HistoCyte Laboratories

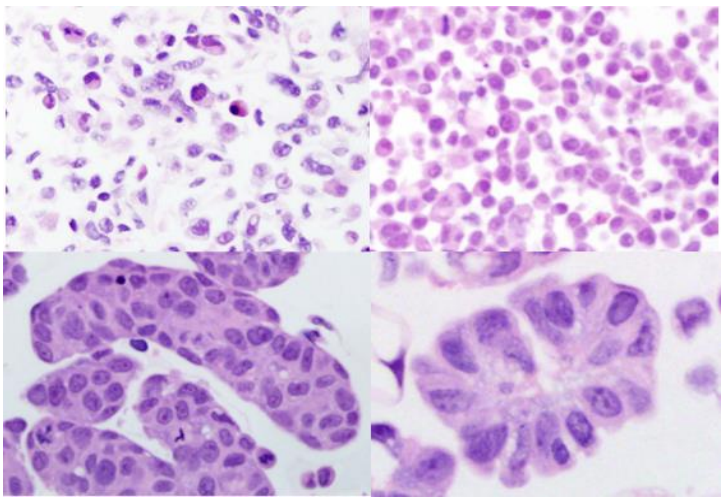
Quality in Control

PD-L1 Analyte Control^{DR}

Product Codes: HCL019, HCL020 and HCL021

Contents

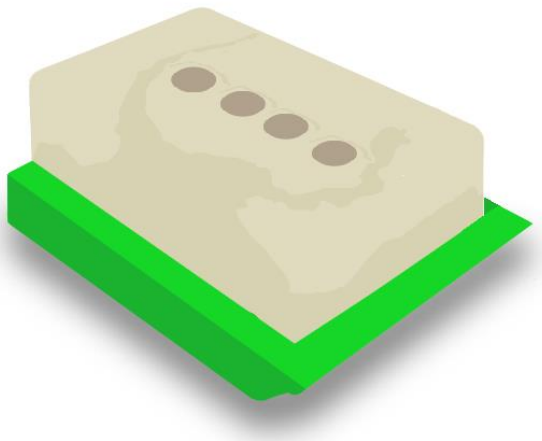
HistoCyte Laboratories Ltd is based in the heart of the Newcastle University campus. Started in 2014 by scientists with a combined experience of over 30 years in the development of reagents for immunohistochemistry and in-situ hybridization. Collaborating with pathologists locally and globally, HistoCyte Laboratories Ltd is developing a range of cost effective products designed to help scientists to maintain and develop the quality of assays within their laboratory.

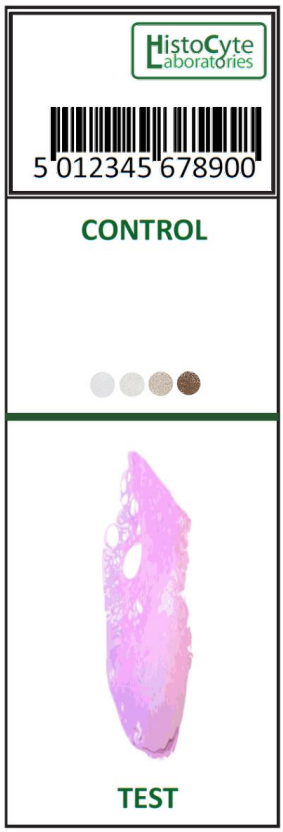


PD-L1 Analyte Control^{DR}

PD-L1 Analyte Control^{DR} is part of the ***Dynamic Range*** of HistoCyte Products. When a Dynamic Range of controls demonstrating the sensitivity of an assay is required, the **PD-L1 Analyte Control^{DR}** is ideal. This product contains four cells of varying expression including a negative control cell.

PD-L1 Analyte Control^{DR} is available as pre-cut slides (2 slide and 5 slides) and cell microarray blocks.





Format	Product Code
2 Slide	HCL019
5 Slide	HCL020
Block	HCL021

What is PD-L1?

Programmed death ligand 1 (PD-L1) is a 40kD type 1 transmembrane protein. Synonyms include:

- CD274
- B7 homolog 1 (B7-H1)

PD-L1 is a checkpoint regulator in immune cells[1], it is expressed on immune or non-hematopoietic cells[2]. Expression of the protein is seen during pregnancy where it has a role in supressing the immune system. PD-L1 induces an inhibitory signal in activated T-cells and promotes T-cell apoptosis[2].

