Report of the 17th Flow and Virtual Crossmatch Exchange

August 14, 2019

For the 17th Flow and Virtual Crossmatch Exchange, Serum 95 (patient 1) and virtual donor V1 from Flow Crossmatch Exchange 16 (June 2019) were re-examined as serum 99 and cell 97. A comparison of virtual crossmatch (VXM) predictions (serum 95 vs. V1) against the physical flow crossmatch (FXM) (**serum 99 vs. cell 97**) are summarized in **Part 1** of this report.

Part 2 examines the single antigen data for the 4 sera examined (**serum nos. 99 - 102**) in this study. **Part 3** summarizes the flow crossmatch results for 2 cells (**cell nos. 97 - 98**) against the 4 sera. Finally, in **Part 4**, the virtual crossmatch predictions for 4 potential donors (V1 - V4) against 2 sera (serum 101 and serum 102) are examined.

Part 1

Physical Flow Cytometric Crossmatch vs. Virtual Crossmatch

Among the 22 labs submitting VXM predictions for serum 95 vs. donor V1 in Exchange 16, 16 labs reported back physical T–cell FXM results and 15 labs reported physical B-cell FXM results for the patient-donor pair (**serum 99 vs. cell 97**) in Exchange 17 (Table 1a). In this present study, 13 out of 16 labs (81%) reported the T-cell FXM as negative in agreement with predictions (Table 1b). Of the remaining labs, 1 lab reported the T-cell FXM as positive and 2 reported it as borderline. Good agreement was also achieved between virtual B-cell predictions and the physical B-cell FXM, as 100% of labs predicting the expected B-cell FXM to be positive, reported the physical B-cell FXM as positive as well in the presence of strong (MFI > 14000) class II DSA.

The reporting of DSA across the 2 studies was consistent among labs, as all 16 labs reported anti-DR17 and –DR52 reactivity in Exchange 16 and 17 (Table 1c). No class I DSA were reported in either study as well.

Table 1a. Summary of Virtual Crossmatch predictions vs. Physical Flow crossmatch results - Direct comparison

Exchange 016					Exchange 017				
Virtual Crossmatch - Serum 95 (Patient 1) vs. Donor V1					Physical Flow Crossmatch - Serum 99 vs. Cell 97				
Donor	Serum no.	#Labs	T-cell Prediction	B-cell Prediction	Cell	Serum no.	#Labs	T-cell Results	B-cell Results
V1	95	16	NEG (16)	POS (16)	97	99	16	NEG (13) Borderline (2) POS (1)	POS (15) NT (1)

Table 1b. Direct comparison of Physical Flow Crossmatch results vs. Virtual Crossmatch results

		T-cell Virtual XM (Exchange 15)					B-cell Virtual XM (Exchange 15)		
		+	-	∅			+	-	∅
Physical Flow XM (Exchange 16)	+		1		**Physical Flow XM (Exchange 16)**	+	15		
	-		13			-			
	∅		2			∅	1		

+/ - = postive/negative   ∅ = uncertain/not typed   n = number of labs

The reporting of DSA and DSA strength were also consistent across the 2 studies. In Exchange 16, anti-DR17 and anti-DR52 reactivity was reported, with respective median MFI = 13684 and 11374. In Exchange 17, anti-DR17 and –DR52 reactivity were reported once again, with respective MFI = 14483 and 10538. Additional weak anti-DP2 reactivity was also reported by some labs across the 2 studies, with median MFI = 3463 in Exchange 16 compared to 3667 in Exchanger 17.

Table 1c. Individual Physical Flow Crossmatch results vs. Virtual Crossmatch predictions - Direct Comparison

Cell #97 (Donor V1) HLA Genotype: A*29:02-A*30:02-B*15:10-B*49:01-C*03:04-C*07:01:01G-DRB1*15:03-DRB1*03:01-DRB3*02:02:01G-DRB5*01:01-DQA1*01:02:01G-DQA1*05:01-DQB1*06:02-DQB1*02:01-DPB1*01:01-DPB1*02:01-DPB1*05:01:01G

| Exchange 016 | | | | | Exchange 017 | | | | |

Exchange 016					Exchange 017				
Virtual Crossmatch - Serum 95 (Patient 1) vs. Donor V1					Physical Flow Crossmatch - Serum 99 vs. Cell 97				
Ctr	Virtual T-cell Prediction	Class I DSA(MFI)	Virtual B-cell Prediction	Class II DSA (MFI)	Ctr	T-Cell RESULT	Class I DSA(MFI)	B-Cell RESULT	Class II DSA(MFI)
206	Negative	No Class I DSA	Positive	DR17(15001) DR52(10613)	206	Negative	None	Positive	DR52 DR17
230	Negative	No Class I DSA	Positive	DR17(16080) DR52(15888)	230	Borderline	None	Positive	DR17, DR52
774	Negative	No Class I DSA	Positive	DR17(13311) DR52(5316)	774	Negative	None	Positive	DR17(13016) DR52(11891)
792	Negative	No Class I DSA	Positive	DR17(12913) DR52(7205) DP1(2857) DP2(3349)	792	Negative	None	Positive	DR17(15469), DR52(8517), DP2(4192), DP1(3556)
2400	Negative	No Class I DSA	Positive	DR17(14196) DR52(6487) DP2(3451)	2400	Negative	None	Positive	DR17(15261), DR52(10537), DP2(3667)
3224	Negative	No Class I DSA	Positive	DR17(17560) DR52(8839) DP2(4929)	3224	Negative	None	Positive	DR17(16105), DR52(16441), DP2(4713)
3753	Negative	No Class I DSA	Positive	DR17(14056) DR52(8229) DP2(2904)	3753	Negative	None	Positive	DR17(12216), DR52(7414), DP2(2654)
3966	Negative	No Class I DSA	Positive	DR17(11724) DR52(8475) DP1(2174) DP2(2810)	3966	Positive	None	Positive	NT
4661	Negative	No Class I DSA	Positive	DR17(10164) DR52(4131) DP2(3079)	4661	Negative	None	Positive	DRB1*03:01(10359) DRB3*02:02(4303) DPB1*01:01(3462) DPB1*02:01(4789)
8001	Negative	No Class I DSA	Positive	DR17(16312) DR52(8196) DP2(4238)	8001	Negative	None	Positive	DR17(16723) DR52(9076) DPB1*02:01(5100)
8035	Negative	No Class I DSA	Positive	DR17(10146) DR52(4895) DP1(2591) DP2(3030)	8035	Negative	None	Positive	DR17(14,483) DRB3*02:02(6237) DP1(3060) DP2(3715)
8050	Negative	No Class I DSA	Positive	DR17(17290) DR52(10873) DP2(4096)	8050	Negative	None	Positive	DR17(13241) DR52(7796) DP2(2420)
8083	Negative	No Class I DSA	Positive	DR52(7914) DP2(4247)	8083	Borderline	None	Positive	DR17(13078) DR52(7320) DP1(2439), DP2(3080)
8096	Negative	No Class I DSA	Positive	DR17(12520) DR52(9911) DQ2(17190) DP1(9988) DP2(9478) DQ6(9828) DQA1*05(12520)	8096	Negative	None	NT	NT
8103	Negative	No Class I DSA	Positive	DR3(6255) DR52(5860) DP2(1871)	8103	Negative	None	Positive	DRB1*03:01, DRB3*02:02(DR52)
8111	Negative	No Class I DSA	Positive	DR17(15593) DR52(6380) DP2(3422)	8111	Negative	None	Positive	DR17(15467); DR52(9421); DP2(3627); DP1(2842)

Class I and class II Luminex single antigen results for serum samples 99 - 102 are summarized in Tables 12 - 15 and individual results for each participating laboratory are listed in Tables 16 –21. In addition, individual cutoff values and sera pretreatment methods are shown on Table 31.

Antibody Identification

Serum 99 was previously examined as serum 95 in Exchange 16. In this present study, 93% (13/14) of labs reported weak anti-B65 (3590) reactivity, compared 100% (17/17) of labs reporting anti-B65 (3000) reactivity in Exchange 16. Strong class II reactivity was also reported once again, with 100% (19/19) of labs reporting reactivity to DR11, DR12, DR13, DR14, DR17, DR18, DR52, and DR8. MFI values ranged from 7751 -14513 in this present study, compared to 8322 - 14558 in Exchange 16.

No class I DSA were reported against either cell 97 or cell 98 in this sample. For class II, strong anti-DR17 and –DR52 reactivity was reported against cell 97, with respective MFI = 14483 and 10538. Additional anti-DP2 (3667) reactivity was reported by 11 labs. Against cell 98, anti-DP4 (DP402) (3418) and anti-DP3 (2847) reactivity was reported.

For **Serum 100,** strong class I reactivity (A30, A31, B13, B41, B44, B45, B49, B50, B61, B47, B60) was reported with MFI values ranging from 6710 to 23712. Each were reported by a consensus of ≥ 90%. Strong class II reactivity was also reported in this sample, with ≥ 90% of labs reporting reactivity to DQ2, DR12, DR7, DR9, and DR52. MFI values ranged from 6333 to 13069.

Multiple class I and class II DSA were reported against cell 97, as labs reported anti-A30 (12277), -B49 (11741), -DQ2 (13069), and –DR52 (7399) reactivity. Against cell 98, anti-B51 (3673) and -DR7 (18000) reactivity was reported. Additional reactivity to DQA1*02 (5604) was also reported by 7 labs against cell 98.

Serum 101 was reported as broadly reactive to a number of class I specificities, including A29, A31, A23, B38, B56, and B59, as well as to a number of 5C and 10C specificities. Each were detected by ≥ 90% of labs, with medium MFI values ranging from 2894 to 16000. For class II, 19 out of 19 labs reported this sample as class II negative.

Multiple class I DSA (A29, B49, B71) were reported against cell 97, with respective MFI = 11435, 11520, and 2954. In addition, 6 labs reported weak anti-A30 (2035) reactivity. Against cell 98, anti-B51 (11243) and -B57 (11327) reactivity was reported by labs. No class II DSA were reported against either cell as this sample was negative for class II.

For **serum 102,** anti-B13, -B27, -B47, -B60, -B61, and -B7 reactivity was reported in complete consensus, with MFI values ranging from 3355 to 11544. For class II, strong class II reactivity was reported by labs, with ≥ 90% of labs reporting strong reactivity to DQ5, DQ6, DQ9, DR15, DR16, DR51, DQ4, and DQ8. MFI values for the specificities ranged from 5640 to 23889.

No class I DSA were reported against either cell 97 or cell 98 in this sample. By contrast, strong class II reactivity was reported, with labs reporting anti-DQ6, –DR15, and -DR51 reactivity against cell 97, with respective MFI = 23889, 20368, and 16543. Strong class II reactivity was also reported against cell 98, with labs reporting reactivity to DR16 (16492), DR51 (16543), and DQ9 (6152).

Conclusion:

Good agreement (≥90%) was achieved across all 4 serum samples in the reporting of class I and class II DSA. For serum samples 100, 101, and 102 strong class I antibodies were detected, with medium MFI values for peak antibodies ranging from 11243 to 23712. For class II, strong anti-DR and anti-DQ reactivity was detected in serum samples 99, 100, and 102. MFI values for peak class II antibodies ranged from 14513 - 23889.

The reporting of class I and class II DSA against cells 97 and 98 was consistent among labs in this study, as MFI values for peak DSA ranged from 11000 and 23899 across the 4 serum samples. However, as DSA strength fell below 4000, as in serum 100 against cell 98, the reporting of DSA among labs became less consistent.

Genotypes of cells provided by UCLA

Cell 97 (African American) - A*29:02-A*30:02-B*15:10-B*49:01-C*03:04-C*07:01:01G-DRB1*15:03-DRB1*03:01-DRB3*02:02:01G-DRB5*01:01-DQA1*01:02:01G-DQA1*05:01-DQB1*06:02-DQB1*02:01-DPB1*01:01-DPB1*02:01

Cell 98 (Hispanic) - A*01:01:01-A*02:06:01-B*51:01:01-B*57:01:01-C*07:01:01-C*15:02:01-DRB1*07:01:01-DRB1*16:02:01-DRB4*01:03N-DRB5*02:02:01-DQA1*02:01:01-DQA1*05:05:01-DQB1*03:01:01-DQB1*03:03:02-DPB1*03:01:01-DPB1*04:02:01

Flow cytometric crossmatch results for cell 97 and cell 98 against sera sample nos. 99 - 102 are summarized in Table 2. Individual results for each laboratory, along with reported class I and class II DSA for each sera, are listed in tables 4 - 11.

Flow Cytometric Crossmatch

Cell 97. Good agreement (≥ 80%) was achieved among labs for each T-cell FXM against serum samples 99 - 102. For cell 97 vs. serum 100 and serum 101, 18 out of 18 labs reported the T-cell FXM as positive in the presence of strong class I DSA (MFI >11000). Interestingly, for cell 97 vs. serum 99 and serum 102, no class I DSA were reported against either serum, however several labs reported the T-cell FXM as either positive or borderline. For the B-cell FXM, all 4 crossmatches against serum samples 99 - 102 were reported as positive in good agreement in the presence of class I and/or class II DSA with MFI values ≥ 11000.

Cell 98. Good agreement (≥ 80%) was achieved among labs for the T-cell FXM against serum 99, 101, and 102.. Against serum 101, the T-FXM was reported as positive by 100%, as strong (>11000) class I DSA was reported. Against serum 100, however, no agreement was achieved, as the only class I DSA detected, B51, was weak (3673). For the B-cell FXM against serum 100 and 102, 100% of labs reported each as positive in the presence of class II DSA with MFI > 16000. By contrast, < 80% agreement was achieved for the B-cell FXM against serum 99 and serum 101 in which either no class II DSA was present or the DSA present was weak (<4000).

Table 2. Summary of Flow crossmatch results for Cell #97 - #98 vs. Serum #99 - #102

Cell no.	Serum no.	#Labs	T-cell Results	B-cell Results		Cell no.	Serum no.	#Labs	T-cell Results	B-cell Results
97	99	19	**NEG(15)** POS(1) Borderline(2) NT(1)	**POS(17)** NT(2)		98	99	20	**NEG(17)** Borderline(2) NT(1)	POS(11) NEG(6) NT(3)
97	100	19	**POS(18)** NT(1)	**POS(16)** NEG(1) NT(2)		98	100	20	POS(7) NEG(9) Borderline(3) NT(1)	**POS(17)** NT(3)
97	101	19	**POS(18)** NT(1)	**POS(15)** NEG(2) NT(2)		98	101	20	**POS(19)** NT(1)	POS(12) NEG(3) Borderline(2) NT(3)
97	102	19	**NEG(16)** POS(2) NT(1)	**POS(17)** NT(2)		98	102	20	**NEG(17)** POS(2) NT(1)	**POS(17)** NT(3)

Agreement < 90%

Conclusion:

Overall, good agreement was achieved for 7 out of 8 pairs of T-cell FXM. Among the positive T-cell FXM, good agreement (>80%) was observed among labs in the presence of class I DSA with MFI > 11000. However, when DSA strength fell below 4000, as in the case of cell 98 vs. serum 100, greater variability was observed in T-FXM outcome among labs due to the sensitivity of the T-cell FXM.

