





**Figure 1. Representative images of the qualitative variability of ER staining.**

### PR

The technical quality of staining for participants was excellent on the cell lines, with all but one participant receiving an **“Optimal”** IHC status. A single laboratory (Lab 136) received an **“Adequate”** IHC status due to weaker staining compared to others participants. The slide from Lab 217 was not available for assessment. No other comments were noted during assessment.

Garrattogram after CPQA assessment:

Lab ID	101	102	103	106	107	111	112	113	114	120	123	125	127	128	129	132	134	136	138	141	147	149	151	159	160	175	183	186	187	190	192	194	196	198	199	202	207	209	217	220	230	233	242	R1													
1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N										
2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N								
3	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P							
4	N	N	N	N	N	N	N	N	N	N	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	U	N	N	N	N	N	N	N	N	N	N	N						
5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P							
6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
7	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
8	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
9	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P					
10	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N			
11	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
12	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
13	N	N	N	N	N	N	N	N	N	N	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
14	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	U	P	P	P	P	P	P	P	P	U	P	U	U	U	U	P	P	P	P	P	P	P	P				
15	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
16	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
17	N	N	N	N	N	N	N	N	N	U	U	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
18	P	P	P	P	P	P	P	P	P	U	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			

### HER2

Once again, the technical quality of staining for participants was very good on the cell lines, with all but two participants receiving an **“Optimal”** IHC status. Lab 136 received an **“Adequate”** IHC status due to weaker staining compared to others participants. Lab 151 received an **“Adequate”** IHC status due to slight background staining. The slides from Lab 181 and Lab 217 were not available for assessment. No other comments were noted during assessment.

Garrattogram after CPQA assessment:

Lab ID	101	102	103	106	107	111	112	113	114	120	123	125	127	129	136	138	147	149	151	160	175	181	186	187	190	194	198	199	202	207	217	220	230	233	R1				
1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
2	N	N	N	N	N	N	N	N	1	N	N	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
3	N	N	N	N	N	N	N	1	N	N	N	N	1	1	N	N	1	N	N	N	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	N	N	
4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
5	1	2	2	N	1	1	N	2	N	U	U	1	1	2	2	1	2	1	2	1	U	2	N	1	U	U	1	1	2	1	1	1	1	1	1	N	N		
6	N	N	N	N	N	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
7	N	N	1	N	N	N	N	1	N	1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
8	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
9	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
10	N	N	N	N	N	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
11	N	N	N	N	N	N	1	N	1	N	1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
12	N	N	N	N	N	1	N	1	N	N	N	N	1	1	N	N	1	N	N	1	N	N	N	N	N	N	N	N	1	N	N	N	N	N	N	N	N	N	
13	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
14	N	1	2	1	1	2	1	2	N	U	U	1	1	2	U	U	2	U	U	N	1	U	U	U	U	U	U	U	U	U	U	N	U	U	U	U	N		
15	N	N	N	N	N	N	N	1	N	N	U	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
16	N	N	N	N	N	N	1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
17	3	3	3	3	3	3	3	3	3	U	U	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
18	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

Supplementary Tables 1-3 summarize the reported staining protocols for ER, PR and HER2, respectively, which can be referred to during validation or optimization of a staining protocol. Supplementary Table 4 provides the definitions of IHC Status and recommended participant action. Your regular participation in CPQA-AQCP is greatly appreciated and we look forward to continuing to work with you and the Canadian Association of Pathologists – Association canadienne des pathologistes.

*This report has been updated with scanned images that were acquired using a NanoZoomer SQ that has been graciously loaned to the CPQA-AQCP by Quorum Technologies and Hamamatsu*

