cIQc Run 17 Assessor's Report

The following report is based on independent assessment of slides by a team of review pathologists, done at Saint John Regional Hospital, on Friday May 6, 2011.

The goal has been to improve the turnaround time in issue assessment reports by CIQC, with a report issued within 5-6 weeks of send out of unstained slides. We were not able to meet this goal on this run, as we became immersed in preparations for our annual Diagnostic Immunohistochemistry annual meeting in Vancouver, on June 4 and 5, but aim to do better in the future.

With the use of the website, it is now possible for participating labs to perform self-assessment of their results immediately, comparing their staining to that of the reference lab (available through a link on the CIQC website). This apparently worked, as the only lab with inadequate staining results for HER2 had self-identified the problem and requested unstained slides for CIQC testing before the assessment meeting.

The labs were assessed as showing optimal, suboptimal or inadequate staining for each marker (with results for individual labs provided in the spreadsheet sent out with this assessment overview), based on the criteria noted below:

HER2: optimal – no false positive or false negative results; suboptimal - 1 or 2 false negative or false positive results; inadequate – 3 or more false negative for false positive results.

ER: optimal – up to two false negative or false positive results; suboptimal – 3 or 4 false negative or false positive results; inadequate – 5 or more false negative or false positive results.

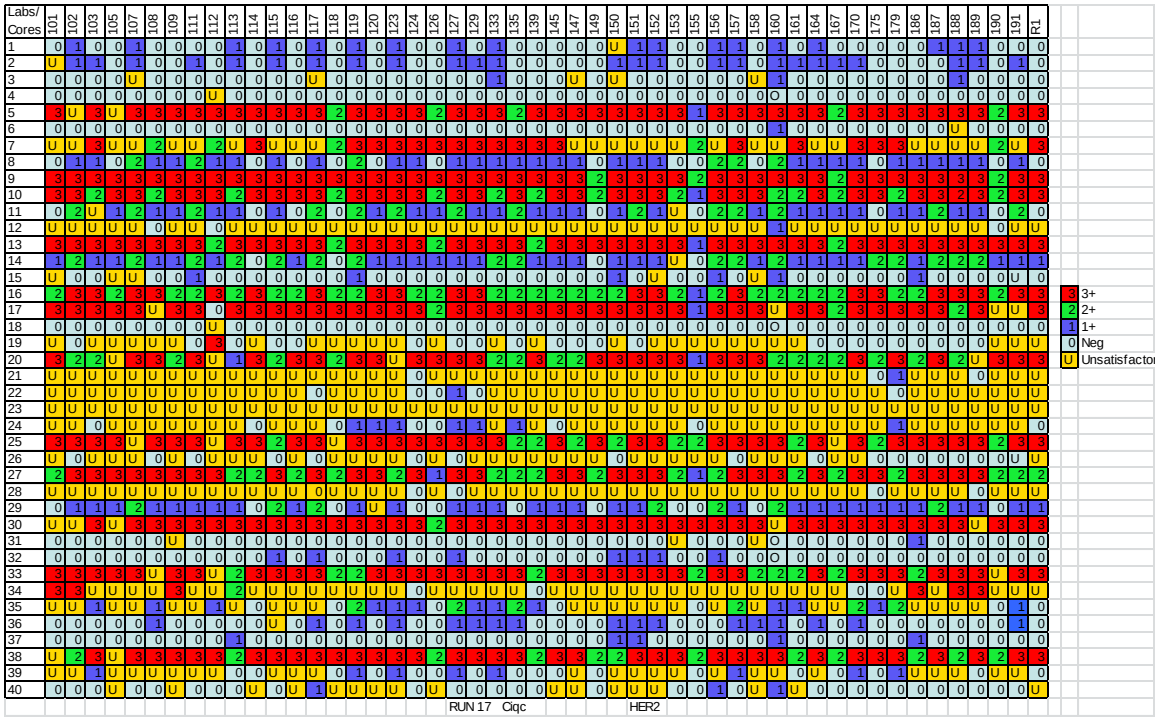
N.B. Assessment results are only available for those labs whose slides were available at the time of the assessment meeting May 6.

Technical notes about this run: There were a large number of unavailable cores in this run – sorry about that. We settled on a sample size of 40 cases but this run provided fewer than this number for technical reasons.

