HistoCyte Laboratories

Quality in Control

BRAF Analyte Control

Product Introduction

Product Codes:

HCL056, HCL057, HCL058

Issue 1. 210609

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Product Name	Format	Code
BRAF Analyte Control (Two cores one negative and one positive for BRAF V600E mutation)	Slide (2)	HCL056
	Slide (5)	HCL057
	Block	HCL058

(For research use only)

What is BRAF?

B-Raf proto-oncogene is a gene encoding the BRAF protein belonging to the RAF family of serine/threonine protein kinases. This protein regulates the MAP kinase/ERK signalling pathway, which influences cell division, migration and differentiation[1].

The Role of BRAF in Cancer

V600E is a mutation of the BRAF gene in which valine is substituted by glutamic acid at amino acid 600. The negative charge of the glutamic acid mimics the phosphorylation of T599 threonine and S602 serine, causing an increase in basal BRAF activity. This mutation is therefore a key driver in the pathophysiology of a number of cancers, including melanoma, colorectal cancer and non-small cell lung cancer[2].

BRAF V600E mutations have been found in several types of cancers such as melanoma, papillary thyroid carcinoma and colorectal adenocarcinoma with a frequency of approximately 60%, 40% and 12% respectively[3]. Additionally, studies have shown that the prevalence of BRAF mutation in lung carcinoma is approximately 2-4%[4].

1. BMC Cancer. 2020; 20(1):368.
2. Int J Mol Sci. 2021;22(7):3474.
3. Cancers (Basel). 2019; 11(9): 1262.
4. Trans. Lung Cancer Res. 2019; 8(3): 258-267.

BRAF Assessment

There are a number of means to assess BRAF V600E mutations including reverse transcriptase-polymerase chain reaction (RT-PCR) and Next Generation Sequencing (NGS). Immunohistochemistry (IHC) assessment of BRAF V600E has been limited due to the high antibody cost and availability of reliable antibody clones. Detection with the antibody clone VE1 provides a sensitive and specific test for BRAF V600E mutations as an alternative to testing BRAF V600E mutations and MLH1 promoter hypermethylation using PCR.

Multiple guidelines (including NICE, NCCN, ASCO and EGAPP) recommend screening of all colorectal cancers for Lynch syndrome to increase cancer survival rate. After initial screening with the MMR panel, patients with an absence of MLH1 staining can be screened for BRAF V600E to identify sporadic colorectal cancer.

BRAF Analyte Control

The product consists of two cell lines: one positive for the BRAF V600E mutation, one negative for the BRAF V600E mutation. BRAF Analyte Control is sold in two formats: pre-prepared slides (Figure 2) or as a cell microarray (CMA) paraffin wax block (Figure 3).

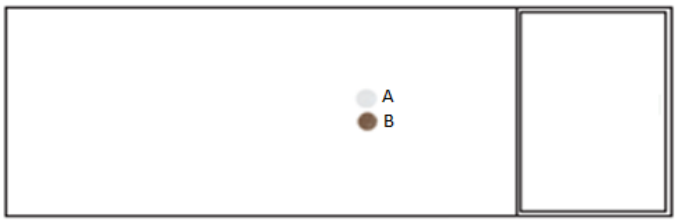


Figure 2: Cell Line Control Slide

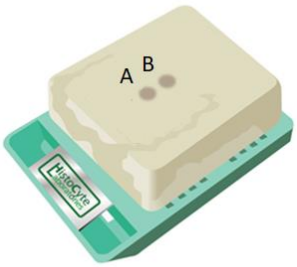
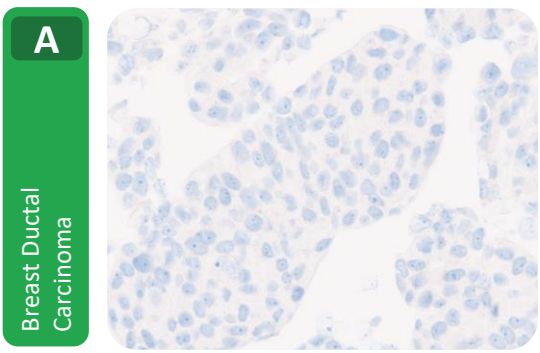