The Role of PD-L1 in Cancer

PD-L1 has been observed to be over expressed in a number of different cancer types and is believed to be a potential means by which the cancer cells can evade the immune system. Overexpression of PD-L1 correlates with poor disease outcomes[3]. The expression of PD-L1 within cancer is not restricted to a single type of cancer and as such it has become a target for anti-cancer drug development. Currently there are a number of anti-PD-L1 clinical trials ongoing, focusing on the following tumour types:

- Lung cancer
- Bladder cancer
- Kidney cancer
- Haematological cancer
- Breast cancer
- Colorectal cancer
- Melanoma
- Solid tumours

1. Dong H et al Nat Med 1999 5 1365-1369
2. Shi L et al J Hematol Oncol. 2013; 6: 74.
3. Ohaegbulam K, et al Cell 2015 21, Issue 1, p24–33

The diagram below (Figure 1.) illustrates the interaction between the tumour cells and the immune system, whereby the anti-PD-L1 antibody blocks the ability of the ligand to bind with the PD-1 receptor. Thus preventing the inhibitory feedback that would otherwise be stimulated.

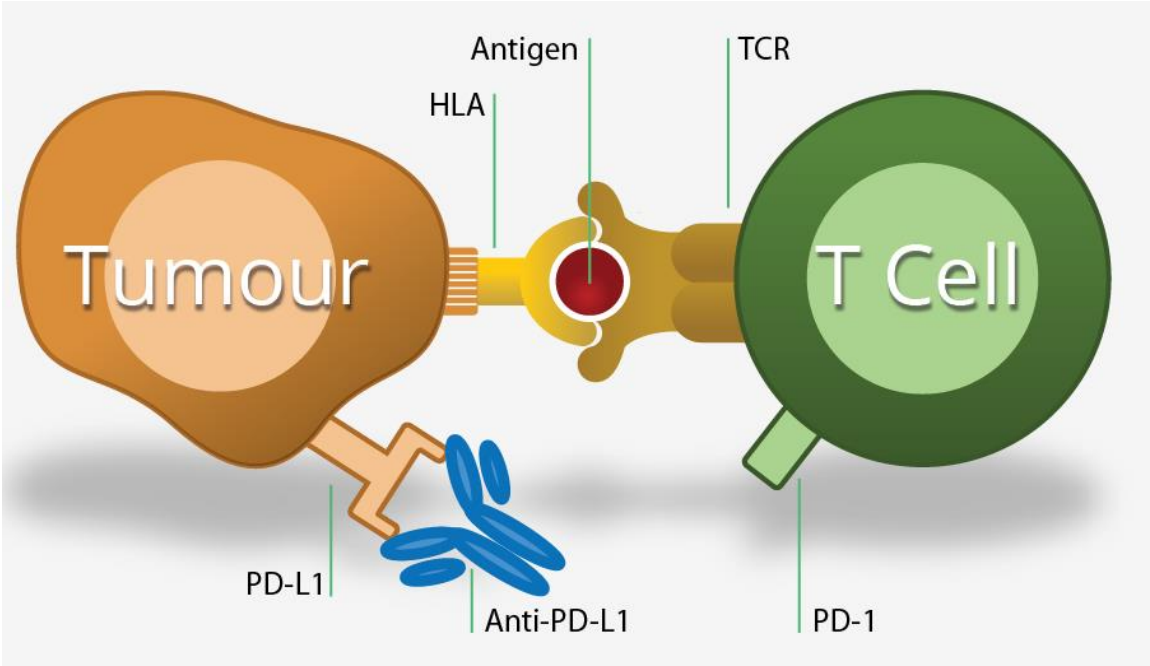


Figure 1. The human leukocyte antigen (HLA) on the tumour cell presents tumour protein which is detected through the T cell receptor (TCR). Upon recognising "tumour protein" the T cell initiates a cytotoxicity event, which would otherwise be inhibited by the interaction between PD-L1 and PD-1 on the T cell.

PD-L1 Assessment

A number of different methods are used to measure PD-L1 expression, these include molecular methods such as:

- Real-time polymerase chain reaction (PCR) using products such as TaqMan® gene expression assay from ThermoFisher.

- Fluorescence in situ hybridisation (FISH) probes for the detection of PD-L1 DNA.
- Advanced Cell Diagnostics provide an RNAscope product for the detection of PD-L1 mRNA.

A number of antibodies are available for the immunohistochemical detection of PD-L1, these include clones:

- E1L3N (Cell Signalling Technology)
- SP263 (Ventana, Roche)
- SP142 (Spring Bioscience)
- 28-8 (Dako, Agilent).
- 22C3 (Dako, Agilent).