For the B-cell FXM, good agreement was achieved for 6 out of 8 crossmatch pairs. All 6 were reported as positive, as strong class I (MF > 11000) and/or class II DSA (>13000) were present. For cell 98 vs. serum 99, < 80% agreement was achieved.as weak anti-DP4 (3418) and -DP3 (2847) reactivity resulted in 11 labs to report the B-cell FXM as positive and 6 to report it as negative. This once again Ilustrates the sensitivity of the FXM can be variabile in the presence of weak DSA, especially at the DP-locus. Interestingly for cell 98 vs. serum 101, no agreement was achieved as only 12 labs reported the B-cell FXM as positive despite the presence of strong anti-B51 (11243) and -B57 (11327) reactivity.

Virtual crossmatch predictions for donor V1 - V4 against sera (patient) samples 101 and 102 are summarized in Table 3 and individual laboratory predictions are listed in Tables 22 - 29. Fictional donor histories precede each patient-donor summary.

Virtual Crossmatch Paper Challenge

For the virtual **T-cell crossmatch**, 6 out of 8 pairs of predictions achieved > 80% agreement. Five are predicted to be positive in the presence of strong class I DSA (MFI > 11000) and 1 is predicted to be negative in the absence of class I DSA. For serum 101 vs. donor V4 and serum 102 vs. donor V3, agreement was < 80% among labs, as a single class I DSA with MFI values below 5500 were reported for each, .

For the virtual **B-cell crossmatch**, 7 out of 8 pairs of predictions were reported as positive in good agreement (> 80%) in the presence of strong class I or class II DSA. The strength of the peak DSA reported for each of the 7 VXM pairs ranged from 5431 to 23889. For the remaining VXM pair, serum 101 vs. donor V4, agreement among labs was < 80% in the presence of a single DSA (A24), with MFI = 5429.

Table 3. Summary of Virtual Crossmatch Predictions (Serum #101 - #102 vs. Donors V1 - V4)

Donor no.	Serum no.	#Labs	T-cell Prediction	B-cell Prediction	Predicted Risk Assessment	Donor no.	Serum no.	#Labs	T-cell Prediction	B-cell Prediction	Predicted Risk Assessment
V1	101	22	POS(21) Borderline(1)	POS(18) NEG(4)	Acceptable(1) Unacceptable(21)	V2	101	22	POS(22)	POS(19) NEG(3)	Unacceptable(22)
V1	102	22	NEG(21) Borderline(1)	POS(21)	Acceptable(3) Unacceptable(19)	V2	102	22	POS(19) NEG(2) Borderline(1)	POS(22)	Unacceptable(22)
Donor no.	Serum no.	#Labs	T-cell Prediction	B-cell Prediction	Predicted Risk Assessment	Donor no.	Serum no.	#Labs	T-cell Prediction	B-cell Prediction	Predicted Risk Assessment
V3	101	22	POS(22)	POS(19) NEG(3)	Acceptable(1) Unacceptable(21)	V4	101	22	POS(16) NEG(6)	POS(12) NEG(8) Borderline(1) NT(1)	Acceptable(6) Unacceptable(16)
V3	102	22	POS(16) NEG(3) Borderline(3)	POS(22)	Acceptable(1) Unacceptable(21)	V4	102	22	POS(22)	POS(22)	Unacceptable(22)

Agreement <80%

DSA Identification

Patient 1 (Serum 101)

Patient's fictional case history: *This individual is a 50 year old male being evaluated for his first transplant. The patient's HLA type is A*03:01-A*68:03-B*07:02-B*14:02-C*07:02-C*08:02-DRB1*01:02-DRB1*15:01-DRB5*01:01-DQA1*01:01-DQA1*01:02-DQB1*05:01-DQB1*06:02-DPB1*04:01-DPB1*13:01.*

For serum 101 against **donor V1,** strong anti-B57 (11327) reactivity was reported. Additional weak reactivity to B35 (3354) and A2 (1651) was also reported by some labs. No class II DSA were reported against donor V1. In the presence of strong class I DSA, 21 labs predicted the expected T-cell FXM to be positive. One lab which did not report B57 as a DSA, predicted the T-cell VXM to be borderline. For B-cell predictions, 18 labs predicted the expected B-cell FXM to be positive, while 4 predicted it to be negative. One lab reporting a negative B-cell prediction, noted "possible allelic incompatibility". In line with predictions, good agreement was achieved among labs for predicted renal transplant risk, as 21 out of 22 labs asses the predicted risk as unacceptable.

Strong anti-B49 (11520) reactivity was reported against **donor V2** by all 22 labs. In addition, 18 labs reported anti-A24 (5429) reactivity against donor V2. No class II DSA were reported against donor V2. Virtual T-cell predictions were reported as positive in complete consensus as a result of the strong class I DSA present. Good agreement was also observed among Virtual B-cell predictions, as 19 labs predicted the expected B-cell FXM to be positive in the presence of strong class I DSA. Three labs predicted the expected B-cell FXM to be negative. For renal transplant risk, 100% of labs assessed the risk as unacceptable.

For serum 101 against **donor V3**, anti-B57 (11327) reactivity was reported in complete consensus. Additional weak anti-B13 (1430) reactivity was also reported by a number (n=13) of labs. No class II DSA were reported against donor V3. In the presence of strong class I DSA, virtual T-cell predictions were reported as positive in complete agreement. Virtual B-cell predictions were also reported as positive in good agreement (> 80%) due to the strength of the class I DSA present. Three labs reported the virtual B-cell prediction as negative. Good agreement was also observed for renal transplant risk, as 100% assessed the predicted risk as unacceptable.

No consensus (< 90%) was achieved for the reporting of class I DSA **against donor V4**, as 18 labs reported anti-A24 (5429) reactivity, while 4 others reported no class I DSA were present. Consequently, predictions were also mixed among labs. For T-cell predictions, 16 labs predicted the expected T-cell FXM to be positive and 6 predicted it to be negative. Among the 6 labs with negative predictions, 4 reported no class I DSA were present. For B-cell predictions, 12 labs predicted the expected B-cell FXM to be positive, 8 labs predicted it to be negative, and 1 predicts borderline results in the absence of class II DSA. No agreement was achieved for predicted renal transplant risk as well, as 16 labs assessed the risk as unacceptable and 6 labs assessed it as acceptable.

Virtual Donors – HLA genotype

Donor 1 (V1): A*02:01:01-A*03:01:01-B*35:03:01-B*57:03:01-C*04:01:01-C*07:01:02-DRB1*13:02:01-DRB3*03:01:01-DQA1*01:02:01-DQB1*06:04:01-DPB1*04:01:01

Donor 2 (V2): A*01:02-A*24:02-B*40:02-B*49:01-C*03:05-C*07:01:01G-DRB1*04:07:01G-DRB1*10:01-DRB4*01:01:01G-DQA1*01:01:01G-DQA1*03:01:01G-DQB1*03:02-DQB1*05:01-DPB1*04:02-DPB1*13:01:01G

Donor 3 (V3): A*01:01-A*11:01-B*13:01-B*57:01-C*03:04-C*06:02:01G-DRB1*07:01-DRB1*15:01-DRB4*01:03N-DRB5*01:01-DQA1*01:02:01G-DQA1*02:01-DQB1*03:03-DQB1*06:01-DPB1*05:01:01G-DPB1*26:01

Donor 4 (V4): A*02:01-A*24:03-B*07:02:01G-B*40:01-C*03:04-C*07:02:01G-DRB1*13:02-DRB1*15:01-DRB3*03:01-DRB5*01:01-DQA1*01:02:01G-DQB1*06:02-DQB1*06:04-DPB1*04:01:01G-DPB1*04:02:01G

Patient 2 (Serum 102)

Patient's fictional case history: This individual is a 35 year old male being evaluated for his second transplant. The patient's HLA type is A*02:01-A*11:01-B*49:01-B*51:01-C*03:03-C*07:01-DRB1*03:01-DRB1*04:05-DRB3*01:01-DRB4*01:03-DQA1*03:03-DQA1*05:01-DQB1*02:01-DQB1*03:01-DPB1*04:01-DPB1*14:01. The HLA typing of his first transplant A*02:01-A*11:02-B*49:01-B*51:01-C*03:04-C*07:01-DRB1*03:01-DRB1*04:05-DRB3*01:01-DRB4*01:03-DQA1*03:03-DQA1*05:01-DQB1*02:01-DQB1*03:01-DPB1*03:02-DPB1*04:01.

For serum 102 (patient 2) against **donor V1**, no class I DSA were reported, only the presence of class II DSA (DQ6), with MFI = 23889. In addition, some labs (n=10) reported strong anti-DQA1*01 (22000) reactivity against donor V1. In the absence of class I DSA, all but 1 lab predicted the T-cell FXM to be negative. The one lab which predicted borderline results, reported the presence of weak anti-Cw4 (583) reactivity. In the presence of strong class II DSA, the expected B-cell FXM was predicted to be positive in complete consensus. Nineteen labs assessed the predicted renal transplant risk for this patient-donor pair to be unacceptable and 3 assessed it as acceptable.

Anti-B61 (5431), -DQ5 (22693), and -DQ8 (5640) reactivity was reported against **donor V2.** Nineteen labs predicted the expected T-cell FXM to be positive, 2 predicted it to be negative, and 1 predicted borderline results in the presence of a single class I DSA of moderate strength (5431). Better agreement was observed for B-cell predictions with all 22 labs predicting the expected B-cell FXM to be positive in the presence of strong (MFI >23000) class II DSA. Consequently, predicted renal transplant risk were all reported as unacceptable in complete consensus.

Against **donor V3**, good agreement (> 90%) was achieved among labs in the reporting of class I and class II DSA, as anti-B13 (4620), –DR15 (20368), and -DR51 (16543) reactivity was reported. In the presence of a single class I DSA of moderate strength (< 5000), 16 labs predicted the expected T-cell FXM to be positive, 3 predicted it to be negative, and 3 predicted borderline results. By contrast, good agreement was achieved for virtual B-cell predictions, with 100% of labs predicting the expected B-cell FXM to be positive in the presence of strong (MFI >20000) class II DSA. For renal transplant risk, all but 1 lab assessed the risk as unacceptable.

Strong class I and class II reactivity was reported against **donor V4,** with > 90% of labs reporting anti-B7 (11544), -DQ6 (23899), –DR15 (20368), and -DR51 (16543) reactivity. Additional anti-B60 (6363) reactivity was also reported by 18 labs. In the presence of strong class I and class II DSA, 100% of labs predicted the expected T– and B-cell FXM for serum 102 against donor V4, to be positive. In line with virtual predictions, renal transplant risk assessments were reported as unacceptable in complete agreement.

Conclusion

In this paper challenge, MFI values for peak DSA ranged from 11554 to 23889. As a result, good agreement was observed among labs in the reporting of positive virtual crossmatch predictions for 12 virtual donor-patient pairs. The few discrepancies observed involved virtual B-cell predictions in which no class II DSA were present, only class I DSA. Among them, several labs reported the B-cell prediction as negative, despite the presence of strong class I DSA (MFI > 11000). We would like to remind participants of the importance of considering the role of both class I and class II DSA in predicting the expected physical B-cell FXM as B-cells express both class I and class II antigens. For predictions in which no consensus was achieved, MFI values for the DSA present were below 6000.

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Flow Cytometric Crossmatch

Cell #97 HLA Genotype: A*29:02-A*30:02-B*15:10-B*49:01-C*03:04-C*07:01:01G-DRB1*15:03-DRB1*03:01-DRB3*02:02:01G-DRB5*01:01-DQA1*01:02:01G-DQA1*05:01-DQB1*06:02-DQB1*02:01-DPB1*01:01-DPB1*02:01

Table 4. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #99

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	99	2.98	1.5	1.13		NEGATIVE	None	4.94	383.45	11.49		POSITIVE	DR52 DR17	11.85	36.55	YES
230	99	2.68	1.2			Borderline	None	3.66	28.8			POSITIVE	DR17, DR52	1.68	1.68	YES
774	99	≥50	-29			NEGATIVE	None	≥120	172			POSITIVE	DR17(13016) DR52(11891)	280	433	NO
792	99	52	13			NEGATIVE	None	106	258			POSITIVE	DR17(15469), DR52(8517), DP2(4192), DP1(3556)	203	254	YES
1160	99	50	11			NEGATIVE	None	70	359			POSITIVE	DR17(10055); DR52(4007); DP1(1082); DP2(1385)	210	215	YES
2400	99	18	13			NEGATIVE	None	23	225			POSITIVE	DR17(15261), DR52(10537), DP2(3667)	52	68	YES
3135	99					NT						NT				
3224	99	70				NEGATIVE	None	140	253			POSITIVE	DR17(16105), DR52(16441), DP2(4713). Recipient has anti-DPA1*01, donor DPA typing not provided.	266	236	YES
3753	99	50	9			NEGATIVE	None	100	319			POSITIVE	DR17(12216), DR52(7414), DP2(2654)	218	257	YES
3766	99	83				NT		83				NT		236	444.67	YES
3966	99	20	33			POSITIVE	None	50	240			POSITIVE		179	358	NO
4345	99					NEGATIVE	None					POSITIVE				NO
4661	99	10	1			NEGATIVE	None	10	227			POSITIVE	DRB1*03:01(10359) DRB3*02:02(4303) DPB1*01:01(3462) DPB1*02:01(4789)	203	237	YES
8001	99	50	2			NEGATIVE	None	100	354			POSITIVE	DR17(16723) DR52(9076) DPB1*02:01(5100)	228	326	YES
8035	99	>48	0			NEGATIVE	None	>90	256			POSITIVE	DR17(14,483) DRB3*02:02(6237) DP1(3060) DP2(3715)	146	186	YES

Table 4. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #99 - cont.