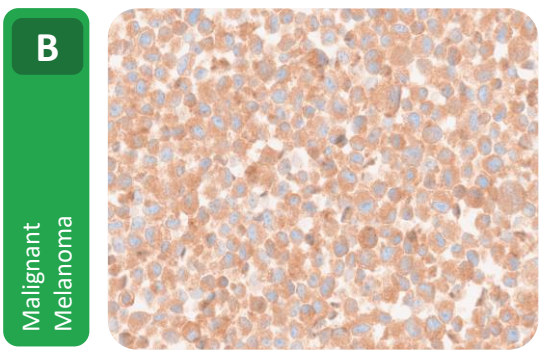
Figure 3: CMA block

The expression patterns of the 2 cell lines for the BRAF V600E mutation using IHC are summarised in the table below.

	Cell Lines	BRAF IHC
A	Breast Ductal Carcinoma	Negative
B	Malignant Melanoma	BRAF V600E Positive

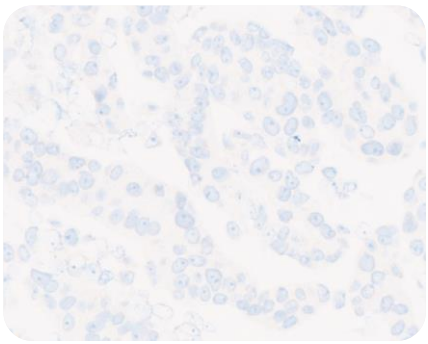
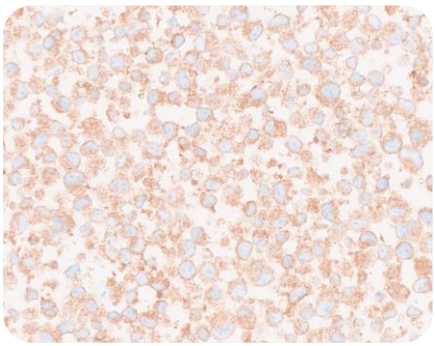
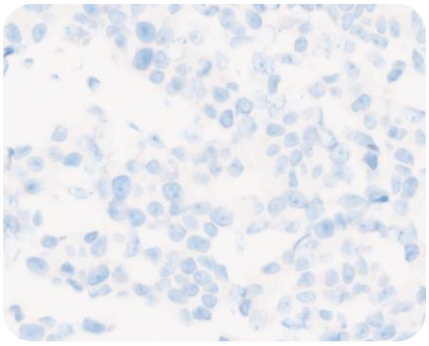
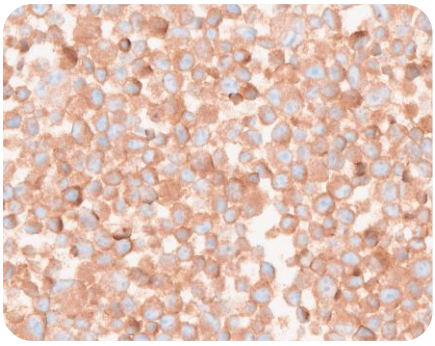
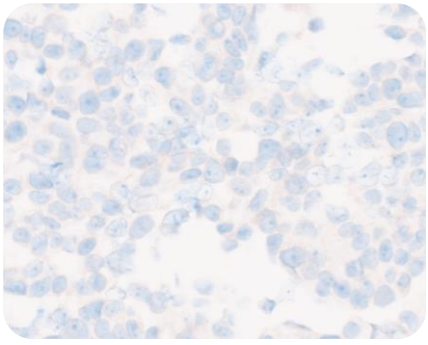
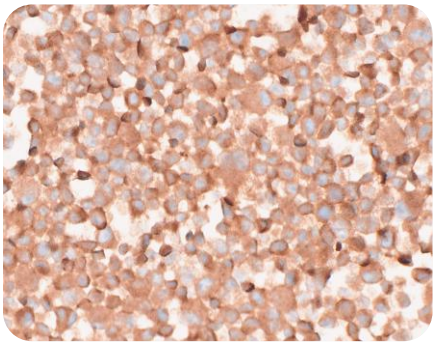
BRAF Analyte Control - IHC





