.57	25.49	oblate conovoid	2	0	0	2	0	2.63
sacog	6.23	6.23	1	4.37	18.06	oblate conovoid	2	0	0	2	0	2.39
sacog	6.81	6.81	1	3.92	19.054	oblate conovoid	2	0	0	2	0	2.15
sacog	5.37	5.37	1	4.23	19.02	oblate conovoid	2	0	0	2	0	1.33
sacog	4.82	4.42	1.09	3	18.94	oblate conovoid	2	0	0	2	0	1.43
sacog	6.72	6.72	1	4.3	22.45	oblate conovoid	2	0	0	2	0	1.64
sacog	7.41	7.25	1.02	7.25	37.49	oblate conovoid	2	0	0	2	0	2.46
sacog	7.8	7.01	1.11	3	41.67	oblate conovoid	2	0	0	2	0	2.36
sacog	6.51	6.51	1	5.44	24.12	oblate conovoid	2	0	0	2	0	1.96
sacog	8.7	6.65	1.31	6.65	56.62	oblate conovoid	2	0	0	2	0	3.08
sacog	7.75	7.7	1.01	5.21	33.52	oblate conovoid	2	0	0	2	0	2.36
sacog	5.96	5.96	1	4.02	18.37	oblate conovoid	2	0	0	2	0	1.96
sacog	4.92	3.82	1.29	3.82	23	quadrangular	3	0	0	1	0	1.96
sacog	3.7	3.7	1	2.9	10.5	oblate conovoid	3	0	0	2	0	1.75
sacog	6.29	5.49	1.15	5.49	27.54	polygon	3	0	0	1	0	2.25
sacog	5.22	4.21	1.24	4.21	20.85	polygon	4	0	0	1	0	2.16
sacog	3.69	3.07	1.2	3.07	8.21	oblate conovoid	2	0	0	2	0	1.03
sacog	4.88	4.27	1.14	4	14.7	oblate conovoid	3	0	0	2	0	1.75
sacog	6.97	6.97	1	5.2	34.78	polygon	4	0	0	1	0	2.05
sacog	7.77	6.45	1.2	5.12	37.23	polygon	4	0	0	1	0	2.61
sacog	4.28	4.02	1.06	3.28	31.28	polygon	4	0	0	1	0	2.35
sacog	6.8	5.88	1.16	4.6	31.59	polygon	2	0	0	1	0	2.36
sacog	4.69	4.69	1	3.33	14.7	polygon	2	0	0	1	0	1.59
sacog	7.07	5.68	1.24	4.67	34.16	polygon	2	0	0	1	0	1.97
sacog	6.78	6.45	1.05	6.41	40.39	ovoid	1	0	0	1	0	2.17
sacog	6.35	6.13	1.04	5.68	24.12	polygon	3	0	0	1	0	3.01
sacog	6.74	6.26	1.08	3.98	19.55	polygon	3	0	0	1	0	2.27
sacog	6.23	4.9	1.27	4.51	19.3	polygon	2	0	0	1	0	1.81
sacog	7.63	7.63	1	4.13	27.61	hemispherical	1	0	0	2	0	2.01
sacog	7.77	7.77	1	5.15	32.7	hemispherical	1	0	0	2	0	2.05
sacog	6.79	6.1	1.11	6.1	33.09	quadrangular	1	0	0	1	0	2.05
sacog	6.99	5.79	1.21	5.79	28.54	hemispherical	2	0	0	2	0	2.15
sacog	5.37	2.88	1.86	2.88	15.25	hemispherical	1	0	0	2	0	2.97

sacog	4.77	3.26	1.46	3.26	14.97	hemispherical	1	0	0	2	0	2.65
sacog	5.77	3.48	1.66	3.48	14.77	hemispherical	2	0	0	2	0	2.35
sacog	5.25	4.47	1.17	4.47	21.11	hemispherical	1	0	0	2	0	1.99
sacog	5.41	4.31	1.26	4.31	17.58	hemispherical	1	0	0	2	0	1.95
sacog	5.92	5.07	1.17	5.07	22.21	hemispherical	1	0	0	2	0	2.05
sacog	5.34	5	1.07	5	18.45	polygon	5	0	0	1	0	2.59
sacog	6.04	6.04	1	6.04	27.63	spherical	1	0	0	1	0	2.14
sacog	6.18	3.95	1.56	3.95	17.37	hemispherical	1	0	0	2	0	2.98
sacog	4.66	3.16	1.47	3.16	9.24	oblate	2	0	0	2	0	2.27
sacog	5.14	3.79	1.36	3.79	18.35	conovoid oblate	2	0	0	2	0	1.59
panda	4.86	3.61	1.35	3.89	15.37	conovoid ovoid	0	1.96	2	1	0	2.76
panda	5.39	4.36	1.24	4.36	15.11	spherical	0	0	0	1	0	1.75
panda	6.88	5.37	1.28	5.37	31.25	ovoid	0	0	0	1	0	3.92
panda	4.6	4.6	1	4.6	16.17	ovoid	1	0	0	1	0	2.31
panda	5.32	5.02	1.06	5.02	22.8	spherical	0	0	0	1	0	2.66
panda	4.86	3.11	1.56	3.11	12.53	elongate ovoid	1	0	0	1	0	2.48
panda	6.92	5.62	1.23	5.62	37.39	ovoid	1	0	0	1	0	3.18
panda	7.68	5.05	1.52	5.05	29.8	pyriform	0	0	0	1	0	4.42
panda	7.02	5.65	1.24	5.62	29.65	prolate	0	2.69	2	1	0	3.29
panda	7.18	6.15	1.17	6.15	36.33	ovoid	0	1.6	2	1	0	3.39
panda	4.67	3.89	1.2	3.89	15.91	ovoid	0	0	0	1	0	2.61
panda	2.51	2.16	1.16	2.16	4.54	ovoid	0	0	0	1	0	1.5
panda	4.06	4.06	1	4.06	12.13	spherical	0	0	0	1	0	1.85
panda	6.49	6.49	1	6.49	33.53	spherical	0	1.01	3	1	0	2.77
panda	4.35	3.7	1.18	3.7	12.09	ovoid	0	0	0	1	0	1.3
panda	4.18	3.8	1.1	3.76	11.66	ovoid	2	0	0	1	0	1.44
panda	6.76	5.32	1.27	5.32	30.13	prolate	0	2.05	2	1	0	3.05
panda	4.52	3.69	1.22	3.69	15.1	prolate	0	1.24	2	1	0	2.06
panda	5.09	5.09	1	5.09	21.11	spherical	1	0	0	1	0	1.13
panda	3.03	2.88	1.05	2.88	8.12	ovoid	0	0	0	1	0	1.74
panda	4.94	4.23	1.17	4.23	17.6	prolate	0	0	0	1	0	1.85
panda	4.5	3.79	1.19	3.79	14.45	prolate	0	0	0	1	0	1.85
panda	7.47	6.09	1.23	6.09	39.18	prolate	0	0	0	1	0	3.55
panda	3.55	2.66	1.33	2.66	7.22	prolate	0	0	0	1	0	1.55
panda	4.1	3.69	1.11	3.69	13.07	prolate	0	0	0	1	0	1.54
panda	5.4	5.4	1	5.4	22.07	spherical	0	0	0	1	0	2.4
panda	3.17	3.17	1	3.17	8.09	spherical	0	0	0	1	0	1.33
panda	3.13	3.13	1	3.13	8.63	spherical	1	0	0	1	0	1.43
panda	5.59	4.12	1.36	4.12	19.12	prolate	0	0	0	1	0	2.76
panda	4.73	4.73	1	4.73	18.62	spherical	0	0	0	1	0	2.15
panda	4.18	3.47	1.2	3.47	12.87	prolate	1	0	0	1	0	2.29
panda	4.93	3.5	1.41	3.5	16.27	prolate	0	0	0	1	0	2.05
panda	3.18	2.67	1.19	2.67	7.8	prolate	1	0	0	1	0	1.02
panda	7.72	7.04	1.1	7.04	47.48	prolate	0	0	0	1	0	3.17
panda	4.4	3.39	1.3	3.39	15.43	prolate	0	0	0	1	0	2.09

panda	4.45	3.18	1.4	3.18	14.18	prolate	0	0	0	1	0	1.54
panda	4.85	4.69	1.03	4.69	18.14	spherical	0	0	0	1	0	1.65
panda	5.06	2.81	1.8	2.81	18.96	pyriform	0	0	0	1	0	1.14
panda	4	3.81	1.05	3.81	10.25	spherical	0	0	0	1	0	1.85
panda	5.02	3.17	1.58	3.17	26.04	prolate	0	0	0	1	0	2.79
panda	4.2	2.35	1.79	2.35	10.04	ovoid	0	0	0	1	0	1.54
panda	2.16	2.15	1	2.15	5	spherical	0	0	0	1	0	1.07
panda	2.87	1.84	1.56	1.84	5.7	prolate	0	0	0	1	0	1.23
panda	4.3	3.89	1.11	3.89	16.75	spherical	0	0	0	1	0	2.15
panda	2.97	2.77	1.07	2.77	7.5	spherical	0	0	0	1	0	1.33
panda	5.59	3.9	1.43	3.9	20.94	ovoid	0	2.34	1	1	0	2.11
panda	4.97	4.11	1.21	4.97	15.6	ovoid	0	0	0	1	0	2.3
panda	3.38	2.87	1.18	2.87	16.75	prolate	1	0	0	1	0	1.13
panda	3.07	2.66	1.15	2.66	7.19	spherical	0	0	0	1	0	1.13
panda	5.33	5.12	1.04	5.12	24	spherical	0	0	0	1	0	2.16
coula	7.6	7.6	1	7.6	36	spherical	0	0	0	1	2	4.5
coula	7.7	7.7	1	7.7	48	spherical	0	2.25	1	1	2	3.38
coula	2.5	2.5	1	2.5	8.27	spherical	0	0	0	1	0	1.54
coula	6.7	6.7	1	6.7	36	spherical	0	0	0	1	2	2.97
coula	7.36	7.36	1	7.36	48	spherical	0	0	0	1	2	3.45
coula	2.88	2.88	1	2.88	7.2	spherical	0	0	0	1	0	1.45
coula	6.15	6.15	1	6.15	27.39	spherical	0	0	0	1	2	2.79
coula	4	4	1	4	13	spherical	0	0	0	1	2	1.74
coula	4.41	4.41	1	4.41	14.55	spherical	1	0	0	1	2	2.15
coula	5.54	5.54	1	5.54	23.23	spherical	0	0	0	1	2	3.79
coula	8.53	8.53	1	8.53	57.11	spherical	0	0	0	1	2	4
coula	10.98	10.98	1	10.98	87.4	spherical	0	0	0	1	2	5.86
coula	8.76	8.76	1	8.76	61.12	spherical	0	0	0	1	2	4.31
coula	7.55	7.55	1	7.55	40.68	spherical	0	0	0	1	2	2.98
coula	5.12	5.12	1	5.12	40	spherical	0	0	0	1	2	3.29
coula	11.34	11.34	1	11.34	90.41	spherical	0	0	0	1	2	5.43
coula	4.73	4.73	1	4.73	18.5	spherical	0	0	0	1	2	2.35
coula	6.35	6.35	1	6.35	33.19	spherical	0	0	0	1	2	3.28
coula	5.09	5.09	1	5.09	30.3	spherical	0	0	0	1	2	2.56
coula	5.81	5.81	1	5.81	24	spherical	1	0	0	1	2	3.15
coula	6.76	6.76	1	6.76	32.16	spherical	1	0	0	1	2	3.28
coula	5.43	5.43	1	5.43	22.79	spherical	0	0	0	1	2	2.56
coula	4.71	4.71	1	4.71	19.28	spherical	0	0	0	1	2	2.07
coula	5.18	5.18	1	5.18	22.92	spherical	0	0	0	1	2	2.47
coula	7.58	7.58	1	7.58	42.52	spherical	0	0	0	1	2	4.13
coula	3.29	3.29	1	3.29	14.59	spherical	0	0	0	1	2	1.69
coula	6.35	6.35	1	6.35	37.24	spherical	0	0	0	1	2	2.97
coula	5.36	5.36	1	5.36	25.06	spherical	0	0	0	1	2	2.66
coula	5.23	5.23	1	5.23	18.26	spherical	1	0	0	1	2	2
coula	5.45	5.45	1	5.45	25.54	spherical	1	0	0	1	2	2.67
coula	4.13	4.13	1	4.13	15.29	spherical	0	0	0	1	2	1.54

coula	7.88	7.88	1	7.88	46.8	spherical	0	0	0	1	2	3.38
coula	9.34	9.34	1	9.34	66.9	spherical	0	0	0	1	2	4.9
coula	6.64	6.64	1	6.64	30.14	spherical	1	0	0	1	2	2.56
coula	7.81	7.81	1	7.81	44.41	spherical	0	1.14	1	1	2	3.6
coula	3.44	3.44	1	3.44	9.67	spherical	0	0	0	1	0	1.44
coula	6.47	6.47	1	6.47	30.62	spherical	0	0	0	1	2	3.19
coula	6.88	6.88	1	6.88	32.11	spherical	0	1.14	1	1	2	2.76
coula	6.66	6.66	1	6.66	34.56	spherical	0	1.14	1	1	2	3.69
coula	4.15	4.15	1	4.15	13.52	spherical	0	1.62	2	1	2	1.85
coula	7.91	7.91	1	7.91	46.31	spherical	0	0	0	1	2	4.51
coula	5.92	5.92	1	5.92	24.25	spherical	1	0	0	1	2	2.46
coula	3.75	3.75	1	3.75	16.7	spherical	1	0	0	1	2	1.84
coula	9.5	8.18	1.16	8.18	64.16	spherical	1	0	0	1	2	3.69
coula	6.45	6.14	1.05	6.14	30.29	spherical	1	0	0	1	1	2.15
coula	8.88	8.51	1.04	8.51	55.31	spherical	0	0	0	1	2	3.07
coula	5.73	5.16	1.11	5.16	21.69	spherical	2	0	0	1	1	1.45
coula	3.9	3.43	1.14	3.43	9.36	oblate conovoid	2	0	0	1	0	1.65
coula	8.66	8.41	1.03	8.41	56.62	spherical	0	0	0	1	2	2.97
coula	6.63	6.51	1.02	6.51	32.19	spherical	0	0	0	1	2	2.46
napoleona	6.32	4.17	1.52	4.17	23.45	ovoid	0	0	0	1	1	2.26
napoleona	5.44	3.66	1.49	3.66	12	elongate ovoid	0	0	0	1	0	1.97
napoleona	5.84	5.64	1.04	5.64	20.17	spherical	0	0	0	1	0	2.06
napoleona	5.08	4.65	1.09	4.65	16.55	ovoid	0	0	0	1	0	1.85
napoleona	4.92	4.53	1.09	4.53	17.7	spherical	0	0	0	1	0	2.25
napoleona	4.76	4.63	1.03	4.63	15.39	spherical	2	0	0	1	0	1.81
napoleona	7.12	5.65	1.26	5.65	32.47	spherical	0	0	0	1	0	3.08
napoleona	6.36	4.71	1.35	4.71	22.32	spherical	0	0	0	1	0	2.11
napoleona	4.72	3.28	1.44	3.28	15.57	spherical	0	0	0	1	0	1.99
napoleona	3.55	2.69	1.32	2.69	7.14	spherical	1	0	0	1	0	1.54
napoleona	5.15	5.08	1.01	5.08	22.96	prolate	0	0	0	1	0	2.56
napoleona	4.75	3.41	1.39	3.41	11.63	ovoid	1	0	0	1	0	1.88
napoleona	4.22	4.17	1.01	4.17	15.78	ovoid	1	0	0	1	0	1.55
napoleona	3.53	3.16	1.12	3.16	7.8	polygon	0	0	0	1	0	2.44
napoleona	5.51	5.34	1.03	5.34	25.52	spherical	0	0	0	1	0	2.61
napoleona	4.35	3.44	1.26	3.44	13.89	ovoid	0	0	0	1	0	1.54
napoleona	4.96	3.73	1.33	3.73	18.9	triangular	1	0	0	2	0	2.25
napoleona	5.31	4.1	1.3	4.1	16.47	triangular	1	0	0	2	0	2.21
napoleona	3.79	3.5	1.08	3.5	12	prolate	0	0	0	1	0	2.39
napoleona	6.66	5.32	1.25	5.32	25.8	prolate	0	0	0	1	0	2.66
napoleona	5.71	5.26	1.09	5.26	23.09	ovoid	1	0	0	1	0	2.25
napoleona	5.31	4.86	1.09	4.86	20.11	spherical	0	0	0	1	0	1.98
napoleona	4.78	4.71	1.01	4.71	19.64	spherical	1	0	0	1	0	2.09
napoleona	6.27	4.61	1.36	4.61	22.13	elongate ovoid	0	0	0	1	0	2.41
napoleona	6.49	6.07	1.07	6.07	31.17	spherical	0	0	0	1	0	2.76
napoleona	4.61	4.53	1.02	4.53	14.91	spherical	1	0	0	1	0	2.19
napoleona	5.07	4.63	1.1	4.63	20.34	spherical	0	0	0	1	0	1.96

napoleona	4.51	3.69	1.22	3.69	13.93	spherical	0	0	0	1	0	1.64
napoleona	4.49	3.77	1.19	3.77	12.72	spherical	1	0	0	1	0	1.69
napoleona	3.99	3.89	1.03	3.89	12.09	spherical	0	0	0	1	0	1.54
napoleona	6.14	4	1.54	4	19.5	prolate	0	0	0	1	1	2.77
napoleona	5.02	4.61	1.09	4.61	19.58	prolate	0	0	0	1	0	2.66
napoleona	5.53	5.22	1.06	5.22	22.7	spherical	1	0	0	1	0	1.74
napoleona	7.2	2.9	2.48	2.9	15.98	triangular	1	0	0	2	0	2.36
napoleona	6.45	3.71	1.74	3.71	18.98	quadrangular	2	0	0	2	0	3.11
napoleona	6.96	4.29	1.62	4.29	22.36	quadrangular	2	0	0	2	0	3.52
napoleona	5.04	4.05	1.24	4.05	16.02	polygon	2	0	0	1	0	1.85
napoleona	7.71	5.43	1.42	5.43	33.27	elongate ovoid	0	0	0	1	0	4.03
napoleona	7.56	5.69	1.33	5.69	31.76	ovoid	1	0	0	1	0	4.2
napoleona	3.88	3.27	1.19	3.27	9.22	prolate	0	0	0	1	0	1.47
napoleona	2.67	2.46	1.09	2.46	6.5	spherical	0	0	0	1	0	1.13
napoleona	2.66	2.56	1.04	2.56	5.5	spherical	0	0	0	1	0	1.13
napoleona	2.66	2.56	1.04	2.56	2.89	spherical	1	0	0	1	0	0.72
napoleona	8.79	6.74	1.3	6.74	47.3	ovoid	2	0	0	1	0	3.28
napoleona	8.35	4.75	1.76	4.75	31.01	elongate ovoid	0	0	0	1	0	3.63
napoleona	7.25	6.25	1.76	6.25	32.95	ovoid	0	0	0	1	0	3.13
napoleona	5.37	4.75	1.76	4.75	18.86	ovoid	0	0	0	1	0	18.86
napoleona	9.06	7.09	1.76	7.09	40.33	ovoid	0	0	0	1	0	4.85
napoleona	11.06	5.14	1.76	5.14	38.99	elongate ovoid	0	0	0	1	0	4.82
napoleona	11.03	4.5	1.76	4.5	38.99	elongate ovoid	0	0	0	1	0	5.79
gilbert	10.26	7.78	1.32	7.78	70.17	ovoid	1	0	0	1	0	3.99
gilbert	9	8.12	1.11	8.12	59.98	ovoid	1	0	0	1	0	2.47
gilbert	13.48	13.05	1.03	13.1	142.87	ovoid	1	0	0	1	0	4.51
gilbert	7.75	7.74	1	5.04	32.76	hemispherical	1	0	0	2	0	2.93
gilbert	14.555	14.33	1.02	1.33	163.84	spherical	1	0	0	1	0	5.44
gilbert	7.27	7.27	1	5.94	39.5	oblate	0	0	0	2	0	1.99
gilbert	8.4	8.08	1.04	8.08	62.07	conovoid hemispherical	1	0	0	2	0	3.79
gilbert	8.01	6.69	1.2	6.69	49.65	hemispherical	1	0	0	2	0	2.83
gilbert	12.79	10.98	1.16	10.98	119.09	ovoid	1	0	0	1	0	4.51
gilbert	7.18	7.18	1	5.02	29.29	hemispherical	1	0	0	2	0	2.63
gilbert	5.94	5.94	1	5.21	30.51	hemispherical	1	0	0	2	0	2.98
gilbert	4.56	4.56	1	2.42	8.18	hemispherical	1	0	0	2	0	1.19
gilbert	8.7	8.39	1.04	8.39	34.95	hemispherical	1	0	0	2	0	3.73
gilbert	7.34	7.34	1	5.72	65.33	hemispherical	1	0	0	2	0	2.81
gilbert	14.25	11.89	1.2	11.89	133.04	ovoid	2	0	0	1	0	6.04
gilbert	6.78	6	1.13	5.51	30.9	oblate	2	0	0	2	0	3.11
gilbert	13.72	11.68	1.17	11.68	131.85	conovoid ovoid	2	0	0	1	0	5.14
gilbert	16.01	12.44	1.29	12.4	167.1	ovoid	0	0	0	1	0	7.29
gilbert	10.25	9.22	1.11	9.22	84.46	ovoid	1	0	0	1	0	3.59
gilbert	17	14.56	1.17	14.56	166.92	ovoid	0	0	0	1	0	8.34
gilbert	15.12	13.58	1.11	13.58	154.6	ovoid	1	0	0	1	0	7.76
gilbert	7.74	7.74	1	5.42	30.66	hemispherical	1	0	0	2	0	2.63

gilbert	12.54	10.08	1.24	10.08	96.89	prolate	0	4.32	2	1	0	4.22
gilbert	8.31	8.16	1.02	8.16	51.53	oblate	2	0	0	2	0	4.1
gilbert	7.16	5.08	1.41	5.08	20.2	conovoid oblate	2	0	0	2	0	1.88
gilbert	7.62	7.62	1	6.88	34.42	conovoid oblate	2	0	0	2	0	3.79
gilbert	10.02	9.38	1.07	9.38	75.18	conovoid ovoid	1	0	0	1	0	5.03
gilbert	9.44	9.38	1.01	9.38	83.58	ovoid	1	0	0	1	0	5.39
gilbert	12.13	10.86	1.12	10.86	95.93	ovoid	1	0	0	1	0	5.53
gilbert	4.75	4.53	1.05	3	24.19	oblate	2	0	0	2	0	2.34
gilbert	9.76	8.54	1.14	8.54	67.71	conovoid ovoid	1	0	0	1	0	3.17
gilbert	5.44	5.44	1	2.06	12.16	hemispherical	1	0	0	2	0	1.65
gilbert	10.04	8.57	1.17	8.57	68.53	ovoid	1	0	0	1	0	4.1
gilbert	17.26	14.72	1.17	14.72	205.35	ovoid	2	2.63	1	1	0	7.87
gilbert	18.2	14	1.3	14	196.58	ovoid	1	5	3	1	0	9.74
gilbert	13.08	11.6	1.13	11.6	124.23	ovoid	1	0	0	1	0	6.06
gilbert	8.15	4.45	1.83	4.45	27	hemispherical	1	0	0	2	0	2.7
gilbert	5.49	5.46	1.01	5.46	25.01	spherical	0	0	0	1	0	2.05
gilbert	11.23	9.05	1.24	9.05	89	spherical	0	0	0	1	0	4.73
gilbert	7.84	7.76	1.01	7.76	46.55	oblate	1	0	0	2	0	2.61
gilbert	7.18	6.74	1.07	6.74	35.18	conovoid oblate	2	0	0	2	0	2.71
gilbert	6.64	5.95	1.12	5.95	33.45	conovoid spherical	2	0	0	1	0	2.49
gilbert	10.67	10.34	1.03	10.34	99.27	spherical	2	0	0	1	0	5.16
gilbert	7.07	6.37	1.11	6.37	32.19	spherical	2	0	0	1	0	1.97
gilbert	6.86	5.63	1.22	5.63	26.39	spherical	2	0	0	1	0	1.95
gilbert	7.66	6.78	1.13	6.78	41.03	spherical	1	0	0	1	0	1.95
gilbert	6.8	6.74	1.01	6.74	38.36	spherical	1	0	0	1	0	1.57
gilbert	9.13	8.34	1.09	8.34	68.58	hemispherical	1	0	0	2	0	3.07
gilbert	6.83	6.1	1.12	6.1	34.08	hemispherical	1	0	0	2	0	2.1
gilbert	5.29	5.09	1.04	5.09	22.94	hemispherical	1	0	0	2	0	1.54
eremo	3.99	3.99	1	3.99	12.61	spherical	0	0	0	1	0	1.64
eremo	2	2	1	2	3.39	spherical	0	0	0	1	0	0.7
eremo	1.88	1.88	1	1.88	4.2	spherical	0	0	0	1	0	0.74
eremo	4.73	4.73	1	4.73	18.9	spherical	0	0	0	1	0	2.05
eremo	4.65	3.91	1.19	3.91	14.46	prolate	0	0	0	1	0	1.35
eremo	3.89	3.89	1	3.89	11.09	spherical	0	0	0	1	0	1.17
eremo	4.63	4.63	1	4.63	16.53	spherical	0	0	0	1	1	2.05
eremo	3.1	3.1	1	3.1	9	spherical	0	0	0	1	0	1.25
eremo	4.9	4.9	1	4.9	20.14	spherical	0	0	0	1	0	2.65
eremo	2.76	2.76	1	2.76	6.57	spherical	0	0	0	1	0	1.74
eremo	3.38	3.38	1	3.38	9.97	spherical	0	0	0	1	0	1.44
eremo	2.63	2.63	1	2.63	5.17	spherical	0	0	0	1	0	1.13
eremo	4.13	4.13	1	4.13	13.66	spherical	0	0	0	1	0	2.67
eremo	2.58	2.58	1	2.58	5.1	spherical	0	0	0	1	0	1.3
eremo	4.5	4.1	1.1	4.1	14.31	prolate	0	0	0	1	0	1.74
eremo	4.05	3.96	1.02	3.96	12.67	prolate	1	0	0	1	1	2.07

eremo	3.05	3.05	1	3.05	9	spherical	0	0	0	1	0	1.65
eremo	4.06	3.83	1.06	3.83	13.63	prolate	0	0	0	1	0	1.85
eremo	3.42	3.42	1	3.42	11	spherical	0	0	0	1	0	1.14
eremo	4.32	4.32	1	4.32	15	spherical	0	0	0	1	0	1.81
eremo	4.12	4.12	1	4.12	14.91	spherical	0	0	0	1	1	1.7
eremo	3.15	3.15	1	3.15	9.46	spherical	0	0	0	1	0	1.43
eremo	3.43	3.43	1	3.43	10.89	spherical	1	0	0	1	0	1.95
eremo	3.89	3.89	1	3.89	12.97	spherical	0	0	0	1	1	1.79
eremo	3.36	3.36	1	3.36	9.65	spherical	1	0	0	1	0	1.45
eremo	2.77	2.77	1	2.77	7.88	spherical	1	0	0	1	0	1.44
eremo	4.43	4.43	1	4.43	15	spherical	0	0	0	1	0	2.06
eremo	2.78	2.78	1	2.78	7.15	spherical	0	0	0	1	0	1.55
eremo	2.58	2.58	1	2.58	5.78	spherical	0	0	0	1	0	0.93
eremo	4.11	4.11	1	4.11	12.89	spherical	1	0	0	1	1	2.05
eremo	2.4	2.4	1	2.4	4.68	spherical	0	0	0	1	0	0.83
eremo	2.89	2.89	1	2.89	7.61	spherical	1	0	0	1	0	1.14
eremo	3.07	3.07	1	3.07	7.23	spherical	0	0	0	1	0	1.44
eremo	2.39	2.39	1	2.39	4.55	spherical	0	0	0	1	0	1.13
eremo	2.47	2.47	1	2.47	5.08	spherical	0	0	0	1	0	1.02
eremo	4.58	3.86	1.19	3.86	14	prolate	0	0	0	1	0	2.46
eremo	5.14	5.14	1	5.14	21	spherical	0	0	0	1	0	2.25
eremo	2.7	2.7	1	2.7	7	spherical	0	0	0	1	0	1.54
eremo	3.89	3.89	1	3.89	12	spherical	0	0	0	1	0	1.64
eremo	3.69	3.69	1	3.69	10.55	spherical	0	0	0	1	0	1.74
eremo	3.49	3.49	1	3.49	7.6	spherical	0	0	0	1	0	1.55
eremo	3.07	2.17	1.41	2.17	5.64	hemispherical	1	0	0	2	0	1.62
eremo	2.17	2.17	1	2.17	3.43	spherical	0	0	0	1	0	1.03
eremo	7.07	6.37	1.11	6.37	17.69	spherical	0	0	0	1	0	1.95
eremo	6.86	5.63	1.22	5.63	8.51	spherical	0	0	0	1	0	1.23
eremo	7.66	6.78	1.13	6.78	6.27	spherical	0	0	0	1	0	0.92
eremo	6.8	6.74	1.01	6.74	12.3	spherical	0	0	0	1	0	2.15
eremo	9.13	8.34	1.09	8.34	12.35	spherical	0	0	0	1	0	1.84
eremo	6.83	6.1	1.12	6.1	6	spherical	0	0	0	1	0	0.92
eremo	5.29	5.09	1.04	5.09	6.28	spherical	0	0	0	1	0	1.13
calpo	2.6	2.6	1	2.6	5.33	spherical	0	0	0	1	0	1.25
calpo	2.16	1.75	1.23	1.75	3.49	ovoid	0	0	0	1	0	0.72
calpo	2.36	2.36	1	2.36	4.13	spherical	0	0	0	1	0	0.83
calpo	2.66	2.66	1	2.66	6	spherical	0	0	0	1	0	1.52
calpo	1.84	1.84	1	1.84	3.13	spherical	0	0	0	1	0	1.33
calpo	2.29	2.29	1	2.29	4.4	spherical	0	0	0	1	0	1.33
calpo	2.27	2.27	1	2.27	4	spherical	0	0	0	1	0	0.7
calpo	1.81	1.81	1	1.81	3.34	spherical	0	0	0	1	0	0.93
calpo	1.69	1.69	1	1.69	2.3	spherical	0	0	0	1	0	0.94
calpo	2.15	2.15	1	2.15	3.12	spherical	0	0	0	1	0	0.93
calpo	2.66	2.66	1	2.66	3.52	spherical	0	0	0	1	0	1.59
calpo	2.43	2.43	1	2.43	3.51	spherical	0	0	0	1	0	0.93

