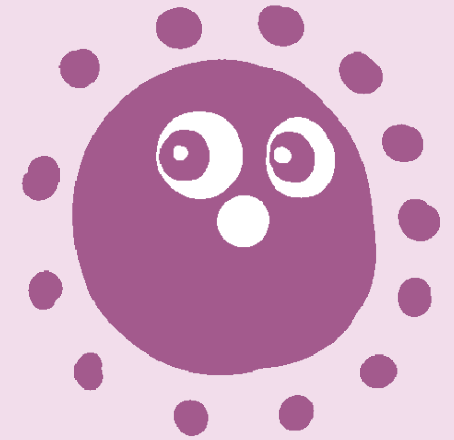
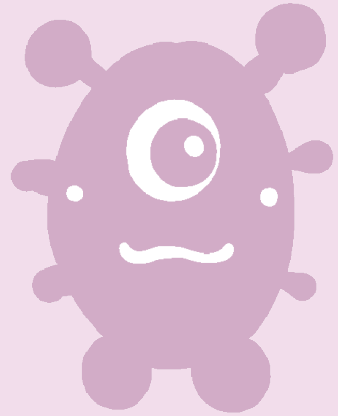


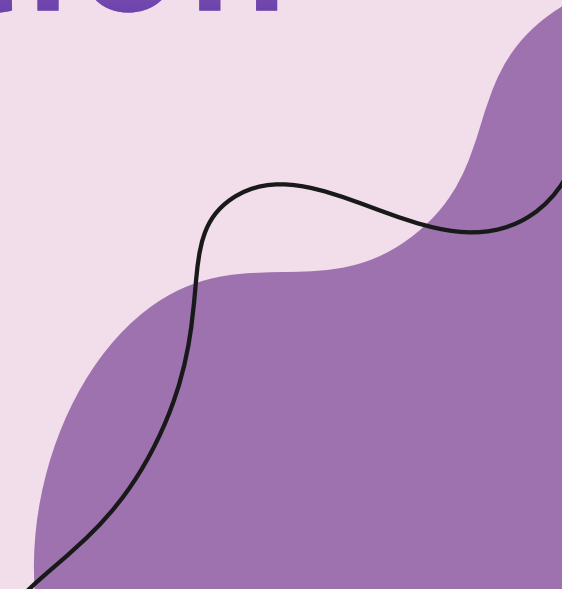


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APPLICATION NOTE



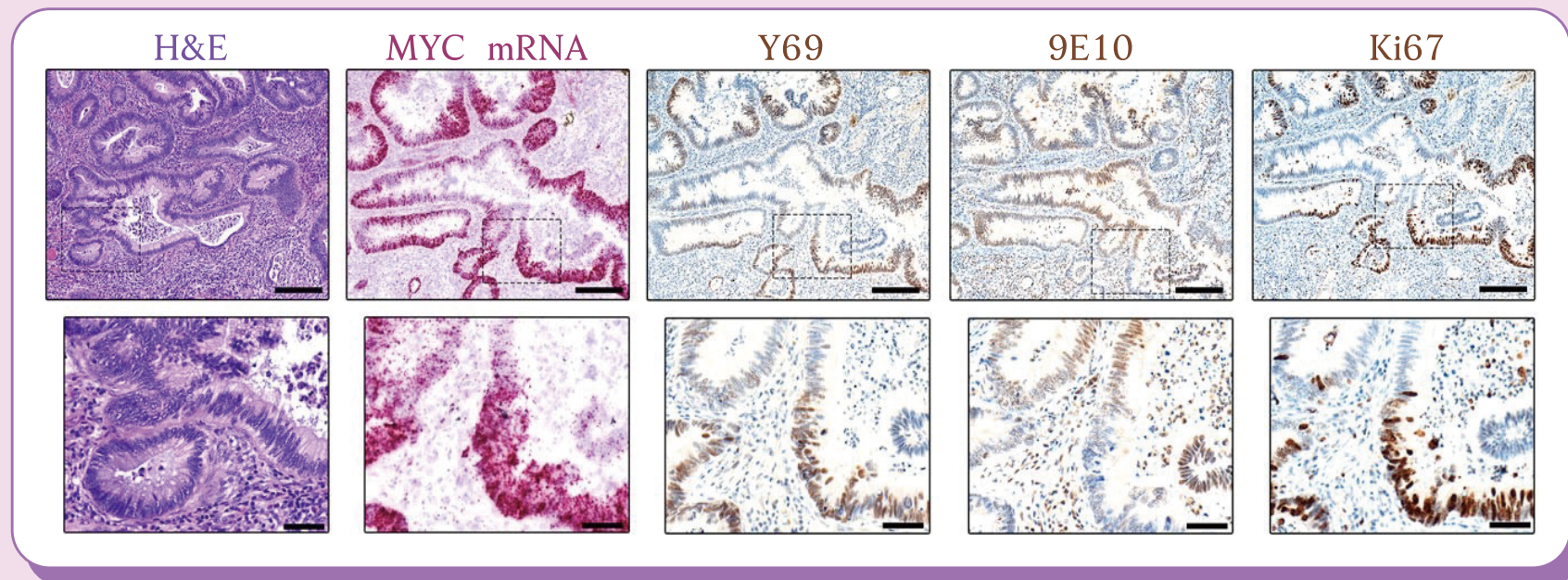
Dual ISH-IHC Antibody Validation



USING THE RNAscope ISH ASSAY TO VALIDATE MYC IHC ANTIBODIES

研究人類檢體中MYC分佈時，因偵測MYC蛋白N端的抗體和偵測C端的抗體之間IHC染色結果缺乏一致性，常使研究者感到困惑。在Barts Cancer Institute的一項研究中，應用RNAscope ISH檢測臨床檢體中的MYC mRNA，藉以確定兩種不同Clone的MYC抗體的可靠性(Baker et al., 2016)。

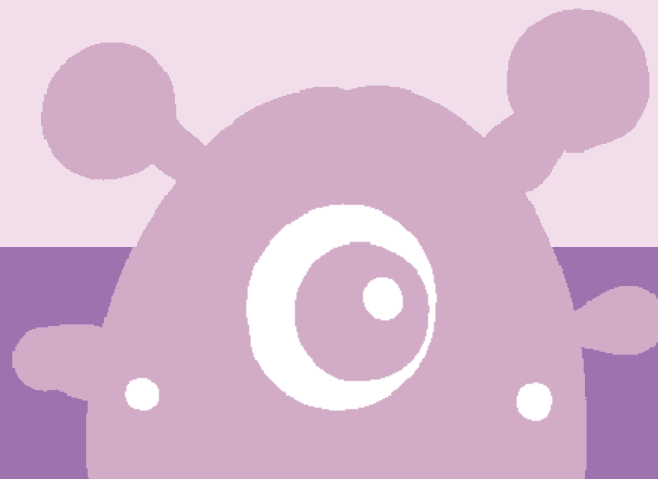
在人類正常結腸、增生性息肉和結腸腫瘤樣本中，使用MYC N端抗體Y69 Clone和C端抗體9E10 Clone觀察蛋白質分佈，隨後與MYC mRNA的位置進行比較。



