

# 全景組織體細胞定量分析儀

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# ➤ TissueGnostics FACS-like Tissue Cytometry

## ➤ 全景組織體細胞定量分析儀

可將切片組織數位化並進行量化與分析統計的系統

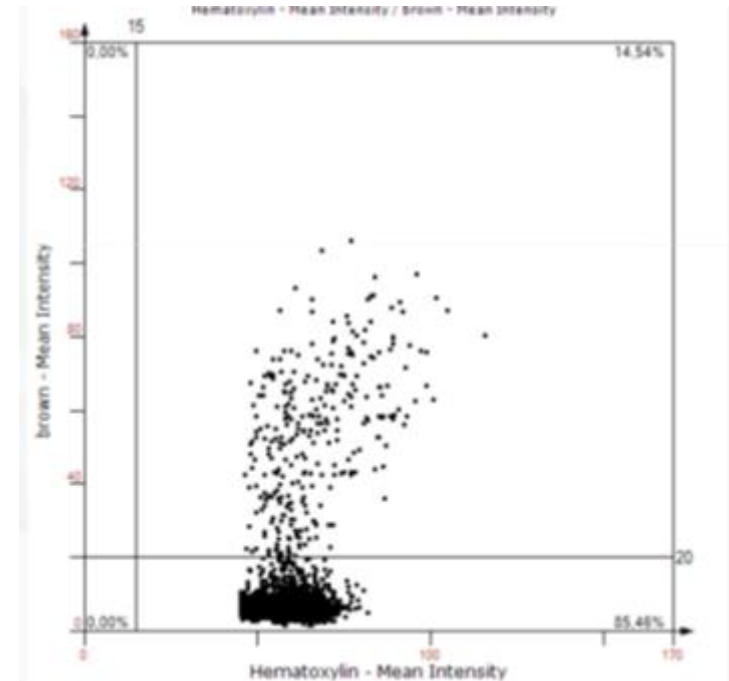
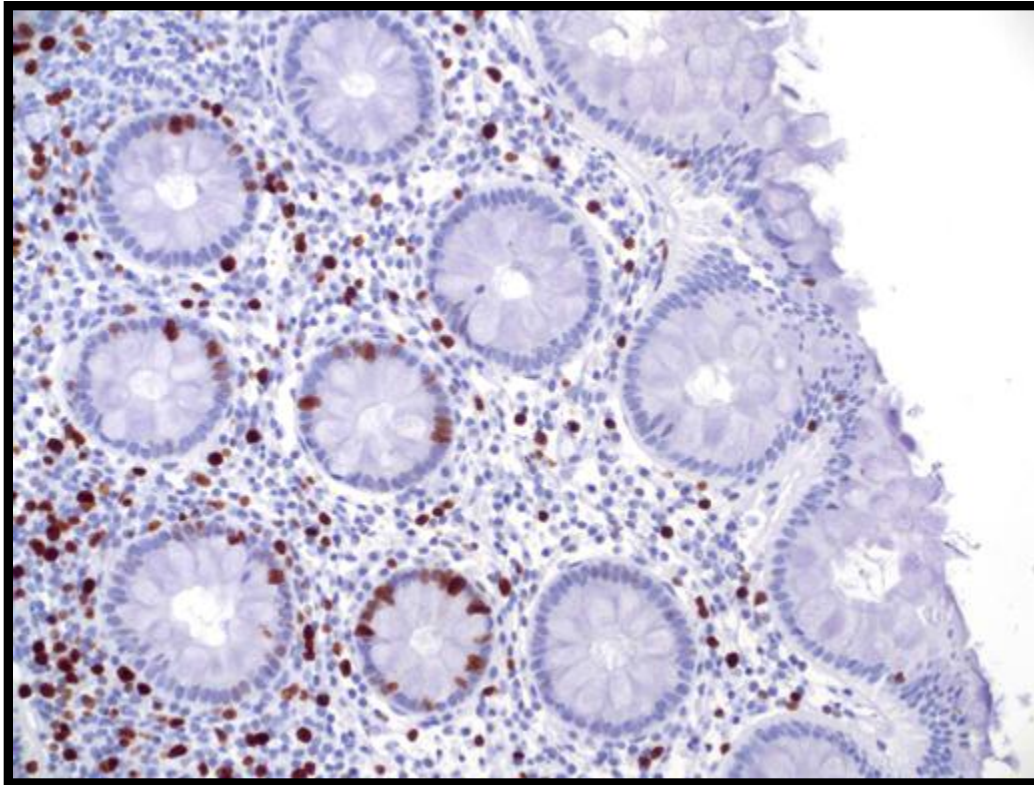