**Table S1. Reported ER staining protocols.**

Lab ID	Platform/instrument	LDT or commercial assay	Ag Retrieval Method	Time for Ag Retrieval (min)	Ab Clone	Ab Dilution	Ab Supplier/Vendor	Ab Lot No.	Time for Ab Incubation (min)	Detection System	Amplification (Y/N)	Enhancement (Y/N)
101	DAKO OMNIS	LDT	EnVision FLEX TRS HIGH pH	30 MIN	EP1	RTU	DAKO	11100155	10 MIN	DAKO Envision FLEX	N	Y
102	Autostainer link 48	LDT	Dako retrieval 9.0	20	EP1	1/50	Agilent	10144585	30* RT	Dako Envision Flex	N	yes CuSO4
103	Benchmark Ultra	commercial	CC1	64	SP1	Pre	Ventana	F12922	16	Ultraview	No	Copper
106	Ventana Ultra Bench Mark	LDT	Heat	64	SP1	RTU	Roche/Ventana	F27361	32	Optiview	N	N
107	Dako Omnis	LDT	Dako FLEX TRS High pH	30	EP1	RTU	Dako	11100155	17	Dako FLEX	N	N
111	ULTRA BENCHMARK	COMMERCIAL	HIER	36	SP1	PEDILUTE	VENTANA	F27361	32	ULTRAVIEW	N	Y
112	BOND III	LDT	BOND ER2 pH 9.0	20 minutes	SP1	1:200	ThermoFisher	VB2932963 A	15 mintues @ RT	BOND Polymer Refine DAB	no	no
113	Ventana	LDT	Cell Conditioner 1	36	SP1	RTU	Roche	F12922	32	Ultraview	N	N
114	Dako Omnis	LDT	Envision Flex TRS, High pH	30	ER1	RTU	Dako	11100155	25	Envision FLEX DAKO Omnis	Y	N
120	Autostainer Link48	LDT	HIER Waterbath	20	EP1	RTU	Dako	11088752	20	Dako Envision Flex	N	N
123	Roche Benchmark Ultra	LDT	Roche CC1	36	SP1	predilute	Roche	F23615	32	Roche UltraView DAB	N	Y
125	Dako Omnis	LDT	HIER	30	SP1	RTU	Roche	F27359	30	Envision Flex	Y	N
127	BENCHMARK ULTRA	LDT	HIER	36 MIN	SP1	PREDILUTE	VENTANA	F18087	32 MIN	ULTRAVIEW DAB	Y	Y
128	Benchmark Ultra	LDT	CC1	64 mins	SP1	Ready to Use	Ventana/Roche	F27361	16min	Ultraview Universal DAB	No	No
129	Bond III	commercial assay	ER 2- High pH retrieval	20	SP1	undiluted	Ventana Roche RTU	F27359	20	Bond Refine Detection Kit	N	N
132	Dako Autostainer	LDT	High pH	20	EP1	RTU	Dako	11088752	20	Envision flex	N	N
134	Ventana Benchmark XT	LDT	HIER - CC1	30m	SP1	RTU	Ventana/Roche	E33042	8m	ultraView	N	N
136	DAKO AS480	LDT	DAKO PT HIGH	20	EP1	RTU	DAKO/AGILENT	1118106	20	DAKO ENVISION FLEX +	N	N
138	Dako OMNIS	LDT	High pH	30	EP1	RTU	Dako	11127656	20	Polymer	N	N
141	Ventana Benchmark XT	LDT	HIER - CC1	30m	SP1	RTU	Ventana/Roche	E33042	8m	ultraview	N	N
147	Leica Bond 3	LDT	ER 2 High PH	20	SP1	RTU	Roche/Ventana	F23615	15	Leica Refine Kit	N	N
