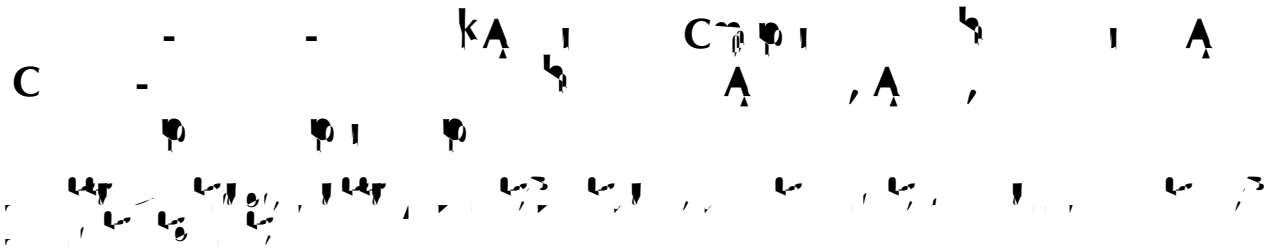
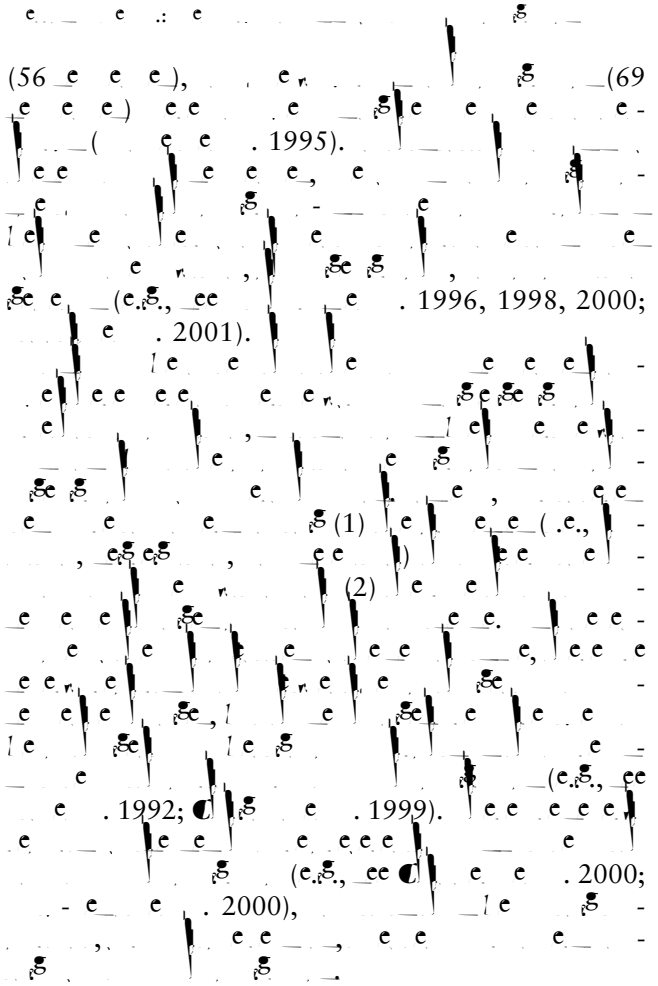




T 4 42 ı ‘ 2‘
‘ 1(-) T T ( )4 ( )4 2(‘)4 1( )4 (( ) (¯ 2-4( ),)- (-42 (ı ıl 4 ( ) T T