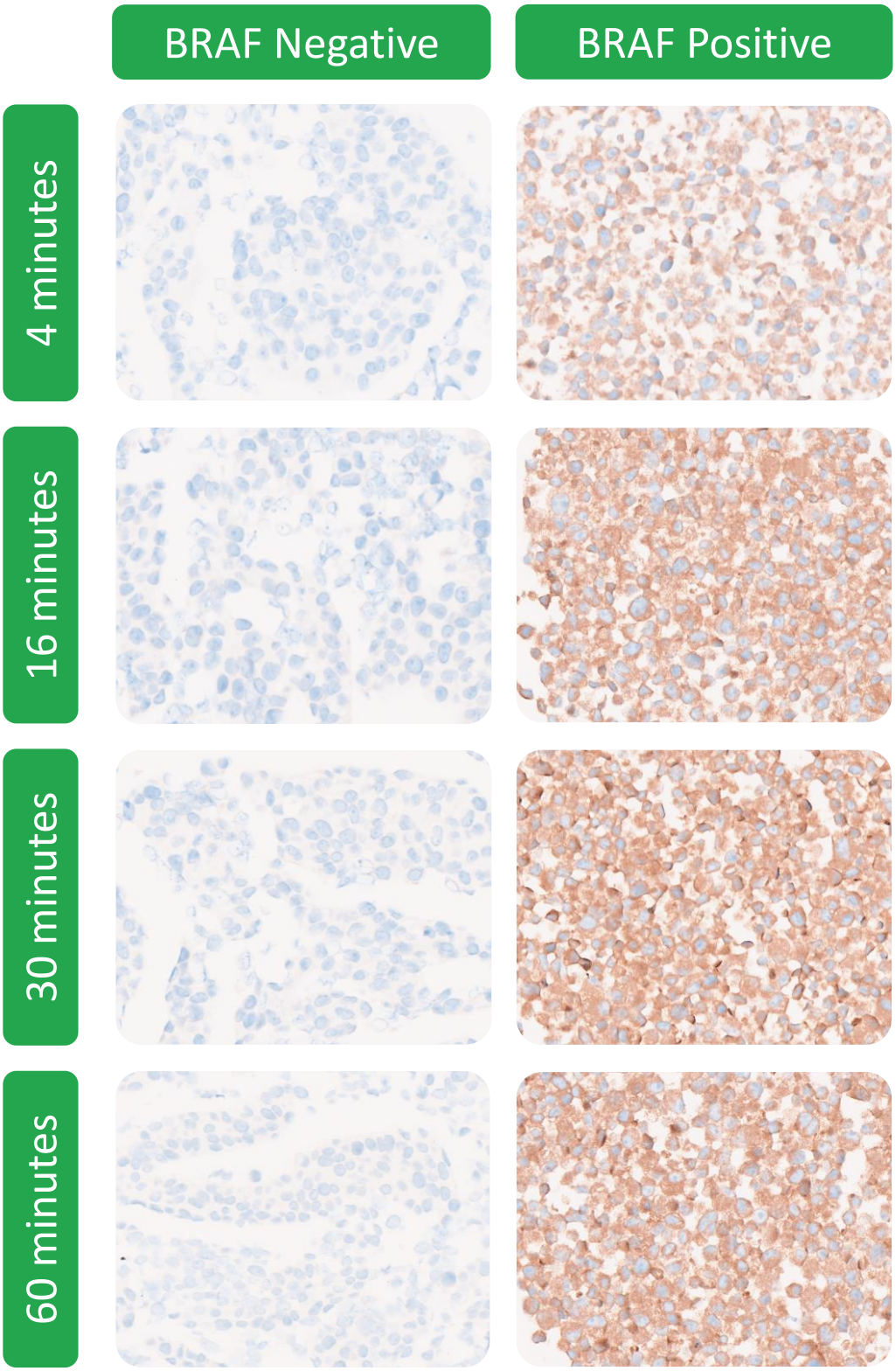
Troubleshooting

Section thickness outside of the validated thickness of 4µm may result in the changes in staining intensity shown below:

	BRAF Negative	BRAF Positive
2µm		
4µm		
6µm		

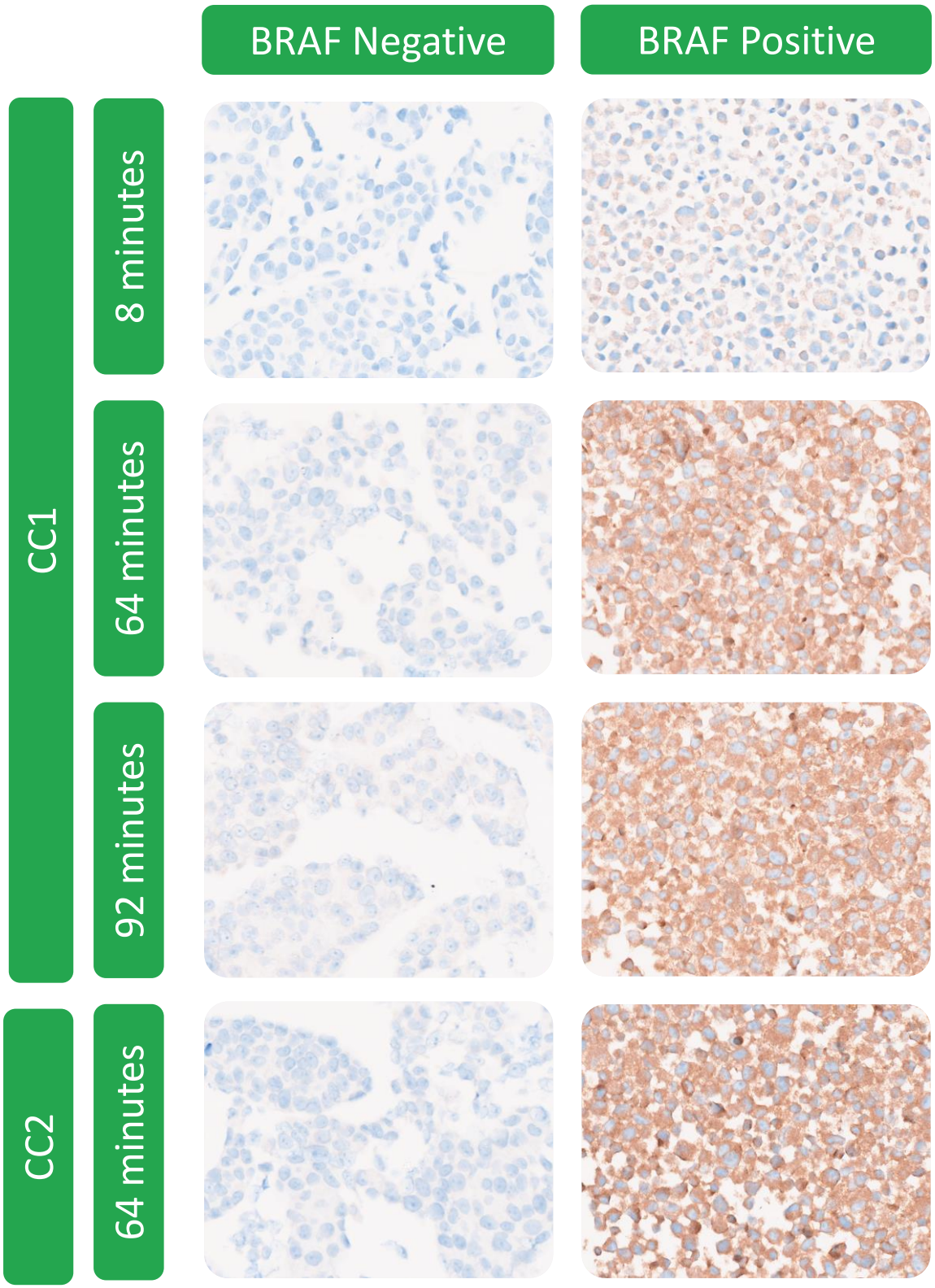
Troubleshooting

Antibody incubation times outside of the validated incubation time of 16 minutes may result in some of the changes in staining intensity shown below:



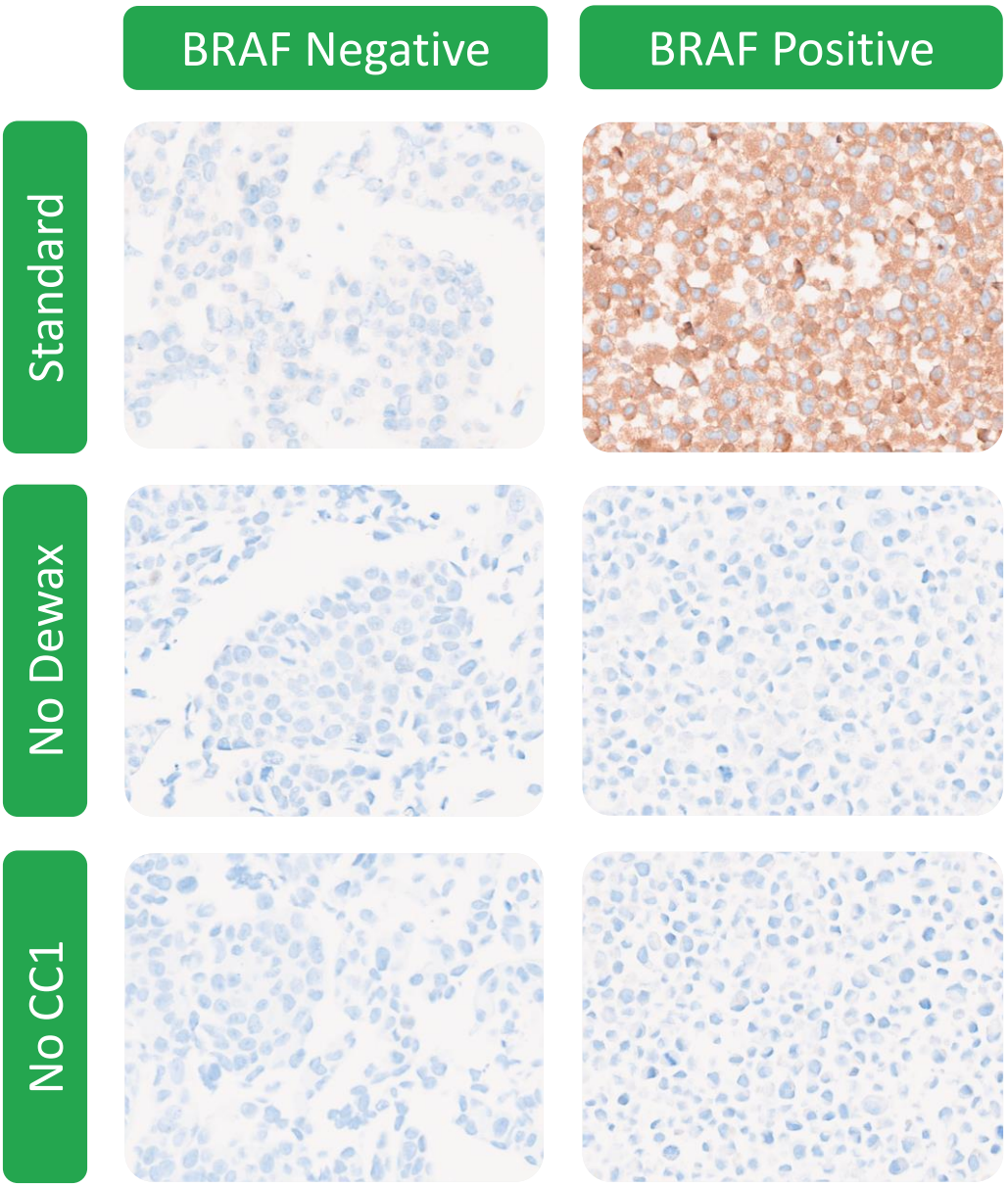
Troubleshooting

Antigen retrieval time/type outside of the validated antigen retrieval parameters of CC1 for 64 minutes may result in the changes in staining intensity shown below:



Troubleshooting

Failures in deparaffinisation and antigen retrieval will result in the absence of BRAF staining as shown below:



Also Available From HistoCyte Laboratories Ltd

Product Name	Format	Code
HPV/p16 Analyte Control[DR] (Four cores: negative and three positive with dynamic range of HPV gene copies)	Slide(2)	HCL001
	Slide(5)	HCL002
	Block	HCL003
HPV/p16 Analyte Control (Three cores: negative and two positive for p16 and HPV gene copies)	Slide(2)	HCL004
	Slide(5)	HCL005
	Block	HCL006
ALK-Lung Analyte Control (Two cores: negative and a positive for the EML4-ALK translocation)	Slide(2)	HCL007
	Slide(5)	HCL008
	Block	HCL009
ALK-Lymphoma Analyte Control (Two cores: negative and a positive for the NPM-ALK translocation)	Slide(2)	HCL010
	Slide(5)	HCL011
	Block	HCL012
ALK Analyte Control[DR] (Four cores: negative, positive for WT ALK, positive for EML4-ALK and positive for NPM-ALK)	Slide(2)	HCL053
	Slide(5)	HCL054
	Block	HCL055
Breast Analyte Control (Two cores: negative and positive for HER2, ER and PR)	Slide(2)	HCL013
	Slide(5)	HCL014
	Block	HCL015
Breast Analyte Control[DR] (Five cores: variable levels of expression of HER2, ER and PR. Including negative control)	Slide(2)	HCL016
	Slide(5)	HCL017
	Block	HCL018
PD-L1 Analyte Control[DR] (Four cores: negative, low, intermediate and high levels of expression of PD-L1)	Slide(2)	HCL019
	Slide(5)	HCL020
	Block	HCL021
ROS1 Analyte Control (Two cores: negative and positive for ROS1 translocation SLC34A2-ROS1)	Slide(2)	HCL022
	Slide(5)	HCL023
	Block	HCL024
ROS1 Analyte Control[DR] (Three cores: negative, FIG-ROS1 (very low fusion protein), SLC34A2-ROS1 (high fusion protein)	Slide(2)	HCL035
	Slide(5)	HCL036
	Block	HCL037
HER2 Analyte Control[DR] (Four cores: 0, 1+ (both non-amplified), 2+ (equivocal) and 3+ (amplified))	Slide(2)	HCL026
	Slide(5)	HCL027
	Block	HCL028
Estrogen Receptor Analyte Control[DR] (Four cores: negative, low, intermediate and high)	Slide(2)	HCL029
	Slide(5)	HCL030
	Block	HCL031
Progesterone Receptor Analyte Control[DR] (Four cores: negative, low, intermediate and high)	Slide(2)	HCL032
	Slide(5)	HCL033
	Block	HCL034
NTRK Analyte Control (Two cores: negative and positive for WT TrkA protein)	Slide(2)	HCL038
	Slide(5)	HCL039
	Block	HCL040
Mismatch Repair Analyte Control[DR] (Four cores, intact expression for MLH1/PMS/MSH2/MSH6, loss of expression for MLH1/PMS2, loss of expression for MSH2, loss of expression for MSH2/MSH6)	Slide(2)	HCL041
	Slide(5)	HCL042
	Block	HCL043
MLH1/PMS2 Analyte Control (Two cores, one with MLH1 deletion and loss of expression of MLH1 and PMS2, one with intact expression for MLH1 and PMS2)	Slide(2)	HCL044
	Slide(5)	HCL045
	Block	HCL046
MSH2 Analyte Control (Two cores, one with loss of MSH2 expression, one with intact expression of MSH2)	Slide(2)	HCL047
	Slide(5)	HCL048
	Block	HCL049
MSH6 Analyte Control (Two cores, one with loss of MSH6 expression, one with intact expression of MSH6)	Slide(2)	HCL050
	Slide(5)	HCL051
	Block	HCL052
BRAF Analyte Control (Two cores: negative and positive for BRAF V600e)	Slide(2)	HCL056
	Slide(5)	HCL057
	Block	HCL058