calpo	1.92	1.92	1	1.92	3.29	spherical	0	0	0	1	0	1.23
calpo	2.16	2.16	1	2.16	4.6	spherical	0	0	0	1	0	1.13
calpo	2.05	2.05	1	2.05	3.31	spherical	1	0	0	1	0	1.05
calpo	2.87	2.87	1	2.87	6.4	spherical	0	0	0	1	0	1.33
calpo	2.05	2.05	1	2.05	4	spherical	0	0	0	1	0	0.92
calpo	1.96	1.96	1	1.96	3.43	spherical	0	0	0	1	0	0.61
calpo	2.35	2.35	1	2.35	4.35	spherical	0	0	0	1	0	0.92
calpo	2.15	2.15	1	2.15	5.1	spherical	0	0	0	1	0	0.83
calpo	1.95	1.95	1	1.95	4.08	spherical	0	0	0	1	0	0.72
calpo	2.25	2.25	1	2.25	6.11	spherical	0	0	0	1	0	1.11
calpo	2.25	2.25	1	2.25	4.91	spherical	0	0	0	1	0	1.03
calpo	2.46	2.46	1	2.46	4.59	spherical	0	0	0	1	0	1.03
calpo	1.95	1.95	1	1.95	3.78	spherical	0	0	0	1	0	0.93
calpo	2.35	2.35	1	2.35	4.23	spherical	0	0	0	1	0	0.92
calpo	2.85	2.85	1	2.85	8.51	spherical	0	0	0	1	0	1.85
calpo	2.36	2.36	1	2.36	4.51	spherical	0	0	0	1	0	1.23
calpo	1.95	1.95	1	1.95	4.3	spherical	1	0	0	1	0	0.72
calpo	1.65	1.65	1	1.65	2.28	spherical	0	0	0	1	0	0.72
calpo	2.57	2.57	1	2.57	5.33	spherical	0	0	0	1	0	1.2
calpo	2.76	2.76	1	2.76	6.52	spherical	0	0	0	1	0	1.33
calpo	2.77	2.77	1	2.77	6.09	spherical	0	0	0	1	0	1.57
calpo	1.45	1.45	1	1.45	1.98	spherical	0	0	0	1	0	0.72
calpo	2.46	2.46	1	2.46	5.3	spherical	0	0	0	1	0	0.92
calpo	1.95	1.95	1	1.95	2.6	spherical	0	0	0	1	0	0.82
calpo	2.15	2.15	1	2.15	3.52	spherical	0	0	0	1	0	0.83
calpo	1.74	1.74	1	1.74	2.46	spherical	0	0	0	1	0	0.61
calpo	2.98	2.98	1	2.98	5.44	spherical	0	0	0	1	0	1.02
calpo	1.95	1.95	1	1.95	4.11	spherical	0	0	0	1	0	1.2
calpo	2.07	2.07	1	2.07	3.96	spherical	0	0	0	1	0	1.04
calpo	2.46	2.05	1.2	2.05	5.87	hemispherical	1	0	0	2	0	1.02
calpo	2.53	2.05	1.23	2.05	6.1	ovoid	0	0	0	1	0	1
calpo	2.96	2.38	1.24	2.38	5.72	prolate	0	0	0	1	0	1.39
calpo	2.82	2.82	1	2.82	6.15	spherical	0	0	0	1	0	1.41
calpo	2.31	2.24	1.03	2.24	5.34	hemispherical	1	0	0	1	0	1.15
calpo	2.76	1.94	1.42	1.94	4.03	hemispherical	1	0	0	1	0	1.38
calpo	2.68	2.46	1.09	2.46	3.86	hemispherical	1	0	0	1	0	1.34
calpo	2.96	2.1	1.41	2.1	4.45	ovoid	0	0	0	1	0	1.48
calpo	2.5	2.5	1	2.5	4.84	spherical	0	0	0	1	0	1.25
sarcoph	14.16	14.16	1	12.57	143.83	quadrangular	6	0	0	3	0	5.92
sarcoph	20.9	13.71	1.52	13.71	192.11	polygon	7	0	0	3	0	5.64
sarcoph	17.49	12.45	1.4	12.45	153.67	polygon	8	0	0	3	0	4.4
sarcoph	21.84	15.25	1.43	15.25	294.44	polygon	9	0	0	3	0	6.45
sarcoph	12.56	11.14	1.13	11.14	136.42	polygon	6	0	0	3	0	6.63
sarcoph	14.14	11.62	1.22	11.62	141.63	polygon	4	0	0	3	0	5.94
sarcoph	11.87	9.98	1.19	9.98	113.99	quadrangular	6	0	0	3	0	5.5
sarcoph	11.27	9.98	1.13	9.88	125.26	polygon	7	0	0	3	0	4.66

sarcoph	12.47	12.21	1.02	12.21	137.97	polygon	6	0	0	3	0	5.76
sarcoph	11.2	11.1	1.01	11.1	104	polygon	7	0	0	3	0	4.73
sarcoph	7.96	5.83	1.37	5	42.99	quadrangular	6	0	0	3	0	3
sarcoph	5.48	5.04	1.09	4.55	25	quadrangular	5	0	0	3	0	2.3
sarcoph	18.22	12.52	1.46	12.5	176	quadrangular	6	0	0	3	0	5.08
sarcoph	14.68	14.68	1	14.68	147	polygon	7	0	0	3	0	4.03
sarcoph	10.92	9.43	1.16	9.43	72	polygon	7	0	0	3	0	4.45
sarcoph	10.08	8.76	1.15	8.76	82	quadrangular	6	0	0	3	0	2.91
sarcoph	11.45	10.45	1.1	10.45	116	quadrangular	6	0	0	3	0	6.38
sarcoph	13.56	11.33	1.2	11.33	135.67	polygon	7	0	0	3	0	3.69
sarcoph	16.49	9.73	1.69	9.73	148	polygon concaveconvex	6	0	0	3	0	5.45
sarcoph	12.58	12.23	1.03	12.23	120.81	polygon	7	0	0	3	0	6
sarcoph	12.23	10	1.22	10	96.81	polygon	7	0	0	3	0	7.44
sarcoph	14.37	11.21	1.28	11.21	119.21	polygon	6	0	0	3	0	10.01
sarcoph	12.36	11.77	1.05	11.77	117.06	hemispherical	1	0	0	2	0	6.24
sarcoph	12.5	10.85	1.15	10.85	10.85	hemispherical	3	5.03	4	2	0	5.16
sarcoph	17	10.04	1.69	10.4	131.55	polygon	9	0	0	3	0	6.1
sarcoph	14.87	10.67	1.39	10.67	141.83	polygon	7	0	0	3	0	5.52
sarcoph	9.88	8.25	1.2	8.25	85.73	polygon	7	0	0	3	0	4.92
sarcoph	10.04	6.69	1.5	6.69	70.08	polygon	7	0	0	3	0	4.85
sarcoph	10.82	9.14	1.18	9.14	85.49	polygon	7	0	0	3	0	4.2
sarcoph	9.91	8.44	1.17	8.44	88.71	polygon	7	0	0	3	0	4.9
sarcoph	10.86	9.58	1.13	9.58	91.81	polygon	7	0	0	3	0	4.72
sarcoph	10.2	9.13	1.12	9.13	91.65	polygon	6	0	0	3	0	5.27
sarcoph	15.69	9.65	1.63	9.65	130.79	polygon concaveconvex	7	0	0	3	0	6.16
sarcoph	10.7	8.03	1.33	8.03	79.75	polygon	6	0	0	3	0	4.64
sarcoph	10.86	9.73	1.12	9.76	85.53	polygon	7	0	0	3	0	5.754
sarcoph	8.78	5.57	1.58	5.57	51.99	polygon	6	0	0	3	0	4.45
sarcoph	20.15	15.79	1.28	5.57	308.59	polygon	6	0	0	3	0	9.24
sarcoph	20.81	16.35	1.27	5.57	232.32	polygon	7	0	0	3	0	6.96
sarcoph	23.75	12.01	1.98	5.57	181.22	polygon	7	0	0	3	0	6.07
sarcoph	17.1	14.59	1.17	5.57	205.63	polygon	9	0	0	3	0	13.16
sarcoph	19.99	13.95	1.43	5.57	163.25	polygon	9	0	0	3	0	5.95
sarcoph	16.41	12.4	1.32	5.57	193.32	polygon	6	0	0	3	0	9.76
sarcoph	17.72	15	1.18	5.57	275.54	polygon	7	0	0	3	0	9.31
sarcoph	18.26	16.95	1.08	7.53	61.53	polygon	6	0	0	3	0	3.58
sarcoph	11	9.09	1.21	9.09	69.42	polygon	6	0	0	3	0	3.62
sarcoph	9.63	9.45	1.02	9.45	82.19	polygon	7	0	0	3	0	4.92
sarcoph	12.47	10.5	1.19	10.5	102.83	polygon	7	0	0	3	0	4.7
sarcoph	9.01	8.87	1.02	8.87	55.17	polygon	7	0	0	3	0	4.83
sarcoph	9.41	7.81	1.2	7.81	60.64	polygon	5	0	0	3	0	4.5
sarcoph	20.15	15.79	1.28	10	258.38	polygon	9	0	0	3	0	9.77
xylia	6.27	5.27	1.19	5.27	26.26	prolate	0	0	0	1	0	1.77
xylia	2.98	2.7	1.1	2.7	6.67	prolate	0	0	0	1	0	0.93

xylia	4.27	3.69	1.16	3.69	13.63	prolate	0	0	0	1	0	1.23
xylia	2.9	2.26	1.28	2.69	5.15	hemispherical	1	0	0	2	0	1.13
xylia	2.81	2.59	1.08	2.59	5.35	hemispherical	1	0	0	2	0	1.3
xylia	4.05	2.7	1.5	2.7	8.46	ovoid	0	0	0	1	0	1.47
xylia	3.38	3.07	1.1	3.07	8.27	prolate	1	0	0	1	0	2.27
xylia	2.87	2.87	1	2.87	7	spherical	0	0	0	1	0	1.03
xylia	4.15	3.69	1.12	3.69	11.74	ovoid	0	0	0	1	0	1.79
xylia	2.77	2.66	1.04	2.66	5	prolate	0	0	0	1	0	0.93
xylia	5.34	3.62	1.48	3.62	14.56	ovoid	0	0	0	1	0	1.96
xylia	3.38	3.28	1.03	3.28	10.53	spherical	0	0	0	1	0	1.62
xylia	5.2	5.2	1	5.2	19	spherical	0	0	0	1	0	2.32
xylia	5.25	4.49	1.17	4.49	16.75	ovoid	0	0	0	1	0	1.64
xylia	4.78	4.78	1	4.78	20	spherical	1	0	0	1	0	1.85
xylia	3.38	3.07	1.1	3.07	8.9	prolate	0	0	0	1	0	1.64
xylia	4.76	3.71	1.28	3.71	14.12	prolate	1	0	0	1	0	1.89
xylia	4.22	4.13	1.02	4.13	15.62	ovoid	2	0	0	1	0	2.17
xylia	3.4	3.18	1.07	3.18	9.08	spherical	1	0	0	1	0	1.65
xylia	5.6	4.65	1.2	4.65	21.12	prolate	1	0	0	1	0	2.29
xylia	4.45	3.44	1.29	3.44	11.84	ovoid	1	0	0	1	0	1.42
xylia	4.18	4.18	1	4.18	13.66	spherical	0	0	0	1	0	1.44
xylia	2.99	2.64	1.13	2.64	6.71	prolate	1	0	0	1	0	1.02
xylia	3.2	3.2	1	3.2	8.57	spherical	1	0	0	1	0	1.85
xylia	3.83	2.11	1.82	2.11	10.05	hemispherical	1	0	0	2	0	1.45
xylia	4.06	3.21	1.26	3.21	10.82	hemispherical	1	0	0	2	0	2.25
xylia	5.31	4.12	1.29	4.12	15.35	prolate	1	0	0	1	0	1.59
xylia	5.77	5.04	1.14	5.04	23.53	prolate	1	0	0	1	0	2.16
xylia	4.22	3.21	1.31	3.21	10.42	ovoid	0	0	0	1	0	1.64
xylia	6	4.51	1.33	4.51	20.11	ovoid	1	0	0	1	0	2.11
xylia	5.13	2.98	1.72	2.98	15.29	hemispherical	1	0	0	2	0	1.74
xylia	5.45	4.18	1.3	4.18	17.82	prolate	1	0	0	1	0	3.18
xylia	2.62	2.62	1	2.62	5.76	spherical	0	0	0	1	0	0.82
xylia	2.2	2.2	1	2.2	4	spherical	0	0	0	1	0	1
xylia	4.93	4.43	1.11	4.43	17	spherical	1	0	0	1	0	2.11
xylia	6.21	5.51	1.13	5.51	29.98	prolate	1	0	0	1	0	2.05
xylia	4.64	3.55	1.31	3.55	11.17	ovoid	1	0	0	1	0	0.72
xylia	5.45	4.03	1.35	4.03	16.51	ovoid	1	0	0	1	0	1.13
xylia	3.84	3.26	1.18	3.26	11.71	prolate	1	0	0	1	0	1.55
xylia	6.56	3.43	1.91	3.43	6.56	prolate	2	0	0	2	0	1.3
xylia	4.6	4.34	1.06	4.34	17.95	prolate	1	0	0	1	0	1.95
xylia	4.61	3.78	1.22	3.78	14.33	prolate	0	0	0	1	0	1.74
xylia	3.92	3.13	1.25	3.13	10.24	ovoid	2	0	0	1	0	1.39
xylia	5.62	5.43	1.03	5.43	25.45	ovoid	1	0	0	1	0	1.84
xylia	4.5	3.33	1.35	3.33	10	ovoid	0	0	0	1	0	0.94
xylia	5.02	4.7	1.07	4.7	22.2	spherical	2	0	0	1	0	1.55
xylia	2.78	2.36	1.18	2.36	8.15	spherical	2	0	0	1	0	1.33
xylia	2.97	2.46	1.21	2.46	6	spherical	1	0	0	1	0	1.33

xylia	3.09	2.87	1.08	2.87	7.75	spherical	1	0	0	1	0	1.57
xylia	3.85	3.25	1.18	3.25	11.43	spherical	1	0	0	1	0	1.25
treculia	8.91	5.07	1.76	5.07	39.15	ovoid	0	0	0	1	0	3.63
treculia	7.5	4.92	1.52	4.92	25.04	oblate	0	0	0	1	0	3.4
treculia	8.38	6.99	1.2	6.99	38.74	conovoid ovoid	1	0	0	1	0	3.42
treculia	4.81	4.31	1.12	4.31	12.82	triangular	3	0	0	2	0	1.9
treculia	6.97	5.21	1.34	5.21	29.15	ovoid	0	0	0	1	0	2.53
treculia	11.6	8.22	1.41	8.22	66.6	ovoid	0	0	0	1	0	4.1
treculia	7.83	5.74	1.36	5.74	30.67	oblate	0	0	0	1	0	3.04
treculia	4.94	4.18	1.18	4.18	14.95	conovoid oblate	0	0	0	1	0	2.47
treculia	6.91	6.11	1.13	6.11	36.2	conovoid ovoid	0	0	0	1	0	2.75
treculia	7.91	5.86	1.35	5.86	29	ovoid	0	0	0	1	0	3.21
treculia	6.52	4.92	1.33	4.92	27.78	ovoid	1	0	0	1	0	2.49
treculia	5.78	4.57	1.26	4.57	23.98	ovoid	1	0	0	1	0	1.65
treculia	8.43	5.91	1.43	5.91	34.9	ovoid	0	0	0	1	0	3.19
treculia	5.93	5.03	1.18	5.03	27.5	ovoid	1	0	0	1	0	2.97
treculia	6.16	4.97	1.24	4.97	22.8	ovoid	0	0	0	1	0	1.95
treculia	5.12	4.81	1.06	4.81	18.45	ovoid	0	0	0	1	0	2.05
treculia	7.41	5.74	1.29	5.74	35.56	ovoid	0	0	0	1	0	2.95
treculia	6.96	5.65	1.23	5.65	31.28	ovoid	0	0	0	1	0	1.87
treculia	15.73	8.65	1.82	8.65	112.17	pyriform	0	0	0	1	0	6.65
treculia	6.69	4.57	1.46	4.57	21.49	oblate	0	0	0	1	0	2.66
treculia	7.36	5	1.47	5	29.18	conovoid pyriform	0	0	0	1	0	2.9
treculia	4.99	4.36	1.14	4.36	20.12	spherical	1	0	0	1	0	1.88
treculia	6.7	6.42	1.04	6.42	33.52	ovoid	0	0	0	1	0	3.08
treculia	6.92	5.28	1.31	5.28	28.34	ovoid	0	0	0	1	0	2.66
treculia	9.03	7.33	1.23	7.33	50.23	ovoid	0	2.03	2	1	0	2.82
treculia	9.42	7.99	1.18	7.99	59.23	plano-convex	0	1.85	1	1	0	3.66
treculia	11.27	7.33	1.54	7.33	67.5	ovoid	0	0	0	1	0	4.77
treculia	6.7	6.05	1.11	6.05	31.26	ovoid	0	0	0	1	0	3.35
treculia	8.46	6.53	1.3	6.53	39.46	ovoid	0	0	0	1	0	2.25
treculia	7.67	6.64	1.16	6.64	35.62	prolate	0	0	0	1	0	2.77
treculia	6.65	5.32	1.25	5.32	28.98	ovoid	1	0	0	1	0	2.66
treculia	10.58	7.47	1.42	7.47	60.42	ovoid	0	0	0	1	0	4.55
treculia	5.68	5.31	1.07	5.31	23.85	hemispherical	1	0	0	1	0	2.07
treculia	6.43	5.09	1.26	5.09	24.92	ovoid	0	0	0	1	0	1.85
treculia	8.99	6.33	1.42	6.33	46.95	ovoid	0	0	0	1	0	4.54
treculia	7.97	5.58	1.43	5.58	33.01	prolate	0	0	0	1	0	2.44
treculia	6.11	5.74	1.06	5.74	28.51	hemispherical	0	0	0	1	1	2.93
treculia	7.15	5.47	1.31	5.47	31.15	ovoid	1	0	0	1	0	3.21
treculia	7.34	5.6	1.31	5.6	32.68	ovoid	0	0	0	1	0	3.2
treculia	8.17	4.98	1.64	4.98	33.67	plano-convex	0	0	0	1	0	3.98
treculia	3.08	2.97	1.04	2.97	7.5	spherical	0	0	0	1	0	1.23
treculia	3.29	2.97	1.11	2.97	8.41	spherical	0	0	0	1	0	1.43
treculia	7.17	5.19	1.38	5.19	26.68	ovoid	0	7.7	5.84	1	0	2.83

treculia	12.47	10.07	1.24	10.07	89.85	ovoid	0	0	0	1	0	5.85
treculia	7.23	7.06	1.02	7.06	37.1	spherical	0	0	0	1	1	3.48
treculia	13.32	10.14	1.31	10.14	93.77	ovoid	0	0	0	1	0	6.33
treculia	5.96	4.1	1.45	4.1	20.23	hemispherical	0	0	0	1	0	2.98
treculia	5.04	4.42	1.14	4.42	18.39	hemispherical	0	0	0	1	0	2.52
treculia	9.73	6.58	1.48	6.58	47.73	ovoid	0	0	0	1	0	3.91
treculia	9.63	8.5	1.13	8.5	58.52	prolate	1	0	0	1	0	4.1

Appendix table 7: Microremain variables used for identification model.

Variable	Description	Metric
Shared variables		
Length	Maximum diameter (μm), measured from spine tip to spine tip	Numeric (μm)
Width	Maximum diameter (μm) perpendicular to the maximum diameter	Numeric (μm)
LW Ratio	Length to width ratio	Numeric (μm)
Area	Total observable area in a 2D plane	Numeric (μm^2)
Shape	Ovoid, elongate ovoid, pyriform, oblate conovoid, elongate conovoid, hemispherical, triangular, quadrangular, polygon, polygon concave-convex, angularpoint, angulate elongate, ovoid concave-convex, prolate concave	16 descriptors
Starch specific		
Facets	Total number of maximum observable facets	Counts
Lam	Lamellae presence and distinctness	0-3 scale
Dist	Distance of longest arm of cross observed on cross-polarised light	Numeric
Striaelen	Average length of radial striae/cracks visible on the starch	Numeric
Striaeno	Number of radial striae/cracks visible on the starch	Counts
Type	simple, semi-compound or compound classification	3 descriptors
Phytolith specific		
Irregul	Measure of phytolith surface irregularity	0-4 scale
Spinelen	Estimated mean spine length: the mean length of spines approximately parallel with the viewing plane	Numeric (μm)
Spineno	Number of spines visible in entirety in the viewing field. Spines were counted value if their base was not obscured by the phytolith.	Numeric
Conjoined	Score of phytolith attachment to other phytoliths	1-2 scale

Appendix table 8: Random forest phytolith identification model. Using spheroid, globular morphotypes only. Identification rate=rate of successful identification per genus.

Number of variables tried at each split (mtry)						15
Tune length						3
Tree number						500
Out of bag estimate of error rate						25.75 %
Confusion matrix						
	Aframomum	*Ancistrophyllum*	*Elaeis*	*Eremospatha*	*Sarcophrynium*	Identification rate
Aframomum	39	3	1	5	2	0.78
Ancistrophyllum	3	32	3	12	0	0.64
Elaeis	2	3	40	5	0	0.8

Eremospatha	5	11	1	33	0	0.66
Sarcophrynium	2	0	1	0	47	0.94

Appendix table 9: Random forest starch identification model. Identification rate=rate of successful identification per genus.

Number of variables tried at each split (mtry)														14
Tune length														3
Tree number														500
Out of bag estimate of error rate														32.77 %
Confusion matrix	*Aframomum*	*Calpocalyx*	*Cola*	*Coula*	*Eremospatha*	*Gilbertiodendron*	*Napoleona*	*Panda*	*Piper*	*Sacoglottis*	*Sarcophrynium*	*Treculia*	*Xylia*	Identification rate
Aframomum	45	1	0	0	0	0	0	0	2	0	0	1	1	0.9
Calpocalyx	0	40	0	0	7	0	0	2	0	0	0	0	1	0.8
Cola	0	0	26	0	0	3	0	2	0	5	0	11	3	0.52
Coula	0	0	0	44	3	0	0	0	0	2	0	0	1	0.88
Eremospatha	0	10	0	0	31	0	0	7	0	0	0	0	2	0.62
Gilbertiodendron	0	0	4	0	0	38	1	0	0	7	0	0	0	0.76
Napoleona	0	2	0	0	1	1	18	7	0	2	0	8	11	0.36
Panda	0	3	1	0	6	0	11	11	0	0	0	6	12	0.22
Piper	2	0	0	0	0	0	0	0	47	1	0	0	0	0.94
Sacoglottis	0	0	0	0	0	6	0	0	0	43	0	0	1	0.86
Sarcophrynium	0	0	0	0	0	2	0	0	1	0	47	0	0	0.94
Treculia	0	0	7	0	0	2	4	6	0	1	0	26	4	0.52
Xylia	0	3	0	0	6	0	7	7	0	3	0	3	21	0.42

Appendix table 10: All recovered microremains in each dental calculus sample. M=many.

	Chimp	Tina	Agathe	Rubra	Mkubwa	Clyde	Kendo	Leo	Lefkas	Zerlina	Castor	Fanny	Goma	Hector	Brutus	Noah	Ondine	Venus	Bijou	Dorry	Oreste	13438	Loukou	Piment	Leonard	Bambou	Ophelia
Starches		4	9	7	-	4	-	5	11	-	25	54	167	2	3	5	-	16	10	4	2	15	1	-	-	-	-
Possible starches		4	4	3	-	-	-	-	-	-	-	-	14	0	11	1	-	2	-	1	2	-	2	-	-	-	1
Phytoliths	Spheroid echinate	14	71	90	4	18	18	100	10	110	55	98	70	21	129	30	15	58	72	11	34	69	8	-	-	-	-
	Long cell	3	3	10	1	2	12	9	3	17	-	3	14	-	4	2	1	4	1	9	2	3	3	-	-	-	-
	Cylindroid	1	-	1	-	-	2	1	-	-	2	-	-	-	1	-	1	4	2	1	-	-	4	-	-	-	-
	Grass short cell	-	3	2	-	3	2	1	-	-	1	-	1	-	7	2	-	3	-	2	-	-	1	-	-	-	-
	Hair cell	-	2	3	3	-	6	1	-	3	3	1	3	1	6	6	4	7	4	6	-	3	3	-	-	-	-
	Acicular hair cell	1	-	-	-	-	-	-	-	1	-	1	2	-	-	1	-	3	1	-	2	-	-	-	-	-	-
	Bulliform	3	3	3	-	-	10	3	1	1	-	5	3	1	4	1	2	4	2	4	1	1	1	-	-	-	-
	Parallepipedal	-	2	3	1	2	11	5	2	6	-	-	1	-	4	2	1	5	3	7	-	2	-	-	-	-	-
	Plate	1	-	1	-	-	2	1	1	1	-	-	1	-	2	-	-	1	-	2	-	-	-	-	-	-	-
	Undenti. phytolith	6	9	7	2	1	7	5	2	7	4	-	2	1	3	3	1	7	2	15	1	2	2	-	-	-	-
	Tracheid	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-
	Ellipsoid	-	-	-	-	-	-	-	-	1	-	1	1	-	1	-	1	1	-	-	-	1	-	-	-	-	-
Unsilicified plants cells	Monocot	-	1	1	-	-	-	-	-	3	1	-	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-
	Dicot	-	3	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-
	Unclear	6	10	13	-	-	6	1	6	3	3	7	4	2	14	14	1	2	12	3	1	4	1	-	-	1	-
	Stoma	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
	Dicot stoma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9	-	-	-	-	-	1	-	-	-	-
	Palm	-	-	-	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-
	Spiral thickening	-	-	13	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-	-	2	-	-	-	-	-
	Honeycomb sheet	-	-	-	-	-	2	-	-	-	-	-	2	-	3	2	-	-	1	-	-	1	-	-	-	-	-
	Stellate hair	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-	-	-	-
	Hairs	-	8	1	1	3	14	8	7	1	2	1	2	2	1	6	-	-	2	-	-	3	-	-	-	-	-

	Jigsaw	-	-	2	-	-	-	-	-	-	-	-	3	-	-	9	-	-	4	-	-	-	-	-	-	-	-
	Tracheid	-	-	-	-	-	1	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fungal spore		1	-	M	-	-	-	-	M	M	M	-	M	M	M	M	-	-	-	-	-	M	M	-	-	-	1
Diatom		-	-	-	1	-	-	1	1	-	5	1	1	1	1	-	-	1	2	-	-	1	-	-	-	-	-
Pollen		-	-	-	-	-	-	1	-	-	-	5	1	3	-	-	-	2	5	2	-	2	-	-	-	-	-
Cystolith		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-	-
Barbule		-	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-
Indeterminate rod		1	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Possible starch amyloplast (Aframomum?)		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxalate																						15	-				
Falcates		-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cup hair		-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feather hair		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mammal hair		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insects		-	-	-	-	-	-	-	-	1	7	2	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-
Insect hairs		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
insect scale		-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Unknown		4	5	7	2	-	-	4	3	-	5	3	2	2	5	4	-	1	2	1	1	2	-	-	-	-	-
Phytoliths included in identification model		3	6	7	-	3	-	5	8	-	22	38	103	2	4	-	-	16	9	4	2	N/A	N/A	-	-	-	-
Starches included in identification model		9	52	104	3	9	16	94	11	76	69	124	129	21	93	27	9	47	63	86	35	N/A	N/A	-	-	-	-

Appendix table 11: Counts of identified genera in Taï Chimpanzee calculus samples.