MYC在侵襲性癌中的表現。H&E染色、RNAscope原位雜交(MYC mRNA, 粉紅色)和Y69(N端MYC)、9E10(C端MYC)和Ki67抗體(棕色)在侵襲性癌區域中的免疫組織染色。

下圖(上圖的放大圖像)顯示了MYC mRNA的表現與MYC抗體Y69和Ki67抗體染色呈現相似的結果, 9E10抗體的染色結果則否。

作者發現, MYC mRNA的定位與N端抗體Y69的蛋白質分佈密切相關, 並且還與增生Marker Ki67的表現相關。用C端抗體9E10 Clone觀察到的蛋白質分佈則並不總是與MYC mRNA、Y69 Clone或Ki67相關, 並且通常顯示出相反的表现模式, 包含在非增生細胞中染色較強。從染色結果的差異表明9E10在IHC染色中的重要性尚不清楚, 其染色結果需謹慎解釋。目前在台灣的醫院病理科, 也都是以Y69為主要使用的Clone。



DUAL ISH-IHC RESOURCES

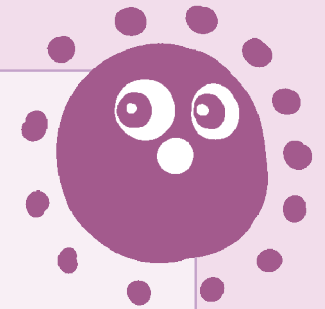
為了促進抗體的驗證，推出了在同一組織切片上進行RNAscope ISH與IHC的方法，稱為Dual ISH-IHC。該技術可以可見光或螢光呈色，並且幾乎與所有的RNAscope方法兼容，包括HiPlex、Multiplex Fluorescent和BaseScope。在神經科學、腫瘤學、幹細胞等領域有超過300篇文獻使用了此技術。