# Why from image to analysis?

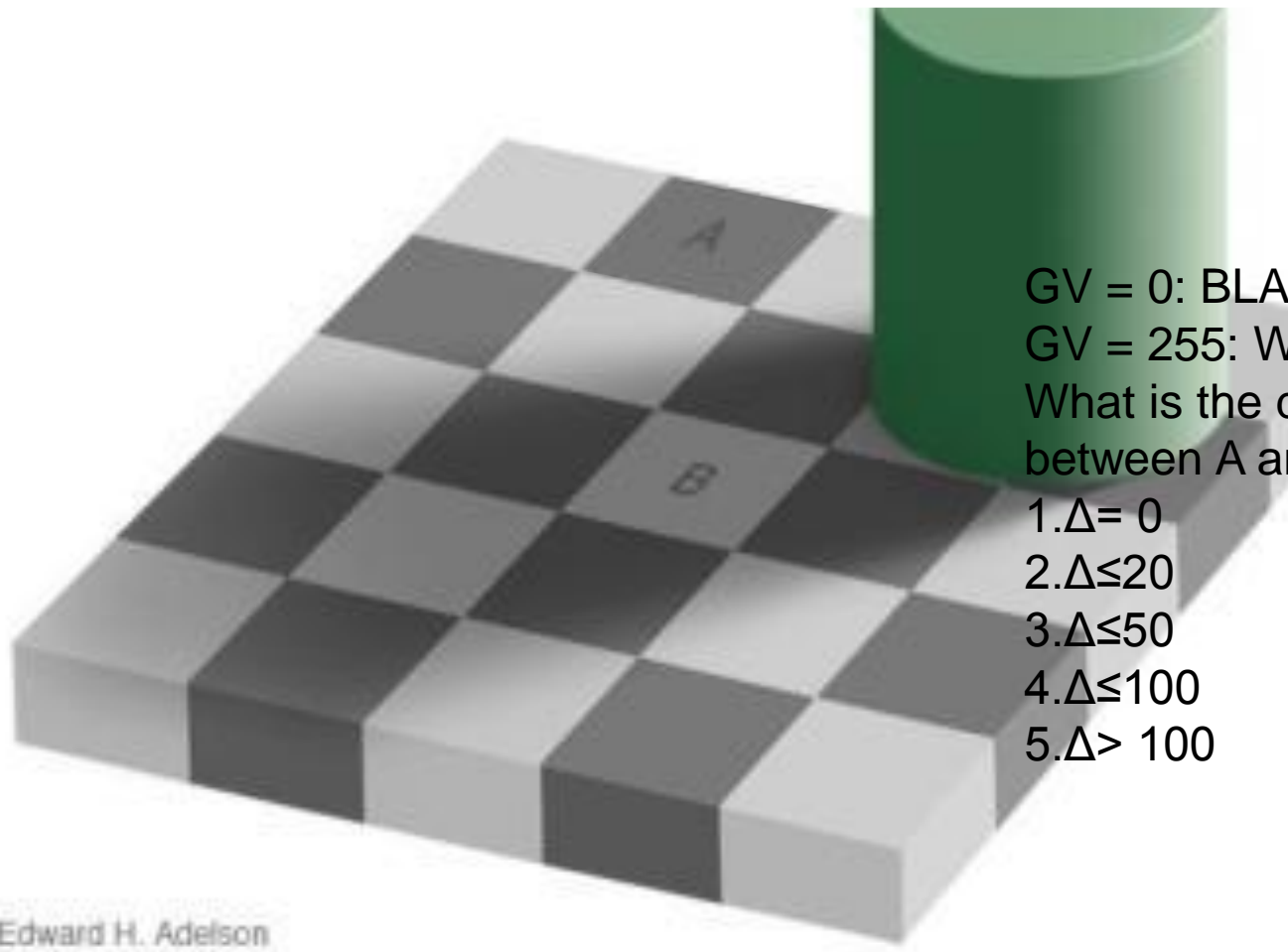
How many of the blue nuclei are also stained in brown (in %)?

Expert's estimations:  
1% - 35% (n=40)

Observer independent measurement: 14.54%



# Estimation versus Measurement



GV = 0: BLACK

GV = 255: WHITE



What is the difference in GV between A and B?

- 1.  $\Delta = 0$
- 2.  $\Delta \leq 20$
- 3.  $\Delta \leq 50$
- 4.  $\Delta \leq 100$
- 5.  $\Delta > 100$

Edward H. Adelson

# Major Components of TissueGnostics system



## Requirement of TissueGnostics

- Digitalized slide image
  - Analyzed slide image
  - Quantified slide image
- Export visualized data

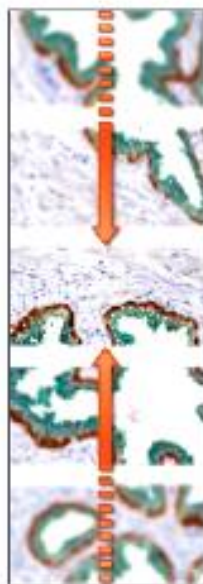
**Rapid  
 preview**



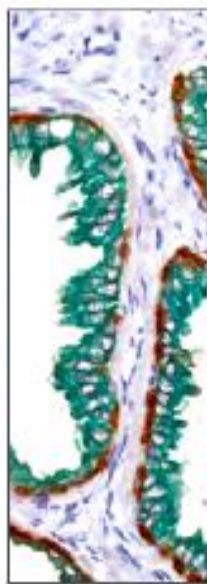
**Automated  
 acquisition at  
 freely selectable  
 magnifications**



**Tunable  
 autofocus for up  
 to 100x oil  
 objectives**



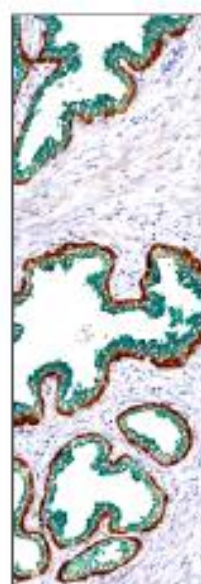
**Automatic stitching  
 function and  
 exportable  
 sample overview**



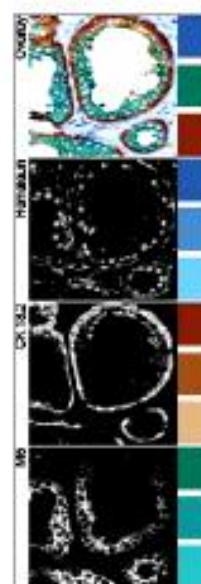
**Subregion  
 creation and  
 export for  
 analysis**



