



Morgan™ HLA SSP ABC Typing Kit

A Locus Worksheet

IMGT/HLA db 2016/01

S/N#: ABC_005 v3

Serology Type	A* alleles amplified with Morgan A primer mix	Primer Mix Number																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		85/90	160/205/215	170/215	175/205	150/155/195	205/215	175/215	90/230/235	260/270	120	185	240	170/235	200/205	170/215	165	195/230	170	170	135/200	120/220	90/155/195	145	175
A1, Null, -	A*01:01:01:01:01:11/01:13-01:31/01:33-01:54/01:56/01:58-01:73/04N/06/08/09/11N/13-18N/22N/24/27N-29/31N-37/39-41/44-50/52:01N-82/84-94/96-98/100-104/106-126/128-135/137/138/140-142/144/146/148-158/160N-166/168-175/177/179N-187/189/193-199														15	16									24
A1, -	A*01:01:12/01:55/10/21/26/38/42/139														15										24
A1, -	A*01:01:32/01:57/02/07/20/23/43/51/83:01/83:02/105/143/188/190/191														16										24
A1	A*01:30							7							15	16									24
-, A1	A*01:12/19/136						6								15										24
A1, -	A*01:25/127						6								15	16									24
-	A*01:30														15	16						22			
-	A*01:95													13	15	16									24
-	A*01:176			3												16									24
-	A*01:192							7							15										24
A2, -, A203, A210, Null	A*02:01:01:01:01:06/01:03-01:30/01:32-01:60/01:62-01:69/01:71-01:121/03:01-04/06:01:01-06:04/06:06-06:08/06:10-07:08/09-13/15N/16/18/20:01/21-35:03/38/40:01-43N/45/46/48/49/51-53N/55/59-61/64:01/64:02/66-72/74:01-76:01/77/80/82N/83N/85/88N-101:02/104-107/109/111/113:01N/113:02N/116-121/123/125N-134/137-148/150/151/153:01/153:02/157:01-171:02/173-178/180-182/184/185/187-189/191-207/211:01-228/230/231/233-235/237-242/244/247-254/256-270/273-278/280-285/287-299/301N/302/304-308/310-319/321N-323/325-333/335/336/339-343/345-348/350N-352/354-358/360-370/372/374/375/377-399/401-407/409-412/414-416/418-420/422-432/434/435/437/439N-450/452/453/455-483/485-488/490N/491/493/494/497-506N/508-516N/518-526/528-530/533-544/547-562/564-570/573-576/578-581/583/584/586-590/592/594-600/602-608N/610		2		4																				
A2, -	A*02:01:02/01:31/06:05/06:09/20:02/76:02/208/236/272/585				4																				
A2, -, Null	A*02:01:61/01:70/02:01:01-02:03/05:01-05:06/08/14/17:01-17:03/39/44/47/57/58/63/65/79:01/79:02/84/86/102/108/110/115/149/152/154/155/172/179/183/186/190/210/229/232/271/286/300/303/320/324/337/344/349/353/359/371/373N/376/400/408/413/421/433/436/438/451/484/489/492/495/496/507/517/531/532/545/546/563/572/577/593/601		2																						
-	A*02:19		2					8																	
-	A*02:36/37/54/255/417		2		4			8																	
A2, -	A*02:50/73/245/334		2																		20				
-	A*02:56:01/56:02/62/103		2	3	4																				
A2, -	A*02:78/114/246/279/582		2		4																	21			
-	A*02:81/87/112/124/136/571		2		4									13											
-	A*02:122				4																20				
-	A*02:156/338		2																		20		22		
-	A*02:243:01/243:02		2		4										14										
-	A*02:309		2												15										
-	A*02:454		2		4										15										
-	A*02:527		2																			21			
-	A*02:609				4										15										
A3, Null, -	A*03:01:01:01:01:11/01:13-01:18/01:20-01:38/01:40-01:56/03N-09/11N/13-16/17:02/20-30/33-64/66-68N/70-72/74/77-81/83-87/91N-96/98-105/108-112/114-121/123:01-134/136-151/153-159/161N-163/165/166/168N-170/172-197N/199-214/216/217/220-222/224-235/238-241, A*30:55			3																					
A3, -	A*03:01:12/89:01/89:02		2	3																					
A3, -	A*03:01:19/107/164			3											15										
A3, -	A*03:01:39, A*74:13			3		5																	22		
A3, -, Null	A*03:02:01-02:04/10/31/32/65/69N/73/76/82/90/106/113/160/198/218/223/236/237/242, A*11:199:01/222			3			6																		
-	A*03:12/88			3																		21			
-	A*03:17:01			3																	20				
-	A*03:18/97/122/135			3																				24	
-	A*03:19			3																			22		
-	A*03:75/215			3				7																	
-	A*03:167			3			6																		24
A11, -, Null	A*11:01:01:01:01:33/01:35-07/09/10/12-16/20-22/29/30/32:01-34/36/37/41/42/45-49/51/54-73/75-77/79-87/89-93/95-97/99N/100/102-105/107-117/120/122-129/131-138/140-142/144-154/156/157/159-177/179-182Q/184-190/192-198/200-208N/210N/212-221/223-225/227-229/231-235Q						6															21			
A11	A*11:01:34		2				6															21			
A11, -	A*11:08/23-25:02/31/35/44/50Q/101/143/158/183/191/211, A*34:11, A*66:10, A*68:140																					21			
-	A*11:11						6										17					21			
-, A11, Null	A*11:17-19/40/43/52Q/74/78N/88/98/106/121/178/230, A*23:34/57/66, A*24:94/138/188/222N/228/233/304/318						6																		
-	A*11:26/118							7									17					21			
-	A*11:27/38/39						6															21			24
-	A*11:94																					21			24