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
8050	99	50	0		952	NEGATIVE	None	120	124		33948	POSITIVE	DR17(13241) DR52(7796) DP2(2420)	85	290	NO
8083	99	90	90			Borderline	None	150	264			POSITIVE	DR17(13078) DR52(7320) DP1(2439), DP2(3080)	229	267	YES
8096	99	20	-0.96			NEGATIVE	None					NT		8.77		NO
8103	99	219.6	193	1.2		NEGATIVE	None	608	709	1.7		POSITIVE	DRB1*03:01, DRB3*02:02(DR52)	183	354	NO
8111	99	11	5			NEGATIVE	None	38	75			POSITIVE	DR17(15,467); DR52(9421); DP2(3627); DP1(2842)	209	205	YES

Table 5. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #100

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	100	2.98	85.05	8.18		POSITIVE	A30 B49	4.94	278.45	8.62		POSITIVE	DQ2	11.85	36.55	YES
230	100	2.68	15.2			POSITIVE	A30, B49	3.66	24.1			POSITIVE	DR52, DQ2	1.68	1.68	YES
774	100	≥50	167			POSITIVE	A30(11121); B49 10225	≥120	163			POSITIVE	DQ2 11843	280	433	NO
792	100	52	234			POSITIVE	A30(11461), B49(10334)	106	243			POSITIVE	DQ2(17492), DR52(1655)	203	254	YES
1160	100	50	287			POSITIVE	A30(7217); B49(7224)	70	304			POSITIVE	DQ2(9740); DR52(906)	210	215	YES
2400	100	18	238			POSITIVE	A30(13234), B49(12576)	23	226			POSITIVE	DR52(7683), DQ2(13069)	52	68	YES
3135	100					NT						NT				
3224	100	70	235			POSITIVE	A30(14940), B49(12812)	140	202			POSITIVE	DR52(10030), DQ2(19708)	266	236	YES
3753	100	50	267			POSITIVE	A30(8456), B49(8253)	100	316			POSITIVE	DQ2(8393)	218	257	YES
3766	100	83				NT		83				NT		236	444.67	YES
3966	100	20	327			POSITIVE		50	277			POSITIVE		179	358	NO
4345	100					POSITIVE						NEGATIVE				NO
4661	100	10	121			POSITIVE	A*30:01(10388) B*49:01(8907)	10	214			POSITIVE	DRB3*02:02(911) DQA1*05:01/ DQB*02:01(6181)	203	237	YES
8001	100	50	320			POSITIVE	A30(16217), B49(15060)	100	341			POSITIVE	DR52(2526), DQ2(21174)	228	326	YES
8035	100	>48	301			POSITIVE	A30(12077), B49(11771)	>90	286			POSITIVE	DRB3*02:02(1132), DQB1*02:01(10456), DQA1*05:01(15556)	146	186	YES
8050	100	50	153		5395	POSITIVE	A30(5759) B49(5974)	120	143		41404	POSITIVE	DR52(3401) DQ2(7274)	85	290	NO
8083	100	90	394			POSITIVE	A30(12277), B49(11741)	150	359			POSITIVE	DR52(2049), DQ2(19338)	229	267	YES
8096	100	20	58.88			POSITIVE						NT		8.77		NO
8103	100	219.6	421	1.2		POSITIVE	A*30(4126), B*49:01(2962)	608	728	1.7		POSITIVE	DQB1*02:01(3388)	183	354	NO
8111	100	11	84			POSITIVE	B49(10752); A30(9701)	38	112			POSITIVE	DQ2(10140); DRB3*02(1466)	209	205	YES

Table 6. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #101

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	101	2.98	95.65	9.07		POSITIVE	A29 B49 B71	4.94	272.95	8.47		POSITIVE	None	11.85	36.55	YES
230	101	2.68	19			POSITIVE	A29, B49	3.66	24.9			POSITIVE	A29, B49	1.68	1.68	YES
774	101	≥50	180			POSITIVE	A29(11435); B49(11520); B71(2954)	≥120	97			NEGATIVE	None	280	433	NO
792	101	52	207			POSITIVE	A29(8655), B71(2186), A30(1551)	106	179			POSITIVE	None	203	254	YES
1160	101	50	318			POSITIVE	A29(5764); B49(7849); A30(1256); B71(1772)	70	310			POSITIVE	None	210	215	YES
2400	101	18	274			POSITIVE	A29(11275), A30(3081), B49(11574), B71(3199)	23	251			POSITIVE	None. Positive is due to Class I	52	68	YES
3135	101					NT						NT				
3224	101	70	219			POSITIVE	A29(13065), A30(1946), B71(3693), B49(12930)	140	156			POSITIVE	None	266	236	YES
3753	101	50	296			POSITIVE	A29(8572), B49(10507), B71(2257)	100	345			POSITIVE	None	218	257	YES
3766	101	83				NT		83				NT		236	444.67	YES
3966	101	20	324			POSITIVE		50	246			POSITIVE		179	358	NO
4345	101					POSITIVE						NEGATIVE				NO
4661	101	10	215			POSITIVE	A*29:02(7436) A*30:01(1059) B*15:01(3070) B*49:01(11254)	10	224			POSITIVE	None	203	237	YES
8001	101	50	275			POSITIVE	A29(13368), B49(15004), B71(4542)	100	262			POSITIVE	None	228	326	YES
8035	101	>48	307			POSITIVE	A29(11478), B49(13896), B71(3745)	>90	295			POSITIVE	None	146	186	YES
8050	101	50	225		11449	POSITIVE	A29(5326) B49(5638) B71(1122)	120	166		52655	POSITIVE	None	85	290	NO
8083	101	90	377			POSITIVE	A29(11994), A30(2659), B71(3742), B49(12041)	150	354			POSITIVE	None	229	267	YES
8096	101	20	50.17			POSITIVE						NT		8.77		NO
8103	101	219.6	356	1.2		POSITIVE	A*29:02(2724), B*49:01(3342)	608	723	1.7		POSITIVE	None	183	354	NO
8111	101	11	72			POSITIVE	B49(11422); A29(9845); B71(2912)	38	94			POSITIVE	None	209	205	YES

Table 7. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #102

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	102	2.98	2.95	1.25		NEGATIVE	None	4.94	670.45	19.34		POSITIVE	DR15 DR51 DQ6	11.85	36.55	YES
230	102	2.68	1.5			NEGATIVE	None	3.66	48.5			POSITIVE	DR15, DR51, DQ6	1.68	1.68	YES
774	102	≥50	-18			NEGATIVE	None	≥120	219			POSITIVE	DR15(20489); DQ6(24410)	280	433	NO
792	102	52	20			NEGATIVE	None	106	332			POSITIVE	DQ6(22873), DR15(19345), DR51(16543)	203	254	YES
1160	102	50	6			NEGATIVE	None	70	397			POSITIVE	DR15(19369); DR51(14132); DQ6(21286)	210	215	YES
2400	102	18	14			NEGATIVE	None	23	287			POSITIVE	DR15(22281), DR51(17187), DQ6(24504)	52	68	YES
3135	102					NT						NT				
3224	102	70				NEGATIVE	None	140	320			POSITIVE	DR15(22018), DR51(19307), DQA1*01(22562), DQ6(22562)	266	236	YES
3753	102	50	13			NEGATIVE	None	100	389			POSITIVE	DQ6(22171), DR15(18467), DR51(14064)	218	257	YES
3766	102	83				NT		83				NT		236	444.67	YES
3966	102	20	39			POSITIVE		50	326			POSITIVE		179	358	NO
4345	102					NEGATIVE						POSITIVE				NO
4661	102	10	1			NEGATIVE	None	10	271			POSITIVE	DRB1*15:03(10198) DRB5*01:01(8904) DQA1*01:02/ DQB1*06:02(15020)	203	237	YES
8001	102	50	-4			NEGATIVE	None	100	398			POSITIVE	DR15(22409), DR51(19422), DQ6(23948)	228	326	YES
8035	102	>48	0			NEGATIVE	None	>90	363			POSITIVE	DQB1*06:02(26673), DRB1*15:03(22571), DRB5*01:01(20146), DQA1*01:02(27326)	146	186	YES
8050	102	50	0		1068	NEGATIVE	None	120	176		58455	POSITIVE	DR15(19395) DR51(14835) DQ6(25197)	85	290	NO

Table 7. Individual Flow crossmatch results and DSA reported for Cell #097 vs. Serum #102 - cont.

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
8083	102	90	141			POSITIVE	None	150	436			POSITIVE	DR15(17673), DR51(15377), DQ6(19762)	229	267	YES
8096	102	20	-0.63			NEGATIVE						NT		8.77		NO
8103	102	219.6	200	1.2		NEGATIVE	None	608	964	1.7		POSITIVE	DQB1*06:02(15862), DRB1*15:03(10379) DRB5*01:01(8528)	183	354	NO
8111	102	11	7			NEGATIVE	None	38	99			POSITIVE	DR15(20241); DR51(15807); DQ6(24360)	209	205	YES

Cell #98 HLA Genotype: A*01:01:01-A*02:06:01-B*51:01:01-B*57:01:01-C*07:01:01-C*15:02:01-DRB1*07:01:01-DRB1*16:02:01-DRB4*01:03N-DRB5*02:02:01-DQA1*02:01:01-DQA1*05:05:01-DQB1*03:01:01-DQB1*03:03:02-DPB1*03:01:01-DPB1*04:02:01

Table 8. Individual Flow crossmatch results and DSA reported for Cell #98 vs. Serum #99

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	99	2.98	2.35	1.21		NEGATIVE	None	4.94	50.15	4.09		NEGATIVE	None	11.45	16.25	YES
230	99	2.15	1.8			Borderline	None	3.11	5.41			POSITIVE	WEAK DP4	1.15	1.11	YES
774	99	≥50	-14			NEGATIVE	None	≥120	46			NEGATIVE	None	262	401	NO
792	99	52	1			NEGATIVE	None	106	121			POSITIVE	DP4(3870), DP3(2847)	211	221	YES
1160	99	50	9			NEGATIVE	None	70	152			POSITIVE	DP4(1346); DP3(1154)	206	201	YES
2400	99	18	14			NEGATIVE	None	23	15			NEGATIVE	None	69	29	YES
3135	99	1,2	8076	1,0		NEGATIVE						NT		8453		NO
3224	99	70				NEGATIVE	None	140	108			POSITIVE	DPB1*04:02 4013. Recipient has anti-DPA1*01, donor DPA typing not provided.	266	236	YES
3753	99	50	9			NEGATIVE	None	100	127			POSITIVE	DP402(2459)	215	220	YES
3766	99	83				NT		83				NT		259.33	308	YES
3966	99	20	16			NEGATIVE		50	71			POSITIVE		172	299	NO
4345	99					NEGATIVE						POSITIVE				NO
4661	99	10	2			NEGATIVE	None	10	37			POSITIVE	DPB1*03:01(2925) DPB1*04:02(4029)	200	213	YES
8001	99	50	22			NEGATIVE	None	100	183			POSITIVE	DPB1*04:02(4392)	207	309	YES
8035	99	>48	15			NEGATIVE	None	>90	136			POSITIVE	DP3(2281), DPB1*04:02(3401)	141	168	YES
8050	99	50	2		789	NEGATIVE	None	120	17		5339	NEGATIVE	DP4(2448)	52	220	NO
8083	99	90	10			NEGATIVE	None	150	-2			NEGATIVE	None	229	264	YES
8096	99	20	-0.31			NEGATIVE						NT		8.93		NO
8103	99	357	326	1.2		Borderline	None	741	928	1.7		POSITIVE	DRB3*02:02(1640) DPB1*02:01(1226)	436	298	NO
8111	99	11	9			NEGATIVE	None	38	25			NEGATIVE	DP4(3175); DP3(2141)	206	161	YES

Table 9. Individual Flow crossmatch results and DSA reported for Cell #98 vs. Serum #100

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	100	2.98	3.8	1.33		NEGATIVE	B51	4.94	500.25	31.78		POSITIVE	DR7	11.45	16.25	YES
230	100	2.15	2.7			Borderline	WEAK B51	3.11	37.7			POSITIVE	DR7, DQA1*02	1.15	1.11	YES
774	100	≥50	25			NEGATIVE		≥120	262			POSITIVE	DR7(17290)	262	401	NO
792	100	52	41			NEGATIVE	B51(2678)	106	338			POSITIVE	DR7(17817), DQ7(1532)	211	221	YES
1160	100	50	81			POSITIVE	B51(1863)	70	440			POSITIVE	DR7(9396); DQA1*02(5171)	206	201	YES
2400	100	18	37			POSITIVE	B51(3602)	23	318			POSITIVE	DR7(18599), DQ2(13069)	69	29	YES
3135	100	1,2	9181	1,1		NEGATIVE						NT		8453		NO
3224	100	70				NEGATIVE	B51 4143	140	334			POSITIVE	DR7(19375), DQA1*02:01(10976)	266	236	YES
3753	100	50	53			POSITIVE	B51(2242)	100	414			POSITIVE	DR7(15845)	215	220	YES
3766	100	83				NT		83				NT		259.33	308	YES
3966	100	20	62			POSITIVE		50	319			POSITIVE		172	299	NO
4345	100					NEGATIVE						POSITIVE				NO
4661	100	10	9			Borderline	B*51:01(1229)	10	289			POSITIVE	DRB1*07:01(10020) DQA*03:02/ DQB1*03:03(780)	200	213	YES
8001	100	50	41			NEGATIVE	B51(5156)	100	326			POSITIVE	DR7(20331), DQA1*02:01(12809)	207	309	YES
8035	100	>48	94			POSITIVE	B*51:01(4154)	>90	415			POSITIVE	DR7(18,425), DQA1*02:01(3203)	141	168	YES
8050	100	50	27		1024	NEGATIVE	B51(1291)	120	244		57246	POSITIVE	DR7(13822) DQA1*02(1197)	52	220	NO
8083	100	90	124			POSITIVE	B51(3742)	150	399			POSITIVE	DR7(19630), DQ7(2264)	229	264	YES
8096	100	20	1.28			NEGATIVE						NT		8.93		NO
8103	100	357	341	1.2		Borderline		741	1714	1.7		POSITIVE	DRB1*07:01(7523)	436	298	NO
8111	100	11	16			POSITIVE	B51(3213)	38	181			POSITIVE	DR7(18320); DQ7(1774); DQ9(1663)	206	161	YES

Table 10. Individual Flow crossmatch results and DSA reported for Cell #98 vs. Serum #101