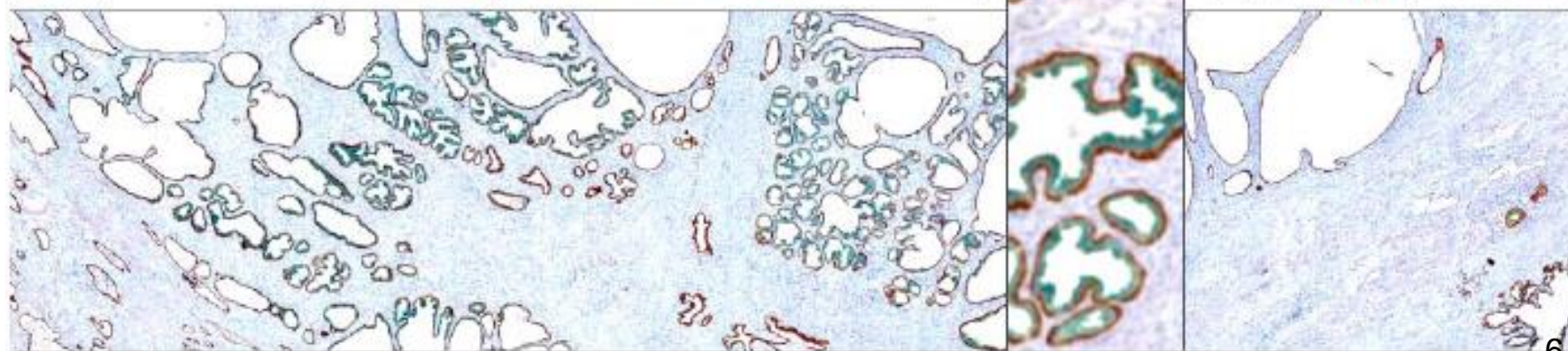
**Reacquisition of  
 single out-of-  
 focus images**