Serology Type	A* alleles amplified with Morgan A primer mix	Primer Mix Number																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		85/90	160/205/215	170/215	175/205	150/155/195	205/215	175/215	90/23/235	260/270	120	185	240	170/255	200/205	170/215	165	195/230	170	170	135/200	150/220	90/155/195	145	175
-	A*11:119:01/119:02					6														20	21				
-	A*11:130			3		6															21				
-	A*11:139						7														21				
-	A*11:155					6										16					21				
-	A*11:199:02		2	3		6																			
-	A*11:209					6														20	21			24	
-	A*11:226															16					21				
A23, -, Null	A*23:01:01-01:12/01:14-08N/10-13/15-33/35-50/52/54-56/58-63/65/67-69					5	6																		
A23	A*23:01:13		2			5	6																		
-	A*23:09/51, A*29:37/56					5																			
-	A*23:14:01/14:02					5	6	7																	
-	A*23:53					5	6																	24	
-	A*23:64					5								13											
A24, -, A2403, Null, A9	A*24:02:01:01-02:26/02:28-02:57/02:59-07:02/09N-13:02/15/18-23/25-28/30-40N/43-49/53-56/58-63/66/68-81/83N-87/90:01N-91/93/95-98/100-103/105-119/121-128/130-137/139-144/146-155N/157-187/189/190/192-207/209-221/223-227/229-232N/234-289/292-295/297-303N/305-308/311-317/319-323N/325-334						6	7																	
A24, -	A*24:02:27/08/29/42/50/82/89/129/145/156/191/290/309-310:02						7																		
A24, -	A*24:02:58/99		2			6	7																		
A24, -	A*24:14/52/64/291/324					6		8																	
A24, -	A*24:17/41/208/296					6	7																	24	
-	A*24:24				5		8																		
-	A*24:51					6																22			
-	A*24:57/120					6	7													20					
-	A*24:67					7	8																		
-	A*24:92					6														20	22				
A25, -, Null	A*25:01:01-01:06/01:08/02/04/05/07-09/11-14/16/18-29/31-33						8											18							
A25, -	A*25:01:07/10		2				8											18							
A25	A*25:01:09						8																		
-	A*25:03/30						8						13					18							
-	A*25:06						8								15										
A26, Null, -, A10	A*26:01:01-01:01:29/01:31-01:37/02:01-08/11N-19/21-28/30-48/50-69/71N-90/92-109								9									18							
A26, A10	A*26:01:30/10								9									18		20					
-, A26	A*26:01:38/01:39/110-120, A*25:15/17, A*66:05/15																	18							
A26, -	A*26:09/91								9						15										
-	A*26:20, A*02:135		2															18							
A26, -	A*26:29/49								9																
A29, Null, -	A*29:01:01-01:01:06/01:08-02:17/04/06-08N/10-12/14-18/20-32/34-36/38/40-47/49/50/52-55/57-65/68/70-72/74-76/78N-83				5					10															
-	A*29:03				5					10														24	
-	A*29:05/09/77				5		7			10															
-	A*29:13, A*32:42									10			13												
-	A*29:19/39/66				5					10												22			
-	A*29:33				5		7			10														24	
-	A*29:48				5					10				14								22			
-	A*29:51/69/73				5					10											21				
-	A*29:67				5					10								17							
A30, -, Null	A*30:01:01-01:07/01:09-02:13/02:15-06/09-11:02/13-17/19-54/56-60/62-73N/75-97										11														
A30	A*30:02:14		2								11														
-	A*30:07					6					11														
-	A*30:08		2								11											21			
-	A*30:61/74										11										20				
A31, -, Null	A*31:01:02:01/01:02:02/01:03-02/05-23/26-28/30-61/63-66/69-103/105, A*33:21/53											12													
-, A31	A*31:03/04											12			15										
-	A*31:24						7					12						17							
-	A*31:25											12						17							
-	A*31:29				5							12													
-	A*31:62						7					12													
-	A*31:67						7					12								20					
-	A*31:68											12								20					
A32, -, Null	A*32:01:01-01:23/03/05-14/16/18-21/23/25/27N/29-32/34-41/43-61/63-65/67-70/72-84												13												
-, A32	A*32:02/22/33:01/33:02, A*24:88/104						7						13												
-, A3	A*32:04/17, A*03:152/219			3									13												
-	A*32:15							8					13												
-	A*32:24												13		15										
-	A*32:26												13					17							
-	A*32:28												13							20					
-	A*32:62												13									22			
-	A*32:66						7						13							20					
A33, -, A19, Null	A*33:01:01-18:02/20/22-31/32:02/33/35-50/52/54-58/60/62-68/70-91/93-101/103-106													14											
-	A*33:19/34/59/102						7							14											
-	A*33:32:01													14						20					
-	A*33:61													14				17							
A34, -	A*34:01:01/01:02/03/05/06/12/14														15						21				
A34, -, Null	A*34:02:01-02:04/04/07/09/10N/13		2												15						21				
-	A*34:08		2	3											15										

Serology Type	A* alleles amplified with Morgan A primer mix	Primer Mix Number																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		85/90	160/205/215	170/215	175/205	150/155/195	205/215	175/215	90/230/235	260/270	120	185	240	170/255	200/205	170/215	165	195/230	170	170	135/200	120/220	90/155/195	145	175
A36, A1, -, Null	A*36:01/04/05, A*01:99/145/147Q/159/167/178N															15	16								
-	A*36:02			3												15	16								
A36	A*36:03							7								15	16								
A43, -	A*43:01, A*26:70								9									17	18						
A66, -, A10	A*66:01:01-01:03/04/06-09/11-14/17-20/22-24																		18			21			
A66, -	A*66:02/21																			19		21			
A10	A*66:03																			19					
-	A*66:16															16				19		21			
A68, A28, Null, -	A*68:01:01-01:01:27/01:29-01:31/02:01-01:03:01/03:03/04/08:01/08:02/10-14/16-18N/ 21:01-25/27:01-28/30/32-35/37-45/47-49N/51-64/66-70/72-82/85-103:02/104:02/106-108/ 110-113/116-128/132/133/135/138/139/141/142N																				20	21			
A68	A*68:01:28					5															20	21	22		
A68	A*68:01:32/03:02		2																		20	21			
A68, -	A*68:05/20/46/84/109/136								9												20	21			
-	A*68:06/07/31/104:01/114																				20				
-	A*68:09/50/129							7													20	21			
-	A*68:15								9												20				
-	A*68:19/71, A*03:171			3																	20	21			
A28	A*68:26							7													20	21			24
-	A*68:29														14						20	21			
A68	A*68:36								8												20	21			
-	A*68:65/115/131																				20	21			24
-	A*68:83/105				4																20	21			
-	A*68:130																	17			20	21			
-	A*68:134							7										17			20	21			
-	A*68:137							7													20				
A69, -	A*69:01-03				4																	21			
A74, -, Null	A*74:01:01/01:02/02:01:01-12N/14N-27					5																	22		
A74	A*74:01:03					5										15							22		
A80, -	A*80:01:01:01-02																							23	
-	A*80:03																							23	24
C.C.	Contamination Control	1																							
-	B*18:27					5																			
-	B*51:160								8																
Cw4, Cw6	C*04:01:51, C*06:02:15																						22		