- 關於Dual ISH-IHC技術的更多資訊，請參考：

<https://acdbio.com/science/applications/research-solutions/dual-ish-and-ihc>

- 關於Dual ISH-IHC文獻的完整列表，請參考：

<https://acdbio.com/science/scientific-resources/publications/publication>



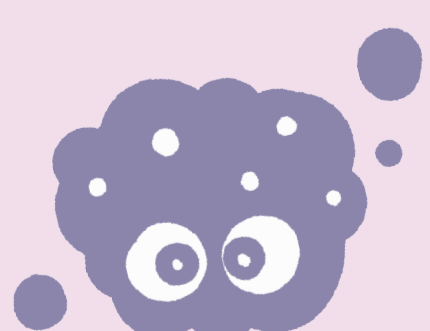
對於需要自動化分析的實驗室，ACD與Roche Tissue Diagnostics, Inc和Leica Biosystems合作，在這些自動化染色機上提供RNAscope ISH測定，這兩種方法都提供了在同一張玻片上結合ISH和IHC的可能性。

DUAL ISH-IHC VALIDATED ANTIBODIES FROM BIO-TECHNE

作為擁有RNAscope原位雜交技術和超過34,000種IHC抗體的公司，Bio-Techne具有獨特的能力為RNA ISH和IHC技術的研究人員提供支持。以下來自Novus Biologicals的抗體已經通過Bio-Techne專家的雙重ISH-IHC檢測驗證。