**HistoQuest color  
 separation**

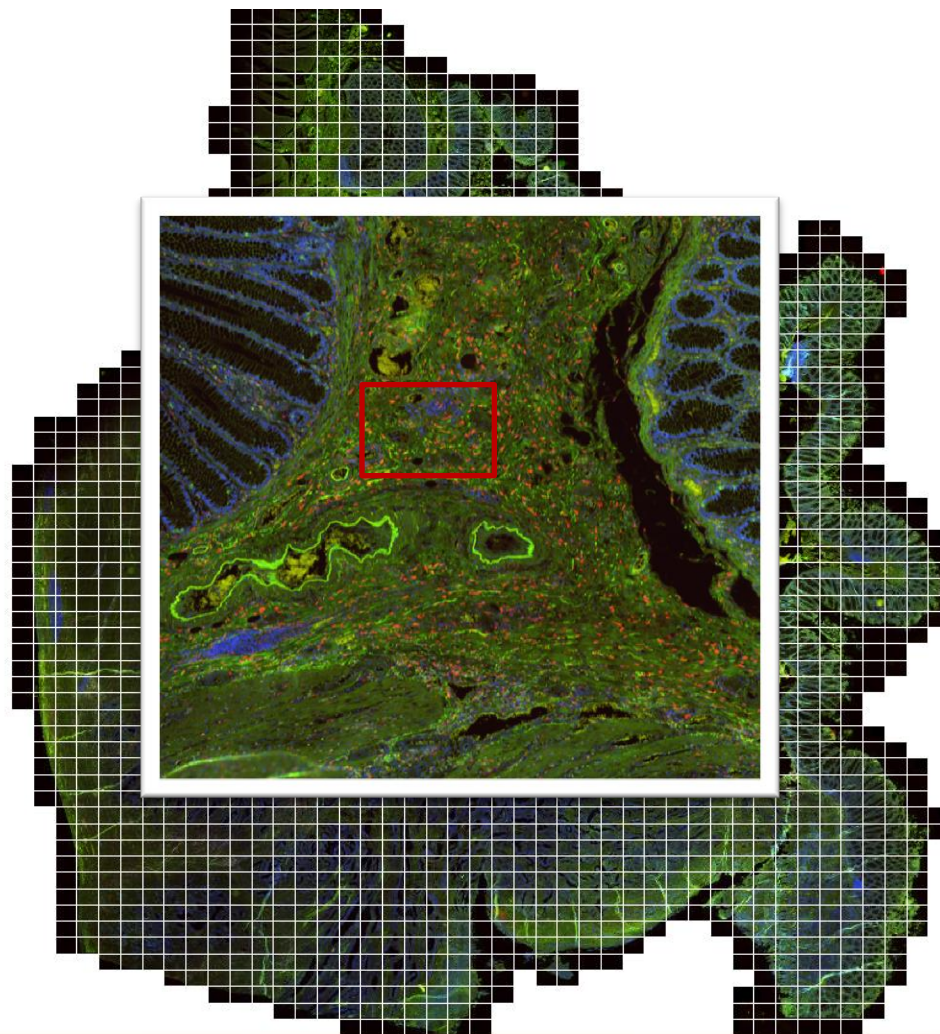


**HistoQuest  
 analysis of  
 staining intensity**





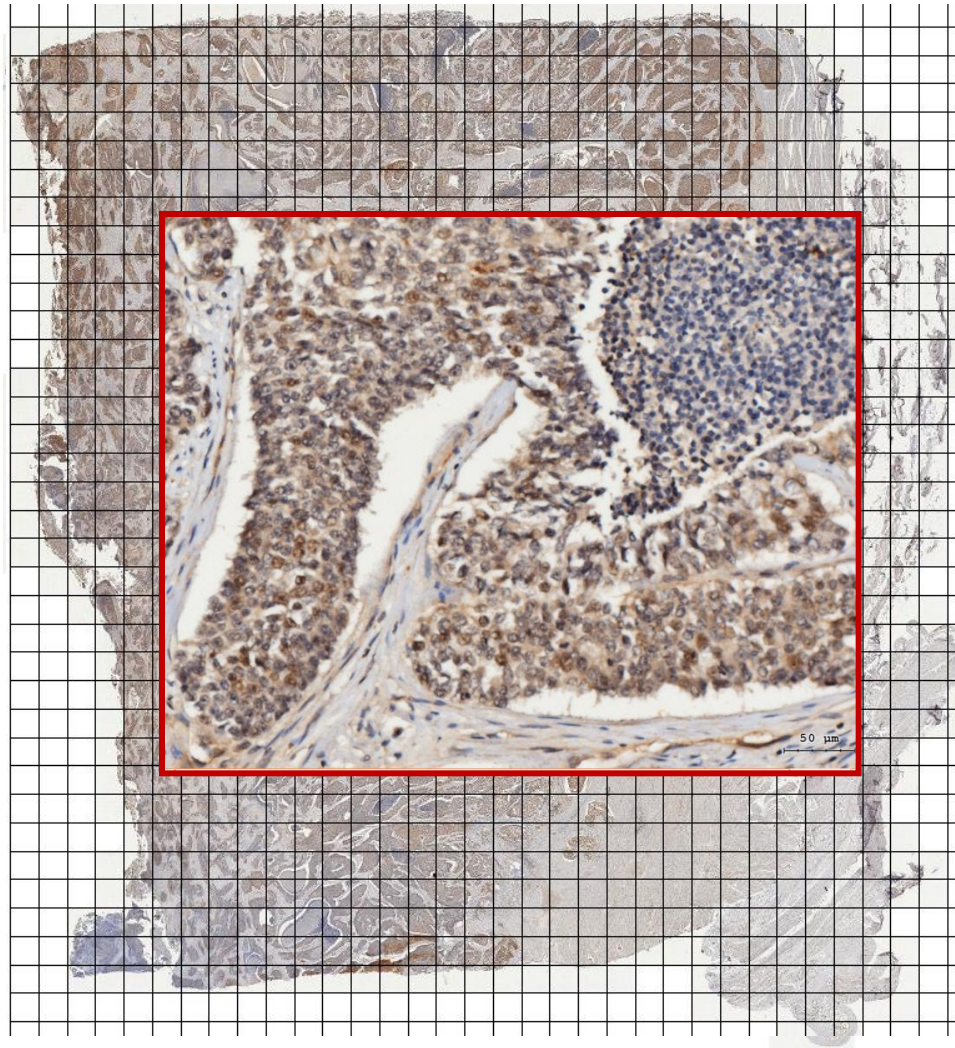
# Virtual Slide





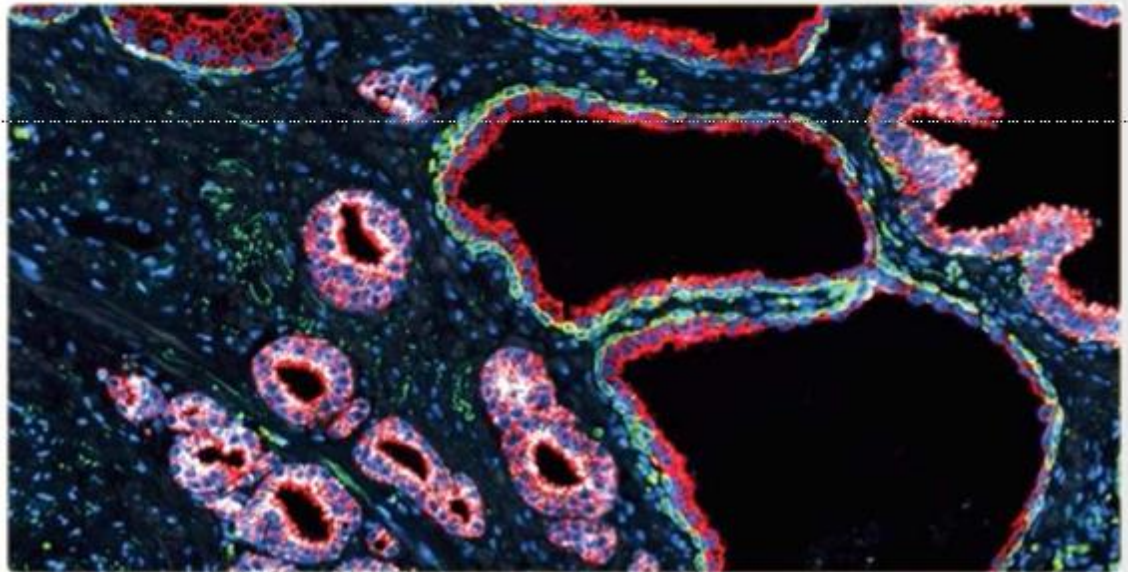
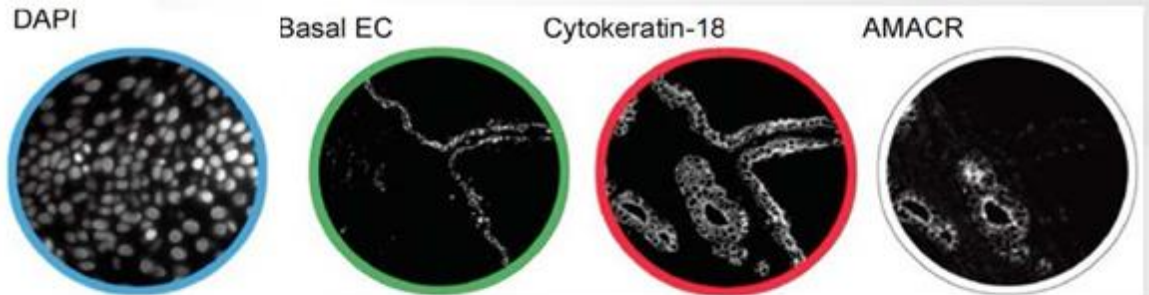
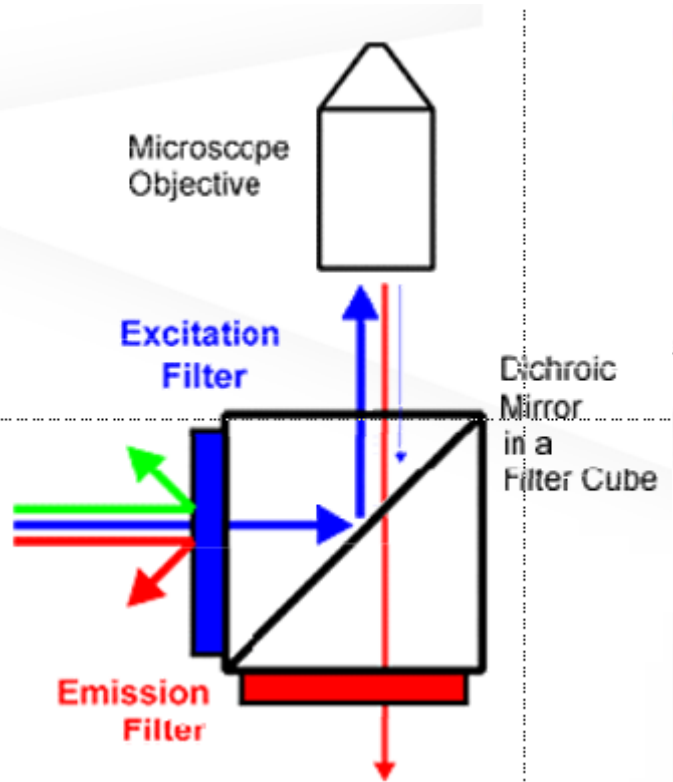
# Virtual Slide