Not covered: A*02:209/591, A*29:01:07, A*30:01:08/12/18, A*31:01:02:03N/104, A*32:71, A*33:51/69/92



Morgan™ HLA ABC Typing Kit

B Locus Worksheet

IMGT/HLA db 2016/01

S/N#: ABC_005 v3

Serology Type	B* alleles amplified with Morgan B primer mix	Primer Mix Number																							
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
		125	95	175	180/185	160	105	195	145	205	155	90	185	145	110	140	130	175/190	110	175	275	160	220	250	250
B7, -, Null	B*07:02:01/02:02:04-02:18/02:20-02:27/02:29-02:48/04/09/11/12/14/15/17-18:02/20-24/26/28/30/31/35/39/41-47/49N/51/52/54/57-59/61-64/66/67N/70/71/74-76/79/82/84/87-89/91-96:02/98/99/101-104/107/108/111N/113-121/124/126-133/135N-136:02/141-146/148/150/152-162/164/166-175/178/179/181N/184-191/194-200/203-205/208/211/212/215-218/220/221/224-227/229-232/234/238/239/241-248/250-254/256/257/260/265	25																							
B7, -	B*07:02:03/73/109	25																							
B7, -	B*07:02:19/192/233	25																							
B7, -	B*07:02:28/37/56:01/83/125/183/259	25																							
B703, B7, -	B*07:03/08/16/50/228	25																							
B7, -, Null	B*07:05:01-05:03/05:05-06/34/80/90/97/105/112/123/137/138/140/176/182N/201N/210/213/222/249/258/264	25							33																
B7	B*07:05:04	25							33																
B7, -	B*07:07/77/163/193/255	25																							
B7, -	B*07:10/56:02/177/263	25																							
-	B*07:13	25																							
-	B*07:19/33:01-33:03/60/106/122/139/165	25																							
-	B*07:27	25																							
-	B*07:29/86	25																							
-	B*07:32/207	25							33																
-	B*07:36/81/149	25																							
-	B*07:38	25																							
-	B*07:48/209/223	25																							
-	B*07:55	25					30																		
-	B*07:65	25																							
-	B*07:68:01-68:03/237	25																							
-	B*07:69	25				29			33																
-	B*07:72	25																							
-	B*07:78	25		27					33																
-	B*07:85	25				29																			
-	B*07:100	25					30																		
-	B*07:110	25																							
-	B*07:134	25																							
-	B*07:147/151:01/151:02	25																							
-	B*07:180	25				29																			
-	B*07:206	25							33																
-	B*07:214	25							33																
-	B*07:219	25																							
-	B*07:235	25																							
-	B*07:236	25																							
-	B*07:240	25																							
-	B*07:261	25																							
-	B*07:262	25							33																
B8, -, Null	B*08:01:01-01:04/01:06-01:23/01:25-01:32/04-08N/10-12:03/15/16/18/19N/21/22/24/26:01-27/29-31/33/34/36/39/41/42/44-48/50/51/56:01-64/67N/68/71/73-77/80-83/86N/88/90-93/95-100/102/104-106/108/109/111/112/114-116/118-122/124/125/127-130/135/137/138/140-142/144-150/152/154	26																							
B8, -	B*08:01:05/85/155	26																							
B8	B*08:01:24	26			28																				
B8, -	B*08:02/52/78/117	26																							
B8	B*08:03	26																							
B8, -	B*08:09/84	26																							
-	B*08:13/25/40/55	26																							
-	B*08:14/28/35/37/43/49/53:01/53:02/69/87/89/107	26																							
-	B*08:17/38	26																							
-	B*08:20	26																							
-	B*08:32	26																							
-	B*08:54	26																							
-	B*08:65	26																							
-	B*08:70, B*15:180	26					30																		
-	B*08:79	25							33																
-	B*08:101	26																							
-	B*08:103/113/134	26																							
-	B*08:123/132	26																							