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	101	2.98	62.55	6.46		POSITIVE	B51 B57	4.94	54.15	4.33		Borderline	None	11.45	16.25	YES
230	101	2.15	14.3			POSITIVE	B51, B57	3.11	11			POSITIVE	None	1.15	1.11	YES
774	101	≥50	185			POSITIVE	B51(11998); B57(11874)	≥120	83			NEGATIVE	None	262	401	NO
792	101	52	193			POSITIVE	B57(9434), B51(8797)	106	175			POSITIVE	None	211	221	YES
1160	101	50	314			POSITIVE	B51(7660); B57(7357); A2(1041)	70	274			POSITIVE	None	206	201	YES
2400	101	18	201			POSITIVE	B51(10878), B57(11476)	23	142			POSITIVE	None, Positive is due to Class I	69	29	YES
3135	101	1,2	9855	1,2		POSITIVE						NT		8453		NO
3224	101	70	149			POSITIVE	A2(1951), B51(13051), B57(12403)	140	71			POSITIVE	None	266	236	YES
3753	101	50	255			POSITIVE	B51(10239), B57(9283)	100	200			POSITIVE	None	215	220	YES
3766	101	83				NT		83				NT		259.33	308	YES
3966	101	20	277			POSITIVE		50	206			POSITIVE		172	299	NO
4345	101					POSITIVE						NEGATIVE				NO
4661	101	10	176			POSITIVE	A*02:01(1010) B*51:01(9003) B*57:01(8561)	10	151			POSITIVE	None	200	213	YES
8001	101	50	234			POSITIVE	A2(2230), B51(14776), B57(14412)	100	160			POSITIVE	None	207	309	YES
8035	101	>48	293			POSITIVE	B*51:01(13717), B*57:01(12297)	>90	294			POSITIVE	None	141	168	YES
8050	101	50	178		4962	POSITIVE	B51(5519) B57(5365)	120	80		10313	Borderline	None	52	220	NO
8083	101	90	203			POSITIVE	B51(11741), B57(11743)	150	206			POSITIVE	None	229	264	YES
8096	101	20	56.08			POSITIVE						NT		8.93		NO
8103	101	357	529	1.2		POSITIVE	B*51:01(2704), B*57:01(3263)	741	529	1.7		NEGATIVE	None	436	298	NO
8111	101	11	66			POSITIVE	B51(11838); B57(10772)	38	75			POSITIVE	None	206	161	YES

Table 11. Individual Flow crossmatch results and DSA reported for Cell #98 vs. Serum #102

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
206	102	2.98	3.2	1.28		NEGATIVE	None	4.94	464.25	29.57		POSITIVE	DR16 DR51 DQ9	11.45	16.25	YES
230	102	2.15	13.9			POSITIVE	None	3.11	10.6			POSITIVE	DR16, DR51, DQ9	1.15	1.11	YES
774	102	≥50	-9			NEGATIVE	None	≥120	250			POSITIVE	DR16(15759); DR51(24180); DQ9(6358)	262	401	NO
792	102	52	10			NEGATIVE	None	106	381			POSITIVE	DR16(17636), DR51(13794), DQ9(7136)	211	221	YES
1160	102	50	2			NEGATIVE	None	70	399			POSITIVE	DR16(15096); DR51(10676); DQ9(DQA1*02:01,DQB1*03:03)(2844)	206	201	YES
2400	102	18	18			NEGATIVE	None	23	252			POSITIVE	DR16(18931), DR51(17187), DQ9(5957)	69	29	YES
3135	102	1,2	7975	0,9		NEGATIVE						NT		8453		NO
3224	102	70				NEGATIVE	None	140	372			POSITIVE	DR16(18817), DR51(19307), DQ9(8441)	266	236	YES
3753	102	50	11			NEGATIVE	None	100	381			POSITIVE	DQ9(4578), DR16(15664), DR51(14064)	215	220	YES
3766	102	83				NT		83				NT		259.33	308	YES
3966	102	20	28			POSITIVE		50	302			POSITIVE		172	299	NO
4345	102					NEGATIVE						POSITIVE				NO
4661	102	10	1			NEGATIVE	None	10	195			POSITIVE	DRB1*16:02(6459) DRB5*02:02(7466) DQA1*03:02/ DQB1*03:03(2095)	200	213	YES
8001	102	50	15			NEGATIVE	None	100	357			POSITIVE	DR16(20020), DR51(15502), DQ9(9143)	207	309	YES
8035	102	>48	2			NEGATIVE	None	>90	352			POSITIVE	DRB1*16:02(18354) DQ9(7406), DR51(18147)	141	168	YES
8050	102	50	10		857	NEGATIVE	None	120	174		27544	POSITIVE	DR16(16492) DR51(14835) DQ9(3352)	52	220	NO

Table 11. Individual Flow crossmatch results and DSA reported for Cell #98 vs. Serum #102 - cont.

Ctr	Serum no	T-Cell Pos cutoff	T Cell MCS	RATIO	MESF	T-Cell RESULT	Class I DSA(MFI)	B-Cell Pos cutoff	B-cell MCS	RATIO	MESF	B-Cell RESULT	Class II DSA(MFI)	T-Cell NEG Control MC	B-Cell NEG Control MC	Pronase Treated
8083	102	90	7			NEGATIVE	None	150	163			POSITIVE	DR16(13748), DR51(11833), DQ9(5525)	229	264	YES
8096	102	20	-0.82			NEGATIVE						NT		8.93		NO
8103	102	357	295	1.2		NEGATIVE	None	741	843	1.7		POSITIVE	DQB1*03:03(1555) DRB1*16:02(8081) DRB5*02:02(6404)	436	298	NO
8111	102	11	9			NEGATIVE	None	38	122			POSITIVE	DR16(16,480); DR51(15,807); DQ9(6006)	206	161	YES

Single Antigen

Table 12. Summary of Single Antigen results for Serum #99

Class I							
*** Serum 99 ***							
14 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
B65	13	93%	3590	3536	1133	1307	5672
B64	12	86%	2822	2817	807	1018	4457
B14	1	7%	1316	1316	0	1316	1316

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA against cell #97 and #98

Class II							
*** Serum 99 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
DR11	19	100%	9835	9865	2902	3773	18033
DR12	19	100%	7751	8215	2834	2461	16388
DR13	19	100%	14513	14471	4365	4462	25992
DR14	19	100%	12044	12084	3494	3967	20803
DR17	19	100%	14483	13689	4299	3775	25070
DR18	19	100%	12000	11610	3421	4831	21290
DR52	19	100%	10538	11878	4582	4085	23390
DR8	19	100%	10000	9715	3049	3018	17310
DPw2	13	68%	3667	4112	1955	1226	8695
DP19	11	57%	3204	3315	1056	1823	5972
DP20	11	57%	2732	2830	1207	985	5956
DP23	11	57%	3500	3869	1277	2222	7043
DPA1*01	11	57%	4100	3954	2142	1291	8381
DPw4	11	57%	3735	4276	1913	1203	8381
DPw3	9	47%	2847	2831	1121	1096	5521
DP18	8	42%	3102	3292	1472	1177	6581
DP28	8	42%	3767	3823	1199	2238	6565
DPA1*03	8	42%	3199	3121	1444	1208	5956
DPw1	8	42%	3201	3689	1541	2411	7506
DP11	7	36%	2448	2729	596	2258	4123
DPw6	7	36%	2442	2201	525	1048	2740
DP402	5	26%	3100	2835	957	1203	4012
DP13	4	21%	2300	3559	2279	2132	7504
DP401	4	21%	4085	4070	730	3023	5087

Table 13. Summary of Single Antigen results for Serum #100

Class I							
*** Serum 100 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
A30	19	100%	12277	11160	4527	2426	17829
A31	19	100%	11177	10006	4250	1541	15852
B13	19	100%	23712	21574	5945	6482	30483
B41	19	100%	8771	7513	3491	748	13036
B44	19	100%	8293	7742	3356	876	13157
B45	19	100%	8969	8136	3676	406	13461
B49	19	100%	11741	9989	4237	677	15951
B50	19	100%	8262	7131	3106	1234	11860
B61	19	100%	9241	8139	3839	1101	14036
B47	18	94%	6710	6093	2511	440	9805
B60	18	94%	7272	6382	3233	723	11338
B51	16	84%	3673	3463	1248	1229	5618
B52	14	73%	2611	2464	833	905	3728
B59	14	73%	2491	2491	871	778	3790
Cw6	13	68%	3000	2918	806	1114	4246
Cw18	8	42%	2522	2521	410	2000	3174
B77	4	21%	1344	1352	149	1178	1545

Class II							
*** Serum 100 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
DQ2	19	100%	13069	13090	6345	2968	22521
DR12	19	100%	6333	5726	2277	1407	8971
DR7	19	100%	18000	15679	5868	1245	22355
DR9	19	100%	10069	9375	3471	1691	13981
DR52	18	94%	7399	6568	3241	1152	12069
DQA1*02	9	47%	5604	7233	4600	1197	12809
DR13	4	21%	1012	1015	281	686	1353
DR18	4	21%	1068	1063	257	697	1421
DQ7	3	15%	1532	1749	365	1452	2264
DQA1*05	3	15%	15556	11841	7816	968	19000

Blue = DSA against cell #97 only

Gold = DSA against cell #98 only

Green = DSA against cell #97 and #98

Table 14. Summary of Single Antigen results for Serum #101

Class I							
*** Serum 101 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
A25	19	100%	4171	3994	1989	771	6950
A29	19	100%	11435	10156	4354	2231	17650
A31	19	100%	3657	3861	2057	544	7055
A32	19	100%	9200	7896	3594	1764	12268
A33	19	100%	2894	2754	1247	599	4864
B35	19	100%	3354	3022	1411	604	5351
B38	19	100%	4500	3834	1772	731	6253
B49	19	100%	11520	10409	4130	1918	16374
B51	19	100%	11243	10041	4225	1190	15477
B52	19	100%	8828	8087	3277	1760	12583
B53	19	100%	7600	6611	2778	1718	10539
B56	19	100%	3117	2968	1440	604	5610
B57	19	100%	11327	9944	3939	2070	15102
B58	19	100%	9887	8447	3846	1254	13260
B59	19	100%	9000	8013	3330	1313	12425
B62	19	100%	3400	3079	1401	699	5432
B63	19	100%	16000	14150	5043	2451	19721
B71	19	100%	2954	2761	1291	555	4936
B75	19	100%	3483	3191	1520	674	6007
A23	18	94%	6805	6354	3019	1047	10463
A34	18	94%	2996	2649	1184	559	4615
A43	18	94%	6278	5547	2422	1231	9477
A74	18	94%	2991	2727	1192	574	4714
B50	18	94%	3098	2917	1269	527	5202
B77	18	94%	8091	7516	2860	1443	11068
A26	17	89%	2350	2481	1082	605	4133
B46	17	89%	3609	3294	1299	896	5206
A24	16	84%	5429	4838	2305	898	7980
A66	15	78%	3240	3145	1373	981	5280
A30	13	68%	2035	1912	866	508	3107
B72	13	68%	2298	2007	789	517	3170
A68	10	52%	2206	2020	571	1027	2955
A2	7	36%	1651	1538	637	663	2329

Class II							
*** Serum 101 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
NEG							

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA against cell #97 and #98

Table 15. Summary of Single Antigen results for Serum #102

Class I							
*** Serum 102 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
B13	19	100%	4620	4176	1780	655	7018
B27	19	100%	6589	5990	2095	1832	9355
B47	19	100%	3355	3099	1084	812	5127
B60	19	100%	6363	5410	2225	1506	8638
B61	19	100%	5431	4682	2175	780	7763
B7	19	100%	11544	10269	3378	3424	14804
B67	16	84%	2373	2159	1033	521	3554
B42	15	78%	2746	2526	1143	489	4075
B48	15	78%	5272	5087	1253	2251	7199
B73	15	78%	2626	2528	940	683	3793
B55	14	73%	2353	2202	911	483	3555
B81	14	73%	10318	9542	2824	4598	13145
A6602	12	63%	5676	5458	2389	1902	8924
B56	10	52%	2001	1934	583	574	2730
B2708	8	42%	6089	5830	2076	2318	8364
A66	7	36%	6883	5992	2140	3005	9548
B8101	7	36%	10000	7488	3946	1816	11729
Cw2	7	36%	2015	1988	651	715	2809
B82	6	31%	1866	1724	580	606	2436
B703	3	15%	3374	3520	837	2576	4611

Class II							
*** Serum 102 ***							
19 typing Labs							
Antigen	No.Labs	Consensus	Median	Mean	Std Dev	Min	Max
DQ5	19	100%	22693	21706	5742	9057	31375
DQ6	19	100%	23889	22903	4271	15020	32630
DQ9	19	100%	6152	6032	2905	1499	11837
DR15	19	100%	20368	19838	4116	11986	29932
DR16	19	100%	16492	16239	4015	8948	25820
DR51	19	100%	16543	15671	3979	8051	24551
DQ4	18	94%	9649	9661	4047	2817	18409
DQ8	18	94%	5640	5448	2361	1908	10277
DQA1*01	5	26%	22000	19059	7466	5887	27909

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA against cell #97 and #98

Table 16a. Individual laboratory results for Serum #099 - #100 - class I by One Lambda Single Antigen

| | **** Serum 99 **** | | | **** Serum 100 **** | | | | | | | | | | | | | | | | | |
Ctr	B65	B64	Other	A30	A31	B13	B41	B44	B45	B49	B50	B61	B47	B60	B51	B52	B59	Cw6	Cw18	B77	Other
54	4648	3274		17829	15852	24401	13036	13157	13461	15951	11860	14036	9805	11338	5618	3728	3758	3324	3012	1445	
206				14630	13177	22663	9641	9141	10320	12272	9150	9874	7417	8497	3865						
230	4764	3504		16385	14718	27689	10422	10109	11355	14142	10043	10892	8274	9358	4525	3172	3311				
774	2454	3152		11121	10835	24296	7708	7973	8201	10225	6946	8388	5878	6658	3509	2227	2322				
792	3311	2552		11461	9762	23981	7339	7938	8745	10334	6717	9087	5750	6241	2678	1811	1857	2406			
1160	1307	1018		7331	6051	23712	5383	5592	5692	7224	4901	5814	3893	4595	1863	1213	1270				
2400	3670	2885		13235	12295	24439	10442	9583	10357	12576	8852	10450	7815	9098	3603	2941	2446	3140	2218		
3224	2983	2031		14939	13660	22504	9523	10427	10639	12811	9407	11046	7635	8485	4143	2707	2837	3333	2486	1242	
3753	2111			8456	8211	21660	5967	5581	6653	8253	5471	6276	4447	4946	2242	1472	1490	2609			
3766	5672	4457		16244	14182	30483	10811	11182	11541	14092	10425	12436	8096	9501	4455	3021	3268	3927	2722		
8001	4187	2719		16217	14545	24153	12006	12407	13013	15060	11160	12724	9657	10308	5156	3684	3790	4246	3174	1545	B53
8035	4072	3163		12283	11861	25749	8771	8293	9879	11771	8298	9241	6787	7885	3900	2685	2776	3428	2557	1178	
8050				5759	5899	22357	4237	4028	4722	5974	3987	4261	3190	3411	1291			1751			
8079	3200	2300		13000	12000	24000	9200	9400	10000	12000	8400	11000	7100	8000	3600	2400	2500	3000	2000		
8083	3590	2758		12277	11177	21922	9050	9218	8969	11741	8262	9818	6633		3742	2537	2482	2733	2000		
8096				2426	1541	6482	748	876	406	677	1234	1101	440	723				2929			A11,A2,B48,B62>
Avg	3536	2818		12100	10985	23156	8393	8432	8997	10944	7820	9153	6426	7269.6	3613	2584	2624	3069	2521	1353	
Std Dev.S	1179	843		4267	3870	4975	3110	3152	3320	3869	2821	3355	2456	2854.8	1183	768	789	668	438.4	172	
MFI %CV	33%	30%		35%	35%	21%	37%	37%	37%	35%	36%	37%	38%	39%	33%	30%	30%	22%	17%	13%	