Navigate through the *digital sample and zoom between overview and high resolution* wherever you need to!



# Color separation

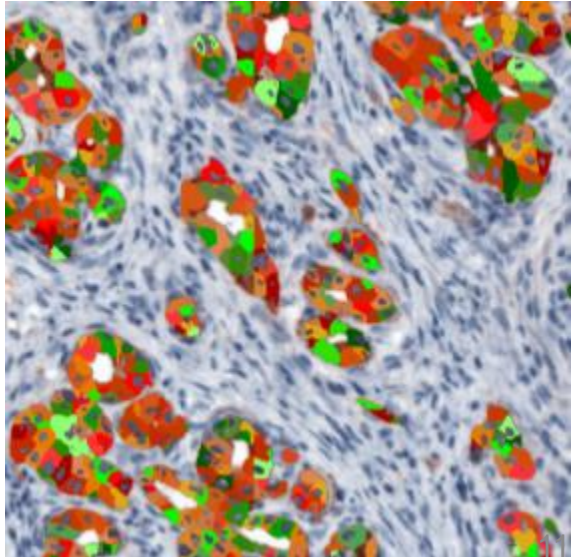
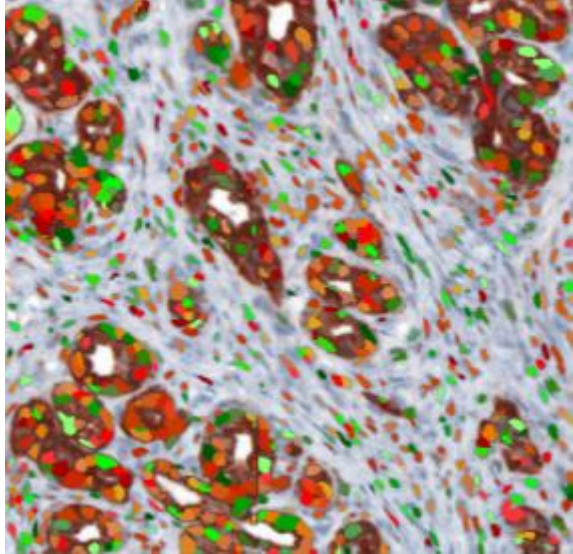
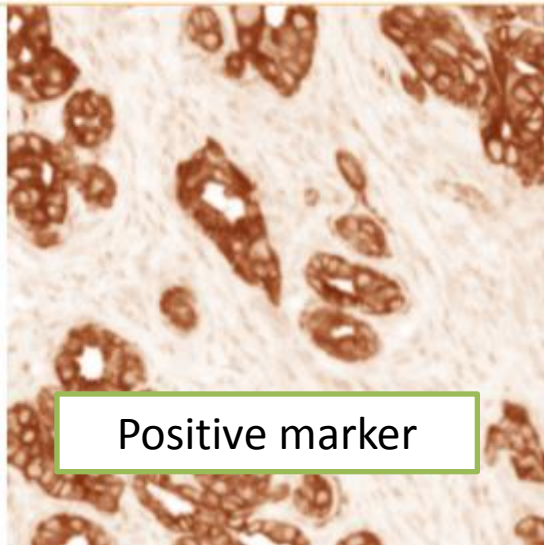
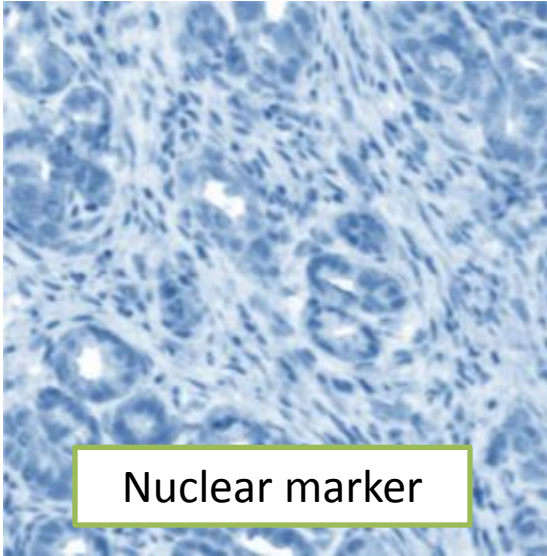
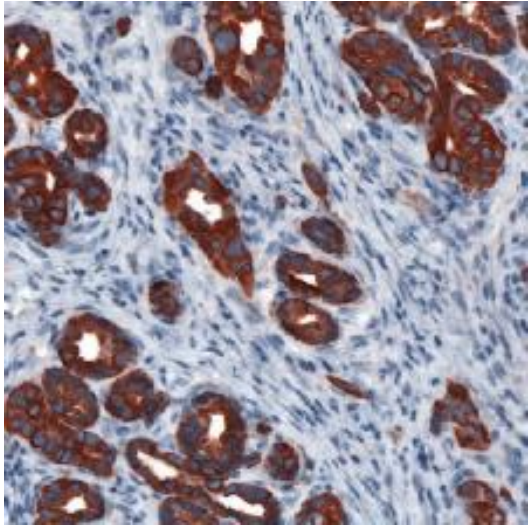
**Fluorescence Separation**  
**Filter system to separate fluorescence**  
**channel**