Serology Type	B* alleles amplified with Morgan B primer mix	Primer Mix Number																																															
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
		125	95	175	180/185	210	160	105	195	145	205	155	90	185	145	110	140	130	175/190	110	175	275	180	140	220	250	250	95/100	225/235	105	150	165	215/235	140	135	105	100	200	200	230	110	85	135	210	125	160	180	175	230
B62, -	B*15:05:01/05:02/77/84/107/128/136/179:01/179:02/185/199/207/211/218Q/233/237/300/322/332/342/348/349							31																																66					71				
B62, -	B*15:06/25:02/39:01-40/65/195/219/288/360/364							31																																60					66			71	
B75, -, Null	B*15:08:01/08:02/11:01-11:07/148/191/209N/215/284/305/350/367							30						36																																		71	
B70, -	B*15:09/229/252/329									33	34																																					71	
B71, B70, -, Null	B*15:10:01-10:04/18:01-18:06/37/80/90/93/99/108/133/134/153/176/197:01-198/221/226N/238/263/290/292-294N/306/307/311-314/323/335/337/338/354										34																																						71
B76, -, Null	B*15:12/14/19/270/298/304N							30	31																																							71	
B77, -	B*15:13:01/13:02/89								31																																							70	
B62	B*15:15							30	31																																							71	
B63, -	B*15:16:01-17:05/67/95/168/196/208/216/268/273/356/362									32																																						70	
B62	B*15:20								31																																							71	
B75, -	B*15:21/44										34																																					71	
-	B*15:23/115										34																																					71	
B62, -	B*15:24:01/24:02/87/157/256							30	31																																							70	
B62, -	B*15:25:01/25:03/240/250/271/289/366								31																																							71	
B62, -	B*15:30/58/150/324							30	31		33																																				71		
B75	B*15:31								31																																							71	
-	B*15:36								31																																							71	
-	B*15:42								31		33																																					72	
-	B*15:43							30	31										42																												71		
B72, -	B*15:46/56/152								30																																							71	
B62, -	B*15:48/188								31																47																						71		
B70, B15, -	B*15:51/52/72/114/124/186/200/275:01/275:02										34																																					71	
-, Null	B*15:53/143/149N, B*35:185							30																																								71	
-	B*15:54							30																																								71	
B15	B*15:55								31																																							71	
-	B*15:61																																																71
-	B*15:62																																																71
-	B*15:66							30																																								71	
B35	B*15:68							30																																								71	
B62	B*15:70							30	31																																							71	
B62, -	B*15:71/175							30	31																	46																					71		
B62	B*15:73							30	31		33																																				71		
-	B*15:74																																																71
-	B*15:83								31																																							72	
-	B*15:85							30	31																																							71	
-	B*15:86/224								31																																							71	
-	B*15:88/144/283								31																																							71	
-	B*15:91																																																71
-	B*15:106																																																71
-	B*15:119																																																71
-	B*15:123/151/235																																																71
-	B*15:131																																																71
-	B*15:137/155								31																																							71	
-	B*15:138	25							31																																							71	
-	B*15:139																																																71
-	B*15:161																																																71
-	B*15:177																																																71
-	B*15:189								32																																							71	
-	B*15:202/239							30																																								71	
-	B*15:204								31	</																																							

Serology Type	B* alleles amplified with Morgan B primer mix	Primer Mix Number																																																		
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			
		125	95	175	180/185	210	160	105	195	145	205	155	90	185	145	110	140	130	175/190	110	175	275	160	140	220	250	250	95/100	225/235	105	150	165	215/235	140	135	105	100	200	230	110	85	135	210	125	160	180	175	230				
B18, -, Null	B*18:01:01-01-01:08/01:10/01:11/01:13-01:19/01:21-07:01/08/10/11/13/17N/18/20-25/27/28/31/32/34/36/38-47/50-53/55/58-60/62-65/68-71/73-78/80-91/93-100/103/104/106/109/111-120															39		41																												71						
B18, -	B*18:01:12/07:02/29																	41					46									55															71					
B18, -	B*18:01:20															39		41																														71				
B18, -	B*18:09/67															39		41																														70				
-	B*18:12:01											35				39		41																															71			
-	B*18:12:02											35				39		41					46									55																		71		
-	B*18:14															39		41																																71		
-	B*18:15/30/57/101															39		41																																71		
-	B*18:19															39		41																																71		
-	B*18:26/61						30									39		41						47																										71		
-	B*18:33															39		41																																71		
-	B*18:35/110	25				29										39		41				45																												71		
-	B*18:37															39		41																																71		
-	B*18:49/66/79															39		41																																71		
-	B*18:54															39		41																																70		
-	B*18:56														37	39		41																															71			
-	B*18:92															39		41																																71		
-	B*18:105															39		41																																71		
-	B*18:107															39		41																																71		
-	B*18:108															39		41																																71		
B27, -, Null	B*27:01-03/05:02-05:08/05:10-05:17/05:19-05:22/05:24-05:31/09/13/14/17/19/25/28/30/31/35/37-39/41/45-53/55-62/64N/65N/70-74/78/80-84/87/88/90:01-90:03/93-99/101/104/110/111/115/117/118/121-124/126/128/131-135/137/139/141-146																40																																		70	
B27, -, Null	B*27:04:01-04:05/06/10/15/21/54/63/66N/68/69/79/86/91/100/103/105/107-109/112-114/120/138																40																																		70	
B27, -	B*27:05:09/05:23/77/85/129																40																																		70	
B27, -	B*27:05:18																40																																		70	
B27, -	B*27:07:01-07:03/11/34/43																40																																		70	
B27, -	B*27:07:04																40																																		70	
B2708, -	B*27:08/26/42/44/89																40																																		71	
B27, -	B*27:12					29											40																																	71		
-	B*27:16/119					29											40																																	70		
B27, -	B*27:20/24										33						40																																	70		
-	B*27:23																40																																		70	
-	B*27:27/76/102/130/136																40																																		70	
B27, -	B*27:29																40																																		70	
-	B*27:32																40																																		70	
-	B*27:33																40																																		71	
-	B*27:36																40																																		70	
-	B*27:40																40																																		71	
-	B*27:67																40																																		70	
-	B*27:75											35					38	40																																70		
-	B*27:92																40																																		70	
-	B*27:106					29											40																																	70		
-	B*27:116																40																																		70	
-	B*27:125																40																																		70	
-	B*27:127																40																																		70	
B35, -, Null	B*35:01:01-01:01:03/01:05-01:38/01:40-01:45/03:01/03:02/03:04-03:16/03:18-03:21/06-08:02/08:04-08:08/15:01/15:02/20:01/20:02/24:01/24:02/33/35/36/38/40N-42:02/52/54/55/57/59:02/65Q/70/74/75/77/78/90-94/100-101:02/103-112/115/116/119/121-124/126-128/130N-134N/137/139-148/150:01/150:02/152/153/155/156/158-161/165N/166/168/170/171/173N/175/176/178-181/187/190-193/195-197/200/202/204/206/209/212/214-216N/218/219/221/223-225/227/228/237-241/243-247/249/250/252/253/255-257/259/261-264/2																																																			