RESULTS SUMMARY

HER2: The HER2 testing results continue to be excellent in Canada (the upcoming paper in Canadian Journal of Pathology, showing greater than 99% sensitivity and specificity in testing for HER2 by IHC in Canada, based on two previous runs, is now published: Lu F-I et al. CJP, 2011). A single lab had inadequate staining, with multiple false negative results. As noted previously, they identified this problem themselves at the

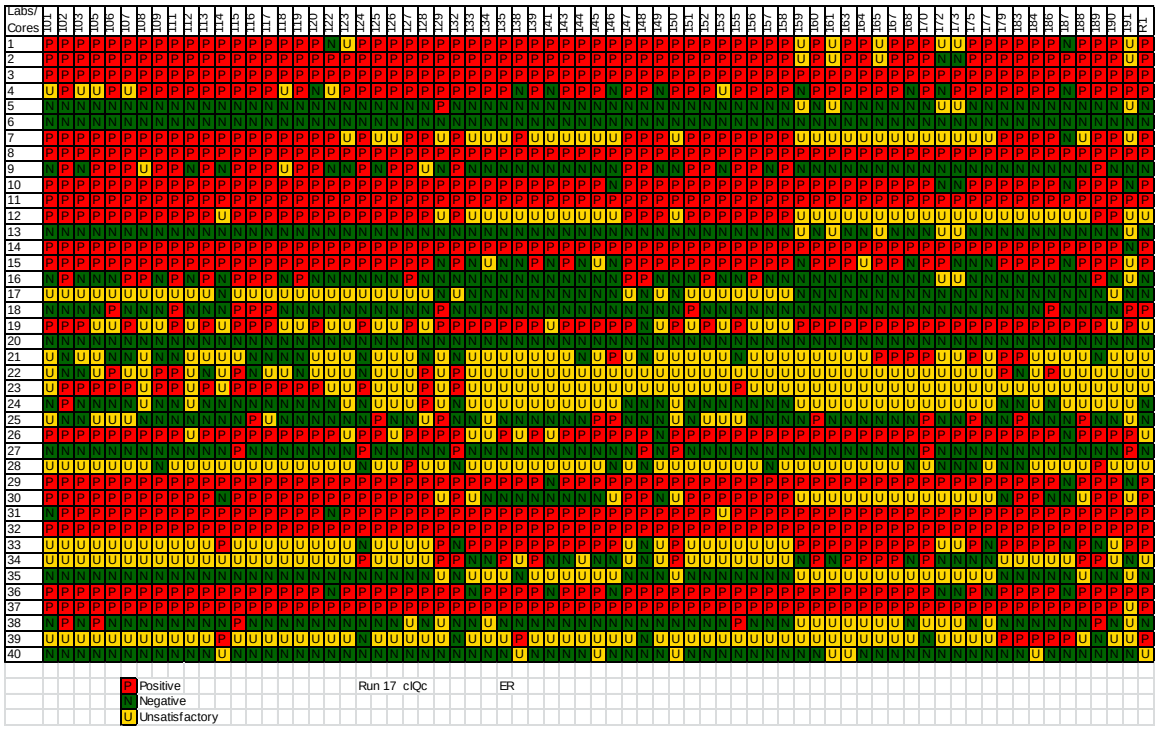
time of self-assessment and took appropriate steps. Apart from this lab, there only two false negative results (and no false positive results), with two labs each having a single false negative result. In one instance it was an interpretive error, as on review, the assessment team interpreted their staining as 2+; thus the assessment team felt that the staining quality in this lab was optimal. For the other lab there was suboptimal staining based on assessment review, with overall weak staining (i.e. cores that were 3+ for other labs showed only 2+ staining. Thus, although this lab had only one false negative result, it was assessed as having suboptimal staining. Staining for all other labs was considered optimal. In summary, there was a single lab with inadequate staining, one lab with suboptimal staining, and for all other participating labs, HER2 staining was considered optimal.



ER: This run presented more than the usual number of very challenging cases with weak ER staining. In particular, cores 9, 16 and 36 proved challenging, with definite but weak staining in some/most labs, but with other labs getting negative results. (Note that core 36, which several labs scored as ER negative, was uniformly PR positive for all labs). Core 4 and 15 had very few tumor cells in sections stained by many labs, and these cores were excluded from the assessment as being non-informative. Core 38 was reported as positive in some labs but this was invariably due to staining of benign cells, and the tumor cells were uniformly ER negative, for all participating labs, based on assessment review. Core 18 was particularly problematic. A few labs did have very weak positive staining of this case, a high-grade carcinoma, with most labs finding it to be completely ER negative. These variable results were confirmed by the assessment team. This case illustrates a challenge in determination of reference values for individual cases – we

