

**Appendix 1.** Description and detailed counts of the phytolith types observed in samples from uppermost Bed I, Olduvai Gorge, Tanzania.

ID	Description (sizes in microns)	Taxonomy	Localities sampled under Tuff IF / DB08-sample #												
			FLK NN			FLK N	FLK	-	VEK		HWK W		HWK E		
			geo1	geo2c	geo2a	geo14	geo3	geo5	geo7	geo6	geo8	geo9	geo10	geo11	geo12
<u>Spherical and subspherical bodies</u>															
Glo-1	Globular granulate body oblong, flatten (L12-30)	FI			6	7					9	4	4	2	
Glo-2	Globular granulate body spherical (d<8)	FI					14							16	
Glo-3	Globular granulate body spherical (d8-15)	FI	122	57	54	33	98				82	143	73	37	7
Glo-4	Globular granulate body spherical (d15-20)	FI	28						21						
Glo-5	Globular granulate body spherical (d20-25)	FI		8			16					1			
Glo-7	Globular granulate/smooth body spherical (d12-25)	FI			10							2		21	
Glo-8	Globular granulate body, vaguely pyramidal (d10-22)	FI	14												
Glo-9	Globular granulate body in string (d10-15)	FI							1						
Glo-10	Globular micro-echinate body (d8-12)	PALM	2					1							1
Glo-11	Globular micro-echinate body (d8) in string/plates (L20)	PALM											8		
Glo-13	Globular echinate body with distinct spines (d6-8)	PALM												20	
Glo-14	Globular echinate body with distinct spines (d10-15)	PALM	5			32					5	6	7		42
Glo-15	Globular echinate body with distinct spines (d15-22)	PALM				8							1		7
Glo-16	Globular echinate body with distinct spines (d30)	PALM			1										
Glo-17	Globular echinate body flat with distinct spines (d15-20)	PALM													2
Glo-18	Globular echinate/micro-echinate, spines unevenly distributed (d20-30)	Mar/Cos? (a)													10
Glo-19	Globular micro-echinate body, fuzzy micro-spines (d10-20)	Mar/Cos? (a)				28									
Glo-20	Globular tuberculate body (d8-20)	FI			3										2
Glo-23	Globular tuberculate body oblong or sub-tabular (L10-20)	FI				3									1
Glo-24	Globular faceted, echinate contour and marked ridges (d8-14)	Mar/Cos (a)						1							
Glo-25	Globular faceted, scalloped (d20)	FI											2		4
Glo-27	Discoïd microechinate, half-cylindrical in side view (d20-50)	-											5		
Glo-28	Globular smooth/psilate (d10-15)	FI	2				1	2						5	7
Glo-29	Globular smooth/psilate flat (d10-15)	FI	8								2				
<u>Striated/onion-like bodies</u>															
Str-1	Angular body (L30-50), sharp edges with concentric striations; also include globular (d8-10) microechinate bodies	FI									8				
Str-2	Vaguely key-stone body with concentric striations (L25-30)	FI (d)				1									
<u>Plates, large tabular bodies</u>															
Pla-2	Thin plate verrucate, angular or rounded edges (L100)	-				8									
Pla-6	Thin plate (<15μ), smooth with MD along L-axis (L30-70)	-											3	22	
Pla-8	Subspherical plate with bulliform-type texture (L40-100)	Grass/Sedge?			45										
Pla-9	Thick polyhedral plate, internal structure tubutuliferous (L40-50?)	Sedge? (b)			6							6		1	
Pla-10	Thick plate with sinuous contour (L40-60)	FI										4	1		
Pla-11	Plate curved at the top, looks like broken lacunate bulliform (L76)	-											5		
<u>S-bodies or sclereids</u>															
S-1	Shape irregular, longitudinal facets, smooth surface (L40-60)	FI	2		11							4		39	8
S-2	Shape irregular, angular, shard-like, smooth surface (L20-50)	FI				6									1
S-3	Thin corner plate irregular (L20-30)	-			1										