Serology Type	B* alleles amplified with Morgan B primer mix	Primer Mix Number																																																																						
		25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	7																							
		125	95	175	180/185	210	160	105	195	145	205	155	90	185	145	110	140	130	175/190	110	175	275	160	140	220	250	250	95/100	225/235	105	150	165	215/235	140	135	105	100	200	200	220	110	85	135	210	125	160	180	175	230																							
-	B*35:26			28					34								41						48					53				58														71																										
B35, -	B*35:29/01/29/02/136/186/229																41															58															71																									
-	B*35:37/235																41														56	58															71																									
B35, -	B*35:43/01/67/79/86/102/117/118					30											41																														71																									
B35	B*35:44					30			33								41																															71																								
-	B*35:45/71												37				41																															71																								
B35	B*35:46											36																					58															71																								
B35, -	B*35:50/84/231																41						46										58															71																								
-	B*35:58/99/232																41																			60												71																								
B35	B*35:60																41	42																														71	7																							
-	B*35:63/217																															55	58															71																								
-	B*35:66	25															41																															71																								
-	B*35:69																41																															71																								
-	B*35:76																41																																71																							
-	B*35:82/85																41																																71																							
-	B*35:87, B*08:133			26													41							47									58															71																								
-	B*35:135					30											41																															71																								
-	B*35:154																																																71																							
-	B*35:162																41							47																								71																								
-	B*35:169																41						46	47																									71																							
-	B*35:198/254																									49																							71																							
-	B*35:203																																																71																							
-	B*35:207																																																71																							
-	B*35:208																41																																71																							
-	B*35:236																41																																71																							
-	B*35:265					30											41																																71																							
-	B*35:270																41							47																									71																							
-	B*35:276																41																																71	7																						
-	B*35:280																41																																71																							
-	B*35:291			27													41																																71																							
-	B*35:294																41																																71																							
-	B*35:309																41																																71																							
-	B*35:311																																																	71																						
B37, -, Null	B*37:01-01-01/03/01-05/01/06/01-08-04/02/06/01/06/02/13/15-19/01/20/21/23-27/30N-33N/35/36/38/39/41-54/56												35					42																																																						
B37	B*37:01-04												35					42																																																						
B37	B*37:01-07												35					42																																																						
-	B*37:05												35					42																															71																							
-	B*37:07	25											35					42																																																						
B37	B*37:08																	42						46																									70																							
B37, -	B*37:09/12												35					42							47																																															
B37, -	B*37:10/14/29/34												35					42																																																						
-	B*37:11/37												35					41																															71																							
-	B*37:19-02												35					42																															70																							
-	B*37:28												35					42																															70																							
-	B*37:40												35					42																															70																							
-	B*37:55												35					42																															70																							
-	B*37:57						29						35					42																															70																							
B38, -, B16, Null	B*38:01-01-01-01:05/01:07-01/14/01:16-01:23/05:01/05:02/09:01-09:03/11/15/26-28/31/32/38Q/40:01N-42/44-48/50/51/53-56/59-61/65-68/71/73-75/77-81/84/86/87N/92-95N/97N/98/100/102/103/106/108/111/113/114				29														43	44																																																				
B38, -	B*38:01:08/02:03/35				29															44																													70																							
B16	B*38:03												35						43	44																																																				
B38	B*38:04/25				29																																																																			

[illegible]

[illegible]