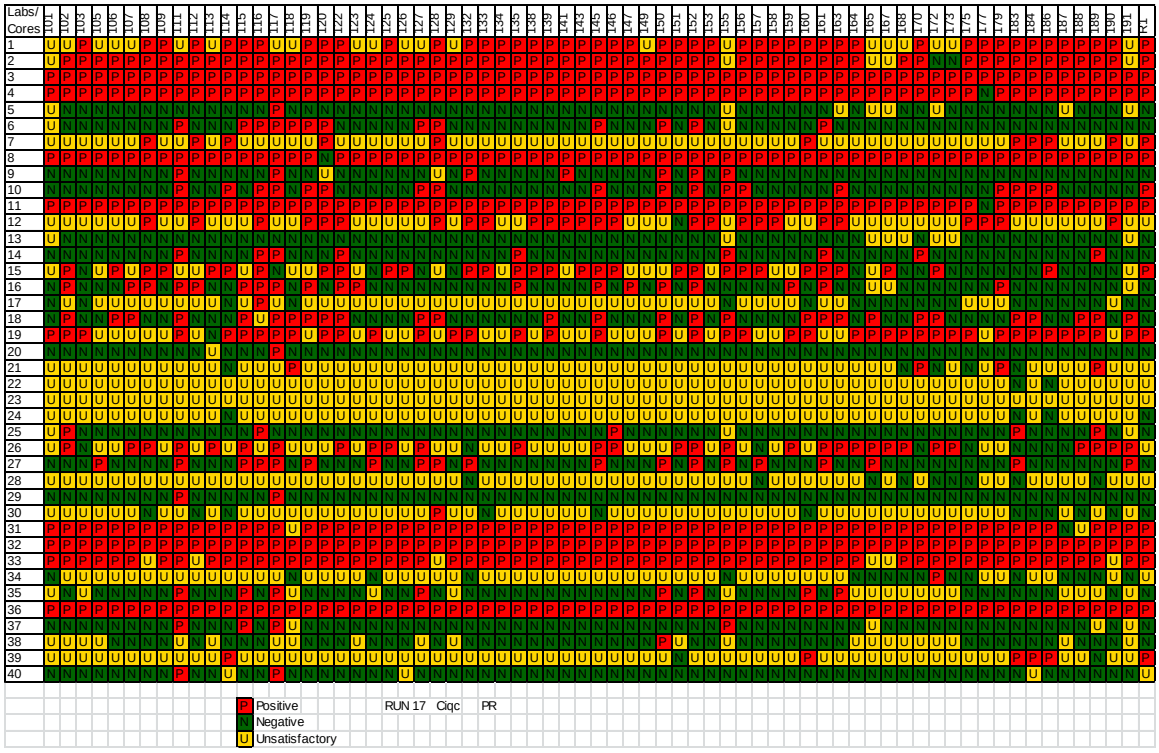
simply do not know whether this is a truly ER positive or ER negative case. It was therefore excluded from the assessment in assignment of categories (i.e. optimal versus suboptimal). This problem is being actively addressed by CIQC as follows: Heather Neufeld, a graduate student at the University of Saskatchewan under the supervision of Dr. Emina Torlakavic, is developing cell lines that will hopefully provided test samples with uniform and quantifiable ER and PR expression. These will then be provided as proficiency testing and in combination with quantification of staining by image analysis (as described in the recent CIQC publication: The laboratory score/reference score ratio is a novel tool for monitoring laboratory performance in immunohistochemistry proficiency testing of hormone receptors in breast cancer: the CIQC experience. CC Cheung et al, Am J Clin Pathol 2011;136:67-73).

Overall, the staining for ER was good in this run, but as we reviewed cases, the assessment team noticed a pattern of relatively weaker staining, with increased cytoplasmic background staining, on some slides. When we looked at the protocols, this pattern was seen in labs using the 1D5 mouse monoclonal antibody. We have previously shown that, at least in our hands, 1D5 is less sensitive than SP1 rabbit monoclonal (M MC Cheang et al, J Clin Oncol 2006;24:5637-5644). NordiQC has also reported poor results for labs using this Ab and recommend against its use. We would therefore suggest that the 1D5 Ab not be used for ER testing. Labs were able to obtain optimal staining results with both 6F11 and SP1, for example, and these are alternative primary Abs to 1D5.



PR: The problems we face with ER staining noted above, in knowing what the "true" result is in reference samples, is even worse with PR staining. Unlike ER staining, for example, there are reports of false positive PR staining, and in an individual case where one lab sees positive staining and another lab does not, we do not know what the correct answer is. In practice, PR positivity is seen almost exclusively in ER positive cases, and in these ER positive cases PR positivity provides prognostic information but does not guide therapy.

Looking at the self assessment Garratograms, there are cores that all labs scored as PR positive, and cores that all labs scored as PR negative, but there are more cores where there are some labs with positive staining for PR and other labs with negative staining for PR on the same case. It is very obvious that for these cores (e.g. cores 6, 9, 10, 14, 16, 18, 35 and 37) labs tend to either have all or most of them stain positively (that is, have more "sensitive" PR staining, or stain few or none of these cases. At present we have no way of knowing what is the correct staining pattern for these cases, and accordingly have offered general, qualitative comments on PR staining, based on review, but not classified staining as optimal, suboptimal or inadequate, as we have done for HER2 and ER. As for ER, we hope that use of cell lines where PR protein can be quantified biochemically will allow more accurate assessment of PR staining in future CIQC runs. Note that ALL labs saw significant cytoplasmic staining of tumor cells for core 15, a most unusual finding and one of uncertain significance.