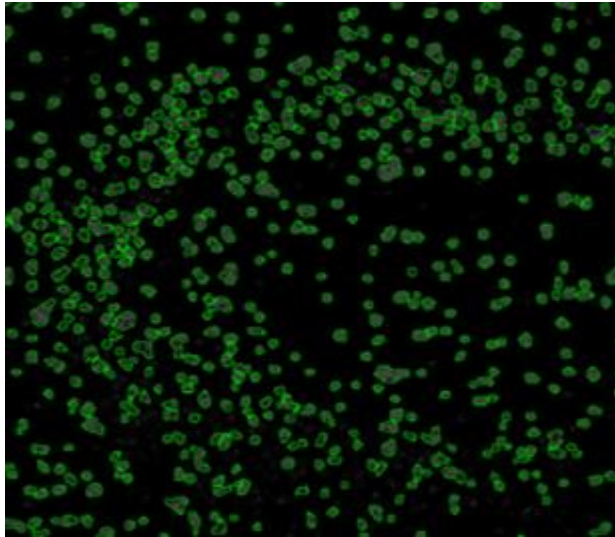
Original

Color  
separation

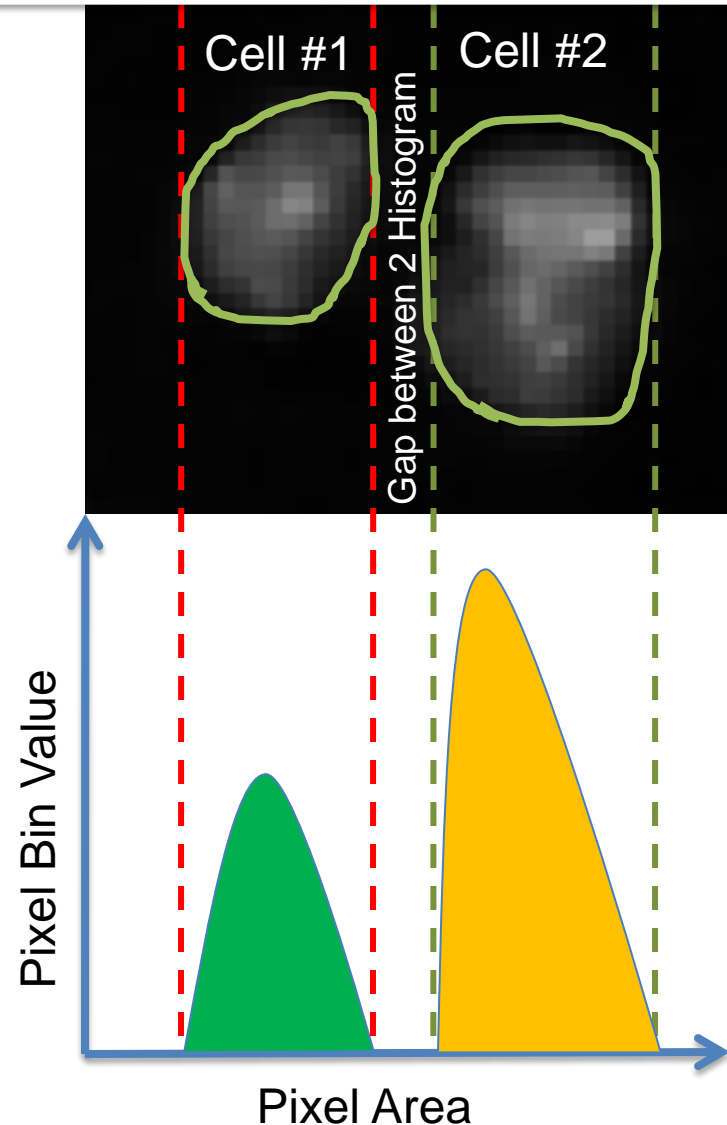
Cell  
detection



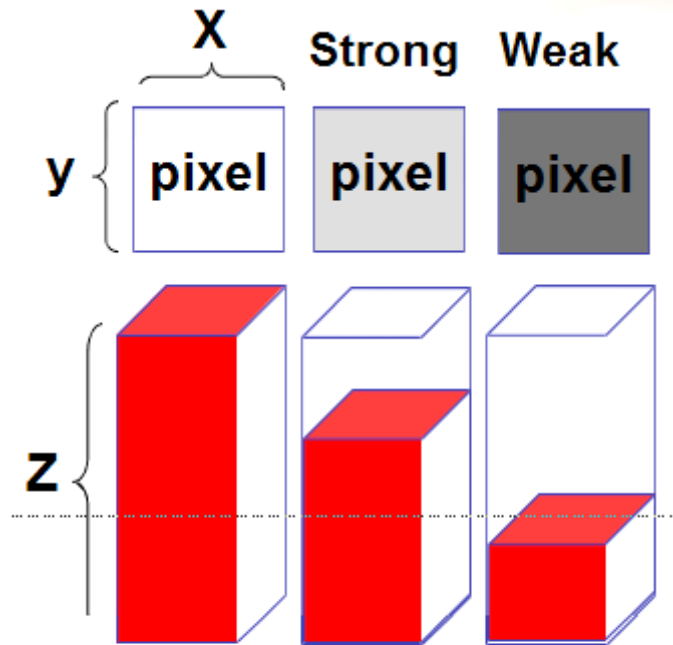
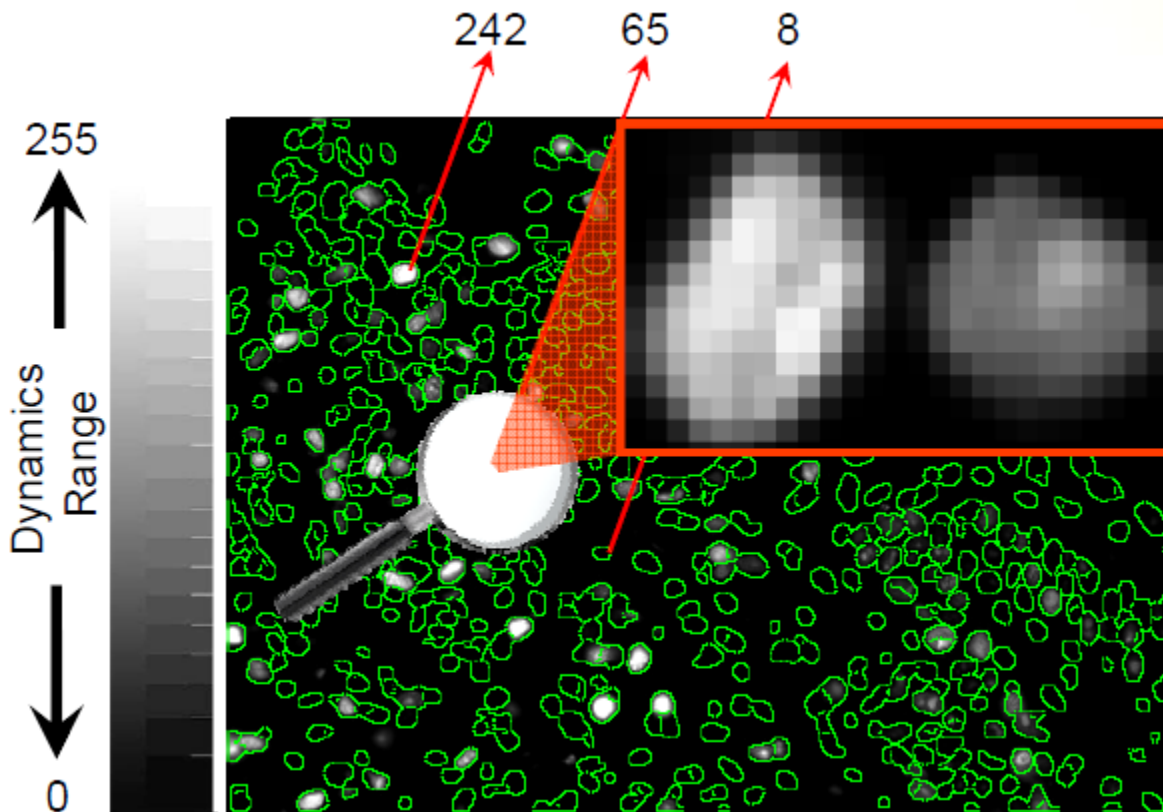
# Cell Identification



Nuclear channel , which also called “Master channel ” , is used to pick up each single cell in your tissue , after identification , you got total cell number of your sample

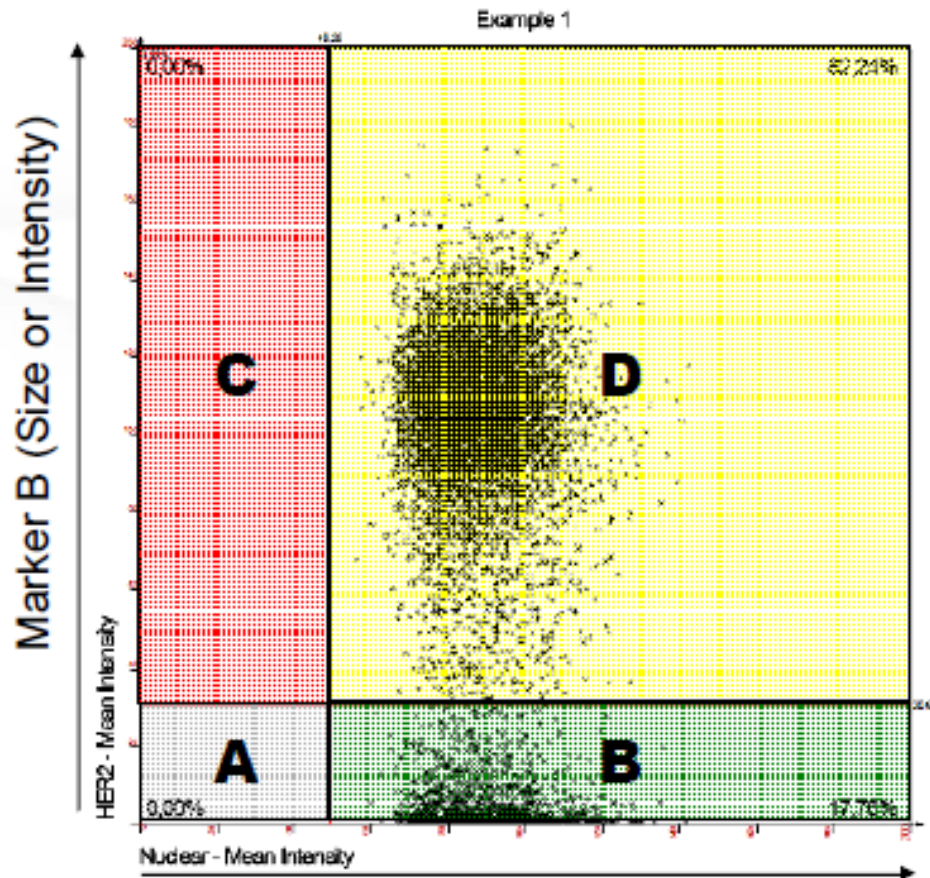


# Intensity measure



**X\*Y= each pixel area**  
**Z= pixel intensity**  
**N= number of pixel in mask**

# Statistic



## Multiple statistic information

- Total cell number in your tissue
- Cell number in each population
- Total area of your tissue
- % of Specific stained cell area cover
- % of each population in total cell
- Mean intensity of each population
- Mean size of each population

	Quadr...	Nuclea...	HER2 ...	Count	Percent	No./mm2
>	UL	0,000	0,000	0	0,00%	0,000
	UR	88,205	104,266	6647	82,24%	166175,...
	LL	0,000	0,000	0	0,00%	0,000
	LR	90,206	5,414	1435	17,76%	35875,000
	Overall	88,561	86,714	8082	100,00%	202050,...