			Localities sampled under Tuff IF / DB08-sample #															
ID	Description (sizes in microns)	Taxonomy	FLK NN			FLK N		FLK		-		VEK		HWK W		HWK E		
			geo1	geo2c	geo2a	geo14	geo3	geo5	geo7	geo6	geo8	geo9	geo10	geo11	geo12	geo13		
S-4	Irregular body with facets, including a globular granulate body (d20)	FI				1												
<u>Mesophyll bodies</u>																		
M-1	Vertebral column body (L24)	GRASS (c)														1		
<u>Elongate bodies</u>																		
EI-1	Small branching body, cylindrical (d10-15, L12-20?)	ND											1					
EI-2	Elongate smooth glass-rod type straight body (L15-30)	ND			1							3		13				
EI-4	Elongate cylindrical body granulate, curved/branched (L20-70)	FI		11		20	4					8	3	14	4			
EI-6	Elongate triangular tansverse section, 2 sinuous edges (L40-50)	-			8													
EI-7	Elongate triangular tansverse section smooth edges (L20)	-											1					
EI-9	Elongate smooth bowed pinched-pointed body with internal vacuole (L70-85?)	FI			8												2	
EI-11	Elongate cylindrical body sinuous, smooth surface (L15-45)	GRASS?										4	2	17	3			
EI-12	Elongate tabular or slightly cylindrical, tuberculate (L30)	GRASS?															2	
EI-14	Elongate tabular body with sinuous egdes (L22-70)	-												1	1			
<u>Blocky bodies</u>																		
Blo-1	Orange-slice body (L20-30)	-	6			2	28					6	3	21	37	10	7	
Blo-2	Acicular body (L16-20)	Grass/Sedge											11					
Blo-3	Acicular body (L20-40)	Grass/Sedge				1								3				
Blo-4	Acicular body, lacunate (L15-20)	Grass/Sedge										1	1					
Blo-5	Acicular body (L40-60)	Grass/Sedge	1															
Blo-6	Body scutiform (L20-30)	-	8	3	22		17					6						
Blo-7	Discoidal/spheroidal psilate body, vaguely fan-shaped (d20-30)	-		28		13			1				1	2				
Blo-8	Fan-shaped bulliform cell with ridges (L20-54)	GRASS										14		1				
Blo-9	Narrow fan-shaped bulliform cell (L20-30?)	Sedge (b)			3												3	
Blo-10	Parallelepiped fan-shaped body (L25-30)	Grass/Sedge? (i)				11												
Blo-11	Parallelepiped fan-shaped body (L30-40)	Grass/Sedge? (i)	7	10			7				4	8	5	11			1	
Blo-12	Parallelepiped fan-shaped body, lacunate (L30-40)	-											2					
Blo-13	Parallelepiped fan-shaped body (L50-80)	Grass/Sedge? (i)				3	7				5	2				4		
Blo-14	Parallelepiped fan-shaped body (L80-130)	Grass/Sedge? (i)		13														
Blo-15	Parallelepiped body with one tapering end (L90-140)	-															6	
Blo-16	Parallelepiped body, one rounded/tapering end, bulliform-type texture (L30-40)	Grass/Sedge? (i)													22			
Blo-19	Parallelepiped body, bulliform-type texture (L30-70)	-	1															
Blo-21	Parallelepiped bowed body (L100-180)	-																1
Blo-22	Tabular thick lacunate body (L30-60)	FI (d)				7	3							1	1			
Blo-23	Tabular thick lacunate body large (L60-140)	FI				21												
Blo-24	Parallelepiped irregular with lacunae along the edges (L30-40)	-											24					
Blo-25	Irregular large blocks with bulliform-type texture (L30-65)	-		31		8					4	9		20				
Blo-26	Irregular large blocks with bulliform-type texture (L100-120)	-		5									47					
Blo-27	Parallelepiped body smooth, pinched-point (L30-80)	-(e)												2				
Blo-28	Parallelepiped/cubic body, psilate surface (L10-30)	-		19			6				9	15						1
Blo-29	Parallelepiped/cubic body lacunate with black material inside (L10-40)	-			4							6		2	3			
Blo-30	Parallelepiped/cubic body, psilate surface (L20-46)	-									6							