Name	Phytolith Genera count	% of total genera	Starch Genera count	% of total genera
Ophelia	0	0	0	0
Leonardo	0	0	0	0
Bambou	0	0	0	0
Piment	0	0	0	0
Oreste	5	100	2	15.38
Hector	3	60	2	15.38
Noah	5	100	0	0
Lefkas	2	40	4	30.77
Tina	3	60	2	15.38
Dorry	4	80	3	23.08
Zerlina	4	80	0	0
Clyde	3	60	3	23.08
Agathe	4	80	4	30.77
Bijou	5	100	5	38.46
Leo	4	80	2	15.38
Castor	5	100	3	23.08
Fanny	4	80	10	76.92
Kendo	5	100	0	0
Venus	4	80	5	38.46
Goma	5	100	9	69.23
Rubra	5	100	5	38.46
Ondine	3	60	0	0
Mkubwa	2	40	0	0
Brutus	5	100	3	23.08

Appendix table 12: Measurements of phytoliths from calculus. ER=*Eremospatha*, AF=*Aframomum*, AN=*Laccosperma*, EL=*Elaeis*, SA=*Sarcophrynium*.

Chimpanzee name	Length	Width	LW Ratio	Brea	Area	Irregul	Spinelen	Spineno	Spineang	Shape	Conjoined	Plant genera	Certainty score
Leo	7.89	7.68	1.03	7.68	48.0	3	0.92	6	99	spherical	1	ER	0.53
Leo	9.74	9.43	1.03	9.43	79.6	3	0.92	10	91	spherical	1	ER	0.49
Leo	6.59	4.18	1.58	4.18	21.7	3	0.65	8	94	ovoid	1	ER	0.60
Leo	8.5	6.41	1.33	6.41	46.2	4	0.51	9	110	ovoid	1	AF	0.42
Leo	6.67	6.39	1.04	6.39	36.6	3	0.88	8	98	spherical	1	ER	0.77
Leo	3.1	2.71	1.14	2.71	7.4	2	0.4	5	88	polygon	1	ER	0.56
Leo	6.84	5.74	1.19	5.74	33.0	2	0.75	6	110	spherical	1	ER	0.77
Leo	4.72	4.72	1	4.72	19.2	4	0.91	8	82	polygon	1	ER	0.40
Leo	10.49	9.08	1.16	9.08	76.6	3	1.04	6	77	spherical	1	AN	0.56

Leo	12.01	8.71	1.38	8.71	87.6	2	0.8	7	131	prolate	1	EL	0.41
Leo	13.63	13.42	1.02	13.42	140.7	3	1.33	13	95.81	spherical	1	EL	0.77
Leo	5.51	4.58	1.2	4.58	22.8	2	0.4	5	113	spherical	1	ER	0.61
Leo	7.97	3.42	2.33	3.42	28.1	4	0.7	10	80	prolate	1	EL	0.69
Leo	9.56	7.17	1.33	7.17	45.6	4	0.87	8	90	ovoid	1	ER	0.53
Leo	6.4	4.92	1.3	4.92	28.8	2	0.55	7	106	spherical	1	ER	0.53
Leo	5.03	4.22	1.19	4.22	16.8	2	0.66	7	113	spherical	1	ER	0.94
Leo	17.86	11.05	1.62	11.05	147.0	2	0.58	14	103	ovoid	1	EL	0.65
Leo	11.28	10.86	1.04	10.86	98.2	2	0.88	15	88	spherical	1	EL	0.77
Leo	8.64	6.45	1.34	6.45	50.3	3	0.92	7	92	ovoid	1	ER	0.42
Leo	8.55	7.5	1.14	7.5	61.2	4	0.66	7	93	spherical	1	EL	0.39
Leo	5.97	5.07	1.18	5.07	23.8	4	0.9	8	126	polygon	1	ER	0.74
Leo	8.47	7.65	1.11	7.65	52.5	3	0.78	8	89	spherical	1	ER	0.44
Leo	7.93	7.39	1.07	7.39	48.9	2	0.78	11	116	spherical	1	ER	0.39
Leo	10.07	9.63	1.05	9.63	87.8	3	1.28	12	101	spherical	1	EL	0.51
Leo	7.08	5.77	1.23	5.77	34.6	3	0	0	0	polygon	1	AF	0.99
Leo	8.48	6.69	1.27	6.69	44.5	2	0.51	11	94	prolate	1	EL	0.90
Leo	8.76	5.03	1.74	5.03	33.5	3	0.7	10	83	prolate	1	EL	0.56
Leo	8.39	7.79	1.08	7.79	59.0	3	0.87	9	107	spherical	1	ER	0.46
Leo	8.8	8.55	1.03	8.55	62.6	3	0.94	8	98	spherical	1	ER	0.42
Leo	8.66	8.06	1.07	8.06	56.0	3	0.87	8	80	spherical	1	ER	0.38
Leo	11.77	8.89	1.32	8.89	73.0	3	0.97	16	125	prolate	1	EL	0.95
Leo	6.19	5.34	1.16	5.34	28.8	4	0.78	7	72.46	spherical	1	AF	0.52
Leo	9.33	9.02	1.03	9.02	64.5	3	0.87	12	82	spherical	1	EL	0.48
Leo	8.6	8.52	1.01	8.52	58.7	4	0.52	15	81	prolate	1	EL	0.83
Leo	16.1	15.56	1.03	15.56	220.0	2	1	19	87	spherical	1	EL	0.91
Leo	11.98	11.01	1.09	11.01	109.0	2	0.83	15	104	spherical	1	EL	0.94
Leo	10.76	6.92	1.55	6.92	62.0	3	0.83	13	119	ovoid	1	EL	0.97
Leo	10.31	9.78	1.05	9.78	80.2	3	0.75	10	80	spherical	1	ER	0.41
Leo	16.43	15.22	1.08	15.22	283.3	2	1.34	22	98	prolate	1	EL	0.89
Leo	6.52	5.63	1.16	5.63	28.2	3	0.6	9	88	polygon	1	ER	0.56
Leo	9.57	8.5	1.13	8.5	67.8	3	0.94	15	105	prolate	1	EL	0.98
Leo	4.81	4.61	1.04	4.61	101.5	4	0.88	9	101	spherical	1	ER	0.53
Leo	8.95	5.73	1.56	5.73	44.3	3	0.71	11	126	ovoid	1	EL	0.93
Leo	5.13	4.71	1.09	4.71	19.5	4	0.87	8	90.78	spherical	1	ER	0.86
Leo	9.79	9.26	1.06	9.26	69.3	3	0.83	14	96	spherical	1	EL	0.85
Leo	11.23	9.41	1.19	9.41	97.8	3	1.24	11	86	prolate	1	EL	0.92
Leo	19.42	18.77	1.03	18.77	305.0	2	1.44	11	111	spherical	1	EL	0.67
Leo	7.6	5.68	1.34	5.68	34.6	4	0.83	14	97	ovoid	1	EL	0.99
Leo	10.89	8.71	1.25	8.71	98.8	4	0.8	16	87	ovoid	1	EL	0.99
Leo	10.43	8.09	1.29	8.09	60.3	4	0.92	6	82	prolate	1	ER	0.38
Leo	8.93	8.24	1.08	8.24	60.9	3	0.96	7	90	spherical	1	ER	0.40
Leo	11.82	9.68	1.22	9.68	97.5	4	1.43	19	78	quadrangular	1	EL	0.95
Leo	6.24	5.23	1.19	5.23	27.3	3	0.8	7	81	ovoid	1	ER	0.60

Leo	6.44	5.36	1.2	5.36	28.1	3	0.78	6	116	spherical	1	ER	0.74
Leo	5.04	4.34	1.16	4.34	15.2	4	0.72	6	96	polygon	1	ER	0.87
Leo	11.57	11.38	1.02	11.38	100.8	3	0.87	14	121	spherical	1	EL	0.81
Leo	7.44	5.48	1.36	5.48	29.4	3	0.65	9	110	prolate	1	ER	0.63
Leo	14.66	12.68	1.16	12.68	155.9	3	1.33	16	75	prolate	1	EL	0.76
Leo	13.27	9.34	1.42	9.34	94.7	4	0.93	16	96	ovoid	1	EL	0.86
Leo	10.67	8.36	1.28	8.36	71.0	2	1.05	11	81	prolate	1	EL	0.91
Leo	4.77	3.43	1.39	3.43	10.4	3	0.6	6	94	polygon	1	ER	0.56
Leo	5.1	3.67	1.39	3.67	14.6	3	0.6	5	112	ovoid	1	AN	0.48
Leo	6.79	5.43	1.25	5.43	27.0	3	0.75	9	108	spherical	1	ER	0.72
Leo	7.98	7.02	1.14	7.02	44.5	3	0.74	9	96	prolate	1	ER	0.71
Leo	12.85	10.82	1.19	10.82	104.6	3	1.02	12	84	ovoid	1	EL	0.96
Leo	8.05	5.07	1.59	5.07	32.9	4	1.02	12	86	ovoid	1	EL	0.95
Leo	9	7.73	1.16	7.73	54.9	3	1.07	7	98	ovoid	1	AN	0.45
Leo	4.63	3.53	1.31	3.53	14.4	4	0.7	3	91	polygon	1	ER	0.57
Leo	6.31	5.3	1.19	5.3	26.3	2	1	8	117	prolate	1	ER	0.58
Leo	9.47	9.27	1.02	9.27	65.2	2	1.02	15	115	spherical	1	EL	0.73
Leo	9.8	9.66	1.01	9.66	75.7	2	0.92	13	91	spherical	1	EL	0.51
Leo	9.66	9.54	1.01	9.54	77.6	2	1.09	12	107	spherical	1	EL	0.41
Leo	4.3	4.1	1.05	4.1	13.1	4	0.72	7	92.3	polygon	1	ER	0.87
Leo	4.29	4.27	1	4.27	15.4	4	0.65	7	103	polygon	1	ER	0.50
Leo	4.52	4.36	1.04	4.36	17.7	4	0.52	5	110	spherical	1	ER	0.46
Leo	14.83	13.66	1.09	13.66	155.7	3	1.1	19	81	ovoid	1	EL	0.79
Leo	8.58	5.74	1.49	5.74	40.1	4	0.6	12	78	prolate concave-convex	1	EL	0.95
Leo	6.76	5.78	1.17	5.78	39.1	3	0.66	8	94	spherical	1	ER	0.67
Leo	9.02	7.48	1.21	7.48	52.7	4	0.94	10	95	polygon	1	EL	0.53
Leo	5.46	4.38	1.25	4.38	21.2	2	0.5	8	110	spherical	1	ER	0.86
Leo	10.38	6.79	1.53	6.79	66.9	2	0.84	11	78	ovoid	1	EL	0.93
Leo	7.08	6.36	1.11	6.36	40.8	3	0.62	8	119	spherical	1	ER	0.60
Leo	10.21	9.64	1.06	9.64	81.9	1	1.14	10	96	spherical	1	AN	0.42
Leo	24.12	20.27	1.19	20.27	435.5	3	1.8	20	111	prolate	1	EL	0.81
Leo	4.41	3.81	1.16	3.81	14.4	3	0.51	4	110	polygon	1	AN	0.79
Leo	7.76	6.26	1.24	6.26	39.1	3	0.78	16	100	spherical	1	EL	0.58
Leo	7.28	7.17	1.02	7.17	38.1	4	0.7	7	98	polygon	1	ER	0.69
Leo	11.4	10.34	1.1	10.34	96.8	3	1.07	16	89	prolate	1	EL	0.97
Leo	10.4	9.31	1.12	9.31	84.2	4	1.01	13	121	ovoid	1	EL	0.95
Leo	6.99	4.85	1.44	4.85	35.7	4	0.8	9	85	polygon	1	ER	0.37
Leo	13.33	12.72	1.05	12.72	128.6	3	0.92	16	116	spherical	1	EL	0.89
Leo	6.9	5.64	1.22	5.64	35.3	3	0.7	8	100	spherical	1	ER	0.67
Leo	10.67	10.03	1.06	10.03	94.2	2	1	13	105	spherical	1	EL	0.61
Leo	10.89	8.81	1.24	8.81	99.7	3	0.84	10	93	spherical	1	ER	0.44
Rubra	5.03	3.99	1.26	3.99	21.2	4	0.75	9	71	polygon	1	ER	0.52
Rubra	4.32	3.9	1.11	3.9	12.2	3	0.5	5	86	spherical	1	ER	0.44
Rubra	5.14	4.23	1.22	4.23	25.7	3	0.7	6	88	polygon	1	ER	0.86

Rubra	11.14	9.56	1.17	9.56	87.5	4	1.3	7	120	ovoid	1	AN	0.42
Rubra	5.65	5.49	1.03	5.49	27.2	3	0.72	6	110	polygon	1	ER	0.66
Rubra	20.7	13.04	1.59	13.04	210.3	4	0.97	19	102	ovoid	1	EL	0.73
Rubra	5.04	3.44	1.47	3.44	13.8	4	0.8	7	72	spherical	1	AN	0.43
Rubra	4.4	3.83	1.15	3.83	12.1	3	0.66	4	114	polygon	1	ER	0.62
Rubra	6.59	3.85	1.71	3.85	19.3	3	0.82	6	70	ovoid	1	EL	0.40
Rubra	9.41	8.54	1.1	8.54	66.2	3	0.87	12	87	spherical	1	EL	0.56
Rubra	13.29	12.04	1.1	12.04	130.2	4	0.75	16	110	ovoid	1	EL	0.86
Rubra	6.04	4.88	1.24	4.88	27.8	4	1.04	7	82.83	polygon	1	AN	0.50
Rubra	11.37	10.36	1.1	10.36	106.3	3	0.6	12	111.16	spherical	1	EL	0.58
Rubra	4.87	4.58	1.06	4.58	17.5	3	0.83	4	100	spherical	1	ER	0.65
Rubra	5.43	5.23	1.04	5.23	23.9	4	0.7	7	110	spherical	1	ER	0.74
Rubra	5.47	4.2	1.3	4.2	15.4	5	0.58	5	99.57	polygon	1	AN	0.47
Rubra	9.63	9.14	1.05	9.14	68.4	3	0.84	7	80	ovoid	1	ER	0.45
Rubra	6.03	5.52	1.09	5.52	26.7	3	0.75	8	56	spherical	1	AF	0.84
Rubra	8.01	6.54	1.22	6.54	39.9	3	0.84	8	86	prolate	1	ER	0.75
Rubra	8.09	7.32	1.11	7.32	49.7	4	0.69	9	95	spherical	1	ER	0.56
Rubra	6.45	4.94	1.31	4.94	26.1	4	0.82	8	91	spherical	1	ER	0.92
Rubra	7.39	4.72	1.57	4.72	32.7	3	0.66	5	89	ovoid	1	ER	0.40
Rubra	6.04	4.64	1.3	4.64	22.0	4	0.85	8	76.18	prolate	1	ER	0.60
Rubra	10.08	7.87	1.28	7.87	63.6	4	0.84	15	86	ovoid	1	EL	1
Rubra	6.29	6.19	1.02	6.19	34.7	3	0.88	5	90	prolate	1	ER	0.74
Rubra	22.19	14.79	1.5	14.79	237.3	2	0.83	15	94	ovoid	1	EL	0.74
Rubra	8.12	6.37	1.27	6.37	45.6	3	0.83	10	99	prolate	1	ER	0.66
Rubra	9.13	8.81	1.04	8.81	65.9	3	0.92	14	104	spherical	1	EL	0.77
Rubra	6.45	4.71	1.37	4.71	23.0	4	0.82	7	92	ovoid	1	ER	0.93
Rubra	10.46	8.45	1.24	8.45	76.9	3	0.84	11	99	ovoid	1	EL	0.95
Rubra	10.67	8.59	1.24	8.59	65.2	4	0.65	7	98	ovoid	1	EL	0.43
Rubra	10.15	8.46	1.2	8.46	83.1	4	1	12	80	ovoid	1	EL	0.97
Rubra	10.55	10.44	1.01	10.44	89.4	4	0.84	16	79.01	spherical	1	EL	0.80
Rubra	12.13	11.81	1.03	11.81	87.4	3	1.17	10	87.43	spherical	1	EL	0.41
Rubra	17.4	12.93	1.35	12.93	180.7	4	0.66	11	107	ovoid	1	EL	0.61
Rubra	12.17	11.04	1.1	11.04	119.0	3	1	17	117	spherical	1	EL	0.95
Rubra	6.42	4.5	1.43	4.5	20.1	4	0.8	7	92	polygon	1	ER	0.71
Rubra	11.8	11.71	1.01	11.71	123.0	4	1.5	12	99	spherical	1	EL	0.55
Rubra	5.74	2.87	2	2.87	20.6	5	2	4	64.16	polygon	1	EL	0.37
Rubra	6.23	6.1	1.02	6.1	35.9	3	0.5	6	101	spherical	1	AF	0.67
Rubra	9.4	7.24	1.3	7.24	56.0	4	0.8	9	107	ovoid	1	ER	0.46
Rubra	28.67	18.76	1.53	18.76	381.8	4	2.4	15	98	ovoid	1	EL	0.71
Rubra	10.63	9.06	1.17	9.06	68.6	4	1.13	11	87	ovoid	1	EL	0.93
Rubra	6.88	5.57	1.24	5.57	31.3	3	0.7	9	110	ovoid	1	ER	0.73
Rubra	10.2	6.57	1.55	6.57	60.5	4	0.92	9	84	ovoid	1	EL	0.36
Rubra	23.9	23.45	1.02	23.45	445.4	3	1.37	15	113	spherical	1	EL	0.82
Rubra	17.74	16.73	1.06	16.73	217.1	3	1.2	17	97	spherical	1	EL	0.89

Rubra	5.59	3.62	1.54	3.62	14.0	3	0.8	5	78	polygon	1	ER	0.36
Rubra	16.66	12.46	1.34	12.46	160.8	3	0.72	18	103	ovoid	1	EL	0.75
Rubra	5.49	5.14	1.07	5.14	25.0	4	0.87	10	93	polygon	1	ER	0.67
Rubra	4.45	3.8	1.17	3.8	19.1	4	0.75	6	93	spherical	1	ER	0.92
Rubra	6.25	5.17	1.21	5.17	23.8	3	0.6	9	102	prolate	1	ER	0.72
Rubra	6.6	6.3	1.05	6.3	27.6	3	0.72	6	0.72	spherical	1	AF	0.84
Rubra	17.82	16.19	1.1	16.19	229.1	2	2.3	11	90	spherical	1	EL	0.61
Rubra	13.42	11.74	1.14	11.74	119.4	3	1.11	3	127	prolate	1	EL	0.31
Rubra	14.11	9.72	1.45	9.72	134.1	4	0.7	20	93	prolate	1	EL	0.73
Rubra	12.12	8.93	1.36	8.93	82.4	2	0.9	14	95	prolate	1	EL	0.96
Rubra	12.43	9.34	1.33	9.34	104.8	4	1	14	100	prolate	1	EL	0.98
Rubra	9.32	6.24	1.49	6.24	49.0	3	0.87	15	103	ovoid	1	EL	0.99
Rubra	6.66	5.65	1.18	5.65	33.2	4	0.75	13	95	ovoid	1	EL	0.95
Rubra	11.06	8.74	1.27	8.74	76.1	4	1	15	105	ovoid	1	EL	0.98
Rubra	8.91	8.29	1.07	8.29	58.0	4	0.9	6	111	spherical	1	ER	0.38
Rubra	8.16	6.05	1.35	6.05	35.7	3	0.6	13	95	ovoid	1	EL	0.96
Rubra	6.21	4.21	1.48	4.21	24.9	4	0.65	9	110	polygon	1	ER	0.60
Rubra	14.52	14.44	1.01	14.44	170.7	4	1.23	15	107	ovoid	1	EL	0.77
Rubra	7.85	6.4	1.23	6.4	42.0	4	1	7	87	prolate	1	AN	0.54
Rubra	5.81	5.76	1.01	5.76	27.5	3	0.5	9	115	spherical	1	AN	0.42
Rubra	5.18	3.94	1.31	3.94	16.5	3	0.82	6	92	polygon	1	ER	0.86
Rubra	6.57	6.45	1.02	6.45	33.1	2	0.7	8	90	spherical	1	ER	0.89
Rubra	4	3.5	1.14	3.5	11.9	3	0.5	9	93	spherical	1	ER	0.57
Rubra	6.64	4.69	1.42	4.69	21.4	4	0.7	9	99	polygon	1	ER	0.62
Rubra	8	5.85	1.37	5.85	37.8	4	0.5	11	103	ovoid	1	EL	0.90
Rubra	12.62	11.65	1.08	11.65	107.8	3	0.84	13	122	spherical	1	EL	0.77
Rubra	3.99	3.62	1.1	3.62	13.9	4	0.92	4	99	polygon	1	ER	0.57
Rubra	10.9	10.13	1.08	10.13	91.8	3	0.8	16	86	spherical	1	EL	0.89
Rubra	6.61	6.33	1.04	6.33	35.5	4	0.9	8	97	spherical	1	ER	0.77
Rubra	3.91	3.6	1.09	3.6	12.9	4	0.72	6	98	polygon	1	ER	0.88
Rubra	4.78	4.35	1.1	4.35	19.9	3	0.72	8	101	spherical	1	ER	0.91
Rubra	10.35	8.91	1.16	8.91	81.5	3	0.87	17	88	prolate	1	EL	0.99
Rubra	4.29	3.69	1.16	3.69	13.9	4	0.6	10	90	prolate	1	ER	0.57
Rubra	8.85	5.68	1.56	5.68	33.2	4	0.61	17	80	ovoid	1	EL	0.97
Rubra	6.39	5.84	1.09	5.84	33.0	4	0.82	7	127	polygon	1	ER	0.72
Rubra	6.37	6.01	1.06	6.01	31.7	4	0.93	9	79	spherical	1	ER	0.44
Rubra	4.21	3.19	1.32	3.19	12.8	4	0.6	8	120	ovoid	1	ER	0.62
Rubra	4.61	4.46	1.03	4.46	15.8	4	0.7	4	115	polygon	1	AN	0.50
Rubra	11.29	9.98	1.13	9.98	95.0	5	1.02	20	90	polygon	1	EL	0.98
Rubra	11.28	10.28	1.1	10.28	84.6	3	0.75	15	106	polygon	1	EL	0.96
Rubra	13.8	7.07	1.95	7.07	96.3	5	0.75	11	83	quadrangular	1	SA	0.46
Rubra	9.25	8.91	1.04	8.91	90.2	5	0.75	6	111	ovoid	1	ER	0.39
Rubra	8.3	7.49	1.11	7.49	58.6	3	0.65	17	99	spherical	1	EL	0.75
Rubra	11.23	8.04	1.4	8.04	80.0	3	0.72	9	110	prolate	1	ER	0.39

Rubra	3.49	2.39	1.46	2.39	6.2	3	0.6	6	100	polygon	1	ER	0.49
Rubra	5.75	4.55	1.26	4.55	21.5	4	0.65	11	74	polygon	1	EL	0.87
Rubra	12.09	9.11	1.33	9.11	91.6	2	0.65	19	100	ovoid	1	EL	0.94
Rubra	10.04	7.89	1.27	7.89	55.0	4	0.65	7	61	ovoid	1	AF	0.74
Rubra	11.51	9.43	1.22	9.43	90.7	3	0.9	9	119	prolate	1	EL	0.47
Rubra	12.37	11.13	1.11	11.13	124.4	3	1	13	98	ovoid	1	EL	0.96
Rubra	4.73	4.56	1.04	4.56	17.2	4	0.8	6	70	polygon	1	ER	0.49
Rubra	3.72	3.15	1.18	3.15	10.7	3	0.9	7	63	prolate	1	AN	0.71
Rubra	3.86	3.33	1.16	3.33	11.8	3	0.53	6	90	spherical	1	ER	0.62
Rubra	5.89	4.1	1.44	4.1	19.2	4	0.55	9	100	ovoid	1	ER	0.37
Rubra	5.65	4.73	1.19	4.73	26.0	4	0.97	7	100	polygon	1	ER	0.58
Rubra	3.55	2.79	1.27	2.79	8.2	3	0.4	4	85	ovoid	1	AN	0.50
Rubra	5.08	4.12	1.23	4.12	6.5	3	0.51	5	95	ovoid	1	AN	0.47
Noah	3.72	3.39	1.1	3.39	12.2	3	0.6	8	70	polygon	1	ER	0.42
Noah	11.17	9.66	1.16	9.66	83.6	3	0.87	11	97	ovoid	1	EL	0.94
Noah	8.3	7.06	1.18	7.06	50.4	3	0.88	3	99	polygon	1	AN	0.37
Noah	18.72	11.19	1.67	11.19	149.6	3	0.7	20	85	triangular	1	EL	0.67
Noah	7.95	7.11	1.12	7.11	41.5	3	0.8	5	107	spherical	1	ER	0.67
Noah	8.04	8.01	1	8.01	53.8	2	0.92	12	92	spherical	1	ER	0.37
Noah	6.48	5.96	1.09	5.96	28.5	5	1.03	6	0.6	polygon	1	AF	0.79
Noah	14.38	9.27	1.55	9.27	124.1	3	0	0	0	polygon	1	SA	0.92
Noah	2.85	2.8	1.02	2.8	8.6	3	0.43	3	116	polygon	1	AN	0.57
Noah	6.14	5.63	1.09	5.63	32.0	3	0.78	7	101	ovoid	1	ER	0.79
Noah	7.58	7.48	1.01	7.48	36.1	3	0.75	6	89	ovoid	1	ER	0.63
Noah	3.8	3.75	1.01	3.75	12.1	4	0.69	6	111	polygon	1	ER	0.73
Noah	3.01	2.66	1.13	2.66	5.1	3	0.4	5	107	polygon	1	AN	0.37
Noah	12.02	11.19	1.07	11.19	114.4	4	1	16	95	spherical	1	EL	0.95
Noah	9.32	8.7	1.07	8.7	66.7	4	0.9	12	96	spherical	1	EL	0.55
Noah	4.73	4.43	1.07	4.43	15.1	3	0.62	6	80	spherical	1	ER	0.50
Noah	6.32	4.32	1.46	4.32	21.2	4	1	5	74	polygon	1	AN	0.49
Noah	5.39	4.2	1.28	4.2	17.5	4	0.55	5	100	spherical	1	AN	0.55
Noah	7.64	7.52	1.02	7.52	45.0	3	0.7	13	92	spherical	1	ER	0.59
Noah	7.17	6.74	1.06	6.74	46.7	4	0.88	11	56	spherical	1	ER	0.47
Noah	7.37	7.21	1.02	7.21	45.8	4	1	10	106	spherical	1	ER	0.66
Noah	5.12	4.4	1.16	4.4	17.8	9	0.84	11	100	polygon	1	EL	0.86
Noah	7.49	6.83	1.1	6.83	47.9	3	0.78	6	89	polygon	1	ER	0.55
Noah	4.93	4.06	1.21	4.06	18.1	3	0.74	8	99	ovoid	1	ER	0.86
Noah	6.32	6.09	1.04	6.09	31.7	3	0.5	8	102	spherical	1	AF	0.64
Noah	4.74	4.37	1.08	4.37	21.3	4	0.52	4	98	polygon	1	AN	0.77
Noah	7.29	4.45	1.64	4.45	31.7	5	0.94	9	92	polygon	1	ER	0.40
hector	6.32	6.04	1.05	6.04	30.5	4	0.83	7	80	polygon	1	ER	0.60
hector	7.17	4.82	1.49	4.82	30.3	4	0.7	9	101	ovoid	1	ER	0.46
hector	6.59	4.76	1.38	4.76	25.8	4	0.8	7	115	ovoid	1	ER	0.79
hector	5.95	3.79	1.57	3.79	18.5	3	0.72	5	97	prolate	1	ER	0.65