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA aginst cell #97 and #98

Table 16b. Individual laboratory results for Serum #099 - #100 - class I by Lifecodes Single Antigen

| | **** Serum 99 **** | | | **** Serum 100 **** | | | | | | | | | | | | | | | | | |
Ctr	B65	B64	Other	A30	A31	B13	B41	B44	B45	B49	B50	B61	B47	B60	B51	B52	B59	Cw6	Cw18	B77	Other
4661			B14	10388	8568	18622	5153	7414	6847	8907	6712	4809	5311	3331	1229	905	778	1114			
8029				3941	2809	9405	1610	2392	1675	2819	1804	1116	1550	878							
8103				4126	2985	11403	1710	2388	2122	2962	1863	2283		1624							B40
Avg	-	-		6152	4787	13143	2824	4065	3548	4896	3460	2736	3431	1944.3	-	-	-	-	-	-	
Std Dev.S	-	-		2996	3275	4849	2017	2901	2866	3474	2817	1888	2659	1257.5	-	-	-	-	-	-	
MFI %CV	-	-		49%	68%	37%	71%	71%	81%	71%	81%	69%	78%	65%	-	-	-	-	-	-	

Table 17a. Individual laboratory results for Serum #101 - class I by One Lambda Single Antigen

Ctr	A25	A29	A31	A32	A33	B35	B38	B49	B51	B52	B53	B56	B57	B58	B59	B62	B63	B71	B75	A23	A34	A43	A74	B50	B77	A26	B46
										Serum 101																	
54	6878	17650	6072	12152	4756	5351	4514	16374	15477	12174	9447	5610	15102	13260	12425	5432	19721	4936	6007	10411	4278	9477	4714	5202	10894	4029	4981
206	4827	12394	5208	9567	3230	3354	3850	11636	11243	8828	7334	3383	11327	9887	9065	3410	16321	3041	3872	7587	3095	6742	3253	3095	7964		3634
230	5843	14107	5675	11739	3635	4152	5403	14492	13914	11057	9136	4190	13448	11817	10898	4192	18703	3780	3599	9361	3264	7764	3636	3953	9814	3400	4323
774	3659	11435	3241	8638	2894	3139	5294	11520	11998	9394	7887	3117	11874	10195	9586	3285	15956	2954	3551	4750	2992	5000	2655	2799	8182	2179	3609
792	3693	10634	3657	7094	2264	2433	3176	9442	8797	6663	5516	2456	9493	8075	7120	2497	13531	2186	2963	5530	2412	5005	2288	2318	6248	2048	2662
1160	3282	6291	3096	7048	1832	1827	3424	7849	7775	6307	4628	1916	7403	6350	6303	1927	10692	1772	2037	5329	2037	3188	1748	1716	5520	1680	1914
2400	5429	11275	7055	9694	3548	3459	4736	11574	10879	8631	7637	3502	11436	10228	8462	3774	16838	3199	3075	7885	3534	6932	3452	3182	8597	3405	3557
3224	5870	13065	5121	11025	3594	4223	5015	12930	13050	10448	8983	4033	12402	11260	10025	4157	16961	3693	4338	9042	3657	7261	3568	3615	9661	3247	3824
3753	2429	8572	2133	5412	1729	2502	3709	10507	10239	8122	6294	2434	9283	7857	8225	2492	14286	2257	2213	2913	1567	3285	1914	2211	7223	1413	2768
3766	5815	14394	6657	11696	3942	4434	5464	14438	14066	11397	9273	4301	14151	12693	11127	4301	19703	4024	4786	9291	3652	8090	3543	4097	10581	3392	4683
8001	6950	14767	5673	12268	4864	5100	6253	15004	14776	12583	10539	4988	14445	12917	12336	5153	19516	4542	5740	10463	4615	8166	4570	4806	11068	4133	5206
8035	4171	12525	3356	9967	2739	3753	6197	13896	13586	10860	9150	3911	12938	11705	11442	4001	17985	3745	3483	6022	2534	6055	2981	3717	9922	2350	4485
8050	1096	5326	1132	2733	1062	1166	1415	5638	5519	4319	2840	1237	5365	4273	4201	1387	9641	1122	1467			1691		1148	3490		1516
8079	4700	12000	5200	9200	3300	3400	4500	11000	12000	8900	7600	3100	11000	9700	9000	3400	16000	2900	3610	7800	3000	6500	3000	3100	8000	2900	3200
8083	5622	13010	5576	10681	3923	4179	5091	12041	12241	9776	8542	4067	12550	10699	9035	3840	16521	3742	4424	8853	3421	7436	3636	3499	9123	3508	3788
8096	771	3141	544	1920	1715	794	731	1918	1190	2010	1796	698	2070	1254	1313	741	2451	555	684	1700	815		1180			1253	896
Avg	4440	11287	4337	8802	3064	3329	4298	11266	11047	8842	7288	3309	10893	9511	8785	3374	15302	3028	3491	7129	2992	6173	3076	3231	8419	2781	3440
Std Dev.S	1862	3780	1944	3197	1109	1310	1550	3704	3731	2866	2480	1317	3495	3286	2960	1287	4521	1201	1438	2664	998.4	2154	989.1	1096	2128	952.5	1235
MFI %CV	42%	33%	45%	36%	36%	39%	36%	33%	34%	32%	34%	40%	32%	35%	34%	38%	30%	40%	41%	37%	33%	35%	32%	34%	25%	34%	36%

Blue = DSA against cell #97 only

Gold = DSA against cell #98 only

Green = DSA aginst cell #97 and #98

Table 17b. Individual laboratory results for Serum #101 - class I by Lifecodes Single Antigen

Ctr	A25	A29	A31	A32	A33	B35	B38	B49	B51	B52	B53	B56	B57	B58	B59	B62	B63	B71	B75	A23	A34	A43	A74	B50	B77	A26	B46
										Serum 101																	
4661	3039	7436	2049	5525	2051	2696	2471	11254	9003	7972	5307	2220	8561	4488	7420	3070	13277	2705	3190	5140	1650	4317	1776	2852	5653	1891	952
8029	891	2231	988	1764	599	604	801	2934	2340	1760	1718	604	2835	1819	1740	699	4840	570	674	1047	559	1231	574	527	1443	605	
8103	928	2724	944	1914	653	864	810	3342	2704	2463	1985	642	3263	2019	2538	760	5907	739	929	1253	609	1721	599	683	1922	753	
Avg	1619	4130	1327	3068	1101	1388	1361	5843	4682	4065	3003	1155	4886	2775	3899	1510	8008	1338	1598	2480	939.3	2423	983	1354	3006	1083	-
Std Dev.S	1230	2873	625.7	2129	823.2	1140	961.6	4690	3746	3402	1999	922.2	3190	1487	3075	1352	4594	1187	1385	2306	616	1658	686.9	1300	2305	703.7	-
MFI %CV	76%	70%	47%	69%	75%	82%	71%	80%	80%	84%	67%	80%	65%	54%	79%	90%	57%	89%	87%	93%	66%	68%	70%	96%	77%	65%	-

Table 17a. Individual laboratory results for Serum #101 - class I by One Lambda Single Antigen, cont.

Ctr	A24	A66	A30	B72	A68	A69	B13	B76	A2	A2403	A6602	A6601	Other
						**** Serum 101 ****							
54	6952	5280	2663	3170	2559	2570	2312	2627	2329				
206	5157	3579											
230	6868	4082	2524	2486	2283								
774		3070											
792	3756	2629	1551										
1160	4338	2105	1256	1153	1380	1191	654	760	1041				B78
2400	6280	3991	3081	2127	2398	2671							
3224	7018		1945	2374	1756	2516	1389	1012	1950	6567	3901	3866	A203,B7801
3753		2144		1388									
3766	7395	4487	3107	2529	2222	2379	1696	1841	1651	6899	4487	4449	
8001	7980	5217	2035	3080	2955	2950	1997	2207	2281				B78,Cw10
8035	2248	3240	849	2377	1027	1018	1471	2042	856				B78,Cw1,Cw10,B7801
8050		1099											
8079	5700		2100			2000				5300	3500	3600	
8083	6619	4068	2659	2298	2189	2550							
8096	1263	1212	588	862	1432	1311	815	1014	663				Cw4,A11,B60,B61 >
Avg	5506	3300	2030	2168	2020	2116	1476	1643	1539	6255	3963	3972	
Std Dev.S	2061	1337	832	743	602	695	597	714	688	843.8	496.4	434.3	
MFI %CV	37%	41%	41%	34%	30%	33%	40%	43%	45%	13%	13%	11%	

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA aginst cell #97 and #98

Table 17b. Individual laboratory results for Serum #101 - class I by Lifecodes Single Antigen, cont.

Ctr	A24	A66	A30	B72	A68	A69	B13	B76	A2	A2403	A6602	A6601	Other
						**** Serum 101 ****							
4661	3352			1732			777	1119		3980	3000	2211	B7801
8029	898		508							1276	811		
8103	1598	981		517						1598	981	767	B15
Avg	1949	-	-	1125	-	-	-	-	-	2285	1597	1489	
Std Dev.S	1264	-	-	859	-	-	-	-	-	1477	1218	1021	
MFI %CV	65%	-	-	76%	-	-	-	-	-	65%	76%	69%	

Table 18a. Individual laboratory results for Serum #102 - class I by One Lambda Single Antigen

								**** Serum 102 ****												
Ctr	B13	B27	B47	B60	B61	B7	B67	B42	B48	B73	B55	B81	A6602	B56	B2708	A66	B8101	Cw2	B82	Other
54	5967	7817	3631	7085	6817	13866	3513	4075	5403	2340	3250	12473	8400	2602	8364			1621	2062	
206	4396	6589	3355	6363	4953	11630			5072			10220								
230	5671	8591	4356	7899	6381	14016	3035	3446	6504	3251	2634	12841	8924	2071						
774	3869	5368	2739	5314	4421	9800			4053	2119		8461			5278	4614				
792	4620	6783	3039	6108	6224	12061	2262	2746	4960	2330	2193	10488		1638		6883				
1160	3308	4251	2030	4102	3769	8658	911	975	2964	1674	808	6908	3621	574						
2400	4722	6964	3679	6855	5431	11912	2593	2680	5631	3462	2345	10416				6977				
3224	5932	7486	3894	6717	6816	12821	2346	2808	5637	3140	2361		7526	1736	7533		11124	1954		B8201
3753	3743	5914	2981	5513	4306	10392	2208	2472	4425	2020	2169	9339	5252	1607					1510	
3766	5971	8080	4164	7574	7051	13321	2992	3215	6085	3489	2719	11729	7714	1968	8080		11729	2094	1691	Cw5,B8201
8001	7018	9355	5127	8638	7763	14804	3274	3782	7199	3793	2911	13145		2384		9548		2714	2041	
8035	5215	7786	4024	7269	5937	13103	3554	3819	6158	3567	3555	12049	7067	2730				2809	2436	B54
8050	1809	3260	1385	3075	2267	6901	1115	1170	2251			5765	1902							
8079	5100	6500	3200	6500	5900	11000	2400	2600	4700	2700	2200		6100		6900		10000			
8083	5257	6922	3475	6436	5954	11544	2608	3047	5272	2626	2619			2033		7227	10234	2015		
8096	3602	3007	812	1634	780	5216	607	489			483	4598				3005		715		Cw6,A2,B62,B50 >
Avg	4763	6542	3243	6068	5298	11315	2387	2666	5088	2809	2327	9879	6278	1934	7231	6376	10772	1989	1948	
Std Dev.S	1289	1811	1104	1817	1841	2627	932.7	1093	1297	684.2	856.5	2754	2319	614.2	1227	2275	801.1	703.5	359.8	
MFI %CV	27%	28%	34%	30%	35%	23%	39%	41%	26%	24%	37%	28%	37%	32%	17%	36%	7%	35%	18%	

Blue = DSA against cell #97 only
Gold = DSA against cell #98 only
Green = DSA aginst cell #97 and #98

Table 18b. Individual laboratory results for Serum #102 - class I by Lifecodes Single Antigen

								**** Serum 102 ****												
Ctr	B13	B27	B47	B60	B61	B7	B67	B42	B48	B73	B55	B81	A6602	B56	B2708	A66	B8101	Cw2	B82	Other
4661	655	1832	1689	1589	1155	3424							2157		2318		1816			B703
8029	924	2903	1836	1506	980	5058	521	576		733	586		3146		3761		2352			B703
8103	1572	4410	3469	2620	2063	5598	620			683		5163	3691		4410	3691	5163		606	Cw4,B40,B703,B46
Avg	1050	3048	2331	1905	1399	4693	570.5	-	-	708	-	-	2998	-	3496	-	3110	-	-	
Std Dev.S	471.4	1295	988	620.6	581.4	1132	70	-	-	35	-	-	777.6	-	1071	-	1798	-	-	
MFI %CV	45%	42%	42%	33%	42%	24%	12%	-	-	0	-	-	26%	-	31%	-	58%	-	-	

Table 19a. Individual laboratory results for Serum #99 - class II by One Lambda Single Antigen