Sequence Analysis and Quality Control

Evolutionary Analysis of Sequences

Recombination/Linkage Disequilibrium (LD) Analysis

The mtDNA-Sequence Set and Haplogroup-Associated Polymorphisms

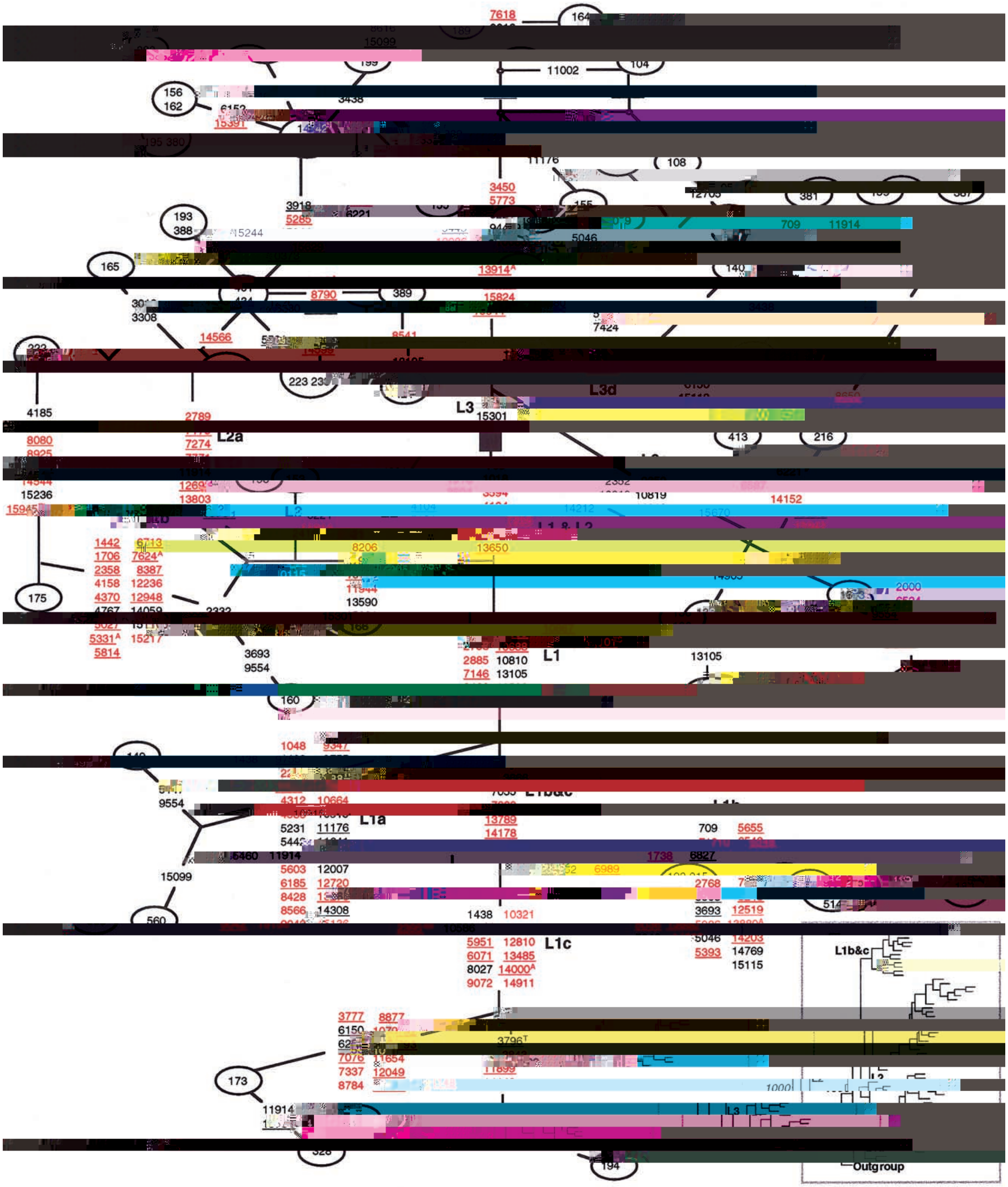
T 1

	663	. (1992)
	9- , 16519	. (1992)
	13263	. (1992)
	2092 , 5178 , 8414	. (1992), (1994)
	7598	. (1994*b*)
	7028 , 14766	(1994), . (1999)
1	3010	. (2001)
2	1438 , 4769	. (2001)
	1719 , 8251 , 10238	. (1996), . (1999)
	4216 , 12612 , 13708	. (1994*a*), . (1999)
1	3010	. (2001)
2	7476 , 15257	. (2001)
	1811 , 9055 , 12308 , 12372	. (1996), . (1999), . (2001)
	10873	- . (1999)
1	2758 , 3594 , 10810	. (1995)
1	4312	. (1999)
1	2352	. (1998)
1	9072 , 12810	. (1998)
2	3594	. (1995)
2	13803	. (2000)
2	4158	. (2000)
3	3594	. (1999)
3	8616 , 11002	- . (1999), . (2000)
3	8618	. (1998)
3	2352	. (1998)
	10400 , 10873	. (1993), - . (1999)
	709 , 1888 , 4917 , 10463, 13368 , 14905 , 15607 , 15928	. (1996), . (1999), . (2001)
1	12633	. (2001)
2	11812 , 14233	. (2001)
	12308 , 12372	. (1996), . (1999)
2	1811 , 9055 , 12308 , 12372	. (2001)
4	1811 , 4646, 11332	. (1999), . (2001)
5	3197	. (1999)
5	7768	. (2001)
5 1	14793	. (2001)
5	5656	. (2001)
6	7805 , 14179	- . (2001)
	4580 , 15904	. (1996), . (1999)
	709 , 1243, 8251 , 8994	. (1996), . (2001)
	6221, 1719 , 14470	. (1999), . (2001)

/001 (e)-350 36.4 97 . (2000)