Laboratory Protocols

Labs	Clone	Dilution	Supplier	Antigen Retrieva	Detection System	Enhancement	Chromogen
101	6F11	1:50	Novocastra	CC1	DAB I-View	AMP Kit	DAB
102	SP1	1/50	Dako	1mM EDTA pH 9.0	Envision+	Copper Sulphate	DAB
103	SP1	predilute	Ventana	CC1	Iview	none	DAB
105	SP1	1:50	Thermoscientific	CC1/standard	Discovery ultramap anti-rabbi	na	ChromoMap DA
106	6F11	1:75	Vector	0.1M Tris-HCl, pH	Elite Avidin/Biotin	None	DAB
107	SP1	Pre-dilute	Ventana	Ventana CC1	Ventana ultraView	none	DAB
108	PHARMdX	PHARMdX	Dako	PHARMdX	PHARMdX	n/a	DAB
109	6F11	1/40	Vector	CC1-High pH (Ven	UltraView DAB (Ventana)	Copper sulphate	DAB
111	SP1	PREDILUTE	VENTANA	CC1 MILD (30 MIN	ULTRAVIEW DAB	COPPER	DAB
112	SP1	PREDILUTE	ROCHE/VENTAN	CC1	ultraVIEW	COPPER	DAB
113	SP1	Predilute	Ventana	CC1	Ultraview	CuSO4	DAB
114	SP1	1:50	Thermo Fischer	CC1 Mild	iView (Ventana)	none	DAB
115	SP1	prediluted	ventana	CC1	I-view DAB	Copper	DAB
116	sp1	RTU	Ventana	CC1 (EDTA)	ultraview DAB detection	no	DAB
118	SP1	RTU	Ventana	sCC1	DABmap	Copper	DAB
119	SP1	PRÃ‰-DILUÃ‰	VENTANA	CC1	ULTRA-VIEW	-	DAB
120	SP1	RTU	Ventana	CC1	Ultra-View	None	DAB
122	6F11	RTU	Leica-Microsyst	ER1/Ph 6.0	Polymer Refine	N/A	DAB
123	SP1	predilute	Roche	CC1	UltraView polymer	copper	DAB
124	SP1	1/30	Cell-marque	CC1 30 min	Kit DAB I view	no	DAB
125	SP1	pre-dilute	Ventana	Ventana CC1	Ventana ultraView	Ventana Copper	DAB
126	SP1	1:250	ThermoFisher	10 mM citrate pH 6	Envision+	no	DAB+
127	SP1	predilute	Ventana	Ultra CC1	Benchmark UltraView	n/a	DAB
128	ER (SP1)	Prediluted	Ventanna	CC1	Ultraview Dab	Copper	DAB
129	6F11	1:125	Novacastra	Bond ER2 high pH	Bond Refine Kit	No	DAB
132	6F11	1:80	VECTOR	FLEX	FLEX	NONE	DAB
133	sp1	1/50	dako	high ph9.0	envision flex polymer dako	mouse linker	dab
134	100	Predilute	Ventana	Citrate Buffer	DAB IView	None	DAB IView
135	NCL-L-ER 6F11	1:100	Leica	ER2	Bond refined polymer	none	DAB
138	SP1	RTU	Dako	TRS High pH	Flex+	None	DAB
139	SP1	Ready use	Ventana	CC1	Iview DAB	no	DAB
141	6F11	predilute	Leica	Citrate pH 6	LSAB2	none	DAB
143	SP1	no	Confirm Ventan	CC1 Standard (60	IView DAB detection Kit	NO	DAB