hector	11.66	10.63	1.1	10.63	110.0	4	0.97	6	95	spherical	1	EL	0.44
hector	19.32	15.84	1.22	15.84	281.6	1	2.4	15	77.5	prolate	1	EL	0.78
hector	8.24	8.12	1.01	8.12	53.4	2	0.7	12	90	spherical	1	EL	0.41
hector	5.92	5.91	1	5.91	27.9	3	0.72	9	98	spherical	1	ER	0.49
hector	7.65	4.95	1.55	4.95	32.6	4	0.72	4	70	prolate	1	AN	0.42
hector	6.03	3.98	1.52	3.98	27.3	4	0.94	4	77	polygon	1	AN	0.47
hector	4.02	3.5	1.15	3.5	11.4	4	0.83	4	80	polygon	1	ER	0.52
hector	20.32	14.28	1.42	14.28	228.7	3	0.9	30	78	prolate	1	EL	0.81
hector	7.97	7.03	1.13	7.03	43.6	3	1	7	87	ovoid	1	AN	0.52
hector	5.14	4.15	1.24	4.15	16.6	4	0.52	4	100	ovoid	1	AN	0.85
hector	12.98	10.1	1.29	10.1	119.1	4	1.3	8	80.41	ovoid	1	EL	0.47
hector	16.7	13.62	1.23	13.62	198.1	3	1.14	17	71	ovoid	1	EL	0.74
hector	12.6	11.75	1.07	11.75	114.4	3	1	4	120	spherical	1	AN	0.31
hector	12	9.68	1.24	9.68	107.0	4	1	5	100	spherical	1	EL	0.37
hector	19.7	16.43	1.2	16.43	254.7	3	1.44	9	102	ovoid	1	EL	0.47
hector	8.15	7.37	1.11	7.37	53.5	4	1.13	4	84	polygon	1	AN	0.55
hector	12.76	10.63	1.2	10.63	102.6	4	0.87	9	100	spherical	1	EL	0.53
castor	4.52	3.91	1.16	3.91	14.3	3	0.5	5	104	polygon	1	AN	0.51
castor	13.34	11.74	1.14	11.74	112.8	3	0.9	15	116	spherical	1	EL	0.86
castor	6.02	5.47	1.1	5.47	30.0	2	0.65	8	108	spherical	1	ER	0.86
castor	5.63	5.12	1.1	5.12	24.6	2	0.55	7	101	spherical	1	ER	0.80
castor	6.56	5.05	1.3	5.05	31.2	4	0.83	8	59.11	polygon	1	AF	0.86
castor	5.2	4.5	1.16	4.5	20.4	3	0.42	7	108	ovoid	1	ER	0.50
castor	7.31	5.54	1.32	5.54	30.4	4	0.75	11	84.33	polygon	1	EL	0.96
castor	3.77	2.69	1.4	2.69	8.6	3	0.51	3	85	ovoid	1	AN	0.48
castor	6.04	4.3	1.4	4.3	20.7	3	0.4	5	116	prolate	1	AF	0.41
castor	5.95	5.54	1.07	5.54	24.8	2	0.4	7	123	spherical	1	AF	0.39
castor	9.94	6.86	1.45	6.86	48.0	4	0.55	11	90	ovoid	1	EL	0.94
castor	4.53	4.13	1.1	4.13	15.2	4	0.61	6	68	polygon	1	AN	0.39
castor	5.47	5.45	1	5.45	23.0	3	0.46	8	100	spherical	1	AN	0.46
castor	10.56	9.02	1.17	9.02	88.1	4	1.25	6	88.06	spherical	1	AN	0.60
castor	8.29	5.73	1.45	5.73	45.9	5	0.82	5	103	polygon	1	AN	0.35
castor	9.1	6.45	1.41	6.45	47.2	3	1	7	109	polygon	1	ER	0.38
castor	7	6.67	1.05	6.67	32.4	3	0.72	14	68	spherical	1	EL	0.50
castor	6.45	5.6	1.15	5.6	30.0	3	1	8	92.67	spherical	1	ER	0.51
castor	4.54	3.53	1.29	3.53	14.2	3	0.72	3	94	polygon	1	ER	0.58
castor	7.53	5.8	1.3	5.8	28.1	5	0.88	4	77	polygon	1	AN	0.39
castor	2.46	2.35	1.05	2.35	4.7	2	0.42	4	82	polygon	1	ER	0.41
castor	3.58	3.39	1.06	3.39	8.3	4	0.83	2	41	spherical	1	AN	0.79
castor	4.22	3.74	1.13	3.74	14.4	3	0.72	6	71	spherical	1	ER	0.40
castor	5.59	5.45	1.03	5.45	25.6	4	0.6	5	91.25	spherical	1	ER	0.54
castor	13.71	11.85	1.16	11.85	126.0	4	1.25	4	99	spherical	1	SA	0.45
castor	4.74	4.32	1.1	4.32	18.1	2	0.74	8	94.06	spherical	1	ER	0.97
castor	8.76	6.82	1.28	6.82	51.7	3	0.61	17	117.95	ovoid	1	EL	0.96

castor	7.54	5.44	1.39	5.44	34.5	3	0.69	6	100	prolate	1	ER	0.50
castor	4.53	3.12	1.45	3.12	13.9	3	0.65	5	78	polygon	2	AN	0.47
castor	6.25	5.96	1.05	5.96	26.5	3	0.72	9	102.89	triangular	2	ER	0.85
castor	6.18	5.34	1.16	5.34	25.9	3	0.46	8	97.41	prolate	1	AF	0.51
castor	6.86	6.25	1.1	6.25	36.7	3	0.88	6	75	ovoid	1	ER	0.46
castor	6.15	4.72	1.3	4.72	23.0	2	0.72	1	65.35	spherical	1	AF	0.73
castor	10.68	8.65	1.23	8.65	65.1	3	0.83	17	88.44	prolate	1	EL	0.99
castor	6.64	4.63	1.43	4.63	26.2	3	0.6	9	90	ovoid	1	ER	0.45
castor	5.22	5	1.04	5	18.8	2	0.75	5	126	spherical	1	ER	0.69
castor	7.18	5.68	1.26	5.68	34.1	4	0.92	7	92	ovoid	1	ER	0.63
castor	5.2	4.72	1.1	4.72	19.9	3	0	0	0	spherical	1	AF	0.90
castor	4.49	3.77	1.19	3.77	12.9	3	0.83	8	89.85	spherical	1	ER	0.91
castor	5.22	5.12	1.02	5.12	21.4	4	0.75	7	85	polygon	1	ER	0.75
castor	7.81	6.09	1.28	6.09	27.7	5	0.83	8	129	polygon	1	ER	0.66
castor	4.06	3.74	1.09	3.74	12.8	4	0.58	5	89	polygon	1	ER	0.53
castor	6.97	5.79	1.2	5.79	33.7	4	0.52	7	88	spherical	1	AF	0.67
castor	5.79	4.71	1.23	4.71	23.1	3	0.61	8	65	spherical	1	AF	0.77
castor	8.93	8.56	1.04	8.56	61.6	3	0.72	9	62	ovoid	1	AF	0.49
castor	4.72	4.24	1.11	4.24	15.9	4	0.97	5	81	polygon	1	AN	0.46
castor	12.18	11.27	1.08	11.27	101.5	3	0.87	5	128.5	ovoid	1	EL	0.38
castor	13.93	11.06	1.26	11.06	128.6	3	1.37	13	55.37	ovoid	1	SA	0.39
castor	5.31	4.96	1.07	4.96	24.1	4	1.01	7	91.91	spherical	1	ER	0.57
castor	4.66	3.99	1.17	3.99	13.9	2	0.52	4	1	prolate	1	AN	0.81
castor	14.06	11.57	1.22	11.57	123.8	2	1.19	14	105	spherical	1	EL	0.78
castor	13.94	11.69	1.19	11.69	119.8	2	0.94	20	75	ovoid	1	EL	0.76
castor	7.29	7.01	1.04	7.01	38.9	3	0.69	7	88	spherical	1	ER	0.66
castor	5.47	4.37	1.25	4.37	17.0	4	0.62	9	84.58	polygon	1	ER	0.62
castor	5.07	4.52	1.12	4.52	18.2	2	0.61	6	85	spherical	1	ER	0.83
castor	5.03	3.54	1.42	3.54	17.9	3	0.75	4	82.1	prolate	1	AN	0.61
castor	10.59	6.86	1.54	6.86	51.3	2	0.83	8	72.34	ovoid	1	ER	0.38
castor	4.1	3.08	1.33	3.08	10.8	3	0.72	6	70	ovoid	1	ER	0.40
castor	5.53	4.82	1.15	4.82	19.3	2	0.61	6	64.66	prolate	1	AF	0.42
castor	9.54	8.72	1.09	8.72	65.2	3	0.94	11	91	prolate	1	EL	0.92
castor	7.05	6.01	1.17	6.01	38.3	3	0.7	9	75	spherical	1	AF	0.50
castor	7.84	5.19	1.51	5.19	34.7	3	0.8	8	96	ovoid	1	ER	0.45
castor	5.33	5.23	1.02	5.23	24.5	4	0.51	7	104	ovoid	1	ER	0.47
castor	4.2	3.9	1.08	3.9	13.9	4	0.52	6	95.19	spherical	1	ER	0.59
castor	9.03	8.81	1.02	8.81	67.7	3	0.83	16	104	spherical	1	EL	0.75
castor	3.9	3.5	1.11	3.5	12.3	3	0.7	7	87	polygon	1	ER	0.87
castor	5.86	4.24	1.38	4.24	19.4	5	0.82	7	90	polygon	1	ER	0.83
castor	6.23	6.06	1.03	6.06	33.8	3	0.72	6	92	ovoid	1	ER	0.75
castor	5.43	4.51	1.2	4.51	19.0	3	0.69	5	95	spherical	1	ER	0.86
bijou	11.52	9.87	1.17	9.87	98.7	3	0.78	13	119.07	prolate	1	EL	0.93
bijou	11.91	9.09	1.31	9.09	80.9	4	0.7	8	130	quadrangular	1	EL	0.48

bijou	6.82	6.29	1.08	6.29	34.0	2	0.65	8	96.97	spherical	1	ER	0.87
bijou	8.27	8.23	1	8.23	138.3	5	0.52	7	138.28	polygon	1	AF	0.39
bijou	15.35	9.54	1.61	9.54	125.5	3	0.8	6	125.54	prolate	1	EL	0.40
bijou	9.83	9.73	1.01	9.73	80.8	2	0.65	8	125.06	spherical	1	ER	0.37
bijou	13.78	10.79	1.28	10.79	107.8	3	1.14	15	93.49	spherical	1	EL	0.75
bijou	5.14	4.35	1.18	4.35	19.0	4	0.6	6	123	polygon	1	ER	0.66
bijou	6.02	4.69	1.28	4.69	21.8	3	0.5	4	111.1	polygon	1	AN	0.56
bijou	18.14	13.74	1.32	13.74	225.6	4	1.65	26	97.83	prolate	1	EL	0.79
bijou	10.62	7.8	1.36	7.8	60.0	4	0.93	9	135	polygon	1	EL	0.46
bijou	6.33	5.14	1.23	5.14	36.5	3	0.83	10	104	polygon	1	ER	0.82
bijou	8.81	7.78	1.13	7.78	49.9	3	0.7	9	112.01	spherical	1	ER	0.45
bijou	5.02	4.66	1.08	4.66	21.8	4	0.82	6	98.98	spherical	1	ER	0.90
bijou	6.87	6.66	1.03	6.66	36.7	4	1.03	9	92.28	polygon	1	ER	0.73
bijou	10.58	8.9	1.19	8.9	75.1	3	0.83	12	135.35	spherical	1	EL	0.54
bijou	7.97	6.74	1.18	6.74	43.7	2	0.52	7	107.33	spherical	1	ER	0.43
bijou	19.89	15.17	1.31	15.17	245.6	2	1.33	28	116.95	ovoid	1	EL	0.81
bijou	7.96	5.61	1.42	5.61	41.5	5	1.38	6	94.45	polygon	1	AN	0.50
bijou	8.33	7.18	1.16	7.18	43.9	4	0.9	5	109.88	polygon	1	ER	0.48
bijou	9.55	7.4	1.29	7.4	55.4	4	0.66	6	119.19	ovoid	1	ER	0.39
bijou	6.86	6.07	1.13	6.07	39.1	3	0.6	8	114.04	polygon	1	ER	0.52
bijou	5.91	5.37	1.1	5.37	26.5	5	0.66	7	105.53	spherical	1	ER	0.77
bijou	12.59	11.48	1.1	11.48	108.4	3	1.2	7	107.62	spherical	1	EL	0.42
bijou	9.42	8.42	1.12	8.42	81.4	5	1.47	17	88.21	prolate	1	EL	0.93
bijou	10.09	9.14	1.1	9.14	67.8	3	1.13	11	67.75	prolate	1	EL	0.79
bijou	10.05	9.96	1.01	9.96	85.4	3	0.69	10	84.61	spherical	1	ER	0.39
bijou	10.83	8.3	1.3	8.3	72.4	3	0.6	14	115.75	ovoid	1	EL	0.96
bijou	11.22	10.87	1.03	10.87	100.8	2	0.84	14	123.01	prolate	2	EL	0.84
bijou	19.87	13.21	1.5	13.21	209.9	5	0.97	5	131.4	ovoid	2	SA	0.40
bijou	12.3	9.82	1.25	9.82	96.5	4	0.93	11	108.2	polygon	1	EL	0.91
bijou	11.48	10.24	1.12	10.24	97.3	3	1.01	15	119	ovoid	1	EL	0.96
bijou	7.82	7.2	1.09	7.2	112.3	3	0.55	10	112	spherical	1	ER	0.33
bijou	8.7	7.58	1.15	7.58	49.5	3	0.41	2	134	spherical	1	AF	0.35
bijou	10.92	8.22	1.33	8.22	72.6	4	1.1	8	92.45	prolate	1	AN	0.38
bijou	12.89	11.02	1.17	11.02	119.7	4	1.17	11	122	spherical	1	EL	0.68
bijou	16.28	10.44	1.56	10.44	137.3	3	1.35	6	96.39	ovoid	1	EL	0.38
bijou	10.85	8.37	1.3	8.37	71.2	4	0.92	4	103.66	polygon	1	AN	0.37
bijou	9.11	8.91	1.02	8.91	64.4	2	1.1	12	96.04	spherical	1	EL	0.40
bijou	14.53	14.45	1.01	14.45	172.5	3	1.25	17	114.06	spherical	1	EL	0.86
bijou	9.85	7.73	1.27	7.73	68.6	3	1.23	13	95.02	prolate	1	EL	0.98
bijou	7.69	7.2	1.07	7.2	47.0	4	0.83	14	118.89	polygon	1	EL	0.89
bijou	11.44	9.36	1.22	9.36	81.0	4	0.87	10	114	prolate	1	EL	0.52
bijou	22.53	21.32	1.06	21.32	364.3	2	1.45	15	106.07	ovoid	1	EL	0.84
bijou	7.37	6.46	1.14	6.46	133.6	2	0.43	3	133.55	spherical	1	AN	0.43
bijou	10.69	10.03	1.07	10.03	90.9	3	0.5	16	119.15	spherical	1	EL	0.83

bijou	11.42	9.63	1.19	9.63	90.3	4	0.8	6	106	spherical	1	EL	0.46
bijou	8.65	7.37	1.17	7.37	51.5	3	0.92	9	92	spherical	1	ER	0.44
bijou	9.83	9.74	1.01	9.74	74.0	3	0.8	8	95.94	spherical	1	ER	0.44
bijou	11.45	11.13	1.03	11.13	93.3	4	0.72	10	78.76	ovoid	1	EL	0.47
bijou	19.32	17.24	1.12	17.24	256.9	2	0.93	15	116.31	prolate	1	EL	0.80
bijou	11.42	9.29	1.23	9.29	84.1	2	0.4	13	88	ovoid	1	EL	0.90
bijou	6.32	5.93	1.07	5.93	29.7	4	0.78	9	110	polygon	1	ER	0.74
bijou	13.4	11.6	1.16	11.6	136.7	5	1.33	12	104.18	polygon	1	EL	0.80
bijou	14.18	11.63	1.22	11.63	152.9	3	0.9	8	116	polygon	1	EL	0.51
bijou	7.56	6.82	1.11	6.82	43.3	2	0.4	18	82	prolate	1	EL	0.89
bijou	10.31	7.27	1.42	7.27	51.2	2	1.1	8	110	ovoid	1	AN	0.48
bijou	14.13	13.53	1.04	13.53	155.1	5	1.3	15	108.1	polygon	1	EL	0.80
bijou	11.37	10.21	1.11	10.21	89.4	2	0.95	17	83	spherical	1	EL	0.92
bijou	10.79	9.75	1.11	9.75	83.0	3	0.94	9	94	polygon	1	EL	0.51
bijou	7.93	6.62	1.2	6.62	41.9	3	0.97	6	110	polygon	1	ER	0.53
bijou	10.72	9.79	1.09	9.79	78.4	2	0.88	3	66	ovoid	1	AF	0.57
bijou	10.21	9.18	1.11	9.18	73.6	2	0.75	10	90	spherical	1	ER	0.46
Goma	7.82	6.04	1.29	6.04	37.9	2	0	0	0	spherical	1	AF	0.99
Goma	6.77	6.24	1.08	6.24	33.2	2	0.51	10	100	spherical	1	ER	0.59
Goma	11.87	6.68	1.78	6.68	54.7	0	0	0	0	spherical	1	SA	0.74
Goma	20.04	18.05	1.11	18.05	303.1	2	1.42	19	91	spherical	1	EL	0.85
Goma	11.59	8.57	1.35	8.57	75.2	3	1.2	13	103	ovoid	1	EL	0.95
Goma	6.65	5.86	1.13	5.86	30.8	5	0	0	0	quadrangular	1	AF	0.98
Goma	8.44	6.95	1.21	6.95	49.3	4	1.01	14	95.03	ovoid	1	EL	1
Goma	5.43	4.51	1.2	4.51	19.0	4	0	0	0	polygon	1	AN	0.51
Goma	23.45	21.32	1.1	21.32	398.3	3	1.43	20	111	spherical	1	EL	0.82
Goma	10.35	8.7	1.19	8.7	66.2	3	1.74	7	66.17	spherical	1	EL	0.40
Goma	17.63	14.66	1.2	14.66	220.2	2	1.62	22	124.85	spherical	1	EL	0.84
Goma	17.3	13.53	1.28	13.53	215.0	3	1.44	16	101.93	prolate	1	EL	0.81
Goma	15.01	13.01	1.15	13.01	143.6	1	1.04	8	123.41	spherical	1	EL	0.49
Goma	8.7	7.92	1.1	7.92	57.5	3	1.17	10	57.51	spherical	1	AF	0.44
Goma	6.58	4.82	1.37	4.82	25.0	4	0.7	7	24.95	prolate	1	AF	0.77
Goma	6.38	5.8	1.1	5.8	38.2	3	0	0	38.2	quadrangular	1	AF	0.98
Goma	19.45	15.59	1.25	15.59	243.7	4	1.33	16	243.69	spherical	1	EL	0.81
Goma	6.72	5.87	1.14	5.87	36.0	2	0.7	6	36.02	spherical	1	AF	0.94
Goma	17.93	12.92	1.39	12.92	191.2	2	1.27	11	80.54	ovoid	1	EL	0.67
Goma	16.05	13.33	1.2	13.33	167.2	4	1.1	8	94	ovoid	1	EL	0.47
Goma	10.73	9.49	1.13	9.49	76.3	5	0.75	8	117.27	spherical	1	ER	0.38
Goma	11.77	8.81	1.34	8.81	88.9	5	0.7	5	11.97	polygon	1	AF	0.54
Goma	15.02	12.36	1.22	12.36	155.1	3	1.3	13	100.25	prolate	1	EL	0.75
Goma	20.3	18.26	1.11	18.26	303.7	3	1.69	24	89.34	spherical	1	EL	0.81
Goma	15	11.29	1.33	11.29	133.1	2	1.14	11	91.53	prolate	1	EL	0.68
Goma	17.58	16.61	1.06	16.61	118.6	4	1.23	11	118.55	spherical	1	EL	0.64
Goma	11.38	8.86	1.28	8.86	88.9	3	1.11	5	105	spherical	1	AN	0.42

Goma	9.9	8.76	1.13	8.76	68.6	4	0.88	18	110	ovoid	1	EL	0.98
Goma	10.08	8.46	1.19	8.46	56.6	4	1.02	15	118.21	prolate	2	EL	0.98
Goma	10.26	6.6	1.55	6.6	66.8	4	1.02	15	103	spherical	2	EL	0.72
Goma	19.89	16.12	1.23	16.12	270.4	4	1.96	18	92.42	polygon	1	EL	0.80
Goma	10.4	8.47	1.23	8.47	77.0	2	0.93	19	84.4	ovoid	1	EL	0.99
Goma	19.39	14.23	1.36	14.23	220.1	4	1.33	24	112.26	ovoid	1	EL	0.78
Goma	19.03	18.8	1.01	18.8	167.1	3	1.74	13	267.06	spherical	1	EL	0.78
Goma	22.73	20.08	1.13	20.08	360.2	3	1.33	11	118.62	spherical	1	EL	0.59
Goma	15.72	14.09	1.12	14.09	177.5	4	1.43	8	177.49	spherical	1	EL	0.47
Goma	17.72	15.08	1.18	15.08	198.7	4	0.94	13	110.35	spherical	1	EL	0.73
Goma	7.47	6.86	1.09	6.86	43.5	4	0.6	15	113.87	spherical	1	EL	0.53
Goma	13.92	13.01	1.07	13.01	159.4	3	1.33	11	120.31	spherical	1	EL	0.62
Goma	14.35	13.62	1.05	14.35	164.4	4	1.33	12	109	spherical	1	EL	0.65
Goma	9.23	8.5	1.09	8.5	65.7	2	0.6	9	106	spherical	1	ER	0.44
Goma	7.3	6.04	1.21	6.04	34.5	5	0.55	7	102	ovoid	1	AF	0.58
Goma	8.33	6.87	1.21	6.87	50.3	4	0.74	13	106.54	spherical	1	EL	0.48
Goma	10.11	7.91	1.28	7.91	69.5	3	0.52	4	114.23	ovoid	1	AN	0.39
Goma	9.85	8.27	1.19	8.27	65.9	4	1.01	9	105.36	polygon	1	EL	0.43
Goma	21.3	16.08	1.32	16.08	263.6	5	1.07	22	110.99	polygon	1	EL	0.79
Goma	9.41	7.37	1.28	7.37	60.6	5	0	0	0	polygon	1	AF	0.99
Goma	16.73	13.74	1.22	13.74	186.0	3	0.75	4	99	ovoid	1	SA	0.40
Goma	18.85	13.74	1.37	13.74	190.9	5	1.07	17	99	ovoid	1	EL	0.78
Goma	18.98	9.32	2.04	9.32	144.8	5	0	0	0	angular point	1	SA	1
Goma	14.96	14.44	1.04	14.44	172.8	1	1.13	18	91	spherical	1	EL	0.88
Goma	16.21	13.09	1.24	13.09	165.4	4	1.25	16	101	ovoid	1	EL	0.77
Goma	11.53	9.88	1.17	9.88	82.8	3	0.88	5	113	spherical	1	EL	0.38
Goma	10.38	9.82	1.06	9.82	82.5	5	0.92	7	106	polygon	1	EL	0.43
Goma	10.71	10.59	1.01	10.59	100.2	3	0.97	8	99.67	spherical	1	ER	0.43
Goma	12.15	10.2	1.19	10.2	93.2	3	1.03	4	104.17	ovoid	1	EL	0.32
Goma	9.06	8.11	1.12	8.11	58.8	3	0.88	10	103.67	ovoid	1	ER	0.44
Goma	11.26	8.65	1.3	8.65	79.3	4	1.31	10	103.89	spherical	1	AN	0.45
Goma	13.34	13.19	1.01	13.19	144.8	2	1.11	8	92.68	spherical	1	EL	0.47
Goma	8.13	7.68	1.06	7.68	49.8	3	0	0	0	polygon	1	AF	0.90
Goma	18.91	16.33	1.16	16.33	265.9	2	0.9	17	99	ovoid	1	EL	0.82
Goma	9.55	8.57	1.11	8.57	71.1	4	1.38	3	75	ovoid	1	AN	0.59
Goma	8.87	6.77	1.31	6.77	47.4	5	0	0	0	ovoid	1	AF	1
Goma	8.66	7.28	1.19	7.28	54.3	4	0.6	5	100	spherical	1	EL	0.31
Goma	7.24	6.23	1.16	6.23	35.4	3	0.5	4	87.1	spherical	1	AF	0.51
Goma	10.4	7.27	1.43	7.27	64.5	3	1	5	104	prolate	1	AN	0.42
Zerlina	7.95	7.14	1.11	7.14	38.2	3	0.75	8	111	spherical	1	ER	0.74
Zerlina	12.24	12.04	1.02	12.04	124.2	3	0.84	6	98	spherical	1	EL	0.48
Zerlina	8.98	8.26	1.09	8.26	69.8	4	1.02	9	89	polygon	1	EL	0.43
Zerlina	6.31	5.74	1.1	5.74	27.7	4	1.23	8	90	spherical	1	AN	0.65
Zerlina	3.99	3.58	1.11	3.58	12.1	4	0.8	5	92	spherical	1	ER	0.88

Zerlina	6.69	5.07	1.32	5.07	34.8	3	0.97	9	78	ovoid	1	AN	0.59
Zerlina	20.79	16.53	1.26	16.53	267.0	4	1.23	15	118.71	prolate	1	EL	0.76
Zerlina	4.11	3.69	1.11	3.69	12.0	3	0.6	7	83	spherical	1	ER	0.50
Zerlina	22.42	21.32	1.05	21.32	386.9	3	1.75	17	93	spherical	1	EL	0.89
Zerlina	16.93	15.06	1.12	15.06	243.0	3	0.83	18	101	spherical	1	EL	0.81
Zerlina	12.88	9.43	1.37	9.43	100.0	3	0.97	8	116	prolate	1	EL	0.44
Zerlina	12.72	11.34	1.12	11.34	98.5	3	0.94	12	98	prolate	1	EL	0.95
Zerlina	8.64	6.55	1.32	6.55	37.9	4	1.23	6	86	polygon	1	AN	0.63
Zerlina	14.65	13.51	1.08	13.51	175.5	4	1.17	14	82	spherical	1	EL	0.81
Zerlina	7.23	6.99	1.03	6.99	42.1	4	1.11	7	88	spherical	1	AN	0.53
Zerlina	15.67	15.08	1.04	15.08	196.2	4	0.97	14	114	spherical	1	EL	0.82
Zerlina	17.38	14.84	1.17	14.84	200.9	3	1.25	19	106	spherical	1	EL	0.82
Zerlina	3.88	3.42	1.13	3.42	12.0	3	0.72	3	91	polygon	1	ER	0.72
Zerlina	10.79	8.97	1.2	8.97	78.9	3	1.11	14	116	prolate	1	EL	0.98
Zerlina	12.26	11.27	1.09	11.27	118.3	2	0.84	16	109	spherical	1	EL	0.95
Zerlina	9.43	8.1	1.16	8.1	61.7	4	0.97	11	103	ovoid	1	EL	0.93
Zerlina	8.12	5.83	1.39	5.83	37.3	3	0.51	7	120	prolate	1	AF	0.45
Zerlina	6.56	5.84	1.12	5.84	32.9	3	0.55	10	99	spherical	1	AF	0.39
Zerlina	15.96	12.03	1.33	12.03	167.6	3	1.37	17	97	ovoid	1	EL	0.77
Zerlina	17.85	17.92	1	17.92	257.0	3	1.5	17	84	ovoid	1	EL	0.83
Zerlina	6.9	5.71	1.21	5.71	32.3	3	0.83	6	98	spherical	1	ER	0.63
Zerlina	10.88	10.17	1.07	10.17	85.0	4	0.92	8	88	polygon	1	EL	0.49
Zerlina	9.69	6.64	1.46	6.64	112.4	4	1.31	10	112	ovoid	1	AN	0.54
Zerlina	11.53	9.26	1.25	9.26	91.0	4	0.8	8	121	ovoid	1	EL	0.48
Zerlina	6.38	4.43	1.44	4.43	26.0	4	0.62	9	100	polygon	1	ER	0.53
Zerlina	9.82	7	1.4	7	58.0	4	1.11	7	79	polygon	1	AN	0.53
Zerlina	5.49	4.32	1.27	4.32	20.3	4	0.78	5	93	polygon	1	ER	0.82
Zerlina	9.52	8.4	1.13	8.4	54.7	4	0.7	11	89	ovoid	1	EL	0.96
Zerlina	4.3	4.32	1	4.32	13.8	4	0.52	6	115	polygon	1	AN	0.59
Zerlina	12.24	11.42	1.07	11.42	110.6	2	1.17	11	89	prolate	1	EL	0.90
Zerlina	9.52	5.95	1.6	5.95	45.9	4	0.72	9	99.74	ovoid	1	EL	0.43
Zerlina	7.9	6.03	1.31	6.03	40.5	4	0.8	5	93.7	ovoid	1	ER	0.64
Zerlina	4.93	3.98	1.24	3.98	15.6	3	0.5	4	90	polygon	1	AN	0.86
Zerlina	17.35	12.7	1.37	12.7	167.6	3	1.17	18	93	prolate	1	EL	0.80
Zerlina	9.81	7.9	1.24	7.9	57.1	3	1.07	17	95	ovoid	1	EL	1
Zerlina	10.51	9.36	1.12	9.36	65.6	3	1.23	7	107	spherical	1	AN	0.45
Zerlina	15.19	13.32	1.14	13.32	159.0	3	1.28	14	104	spherical	1	EL	0.76
Zerlina	9.83	7.39	1.33	7.39	56.2	4	1.44	2	86	spherical	1	AN	0.67
Zerlina	6.71	5.91	1.14	5.91	32.5	4	0.83	11	88	polygon	1	EL	0.91
Zerlina	4.92	4.69	1.05	4.69	20.0	3	0.83	6	81	spherical	1	ER	0.53
Zerlina	11.8	10.66	1.11	10.66	101.4	3	0.97	12	102	spherical	1	EL	0.68
Zerlina	6.36	4.1	1.55	4.1	24.9	3	0.61	5	107	ovoid	1	ER	0.52
Zerlina	9.21	8.92	1.03	8.92	71.6	2	0.92	13	95.76	spherical	1	EL	0.52
Zerlina	9.71	8.03	1.21	8.03	75.8	3	1.17	11	81	prolate	1	EL	0.91