same

The African mtDNA Network


L3d
L3
L2a
L2
L1a
L1b&c
L1
L1c
Outgroup

T ı 2

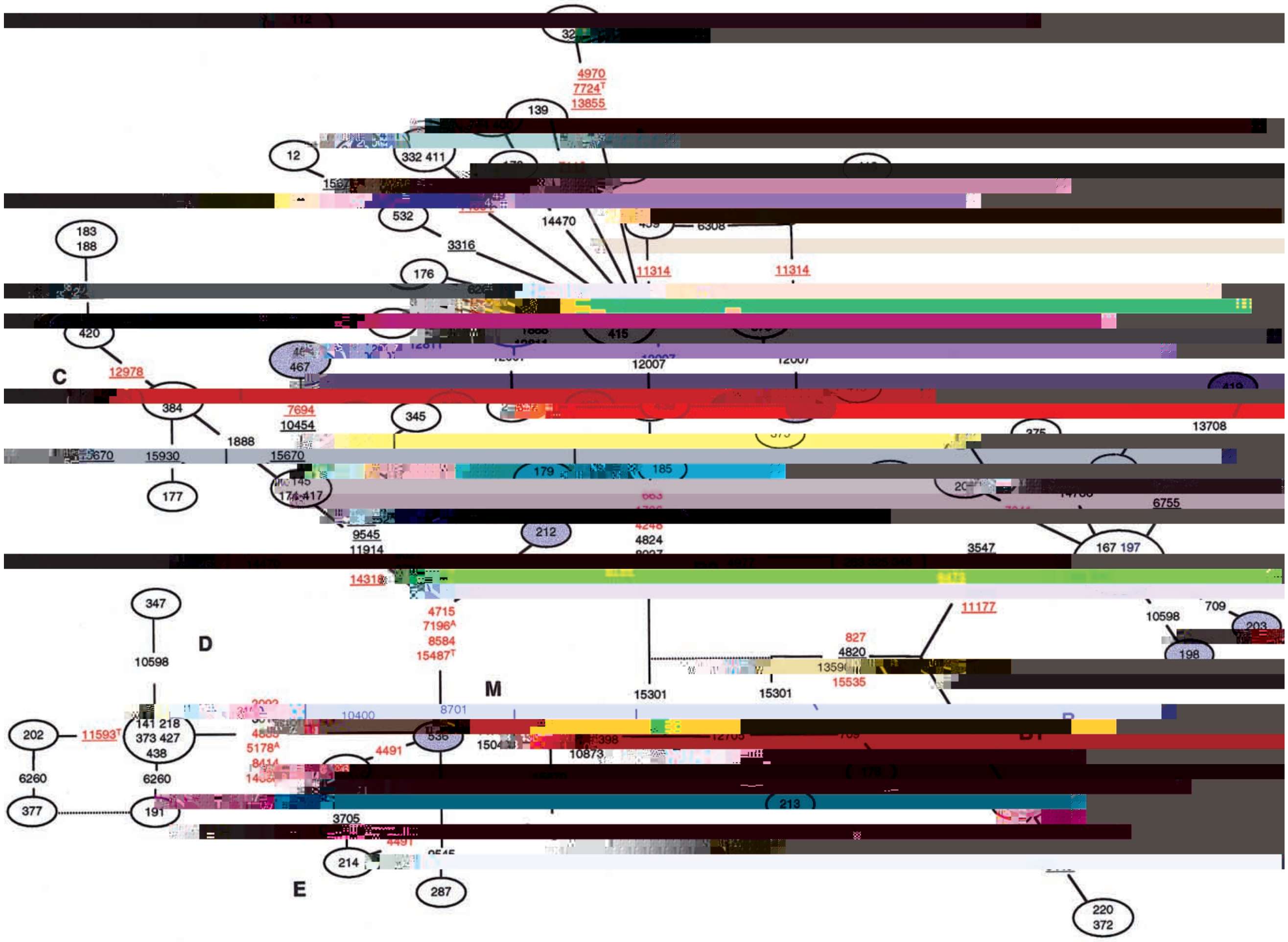
										1	2	3						
	(25)	(18)	(13)	(9)	(3)	(226)	(14)	(33)	(47)	(13)	(23)	(20)	(1)	(46)	(42)	(8)	(8)	(11)
593				1				1	2									
709		2				3			9	7		1		46	1		8	
750	25	18	13	9	3	218	14	33	47	13	23	17	1	46	42	8	8	11
769										13	23							
930	1										1			16				
1018										13	23							
1438	25	18	13	9	3	208	12	33	47	6	23	20	1	46	42	8	8	11
1598	2						1							1				
1719						2	14	1						1				11
1811						1			46						15			
1888	2		6					1						46				
2158								2							1			
2217						1			5									
2332											4	2						
2352										7		11						
2706	25	18	13	9	3	13	14	31	47	13	23	20	1	46	42	8	8	11
3010				9		73		27			1	1			3			
3027					1	1												
3197															24			
3308										7	1							
3316	2					1					1			1			1	
3394					1	1		2										
3438						1					1	3						
3547		14				2												
3552			12						1									
3591	1					2												
3594										13	23							
3666				1		2				11								
3693										7	1							
3705					2						1				1			1
3796						1				2								
3796		1				3												
3915		1				9						1						
3918		1									7			1	1			