														**** Serum 99 ****								
Ctr	DR11	DR12	DR13	DR14	DR17	DR18	DR52	DR8	DPw2	DP19	DP20	DP23	DPA1*01	DPw4	DP401	DP402	DPw3	DP18	DP28	DPA1*03	DPw1	Other
54	12156	10767	18291	15937	17246	14347	18154	12470		3945	3323	4642	5423						3985	3323		
206	10292	8078	15162	12989	15791	12428	10434	10585														
230	11082	8668	15921	13774	16030	13443	11498	11527						4466								
774	8765	7751	14868	11142	13016	10817	11891	9162														
792	11123	9662	17025	13188	15469	12448	14896	11170	4192	3356	2863	3978		4690			2847	3349	3663		3556	DP11,DPw6,DP13
1160	7454	5447	11496	8300	10055	7818	8622	6672			985		1677									
2400	10407	8447	14513	12606	15262	12704	10538	10943	3667	3013	2700	3494		3700			2878	2751	2989		3013	DP11,DPw6
3224	11935	10968	18010	14948	16104	14205	16440	12189	4713	3409	3074	4389	5087		5087	4012	2863	3658	3870	3074	3341	DP11,DPw6,DPA1*04>
3753	8464	6012	12186	10075	12216	9837	7414	8541	2654	2229		2528	2081		3023	2459						
3766	18033	16388	25992	20803	25070	21290	23390	17310	7430	5972	5956	7043	8381	8381					6565	5956		
8001	13304	11369	18173	15994	16723	14961	17476	12659	5100	3994	3362	4645	5503	5503			3254	3770	4212	3362	4189	DP11,DPw6
8035	9835	7565	14491	12044	14483	12270	9229	10325	3715	3204	2732	3439	2830	3735	4070	3401	2281	2855	3063	2489	3060	DP11,DPw6,DP13
8050	9007	6437	14212	11045	13241	10910	7796	9364	2420	1823	1610	2222	1606	2448						1208		
8079	10000	9000	16000	13000	15000	12000	15000	10000	3600	3100	2500	3500	4100		4100	3100						
8083	9008	7476	14156	11407	13078	10296	12872	9246	3080	2429	2034	2680		3164			2087	2199	2238		2439	
8096	6266	6528	9163	8086	9602	9126	7319	5953	8695					6652			5521	6581			7506	DP11,DP13,DR1,DR103>
Avg	10446	8785	15604	12834	14899	12431	12686	10507	4479	3316	2831	3869	4076	4749	4070	3243	3104	3595	3823	3235	3872	
Std Dev.S	2704	2687	3715	3143	3510	3071	4564	2628	1963	1108	1266	1339	2258	1851	843	646	1137	1427	1282	1557	1690	
MFI %CV	26%	31%	24%	24%	24%	25%	36%	25%	44%	33%	45%	35%	55%	39%	21%	20%	37%	40%	34%	48%	44%	

Blue = DSA against cell #97 only

Gold = DSA against cell #98 only

Green = DSA aginst cell #97 and #98

Table 19b. Individual laboratory results for Serum #99 - class II by Lifecodes Single Antigen

													**** Serum 99 ****								
Ctr	DR11	DR12	DR13	DR14	DR17	DR18	DR52	DR8	DPw2	DP19	DP20	DP23	DPA1*01	DPw4	DP401	DP402	DPw3	DP18	DP28	DPA1*03	DPw1	Other
4661	9446	6911	11245	10990	9173	7027	10359	7125					5525							4236		DR1403,DR1404>
8029	7091	6160	9583	9308	8766	9835	8276	6330	2968					3097			2658				2411	DPw6,DR1403,DR1404>
8103	3773	2461	4462	3967	3775	4831	4085	3018	1226				1291	1203		1203	1096	1177		1324		DPw6,DR3
Avg	6770	5177	8430	8088	7238	7231	7573	5491	2097	-	-	-	3408	2150	-	-	1877	-	-	2780	-	
Std Dev.S	2850	2382	3535	3667	3006	2508	3195	2178	1232	-	-	-	2994	1339	-	-	1105	-	-	2059	-	
MFI %CV	42%	46%	42%	45%	42%	35%	42%	40%	59%	-	-	-	88%	62%	-	-	59%	-	-	74%	-	

Table 20a. Individual laboratory results for Serum #100 - #101- class II by One Lambda Single Antigen

Ctr	DQ2	DR12	DR7	DR9	DR52	DQA1*02	DR13	DR18	Other		Other
				Serum 100						**Serum 101**	
54	21657	8971	21381	13981	12069	12188				NEG	
206	12802	6791	19466	11862						NEG	
230	14049	7813	21623	12014	7113	5604				NEG	
774	14843	6484	17290	10690	8201					NEG	
792	17492	6658	17817	10089	8169				DQ7	NEG	
1160	9740	3330	9396	6021	3903	5171				NEG	
2400	13069	6333	18600	10069	7684					NEG	
3224	19707	7423	19374	12454	10030	10976	1227	1036		NEG	
3753	8393	5091	15845	9110	4440					NEG	
3766	22521	8072	22355	12311	9757	12502				NEG	
8001	21174	7900	20331	12799	10123	12809	1353	1100	DR14	NEG	
8035	9788	5034	18425	9362	4634	3203			DQA1*05	NEG	
8050	7274	3453	13822	7135	3401	1197				NEG	
8079	19000	5800	18000	10000	7800				DQA1*05	NEG	
8083	19338	8553	19630	13193	10321				DQ4,DQ7	NEG	
8096	3119	1950	1245	1691	1152	1450	686	1421	DR103,DR8,DR10,DR11 >	NEG	
Avg	14623	6229	17163	10174	7253	7233	1089	1186			
Std Dev.S	5824	2016	5306	3131	3107	4879	354	206			
MFI %CV	40%	32%	31%	31%	43%	67%	33%	17%			

Blue = DSA against cell #97 only

Gold = DSA against cell #98 only

Green = DSA aginst cell #97 and #98

Table 20b. Individual laboratory results for Serum #100 - #101 - class II by Lifecodes Single Antigen

Ctr	DQ2	DR12	DR7	DR9	DR52	DQA1*02	DR13	DR18	Other		Other
				Serum 100						**Serum 101**	
4661	8399	5872	10020	8477	5947		797	697	DR8,DR11,DR14,DR1403 >	NEG	
8029	2968	1407	5772	2990	1607					NEG	
8103	3388	1876	7523	3886	1885					NEG	
Avg	4918	3052	7772	5118	3146	-	-	-			
Std Dev.S	3022	2454	2135	2944	2429	-	-	-			
MFI %CV	61%	80%	27%	58%	77%	-	-	-			

Table 21a. Individual laboratory results for Serum #102 - class II by One Lambda Single Antigen

Ctr	DQ5	DQ6	DQ9	DR15	DR16	DR51	DQ4	DQ8	Other
	**** Serum 102 ****								
54	23719	23889	10206	21809	17734	19415	13264	8565	
206	22356	22207	6152	20368	17813	16875	10260	5814	
230	27202	26533	7198	23459	19355	17436		6720	
774	24180	24410	6358	20489	15759	16798	10161	5465	
792	22077	25018	7136	20292	17636	16543	11072	6379	
1160	25423	26318	1911	19510	15096	14132	9136	2592	
2400	24545	24505	5957	22282	18932	17187	10911	5898	
3224	22693	22561	8441	22017	18816	19306	13983	7382	DQA1*01
3753	22320	22171	4578	18467	15664	14064	7817	4381	
3766	31375	32630	11837	29932	25820	24551	18409	10277	
8001	24176	23948	9143	22486	20641	19422	15447	8442	
8035	28123	27644	7406	22539	18532	18147	11665	6957	DQA1*01,DQA1*03
8050	24892	25197	3352	19395	16492	14835	7419	3228	
8079	22000	22000	5700	21000	15000	14000	9000	4800	DQA1*01,DQA1*03
8083	20549	21458	5525	17673	13950	15377	8071	5018	
8096	9057	15762	8563	17947	13173	14192	8127		DR1,DR103,DR4,DR7 >
Avg	23418	24141	6841	21229	17526	17018	10983	6128	
Std Dev.S	4688	3551	2500	2894	3037	2791	3136	2048	
MFI %CV	20%	15%	37%	14%	17%	16%	29%	33%	

Blue = DSA against cell #97 only

Gold = DSA against cell #98 only

Green = DSA aginst cell #97 and #98

Table 21b. Individual laboratory results for Serum #102 - class II by Lifecodes Single Antigen

Ctr	DQ5	DQ6	DQ9	DR15	DR16	DR51	DQ4	DQ8	Other
	**** Serum 102 ****								
4661	12600	15020	2095	11986	9581	8904	3365	2316	
8029	12610	17091	1499	12865	8948	8051	2989	1908	
8103	12528	16810	1555	12418	9601	8528	2817	1931	DQ3,DQA1*01,DQA1*04
Avg	12579	16307	1716	12423	9377	8494	3057	2052	
Std Dev.S	45	1123	329	440	371	427	280	229	
MFI %CV	0%	7%	19%	4%	4%	5%	9%	11%	

Paper Challenge

Table 22. Individual Virtual crossmatch results for Serum #101 vs Donor# V1

Donor #V1 HLA genotype: A*02:01:01-A*03:01:01-B*35:03:01-B*57:03:01-C*04:01:01-C*07:01:02-DRB1*13:02:01-DRB3*03:01:01-DQA1*01:02:01-DQB1*06:04:01-DPB1*04:01:01

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	T-cell Comments
54	101	95	Positive	A2 (2329) B57 (15102) B35 (5351)	Positive	None	Unacceptable	Positive due to Class I antibodies.
206	101	76	Positive	B57 (11327) B35 (3355)	Positive	None	Unacceptable	
230	101	78	Positive	B57 (13448)	Negative	None	Unacceptable	Possible allelic incompatibility too; No Class II DSA
774	101	74	Positive	B57 (11874) B35 (3139)	Positive	None	Unacceptable	No HLA Class II Ab
792	101	82	Positive	B57 (9493) B35 (2433)	Positive	None	Unacceptable	No Class II DSA
1461	101	29	Positive	B57 (2589) B35 (600)	Positive	None	Unacceptable	
2400	101	62	Positive	A2 (1699) B57 (11399) B35 (3443)	Positive	None	Unacceptable	No Class II DSA. Reactivity due to Class I.
3224	101	95	Positive	A2 (1906) B57 (12385) B35 (4223)	Positive	None	Unacceptable	
3753	101	74.71	Positive	B57 (9283) B35 (2502)	Positive	None	Unacceptable	
3766	101	94	Positive	A2 (1578) B57 (14151) B35 (4434)	Positive	None	Unacceptable	B35 MFI=4434 is to B*35:01 whereas the donor is B*35:03:01. C*07:01 not covered on Class I Single Antigen bead panel. Only Class I DSAs present, no Class II antibodies.
3966	101	80	Positive	A2 (773) B57 (10284) B35 (2597)	Negative	None	Unacceptable	
4661	101	32.4	Positive	B57 (8561) B35 (2696)	Positive	None	Unacceptable	Epitope 163LW, 131S. No class II DSA.
8001	101	96	Positive	A2 (2281) B57 (14445)	Positive	None	Unacceptable	B*35:03, C*07:01 not in LSAB panel. DRB1*13:02 not in LSAB panel
8029	101	22	Positive	B57 (2835) B35 (604)	Positive	None	Unacceptable	Intermediate risk
8035	101	68	Positive	A2 (856) B57 (13580)	Positive	None	Unacceptable	As per our program, this is unAcceptable-However, some programs may have other options as desensitization--if they can make sure the DSAs are not Complement binding. Also additional DSA may exist to B*35:03, but no bead is available to us. Our B cell Positivity is based mainly on the Class I DSAs. No Class II DSAs that can clearly account for a B cell positivity was detected.
8050	101	76	Positive	B57 (5365) B35 (1166)	Positive	None	Unacceptable	
8079	101	100	Positive	B57 (11000)	Positive	None	Unacceptable	
8080	101	94	Positive	A2 (2015) B57 (12284) B35 (4039)	Positive	None	Unacceptable	
8083	101	84	Positive	B57 (12550)	Positive	None	Unacceptable	Due to expression of Class I on B cells
8096	101		Positive	Cw4 (1299) A3 (1131) Cw7 (1244)	Negative	None	Unacceptable	No Class II DSA
8103	101	11	Borderline	B51 (3263) B35 (864)	Negative	None	Acceptable	Possible cross-reacting antibodies B*35:01 and B*57:01
8111	101	42	Positive	B57 (10772)	Positive	None	Unacceptable	

Table 23. Individual Virtual crossmatch results for Serum #101 vs Donor# V2

Donor #V2 HLA genotype: A*01:02-A*24:02-B*40:02-B*49:01-C*03:05-C*07:01:01G-DRB1*04:07:01G-DRB1*10:01-DRB4*01:01:01G-DQA1*01:01:01G-DQA1*03:01:01G-DQB1*03:02-DQB1*05:01-DPB1*04:02-DPB1*13:01:01G

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
54	101	95	Positive	A24 (6952) B49 (16374)	Positive	None	Unacceptable	Positive due to Class I Antiboies
206	101	76	Positive	A24 (5157) B49 (11637)	Positive	None	Unacceptable	
230	101	78	Positive	A24 (7293) B49 (14492)	Negative	None	Unacceptable	No Class II DSA, Bcell positive due to Class I DSA.
774	101	74	Positive	B49 (11520)	Positive	None	Unacceptable	No HLA Class II Ab
792	101	82	Positive	A24 (3756) B49 (9442)	Positive	None	Unacceptable	No Class II DSA
1461	101	29	Positive	A24 (1240) B49 (2991)	Positive	None	Unacceptable	
2400	101	21	Positive	A24 (6378) B49 (11559)	Positive	None	Unacceptable	No Class II DSAs. Positive due to Class I.
3224	101	95	Positive	A24 (7018) B49 (12930)	Positive	None	Unacceptable	
3753	101	74.71	Positive	B49 (10507)	Positive	None	Unacceptable	
3766	101	94	Positive	A24 (7395) B49 (14438)	Positive	None	Unacceptable	C*03:05 and C*07:01 not covered in the Class I Single antigen bead panel. Only Class I DSAs present, no Class II antibodies
3966	101	80	Positive	A24 (4478) B49 (11682)	Negative	None	Unacceptable	
4661	101	32.4	Positive	A24 (3352) B49 (11254)	Positive	None	Unacceptable	Epitope 76ENI,131S,163LW. No class II DSA
8001	101	96	Positive	A24 (7980) B49 (15004)	Positive	None	Unacceptable	A*01:02, C*03:05, C*07:01 not in LSAB panel. DRB1*04:07 not in LSAB panel
8029	101	22	Positive	A24 (898) B49 (2934)	Positive	None	Unacceptable	Intermediate risk. No class II anti HLA antibodies
8035	101	68	Positive	A24 (2475) B49 (13896)	Positive	None	Unacceptable	As per our program, this is unAcceptableHowever, some programs may have other options as desensitization-if they can make sure the DSAs are not Complement binding. Also additional DSA may exist to C*03:05, but no bead is available to us. Our B cell Positivity is based mainly on the Class I DSAs. No Class II DSAs that can clearly account for a B cell positivity was detected.
8050	101	76	Positive	B49 (5638)	Positive	None	Unacceptable	
8079	101	100	Positive	A24 (5700) B49 (11000)	Positive	None	Unacceptable	
8080	101	94	Positive	A24 (6414) B49 (12486)	Positive	None	Unacceptable	
8083	101	84	Positive	A24 (6619) B49 (12041)	Positive	None	Unacceptable	Due to expression of Class I on B cells
8096	101		Positive	A24 (1263) B49 (1918) Cw7 (1244)	Negative	None	Unacceptable	No Class II DSA
8103	101	11	Positive	A24 (995) B49 (3342)	Positive	None	Unacceptable	Class 1 antigen positivity
8111	101	42	Positive	B49 (11422)	Positive	None	Unacceptable	