149	Dako OMNIS	LDT	high pH OMNIS	20 min at 97 C	EP1	RTU	Dako Agilent	11100155	20	EnVision Flex OMNIS	Yes	No
151	BOND 111	COMMERCIAL	HIER 2	20MIN	SP1	RTU	VENTANA	F18087	15 MIN	BOND REFINE	N	N
159	Autostainer 48 Link	Commercial	Flex TRS High	40 min.	EP1	RTU	Dako, Agilent	11088752	20	Dako Flex	N	N
160	BenchMark Ultra	LDT	CC1	36 MIN	SP1	PRÄ% DILUÄ%	VENTANA	F18087	8 MIN	ULTRA-VIEW	N	Y
175	Ventana	commercial	HIER	36	SP1	Pre dilute	Roche	F27361	32	Ultra DAB polymer	N	Y
180	Ventana Ultra	commercial assay	CC1-32	32	SP1	RTU	Ventana	790-4324	16	Ventana OptiView	N	N
183	Ventana Benchmark	LDT	ULTRA CC1	36	SP1	RTU	VENTANA	F21057	32	ULTRAVIEW	N	N
186	LEICA BOND III	LDT	HIER	20	SP1	1:50	THERMOSCIE NTIFIC	9101S1904 E	15	BOND POLYMER REFINE DETECTION	N	N
187	Bench Mark Ultra	commercial assay	CC1	16	SP1	Predilute	Roche	F27361	8	Optiview	N	N
190	Roche Ventana Benchmark Ultra	LDT	HIER	36	SP1	RTU	ROCHE	F27361	32	iView DAB	N	N
192	BenchMark Ultra	Commercial assay	Ultra CC1	36 minutes	SP1	Ready to use	Ventana/Roche	F27361	16 minutes	Ventana Ultraview DAB	N	Y (copper)
194	ULTRA BENCHMARK	LDT	HIER - CC1	64	SP1	RTU	ROCHE	F23615	16	ULTRAVIEW	N	Y
196	Benchmark ultra	Commercial assay	n/a	n/a	sp1	no	ventana	F27361	8	dab	n	n
198	Dako Omnis	LDT	HIER	30	EP1	RTU	Dako-Agilent	10147122	30	Envision FLEX	N	N
199	Bond-III	LDT	Bond ER-1	20	6F11	RTU	Leica/Novocast a	66418	15	Refine Detection-DAB	N	N
202	Leica Bond III	LDT	HIER PH 6.0	15	6F11	1/100	NCL-Leica	6072375	15	Bond refine detection kit	N	N
207	BenchMark Ultra	LDT	CC1-Online	36 minutes	SP1	Prediluted	Ventana	F27359	16 minutes	Ultraview DAB	N	Y
209	Dakoautostainer 48	LDT	HIER	20	EP1	Prediluted	Dako	11118106	35	Polymer	N	N
217	ultra	ldt	hier ventana cc1	64	sp1	rtu	roche	e22622	20	optiview	n	y
220	Ventana BenchMark Ultra	commercial assay	HIER	36	sp1	PRE DILUTE	VENTANA	F27361	36	Ventana ultraview	N	Y
230	Benchmark Ultra	LDT	HIER	64	SP1	predilute	Roche Diagnostics	F30879	32	Ultraview	N	N
233	Benchmark Ultra	LDT	CC1	36 min	SP1	NA	Roche	F27359	16 min	Ultraview DAB	n	y
242	Leica Bond III	commercial assay	Heat Induced Epitope Retrieval	20 minutes	6F11	Ready to Use	Leica Biosystems	66418	15	DAB	N	N
243	Bond III	Commercial Assay	HIER- high PH	20 minutes	6F11	N/A	leica	66090	15 minutes	polymer- refine dection	N	N