4104										13	23			1				
4185						1					2							
4216						2		33			1			46				
4561						1			8						1			
4646						1									5			
4688												1		2				
4767						1					3							
4769	25	18	13	9	3	209	14	33	47	13	23	20	1	46	42	8	8	11
4793						5								1				
4820		17													1			
4824	25									1								
4917							1							46				
5004						11											1	
5046										7		1					8	
5147						1				1		3		16				
5231									5	2								
5319						1									2			
5426														7	7			
5442						1				2			1					
5460				1		2		2		2	1					1	8	
5581											3				1			
5656							1								4			
5913	1								4									
5999														1	5			
6023		3				2								1	1			
6150										2		1						
6152											2			1	7			
6221											1	11		1				11
6253						1				2								

(*continued*)

T ı 2 ( )

										1	2	3						
	(25)	(18)	(13)	(9)	(3)	(226)	(14)	(33)	(47)	(13)	(23)	(20)	(1)	(46)	(42)	(8)	(8)	(11)
6260	1			2		1			6						1			
6413		3						1										
6671					1	1		2										
6680					1							2						
6719						1												

60 18219.2(68.8(-1525 0.831 650.54247424) .99 1.) -184.9(2)388.8(1)-(79 2 -1.1525 0.00)) (60 18219.2(68.8(-1525 0.831 650.542480-2) 0504 9 9(6)-85



2 … 69 … 10398, … 961 … 1. … 3 … 216 …).