Zerlina	7.42	5.5	1.35	5.5	34.5	3	0.75	10	75	prolate	1	ER	0.42
Zerlina	12.39	11.18	1.11	11.18	112.9	2	0.83	19	110	spherical	1	EL	0.94
Zerlina	11.95	7.82	1.53	7.82	76.6	3	1.09	14	108	ovoid	1	EL	0.94
Zerlina	8.39	8.33	1.01	8.33	60.9	4	1.1	6	115	polygon	1	EL	0.47
Zerlina	13.4	12.85	1.04	12.85	139.6	3	1.13	17	103	prolate concave-convex	1	EL	0.89
Zerlina	13.58	12.68	1.07	12.68	130.8	3	1.11	15	105	spherical	1	EL	0.82
Zerlina	15.75	15.57	1.01	15.57	178.5	3	1.02	20	115	ovoid	1	EL	0.82
Zerlina	16.36	12.5	1.31	12.5	163.0	3	1.7	13	86	ovoid	1	EL	0.73
Zerlina	8.81	7.71	1.14	7.71	63.3	4	0.97	8	87	polygon	1	EL	0.43
Zerlina	10.72	10.61	1.01	10.61	93.8	3	1.09	18	94	spherical	1	EL	0.76
Zerlina	11.15	10.58	1.05	10.58	104.7	3	1.14	16	96	spherical	1	EL	0.85
Zerlina	7.03	6.38	1.1	6.38	36.1	4	0.88	7	87	prolate	1	ER	0.72
Zerlina	11.13	9.49	1.17	9.49	86.9	4	0.88	17	90.79	ovoid	1	EL	0.98
Zerlina	7.17	6.86	1.05	6.86	44.2	4	0.84	9	111	spherical	1	ER	0.72
Zerlina	9.52	8.6	1.11	8.6	69.8	3	0.94	10	76	spherical	1	ER	0.37
Zerlina	16.37	11.61	1.41	11.61	146.2	3	1.23	19	101	ovoid	1	EL	0.77
Zerlina	15.09	12.89	1.17	12.89	145.6	4	1.3	11	106	ovoid	1	EL	0.63
Zerlina	9.34	7.45	1.25	7.45	55.1	5	1.33	7	97	polygon	1	EL	0.42
Zerlina	11.98	9.72	1.23	9.72	108.2	4	1.01	9	119	ovoid	1	EL	0.46
Zerlina	11.37	9.22	1.23	9.22	90.2	3	1.23	13	107	spherical	1	EL	0.69
Zerlina	21.3	18.12	1.18	18.12	311.0	2	1.17	18	101	ovoid	1	EL	0.82
Zerlina	7.9	5.51	1.43	5.51	37.3	2	0.75	12	89	ovoid	1	EL	0.95
Zerlina	12.02	7.25	1.66	7.25	61.7	3	0.83	7	106	ovoid	1	EL	0.47
Zerlina	17.2	15.46	1.11	15.46	219.0	3	1.36	18	106	spherical	1	EL	0.82
Zerlina	17.47	13.35	1.31	13.35	165.4	3	1.37	17	92	ovoid	1	EL	0.79
Zerlina	5.73	5.43	1.06	5.43	26.0	3	0.6	4	75	prolate concave-convex	1	AN	0.43
Zerlina	3.79	3.58	1.06	3.58	11.0	3	0.42	3	108	polygon	1	AN	0.69
Dorry	6.41	4.61	1.39	4.61	21.0	2	0.69	13	74	prolate	1	EL	0.95
Dorry	7.77	5.72	1.36	5.72	40.2	3	0.9	13	77	prolate	1	EL	0.96
Dorry	7.69	7.07	1.09	7.07	43.8	4	0.55	15	97	spherical	1	EL	0.54
Dorry	7.17	6.76	1.06	6.76	36.7	3	1.09	11	89	spherical	1	ER	0.51
Dorry	6.04	5.77	1.05	5.77	25.7	3	0.65	8	93	spherical	1	ER	0.77
Dorry	7.03	5.29	1.33	5.29	31.6	4	0.72	7	94	ovoid	1	ER	0.71
Dorry	10.49	9.32	1.13	9.32	67.0	3	0.83	12	108	spherical	1	EL	0.55
Dorry	5.98	5.74	1.04	5.74	33.6	3	0.65	15	82	prolate	1	EL	0.74
Dorry	5.66	5	1.13	5	26.5	2	0.83	8	92	spherical	1	ER	0.95
Dorry	6.99	5.55	1.26	5.55	31.0	3	0.83	8	105	spherical	1	ER	0.70
Dorry	9.88	8.26	1.2	8.26	69.4	4	1.1	13	97	ovoid	1	EL	0.98
Dorry	8.73	8.13	1.07	8.13	56.6	4	0.88	12	105	spherical	1	EL	0.54
Dorry	6.17	4.95	1.25	4.95	22.4	3	0.74	7	90	prolate	1	ER	0.98
Dorry	10.09	8.34	1.21	8.34	68.0	4	0.78	16	90	spherical	1	EL	0.87
Dorry	9.67	7.47	1.29	7.47	62.1	4	1.35	14	76	spherical	1	EL	0.80
Dorry	9.96	9.27	1.07	9.27	71.0	3	0.8	10	111	spherical	1	ER	0.46

Dorry	8.91	6.15	1.45	6.15	43.6	4	0.88	9	89	ovoid	1	ER	0.39
Dorry	7.52	5.14	1.46	5.14	31.7	5	0.52	6	107	prolate	1	AF	0.45
Dorry	5.41	4.73	1.14	4.73	21.9	2	0.87	8	85	spherical	1	ER	0.78
Dorry	7.78	5.8	1.34	5.8	45.5	5	1.13	9	76	ovoid	1	AN	0.84
Dorry	10.78	7.32	1.47	7.32	55.0	3	0.62	15	98	ovoid	1	EL	0.98
Dorry	10.03	9.63	1.04	9.63	75.0	3	0.9	13	79	spherical	1	EL	0.60
Dorry	5.62	3.71	1.51	3.71	21.9	3	0.6	7	100	prolate	1	ER	0.51
Dorry	5.53	5.43	1.02	5.43	22.3	3	0.83	9	62	spherical	1	AF	0.54
Dorry	12	10.81	1.11	10.81	124.9	3	0.94	15	91	spherical	1	EL	0.94
Dorry	5.33	4.4	1.21	4.4	20.3	4	0.74	7	89	prolate	1	ER	0.93
Dorry	10.86	8.18	1.33	8.18	65.9	4	1.14	9	96	ovoid	1	AN	0.40
Dorry	4.87	4.36	1.12	4.36	21.5	3	0.83	6	83	spherical	1	ER	0.57
Dorry	4.92	3.92	1.26	3.92	16.6	4	0.51	7	95	ovoid	1	ER	0.49
Dorry	9.5	8.36	1.14	8.36	55.7	4	0.61	9	118	ovoid	1	EL	0.46
Dorry	6.29	3.52	1.79	3.52	22.3	5	1.19	9	89	prolate	1	AN	0.55
Dorry	5.77	4.54	1.27	4.54	24.1	3	0.74	6	82	spherical	1	ER	0.53
Dorry	24.69	21.2	1.16	21.2	353.3	1	2.7	19	79	spherical	1	EL	0.82
Dorry	10.65	9.65	1.1	9.65	86.3	3	0.82	11	106	spherical	1	EL	0.51
Dorry	10.31	8.01	1.29	8.01	61.6	3	0.87	16	86	ovoid	1	EL	1
Dorry	6.14	5.45	1.13	5.45	26.2	4	0.92	9	94	spherical	1	ER	0.84
Dorry	5.43	5.22	1.04	5.22	34.4	3	0.84	10	91	spherical	1	ER	0.79
Dorry	6.45	5.63	1.15	5.63	31.8	3	0.66	10	95	spherical	1	ER	0.76
Dorry	9.85	6.85	1.44	6.85	46.0	5	1.1	8	94	triangular	1	AN	0.56
Dorry	10.85	10.44	1.04	10.44	87.9	3	0.93	9	100	spherical	1	ER	0.45
Dorry	7.78	6.27	1.24	6.27	38.8	3	0.8	7	89	spherical	1	ER	0.70
Dorry	11.64	10.42	1.12	10.42	105.9	4	1.14	13	113	spherical	1	EL	0.77
Dorry	10.36	8.8	1.18	8.8	74.0	3	0.78	12	111	prolate	1	EL	0.95
Dorry	4.83	4.37	1.11	4.37	16.3	3	0.65	5	100	spherical	1	ER	0.80
Dorry	8.3	5.63	1.47	5.63	34.8	4	0.82	8	88	ovoid	1	ER	0.36
Dorry	7.83	6.25	1.25	6.25	39.2	4	0.72	10	93	ovoid	1	ER	0.71
Dorry	3.53	2.42	1.46	2.42	7.8	3	0.52	5	93	prolate	1	ER	0.37
Dorry	4.61	4.61	1	4.61	13.5	5	0.51	8	75	spherical	1	AN	0.43
Dorry	3.67	3.02	1.22	3.02	12.2	4	0.55	6	111	spherical	1	ER	0.54
Dorry	5.94	4.49	1.32	4.49	25.9	3	0.75	11	102	spherical	1	ER	0.59
Dorry	10.15	7.19	1.41	7.19	65.1	3	0.74	13	89	prolate	1	EL	0.99
Dorry	7.07	5.73	1.23	5.73	28.1	2	0.75	14	90	prolate	1	EL	0.98
Dorry	6.86	5.86	1.17	5.86	31.2	5	0.94	12	87	ovoid	1	EL	0.92
Dorry	7.69	6.17	1.25	6.17	42.8	3	0.78	12	102	prolate	1	EL	0.92
Dorry	5.46	4.29	1.27	4.29	20.3	4	0.61	7	106	ovoid	1	ER	0.71
Dorry	5.42	4.92	1.1	4.92	22.5	3	0.82	3	105	spherical	1	ER	0.68
Dorry	15.05	14.44	1.04	14.44	175.6	2	0.78	12	105	spherical	1	EL	0.66
Dorry	6.74	5.99	1.13	5.99	29.4	3	0.88	7	90	spherical	1	ER	0.70
Dorry	4.41	3.71	1.19	3.71	14.1	3	0.51	8	85	spherical	1	ER	0.55
Dorry	7.16	6.04	1.19	6.04	50.1	3	0.66	10	107	spherical	1	ER	0.64

Dorry	7.07	6.56	1.08	6.56	42.3	2	0.93	11	81	spherical	1	ER	0.55
Dorry	5.33	4.81	1.11	4.81	19.0	3	0.84	9	93.33	spherical	1	ER	0.85
Dorry	7.66	5.68	1.35	5.68	36.6	3	1.05	11	83	spherical	1	ER	0.45
Dorry	7.28	5.53	1.32	5.53	30.4	3	0.97	14	103	prolate	1	EL	0.97
Dorry	5.94	5.33	1.11	5.33	29.7	3	0.87	11	108	spherical	1	ER	0.59
Dorry	7.17	4.98	1.44	4.98	33.9	2	0.72	11	87	prolate	1	EL	0.94
Dorry	9.17	8.91	1.03	8.91	67.1	2	0.87	13	120	spherical	1	EL	0.52
Dorry	10.46	10.03	1.04	10.03	77.9	4	0.97	19	99	spherical	1	EL	0.78
Dorry	6.79	5.4	1.26	5.4	27.1	3	0.65	13	91	ovoid	1	EL	0.96
Dorry	18.76	14.9	1.26	14.9	236.0	1	1.88	32	60	ovoid	1	EL	0.50
Dorry	19.78	17.67	1.12	17.67	271.0	3	1.48	11	99	spherical	1	EL	0.59
Dorry	5.63	5.33	1.06	5.33	22.6	3	0.61	7	97	spherical	1	ER	0.71
Dorry	6.81	5.58	1.22	5.58	28.3	3	0.51	9	106	prolate	1	AF	0.44
Dorry	7.37	5.73	1.29	5.73	34.9	4	0.88	16	97	spherical	1	EL	0.59
Dorry	11.81	10.41	1.13	10.41	100.0	5	1.13	7	90	spherical	1	EL	0.42
Dorry	5.26	4.1	1.28	4.1	20.0	3	0.75	6	91	polygon	1	ER	0.88
Dorry	6.37	5.07	1.26	5.07	27.8	5	0.72	12	95	polygon	1	EL	0.93
Dorry	5.09	4.67	1.09	4.67	19.6	3	0.62	7	80	ovoid	1	ER	0.55
Dorry	5.61	5.29	1.06	5.29	21.7	3	0.61	5	98	polygon	1	ER	0.68
Dorry	8.5	8	1.06	8	54.1	2	1.01	11	83	spherical	1	EL	0.48
Dorry	7.48	7.18	1.04	7.18	35.6	3	0.93	7	95	spherical	1	ER	0.66
Dorry	8.16	6.47	1.26	6.47	38.8	2	1.25	9	100	spherical	1	AN	0.61
Dorry	6.12	4.6	1.33	4.6	25.8	3	1	9	70	prolate	1	AN	0.62
Dorry	3.7	2.97	1.25	2.97	7.0	3	0.61	4	91	spherical	1	ER	0.65
Dorry	8.55	8.13	1.05	8.13	59.4	3	0.8	13	92	ovoid	1	EL	0.92
Dorry	5.37	3.3	1.63	3.3	13.1	5	0.72	7	90	polygon	1	ER	0.61
Venus	5.07	4.49	1.13	4.49	17.2	3	0.55	6	99	spherical	1	ER	0.57
Venus	7.42	2.73	2.72	2.73	19.0	5	0	0	0	angular point	1	EL	0.43
Venus	5.23	4.3	1.22	4.3	19.2	3	0.61	9	70	spherical	1	ER	0.33
Venus	4.56	3.33	1.37	3.33	11.7	3	0.75	7	70	spherical	1	ER	0.36
Venus	6.16	4.25	1.45	4.25	22.4	3	0.8	7	88	spherical	1	ER	0.61
Venus	5.07	3.79	1.34	3.79	16.4	3	0.6	7	84	prolate	1	ER	0.55
Venus	5.77	4.22	1.37	4.22	19.5	4	0.83	6	101	spherical	1	ER	0.84
Venus	8.32	7.31	1.14	7.31	50.9	3	0.75	10	100	spherical	1	ER	0.43
Venus	6.54	4.74	1.38	4.74	26.5	5	0.88	6	94	prolate	1	ER	0.77
Venus	6.83	4.5	1.52	4.5	34.1	4	0.63	8	85	prolate	1	ER	0.32
Venus	4.3	3.28	1.31	3.28	12.9	4	0.51	5	100	polygon	1	AN	0.49
Venus	5.54	4.81	1.15	4.81	18.3	3	0.78	8	85	spherical	1	ER	0.74
Venus	7.07	5.63	1.26	5.63	34.5	3	1	7	88	spherical	1	AN	0.64
Venus	3.72	3.66	1.02	3.66	10.5	4	0.72	5	85	polygon	1	ER	0.73
Venus	6.59	4.99	1.32	4.99	25.0	3	0.72	8	88	polygon	1	ER	0.85
Venus	7.08	5.12	1.38	5.12	28.4	4	0.62	5	98	polygon	1	ER	0.47
Venus	7.16	5.45	1.31	5.45	36.1	3	0.69	10	78	prolate	1	ER	0.42
Venus	2.82	2.53	1.11	2.82	5.9	4	0.75	4	101	polygon	1	ER	0.68

Venus	5.45	4.95	1.1	5.45	27.1	4	0.8	9	89	ovoid	1	ER	0.81
Venus	5.33	3.49	1.53	3.49	14.2	5	0.75	7	95	ovoid	1	ER	0.61
Venus	12.7	7.89	1.61	7.89	72.0	2	0.8	12	107	ovoid	1	EL	0.87
Venus	6.14	4.64	1.32	4.64	30.6	5	1.24	5	78.06	polygon	1	AN	0.65
Venus	9.24	7.7	1.2	7.7	55.6	4	0.87	8	55.6	spherical	1	AF	0.85
Venus	9.27	8.47	1.09	8.47	67.0	5	1.64	4	68	polygon	1	EL	0.43
Venus	5.36	4.13	1.3	4.13	18.4	3	0.7	7	87	spherical	1	ER	0.80
Venus	4.71	3.69	1.28	3.69	12.0	4	0.6	5	79	polygon	1	ER	0.45
Venus	7.58	5.53	1.37	5.53	31.5	3	0.4	8	110	ovoid	1	AF	0.59
Venus	8.31	3.18	2.61	3.18	8.3	4	0.75	4	75	polygon	1	EL	0.56
Venus	4.6	4	1.15	4	16.1	2	0.6	7	100	prolate	1	ER	0.87
Venus	7.62	5.73	1.33	5.73	34.3	3	0.69	6	80	ovoid	1	ER	0.38
Venus	10.35	7.95	1.30	7.95	63.9	4	0.87	9	99	spherical	1	ER	0.44
Venus	4.8	4.56	1.05	4.56	17.9	4	0.62	5	77	polygon	1	ER	0.48
Venus	5.9	3.41	1.73	3.41	16.5	5	0.62	8	82	polygon	1	EL	0.46
Venus	5.14	4.22	1.22	4.22	15.7	3	0.72	7	97	ovoid	1	ER	0.83
Venus	6.53	4.92	1.33	4.92	25.1	3	0.62	7	82.14	prolate	1	ER	0.53
Venus	12.32	10.32	1.19	10.32	97.7	3	1	9	91	ovoid	1	EL	0.46
Venus	4.51	4.1	1.1	4.1	16.6	4	0.58	5	95	polygon	1	ER	0.51
Venus	5.92	4.72	1.26	4.72	24.2	4	0.65	9	102	polygon	1	ER	0.84
Venus	7.8	5.74	1.36	5.74	31.7	5	1.44	4	61	polygon	1	AN	0.41
Venus	7.69	6.36	1.21	6.36	35.3	3	0.78	8	98	spherical	1	ER	0.75
Venus	5.8	5.08	1.141	5.08	25.3	3	0.66	8	92	spherical	1	ER	0.89
Venus	4.1	3.99	1.03	3.99	13.8	3	0.6	7	88	polygon	1	ER	0.70
Venus	4.51	4.4	1.03	4.4	13.5	3	0.61	7	91	polygon	1	ER	0.75
Venus	6.86	5.84	1.17	5.84	32.1	3	0.72	9	96	polygon	1	ER	0.75
Venus	3.1	2.78	1.12	2.78	9.0	4	0.74	5	80	polygon	1	ER	0.60
Venus	4.34	3.72	1.17	3.72	14.2	4	0.84	7	89	polygon	1	ER	0.90
Venus	6.15	5.84	1.05	5.84	30.8	5	0.97	7	88	polygon	1	ER	0.50
fanny	5.24	4.12	1.27	4.12	15.3	3	0.82	11	95	spherical	1	ER	0.58
fanny	7.11	6.6	1.08	6.6	39.2	3	0.7	9	119	spherical	1	ER	0.72
fanny	9.56	8	1.2	8	66.3	3	1.15	10	65	spherical	1	EL	0.32
fanny	8.61	6.65	1.29	6.65	41.9	4	0.85	15	98	spherical	1	EL	0.67
fanny	10.08	8.94	1.13	8.94	73.2	3	1	15	92	spherical	1	EL	0.86
fanny	6.97	6.45	1.08	6.45	38.7	3	0.72	8	80	spherical	1	ER	0.48
fanny	10.46	7.24	1.44	7.24	67.5	3	0.85	14	80	ovoid	1	EL	1
fanny	9.83	6.65	1.48	6.65	55.1	4	0.61	7	112	ovoid	1	EL	0.31
fanny	5.8	5.36	1.08	5.36	25.0	4	0.69	6	97	polygon	1	ER	0.80
fanny	5.8	4.95	1.17	4.95	27.0	4	1.17	4	113	polygon	1	AN	0.52
fanny	7.33	4.69	1.56	4.69	107.0	5	0.6	9	107	polygon	1	EL	0.38
fanny	8.5	6.55	1.3	6.55	41.2	4	1.33	1	55.58	polygon	1	AF	0.54
fanny	12.59	11.88	1.06	11.88	117.5	3	1.23	12	104.46	spherical	1	EL	0.66
fanny	12.51	8.94	1.4	8.94	97.0	4	0.92	19	88.6	spherical	1	EL	0.93
fanny	4.18	3.92	1.07	3.92	15.3	4	0.7	5	85	polygon	1	ER	0.70

fanny	7.07	5.54	1.28	5.54	30.2	4	1.1	6	105	ovoid	1	AN	0.56
fanny	10.96	9.91	1.11	9.91	85.3	4	1.35	5	91.89	spherical	1	AN	0.47
fanny	9.77	8.43	1.16	8.43	61.6	3	0.74	8	94.15	spherical	1	ER	0.42
fanny	12.8	11.27	1.14	11.27	117.1	4	1.09	10	106	spherical	1	EL	0.48
fanny	8.5	7.25	1.17	7.25	59.9	4	0.94	15	73	spherical	1	EL	0.79
fanny	10.85	9.12	1.19	9.12	80.3	3	0.69	8	84	spherical	1	ER	0.33
fanny	11.7	9.09	1.29	9.09	90.3	4	0.94	9	96	polygon	1	EL	0.61
fanny	5.41	4.17	1.3	4.17	16.7	4	1.13	5	102	polygon	1	AN	0.44
fanny	8.49	6.85	1.24	6.85	49.0	3	0.88	8	88.08	polygon	1	EL	0.44
fanny	8.52	8.5	1	8.5	68.6	2	0.83	17	94.22	spherical	1	EL	0.75
fanny	8.98	8.9	1.01	8.9	63.3	2	0.92	8	72.47	spherical	1	ER	0.56
fanny	9.1	8.92	1.02	8.92	61.7	3	0.84	13	119	spherical	1	EL	0.51
fanny	12.92	10.41	1.24	10.41	98.1	3	1.02	21	103.14	ovoid	1	EL	0.99
fanny	8.32	7.2	1.16	7.2	49.2	3	0.83	5	97.88	polygon	2	ER	0.43
fanny	9.34	8.91	1.05	8.91	59.5	4	1.02	8	100	spherical	2	ER	0.40
fanny	13.92	13.83	1.01	13.83	137.4	4	1.14	19	112.56	ovoid	1	EL	0.80
fanny	13.93	13.11	1.06	13.11	144.2	2	1.19	17	56	spherical	1	EL	0.50
fanny	7.75	6.87	1.13	6.87	39.3	3	0.75	16	91.79	spherical	1	EL	0.55
fanny	10.9	8.08	1.35	8.08	67.4	3	0.88	8	101	spherical	1	ER	0.40
fanny	9.69	8.32	1.16	8.32	58.8	3	0.82	9	92	prolate	1	ER	0.50
fanny	14.74	13.03	1.13	13.03	85.6	4	0.92	6	85	spherical	1	EL	0.43
fanny	8.96	8.22	1.09	8.22	67.9	4	0.52	8	137	polygon	1	AF	0.39
fanny	17.98	15.2	1.18	15.2	234.6	3	1	14	97.16	spherical	1	EL	0.77
fanny	10.07	9.01	1.12	9.01	72.9	3	0.72	5	88.97	spherical	1	ER	0.41
fanny	13.4	9.02	1.49	9.02	96.4	4	0.66	8	116	ovoid	1	EL	0.41
fanny	9.69	8.74	1.11	8.74	72.8	3	0.78	13	111	spherical	1	EL	0.63
fanny	10.72	10.53	1.02	10.53	98.2	3	1.16	11	99	spherical	1	EL	0.43
fanny	5.4	4.72	1.14	4.72	19.6	3	0.6	6	83	spherical	1	ER	0.46
fanny	13.12	12.84	1.02	12.84	142.0	3	1.16	11	89.24	spherical	1	EL	0.58
fanny	4.95	4.27	1.16	4.27	17.3	3	0.7	4	17.3	spherical	1	AN	0.71
fanny	5.32	4.6	1.16	4.6	72.3	3	0.5	6	101	polygon	1	ER	0.39
fanny	6.38	3.33	1.92	3.33	17.9	3	0.42	7	102	ovoid	1	EL	0.35
fanny	10.4	9.45	1.1	9.45	73.0	4	0.72	13	92	ovoid	1	EL	0.96
fanny	10.89	9.04	1.2	9.04	77.2	3	0.6	11	81	ovoid	1	EL	0.92
fanny	4.67	3.76	1.24	3.76	11.8	3	0.47	8	96	spherical	1	ER	0.54
fanny	9.93	9.01	1.1	9.01	71.6	3	0.78	14	94	ovoid	1	EL	0.99
fanny	12.1	10.49	1.15	10.49	103.3	4	0.88	17	90.25	prolate	1	EL	0.99
fanny	9.04	8.85	1.02	8.85	59.4	2	0.84	8	97	spherical	1	ER	0.53
fanny	6.15	4.53	1.36	4.53	19.3	3	0.66	3	82	polygon	1	ER	0.39
fanny	10.21	9.21	1.11	9.21	76.4	2	0.74	18	110	spherical	1	EL	0.84
fanny	5.98	5.08	1.18	5.08	27.9	4	1	2	74	polygon	1	AN	0.44
fanny	11.06	10.44	1.06	10.44	90.5	3	0.82	10	117	spherical	1	ER	0.46
fanny	11.17	8.4	1.33	8.4	75.8	3	0.8	17	66	ovoid	1	EL	0.64
fanny	15.56	14.57	1.07	14.57	170.4	2	1.25	15	81.61	spherical	1	EL	0.85

fanny	7.62	6.31	1.21	6.31	40.4	3	0.72	12	89.9	prolate	1	EL	0.92
fanny	6.8	6.22	1.09	6.22	34.3	4	0.88	10	95.29	spherical	1	ER	0.82
fanny	8.77	7.89	1.11	7.89	55.2	3	0.87	9	99	spherical	1	ER	0.46
fanny	3.6	3.38	1.07	3.38	9.2	3	0.84	6	100	polygon	1	ER	0.86
fanny	5.22	4.92	1.06	4.92	19.5	3	0.7	5	93	spherical	1	ER	0.83
fanny	2.93	2.33	1.26	2.33	5.3	3	0.55	3	92	polygon	1	AN	0.45
fanny	4.31	3.89	1.11	3.89	12.0	3	0.55	3	99	spherical	1	AN	0.68
fanny	15	12.55	1.2	12.55	128.2	3	1.01	19	87	ovoid	1	EL	0.78
fanny	8.47	6.86	1.23	6.86	40.7	3	0.72	8	118	prolate	1	ER	0.58
fanny	6.88	4.59	1.5	4.59	33.4	4	0.97	6	105.71	polygon	1	ER	0.47
fanny	15.07	10.98	1.37	10.98	129.3	3	0.94	12	104.33	ovoid	1	EL	0.65
fanny	7.01	5.77	1.21	5.77	31.3	4	0.78	4	93	polygon	1	ER	0.48
fanny	15.18	14.77	1.03	14.77	186.3	3	1.14	7	97	spherical	1	EL	0.55
fanny	6.46	5.43	1.19	5.43	30.0	3	0.88	6	100	spherical	1	ER	0.68
fanny	9.06	8.09	1.12	8.09	61.4	3	0.88	8	82.57	spherical	1	ER	0.36
fanny	8.71	8.4	1.04	8.4	52.1	4	0.94	7	52.14	polygon	1	AF	0.61
fanny	6.25	4.52	1.38	4.52	22.7	3	0.8	9	94	ovoid	1	ER	0.86
fanny	10.71	6.96	1.54	6.96	66.6	3	1.1	12	95	prolate	1	EL	0.97
fanny	8.19	7.79	1.05	7.79	48.8	4	0.8	6	96	polygon	1	ER	0.50
fanny	8.48	8.41	1.01	8.41	57.6	3	0.93	7	86.42	spherical	1	ER	0.39
fanny	11.04	10.44	1.06	10.44	92.9	3	0.84	6	92.86	spherical	1	ER	0.44
fanny	18.84	16.9	1.11	16.9	261.6	4	1.05	7	124	spherical	1	EL	0.47
fanny	13.57	12.85	1.06	12.85	121.1	3	1	10	93.74	spherical	1	EL	0.56
fanny	13.26	12.89	1.03	12.89	149.9	3	1.6	12	92	polygon	1	EL	0.75
fanny	17.8	14.9	1.19	14.9	223.3	3	1.33	14	95	ovoid	1	EL	0.76
fanny	14.64	14.54	1.01	14.54	160.8	3	0.8	16	77	spherical	1	EL	0.83
fanny	6.1	6.05	1.01	6.05	31.4	4	0.65	6	114	spherical	1	ER	0.56
fanny	9.56	8.63	1.11	8.63	72.9	4	0.78	10	85.67	polygon	1	EL	0.50
fanny	8.5	8.09	1.05	8.09	52.3	4	1.1	7	101	polygon	1	EL	0.43
fanny	12.77	12.25	1.04	12.25	136.1	3	0.93	20	100	spherical	1	EL	0.86
fanny	12.69	12.09	1.05	12.09	120.8	3	0.94	12	98	spherical	1	EL	0.65
fanny	9.85	9.52	1.03	9.52	78.8	3	0.85	12	91	spherical	1	EL	0.46
fanny	10.32	9.45	1.09	9.45	67.7	5	0.75	11	112	polygon	1	EL	0.92
fanny	13.47	11.01	1.22	11.01	115.1	3	0.83	13	100	ovoid	1	EL	0.85
fanny	16.29	14.48	1.13	14.48	191.3	3	1	11	95	ovoid	1	EL	0.67
fanny	11.11	9.11	1.22	9.11	86.5	3	0.8	11	90	ovoid	1	EL	0.94
fanny	6.86	4.24	1.62	4.24	25.8	4	0.9	6	81	ovoid	1	AN	0.36
fanny	12.91	11.99	1.08	11.99	133.4	3	1.1	9	109	spherical	1	EL	0.44
fanny	5.4	4.2	1.29	4.2	16.2	4	0.72	5	76.85	spherical	1	ER	0.39
fanny	7.38	4.92	1.5	4.92	31.2	4	1	5	79	polygon	1	AN	0.45
fanny	4.06	3.98	1.02	3.98	15.0	4	0.72	5	65	spherical	1	AN	0.59
fanny	7.61	6.91	1.1	6.91	42.4	4	0.93	7	75	polygon	1	ER	0.52
fanny	6.45	5.25	1.23	5.25	31.2	4	0.92	9	108	ovoid	1	ER	0.72
fanny	10.3	9.39	1.1	9.39	79.1	3	0.92	12	93	ovoid	1	EL	0.95