Morgan™ HLA SSP ABC Typing Kit

C Locus Worksheet

IMGT/HLA db 2016/01

S/N#: ABC_005 v3

Serology Type	C* alleles amplified with Morgan C primer mix	Primer Mix Number																							
		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
		215	150	255	235	165	105/275	140/170	120	145/160	110	215	210/240	160	250	100	135/200	110/210	115	130/210	145/230	90	95	160	275
Cw1, -, Null	C*01:02:01-02:05/02:07-02:17/02:19-03/05-08/10-20/22-42/44-47/49:01-73/76-89N/91-96/99-117N/119	73																							
Cw1, -	C*01:02:06/97, C*14:58	73	74																						
Cw1	C*01:02:18	73																			92				
-	C*01:04	73										83											94		
Cw1	C*01:09	73										83													
-	C*01:21	73							80	81													94		
-	C*01:43	73												85										95	
-	C*01:48	73			76																				
-	C*01:90	73																				93			
Cw2, -, Null	C*02:02:01-02:11/02:13-02:25/02:27-04/07/09-11/15-16/02:18-20/22-25Q/28-32/34-40:02/43-46/48/50-54/56-74/76-86/88-93/95-106/108-112			75	76																91				
Cw2	C*02:02:12			75	76																				
Cw2, -	C*02:02:26/21/26:01-26:03, C*15:27				76																91				
-	C*02:05:01/17		74	75	76							83									91				
-	C*02:05:02/05:03			75	76							83									91				
Cw2, -	C*02:06:01/06:02/47, C*15:11			75	76																91	93			
Cw2	C*02:08			75																	91				
-	C*02:12			75	76				80													92			
-	C*02:13			75	76												88				91				
-	C*02:14:01/14:02			75	76													89			91				
-	C*02:27:01/27:02			75	76																	92			
-	C*02:42			75																					
-	C*02:55:01/55:02			75	76				80													91			
-	C*02:75							79														91			
-	C*02:94			75	76					81												91			
Cw10, -, Cw3, Null	C*03:02:01-02:09/02:11/02:14/04:01-01-04:25/04:28-04:37/04:39-06:02/08-10/23-29/33-36/38:01/38:02/40:01/40:03/42/44/46-48/51/54/57:01/57:02/63/65/70/72-74/77/78/80/82/84/87:02/90-93/95/98/100/101/104-106/108/109/111/114/117/118/121N/123/125/128/129/131/135/138/139/143/145-149/153-155/157/159/162/164/169Q/170/172-174/178-181/183-184:02/186:01/186:02/190/191/193/194/197-201N/208N-213/215/216/218/219/221/222/224N-226/232-236/238-240/244Q-248/250/252/255-259/261/265N/266/269/270/277N-279/281-283/286/287/292/294/296/298-300/303/305/309-311				76	77															92				
Cw10, -	C*03:02:10/02:12/04:26/115/134/137/156/166/264				76	77																			
Cw10	C*03:02:13				76																				
Cw9, Cw3, -, Null	C*03:03:01-03:20/03:22-03:29/11:01-13:02/18:02/20N-22Q/30/31/43:01/49/50/52/53/55/56/59/61/62/66/68/69/75/76/79/81/83/85/88/96/97/103/112/116:01/116:02/120/122/124/126/127/132/133/141/142/150/152/158/160/161/165/167/168/171/175-177/185/187-189N/192/196/202-207/214/217/223/227-230/237/241/242/253/254/262/272-276/284/285/288-291/295/304/308/312					77	78														92				96
Cw9, -	C*03:03:21/18:01/64:02/144/182/195					77																			
Cw10, -, Cw3	C*03:04:27/14/16/40:02/40:04-41:02/87:01/94/110/113/260/263/293				76																	92			
Cw10, -	C*03:04:38/32/37:01/37:02/60/64:01/107/136/301/306					77																92			
Cw3, -	C*03:07/130/140/163				76	77																91			
-	C*03:15/45/297					77																91			
-	C*03:17/71/249/302		74		76	77																92			
Cw3	C*03:19				76	77																92	93		
Cw3, -	C*03:39, C*07:242					77												89							
-	C*03:43:02/58/86/119/151/220/251/267						78															92			96
-	C*03:67					77	78						84					89				92			96
-	C*03:89				76	77	78						84									92			
-	C*03:102					78																92	93		96
-	C*03:231					77									86										
-	C*03:243/268					77	78														91				96
-	C*03:271		74			77	78															92			96
-	C*03:280				76	77							85									92		95	
-	C*03:307					77	78															92	93		96
Cw4, -, Null	C*04:01:01-01-01:04/01:06/01:08/01:11-01:22/01:24-01:28/01:31/01:32/01:34-03:01/04:01-09N/12-14/15:02-26/28/30-32/34/35/38-41/43-51/53/54/56/58-62/64:01-70/72-79/81-94:01/95N-99/101-106/108-111/113/115N/117-128/131-139/141-152/154-159/161-165/167/168/170N/171/173N-177/179/181-191N/193-200/202-209/211/213/216-219/221/222/224-229						78	79	80												91				
-, Cw4	C*04:01:05/01:07/01:09/01:30/01:33/15:01/57/63/80/94:02/100/160/180:01/180:02/223, C*02:49						79	80														91			
Cw4, -	C*04:01:10/01:23/130						78															91			
Cw4, -	C*04:01:29/140/166						78	79	80																
-, Cw4, Null	C*04:03:02/10/153/192/210/215N						78	79														91			
-	C*04:11/55						78								86										
-	C*04:27/33/52/116						78	80														91			
-	C*04:29						78	79	80						86										
-	C*04:36						78	79							86										
-	C*04:37		74					79	80													91			
-	C*04:42:01/42:02						78	79	80													89	91		