**Table S2. Reported PR staining protocols.**

Lab ID	Platform/instrument	LDT or commercial assay	Ag Retrieval Method	Time for Ag Retrieval (min)	Ab Clone	Ab Dilution	Ab Supplier/ Vendor	Ab Lot No.	Time for Ab Incubation (min)	Detection System	Amplification (Y/N)	Enhancement (Y/N)
101	DAKO OMNIS	LDT	EnVision FLEX TRS HIGH pH	30 MIN	PgR 1294	RTU	DAKO	11118088	25 MIN	DAKO Envision FLEX	N	N
102	Dako Autostainer 48 Link	LDT	Dako retrieval solution 9.0	20	312	1/200	Leica	6074381	30" RT	Dako Envision Flex	N	yes CuSO4
103	Benchmark Ultra	Commercial	CC1	64	100	pre	Ventana	F18093	16	Ultra view	No	copper
106	Ventana Bench Ultra Benchmark	LDT	Heat	64	PgR 1294	1:525	Dako/Agilent	10144176	32	Optiview	N	N
107	Dako Omnis	LDT	Dako FLEX TRS High pH	30	PgR1294	RTU	Dako	11118088	15	Dako FLEX	N	N
111	ULTRA BENCHMARK	COMMERCIAL	HIER	32	16	1/80	LEICA	6061976	32	OPTIVIEW	N	Y
112	BOND III	LDT	BOND ER2 pH 9.0	12 minutes	16	RTU	LEICA	66685	15 minutes @ RT	BOND Polymer Refine DAB	none	none
113	Ventana	LDT	Cell Conditioner 1	32	16	1/60	Leica	6069409	32	Optiview	N	N
114	Dako Omnis	LDT	Envision Flex TRS, High pH	30	1294	RTU	Dako	10147124	25	Envision FLEX DAKO Omnis	N	N
120	Autostainer Link48	LDT	HIER Waterbath	20	PgR636	RTU	Dako	10148933	20	Envision Flex+	Y	N
123	Roche Benchmark Ultra	LDT	Roche CC1	64	16	1/25	Leica NCL	6072364	60	Roche UltraView DAB	n	y
125	Dako Omnis	LDT	HIER	30	PgR 1294	1/200	Dako	11101768	20	Envision Flex	N	N
127	BENCHMARK ULTRA	LDT	HIER	36 MIN	100	PREDILUTE	VENTANA	F13878	8 MIN	ULTRAVIEW DAB	Y	Y
128	Benchmark Ultra	LDT	CC1	64 mins	100	Ready to Use	Ventana/Roche	F30879	16min	Ultraview Universal DAB	No	No
129	Bond III	commercial assay	ER 2- High pH retrieval	20	16	1:400	Novacastra	6061976	20	Bond Refine Detection Kit	N	N
132	Dako Autostainer	LDT	High pH	20	NCL-L-PGR-312	1:200	Leica	6069409	30	Envision flex	N	N
134	Ventana Benchmark XT	LDT	HIER - CC1	30m	100	RTU	Ventana/Roche	F04649	12m	ultraView	N	N
136	DAKO AS480	LDT	DAKO PT LOW	20	PGR 636	RTU	DAKO	11088778	20	DAKO ENVISION FLEX +	N	N
138	Dako OMNIS	LDT	High pH	30	PgR 1294	RTU	Dako	10150992	20	polymer	n	n
141	Ventana Benchmark XT	LDT	HIER - CC1	30m	100	RTU	Ventana/Roche	F04649	12m	ultraview	N	N
147	Leica Bond 3	LTD	ER2 High PH	20	PGR 312	800	Leica	6061976	15	Leica Refine Kit	N	N
149	Dako OMNIS	LDT	high pH OMNIS	20 min at 97 C	PgR1294	RTU	Dako Agilent	10153468	20	EnVision Flex OMNIS	No	No
151	BOND 111	COMMERCIAL	HEIR 1	20MIN	16	1:100	NCL	6060299	15 MIN	BOND REFINE	N	N
159	Autostainer 48 Link	Commercial	Flex TRS High	40 min.	PgR 636	RTU	Dako, Agilent	10154161	30	Dako Flex	N	N
160	BenchMark Ultra	LDT	CC1	36 MIN	100	PR <sup>A</sup> %-DILU <sup>A</sup> %	VENTANA	F18093	8 MIN	ULTRA-VIEW	N	Y
175	Ventana	commercial	HIER	64	100	Pre dilute	Roche	F30879	32	Ultra DAB polymer	N	Y
183	Bond Max	LDT	ER2	30	16	RTU	LEICA/NOVOC ASTRA	65814	15	POLYMER REFINE	N	N
186	LEICA BOND III	LDT	HIER	30	16	1:200	LEICA	6066488	15	BOND POLYMER REFINE DETECTION	N	N
187	Bench Mark Ultra	commercial assay	CC1	64	IE2	Predilute	Roche	F30879	12	Optiview	N	N
190	Roche Ventana Benchmark Ultra	LDT	HIER	36	16	1:50	Leica	6061976	32	iView DAB	N	N
192	BenchMark Ultra	Commercial assay	Ultra CC1	36 minutes	100	Ready to use	Ventana/Roche	F30879	16 minutes	Ventana Ultraview DAB	N	Y (copper)
194	ULTRA BENCHMARK	LDT	HIER - CC1	64	100	RTU	ROCHE	E30224	16	ULTRAVIEW	N	Y
196	Benchmark ultra	Commercial assay	n/a	n/a	100	no	ventana	F24155	8	dab	n	n
198	Dako Omnis	LDT	HIER	30	PgR 1294	RTU	Dako-Agilent	10153468	15	Envision FLEX	Y	N
199	Bond-III	LDT	Bond ER-1	20	16	1:200	Leica/Novocast	6066488	15	Refine Detection-DAB	N	N
202	Leica Bond III	LCT	HIER PH 6.0	20	16	RTU	Leica	66685	15	BOND POLYMER REFINE DETECTION KIT	N	N
207	BenchMark Ultra	LDT	CC1-on line	32 minutes	16-Leica	1/100	Leica	6072381	32 minutes	Optiview	N	Y
209	Dakoautostainer 48	LDT	HIER	20	PgR636	None	Dako	10151715	20	Polymer based	Y	N
217	ultra	ldt	hier ventana cc1	64	100	rtu	roche	f04649	16	optiview	n	y
220	Ventana BenchMark Ultra	commercial assay	HIER	36	100	PRE DILUTE	VENTANA	F30879	12	Ventana ultraview	N	Y
230	Benchmark Ultra	LDT	HIER	64	100	predilute	Roche Diagnostics	F30879	16	Ultraview	N	N
233	Benchmark Ultra	LDT	CC1	48 min	16	1/100	Leica	6072364	32	Optiview DAB	n	y
242	Leica Bond III	commercial assay	Heat Induced Epitope Retrieval	20 minutes	16	Ready to Use	Leica Biosystems	65162	15	DAB	N	N