fanny	5.02	4.41	1.14	4.41	17.7	3	1.05	4	71	spherical	1	AN	0.83
fanny	13.64	10.14	1.35	10.14	99.9	2	0.93	12	89	spherical	1	EL	0.59
fanny	9.36	8.61	1.09	8.61	63.7	3	0.51	9	120	ovoid	1	AF	0.38
fanny	5.61	4.54	1.24	4.54	16.2	4	0.8	6	102	polygon	1	ER	0.89
fanny	17.26	12.84	1.34	12.84	178.8	5	1.43	14	102	polygon	1	EL	0.74
fanny	17.55	13.1	1.34	13.1	190.7	3	1.3	12	100	prolate	1	EL	0.68
fanny	8.89	7.48	1.19	7.48	49.1	2	0.7	9	108	prolate	1	ER	0.54
fanny	3.38	3.28	1.03	3.28	11.7	3	0.46	6	75	polygon	1	ER	0.40
fanny	9.68	8.18	1.18	8.18	61.7	3	0.88	8	77	spherical	1	ER	0.34
fanny	13.95	12.1	1.15	12.1	126.8	3	0.87	17	95	ovoid	1	EL	0.77
fanny	11.27	10.36	1.09	10.36	93.0	2	0.87	9	112	spherical	1	ER	0.53
fanny	8.25	8.1	1.02	8.1	52.1	3	0.51	14	109	spherical	1	EL	0.71
fanny	5.04	4.3	1.17	4.3	15.7	3	0.62	4	113	spherical	1	ER	0.56
fanny	9.41	8.16	1.15	8.16	79.4	3	0.94	15	115	ovoid	1	EL	0.98
fanny	9.12	8.4	1.09	8.4	63.8	3	0.7	11	120	spherical	1	EL	0.53
fanny	9.22	7.47	1.23	7.47	59.0	4	1	8	92	spherical	1	AN	0.36
fanny	6.93	4.78	1.45	4.78	27.6	4	0.66	7	96	prolate	1	ER	0.51
fanny	9.22	7.88	1.17	7.88	57.8	4	0.58	9	103	ovoid	1	EL	0.41
fanny	15.86	15.72	1.01	15.72	215.0	4	1.17	24	90	ovoid	1	EL	0.82
fanny	8.55	6.95	1.23	6.95	52.7	4	0.8	10	83	prolate	1	ER	0.45
fanny	12.31	8.13	1.51	8.13	76.6	4	0.9	11	94	ovoid	1	EL	0.92
Brutus	5.92	5.78	1.02	5.78	33.0	3	0.66	6	91	polygon	1	ER	0.69
Brutus	5.08	4.81	1.06	4.81	19.2	3	0.69	9	90	spherical	1	ER	0.81
Brutus	6.46	5.36	1.21	5.36	31.1	4	0.75	10	85	polygon	1	ER	0.57
Brutus	6.86	5.23	1.31	5.23	26.0	4	0.72	5	118	ovoid	1	ER	0.68
Brutus	13.01	11.28	1.15	11.28	130.1	3	1.17	15	93	prolate	1	EL	0.99
Brutus	6.47	4.71	1.37	4.71	25.5	3	1.13	9	107	spherical	1	AN	0.58
Brutus	3.58	3.28	1.09	3.28	11.0	4	0.51	5	103	polygon	1	ER	0.48
Brutus	11.9	11.67	1.02	11.67	11.5	3	1.17	16	85	spherical	1	EL	0.81
Brutus	14.02	10.79	1.3	10.79	123.0	4	1.03	12	123	prolate	1	EL	0.65
Brutus	7.17	6.55	1.09	6.55	36.3	4	0.74	8	105	polygon	1	ER	0.79
Brutus	5.95	4.52	1.32	4.52	21.1	4	0.93	5	100	polygon	1	ER	0.74
Brutus	10.67	9.88	1.08	9.88	96.1	3	0.94	14	94	prolate	1	EL	0.98
Brutus	6.69	6.15	1.09	6.15	32.7	2	0.84	13	70	spherical	1	ER	0.51
Brutus	5.97	5.13	1.16	5.13	22.2	3	0.78	12	70	spherical	1	ER	0.54
Brutus	18.45	16.46	1.12	16.46	240.0	4	1.16	15	92	ovoid	1	EL	0.75
Brutus	11.22	9.11	1.23	9.11	81.2	4	0.75	15	111	prolate	1	EL	0.97
Brutus	24.76	17.74	1.4	17.74	341.7	3	1.7	19	102	ovoid	1	EL	0.78
Brutus	13.63	13.38	1.02	13.38	153.4	3	0.93	16	105	spherical	1	EL	0.84
Brutus	17.54	11.72	1.5	11.72	180.6	5	1.1	11	111	ovoid	1	EL	0.62
Brutus	13.98	11.82	1.18	11.82	140.7	3	0.94	10	90	spherical	1	EL	0.50
Brutus	18.93	13.04	1.45	13.04	205.1	3	1	19	86	prolate	1	EL	0.80
Brutus	7.18	6.16	1.17	6.16	40.0	3	0.8	10	89	spherical	1	ER	0.80
Brutus	9.45	6.78	1.39	6.78	48.8	4	0.8	11	88	prolate	1	EL	0.96

Brutus	18.62	14.62	1.27	14.62	208.0	3	1.05	14	105	ovoid	1	EL	0.75
Brutus	13.64	13.12	1.04	13.12	133.4	2	1.03	13	92	spherical	1	EL	0.82
Brutus	4.75	4.06	1.17	4.06	16.5	4	0.6	6	95	polygon	1	ER	0.71
Brutus	10.54	9.48	1.11	9.48	85.6	3	0.97	7	101	spherical	1	AN	0.35
Brutus	6.13	4.94	1.24	4.94	28.3	3	0.65	10	88	polygon	1	ER	0.67
Brutus	13.43	11.47	1.17	11.47	120.4	3	0.92	13	110	spherical	1	EL	0.75
Brutus	18.23	15.67	1.16	15.67	230.7	4	1.4	14	105	spherical	1	EL	0.76
Brutus	6.32	4.66	1.36	4.66	21.3	3	0.65	7	100	ovoid	1	ER	0.85
Brutus	13.26	9.86	1.34	9.86	113.3	4	1.14	10	113	prolate	1	EL	0.50
Brutus	12.95	9.75	1.33	9.75	86.2	3	1.17	10	91	spherical	1	EL	0.42
Brutus	7.85	7.81	1.01	7.81	42.3	5	0.66	8	113	ovoid	1	ER	0.55
Brutus	9.5	7.12	1.33	7.12	51.0	4	0.72	8	100	prolate	1	ER	0.45
Brutus	21	18	1.17	18	309.0	3	1.23	18	120	spherical	1	EL	0.82
Brutus	5.79	5.36	1.08	5.36	23.7	4	0.78	7	90	polygon	1	ER	0.84
Brutus	19.59	11.59	1.69	11.59	119.8	3	0.84	19	90	spherical	1	EL	0.70
Brutus	19	18.03	1.05	18.03	283.0	3	1.09	13	94	spherical	1	EL	0.81
Brutus	13.5	8.52	1.58	8.52	90.6	3	0.94	9	77.25	ovoid	1	EL	0.42
Brutus	5.94	5.43	1.09	5.43	23.3	3	0.72	6	86	polygon	1	ER	0.84
Brutus	6.35	3.38	1.88	3.38	16.8	4	0.72	7	89	quadrangular	1	ER	0.45
Brutus	5.57	5.37	1.04	5.37	26.6	3	0.78	7	86	polygon	1	ER	0.77
Brutus	11.9	10.66	1.12	10.66	105.0	4	0.9	13	100	ovoid	1	EL	0.97
Brutus	5.96	5.41	1.1	5.41	28.8	3	0.66	12	102	spherical	1	ER	0.60
Brutus	17.82	13.64	1.31	13.64	193.3	3	1.2	16	93	ovoid	1	EL	0.79
Brutus	9.43	7.62	1.24	7.62	56.0	3	0.77	11	97	prolate	1	EL	0.95
Brutus	7.75	5.69	1.36	5.69	33.2	4	0.92	9	99	polygon	1	ER	0.55
Brutus	5.04	4.45	1.13	4.45	18.9	4	0.6	7	78	polygon	1	ER	0.53
Brutus	9.45	7.25	1.3	7.25	47.0	3	0.78	12	88	ovoid	1	EL	0.98
Brutus	10.44	6.43	1.62	6.43	45.8	5	0.78	6	100	ovoid	1	ER	0.35
Brutus	6.7	4.8	1.4	4.8	25.2	3	0.65	8	101	prolate	1	ER	0.62
Brutus	12.08	7.07	1.71	7.07	68.8	3	1.2	7	57	prolate concave-convex	1	SA	0.39
Brutus	8.45	6.91	1.22	6.91	43.1	4	0.5	10	93.6	triangular	1	AF	0.36
Brutus	13.57	9.16	1.48	9.16	101.6	4	1.03	9	111	elongate	1	EL	0.43
Brutus	25.24	11.43	2.21	11.43	139.4	3	1.37	8	119	prolate	1	SA	0.46
Brutus	6.16	4.05	1.52	4.05	20.7	3	1	7	73.26	prolate	1	AN	0.58
Brutus	6.5	5.32	1.22	5.32	28.0	3	0.69	8	94	spherical	1	ER	0.84
Brutus	5.87	5.69	1.03	5.69	27.2	3	0.65	5	96	spherical	1	ER	0.66
Brutus	4.56	3.19	1.43	3.19	14.1	4	0.61	6	78	polygon	1	AN	0.42
Brutus	6.78	5.45	1.24	5.45	29.9	5	1.03	5	82	polygon	1	AN	0.45
Brutus	5.39	3.67	1.47	3.67	17.2	4	0.94	6	89	polygon	1	ER	0.48
Brutus	6.19	5.18	1.19	5.18	27.7	4	0.8	7	78	polygon	1	ER	0.62
Brutus	7.06	5.85	1.21	5.85	35.6	3	0.8	12	93	prolate	1	EL	0.93
Brutus	5.43	4.31	1.26	4.31	18.1	4	0.85	9	94	prolate	1	ER	0.86
Brutus	9.11	7.83	1.16	7.83	57.1	2	0.93	13	94	spherical	1	EL	0.58
Brutus	10.28	9.56	1.08	9.56	74.7	4	1.13	17	113	ovoid	1	EL	0.97

Brutus	10.78	9.75	1.11	9.75	90.0	3	0.92	11	97	spherical	1	EL	0.53
Brutus	10.86	9.85	1.1	9.85	84.5	4	0.84	14	108	ovoid	1	EL	0.97
Brutus	15.01	14.76	1.02	14.76	185.8	3	0.97	15	107	spherical	1	EL	0.81
Brutus	8.3	6.09	1.36	6.09	90.8	4	1.01	9	90	polygon	1	EL	0.39
Brutus	14.17	14.01	1.01	14.01	150.5	4	1.01	13	85.85	spherical	1	EL	0.76
Brutus	16.81	14.98	1.12	14.98	194.0	3	0.88	14	101.75	spherical	1	EL	0.77
Brutus	16.35	15.4	1.06	15.4	202.0	2	1.4	13	110	spherical	1	EL	0.85
Brutus	8.15	7.3	1.12	7.3	43.0	3	0.66	10	99	spherical	1	ER	0.65
Brutus	5.82	5.69	1.02	5.69	31.4	3	0.64	7	97	polygon	1	ER	0.53
Brutus	14.8	14.2	1.04	14.2	165.7	3	1.19	10	115.7	spherical	1	EL	0.54
Brutus	6.33	5.71	1.11	5.71	25.7	3	0.6	9	110	spherical	1	ER	0.57
Brutus	5.68	4.95	1.15	4.95	26.5	4	0.74	6	92.7	polygon	1	ER	0.90
Brutus	6.95	5.95	1.17	5.95	34.6	3	0.66	10	100	polygon	1	ER	0.79
Brutus	8.66	8.32	1.04	8.32	56.0	3	0.83	10	102	polygon	1	ER	0.48
Brutus	17.72	13.52	1.31	13.52	159.0	3	1.02	15	120	ovoid	1	EL	0.74
Brutus	8.37	6.22	1.35	6.22	34.2	4	0.55	8	120	ovoid	1	AF	0.38
Brutus	10.27	6.71	1.53	6.71	60.1	4	0.94	9	97	prolate concave-convex	1	EL	0.42
Brutus	11.95	8.36	1.43	8.36	82.0	3	1.14	12	85	ovoid	1	EL	0.92
Brutus	11.43	10.58	1.08	10.58	103.7	3	1.03	15	87	spherical	1	EL	0.95
Brutus	10.14	9.01	1.13	9.01	75.0	5	1.02	9	96.6	polygon	1	EL	0.44
Brutus	9.02	7.79	1.16	7.79	58.5	3	0.83	11	100	spherical	1	EL	0.50
Brutus	14.24	11.86	1.2	11.86	123.8	3	0.92	17	81	prolate	1	EL	0.80
Brutus	11.39	10.21	1.12	10.21	91.5	3	0.82	19	86	ovoid	1	EL	0.97
Brutus	14.57	14.01	1.04	14.01	169.3	3	1.14	15	116	spherical	1	EL	0.83
Brutus	12.44	9.75	1.28	9.75	99.7	3	1.13	10	97	ovoid	1	EL	0.49
Brutus	5.86	4.52	1.3	4.52	26.3	4	0.6	6	109.4	polygon	1	ER	0.59
hector	6.32	6.04	1.05	6.04	30.5	4	0.83	7	80	polygon	1	ER	0.60
hector	7.17	4.82	1.49	4.82	30.3	4	0.7	9	101	ovoid	1	ER	0.46
hector	6.59	4.76	1.38	4.76	25.8	4	0.8	7	115	ovoid	1	ER	0.79
hector	5.95	3.79	1.57	3.79	18.5	3	0.72	5	97	prolate	1	ER	0.65
hector	11.66	10.63	1.1	10.63	110.0	4	0.97	6	95	spherical	1	EL	0.44
hector	19.32	15.84	1.22	15.84	281.6	1	2.4	15	77.5	prolate	1	EL	0.78
hector	8.24	8.12	1.01	8.12	53.4	2	0.7	12	90	spherical	1	EL	0.41
hector	5.92	5.91	1	5.91	27.9	3	0.72	9	98	spherical	1	ER	0.49
hector	7.65	4.95	1.55	4.95	32.6	4	0.72	4	70	prolate	1	AN	0.42
hector	6.03	3.98	1.52	3.98	27.3	4	0.94	4	77	polygon	1	AN	0.47
hector	4.02	3.5	1.15	3.5	11.4	4	0.83	4	80	polygon	1	ER	0.52
hector	20.32	14.28	1.42	14.28	228.7	3	0.9	30	78	prolate	1	EL	0.81
hector	7.97	7.03	1.13	7.03	43.6	3	1	7	87	ovoid	1	AN	0.52
hector	5.14	4.15	1.24	4.15	16.6	4	0.52	4	100	ovoid	1	AN	0.85
hector	12.98	10.1	1.29	10.1	119.1	4	1.3	8	80.41	ovoid	1	EL	0.47
hector	16.7	13.62	1.23	13.62	198.1	3	1.14	17	71	ovoid	1	EL	0.74
hector	12.6	11.75	1.07	11.75	114.4	3	1	4	120	spherical	1	AN	0.31
hector	12	9.68	1.24	9.68	107.0	4	1	5	100	spherical	1	EL	0.37

hector	19.7	16.43	1.2	16.43	254.7	3	1.44	9	102	ovoid	1	EL	0.47
hector	8.15	7.37	1.11	7.37	53.5	4	1.13	4	84	polygon	1	AN	0.55
hector	12.76	10.63	1.2	10.63	102.6	4	0.87	9	100	spherical	1	EL	0.53
kendo	6.31	4.69	1.35	4.69	23.0	5	0.72	5	88	polygon	1	ER	0.82
kendo	6.45	5.43	1.19	5.43	29.5	3	0.94	7	82.55	spherical	1	AF	0.36
kendo	7.72	5.05	1.53	5.05	42.5	2	1.17	11	96.81	prolate	1	EL	0.90
kendo	15.35	13.95	1.1	13.95	191.8	4	1.49	5	84.4	polygon	1	SA	0.45
kendo	4.37	4.04	1.08	4.04	16.4	5	0.5	5	88	polygon	1	AN	0.48
kendo	7.59	6.16	1.23	6.16	34.0	3	0.72	13	83.68	spherical	1	ER	0.55
kendo	3.88	3.2	1.21	3.2	9.4	3	0.81	6	92.55	polygon	1	ER	0.91
kendo	16.78	14.13	1.19	14.13	175.7	3	1.03	12	107	ovoid	1	EL	0.68
kendo	4.2	4.04	1.04	4.04	23.6	4	0.98	6	0.81	polygon	1	AN	0.50
kendo	11.01	10.42	1.06	10.42	98.0	3	0.9	14	94	spherical	1	EL	0.85
kendo	6.67	6.31	1.06	6.31	39.4	4	0.74	9	94	polygon	1	ER	0.81
kendo	5.7	5.02	1.14	5.02	26.0	3	0.9	7	98	spherical	1	ER	0.73
kendo	14.84	13.38	1.11	13.38	161.6	3	1.03	8	111	spherical	1	EL	0.48
kendo	7.1	6.77	1.05	6.77	41.4	4	1.17	8	97	polygon	1	ER	0.39
kendo	5.18	4.68	1.11	4.68	23.7	3	0.98	4	102	polygon	1	AN	0.51
kendo	7.85	7.1	1.11	7.1	42.4	3	0.81	8	91	polygon	1	ER	0.72
Ondine	4.85	4.5	1.08	4.5	16.4	2	0.55	7	110	spherical	1	ER	0.85
Ondine	4.43	3.19	1.39	3.19	12.0	4	0.46	7	90	polygon	1	ER	0.41
Ondine	8.23	7.7	1.07	7.7	55.2	3	0.66	10	90	spherical	1	ER	0.49
Ondine	7.17	6.56	1.09	6.56	39.1	3	1.05	15	70	spherical	1	EL	0.56
Ondine	5.18	4.24	1.22	4.24	18.2	2	0.62	5	102	prolate	1	ER	0.83
Ondine	8.92	7.23	1.23	7.23	52.7	2	0.8	14	85	ovoid	1	EL	0.99
Ondine	6.96	3.69	1.89	3.69	22.2	3	0.72	7	99	polygon	1	EL	0.47
Ondine	6.34	4.67	1.36	4.67	29.5	3	0.66	6	120	prolate concave-convex	1	ER	0.75
Ondine	4.57	3.1	1.47	3.1	12.0	5	0.72	7	106	polygon	1	ER	0.60
Lefkas	5.53	4.27	1.3	4.27	21.7	4	0.78	6	118	spherical	1	ER	0.78
Lefkas	4.71	4.3	1.1	4.3	15.5	3	0.51	9	87	polygon	1	ER	0.56
Lefkas	7.56	6.06	1.25	6.06	38.2	4	0.81	11	105	spherical	1	ER	0.55
Lefkas	6.19	4.64	1.33	4.64	26.9	4	0.75	9	94	polygon	1	ER	0.91
Lefkas	6.41	5.34	1.2	5.34	24.1	4	0.58	9	75	ovoid	1	AF	0.38
Lefkas	4.64	2.79	1.66	2.79	9.8	5	0.72	6	93	polygon	1	ER	0.58
Lefkas	6.46	5.85	1.1	5.85	24.8	3	0.62	6	99	spherical	1	ER	0.68
Lefkas	6.5	5.18	1.25	5.18	25.0	3	0.66	14	96	spherical	1	EL	0.58
Lefkas	5.76	4.95	1.16	4.95	24.9	4	0.88	8	71	polygon	1	ER	0.44
Lefkas	5.84	4.81	1.21	4.81	22.3	3	0.94	8	100	spherical	1	ER	0.80
Lefkas	14.44	14.14	1.02	14.14	173.3	2	0.97	11	116	spherical	1	EL	0.64
Agathe	9.99	8.36	1.19	8.36	67.6	3	0.66	11	101	ovoid	1	EL	0.95
Agathe	6.79	5.14	1.32	5.14	29.0	3	0.51	7	93	prolate	1	AF	0.54
Agathe	7.3	6.09	1.2	6.09	34.6	5	0.92	5	92	polygon	1	ER	0.66
Agathe	5.43	5.07	1.07	5.07	23.3	4	0.58	10	93	polygon	1	ER	0.52
Agathe	7.2	5.67	1.27	5.67	27.7	4	0.92	7	95	ovoid	1	ER	0.61

Agathe	14.45	9.62	1.5	9.62	108.9	3	1.09	9	109	ovoid	1	EL	0.42
Agathe	8.33	7.35	1.13	7.35	44.6	4	0.8	10	96	polygon	1	ER	0.50
Agathe	12.27	11.67	1.05	11.67	127.7	4	1.09	24	88	ovoid	1	EL	0.96
Agathe	4.6	3.94	1.17	3.94	16.0	3	0.72	8	85	spherical	1	ER	0.73
Agathe	7.36	5.13	1.43	5.13	32.2	4	0.83	8	104	prolate	1	ER	0.53
Agathe	13.39	11.78	1.14	11.78	129.8	2	0.92	9	125	prolate	1	EL	0.51
Agathe	5.84	5.02	1.16	5.02	29.9	3	0.58	8	110	polygon	1	ER	0.49
Agathe	3.94	3.86	1.02	3.86	14.5	4	0.58	9	79	polygon	1	ER	0.49
Agathe	4.66	4.64	1	4.64	16.8	3	0.8	9	92	spherical	1	ER	0.56
Agathe	7.58	6.46	1.17	6.46	43.2	3	0.65	6	110	spherical	1	ER	0.58
Agathe	18.04	16.72	1.08	16.72	241.0	2	1.23	16	88	ovoid	1	EL	0.86
Agathe	9.85	6.25	1.58	6.25	45.7	4	0.94	9	98	prolate	1	EL	0.37
Agathe	5.16	5.02	1.03	5.02	23.6	3	0.51	8	91	polygon	1	ER	0.52
Agathe	8.71	6.36	1.37	6.36	49.0	3	0.72	9	117	ovoid	1	ER	0.48
Agathe	9.88	8.61	1.15	8.61	76.8	3	1.09	13	81.75	spherical	1	EL	0.68
Agathe	3.79	3.69	1.03	3.69	12.9	4	0.72	5	114	polygon	1	ER	0.75
Agathe	6.37	4.32	1.47	4.32	22.2	4	0.65	10	93	ovoid	1	ER	0.44
Agathe	4.64	3.13	1.48	3.13	14.4	4	0.46	5	106	polygon	1	AN	0.45
Agathe	4.03	3.87	1.04	3.87	14.5	4	0.78	6	95	polygon	1	ER	0.84
Agathe	10.78	9.49	1.14	9.49	78.7	2	0.72	9	105	spherical	1	ER	0.50
Agathe	4.82	3.49	1.38	3.49	16.2	4	0.8	5	87	polygon	1	ER	0.66
Agathe	12.37	7.33	1.69	7.33	76.5	2	1.85	11	76	prolate	1	EL	0.73
Agathe	4.24	3.62	1.17	3.62	11.9	4	0.62	6	73	polygon	1	ER	0.56
Agathe	2.81	2.48	1.13	2.48	4.9	3	0.5	4	86	polygon	1	AN	0.39
Agathe	4.61	3.28	1.41	3.28	13.1	3	0.62	7	92	polygon	1	ER	0.58
Agathe	6.49	5.87	1.11	5.87	29.8	2	0.92	8	92.35	spherical	1	ER	0.86
Agathe	5.24	5.23	1	5.23	20.8	4	0.69	8	100	polygon	1	ER	0.49
Agathe	3.71	3.67	1.01	3.67	10.4	3	0.8	4	82	spherical	1	ER	0.58
Agathe	14.06	8.63	1.63	8.63	99.9	2	1.03	11	70	ovoid	1	EL	0.51
Agathe	13.98	11.8	1.18	11.8	121.5	4	1.3	10	100	prolate	1	EL	0.47
Agathe	3.08	2.67	1.15	2.67	6.6	3	0.55	9	82	spherical	1	ER	0.43
Agathe	6.76	5.23	1.29	5.23	30.6	3	0.84	6	108	prolate	1	ER	0.79
Agathe	9.87	5.92	1.67	5.92	49.1	4	0.69	10	100	ovoid	1	EL	0.51
Agathe	9.91	8.01	1.24	8.01	61.0	3	0.62	8	86	ovoid	1	EL	0.40
Agathe	5.74	4.12	1.39	4.12	21.4	4	0.87	7	93.61	polygon	1	ER	0.67
Agathe	8.35	5.53	1.51	5.53	39.5	4	0.83	8	107	ovoid	1	ER	0.39
Agathe	6.54	5	1.31	5	75.5	3	0.84	7	75.5	spherical	1	AF	0.43
Agathe	10.96	7.11	1.54	7.11	55.1	3	0.92	9	66.1	prolate	1	AF	0.42
Agathe	9.85	7.58	1.3	7.58	61.3	3	0.94	7	91.53	spherical	1	ER	0.38
Agathe	5.59	5.1	1.1	5.1	24.2	4	0.72	9	86	spherical	1	ER	0.76
Agathe	5.24	4.31	1.22	4.31	17.9	3	0.6	7	87	spherical	1	ER	0.67
Agathe	4.61	4.3	1.07	4.3	17.6	4	0.72	5	103.17	polygon	1	ER	0.77
Agathe	8.92	8.5	1.05	8.5	55.3	2	0.84	9	97.72	spherical	1	ER	0.55
Agathe	10.01	5.95	1.68	5.95	48.2	5	1.02	8	90.1	ovoid	1	AN	0.41