Table of Selected Dual ISH-IHC Validated Antibodies

Catalog	Product	Reactivity	Applications	Publications
NB100-122	HIF-2 alpha/EPAS1 Antibody - BSA Free	Hu, Mu, Rt, Fi, Ha, Pm, Rb, Re, Sh	WB, Simple Western, CHIP, ELISA, Flow, GS, IB, ICC/IF, IHC, IHC-Fr, IHC-P, In vitro, IP, PAGE, Dual ISH-IHC, KD, KO	713
NB400-105	ABCA1 Antibody - BSA Free	Hu, Mu, Rt, Po, Ca, Ch, ChHa, Eq, Ha, Md, Pm, Rb	WB, Simple Western, CHIP, ELISA, Flow, IB, ICC/IF, IHC, IHC-Fr, IHC-P, IP, B/N, Dual ISH-IHC, Func, GS, KD, KO	373
NB500-201	Survivin Antibody - BSA Free	Hu, Mu, Rt, Ca, Fe, Gp, Ha	WB, Simple Western, CHIP, ELISA, Flow, ICC/IF, IHC, IHC-Fr, IHC-P, IP, Dual ISH-IHC, KD	354
NB100-1028	AIF-1/Iba1 Antibody	Hu, Mu, Rt, Ca, Fe, Po, Bv, RM	WB, ICC/IF, IHC, IHC-Fr, IHC-P, PEP-ELISA, Dual ISH-IHC, IHC-FrFl, IHC-WhMt, KO	249
NB100-417	Carbonic Anhydrase IX/CA9 Antibody - BSA Free	Hu, Mu, Rt, Pl	WB, Simple Western, CHIP, ELISA, Flow, GS, IB, ICC/IF, IHC, IHC-Fr, IHC-P, MiAr, PLA, Dual ISH-IHC	228
NB100-134	HIF-1 alpha Antibody - BSA Free	Hu, Mu, Rt, Bv, Ca, Gp, Pm, Xp, Ze	WB, Simple Western, ELISA, GS, IB, ICC/IF, IHC, IHC-Fr, IHC-P, IP, CHIP, CHIP-SEQ, Dual ISH-IHC, KO	190
NB300-109	Tyrosine Hydroxylase Antibody	Hu, Mu, Rt, Ch, Dr, I, Ma	WB, Simple Western, ICC/IF, IHC, IHC-Fr, IHC-P, Dual ISH-IHC, IHC-FrFl, IHC-WhMt, KO	175
NB100-56566	TLR4 Antibody (76B357.1) - BSA Free	Hu, Mu, Rt, Po, Bv, Ma, Pm, ChHa	WB, CHIP, DB, ELISA, Flow, Flow-CS, Flow-IC, ICC/IF, IHC, IHC-Fr, IHC-P, In vitro, PAGE, B/N, CyTOF-ready, Dual ISH-IHC, ELISA(Cap), KD, KO	118
NB110-89474	CD11b Antibody - BSA Free	Hu, Mu, Rt, Bv, Ce, ChHa, Pm, RM	WB, Simple Western, Flow-CS, ICC/IF, IHC, IHC-Fr, IHC-P, ISH, Dual ISH-IHC, Single-Cell Western	79
NB100-56576	SARS Nucleocapsid Protein Antibody - BSA Free	SARS-Cov, SARS-Cov-2, Virus	WB, ICC/IF, IHC, IHC-P, PAGE, Dual ISH-IHC	89
NBP1-76769	PD-L1 Antibody - BSA Free	Hu, Mu, Rt	WB, ELISA, Flow, ICC/IF, IHC, IHC-Fr, IHC-P, IP, Dual ISH-IHC, ICC/IF, IHC-WhMt, KD	29
NB300-318	xCT Antibody - BSA Free	Hu, Mu, Rt	WB, Simple Western, Flow, ICC/IF, IHC, IHC-P, Dual ISH-IHC, IP (-)	65
NB100-683	CD68/SR-D1 Antibody (KP1) - BSA Free	Hu, Mu, Rt	WB, EM, Flow, ICC/IF, IHC, IHC-Fr, IHC-P, IP, Dual ISH-IHC	53
NB300-164	Bestrophin 1 Antibody (E6-6) - BSA Free	Hu, Mu, Po, Ca, Pm, Rt(-)	WB, ICC/IF, IHC, IHC-Fr, IHC-P, IP, PLA, Dual ISH-IHC	47
NB110-40877	Perilipin-2/ADFP Antibody - BSA Free	Hu, Mu, Rt, Bv	WB, Simple Western, ICC/IF, IHC, IHC-Fr, IHC-P, Dual ISH-IHC	44
NBP1-19371	CD4 Antibody - BSA Free	Hu, Mu, Rt, Po, Ca, Rb	WB, Simple Western, Flow, ICC/IF, IHC, IHC-Fr, IHC-P, Dual ISH-IHC	40
NB600-562	CD31/PECAM-1 Antibody (JC/70A) - BSA Free	Hu, Mu, Fe, Rb	WB, ELISA, Flow, Flow-CS, ICC/IF, IHC, IHC-Fr, IHC-P, Dual ISH-IHC, KO	40
NBP2-29429	Cytokeratin, pan Antibody (AE-1/AE-3)	Hu, Mu, Rt, Bv, Ca, Ch, Pm, Rb, Re, Ze	WB, Flow, Flow-IC, ICC/IF, IHC, IHC-Fr, IHC-P, CyTOF-reported, Dual ISH-IHC, Single-Cell Western	37
NB100-39002	FoxP3 Antibody - BSA Free	Hu, Mu, Rt, Bv	WB, Flow, IB, ICC/IF, IHC, IHC-P, IP, Dual ISH-IHC, Single-Cell Western	34
NB100-77855	HLA-DR Antibody (L243) - BSA Free	Hu, Ca, Pm, Pm	WB, ELISA, EM, Flow, Flow-CS, Func, ICC/IF, IHC, IHC-Fr, IHC-P, In vitro, IP, B/N, CyTOF-ready, Dual ISH-IHC	30
NB100-77758	CD14 Antibody (M5E2) - BSA Free	Hu, Po, Bv, Ca, Pm	Simple Western, Flow, ICC/IF, IHC, IHC-Fr, B/N, CyTOF-ready, Dual ISH-IHC	12
NB100-56683	SARS Nucleocapsid Protein Antibody	SARS-Cov, SARS-Cov-2	WB, Simple Western, ELISA, ICC/IF, IHC, IHC-P, Dual ISH-IHC	16
NB400-156	MRP1 Antibody (IU2H10) - BSA Free	Hu, Mu, Rt	WB, ELISA, Flow, ICC/IF, IHC, IP, CyTOF-ready, Dual ISH-IHC	15
NB100-2749	Polyoma Virus, Medium T Antigen Antibody (PyMT)	Virus	WB, ICC/IF, IHC, IHC-P, IP, Dual ISH-IHC	13



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