Serology Type	C* alleles amplified with Morgan C primer mix	Primer Mix Number																							
		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
		215	150	255	235	165	105/275	140/170	120	145/160	110	215	210/240	160	250	100	135/200	110/210	115	130/210	145/230	90	95	160	275
-	C*04:71	73					78	79	80											91					
-	C*04:107			75	76		78	80												91					
-	C*04:112						78	79	80							87				91					
-	C*04:114						78	79	80						86					91					
-	C*04:129						78	79	80	81										91					
-	C*04:169						78									87				91					
-	C*04:172						78	80							86										
-	C*04:178							79	80											91		93			
-	C*04:201/212					77	78	79	80											91					
-	C*04:214						78	79																	
-	C*04:220						78	79	80									89							
-	C*04:230	74					78	79	80											91					
Cw5, -, Null	C*05:01:01:01-24/27/28/30-35/37-41/44:01-45/47-57/59-78/80-91N/93-97/99N-127, C*12:21									81										91					
-	C*05:25						79			81										91					
-	C*05:26			75						81										91					
-	C*05:36, C*15:107									81						87				91					
-	C*05:42						79	80	81											91					
-	C*05:46							80	81											91					
-	C*05:58:01/58:02				76					81										91					
-	C*05:98									81															
Cw6, -, Null	C*06:02:01:01-02:05/02:07-02:13/02:15/02:17-02:24/02:26/02:28-02:32/02:34-02:37/02:39-02:42/02:44/07-10/12/13/15/16N/18-27/29/30/32-34:02/36/38/40-43:02/45-61/63-66/68-71/73-75/78/80/82-91/93-100/102-117/119-121/123/125/126/128N-131/133-135/137/139-142/145/146/148-152N/154-157/159-167/169-173	74									82	83						89							
Cw6, -	C*06:02:06/03:01/03:02/77	74									82	83													
Cw6, -	C*06:02:14/02:25/02:27/02:33/37/62/92/158										82	83						89							
Cw6, -	C*06:02:16/02:43/14/35/72/81/101/127:01/127:02/136/143/144, C*07:357/403/406										82							89							
Cw6	C*06:02:38	74									82	83						89		92					
-, Null	C*06:04:01/04:02/06/79N/153	74									82							89							
Cw6	C*06:05	74					79		81									89							
-	C*06:11/122	74									82	83	84					89							
-	C*06:17/39/138	74										83						89							
-	C*06:28	74									82	83						89	91						
-	C*06:31	74									82	83					88	89							
-	C*06:44	74										83	84												
-	C*06:67	74								81	82	83						89							
-	C*06:76:01/132:01	74									82	83							91						
-	C*06:76:02	74					79	80				83							91	92					
-	C*06:118	74									82						88	89							
-	C*06:124	74										83	84					89							
-	C*06:168	74									82	83						89			93				
Cw7, -, Null	C*07:01:01:01-01:04/01:06-01:12/01:14/01:15/01:17-01:52/06/07/09/16/18-22/24/28/30/35/36/40/44/52/53/55N/58-60/65/69-71/73/77-78:02/81-83/85/86/89/91/93-95/98N/103/104N/106/108:01-113/115/116/118-120/122/124/128/129/131:01-132/134/150Q/151/153/156/162-166/173/176/179/180/182/188-191N/196/197/200/201/203-207/210/212/214/215/219/222-225/227N/228/230/231/235Q-237/247-250/253-257:04/266/268/269/276-282/292/293/297-301/303/310/311/313/330-332/337/343/353/362/366/369-371/377/380/385-387/391/404/407/408/410-412/417-419/421/422/424/427/430/431/435/437N/440-445/448/450/453-455/458/460-463/468-471/475/476N/479/481							79				84													
Cw7, -	C*07:01:05:01:16/57/140-141:02/170/304												84												
Cw7	C*07:01:13							79				82	84												
Cw7, -, Null	C*07:02:01:01-02:03/02:05-02:08/02:11-02:32/02:34-02:55/02:57-02:71/05/08/10/13-15/23/25/27:01/27:02/29:01/29:02/32N/37/38:01/39/42/43/46-48/50/51/54/56:01/56:02/61N/62/66/67/72/74/75/79/80/84/87/88/90/97/99/100/102/105/107/114/117/121Q/123/125/126/130/133/135-138/143-147/149/152N/154/157-160/167-169/172:01/172:02/174/175/178/183-187/192-195/198N/202/208/209/211/213/217/218/220/221/226/229/232-234/239-241/243-245/251/252/258-262/264N/265/270/271/273-275/283-288/290/291/294/305/306/308/309/312/316/318-321/325-327/333-335/339-342/344-350N/352/356/359/360/363/367/368/372-376/379/381-384/389/390/392/393N/396/397/399-401/405/409/413-416/423/425/429/432-434/436/438/446/451N/452N/456/457/464/465/472-474/477/478/482-486							79					84					89							
Cw7, -	C*07:02:04/03/17:01/17:02/38:02/41/171/307/336/388/398/439												84					89							
Cw7	C*07:02:09							79	80				84					89							
Cw7, -	C*07:02:10/127							79					84					89		92					
Cw7, -	C*07:02:33/49/76:01/155/238/315							79										89							
Cw7, -, Null	C*07:02:56/26:01/26:02/33N/92/246/267/296/314:01/317/322/351/449							79																	
Cw7, -, Null	C*07:04:01-04:10/11/12/45/63/68/142/181/199:01/199:02/272/302/323/324/329N/338/354/355/358/361/364/365/378/394/395/420/426/428/447/459/466/467/480/487											82	84					89							
-	C*07:31:01/31:02/177							79					84				88	89							
-	C*07:64/402							79							86										
-	C*07:76:02							79				82						89							
-	C*07:96:01/96:02/314:02							79												92					
-	C*07:101											82	84	85				89						95	
-	C*07:139											82													