144	SP1	Pre-Dilute	Ventana	CC1 30 Min	Ultraview	Copper	DAB
145	SP1	1/20	VENTANA	CC1	XT ULTRAVIEW	YES	DAB
146	SP1	RTU	Dako	FLEX TRS High	EnVision FLEX Peroxidase/HR	None	DAB
147	6F11	1:125	NCL	ER2 (edta, pH9)	REFINE (Leica)	N/A	DAB
148	SP1	N/A	Ventana	CC1	iView	None	DAB
149	6F11	1:50	Vector Labs	CC1 Ventana stan	Ultraview	copper solution	DAB
150	SP1	ready to use	ventana	cc1	iview	cuivre	dab
151	ER 6F11	1:80	NOVACASTRA	HEIR2	BOND POLYMER	NO	DAB
152	SP1	Pre-diluted	Ventana	CC1 (mild)	iVIEW	Copper Sulfate	DAB
153	SP1	ready to use	Ventana	CC1 court	Ultraview dab	Ultra view coope	Dab
155	Er (SP1)	1 ug/ml	Ventana	CC1 30 min	Ultraview dab	ultraview copper	Dab
156	SP1	pre-diluted	Ventana	CC1	iview dab	-	Dab
157	SP-1	PRE-DILUTED	VENTANA	CC1 30 MIN.	ULTRAVIEW BENCHMARK	YES	YES
158	PharmDx ER An	Ready to use	DAKO	DAKO ER/PR retrie	DAKO ER/PR Visualization rea	N/A	DAB
159	1D5	1/25	DAKO	pH 9	Envision	none	DAB
161	SP1	RTU	DAKO Autostain	High EDTA buffer	Envision FLEX	no	DAB
163	SP1	Pre-diluted	Ventana	Cell Conditioner #1	PAP	none	DAB
164	SP1	ready to use	Ventana 790-43	CC1/ 36min	BenchmarkUltra (NEW)	no	ultraDAB
165	sp1	ventana	ventana	cc1	ultraview	ultraview	dab
167	.	..	...	....	.....	.....	.....
168	SP1	RTU	Dako	High pH	Envision Flex	non	Flex DAB+
170	sp1	ready to use	dako	yes	dako	no	dab
172	DAKO SP1	pre-diluted by d	dako	97C 20min pH9	Envision Flex +	No	DAB
173	1D5	Pre-dilute	Dako	Citrate ph 6	Invitrogen Histostain Plus	ABC	DAB
175	SP1	pre-diluted	Ventana	CC1	iView DAB detection kit	none	DAB
177	6F11	1:50	Novocastra	CC1 30 min	Ventana Ultraview	yes	DAB
179	6F11	1:100	Novocastra	Diva Decloaker Bio	Revel Spring	Hematoxilin	DAB
183	SP1	predilute	Ventana	CC1	Ultraview	none	DAB
184	1D5 & ER-2-12	K4071 - predilu	Dako	K4071, citrate buf	K4071, dextranpolymer	none	K4071, DAB+
186	SP1	1:50	LabVision	Bond H1 (citrate)	Bond (Leica) Refine	none	DAB
187	ID5	1:40	Dako	Citric Acid pH 6.0	Universal Polymer	None	DAB
189	SP1	predilute	Ventana	CC1	UltraView DAB	Copper	DAB
190	SP1 rabbit	prediluted	Ventana	CC1 mild	Ventana XT	none	Iview DAB
R1	SP1	1:50	ThermoFisher	CC1	iView	non	DAB
				Run 17 ER			