… 3 … 1/ 2- … 769, 1018, 3594, 4104, 7256, 7521, … 13650. … 1/ 2 … 1/ 2- … 3594 … 1995 … 1999). … 3 … 15301 … 3- … 1- … (… 1). … 3 … (… 1), … 10819 … 14212

… 3 … 1 … 2, … 2). … 104 … 1- … 10810 … 1999), … 825, 2758, 2885, 7146, 8468, 8655, 10688, 13506 … 1 … 2416, 8206, 9221, 10115, 11944 … 2 … 2 … 2

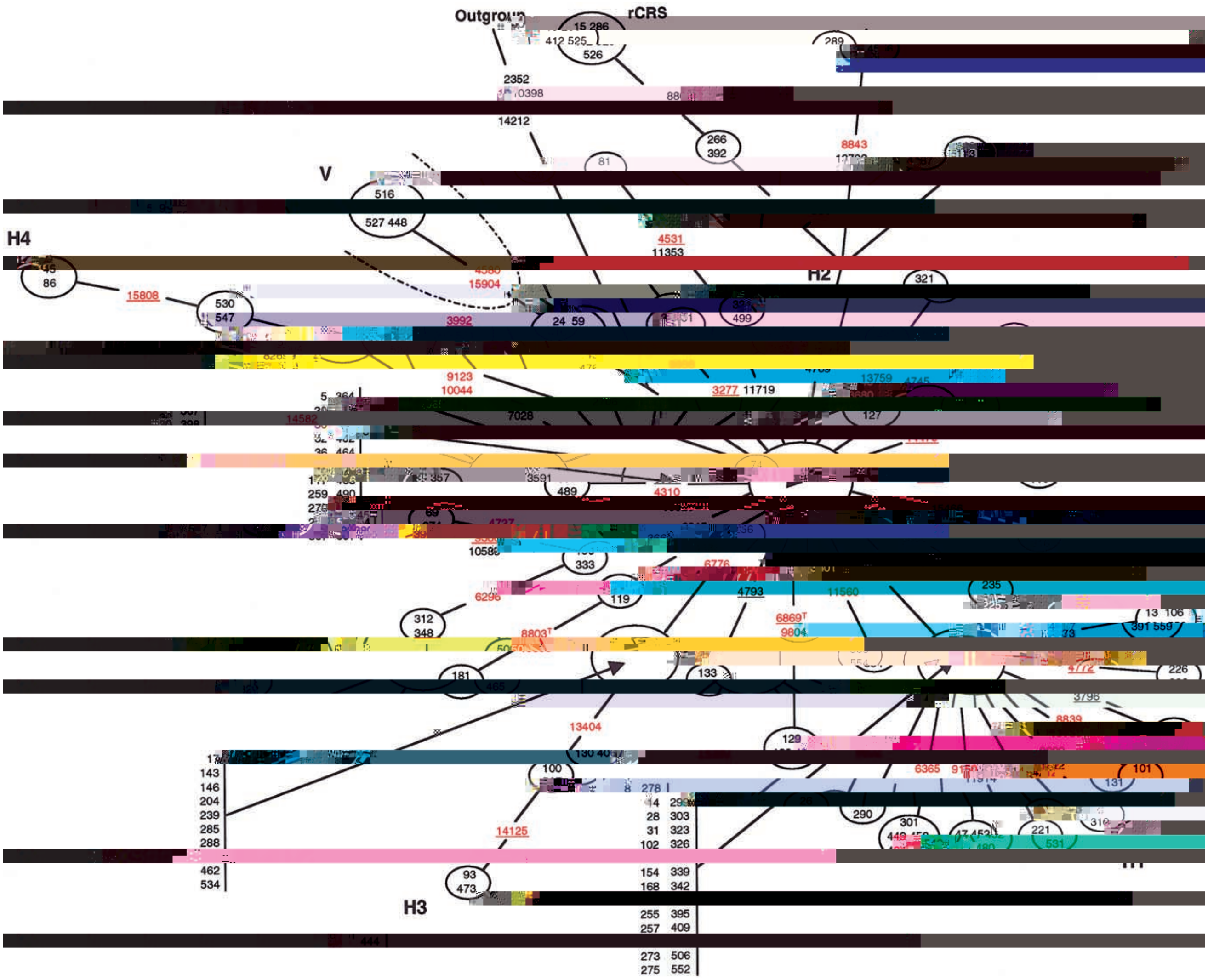
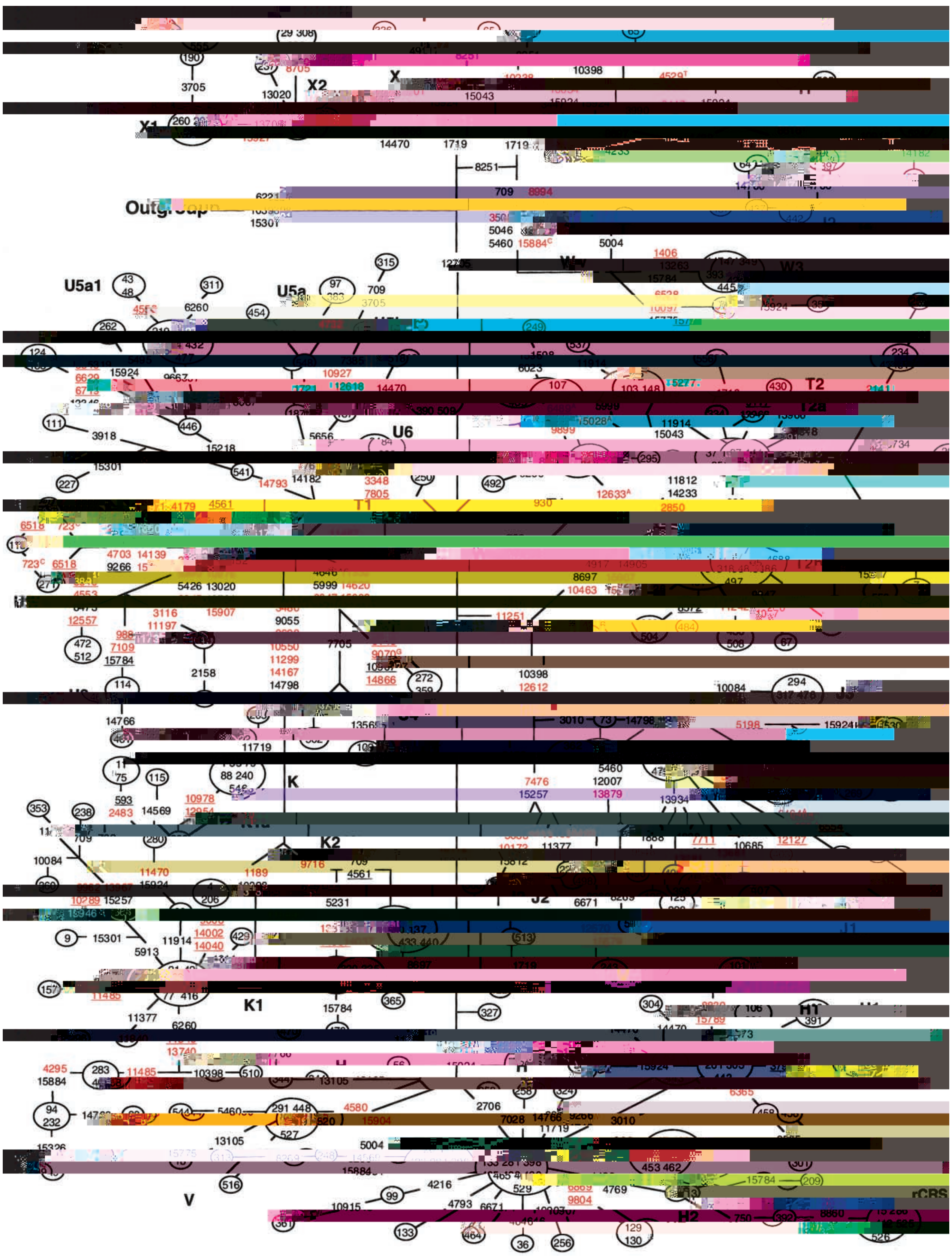
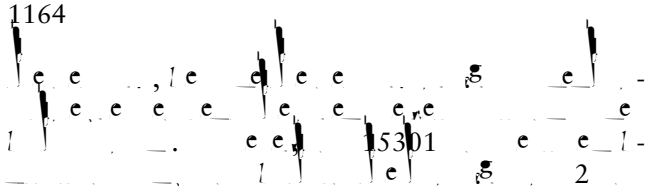