Serology Type	C* alleles amplified with Morgan C primer mix	Primer Mix Number																							
		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
		215	150	255	235	165	105/275	140/170	120	145/160	110	215	210/240	160	250	100	195/200	110/210	115	190/210	145/230	90	95	160	275
-	C*07:148							79					84	85											95
-	C*07:161							79					84	85				89							95
-	C*07:216							79					84					89	91						
-	C*07:263							79					84							92					
-	C*07:289							79					84					89			93				
Cw8, -, Null	C*08:01:01-01:05/01:08-01:14/01:16/01:17/01:19/03:01-03:03/06/08:01-09/11/14/20/22/24/26N/36N/38/40-42/44/46/50/56/58-61/72:01/72:02/78-89N/91/95-99/101/102/106/109/117-119/121N/122/124/127N/128													85				89							95
-, Cw8, Null	C*08:01:06/01:07/01:15/01:18/02:01-01:02-12/04:01-04:03/07/12/15:01/15:02/17/19/23/27/29-35/39/43/45/47-49/51-54/57/62-71/73-77/90/92/93/100/103/104/107/108/110-116/120/123/125/126, C*02:87													85											95
-	C*08:05								80					85				89		91					95
-	C*08:10, C*05:43/79									81								89							
-	C*08:16:01/16:02, C*02:107, C*07:328																	89							
-	C*08:21								80					85				89							95
-	C*08:28							79						85											95
-	C*08:37												84	85				89							95
-	C*08:105				76									85				89							95
-, Null	C*12:02:01:02-02:02:04/02:05/02:07/02:09/02:10/02:13/17/22/27/30/36/40/56/64/67-69/72-74/80N/84N/86/96/103-106/112/114/117/124/126/128/130/134/136/142/145/148N/151/155Q/161/162/164/166/168								80	81															94
-	C*12:02:03/10:01/10:02/44								80																94
-	C*12:02:06/02:08/02:12/14:01/18:02/118, C*08:25								80																
-	C*12:02:11									81	82														94
-, Null	C*12:03:01:01-03:01:03/03:03/03:05-03:07/03:10-03:15/03:18/03:21-03:25/03:28/03:29/03:31/03:35-03:37/06/07/11-13/23/25/29/31/32/34/35/37-39N/42Q/43/45-48/50-53/57/58/61-63/65/66/70/71/75/77-79/82/87-95/97/99-102/107-111/113/115/116/119-122/125/129/131/133/138/139/141/143/149/150/152-154/156-160/163/165/167/170/172		74						80			83									92				
-	C*12:03:02/03:16/03:30/76/144								80			83													
-	C*12:03:04/98		74									83									92				
-	C*12:03:08/03:20/26/59		74						80			83													
-	C*12:03:09		74									82	83								92				
-	C*12:03:17/03:27/03:33								80			83									92				
-	C*12:03:19								80			83												94	
-	C*12:03:26		74						80			82	83								92				
-	C*12:03:32								80	81		83												94	
-	C*12:03:34/01:03:34:02, C*06:147		74									83													
-	C*12:04:01, C*06:132:02		74									83								91					
-	C*12:04:02/54/60		74						80			83								91	92				
-	C*12:05		74									83								91	92				
-	C*12:08								80	81						87								94	
-	C*12:09, C*14:12/49		74																	91					
-	C*12:14:02/18:01/83/85/137/169								80	81															
-	C*12:15		74						80			83									92	93			
-	C*12:16								80	81		84						89						94	
-	C*12:19		74						80																
-	C*12:20/24		74						80												92				
-	C*12:28/135		74					79	80			83									92				
-	C*12:33		74							81		83								91					
-	C*12:41								80	81										91				94	
-	C*12:49/123									81														94	
-	C*12:55		74						80			83			86						92				
-	C*12:81		74						80			83				87					92				
-	C*12:127								80	81				85										94	95
-	C*12:132							79	80	81														94	
-	C*12:140		74		76				80			83									92				
-	C*12:146							79	80	81										91				94	
-	C*12:147		74						80			83	84					89			92				
-, Null	C*14:02:01-02:04/02:06/02:07/02:09-02:19/05-07N/10/11/13/14/18-21N/23-27/29-34/36/37/39/40/42-48/50/52/55-57/59/60/62/63/65/66/68/69/71-73		74												86										
-	C*14:02:05/08/09/28:01/28:02/51														86										
-	C*14:02:08		74												86						92				
-, Null	C*14:03/22/35N/38/41/53/61/70		74		76										86										
-	C*14:04/64		74												86					91					
-	C*14:15		74												86		88								
-	C*14:16		74									83			86										
-	C*14:17														86		88								
-	C*14:54				76										86										
-	C*14:67		74	75											86										
-, Null	C*15:02:01:01-02:02/02:04-02:09/02:11/02:12/02:14-02:16/02:18/02:19/02:21-02:24/08/13/15/18/26/28/31-35/38/39/41/42/44/45/47-53/56/57/60/64/67/68/71-75/78-89/91-98/100/101/103/106/109/112/114/119-121				76											87				91		93			
-	C*15:02:03				76											87						93			
-	C*15:02:10/02:17/17/99				76															91		93			
-, Null	C*15:02:13/04:01-05:10/06:01-06:03/09/19/22/24/29/30/36/40/46/54/59/61/66/69/70/76/77/90/102/104/105Q/108/110/111/115N/117				76											87				91					
-	C*15:02:20/10:01-10:03															87				91		93			
-	C*15:03				76				80							87				91		93			
-	C*15:05:11				76											87									
-	C*15:07/21				76											87					92	93			

Serology Type	C* alleles amplified with Morgan C primer mix	Primer Mix Number																							
		73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
		215	150	255	235	165	105/275	140/170	120	145/160	110	215	210/240	160	250	100	195/200	110/210	115	180/210	145/230	90	95	160	275
-	C*15:12						78									87				91		93			96
-	C*15:16				76				80											91		93			
-	C*15:23				76								84			87				91					
-	C*15:25							79	80												92				
-	C*15:37/58		74		76											87				91		93			
-	C*15:43				76																92	93			
-	C*15:55		74		76											87				91					
-	C*15:62							79								87				91		93			
-	C*15:63											84				87						93			
-	C*15:65				76		79									87				91					
-	C*15:113															87						93			
-	C*15:116				76											87					92				
-	C*15:118			75	76											87				91		93			
-	C*16:01:01:01-01:04:01:06-01:13:01:15:01:16:01:18:01:19:08/10/11/13/14/16Q-18/20/23/24/28/30N-32/35-39:02/41/44/45/49-52/54/56/58/59/62/65/67/68/71-73/75/76/79/81/83/85/86/92		74														88								
-	C*16:01:14/07:01/27																88								
-	C*16:01:17		74														88				92				
-	C*16:02:01:02:02:02:04-02:12/09/12/19/47/48/57/60/63/69/74/77N/84/88-90		74														88				91				
-	C*16:02:03:02:13																88				91				
-	C*16:04:01/04:03/29/33/42/61/66/78/82		74									83					88								
-	C*16:06, C*02:33, C*05:29:01/29:02/92N, C*17:06/07																			91					
-	C*16:15:01		74						80								88								
-	C*16:15:02		74						80								88				92				
-	C*16:21/80		74									84					88	89							
-	C*16:22/40/43/53		74														88								
-	C*16:25		74						80								88				91				
-	C*16:26		74					79									88								
-	C*16:34		74	75	76												88				92				
-	C*16:46		74					79									88				91				
-	C*16:55		74					79				83					88								
-	C*16:64		74					79	80							87	88								
-	C*16:70		74		76											87	88				91				
-	C*16:87		74													87	88								
-	C*16:91		74									83					88				91				
-	C*17:01:01:01-01:03:01:05-01:07:01:09-04/08-19/21/23-31																			90	91				
-	C*17:01:04								80											90	91				
-	C*17:01:08/22																			90					
-	C*17:05									81										90	91				
-	C*17:20																		89	90	91				
-	C*18:01-03/06-08/10						78				82							89							
-	C*18:04						78				82							89		91					
-	C*18:05						78					84													
-	C*18:09						78				82														
-	A*03:210, A*24:137, B*07:234, B*15:315, B*44:85, B*55:30				76																				
-	A*23:63, A*30:41, A*32:51, A*33:86			75																					
-	A*30:62																								
-	B*07:51/220															86									
-	B*07:78, B*13:01:11, B*40:48, B*56:20:02																88								
-	B*07:239, B*40:243		74																			93			
-	B*08:15												84												
-	B*15:57/135, B*35:27/56/203, B*55:12, B*56:41, B*78:06																			91					
-	B*40:164, B*82:01-03																				92				
-	B*67:02								80																