Labs	Clone	Dilution	Supplier	Antigen Retrieval S	Detection System	Enhancement	Chromoger
101	16	1:100	Novocastra	CC1	DAB I-View	no	DAB
102	16	1/90	Leica	1mM EDTA pH9.0	Envision+	Copper Sulphate	DAB
103	100	predilute	Ventana	CC1	Iview	none	DAB
105	PgR 636	1:100	Dako	CC1 standard	Discovery Ultramap anti-r	na	ChromoMap I
106	1294	1:1250	Dako	0.1 M Tris-HCl, pH 9.(	Elite Avidin/Biotin	None	DAB
107	PgR 1294	1:50	Dako	Ventana CC1	Ventana ultraView	Ventana Amp Kit	DAB
108	PHARMdX	PHARMdX	Dako	PHARMdX	PHARMdX	n/a	DAB
109	16	1/100	Vector	CC1 High pH(Ventan	UltraView DAB (Ventana	Copper Sul.	DAB
111	100	PREDILUTE	VENTANA	CC1 MILD (30 MIN)	ULTRAVIEW DAB	COPPER	DAB
112	100	PREDILUTE	ROCHE/VENTAN	CC1	ultraVIEW	COPPER	DAB
113	PgR636	1/40	DAKO	Citrate	LSAB+	CuSO4	DAB
114	Clone 16	1:50	Novocastra	CC1 Mild	iView (Ventana)	none	DAB
115	100	prediluted	Ventana	CC1	I-view DAB	Copper	DAB
116	100	RTU	Ventana	CC1 (EDTA)	ultraview DAB detection	no	DAB
118	100	RTU	Ventana	sCC1	DABmap	Copper	DAB
119	100	PRA‰-DILUA	VENTANA	CC1	ULTRA-VIEW	-	DAB
120	100	RTU	Ventana	CC1	Ultra-View	None	DAB
122	16	RTU	Leica-Microsyst	ER2/Ph9.0	polymer Refine	N/A	DAB
123	16	1/50	Vector Laborato	CC1	Ultraview polymer	copper	DAB
124	100	Pre diluted	Ventana	CC1 30 min	Kit DAB I view	no	DAB
125	100	pre-dilute	Ventana	Ventana CC1	Ventana ultraView	Ventana Copper	DAB
126	636	1:500	Dako	10mM citrate pH 6.0	Envision+	no	DAB+
127	10	predilute	Ventana	Ultra CC1	Benchmark UltraView	n/a	DAB
128	PR (1E2)	prediluted	Ventanna	CC1	Ultraview DAB	Copper	DAB
129	16	1:400	Dako	Bond ER2 high pH bu	Bond Refine Kit	No	DAB
132	16	1:200	VECTOR	FLEX	FLEX	NONE	DAB
133	1294	1/50	dako	low ph 6.0	envision flex polymer dak	none	dab
134	SP1	Predilute	Ventana	Citrate Buffer	DAB IView	None	DAB IView
135	16	1:400	Leica	ER2	Bond refined polymer	none	DAB
138	636	RTU	Dako	TRS High pH	Flex+	None	DAB
139	100	Ready use	Ventana	CC1	Iview DAB	no	DAB
141	PgR636	predilute	Dako	Citrate pH6	LSAB2	none	DAB
143	100	NO	Confirm Ventana	CC1 Standard (60')	IView DAB detection Kit	Engogenious Biotin	DAB
145	100	1/2	VENTANA	CC1	XT ULTRAVIEW	YES	DAB
146	PgR 636	RTU	Dako	FLEX TRS High	EnVision FLEX Peroxidas	None	DAB
147	16	1:800	NCL	ER2 (edta, pH9)	REFINE (Leica)	N/A	DAB
149	PfR 1294	1:200	Dako M3568	CC1 Ventana mild 32	Ultraview	copper solution	DAB
150	100	ready to use	ventana	cc1	iview	cuivre	dab
151	16	1:200	NOVACASTRA	HEIR1	BOND POLYMER	NO	DAB
152	100	Pre-diluted	Ventana	CC1 (mild)	iVIEW	Copper sulfate	DAB
153	100	Ready to use	Ventana	CC1 court	Ultraview Dab	Ultraview cooper	Dab
155	Pr (1E2)	1 ug/ml	Ventana	CC1 30 min.	Ultraview dab	Ultraview copper	Dab
156	IE2	Pre-diluted	Ventana	CC1	iview dab	-	Dab
157	IE 2	PRE DILUTED	VENTANA	CC1 30 MIN.	ULTRAVIEW BENCHMAR	YES	YES
158	PharmDx PI	Ready to use	DAKO	DAKO epitope retriev	DAKO ER/PR Visualizatio	N/A	DAB
159	PgR 636	PrÃ©diluted	DAKO	pH 6	Envision	none	DAB
161	PgR636	RTU	DAKO Autostair	High EDTA Buffer TR	Envision Flex	mouse linker	DAB
163	100	Pre-diluted	Ventana	Cell Conditioner #1	PAP	None	DAB
164	100	ready to use	Ventana 790-22	CC1/ 36min	BenchmarkUltra (NEW)	no	ultraDAB
165	100	ventana	ventana	cc1	ultravie	ultraview	dab
167	.	..	...	....	.....	.....	.....
168	PgR 636	RTU	Dako	High pH	EnVision Flex	mouse Linker	Flex DAB+
170	636	ready to use	dako	yes	envison flex dako	no	dab
172	Dako PgR 6	pre-diluted by	Dako	97C 20min pH9	Envision Flex +	No	DAB
173	PgR 636	Pre-Dilute	Dako	Citrate pH 6	Invitrogen Histostain Plus	ABC	DAB
175	IE2	pre-diluted	Ventana	CC1	iView DAB detection kit	none	DAB
177	pgr 636	1:100	DAKO	CC1 30 MIN	Ventana Ultrview	yes	DAB
179	SP42	1:200	Spring	Diva Decloaker BioC	Reviel Spring	Hematoxilin	DAB
183	100	predilute	Ventana	CC1	ultraview	none	DAB
184	PgR 1294	K4071; predil	Dako	K4071; citrate buffer	K4071; dextran polymer	none	K4071; DAB+
186	PR88	1:100	BioGenex	Bond H1 (citrate)	Bond (Leica) Refine	none	DAB
187	PgR 636	1/200	Dako	Citric Acid Ph 6.0	Universal Polymer	None	DAB
189	100	Predilute	Ventana	CC1	UltraView DAB	Copper	DAB
190	16	1:50	Novocastra	CC1 mild	Ventana	none	Iview DAB
R1	Clone 16	1:50	Novocastra	CC1 mild	iView	non	DAB
				Run 17 PR			