**Table S3. Reported HER2 staining protocols.**

Lab ID	Platform/instrument	LDT or commercial assay	Ag Retrieval Method	Time for Ag Retrieval (min)	Ab Clone	Ab Dilution	Ab Supplier/Vendor	Ab Lot No.	Time for Ab Incubation (min)	Detection System	Amplification (Y/N)	Enhancement (Y/N)
101	DAKO OMNIS	LDT	EnVision FLEX TRS HIGH pH	30 MIN	4B5	1:8	ROCHE DIAGNOSTICS	F20661	15 MIN	DAKO Envision FLEX	N	N
102	Dako Autostainer 48 Link	LDT	Dako retrieval solution 9.0	20	SP3	1/80	Cell Marque	50420	25	Dako Envision Flex	N	yes CuSO4
103	Benchmark Ultra	Commercial	36	16	4B5	Pre	Ventana	F22519	16	Ultraview	No	Copper
106	Dako Omnis	LDT	Heat High pH	30	4B5	1/5	Roche/Ventana	G00616	20	Envision Flex	N	N
107	Dako Omnis	LDT	Dako FLEX TRS High pH	30	Polyclonal (Rabbit)	1:1000	Dako	20067288	12	Dako FLEX	N	N
111	BENCHMARK ULTRA	COMMERCIAL	HIER	36	4B5	PREDILUTE	VENTANA	G607317	32	ULTRAVIEW	N	Y
112	BOND III	LDT	BOND ER2 pH 9.0	20 minutes	4B5	1:4 ration of RTU	Ventana/Roche	F24837	15 minutes @ RT	BOND Polymer Refine DAB	none	none
113	Ventana	LDT	Cell Conditioner 1	36	SP3	1/50	Cell Marque	57447	20	Ultraview	N	N
114	Dako Omnis	LDT	Envision Flex TRS, High pH	30	4B5	1:8	Roche	G01326	25	Envision FLEX DAKO Omnis	N	N
120	Autostainer Link48	LDT	HIER Waterbath	40	Hercept	RTU	Dako	20075497	30	Envision Flex+	N	N
123	Roche Benchmark Ultra	LDT	Roche CC1	36	4B5	predilute	Roche	F30654	24	Roche UltraView DAB	N	Y
125	Dako Omnis	LDT	HIER	30	A0485	1/800	Dako	20067288	10	Envision Flex	N	N
127	BENCHMARK ULTRA	LDT	HIER	36 MIN	4B5	PREDILUTE	VENTANA	G00616	24 MIN	ULTRAVIEW DAB	Y	Y
129	Bond III	commercial assay	ER 2- High pH retrieval	20	SP3	1:50	ThermoFisher Scientific	VA2931211	20	Bond Refine Detection Kit	N	N
136	DAKO AS480	HERCEPT TEST KIT	DAKO PT LOW	40	A0485	RTU	DAKO	20076620	30	DAKO ENVISION FLEX +	N	N
138	Autostainer Link 48	LDT	High pH	40	4B5	RTU	Ventana	00F15240	30	polymer	n	n
147	Leica Bond 3	LTD	ER2 High PH	20	4B5	5	Roche/Ventana	F30654	15	Leica Refine Kit	N	N
149	Dako OMNIS	LDT	high pH OMNIS	20 min at 97 C	A0485	1:800	Dako Agilent	20062529	20	EnVision Flex OMNIS	No	No
151	BOND 111	COMMERCIAL	HIER 2	20MIN	SP3	1:50	THERMO	TL2673411	15 MIN	BOND REFINE	N	N
160	BenchMark Ultra	LDT	CC1	36 MIN	4B5	PRÄDILUÄ%	VENTANA	G00616	16 MIN	ULTRA-VIEW	N	Y
175	Ventana	commercial	HIER	36	4B5	Pre dilute	Roche	g00616	16	Ultra DAB polymer	N	Y
181	Ventana Benchmark	commercial	CC1 onboard	30 minutes	4B5	pre-dilute	ROCHE	F30654	16 min	Ventana Ultraview DAB	N	Y