Outgroup
rCRS
V
H4
H2
H3
2352
14212
8843
4531
11353
15808
15904
3992
9123
10044
3277 11719
7028
3591
489
4310
10586
6776
6296
4793
11560
6869
312
348
181
133
13404
100
14125
129
6365
290
301
221
93
473
143
146
204
239
285
288
462
534
154 339
168 342
255 395
257 409
273 506
275 552

Figure 3 [illegible]



4 … 259 … 50 … 10398, … 1.

Am. J. Hum. Genet. 70:1152–1171, 2002



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e e 12007 e *three*

g e e e e e e

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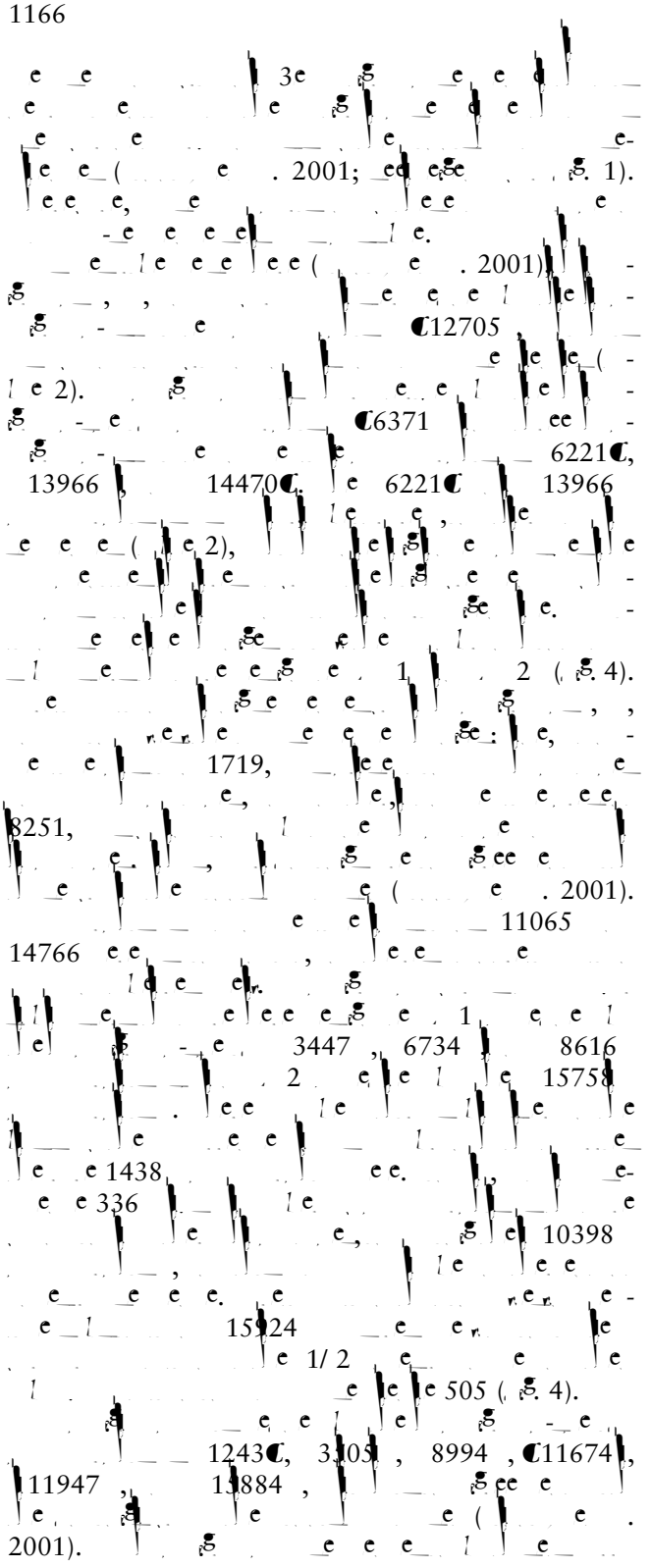
, e e e