Table 24. Individual Virtual crossmatch results for Serum #101 vs Donor# V3

Donor #V3 genotype: A*01:01-A*11:01-B*13:01-B*57:01-C*03:04-C*06:02:01G-DRB1*07:01-DRB1*15:01-DRB4*01:03N-DRB5*01:01-DQA1*01:02:01G-DQA1*02:01-DQB1*03:03-DQB1*06:01-DPB1*05:01:01G-DPB1*26:01

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	T-cell Comments
54	101	95	Positive	B13 (1899) B57 (14887)	Positive	None	Unacceptable	Positive due to Class I antibodies.
206	101	76	Positive	B57 (11327)	Positive	None	Unacceptable	
230	101	78	Positive	B57 (12865)	Negative	None	Unacceptable	No Class II DSA, Bcell will be positive due to Class I DSA.
774	101	74	Positive	B57 (11874)	Positive	None	Acceptable	No HLA Class II Ab
792	101	82	Positive	B57 (9434)	Positive	None	Unacceptable	No Class II DSA
1461	101	29	Positive	B57 (2589)	Positive	None	Unacceptable	
2400	101	10	Positive	B13 (1293) B57 (11559)	Positive	None	Unacceptable	No Class II DSAs. Positive due to Class I.
3224	101	95	Positive	B13 (1172) B57 (12402)	Positive	None	Unacceptable	
3753	101	74.71	Positive	B57 (9283)	Positive	None	Unacceptable	
3766	101	94	Positive	B13 (1554) B57 (13419)	Positive	None	Unacceptable	Only Class I DSAs present, no Class II antibodies.
3966	101	80	Positive	B13 (775) B57 (10284)	Negative	None	Unacceptable	
4661	101	32.4	Positive	B57 (8561)	Positive	None	Unacceptable	Epitope 131S,163LW,76ENI. No class II DSA
8001	101	96	Positive	B13 (1818) B57 (14412)	Positive	None	Unacceptable	DPB1*26:01 not in LSAB panel
8029	101	22	Positive	B57 (2835)	Positive	None	Unacceptable	Intermediate risk. No class II anti HLA antibodies
8035	101	68	Positive	B13 (1411) B57 (12297)	Positive	None	Unacceptable	As per our program, this is unAcceptable-However, some programs may have other options as desensitization--if they can make sure the DSAs are not Complement binding. Our B cell Positivity is based mainly on the Class I DSAs. No Class II DSAs that can clearly account for a B cell positivity were detected.
8050	101	76	Positive	B57 (5365)	Positive	None	Unacceptable	
8079	101	100	Positive	B57 (11000)	Positive	None	Unacceptable	
8080	101	94	Positive	B57 (12669)	Positive	None	Unacceptable	
8083	101	84	Positive	B57 (11473)	Positive	None	Unacceptable	Due to expression of Class I on B cells
8096	101		Positive	A1 (1882) B57 (2070)	Negative	None	Unacceptable	No Class II DSA
8103	101	11	Positive	B57 (3263)	Positive	None	Unacceptable	Class 1 antibody positivity
8111	101	42	Positive	B13 (1128) B57 (10772)	Positive	None	Unacceptable	

Table 25. Individual Virtual crossmatch results for Serum #101 vs Donor# V4

Donor #V4 HLA genotype: A*02:01-A*24:03-B*07:02:01G-B*40:01-C*03:04-C*07:02:01G-DRB1*13:02-DRB1*15:01-DRB3*03:01-DRB5*01:01-DQA1*01:02:01G-DQB1*06:02-DQB1*06:04-DPB1*04:01:01G-DPB1*04:02:01G

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	T-cell Comments
54	101	95	Positive	A24 (6520) A2 (2329)	Positive	None	Unacceptable	Positive due to Class I antibodies.
206	101	76	Positive	A24 (5157)	Positive	None	Unacceptable	
230	101	78	Positive	A24 (6443)	Negative	None	Unacceptable	No Class II DSA, Bcell will be positive due to Class I DSA
774	101	74	Negative		Negative	None	Acceptable	No HLA Class I DSA. No HLA Class II Ab
792	101	91	Positive	A24 (3541)	Borderline	None	Unacceptable	No Class II DSA
1461	101	29	Positive	A24 (1670)	Positive	None	Unacceptable	
2400	101	60	Positive	A24 (6113) A2 (1699)	Positive	None	Unacceptable	No Class II DSAs. Positive due to Class I.
3224	101	95	Positive	A2 (1906) A2403 (6567)	NT	None	Unacceptable	
3753	101	74.71	Negative		Negative	None	Acceptable	
3766	101	94	Positive	A24 (6899) A2 (1578)	Positive	None	Unacceptable	Only Class I DSAs present, no Class II antibodies.
3966	101	80	Positive	A24 (4478) A2 (773)	Negative	None	Unacceptable	
4661	101	32.4	Positive	A2403 (3980)	Positive	None	Unacceptable	Epitope 76ENI. No class II DSA
8001	101	96	Positive	A24 (7589) A2 (2281)	Positive	None	Unacceptable	DRB1*13:02 not in LSAB panel
8029	101	22	Positive	A24 (1276)	Positive	None	Unacceptable	Minimum risk. No class II anti HLA antibodies
8035	101	68	Negative	A2 (856) A2403 (2020)	Negative	None	Acceptable	In cases like these we would recommend a real cross match because the strength of the reaction will depend on the density of the antigens on a specific donor. Also, a Class I moderate DSA was detected.
8050	101	76	Negative		Negative	None	Acceptable	
8079	101	100	Positive	A2403 (5300)	Positive	None	Unacceptable	
8080	101	94	Positive	A24 (6117) A2 (2015)	Positive	None	Unacceptable	
8083	101	84	Positive	A24 (6132)	Positive	None	Unacceptable	Due to expression of Class I on B cells
8096	101		Negative		Negative	None	Acceptable	No Class II DSA
8103	101	11	Positive	A24 (1528) A2403 (1528)	Positive	None	Unacceptable	Crossreacting Class 1 antibody
8111	101	42	Negative	A24 (947)	Negative	None	Acceptable	

Table 26. Individual Virtual crossmatch results for Serum #102 vs Donor# V1

Donor #V1 HLA genotype: A*02:01:01-A*03:01:01-B*35:03:01-B*57:03:01-C*04:01:01-C*07:01:02-DRB1*13:02:01-DRB3*03:01:01-DQA1*01:02:01-DQB1*06:04:01-DPB1*04:01:01

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
54	102	86	Negative	None	Positive	DQ6 (23019) DQA1*01 (23889)	Unacceptable	Unacceptable due to class II postiive
206	102	90	Negative	None	Positive	DQ6 (22207)	Acceptable	
230	102	91	Negative	None	-	DQ6 (25005)	Unacceptable	
774	102	90	Negative	None	Positive	DQ6 (24410) DQA1*01 (24410)	Unacceptable	No HLA Class I DSA
792	102	91	Negative	None	Positive	DQ6 (21674)	Unacceptable	No Class I DSA
1461	102	10	Negative	None	Positive	DQ6 (14345) DQA1*01 (14345)	Unacceptable	
2400	102	37	Negative	None	Positive	DQ6 (23786)	Unacceptable	
3224	102	91	Negative	None	Positive	DQ6 (22055) DQA1*01 (22693)	Unacceptable	
3753	102	90.73	Negative	None	Positive	DQ6 (22171)	Unacceptable	
3766	102	83	Negative	None	Positive	DQ6 (29632)	Unacceptable	Very strong Class II DSA present. Antibodies to donor specific DQ heterodimer: DQA1*01:02,DQB1*06:04 MFI=29632
3966	102	94	Negative	None	Positive	DQ6 (25547) DQA1*01 (24711)	Unacceptable	
4661	102	30.00%	Negative	None	Positive	DQ6 (14674)	Unacceptable	No class I DSA. Epitope 45GV
8001	102	92	Negative	None	Positive	DQ6 (23161) DQA1*01 (24165)	Unacceptable	B*35:03, C*07:01 not in LSAB panel. DRB1*13:02 not in LSAB panel.
8029	102	10	Negative	None	Positive	DQ6 (17091)	Unacceptable	Virtual B CELL Prediction POSITIVE
8035	102	91	Negative	None	Positive	DQ6 (25978) DQA1*01 (27326)	Acceptable	As per our program, this isUnacceptable-However, some programs may have other options as desensitization--if they can make sure the DSAs are not Complement binding.
8050	102	92	Negative	None	Positive	DQ6 (25197)	Unacceptable	
8079	102	100	Negative	None	Positive	DQ6 (19000) DQA1*01 (21000)	Unacceptable	
8080	102	93	Negative	None	Positive	DQ6 (26432)	Unacceptable	
8083	102	92	Negative	None	Positive	DQ6 (18533)	Unacceptable	Due to Class II antibody
8096	102		Negative	None	Positive	DR13 (12678) DQA1*01 (5887)	Acceptable	
8103	102	2	Borderline	Cw4 (583)	Positive	DQ6 (16810) DQA1*01 (16810)	Unacceptable	
8111	102	92	Negative	None	Positive	DQ6 (24360)	Unacceptable	

Table 27. Individual Virtual crossmatch results for Serum #102 vs Donor# V2

Donor #V2 HLA genotype: A*01:02-A*24:02-B*40:02-B*49:01-C*03:05-C*07:01:01G-DRB1*04:07:01G-DRB1*10:01-DRB4*01:01:01G-DQA1*01:01:01G-DQA1*03:01:01G-DQB1*03:02-DQB1*05:01-DPB1*04:02-DPB1*13:01:01G

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
54	102	86	Positive	B61 (6817)	Positive	DQ5 (23719) DQ8 (7300) DQA1*01 (23719) DQA1*03 (7300)	Unacceptable	
206	102	90	Positive	B61 (4953)	Positive	DQ5 (22365) DQ8 (5815)	Unacceptable	
230	102	91	Positive	B61 (7240)	Positive	DQ5 (27541)	Unacceptable	
774	102	90	Positive	B61 (4421)	Positive	DQ5 (24180) DQA1*01 (24180)	Unacceptable	
792	102	91	Positive	B61 (6224)	Positive	DQ5 (21519) DQ8 (6379)	Unacceptable	
1461	102	10	Positive	B40 (766)	Positive	DQ5 (11067) DQ8 (1653) DQA1*01 (6456)	Unacceptable	
2400	102	48	Positive	B61 (6160)	Positive	DQ5 (24789) DQ8 (5898)	Unacceptable	
3224	102	91	Positive	B61 (6816)	Positive	DQ5 (22693) DQ8 (7383) DQA1*01 (22693)	Unacceptable	
3753	102	90.73	Negative	B61 (4306)	Positive	DQ5 (22320) DQ8 (4381)	Unacceptable	
3766	102	83	Positive	B61 (7051)	Positive	DQ5 (31375) DQ8 (8697)	Unacceptable	C*03:05, C*07:01 and DRB1*04:07 not covered on the Class I/ Class II Single antigen bead panels. Strong DSAs to donor DQ heterodimers; DQA1*03:01/DQB1*03:02 MFI=8697 and DQA1*01:01/DQB1*05:01 MFI=31375
3966	102	94	Positive	B61 (4846)	Positive	DQ5 (25136) DQ8 (4669) DQA1*01 (25413)	Unacceptable	
4661	102	30	Positive	B61 (1155)	Positive	DQ5 (8139) DQ8 (1955)	Unacceptable	Epitope 73TE,163LW; Epitope 45GV
8001	102	92	Positive	B61 (7763)	Positive	DQ5 (24176) DQ8 (8442) DQA1*01 (24176)	Unacceptable	A*01:02, C*03:05, C*07:01 not in LSAB panel; DRB1*04:07 not in LSAB panel; Cannot rule out DQA1*01:01 due to DQA/DQB overlap
8029	102	10	Positive	B40 (1506)	Positive	DQ5 (12610) DQ8 (1908)	Unacceptable	Virtual T CELL Prediction - Minimum risk
8035	102	91	Borderline	B61 (5937)	Positive	DQ5 (27843) DQ8 (6957) DQA1*01 (27722)	Unacceptable	In cases like these we would recommend a real cross match because the strength of the reaction will depend on the density of the antigens on a specific donor. Our B cell Positivity is based on both Class I and II DSA.
8050	102	92	Negative	B61 (2267)	Positive	DQ5 (24892) DQ8 (3228)	Unacceptable	
8079	102	100	Positive	B61 (5900)	Positive	DQ5 (22000) DQ8 (4800) DQA1*01 (22000) DQA1*03 (9100)	Unacceptable	
8080	102	93	Positive	B61 (5878)	Positive	DQ5 (28985) DQ8 (5574)	Unacceptable	
8083	102	92	Positive	B61 (5954)	Positive	DQ5 (20549) DQ8 (5018)	Unacceptable	Also B61 which is expressed on B cells
8096	102		Positive	B61 (780)	Positive	DR10 (6724) DQ5 (9057) DP13 (12564) DQA1*01 (5887)	Unacceptable	
8103	102	2	Positive	B40 (2063) B61 (2063)	Positive	DQ3 (1931) DQ5 (12528) DQ8 (1931) DQA1*01 (7340)	Unacceptable	
8111	102	92	Positive	B61 (4785)	Positive	DQ5 (24780) DQ8 (5629)	Unacceptable	