Agathe	11.26	10.14	1.11	10.14	98.3	3	1.47	14	71.23	spherical	1	EL	0.88
Agathe	5.23	3.38	1.55	3.38	14.8	4	0.83	7	99.55	polygon	1	ER	0.62
Agathe	11.04	7	1.58	7	68.6	4	0.74	10	94.7	ovoid	1	EL	0.49
Clyde	8.54	7.26	1.18	7.26	47.3	3	0.74	11	87.78	prolate	1	EL	0.93
Clyde	7.1	5	1.42	5	31.1	2	0.51	12	113.61	prolate	1	EL	0.91
Clyde	3.65	3.23	1.13	3.23	9.4	3	0.51	5	91	polygon	1	ER	0.47
Clyde	4.77	4.17	1.14	4.17	16.9	3	0.55	8	93	polygon	1	ER	0.59
Clyde	4.85	3.4	1.43	3.4	14.8	3	0.74	6	93	polygon	1	ER	0.64
Clyde	7.79	6.96	1.12	6.96	47.5	4	0.69	10	88	ovoid	1	ER	0.52
Clyde	5.43	3.5	1.55	3.5	16.2	3	0.72	6	74	prolate	1	AN	0.35
Clyde	3.94	2.47	1.6	2.47	8.1	4	0.51	6	77	polygon	1	EL	0.38
Clyde	3.99	3.16	1.26	3.16	7.8	4	0.51	4	79	polygon	1	AN	0.58
Tina	8.42	5.14	1.64	5.14	43.1	4	0.82	11	96.75	ovoid	1	EL	0.93
Tina	3.69	2.46	1.5	2.46	7.6	3	0.6	6	91	polygon	1	ER	0.49
Tina	6.64	5.67	1.17	5.67	31.6	4	0.72	13	85.65	spherical	1	ER	0.55
Tina	8.7	7.79	1.12	7.79	45.2	4	0.72	8	45.22	polygon	1	AF	0.92
Tina	9.11	7.68	1.19	7.68	54.6	5	1.31	6	68.12	polygon	1	EL	0.46
Tina	8.85	4.92	1.8	4.92	37.9	4	0.87	5	98.19	prolate	1	EL	0.37
Tina	5.94	3.38	1.76	3.38	18.7	4	0.69	4	108.59	polygon	1	ER	0.35
Tina	4.05	2.66	1.52	2.66	11.2	4	0.61	8	100	prolate	1	ER	0.55
Tina	7.58	7.28	1.04	7.28	44.5	3	0.94	11	89.22	spherical	1	ER	0.61
Mkubwa	3.49	3.18	1.1	3.18	8.7	3	0.5	6	100	spherical	1	ER	0.57
Mkubwa	7.84	6.24	1.26	6.24	46.6	3	1.02	9	91.05	spherical	1	AN	0.45
Mkubwa	2.88	2.34	1.23	2.34	6.1	3	0.58	5	102	spherical	1	ER	0.53
Oreste	8.7	7.17	1.21	7.17	57.1	3	0.72	9	94.11	quadrangular	1	ER	0.47
Oreste	11.58	9.44	1.23	9.44	89.0	3	1.04	14	97.62	ovoid	1	EL	0.96
Oreste	5.97	5.34	1.12	5.34	24.9	4	0.61	8	101	polygon	1	ER	0.75
Oreste	4.04	3.01	1.34	3.01	16.0	4	0.82	6	75.75	polygon	1	ER	0.55
Oreste	7.2	6.57	1.1	6.57	35.4	2	0.6	6	105	spherical	1	ER	0.62
Oreste	9.4	9.32	1.01	9.32	73.7	2	0.85	7	97.79	spherical	1	ER	0.48
Oreste	14.64	12.05	1.21	12.05	133.2	2	0.83	13	114.75	prolate	1	EL	0.75
Oreste	13.37	10.73	1.25	10.73	115.5	3	0.9	12	128	prolate	1	EL	0.81
Oreste	8.11	6.5	1.25	6.5	42.4	4	0.6	7	95	prolate	1	ER	0.50
Oreste	12.89	11.2	1.15	11.2	118.4	3	0.52	13	87	prolate	1	EL	0.92
Oreste	12.42	7.79	1.59	7.79	74.2	4	0.94	12	102	ovoid	1	EL	0.91
Oreste	7.85	6.66	1.18	6.66	40.0	2	0.62	10	123	prolate	1	ER	0.67
Oreste	14.42	12.09	1.19	12.09	139.2	2	0.72	17	122	prolate	1	EL	0.79
Oreste	6.97	6.82	1.02	6.82	39.7	4	0.8	6	87	spherical	1	ER	0.70
Oreste	12.98	12.46	1.04	12.46	138.3	5	1.16	20	90	polygon	1	EL	0.89
Oreste	5.17	3.95	1.31	3.95	21.4	3	0	0	0	polygon	1	AF	0.71
Oreste	9.21	7.01	1.31	7.01	50.5	4	0.75	9	99	polygon	1	EL	0.48
Oreste	6.26	5.86	1.07	5.86	26.7	1	0.4	6	117	spherical	1	AF	0.46
Oreste	6.56	6.24	1.05	6.24	30.5	3	0.72	8	117	polygon	1	ER	0.70
Oreste	7.07	6.99	1.01	6.99	40.1	2	0.46	11	124	spherical	1	ER	0.63

Oreste	13.75	11.53	1.19	11.53	133.8	4	0.94	20	92.32	spherical	1	EL	0.79
Oreste	18.6	14.65	1.27	14.65	219.9	3	0.74	23	115	prolate	1	EL	0.78
Oreste	11.39	9.26	1.23	9.26	86.8	4	2.1	4	70	polygon	1	EL	0.51
Oreste	9.32	8.19	1.14	8.19	64.2	5	1.33	8	91	polygon	1	EL	0.43
Oreste	11.63	9.53	1.22	9.53	81.6	4	0.9	11	116	ovoid	1	EL	0.91
Oreste	9.91	7.01	1.41	7.01	64.1	4	0.91	10	89.35	quadrangular	1	EL	0.42
Oreste	5.06	4.03	1.26	4.03	16.1	4	0.62	7	81	polygon	1	ER	0.60
Oreste	18.34	14.28	1.28	14.28	165.9	5	0.72	8	97	polygon	1	EL	0.49
Oreste	9.32	7.38	1.26	7.38	60.0	4	0.72	15	89	polygon	2	EL	0.99
Oreste	10.52	9.54	1.1	9.54	81.6	3	0.92	13	91.63	prolate	2	EL	0.96
Oreste	10.51	9.49	1.11	9.49	87.4	3	1.1	9	112.25	ovoid	1	AN	0.35
Oreste	12.72	7.12	1.79	7.12	52.6	3	0	0	0	angular point	1	SA	0.98
Oreste	13.62	11.74	1.16	11.74	131.7	3	1.1	6	58	polygon	1	SA	0.65
Oreste	6.35	5.43	1.17	5.43	29.2	5	0.7	8	95	polygon	1	ER	0.81
Oreste	14.65	11.98	1.22	11.98	155.4	3	2.36	6	91	polygon	1	EL	0.48

Starch microremains from calculus. ER=*Eremospatha*, AF=*Aframomum*, AN=*Laccosperma*, GI=*Gilbertiodendron*, CO=*Cola*, NA=*Napoleona*, TR=*Treculia*, CU=*Coula*, XY=*Xylia*, PI=*Piper*, PA=*Panda*, SG=*Sacoglottis*, CL=*Calpocalyx*.

Chimpanzee name	Length	Width	LW Ratio	Brea	Area	Shape	Facets	Striaelen	Striaeno	Type	Lam	Dist	Genus with highest certainty score	Certainty score
castor	13.21	12.67	1.0	12.7	131.22	spherical	0	0	0	1	1	6.16	GI	0.31
castor	16.89	14.11	1.2	14.1	191.72	ovoid	0	0	0	1	2	10.78	CO	0.45
bijou	6.02	4.98	1.2	5.0	24.77	spherical	0	0	0	1	0	3.01	NA	0.30
bijou	12.38	10.67	1.2	10.7	113.42	spherical	0	0	0	1	0	7.3	GI	0.32
bijou	11.67	11.16	1.0	11.2	103.46	spherical	0	2.2	2	1	0	5.12	GI	0.28
bijou	11.14	7.47	1.5	7.5	69.21	ovoid	0	0	0	1	0	6.45	TR	0.51
bijou	8.64	6.53	1.3	6.5	59.32	ovoid	0	0	0	1	1	3.98	TR	0.66
bijou	5.63	4.92	1.1	4.9	23.65	spherical	1	0	0	1	1	2.78	CU	0.28
bijou	5.12	5.12	1.0	5.0	20.55	spherical	1	0	0	1	1	1.96	ER	0.33
bijou	9.76	9.11	1.1	9.1	81.09	spherical	1	1.27	2	1	0	4.88	GI	0.39
bijou	10.26	10.26	1.0	10.2	82.18	spherical	0	0	0	1	0	5.13	CU	0.35
fanny	10.03	8.08	1.2	8.1	56.48	ovoid	0	0	0	1	0	5.32	TR	0.50
fanny	5.01	4.9	1.0	4.9	19.72	polygon	7	0	0	3	0	1.95	PI	0.53
fanny	3.71	3.5	1.1	3.5	10.52	hemispherical	1	0	0	1	0	1.24	XY	0.31
fanny	5.25	5.25	1.0	5.0	26.12	spherical	0	0	0	1	0	1.85	ER	0.31
fanny	4.83	4.32	1.1	4.3	16.57	spherical	1	0	0	1	0	1.74	NA	0.24
fanny	11.38	11.18	1.0	11.2	108.01	oblate conovoid	2	1.59	1	2	0	5.69	GI	0.41
fanny	3.62	3.33	1.1	3.3	10.84	hemispherical	1	0	0	1	0	1.54	XY	0.32
fanny	12.18	11.48	1.1	11.5	115.41	spherical	0	0	0	1	0	5.47	GI	0.34
fanny	20.04	16.43	1.2	16.4	242.33	polygon	6	0	0	1	1	8.47	SA	0.63
fanny	8.82	8.69	1.0	8.7	56.17	oblate conovoid	3	0	0	2	0	2.77	GI	0.45
fanny	5.99	5.51	1.1	5.5	26.15	spherical	0	0	0	1	1	2.15	NA	0.25

fanny	15.52	11.89	1.3	11.9	132.17	ovoid	0	3.2	2	1	0	6.06	CO	0.40
fanny	9.35	8.4	1.1	8.4	62.36	oblate conovoid	3	0	0	1	0	4.675	GI	0.43
fanny	6.06	5.73	1.1	5.7	33.11	hemispherical	1	0	0	1	0	2.36	GI	0.27
fanny	7.7	7.08	1.1	7.1	43.67	spherical	0	0	0	1	0	2.1	ER	0.21
fanny	2.43	2.14	1.1	2.1	5.09	oblate conovoid	1	0	0	1	0	1.04	CL	0.33
fanny	10.14	9.14	1.1	9.1	81.11	spherical	0	4.5	3	1	0	4.71	GI	0.27
fanny	4.94	4.51	1.1	4.5	18.28	spherical	0	0	0	1	0	1.44	ER	0.26
fanny	8.43	6.48	1.3	6.5	37.77	prolate	0	0	0	1	0	3.8	TR	0.32
fanny	4.86	4.22	1.2	4.2	18.97	polygon	7	0	0	3	0	2.63	PI	0.55
fanny	6.02	4.78	1.3	4.8	20.54	polygon	7	0	0	3	0	3.01	PI	0.46
fanny	4.86	3.5	1.4	3.5	16.57	polygon	7	0	0	3	0	2	PI	0.72
fanny	4.36	3.25	1.3	3.3	18.98	polygon	7	0	0	3	0	1.75	PI	0.70
fanny	6.22	5.18	1.2	5.2	31.03	polygon	5	0	0	3	0	2.19	PI	0.40
fanny	6.36	3.48	1.8	3.5	27.6	polygon	8	0	0	3	0	2.87	PI	0.51
fanny	5.04	3.75	1.3	3.8	35.22	polygon	7	0	0	3	0	2.52	PI	0.54
fanny	7.6	6.78	1.1	6.8	36.75	polygon	8	0	0	3	0	3.58	SA	0.57
fanny	4.61	4.61	1.0	4.6	18.18	spherical	0	0	0	1	1	1.23	ER	0.47
fanny	9.3	9.3	1.0	8.4	64.03	spherical	0	0	0	1	0	4.31	CU	0.41
fanny	4.86	4.4	1.1	4.4	17.47	polygon	7	0	0	3	0	2.43	PI	0.60
fanny	5.22	4.61	1.1	4.6	19.72	polygon	5	0	0	3	0	2.31	PI	0.52
fanny	4.74	4.64	1.0	4.6	14.72	polygon	8	0	0	3	0	2.14	PI	0.58
fanny	4.32	4.14	1.0	4.1	18.99	polygon	6	0	0	3	0	1.85	PI	0.58
fanny	3.53	3.18	1.1	3.2	15.66	polygon	3	0	0	3	0	2.15	PI	0.53
fanny	6.51	4.12	1.6	4.1	18.44	polygon	5	0	0	3	0	3.255	PI	0.39
fanny	5.2	3.69	1.4	3.7	17.72	concaveconvex polygon	7	0	0	3	0	2.6	PI	0.67
fanny	3.67	3.13	1.2	3.1	10.76	polygon	7	0	0	3	0	1.835	PI	0.74
fanny	4.67	4.46	1.0	4.5	20.97	polygon	7	0	0	3	0	2.335	PI	0.53
Leo	14.23	12.29	1.2	12.3	130.05	spherical	2	0	0	1	1	7.43	GI	0.46
Leo	15.02	14.2	1.1	14.2	178	spherical	0	2.03	1	1	0	7.99	GI	0.29
Leo	22.91	18.17	1.3	18.2	346	prolate	0	9.44	2	1	3	7.95	CO	0.73
Leo	19.42	13.85	1.4	13.9	218	ovoid	0	0	0	1	0	9.5	GI	0.39
Leo	6.73	6.12	1.1	6.1	38.18	spherical	0	0	0	1	0	2.56	NA	0.23
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42

castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	5.5	5.08	1.1	5.1	24.45	polygon	8	0	0	3	0	2.19	PI	0.42
castor	6.41	4.36	1.5	4.4	24.45	polygon concave convex	8	0	0	3	0	2.19	PI	0.36
castor	13.83	11.75	1.2	11.8	113.82	triangular	0	0	0	1	1	6	CO	0.45
Goma	24.38	19.47	1.3	19.5	342	ovoid	0	0	0	1	2	17.96	CO	0.57
Goma	5.32	4.92	1.1	4.9	25.84	spherical	0	0	0	1	0	2.61	NA	0.34
Goma	4.38	3.67	1.2	3.7	14.85	spherical	0	0	0	1	0	1.95	ER	0.29
Goma	29.37	20.49	1.4	20.5	432	ovoid	0	0	0	1	2	20	CO	0.58
Goma	12.42	11.61	1.1	11.6	107	spherical	0	3	2	1	1	4.82	GI	0.27
Goma	16.72	15.6	1.1	15.6	212	quadrangular	1	2	4.86	1	2	6.56	CO	0.50
Goma	9.35	8.83	1.1	8.8	60.53	spherical	0	0	0	1	1	4.675	CU	0.30
Goma	14.5	13.95	1.0	14.0	154	spherical	0	0	0	1	1	6.79	GI	0.33
Goma	14.63	13.13	1.1	13.1	129.55	spherical	0	0	0	1	1	6.97	GI	0.31
Goma	20.31	18.43	1.1	18.4	304.94	polygon	6	3.36	9	1	0	7.76	SA	0.53
Goma	24.12	19.79	1.2	19.8	368.42	ovoid	0	4	1	1	2	12	CO	0.75
Goma	7.38	5.08	1.5	5.1	32.32	ovoid	1	0	0	1	0	3.65	TR	0.72
Goma	29.31	20.18	1.5	20.2	463	ovoid	1	0	0	1	1	20.86	GI	0.45
Goma	17.47	16.82	1.0	16.8	215	ovoid	1	0	0	1	0	8.5	GI	0.72
Goma	11.99	11.99	1.0	12.0	106	spherical	1	3.2	1	1	0	4.84	GI	0.30
Goma	11.57	9.93	1.2	9.9	90.26	spherical	0	0	0	1	0	2.95	GI	0.25
Goma	14.06	11.38	1.2	11.4	129.31	ovoid	0	0	0	1	3	9.76	CO	0.52
Goma	30.68	21.71	1.4	21.7	493.67	ovoid	0	0	0	1	2	10	CO	0.59
Goma	11.33	11.33	1.0	11.0	103.43	spherical	0	0	0	1	0	5.5	CU	0.34
Goma	16.15	15.79	1.0	15.8	201.29	spherical	0	0	0	1	1	8	GI	0.33
Goma	30.27	25.27	1.2	25.3	568.1	triangular	0	0	0	1	2	19	CO	0.65
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38

Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38

Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	5.32	5.12	1.0	5.1	20.16	polygon	8	0	0	3	0	3.81	PI	0.38
Goma	20.17	20.17	1.0	20.0	312.77	spherical	0	0	0	1	1	6.3	CU	0.32
Goma	23.46	11.8	2.0	11.8	213.82	elongate ovoid	0	0	0	1	2	9.54	CO	0.52
Goma	10.44	10.44	1.0	10.2	80.19	spherical	0	0	0	1	1	9.76	CU	0.38
Goma	9.04	8.36	1.1	8.4	60.76	spherical	0	0	0	1	1	4.5	CU	0.32
Goma	11.05	10.06	1.1	10.1	84.6	spherical	0	0	0	1	1	5	GI	0.30
Goma	6.74	4.71	1.4	4.7	23.52	prolate	0	0	0	1	1	1.95	XY	0.23
Goma	14.35	12.35	1.2	12.4	180	polygon	6	0	0	1	1	5.87	SA	0.62
Goma	21.41	15.77	1.4	15.8	261	ovoid	0	0	0	1	1	14.55	GI	0.37
Goma	9.42	7.68	1.2	7.7	63.58	hemispherical	1	0	0	2	1	4.89	GI	0.51
Goma	8.63	6.06	1.4	6.1	40.83	hemispherical	1	0	0	2	0	4.5	GI	0.46
Goma	15.43	12.53	1.2	12.5	166.28	polygon	4	0	0	1	0	6.75	SA	0.47
Goma	7.99	7.17	1.1	7.2	46.48	ovoid	0	0	0	1	0	4.2	TR	0.62
Goma	12.46	12.46	1.0	11.7	111.51	spherical	0	0	0	1	2	6.81	CU	0.62
Goma	25	18	1.4	18.0	372	ovoid	0	0	0	1	0	13	CO	0.34
Rubra	9.84	12.34	0.8	12.3	95.74	hemispherical	3	0	0	2	0	5.08	GI	0.47
Rubra	5.29	4.37	1.2	4.4	16.86	spherical	0	0	0	1	0	1.79	ER	0.27
Rubra	7.39	5.59	1.3	5.6	30.21	ovoid	0	0	0	1	0	1.87	TR	0.71
Rubra	9.95	9.95	1.0	9.7	72.27	spherical	0	0	0	1	0	4.17	CU	0.36
Rubra	6.9	5.55	1.2	5.6	28.27	prolate	0	0	0	1	0	2.89	TR	0.31
Rubra	7.97	6.41	1.2	6.4	43.34	elongate conovoid	2	0	0	1	0	4.61	TR	0.26
Rubra	16.52	12.95	1.3	13.0	182.78	polygon	7	0	0	1	0	7.23	SA	0.64
Dorry	8.81	7.6	1.2	7.6	51.33	ovoid	0	0	0	1	0	3.34	TR	0.58
Dorry	8.61	6.05	1.4	6.1	38.2	prolate	0	0	0	1	0	3.6	TR	0.34
Dorry	5.84	5.22	1.1	5.2	26.04	spherical	0	0	0	1	0	2.07	NA	0.32
Dorry	6.96	6.48	1.1	6.5	35.5	spherical	0	0	0	1	1	3.48	CU	0.28
Venus	9.43	7.9	1.2	7.9	65.51	spherical	1	0	0	1	0	4.3	GI	0.33
Venus	9.93	9.01	1.1	9.0	73.23	spherical	0	0	0	1	0	6.59	GI	0.32
Venus	17.91	14.01	1.3	14.0	185.85	ovoid	0	0	0	1	1	11.17	GI	0.46
Venus	8.4	7.79	1.1	7.8	53.82	spherical	0	0	0	1	0	3.38	CU	0.25
Venus	4.53	4.12	1.1	4.1	15.04	hemispherical	1	0	0	1	0	1.91	XY	0.23
Venus	15.97	11.92	1.3	11.9	134.03	pyriform	0	0	0	1	1	8.2	CO	0.44
Venus	7.48	6.16	1.2	6.2	33.17	prolate	1	0.5	2	1	1	3.18	PA	0.33
Venus	6.04	4.22	1.4	4.2	23.28	prolate	0	0	0	1	0	2.11	PA	0.31
Venus	12.17	10.44	1.2	10.4	93.68	prolate	0	0	0	1	0	5.64	CO	0.48
Venus	15.61	12.87	1.2	12.9	150.5	prolate	0	0.7	2	1	0	8.2	CO	0.44
Venus	26.95	20.72	1.3	20.7	435	ovoid	0	0	0	1	2	20	CO	0.58
Venus	9.56	8.69	1.1	8.7	65.62	hemispherical	0	0	0	2	0	5.49	GI	0.47
Venus	10.79	10.72	1.0	10.7	93.61	hemispherical	0	0	0	2	0	6.04	GI	0.42
Venus	14.25	12.7	1.1	12.7	143.15	spherical	0	0	0	1	1	8	GI	0.32
Venus	8.43	7.16	1.2	7.2	44.74	spherical	0	0	0	1	1	4.15	CU	0.27
Venus	4.89	3.26	1.5	3.3	12.52	prolate	0	0	0	1	0	1.77	PA	0.42

Brutus	6.41	5.65	1.1	5.7	34.96	hemispherical	2	0	0	2	0	3.32	GI	0.40
Brutus	6.02	5.06	1.2	5.1	24.28	hemispherical	2	0	0	2	0	2.87	SG	0.38
Brutus	4.73	4.35	1.1	4.4	17.12	ovoid	0	0	0	1	0	2.35	TR	0.28
Brutus	21.56	16.95	1.3	17.0	181	ovoid	0	0	0	1	0	15.88	GI	0.43
hector	8.19	8.19	1.0	8.0	50.66	spherical	0	1.02	1	1	0	3.38	CU	0.47
hector	5.95	5.39	1.1	5.4	25.88	oblate conovoid	2	0	0	2	0	2.61	SG	0.57
Lefkas	6.48	5.63	1.2	5.6	27.02	spherical	0	0	0	1	0	3.24	NA	0.28
Lefkas	4.35	4.13	1.1	4.5	18.23	spherical	1	0	0	1	0	2.175	NA	0.27
Lefkas	19.67	18.32	1.1	18.3	276.13	ovoid	1	0	0	1	3	11.29	CO	0.41
Lefkas	3.61	3.61	1.0	3.6	9.81	spherical	0	0	0	1	0	1.805	ER	0.62
Lefkas	4.53	3.35	1.4	3.4	11.13	spherical	0	0	0	1	1	1.65	ER	0.34
Lefkas	5.18	5.18	1.0	4.4	18.33	spherical	0	0	0	1	0	1.65	ER	0.41
Lefkas	3.98	3.98	1.0	3.9	14.39	spherical	0	0	0	1	0	1.99	ER	0.57
Lefkas	7.48	4.4	1.7	4.4	29.47	ovoid	0	0	0	1	0	3.74	TR	0.70
Agathe	12.37	7.81	1.6	7.8	77.7	ovoid	0	0	0	1	0	6.185	TR	0.39
Agathe	7.82	6.97	1.1	7.0	42.71	spherical	2	0	0	1	0	3.88	GI	0.30
Agathe	7.85	6.65	1.2	6.7	39.78	spherical	1	0	0	1	1	2.31	CU	0.26
Agathe	5.8	5.25	1.1	5.3	24.04	spherical	1	0	0	1	1	2.9	CU	0.31
Agathe	8.23	6.03	1.4	6.0	37.76	prolate	0	0	0	1	0	3.62	TR	0.34
Agathe	4.58	4.22	1.1	4.2	15.2	spherical	0	0	0	1	0	2.29	NA	0.31
Clyde	12.65	10.84	1.2	10.8	106	spherical	2	0	0	1	0	4.75	GI	0.49
Clyde	6.01	4.5	1.3	4.5	21.7	spherical	0	0	0	1	2	3.005	CU	0.50
Clyde	13.31	12.49	1.1	12.5	133	polygon	8	1.7	2	3	0	4.93	SA	0.78
Tina	5.34	4.72	1.1	4.7	20.45	oblate conovoid	2	0	0	2	0	2.39	SG	0.65
Tina	4.92	3.98	1.2	4.0	15.51	hemispherical	1	0	0	1	0	1.85	SG	0.25
Tina	8.92	8.64	1.0	8.6	68.1	spherical	0	0	0	1	0	4.32	GI	0.27
Oreste	6.5	4.81	1.4	4.8	27.18	ovoid	1	0	0	1	0	2.44	TR	0.65
Oreste	6.16	5	1.2	5.0	25.54	oblate conovoid	2	0	0	2	0	2.47	SG	0.57
Vanessa	8.65	7.85	1.1	7.9	48.29	spherical	0	0	0	1	0	3.94	CU	0.25
Vanessa	9.37	8.2	1.1	8.2	62.79	prolate	0	0	0	1	0	3.65	CO	0.35

Appendix table 13: Coefficients of the statistical models.

Model	Term	Estimate	Std. Err.	Z value	P
Tests of effect of age and sex on microremain numbers					
Phytolith Negative binomial	Intercept	3.969	0.160	24.790	1.1398e-135
	Age	0.002	0.0005	3.833	1.2616e-04
	Sex	-0.027	0.157	-0.170	8.6469e-01
Starch Negative binomial	Intercept	3.009	0.426	7.052	1.7575e-12
	Age	0.003	0.001	2.661	7.7805e-03
	Sex	-2.569	0.437	-5.873	4.2665e-09
Unsilicified remains	Intercept	2.210	0.202	10.904	1.0978e-27
Negative binomial	Age	0.001	0.0006	3.093	1.9775e-03
	Sex	-0.048	0.199	-0.245	8.0594e-01
Tests of effect of consumption frequency on microremain numbers					

Phytolith Poisson model	Intercept	-0.231	0.876	-0.263	0.791
	z.min	1.707	0.680	2.509	0.012
	z.age	3.612	2.075	1.740	0.081
	sex	-0.801	0.934	-0.858	0.390
Starch logistic regression model	Intercept	-14.218	0.870	-6.325	6.4911e-60
	z.min	0.591	0.505	1.169	2.4224e-01
	z.age	0.489	0.442	1.105	2.6885e-01
	sex	-1.266	0.996	-1.271	2.0372e-01

Appendix table 14: Variable importance in phytolith and starch classification random forest.

Phytolith model		Starch model	
Variable	Importance	Variable	Importance
Length	100	Area	100
Spine number	75.301	Length	75.8434
Spine ang	74.109	Width	67.5876
LW Ratio	43.996	Dist	61.1718
Spine length	42.854	Facets	60.4963
Area	29.581	LW Ratio	56.2298
Width	22.056	Type	55.9587
Irregul	10.236	Lam	35.8372
Spherical	6.667	Spherical	31.833
Angularpoint	6.575	Prolate	8.2554
Polygon	4.590	Ovoid	7.157
Ovoid	1.663	Polygon	5.8693
Prolate	1.620	Hemispherical	4.9279
Triangular	1.447	Oblate conovoid	4.6926
Elongate	0.440	Striaelen	2.4395
Quadrangular	0.228	Elongate ovoid	2.4011
Facets	0.184	Striae no	2.1051
Conjoined	0.106	Triangular	1.8956
Prolate concave-convex	0.043	Quadrangular	0.9141
Polygon concave	0.042	Pyriform	0.4986

7.3 Chapter five appendix

7.3.1 Comparative data for model

We prepared data from past dental calculus studies for a comparative analysis (Salazar-García et al., 2013; Henry et al., 2014). This dataset included starch and phytolith counts from nine other Middle Palaeolithic sites. As other microremains are not included in previous published studies, we only included starch and phytoliths in our model. Although our samples were weighed in mg, weights for all eight sites are not available. Similarly, in the datasets presented in this paper we treated starches of the same type that occurred as lumps as one starch as

accurately counting each starch in a lump is not possible. We collected the most to date estimated date range for each site and used the median value.

Goyet: this archaeological site comprises several caves near Gesves, in the Namur Province of Belgium. The cave system has seen several campaigns of excavation in the 19th and 20th century. Early explorers found hominin remains (Goyet VIII) in 1868 in the largest of the caves. Dupont found the studied mandible in the second of five fauna-rich levels (Dupont, 1872; Toussaint, 2006). Originally, the fossil was thought to be modern human due to its stratigraphic proximity to Aurignacian artefacts, but this has been re-evaluated and it now is accepted to be a Neanderthal (Rougier et al., 2012, 2014). In addition, in the Aurignacian phase there is an upper Magdalenian level dated to 13 ka (Toussaint, 2006). Mixing is present in all levels and its date was long ambiguous but this has recently been re-evaluated as dating to 44-45.5 ka cal BP (Rougier et al., 2014). This date places the hominin in a transitional period. Regional vegetation reconstructions suggest the surrounding environment was generally tundra-steppe.

La Chapelle-aux-Saints: this Middle Palaeolithic site is located in the Corrèze region of southern France. Researchers have excavated La Chapelle-aux-Saints since 1905, and this has recovered evidence of Mousterian sediments and a complete Neanderthal in 1908. The chronological history of this site has been studied with electron spin resonance (ESR), suggesting dates of 56 ka or 47 ka depending on the radiation uptake model used (Grün and Stringer, 1991). The ESR may suggest the remains belongs to the warm parts of MIS 3, but this contradicts correlation with the Combe-Grenal sequence which would put the remains at the end of MIS 4 and beginning of MIS 3. The associated fauna profile is predominately reindeer (*Rangifer tarandus*), with some bovines (*Bos*/*Bison* sp.), horse (*Equus* sp.), ibex, wolf (*Canis lupus*), fox (*Canis vulpes*), *Rhinoceros*, cave hyena (*Crocuta spelaeaus*), boar (*Sus scrofa*) and marmot (*Arctomys* sp.) (Boule, 1911; Bouyssonie et al., 1913). The fauna is clearly a cold phase profile indicating a date during the late MIS 4 (Mellars, 1986). In addition, fauna shows the surrounding environment was a cold open biome.