5 e

T 3

[illegible]	56	69	435	226
[illegible]	418	293	906	413
[illegible]	143 (34%)	25 (10%)	15 (2%)	9 (2%)
r^2/ [illegible]	8,911	210	105	36
r^2/ [illegible]	−.001	−.181*	.085	.103
δ/ [illegible]	7,213	153	105	36
δ/ [illegible]	−.001	−.147*	−.002	.112

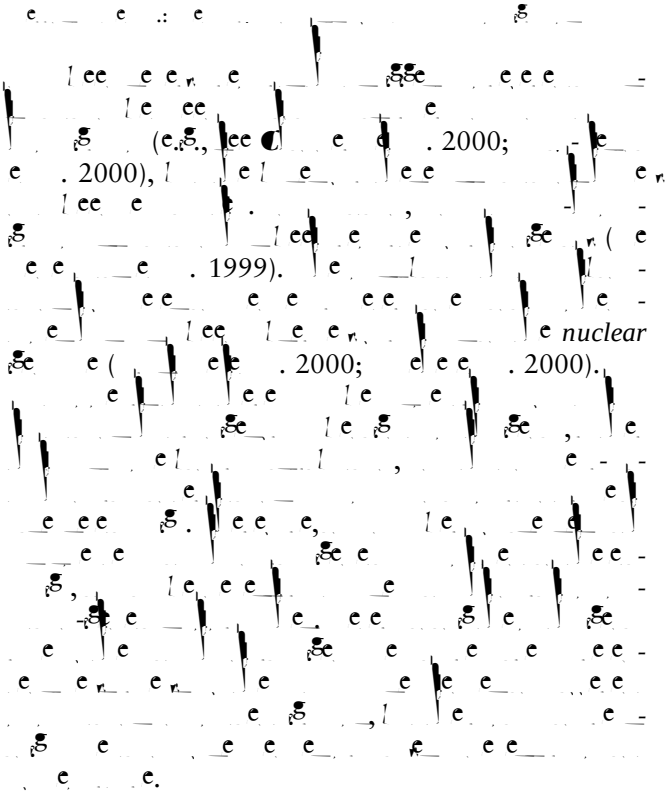
[illegible] ≥5% [illegible]

[illegible] r^2 [illegible] 0).

[illegible] r^2 [illegible] δ [illegible] 2001). [illegible] (*) [illegible] 2001). [illegible] 0.

[illegible] *positive* δ [illegible]

[illegible] (2). [illegible] 2001). [illegible] 5773 [illegible] 9545 [illegible] 11899 [illegible] 12630 [illegible] 5 1, [illegible] 3, [illegible] 1, [illegible] 2 ([illegible] 1 [illegible] 2), [illegible] (2). [illegible]



A k

(2000) 44.4( )-333.4(62:1)-311.2(2( )-422.

(2001) 68:1315 1320

(1998) 62:241 260

(2000) 44.4( )-333.4(62:1)-311.2(2( )-422.

(1999) 186:49 116

(1996) 59:501 509

(1995) 92:6892 6895

(2000) 408:708 713

(1992) 331 182:238 246

(2001) 2:13

(1999) 64: 232 249

(1994) 36:747 751

(2001) 52:160 170

(2001) 18: 2132 2135

(1990) 183:63 98

(2001) 16:37 45

(1999) *Homo sapiens sapiens* 23:437 441

(1998) 62:531 550

(1998) 59: 185 203

64: 403–416
130:153–162 (1997)
(1994)
61:691–704
(2001)
26:261–271
159:749–756
(1999)
(2001)
238:211–230
(1992)
18:1425–1434