Labs	Clone	Dilution	Supplier	Antigen Retrieval S	Detection System	Enhancement	Chromager
101	SP3	1:50	Neomarker(The	CC1	DAB I-View	AMP Kit	DAB
102	SP3	1/200	Labvision	1mM EDTA pH9.0	Envision+	Copper Sulphate	DAB
103	4B5	Predilute	Ventana	CC1	Polymere	none	DAB
105	4B5	Neat	ventana	CC1 standard	DABMAP kit	na	DAB
107	4B5	Pre-dilute	Ventana	Ventana CC1	Ventana ultraView	none	Dab-Ventana
108	Herceptest	Herceptest	DAKO	Herceptest	Herceptest	n/a	DAB
109	4B5	RTU	Ventana	CC1 High pH (Ventar	ultraVIEW DAB	Copper Sul.	DAB
111	4B5	PREDILUTE	VENTANA	CC1 MILD (30 MIN)	ULTRAVIEW DAB	COPPER	DAB
112	4B5	PREDILUTE	ROCHE/VENTA	CC1	ultraVIEW	COPPER	DAB
113	polyclonal	1/100	Dako	Citrate	Iview	CuSO4	DAB
114	SP3	1:50	Thermo Fischer	CC1 Mild	iView (Ventana)	none	DAB
115	4B5	Prediluted	Ventana	CC1	I-view DAB	Copper	DAB
116	sp3	1/100	Neomarkers	CC1 (EDTA)	ultraview DAB detect	no	DAB
118	4B5	RTU	Ventana	sCC1	DABmap	Copper	DAB
119	C-ERB2	1/1000	DAKO	CC1	ULTRA-VIEW	-	DAB
120	4B5	RTU	Ventana	CC1	Ultra-View	None	DAB
123	4B5	predilute	Roche	CC1	Ultraview polymer	copper	DAB
124	4B5	pre diluted	Ventana	CC1 4 min	Kit DAB I view	no	DAB
126	SP3	1:300	ThermoFisher	TRIS-EDTA pH 9.0	Envision+	no	DAB+
127	4B5	predilute	Ventana	Ultra CC1	Benchmark Ultra	n/a	DAB
128							
129	A0485	1:600	Dako	Bond ER1 low pH but	Bond Refine Kit	No	DAB
133	ao485	1/400	dako	low ph 6.0	envision flex polymer	none	dab
135	A0485	1:700	Dako	ER1	Bond refined polymer	none	DAB
139	4B5	Ready use	Ventana	CC1	Iview DAB	no	DAB
145	4b5	1/40	ventana	CC1	XT ULTRAVIEW	YES	DAB
147	Polyclonal	1:300	Dako	ER1 (citrate, pH6)	REGINE (Leica)	N/A	DAB
149	SP3	1:200	Thermo Scientif	citrate pH 6.0	Impress Polymer	none	DAB
150	A0485	1:300	Dako	cc1	iview	cuivre	dab
151	c-erB-2 Onc	1:275	DAKO	HEIR1	BOND POLYMER	NO	DAB
152	4B5	Pre-diluted	Ventana	CC1 (standard)	iView	Copper Sulfate	DAB
153	SP3	1/100	Fisher (nÃ©o n	CC1 Court	Ultraview Dab	Ultraview cooper	Dab
155	Anti-Her-2/ne	6 ug/ml	Ventana	CC1 8 min.	Ultraview Dab	Ultraview copper	Dab
156	4B5	Pre-diluted	Ventana	CC1	iview dab	-	Dab
157	4B 5	PRE DILUTED	VENTANA	CC1 60 MIN.	ULTRAVIEW, BENCH	YES	YES
158	HercepTest I	Ready to use	DAKO	HercepTest Epitope F	DAKO HercepTest Vi	N/A	DAB
161	Herceptest r	RTU	DAKO autostai	Herceptest epitope re	Herceptest visualisat	no	DAB
164	4B5	ready to use	Ventana 800-2	CC1/ 36min	BenchmarkUltra (NEV	no	ultraDAB
167	.	..	...	....	.....	.....	.....
170	her 2 protein	ready to use	dako	yes	envision flex dako	no	dab
175	4B5	Pre-diluted	Ventana	CC1	iView DAB detection	none	DAB
179	CB11	1:400	Novocastra	Diva Decloaker Bioca	Revel Spring	Hematoxilin	DAB
186	polyclonal (A	1:200	Dako	Bond H1 (citrate)	Bond (Leica) Refine	none	DAB
187	Cerb-B2	1/750	Dako	Envision Flex pH 6.0	Monospecies Polyme	None	DAB
189	4B5	Predilute	Ventana	CC1	UltraView DAB	Copper	DAB
190	SP3 rabbit	1:50	Lab Vision	CC1 mild	Ventana XT	Ventana Amplifica	Iview DAB
R1	SP3	1:50	TermoFisher	CC1 mild	iView	non	DAB
			Run 17 HER2 Protocols				