			Localities sampled under Tuff IF / DB08-sample #															
ID	Description (sizes in microns)	Taxonomy	FLK NN			FLK N		FLK -		VEK		HWK W		HWK E				
			geo1	geo2c	geo2a	geo14	geo3	geo5	geo7	geo6	geo8	geo9	geo10	geo11	geo12	geo13		
Blo-31	Parallelepiped/cubic/ovate body, granulate/tuberculate surface (L15-20)	FI?				8												
Blo-32	Parallelepiped with gully-like patterns (L30-40)	-		4														
Blo-33	Anvil-type body made of 2 combined prisms (L60-70)	-		6														
Blo-34	Parallelepiped lacunate body (L30-60)	FI			19		1											
Blo-35	Small pyramidal body with bulliform-like texture (L15?)	-		5														
Blo-36	Parallelepiped body constricted on one side along L-axis (L50)	-								3								
<u>Grass silica shortcells</u>																		
GSSC-1	Bilobate concave lobes (L12)	GRASS			0.5					4	0.5			0.5				
GSSC-2	Bilobate concave lobes, alate, thin shank, long (20-32μ) lobes! (L45-80)	GRASS											1	1				
GSSC-4	Bilobate round lobes	GRASS	0.5							1								
GSSC-5	Bilobate straight lobes (L10-12)	GRASS								1	3	16	3					
GSSC-6	Bilobate tabular round lobes twisted (L12)	GRASS										2						
GSSC-7	Bilobate tabular thick shank squarish lobes	GRASS										2	1					
GSSC-8	Bilobate thick shank round lobes (L12)	GRASS								2								
GSSC-9	Cross 4-lobed tabular (L15?)	GRASS										2						
GSSC-10	Cross 4-lobed with rectangular top (L15?)	GRASS								1								
GSSC-11	Cross 4-lobed with squared lobes at the corners, alate (d10-20)	GRASS (f)			1					1								
GSSC-12	Non-rectangular and irregular pyramidal (b10)	GRASS								2								
GSSC-13	Non-rectangular and irregular pyramidal (b18)	GRASS								1	3							
GSSC-15	Oblong tabular (d16-20)	GRASS											11					
GSSC-16	Oblong trapeziform (L22)	GRASS								2	1		8					
GSSC-17	Polylobate cylindrical with irregular lobes, round/straight (L28)	GRASS											1					
GSSC-18	Polylobate cylindrical, round lobes (L22)	GRASS										1						
GSSC-19	Polylobate tabular with irregular lobes, squarish (L14-32)	GRASS (g)											2					
GSSC-20	Polylobate tabular, concave end lobes (L15-20)	GRASS			1													
GSSC-21	Polylobate trapeziform (L22-28)	GRASS											5					
GSSC-22	Pyramidal (b12-16)	GRASS				1							4					
GSSC-24	Rondel conical (d6-12)	GRASS	1															
GSSC-25	Rondel conical, top keeled (d6-12)	GRASS											37	10				
GSSC-26	Rondel conical, top spiked (d6-12)	GRASS									7		4					
GSSC-27	Rondel conical, top truncated (d6-12-16)	GRASS				1					6	1	53	18				
GSSC-29	Rondel cylindrical short, base round/oblong (d6-12)	GRASS									2		18	2				
GSSC-30	Rondel cylindrical tall, base round/oblong (d10, h20)	GRASS										1	9					
GSSC-31	Rondel half-sphere (d18)	GRASS								2								
GSSC-32	Rondel half-sphere with ridges (d20)	GRASS?									2							
GSSC-33	Rondel sinuous base, conical, top truncated (d8)	GRASS									2							
GSSC-34	Rondel sinuous/oblong base, conical, top spiked (d8-10)	GRASS (h)									3		5					
GSSC-35	Rondel tabular hexagonal (d8-12)	GRASS			4							1	10					
GSSC-36	Rondel tabular slightly crescent-shaped (d10-12)	GRASS										7	9	5	1			
GSSC-37	Rondel, base oblong constricted/bilobate? top truncated (d6-12)	GRASS										2						
GSSC-38	Saddle collapsed (L10)	GRASS										2						
GSSC-39	Saddle regular (L10)	GRASS			1						1	5	2					
GSSC-40	Saddle regular (L16-18)	GRASS										1		5				
GSSC-41	Saddle short convex edges (L10)	GRASS										1		2				
GSSC-42	Trapeziform shortcell (b10-16)	GRASS	1			5					1	2	6	15	11			

ID	Description (sizes in microns)	Taxonomy	Localities sampled under Tuff IF / DB08-sample #													
			FLK NN			FLK N		FLK	-	VEK		HWK W		HWK E		
			geo1	geo2c	geo2a	geo14	geo3	geo5	geo7	geo6	geo8	geo9	geo10	geo11	geo12	geo13
GSSC-43	Trapeziform shortcell (b16-20)	GRASS											1	2	1	
<u>Unidentified</u>																
Unid-1	Dubious globular	-							2							
Unid-4	Dubious GSSC	-										1	2			
Unid-6	Cubic, sub-spheroidal micro-echinate with ridges (L10-15)	-						3								
	<b>SUM Phytoliths</b>		<b>209</b>	<b>200</b>	<b>210</b>	<b>228</b>	<b>207</b>	<b>27</b>	<b>0</b>	<b>150</b>	<b>335</b>	<b>224</b>	<b>506</b>	<b>188</b>	<b>28</b>	<b>2</b>
	Diatoms				2											

### Definitions

Echinate: spines >1µm ; Micro-echinate: spines <1µm; b: base; d: diameter; L: longest axis; l: shortest axis; t: top; MD: material or surface that is made of transparent, opaque silica with small black (organic?) grains inside and have a verrucate, somewhat diffuse (not well-defined) surface (Stromberg 2003).

### Notes

- a, Strömberg, 2004; Strömberg, 2003, *Costus* -type; Fig 5.11c
- b, Ball et al 2002 (Cyperus spp slides 325, 371), Epidermal plates
- c, Strömberg, 2004; Strömberg 2003, Fig 4.5d
- d, Mercader et al 2009, Fig 6k,l,m
- e, Strömberg, 2003; Fig 4.15b
- f, Strömberg, 2003, type CR4-8; Fig 4.21k
- g, Strömberg, 2003; Fig 4.23g
- h, Strömberg, 2003, type CO-4; Fig 4.19e
- i, Barboni and Novello, unpublished data on the phytolith content of some African sedges.