PD-L1 Product Details

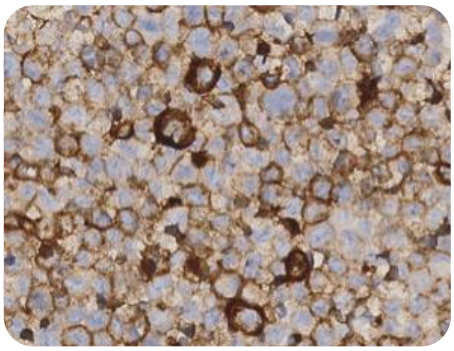
The product consists of four different cell lines with PD-L1 expression levels of high, medium, low and negative. The product was developed using the E1L3N PD-L1 antibody and SP263. However, it has also been independently tested at different laboratories using different PD-L1 antibodies with different protocols. In all cases the HistoCyte PD-L1 control provided the same high, medium, low and zero expression range regardless of assay employed. All HistoCyte products are designed to be suitable for FISH testing. All the cells are amplified for PD-L1 except the negative cell line.

PD-L1 Analyte Control^{DR} staining

Cell Signalling Technologies Clone: SP263

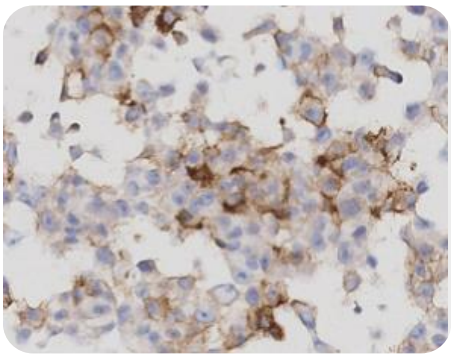
Performed on the Roche Ventana Benchmark Ultra™

T cell non-Hodgkin Lymphoma



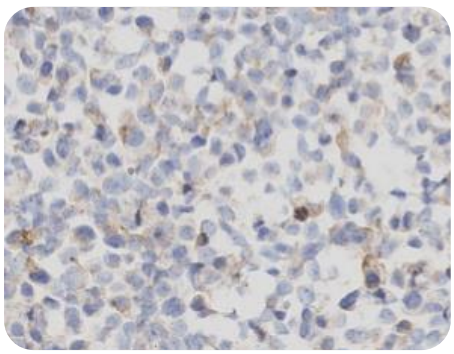
High expression: Strong staining in majority of cells.

Fibrosarcoma



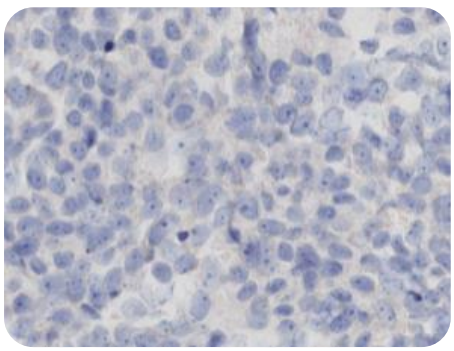
Medium expression: Convincing staining in majority of cells. Some strong staining.

Osteosarcoma



Low expression: Faint staining in majority of cells. Occasional strong staining.

Breast Ductal Carcinoma



Negative expression: Absence of any genuine staining.

Additional assessment: mRNA levels by QT-PCR correlated to the IHC results.

Also Available from HistoCyte Laboratories Ltd

Product Name	Format	Code
HPV/p16 Analyte Control[DR] (Four core with dynamic range of HPV gene copies)	Slide(2)	HCL001
	Slide(5)	HCL002
	Block	HCL003
HPV/p16 Analyte Control (Three core with standard range of HPV gene copies)	Slide(2)	HCL004
	Slide(5)	HCL005
	Block	HCL006
ALK-Lung Analyte Control (Two core positive and negative for the EML4-ALK translocation)	Slide(2)	HCL007
	Slide(5)	HCL008
	Block	HCL009
ALK-Lymphoma Analyte Control (Two core positive and negative for the NPM-ALK translocation)	Slide(2)	HCL010
	Slide(5)	HCL011
	Block	HCL012
Breast Analyte Control (Two cores, one positive for Her2, ER and PR. The other negative)	Slide(2)	HCL013
	Slide(5)	HCL014
	Block	HCL015
Breast Analyte Control[DR] (Five cores with a dynamic range of expression of Her2, ER and PR. Including negative control)	Slide(2)	HCL016
	Slide(5)	HCL017
	Block	HCL018
PD-L1 Analyte Control[DR] (4 core with a dynamic range of expression of PD-L1)	Slide(2)	HCL019
	Slide(5)	HCL020
	Block	HCL021
ROS1 Analyte Control (Two cores positive and negative for ROS1 translocation)	Slide(2)	HCL022
	Slide(5)	HCL023
	Block	HCL024
Sienna Cancer Diagnostics hTERT assay. 1ml of anti-hTERT mouse mAb. *(Available UK & Ireland Only)*	1ml	HCL025

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