Table 28. Individual Virtual crossmatch results for Serum #102 vs Donor# V3

Donor #V3 genotype: A*01:01-A*11:01-B*13:01-B*57:01-C*03:04-C*06:02:01G-DRB1*07:01-DRB1*15:01-DRB4*01:03N-DRB5*01:01-DQA1*01:02:01G-DQA1*02:01-DQB1*03:03-DQB1*06:01-DPB1*05:01:01G-DPB1*26:01

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
54	102	86	Positive	B13 (3329)	Positive	DR15 (19693) DR51 (19415) DQ9 (10206) DQ6 (23567) DQA1*01 (23889) DQA1*02 (11800)	Unacceptable	
206	102	90	Positive	B13 (4396)	Positive	DR15 (20369) DR51 (16875) DQ9 (6153) DQ6 (22207)	Unacceptable	
230	102	91	Positive	B13 (5009)	Positive	DR15 (21822) DR51 (19274) DQ6 (27821)	Unacceptable	
774	102	90	Positive	B13 (3869)	Positive	DR15 (20489) DQ9 (6358) DQ6 (24410)	Unacceptable	
792	102	91	Positive	B13 (2949)	Positive	DR15 (18373) DR51 (16543) DQ9 (7136)	Unacceptable	
1461	102	10	Positive	B13 (590)	Positive	DR15 (10120) DR51 (6829) DQ9 (1342) DQ6 (9738) DQA1*01 (14345)	Unacceptable	
2400	102	61	Positive	B13 (4108)	Positive	DR15 (21282) DR51 (19197) DQ9 (5957) DQ6 (24713)	Unacceptable	
3224	102	91	Positive	B13 (4180)	Positive	DR15 (20424) DR51 (19307) DQ9 (7024) DQ6 (22385) DQA1*01 (22561)	Unacceptable	
3753	102	90.73	Negative	B13 (3743)	Positive	DR15 (18467) DR51 (14064) DQ9 (4578) DQ6 (22171)	Unacceptable	
3766	102	83	Positive	B13 (4198)	Positive	DR15 (27255) DR51 (24551) DQ9 (9780) DQ6 (31005) DQA1*01 (31021)	Unacceptable	C*03:04 is a previously transplanted antigen. DPB1*26:01 not covered in the Class II Single antigen panel. DQA1*01:02/DQB1*06:01 heterodimer not covered in bead panel. Donor DQ heterodimer; DQA1*02:01/DQB1*03:03 MFI=9780.
3966	102	94	Positive	B13 (3640)	Positive	DR15 (19277) DR51 (13145) DQ9 (4719) DQ6 (25548) DQA1*01 (24711)	Unacceptable	
4661	102	30	Borderline	B13 (655)	Positive	DR15 (11986) DR51 (8904) DQ9 (2095) DQ6 (15020)	Unacceptable	Epitope 163EW,73TE; Epitope 142M3,108T,45GV
8001	102	92	Positive	B13 (5328)	Positive	DR15 (20992) DR51 (19422) DQ9 (9143) DQ6 (23332) DQA1*01 (24165)	Unacceptable	DPB1*26:01 not in LSAB panel
8029	102	10	Positive	B13 (924)	Positive	DR15 (12865) DR51 (8051)	Unacceptable	Virtual T CELL Prediction - Minimum risk
8035	102	91	Borderline	B13 (4557)	Positive	DR15 (21071) DR51 (20146) DQ9 (7406) DQ6 (28326) DQA1*01 (27326)	Unacceptable	As per our program, this isUnacceptable-However, some programs may have other options as desensitization--if they can make sure the DSAs are not Complement binding. Also a Class I moderate DSA was detected. Our B cell Positivity is based on both Class I and II DSA. Also no bead available to assess DP26.
8050	102	92	Negative	B13 (1809)	Positive	DR15 (19395) DR51 (14835) DQ9 (3352) DQ6 (25197)	Unacceptable	
8079	102	100	Positive	B13 (2600)	Positive	DR15 (16000) DR51 (14000) DQ9 (5700) DQ6 (21000) DQA1*01 (21000)	Unacceptable	

Table 28. Individual Virtual crossmatch results for Serum #102 vs Donor# V3 - cont.

Donor #V3 genotype: A*01:01-A*11:01-B*13:01-B*57:01-C*03:04-C*06:02:01G-DRB1*07:01-DRB1*15:01-DRB4*01:03N-DRB5*01:01-DQA1*01:02:01G-DQA1*02:01-DQB1*03:03-DQB1*06:01-DPB1*05:01:01G-DPB1*26:01

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
8080	102	93	Positive	B13 (3777)	Positive	DR15 (21245) DR51 (20151) DQ9 (5970) DQ6 (29062)	Unacceptable	
8083	102	92	Positive	B13 (3774)	Positive	DR15 (15383) DQ9 (5525) DQ6 (19597)	Unacceptable	Also B13 which is expressed on B cells
8096	102		Negative		Positive	DR15 (17947) DR51 (14192) DQA1*01 (5887)	Acceptable	
8103	102	2	Borderline	B13 (1572)	Positive	DR15 (12418) DR51 (8528) DQ6 (13283) DQA1*01 (16810)	Unacceptable	Possible crossreacting B*13:02 antibody
8111	102	92	Positive	B13 (4108)	Positive	DR15 (20241) DR51 (15807) DQ9 (6006) DQ6 (24360)	Unacceptable	

Table 29. Individual Virtual crossmatch results for Serum #102 vs Donor# V4

Donor #V4 HLA genotype: A*02:01-A*24:03-B*07:02:01G-B*40:01-C*03:04-C*07:02:01G-DRB1*13:02-DRB1*15:01-DRB3*03:01-DRB5*01:01-DQA1*01:02:01G-DQB1*06:02-DQB1*06:04-DPB1*04:01:01G-DPB1*04:02:01G

Ctr	Patient	% CPRA	Virtual T Cell Prediction	Class I DSA (MFI)	Virtual B-cell prediction	Class II DSA(MFI)	Risk Assessment	Comments
54	102	86	Positive	B60 (7085) B7 (13866)	Positive	DR15 (19693) DR51 (19415) DQ6 (23207) DQA1*01 (23889)	Unacceptable	
206	102	90	Positive	B60 (6364) B7 (11631)	Positive	DR15 (20369) DR51 (16875) DQ6 (22207)	Unacceptable	
230	102	91	Positive	B7 (14016)	Positive	DR15 (21822) DR51 (19274) DQ6 (26533)	Unacceptable	
774	102	90	Positive	B60 (5314) B7 (9800)	Positive	DR15 (20489) DQ6 (24410)	Unacceptable	
792	102	91	Positive	B60 (6108) B7 (12061)	Positive	DR15 (18373) DR51 (16543) DQ6 (22873)	Unacceptable	
1461	102	10	Positive	B40 (1058) B7 (2023)	Positive	DR15 (10120) DR51 (6829) DQ6 (13410) DQA1*01 (14345)	Unacceptable	
2400	102	61%	Positive	B60 (6813) B7 (11871)	Positive	DR15 (21282) DR51 (19197) DQ6 (23884)	Unacceptable	
3224	102	91	Positive	B61 (6717) B7 (12821)	Positive	DR15 (20424) DR51 (19307) DQ6 (22561) DQA1*01 (22561)	Unacceptable	
3753	102	90.73	Positive	B60 (5513) B7 (10392)	Positive	DR15 (18467) DR51 (14064) DQ6 (22171)	Unacceptable	
3766	102	83	Positive	B60 (7574) B7 (13321)	Positive	DR15 (27255) DR51 (24551) DQ6 (31021)	Unacceptable	DRB1*13:02 not covered in Class II Single Antigen
3966	102	94	Positive	B60 (6212) B7 (11480)	Positive	DR15 (19277) DR51 (13145) DQ6 (25547) DQA1*01 (24711)	Unacceptable	
4661	102	30.00%	Positive	B60 (1589) B7 (3424)	Positive	DR15 (11986) DR51 (8904) DQ6 (15020)	Unacceptable	Epitope 163EW,73TE; Epitope 142M3,108T,45GV
8001	102	92	Positive	B60 (8638) B7 (14804)	Positive	DQA1*01 (24165)	Unacceptable	ruled out due to DQA/DQB overlap
8029	102	10%	Positive	B60 (1506) B7 (5058)	Positive	DR15 (12865) DR51 (8051)	Unacceptable	
8035	102	91%	Positive	B60 (7269) B7 (13103)	Positive	DR15 (21071) DR51 (20146) DQ6 (26673) DQA1*01 (27326)	Unacceptable	As per our program, this isUnacceptable-However, some programs may have other options as desensitization--if they can make sure the DSAs are not Complement binding. Our B cell Positivity is based on both Class I and II DSA.
8050	102	92	Positive	B60 (3075) B7 (6901)	Positive	DR15 (19395) DR51 (14835) DQ6 (25197)	Unacceptable	
8079	102	100	Positive	B60 (6500) B7 (11000)	Positive	DR15 (16000) DR51 (14000) DQ6 (22000) DQA1*01 (20000)	Unacceptable	
8080	102	93	Positive	B60 (6618) B7 (11847)	Positive	DR15 (21245) DR51 (20151) DQ6 (26595)	Unacceptable	DQB1*06:02 MFI 26595, DQB1*06:04 MFI 26432
8083	102	92	Positive	B60 (6436) B7 (11544)	Positive	DR15 (15383) DR51 (15377) DQ6 (19762)	Unacceptable	Also B7 and B60 which are expressed on B cells
8096	102		Positive	B40 (1634) B7 (5216)	Positive	DQ6 (15762) DQA1*01 (5887)	Unacceptable	
8103	102	2	Positive	B40 (2620) B60 (2620) B7 (5598)	Positive	DR15 (12418) DR51 (8528) DQ6 (16810) DQA1*01 (16810)	Unacceptable	
8111	102	92	Positive	B60 (5844) B7 (10541)	Positive	DR15 (20241) DR51 (15807) DQ6 (24360)	Unacceptable	

Table 30: Individual Cutoff values and Sera Pretreatment

Ctr	Locus	Pos Cutoff Value	Locus	Pos Cutoff Value	Manufacturer	Sera Pretreament
54	A		DRB1		One Lambda	EDTA
	B		DRB3/4/5			
	C		DQA1			
	Class I	1500	DQB1			
			DPB1			
			Class II	1500		
206	A	3000	DRB1	3000	One Lambda	EDTA
	B	3000	DRB3/4/5	3000		
	C	15000	DQA1	15000		
	Class I		DQB1	3000		
			DPB1	15000		
			Class II			
230	A	2000	DRB1	2000	One Lambda	None
	B	2000	DRB3/4/5	2000		
	C	10000	DQA1	2000		
	Class I		DQB1	2000		
			DPB1	10000		
			Class II			
774	A	2000	DRB1	2000	One Lambda	DTT
	B	2000	DRB3/4/5	2000		
	C	5000	DQA1	2000		
	Class I	2000	DQB1	2000		
			DPB1	5000		
			Class II	2000		
792	A	1500	DRB1	1500	One Lambda	None
	B	1500	DRB3/4/5	1500		
	C	1500	DQA1	1500		
	Class I	1500	DQB1	1500		
			DPB1	1500		
			Class II	1500		
1160	A		DRB1		One Lambda	EDTA
	B		DRB3/4/5			
	C		DQA1			
	Class I	2000	DQB1			
			DPB1			
			Class II	2000		

Ctr	Locus	Pos Cutoff Value	Locus	Pos Cutoff Value	Manufacturer	Sera Pretreament
2400	A	2000	DRB1	2000	One Lambda	EDTA
	B	2000	DRB3/4/5	2000		
	C	2000	DQA1	2000		
	Class I	2000	DQB1	2000		
			DPB1	2000		
			Class II	2000		
3224	A	1000	DRB1	1000	One Lambda	None
	B	1000	DRB3/4/5	1000		
	C	1000	DQA1	1000		
	Class I		DQB1	1000		
			DPB1	1000		
			Class II			
3753	A	1000	DRB1	1000	One Lambda	DTT
	B	1000	DRB3/4/5	1000		
	C	2000	DQA1	1000		
	Class I	1000	DQB1	1000		
			DPB1	2000		
			Class II	1000		
3766	A	1500	DRB1	1500	One Lambda	None
	B	1500	DRB3/4/5	1500		
	C	1500	DQA1	1500		
	Class I	1500	DQB1	1500		
			DPB1	1500		
			Class II	1500		
4661	A	750	DRB1	750	Lifecodes	EDTA
	B	650	DRB3/4/5	750		
	C	750	DQA1	1000		
	Class I		DQB1	1000		
			DPB1	750		
			Class II			
8001	A		DRB1		One Lambda	FBS
	B		DRB3/4/5			
	C		DQA1			
	Class I	1000	DQB1			
			DPB1			
			Class II	1000		

Table 30: Individual Cutoff values and Sera Pretreatment - cont.

Ctr	Locus	Pos Cutoff Value	Locus	Pos Cutoff Value	Manufacturer	Sera Pretreament
8029	A	500	DRB1	500	Lifecodes	None
	B	500	DRB3/4/5	500		
	C	500	DQA1	500		
	Class I	500	DQB1	500		
			DPB1	500		
			Class II	500		
8035	A	700	DRB1	700	One Lambda	DTT, FCS
	B	700	DRB3/4/5	700		
	C	700	DQA1	700		
	Class I		DQB1	700		
			DPB1	700		
			Class II			
8050	A	1000	DRB1	1000	One Lambda	DTT
	B	1000	DRB3/4/5	1000		
	C	1000	DQA1	1000		
	Class I	1000	DQB1	1000		
			DPB1	1000		
			Class II	1000		
8079	A	2000	DRB1	2000	One Lambda	None
	B	2000	DRB3/4/5	2000		
	C	2000	DQA1	2000		
	Class I	2000	DQB1	2000		
			DPB1	2000		
			Class II	2000		

Ctr	Locus	Pos Cutoff Value	Locus	Pos Cutoff Value	Manufacturer	Sera Pretreament
8083	A		DRB1		One Lambda	EDTA
	B		DRB3/4/5			
	C		DQA1			
	Class I	2000	DQB1			
			DPB1			
			Class II	2000		
8096	A		DRB1		One Lambda	None
	B		DRB3/4/5			
	C		DQA1			
	Class I		DQB1			
			DPB1			
			Class II			
8103	A	93	DRB1	51	Lifecodes	None
	B	97	DRB3/4/5			
	C	149	DQA1			
	Class I	182	DQB1	33		
			DPB1	54		
			Class II	138		