La Ferrassie: this site is located in the Vézère Valley, in the Dordogne region of France. La Ferrassie is a large deep cave with an adjoining long rock-shelter and small rock-shelter. The site has a plethora of levels of different periods in various sections of the cave. Mousterian levels below the long rock-shelter produced remains of six Neanderthals in excavations during 1909 and 1921. The bison, auroch and red deer that dominate the Mousterian fauna imply a moderate temperate environment.

These fauna suggest tree cover and a closed, forested environment (Capitan and Peyrony, 1912a; b; c; Guérin et al., 2015). Mousterian deposits at La Ferrassie has been recently dated with OSL and radiocarbon dating, suggesting that the Neanderthal remains La Ferrassie 1 is most likely 39 ±5 ka and 2 skeletons 43 ±3 ka (Guérin et al., 2015).

La Quina: La Quina is a series of rock shelters in the Charente region of Central France. Remains used in this study were found in 1911 in one of two sub-sections of Station Amont, a deposit extending below the upper rock shelter base. This deposit was studied over the course of several excavations. Excavations revealed Mousterian remains, faunal debris and the remains of many Neanderthals (Henri-Martin, 1961). The upper deposits of the sequence at Station Amont are considered to date to 48-43 ka. This, combined with cold phase fauna, indicates a date for the fossil of MIS 4, probably 71-57 ka (Debénath and Jelinek, 1998). Fauna found was mostly bovines, horse and reindeer, with few other species represented (Debénath and Jelinek, 1998). These faunas also suggest a cold and dry environment that was devoid of trees.

Malarnaud: this site is a cave in the Ariège region of Southern France. There has been scientific interest in the cave since 1883. Deposits dated to Mousterian, Aurignacian and Magdalenian have been found onsite. Investigators found a juvenile Neanderthal mandible during 1888 in the lower of two layers in a side chamber of this cave complex. However, it is possible that the mandible was moved by carnivores in this chamber as it is removed from much the archaeological material. Unfortunately, the site has not been radiometrically dated. Faunal profiles indicate the mandible dates to Riss-Würm interglacial, 130-117 ka or the beginning of the Würm, 100-50 ka. Fauna in the layer of the mandibles include cave lion (*Panthera leo*), cave hyena, fox, and wolf, mammoth and rhinoceros (Rhinocerotidae) (Boule, 1889; Filhol, 1889). This fauna is suggestive of tree cover in the early glacial warm or transitional phase, and thus we classify the environment as of mixed openness.

Spy: this archaeological site is located in Jemeppe-sur-Sambre, Namur in Belgium. The site was excavated from 1879 onwards, and the Neanderthal remains were found in a bone rich layer. Later excavations have clarified the stratigraphy of the cave. Faunal profiles from excavation of this layer have suggested an intensely cold climate (Otte, 1979). Some studies found misclassified Neanderthal remains in faunal bags (Crevecoeur et al., 2010). These teeth were directly radiocarbon dated to about 36 ka (Semal et al., 2009). De Puydt and Lohest recovered fauna from this

level, including horse and hyena, with some mammoth, wholly rhinoceros, reindeer, red deer, aurochs, cave bear, cave lion, wolf, wolverine (*Gulo gulo*) and badger (*Meles meles*). However, palaeoenvironment reconstructions may be questioned due to the poor stratigraphic integrity of this layer (de Puydt and Lohest, 1887). The direct data of the hominin remains firmly places the occupation in a cold phase when dry tree landscapes dominated much of Europe. We consider the environment as open for our model.

Kůlna Cave: this Middle Palaeolithic site is located in the Moravian Karst, in the eastern part of the Czech Republic in Central Europe. The cave saw first investigations in 1880 when stone tools and bones of extinct animals were noticed (Sroubek et al., 2001). Karel Valoch conducted the first modern archaeological investigation in 1961 and 1976. He identified 14 sedimentary complexes covering the last interglacial to the Holocene. Neanderthal remains were found in strata 7a and 7c of but specimens in this study come from stratum 7a only. Radiocarbon dating has suggested a data of >45 ka BP ^{14}C, and electron spin resonance on layer 7a shows it dates to 50 ± 5 ka BP (Rink et al., 1996). The character of the fauna from this layer matches this age (Rink et al., 1996). Layer 7a contained reindeer, with mammoth and a few elk, the presence of reindeer clearly indicate cold conditions of central Europe in the MIS 3 (Valoch, 1970).

Shanidar Cave: This site is located in the Zagros Mountains in Northwest Iraq. Solecki and colleagues excavated the cave between 1952 and 1957. Excavators described four archaeological strata (A, B, C and D). The Shanidar III fossils were found in Mousterian level D (Solecki, 1960). A radiocarbon date near the Shanidar I fossil indicates that Shanidar III is >46 ka BP, possibly as old as 50 ka BP (Solecki, 1960). Goat (*Capra* sp.) and sheep (*Ovis* sp.) dominate fauna found on site. This reflects the local mountainous topography (Perkins, 1964; Evins, 1982). Pollen analysis indicated the presence of date palms (*Phoenix dactylifera*), walnuts (*Juglans* sp.), chestnuts (*Castanea* sp.), oaks (*Quercus* spp.) and herbs (Solecki, 1961; Leroi-Gourhan, 1968, 1969, 1975). These plant taxa indicate a mild moist environment with at least some level of tree cover. For our model, we classified this habitat as closed.

7.3.2 Reference collection

Microremain identification was based on a reference collection of modern plant samples, including >2,000 global species. Our reference collection has extensive

coverage of edible western Eurasian species. From these species, we identified over 54 species that produced starches, and thus that might be represented in our samples (Appendix table 21). More information is available for phytoliths produced by different taxa so; we instead identified phytoliths using available literature including PhyCore database (Albert et al., 2016). We did not make a reference collection for unsilicified plant microremains, as its unclear if these microremains are diagnostic, nor do we currently have a sufficient reference collection for identifying this types of microremains (Power et al., 2015b).

7.3.3 Classification of microremain taxa

We identified microremains to plant taxon, usually at the family or tribe level. When this was not possible, we assigned microremains to a type based on shared diagnostic morphology that indicates that the morphology likely represents a single plant taxon. We then used the summed number of types to derive a metric of breadth of plant use.

7.3.4 Microremain results

See following tables.

Appendix table 15: Total recovered microremains from Vindija Cave Neanderthal and control samples.

					Starches															Phytoliths										
Identifier	Specimen	Species	Tooth	Wt	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type 10	Type 11	Type 12	Type 13	Type 14	Type 15	partially disrupted	Pes/Dmg	Long-cell	Rondel	Hair	unknown phyto hair	Globular sinuate?	Bulliform	Parallelepipedal	Long-cell multi-cell	Brachiform	Multicellular polyhedrons
Vja-12-13	12.1/229	Neanderthal	URM2	0.39	3	3	5	1	3		1			8	3		3	1			4	3					1	2			
Vja-12-14	12.2/286	Neanderthal	LRI2	0.05			1				1	1									2	1						1			
Vja-12-16	12.4/ 290	Neanderthal	URI1	0.05																								2			
Vja-12-17	12.5/287	Neanderthal	URC	0.05		1		1																				1			
Vja-12-18	12.6/288	Neanderthal	LLC	0.02			1														1	1					1				
Vja-12-19	12.7/201	Neanderthal	LLI2	0.89		4	4	1			2		1					1			8	3	3	5	2			3			
Vja-12-20	11.39/206	Neanderthal	LRC	0.45						1				1								3						2			
Vja-12-21b	11.39/206	Neanderthal	LRM1	0.41		1		1			1			1								4						1	1		
Vja-12-21a	11.39/206	Neanderthal	LRM1	0.50	1	1			1				1																		
Vja-12-24	11.45/231	Neanderthal	LLM3	0.67							1											1	1	4		4	1	3		1	
Vja-12-26	11.46/259	Neanderthal	ULM2	0.87				3										2			1	1					5	3			
Vja-12-51	11.40+11.40a – Vi76/226+265	Neanderthal	LLM1	0.19										1	1					1	1		1	1			2	1			
Vja-12-54	11.40+11.40a – Vi76/226+265	Neanderthal	LLM1	0.05			1																				1				
Vja-12-55	11.40+11.40a – Vi76/226+265	Neanderthal	LLM1	0.09																											
Vindija fauna calculus samples																															
Vja-12-28	1639/car Vi-87	*Panthera*	C	0.63																											
Vja-12-29	555/car 78	*Canis*		0.79																1											
Vja-12-30	735/car Vi-83	*Canis*		0.53			7							3								1						1			
Vja-12-31	335/car Vi-78	*Canis*	P1	0.10							1			1															1		
Vja-12-34	637/car Vi-76	*Canis*		0.40																											
Vja-12-35	714/car Vi-1976	*Canis*		0.58																								1			
Vja-12-37	2/car Vi-76	*Ursus spelaeus*	M2	1.04																											
Vja-12-38	nova 3/car Vi-76	*U.spelaeus*	M2	0.46																		1	1								8
Vja-12-45	nova 1/car Vi-76	*U.spelaeus*	M2	1.248																		2									
Vja-12-46		*U.spelaeus*	M2	0.88	1	4									1						1	3				1		3			
Vja-12-47		*U.spelaeus*	M2	0.18																	1	2	1				2	5			
Vja-12-48		*U.spelaeus*	M2	0.30																							1	3			
Vja-12-53	599 Vi-78	*Canis*		0.43																											

Controls																																					
Vja-12-43	adhesive used to hold teeth, sampled on Vi-11.39							0.796						1								1				2										
Vja-12-44	adhesive used to hold teeth, sampled on Vi-11.40							0.54				1					7			11				4		30										

	Phytoliths (continued)				Calcium oxalates			Spores						Pollens					Spicule	Hair	Unsilicified plant microremains																
Identifier																																					
	Ellipsoid rugulate	Epidermis	Plate	Indet. phytolith	Prism	Styloid	Irreg oxalate	Very small round dark	Ellipsoidal, single-walled spore	Unknown spore	Clear fusiform	Cluster	Tube of spheres	Unidentified	Pollen indet.	Pollen (Betulaceae)	Algae?	Yellow pollen/spore?	Unknown spicule	Hair	Monocot unsilicified	Unknown unsilicified	Vascular bundle	Grass unsilicified	Indet. animal cells	spherulite	Nematode??	Cellouse type fibre	Fibre	Total starch & phytoliths	Total starch & phytoliths types	Mənhinick's index
Vja-12-13					2	1				2								2			1									37	13	2.1			
Vja-12-14						1	3					1																		5	5	2.2			
Vja-12-16														1						1								1		2	1	0.7			
Vja-12-17					2					2										1									2	3	3	1.7			
Vja-12-18					3									1			1					2								3	3	1.7			
Vja-12-19	2		1		1					2				2		1			1							1	1			32	13	2.3			
Vja-12-20																														7	4	1.5			
Vja-12-21b					1	2	3	1				1																		10	7	2.2			
Vja-12-21a																														4	4	2			
Vja-12-24			1							1				1								1						1	3	17	9	2.2			
Vja-12-26			1			3		1	1	2	1		1	1						1			1	3						15	6	1.5			
Vja-12-51														3				1				2						3	2	7	6	2.3			
Vja-12-54																												2		2	2	1.4			
Vja-12-55				1																								2			1				
Vindija fauna calculus samples																																			
Vja-12-28																			1									2							
Vja-12-29																												1			1				
Vja-12-30														4						4									1	12	4	1.2			
Vja-12-31																														3	3	1.7			

Vja-12-34				1										1	1											
Vja-12-35				1																				1	1	1
Vja-12-37														1												
Vja-12-38	1	1												2					1	1		1	2	12	5	1.4
Vja-12-45		1										2										1	1	3	2	1.2
Vja-12-46		1						1	1													3		14	7	1.9
Vja-12-47		1							1													4	3	11	5	1.5
Vja-12-48									1						1		1					5		4	2	1
Vja-12-53								2														3	3			
Controls																										
Vja-12-43																								2	2	
Vja-12-44																								23	4	

Starch key	
Type 1	Moderate size, spherical-subspherical, with thick lamellae, some show yellow colouration, diameter is 10-22 μm.
Type 2	Large circular-subcircular in 2D, spherical-lenticular-subspherical 3D, diameter is 20->μm.
Type 3	Small round, constrained facets may be present, diameter is <10 μm.
Type 4	Sub-polyhedral, 2 or more facets but more of surface is not covered by facets, facets often are less sharply defined, no lamellae.
Type 5	Slightly eccentric starch.
Type 6	Faceted, generic type.
Type 7	Ovoid starch, with or without surface features, some have damaged central cavity but this is not a classification trait.
Type 8	Triangular-elliptical, may have central fissure, other surface features can include lamellae.
Type 9	Very eccentric and partially disrupted starch.
Type 10	Lenticular or subelliptical in 3D, equatorial groove may be visible, some show signs of gelatinisation, distinguished from type 8 by poorly defined longitude crack.
Type 11	Small oval or slight ovoid, subspherical (5-10 μm), 1-2 facets may be apparent, little surface features but a central aperture may be present.
Type 12	Large ovoid, routinely eccentric, often with lamellae, diameter is >40 μm.
Type 13	Large spherical/subspherical
Type 14	Polyhedral, distinct facets surface on ≥50 %, no lamellae present.
Type 15	Very small polyhedral, highly facets surface on ≥50 %, no lamellae present.

Appendix table 16: Total recovered microremains from Grotta Guattari Neanderthal and control samples. Specimen column uses Circeo numbering.

				Starches												Phytoliths													Spores		Other microremains										
Identifier	Specimen	Tooth	Wt	Type 1	Type 2.	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type 11	Other	Dmg/indet.	Long Cell	Rondel	Bulliform Parallelepipedal	Trichome	Parallelepipedal	Spheroid granulate	Cylindroid psilate	hair	Mesophyll	Multicellular indet.	Prism & sub calcium oxalate	Cystolith	cf Pteridium spore	Nigrospora	fusiform (boletoid)	Indet. spore	Triporate pollen	Pollen with airsacs	Indeterm. pollen	Diatom	Faunal Hair	Grass cells	Stellate hair	Vascular budle	Indet. plant cell	Menhinick's
Neanderthal samples																																								
GTN1	2	RLM3	0.65														1						1		1				2						1					2.1
GTN2	3	RLM1	0.87			1		1	1			7			6	5	4	1	2	1			1	1	2	1								2	1	2	1		1	2.5
GTN3	3	LLI2	0.65			2			1	1	2				4	5	3	2			2	2	2			2	1	1	1	1	4	2		1	4	1			1	8	2.6
GTN4	3	RLI2/M1	0.26	1	1	2	1										1									2		1													4.0
GTN5	3	LLM1/PM 1	0.29				1	1									1			1						2															3.7
Guattari Control samples																																									
2a	2	Wash	n/a												7															4											
2b	2	Wash	n/a												1	1																									
2c	2	Wash	n/a										1	1	1																								1		
2d	2	Wash	n/a											1																7		1	1							
2e	2	Adhesive	1.30	2				104					1	1																										0.3
2g	2	Bone dust	0.34																																						
3a	3	Filler	####	4																																					0.1
3b	3	Adhesive residue	n/a											2																2		1								

Starch key

Type 1: Polyhedral with centric extinction cross oval with no fissures, cross arms are clear and straight, diameter is 17 μm.

Type 2: Unknown shape, partially disrupted (semi gelatinised) eccentric starch, diameter is 90 μm.

Type 3: Spherical starch, typically with cross arms that are clear and straight or near straight. No discernible surface features. Diameter is 6-9 μm.

Type 4: Sub-polyhedral, cross arms are faint and straight.

Type 5: lenticular, cross arms clear and straight. Faint lamellae present. Diameter is 17 μm. (Possible Triticeae).

Type 6: large sub polyhedral. 15 μm or above.

Type 7: Very small polyhedral, no lamellae or fissures (Possible *Avena or* bogbean).

Type 8: slightly eccentric.

Type 9: Highly eccentric.

Type 10: Very small starch with centric cross.

Type 11: with think lamellae, diameter is 10-20 μm.

Appendix table 17: Total recovered microremains from Grotta Fossellone Neanderthal remains and control samples.

			.		Starches						Phytoliths		Unsilicified plant microremains									
Identifier	Specimen	Tooth	Wt	Sampling date	Type 2	Type 5	Type 6	Type 7	Type 10	Other	Rondel	Indet. monocot	Grass cell	Stellate hair	Xylem	Vascular bundle	Indet. plant cells	Total numbers/mg	Total starch & phytoliths	Total starch & phytolith types	Menhinick's	Menhinick's/mg
Fossellone Neanderthal samples																						
FON1	Fossellone 3	LLM1	0.07	16th Mar 13					3						1			59.70	3	1	0.58	2.2
FON2	Fossellone 3	LLM2	0.1	16th Mar 13	4		1	1	1	1	1	1					1		9	6	2.00	2.6
Fossellone Control samples																						
FON3	Fossellone 3	Wash		16th Mar 13		17*																

Starch key

Type 1: Polyhedral with centric extinction cross oval with no fissures, cross arms are clear and straight. Diameter is 17 μm.

Type 2: Unknown shape, possible semi gelatinised eccentric starch, diameter is 90 μm.

Type 3: Spherical starch, typically with cross arms that are clear and straight or near straight. No discernible surface features. Diameter is 6-9 μm.

Type 4: Sub-polyhedral, cross arms are faint and straight.

Type 5: lenticular, cross arms clear and straight. Faint lamellae present. Diameter is 17 μm, (Possible Triticeae).

Type 6: large sub polyhedral. 15 μm or above.

Type 7: Very small polyhedral, no lamellae or fissures (Possible *Avena* sp. or bogbean).

Type 8: slightly eccentric.

Type 9: Highly eccentric.

Type 10: Very small starch with centric cross.

Appendix table 18: Total recovered microremains from Sima de las Palomas del Cabezo Gordo Neanderthal and control samples.

						Starches				Phytoliths				Other microremains											
Identifier	Specimen	Species	Tooth	Wt.	Sampling date	Type 1	Type 2	Other	Dmg/indet	Polyhedral multicell	Psilate	Shortcell	Bulliform	Parallelepiped	Indet. phytolith	Indet. particle	Possible fibre	Possible algae	Degraded glove starch	Total starch & phytoliths	Total starch & phytoliths types	Menhinick's index	Total starch & phytoliths/mg	Total starch & phytoliths types/mg	Menhinick's index/mg
SP45	SP45	Neanderthal	LRP3	0.08	25.July.15																		0	0	0
SP54	SP54	Neanderthal	LRC	0.10	20.July.15										1					1	1	1	9.8	9.8	3.1
SP83	SP83	Neanderthal	LRdm2	0.09	25.July.15																			0	0
SP78	SP78	Neanderthal	LLP4	n/a	30.June.11						1									1	1	1			
SP79	SP79	Neanderthal	ULI1	n/a	30.June.11																				
SP84	SP84	Neanderthal	LLM1	n/a	1.July.11									1	1	6			1	2	2	1.4			
SP84	SP84	Sediment on SP84	LLM1	n/a	1.July.11																				
SP1	SP1	Teeth consolidant	LRM3	n/a	22.Mar.12	44														44	1	0.2			
		Packing cotton		n/a	1.July.11											1	3	1	2	0	0				
SPF1S	SPF1S	Lagomorph		n/a	27.Mar.12			1				2		1		1				4	3	1.5			
SPF1D	SPF1D	Lagomorph		0.33	19.Jul.13											1				0	0				0
SPF2S	SPF2S	Carnivore	P	n/a	26.Mar.12															0	0				
SPF3	SPF3	Carnivore	M	n/a																0	0				
SPF4	SPF4	Carnivore	M	n/a	25.Mar.12												1		1	0	0				
SPF5D	SPF5D	Carnivore	M	n/a	8.Apr.12										1	1				1	1	1			
SPF5S	SPF5S	Carnivore	M	n/a	5th Apr 12				1											1	1	1			
SPF7	SPF7	Horse	LRM3	n/a	8th Apr 12						1	1							1	2	2	1.4			

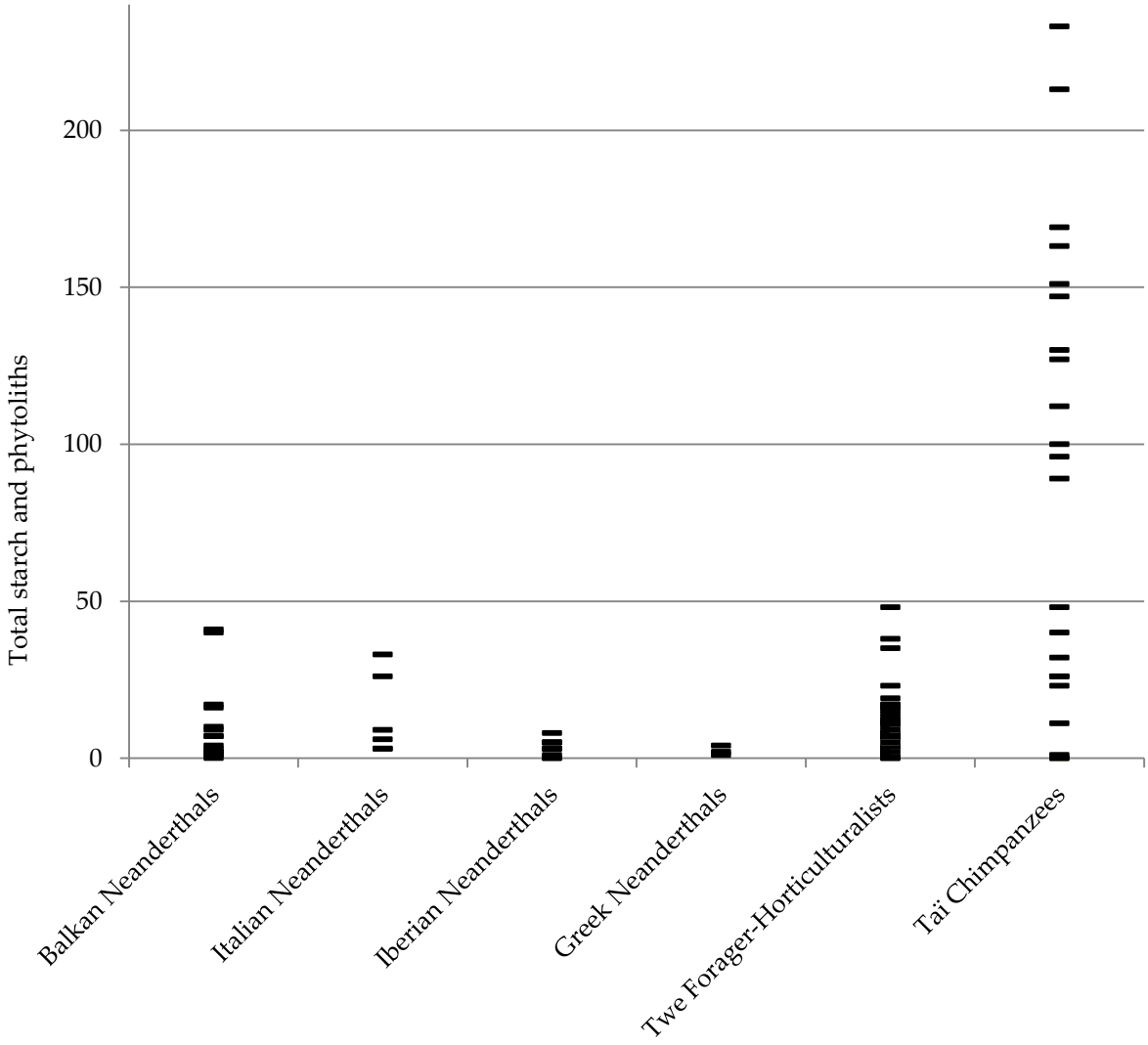
Starch key

Type 1 Polyhedral, moderate size, aggregating type, diameter is 8-25 μm.

Type 2 Lenticular.

Appendix table 19: Total recovered microremains from Kalamakia Cave Neanderthal remains samples.

						Starches				Phytoliths			Calcium oxalates									
Identifier	Specimen	Type	Tooth	Wt	Sampling date	Type 1	Type 2	Dmg/indet.	Possible starch	Rondel	Tabular	Indet.	block & sub	5 face	Irregular	Spicules	Total starch & phytoliths	Total starch & phytoliths types	Menhinick's index	Total starch & phytoliths/mg	Total starch & phytoliths types/mg	Menhinick's index/mg
KAL 3	KAL 3	Neanderthal	UlM3	2.87	12.Feb.13				3	1			1	1			4	2	1	1.40	0.70	0.59
KAL 5	KAL 5	Neanderthal	URP2	0.05	29.Jan.13						1				14		1	1	1	20	20	4.47
KAL 8	KAL 8	Neanderthal	URM2	n/a	26.Jan.13	1	1									1	2	2	1.41			
Starch key																						
Type 1		Lamellae, faint cross on cross polarization.																				
Type 2		Faceted.																				



Appendix fig. 3: Total numbers of starch and phytoliths in each Neanderthals site with reference groups (Twe forager-horticulturalists from Namibia and Taï Forest Chimpanzees) from Leonard et al., 2015 and Power et al., 2015.

Appendix table 20: Coefficients of statistical models.

Model	Term	Estimate	Std. Err.	Z value	P
Tests of effect of openness, MET and age on microremain diversity					
Random effect Poisson model	Intercept	0.918	0.756	1.205	0.228
	Openness mixed	1.189	1.259	0.945	0.345
	Openness open	1.241	0.500	2.481	0.013
	MET	-0.464	0.708	-0.656	0.512
	Age of fossil specimen	-0.432	0.278	-1.553	0.121
Random effect Poisson model with alternative chronology	Intercept	1.039	0.496	2.094	0.036
	Openness mixed	0.429	1.223	0.351	0.726
	Openness open	1.200	0.636	1.886	0.059
	MET	-0.017	0.445	-0.037	0.970
	Alternative age of fossil specimen	-0.198	0.241	-0.824	0.410

Appendix table 21: Western Eurasian economic plants that we identified as starch-rich plants. These plants are candidate plant food staples.

Family	Species	Common name
Anacardiaceae	*Pistacia* sp.	pistachio
Amaryllidaceae	*Allium ursinum*	ramson
Apiaceae	*Pastinaca sativa*	wild parsnip
Apiaceae	*Conopodium majus*	pignut
Alismataceae	*Sagittaria sagittifolia*	arrowhead
Alismataceae	*Alisma plantago-aquatica*	water plantain
Araceae	*Arum maculatum*	arum
Butomaceae	*Butomus umbellatus*	flowering rush
Brassicaceae	*Crambe maritima*	seakale
Dioscoreaceae	*Dioscorea communis*	black bryony
Fabaceae	*Pisum sativa*	common pea
Fabaceae	*Vicia sativa*	common vetch
Fabaceae	*V. sepium*	bush vetch
Fabaceae	*V. cracca*	tufted vetch
Fabaceae	*Lathyrus sylvestris*	everlasting pea
Fabaceae	*Lathyrus latifolius*	bitter pea
Fabaceae	*Lathyrus sativus*	grass pea
Fabaceae	*Lathyrus ochrus*	cyprus pea
Fabaceae	*Lathyrus cicera*	red pea
Fabaceae	*Lathyrus aphaca*	yellow pea
Fabaceae	*Vicia ervilia*	bitter vetch
Fabaceae	*Vicia hirsuta*	hairy tare
Fabaceae	*Vicia narbonensis*	purple broad vetch
Cyperaceae	*Cyperus longus*	sweet flag
Cyperaceae	*Cyperus esculentus*	tigernut

Cyperaceae	*Schoenoplectum* spp.	common clubrush
Corylaceae	*Corylus cf. avellana*	hazel
Liliaceae	*Lilium martagon*	turk's cap lily
Liliaceae	*Erythronium*	dog's tooth violet
Rosaceae	*Potentilla anserina*	silverweed
Rosaceae	*Sanguisorba officinalis*	great burnet
Papaveraceae	*Corydalis cava*	corydalis
Polygonaceae	*Bistorta officinalis*	european bistort
Equisetaceae	*Equisetum palustre*	marsh horsetail
Menyanthaceae	*Menyanthes trifoliata*	bogbean
Typhaceae	*Typha latifolia*	reedmace
Poaceae	*Avena elatior*	false oat-grass
Poaceae	*Avena sativa*	common oats
Poaceae	*Brachypodium pinnatum*	false brome
Poaceae	*Festuca* sp.	fescue
Poaceae	*Deschampsia cespitosa*	hair grass
Poaceae	*Echinochloa crus -galli*	barnyard grass
Poaceae	*Dactylis glomerata*	cocksfoot grass
Poaceae	*Elymus repens*	couchgrass
Poaceae	*Hordeum murinum*	wall barley
Poaceae	*Hordeum bulbosum*	bulbous barley
Fagaceae	*Castanea sativa*	sweet chestnut
Fagaceae	*Quercus ilex subsp. rotundifolia*	holm oak
Fagaceae	*Quercus coccifera*	kemes oak
Fagaceae	*Quercus faginea*	portugese oak
Smilacaceae	*Smilax aspera*	rough bindweed
Dennstaedtiaceae	*Pteridium* sp.	bracken
Ranunculaceae	*Ficaria verna*	lesser celandine
Nymphaea	*Nuphar lutea*	yellow waterlily
Nymphaea	*Nymphaea alba*	white waterlily
Trapaceae	*Trapa natans*	water caltrop