ASSESSMENT TEAM NOTES

Lab	HER2	ER	ER notes	PR notes
101	optimal	suboptimal	cores 9, 16 and 31 were false negative for ER	
102	optimal	optimal	core 24 recorded as positive for ER, but negative on assessment review	
103	optimal	optimal	false neg ER for cores 9 and 16, and significant cytoplasmic background staining	
105	optimal	optimal	false neg ER for core 16	
106		optimal	false neg ER for core 16	
108	optimal	optimal		
109	optimal	optimal	false neg ER for core 16	
111	optimal	optimal		
112	optimal	optimal	false neg ER for cores 9 and 16	
113	optimal	optimal		
114	optimal	suboptimal	false neg ER for cores 9, 16 and 30	
115	optimal	optimal	core 27 called positive for ER, but only benign cells staining on review	
116	optimal	optimal		
117	optimal	optimal	false neg ER on core 16	
118	optimal	optimal		
119	optimal	optimal	false neg ER on core 16	
120	optimal	optimal	false neg ER on core 16	
122		suboptimal	false neg ER on cores 1, 9, 16, 31, and 36	
123	optimal	optimal	false neg ER on cores 9 and 16	relatively weak PR
124	optimal	optimal	core 27 recorded as ER pos but neg on review, with only benign cells staining, and false ER neg for core 16	relatively weak PR
125		optimal	false neg ER on cores 9 and 16	
126	suboptimal	optimal	false neg ER on core 16	
127	optimal	optimal	core 28 called ER pos but uninterpretable on review	
128		optimal	false neg ER on core 16	
129	optimal	optimal	false neg ER on cores 9 and 16, and cores 5, 15 and 24 were considered uninterpretable on review	
132		optimal	false neg ER on core 16, and core 27 called ER pos but only benign cells staining, based on review	
133	optimal	suboptimal	false neg ER on cores 9, 16 and 36 - core 15 considered uninterpretable on review	
134		optimal	false ER neg on core 9 - tissue severely distorted - perhaps too aggressive antigen retrieval	
135	optimal	optimal	false ER neg on cores 9 and 16, and core 15 considered uninterpretable on review	
138		suboptimal	false ER neg on cores 4, 9 and 16, cores 15 and 39 uninterpretable on review	
139	optimal	optimal	false ER neg on cores 9 and 16	
141		suboptimal	false ER neg on cores 4, 9, 16 and 36	
143		optimal	false ER neg on core 9	
144		optimal	false ER neg on cores 9 and 16, core 15 considered uninterpretable on review	
145	optimal	optimal	false ER neg on cores 9 and 16	
146		suboptimal	false ER neg on cores 4, 9, 10, 16 and 36	
147	optimal	optimal		
148		optimal		
149	optimal	suboptimal	false ER neg on cores 4, 9 and 16, and core 31 considered to be weakly ER pos on review	
150	optimal	optimal	false ER neg on cores 9 and 16	
151	optimal	optimal	false ER neg on core 16	
152	optimal	optimal		
153	optimal	optimal	false ER neg on cores 9 and 16	
155	inadequate	optimal	false ER neg on core 16	
156	optimal	optimal		
157	optimal	optimal	false ER neg on cores 9 and 16	
158	optimal	optimal	false ER neg on core 16	
159		suboptimal	high background, without crisp nuclear staining, and false negative for ER on cores 4, 9 and 16	
160	optimal	optimal	false ER neg on cores 9 and 16	
161	optimal	optimal	false ER neg on cores 9 and 16	
164	optimal	optimal	false ER neg on cores 9 and 16	relatively weak PR
165		optimal	false ER neg on cores 9 and 16	
167	optimal	optimal	false ER neg on cores 9 and 16	
168		suboptimal	false ER neg on cores 4, 9 and 19, with core 15 considered unsatisfactory based on review	
170	optimal	optimal	false ER neg on cores 9 and 16	
173		inadequate	false ER neg on cores 2, 9, 10, 15 and 36, with prominent cytoplasmic staining	relatively weak PR
175		suboptimal	false ER neg on cores 9, 15, 16	
177		suboptimal	false ER neg on cores 9, 15, 16 and 36	weak PR staining
179				
183		optimal	false ER neg on cores 9 and 16	
186	optimal	optimal	false ER neg on cores 9 and 16	
187	optimal	inadequate	false ER neg on cores 1, 4, 9, 10, 15, 16, 36	
188	optimal	optimal	false ER neg on cores 9 and 16	
189	optimal	optimal		
190	optimal	optimal	false ER neg on cores 9 and 16	relatively weak PR staining,