186	LEICA BOND III	LDT	HIER	20	HER2	1:400	DAKO	20067287	15	BOND POLYMER REFINE DETECTION	N	N
187	Bench Mark Ultra	commercial assay	CC1	16	4B5	Predilute	Roche	F30653	24	Optiview	N	N
190	Roche Ventana Benchmark Ultra	LDT	HIER	36	4B5	RTU	ROCHE	G07317	24	iView DAB	N	WITH BLOCKER
194	ULTRA BENCHMARK	LDT	HIER - CC1	36	4B5	RTU	ROCHE	G00616	12	ULTRVIEW	N	Y
198	Dako-Omnis	LDT	HIER	20	4B5	1/5	Ventana	F30653	20	Envision FLEX	N	N
199	Bond-III	LDT	Bond ER-2	20	SP3	1:300	Cell Marque	47144	15	Refine Detection-DAB	N	N
202	DAKO Autostainer	Commercial	HIER PH 6.0	40	Cerb2	RTU	Dako/Agilent	20076620	30	Herceptest Kit for Autostainer Platform	N	Y
207	BenchMark Ultra	LDT	CC1-On line	36 minutes	4B5	Prediluted	ventana	G00616	16 minutes	Ultraview	N	Y
217	ultra	ldt	hier ventana cc1	32	4b5	rtu	roche	f30654	20	optiview	n	y
220	Ventana Benchmark Ultra	commercial assay	HIER	36	4B5	PRE DILUTE	VENTANA	F29872	12	Ventana ultraview	N	Y
230	Benchmark Ultra	LDT	HIER	32	4B5	predilute	Roche Diagnostics	G02631	16	Ultraview	N	N
233	Benchmark Ultra	LDT	CC1	36 min	4B5	NA	Roche	F248437	16 min	Ultraview DAB	N	Y

**Table S4. Proficiency Testing Definitions of IHC Status.**

IHC Status	Definition	Proficiency Testing Performance
<b>Optimal</b>	All expected targets are identified appropriately and demonstrate the expected staining intensity. Absence of non-specific staining (no background staining).	<b>PASS</b>
<b>Adequate</b>	All targets are identified, but intensity of staining is weaker than optimal or there is false-positive staining which does not interfere with interpretation.	<b>PASS</b>
<b>Sub-optimal</b>	None or only some targets are identified OR all targets are identified, but false-positive staining may interfere with interpretation.	<b>PASS, Conditionally<sup>1</sup></b>
<b>Failed</b>	The staining was considered to be of such poor quality that accurate readout of the test is unlikely or impossible.	<b>FAIL<sup>2</sup></b>
<b>Unsatisfactory</b>	Technical issue (e.g. unsuitable antibody selection, etc.)	<b>N/A</b>

1 – A one-time sub-optimal performance qualifies for a “Pass” result. Two successive “sub-optimal” results will be designated as a “Fail”.

1,2 – Please contact the CPQA-AQCP for assistance and, if necessary, inform your regional regulatory body as per the terms of your laboratory's accreditation provider.