A=Negative

B=Marker A single positive

C=Marker B single positive

D=Marker A&B double positive

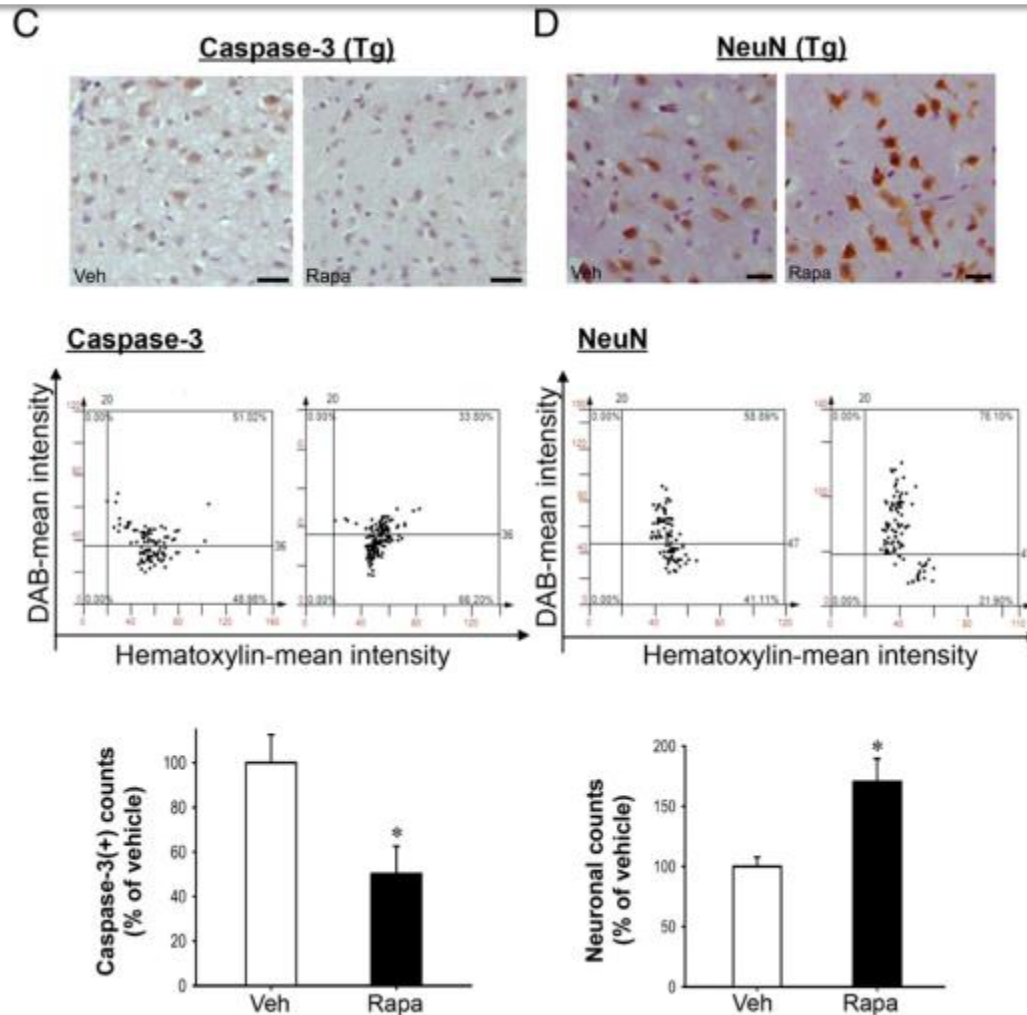
日期	論文名稱	作者	期刊	卷數	期數	頁數 (開始)	頁數 (結束)	Impact Factor	致謝
2018.10	Hypoxia-preconditioned human umbilical vein endothelial cells protect against neurovascular damage after hypoxic ischemia in neonatal brain	Lee YC, Chang YC, Wu CC, Huang CC	Mol Neurobiol	55	10	7743	7757	5.076	否
2018.11	Pterostilbene attenuates hexavalent chromium-induced allergic contact dermatitis by preventing cell apoptosis and inhibiting IL-1 $\beta$ -related NLRP3 inflammasome activation	Wang BJ, Chiu HW, Lee YL, Li CY, Wang YJ, Lee YH	J Clin Med	7	12	E489	E489	5.583	否
2018.11	Elevated serum Interleukin-8 level correlates with cancer-related cachexia and sarcopenia: an indicator for pancreatic cancer outcomes	Hou YC, Wang CJ, Chao YJ, Chen HY7, Wang HC, Tung HL, Lin JT, Shan YS	J. Clin. Med	7	12	E502	E502	5.583	是
2018.12	Synthetic $\alpha 5\beta 1$ integrin ligand PHSRN is proangiogenic and neuroprotective in cerebral ischemic stroke	Wu CC, Wang LC, Su YT, Wei WY, Tsai KJ	Biomaterials	185		142	154	8.806	否

# Paper published progress

日期	論文名稱	作者	期刊	卷數	期數	頁數 (開始)	頁數 (結束)	Impact Factor	致 謝
2019.1	Safe nanocomposite-mediated efficient delivery of microRNA plasmids for autosomal dominant polycystic kidney disease (ADPKD) therapy	Tsai YC, Teng IL, Jiang ST, Lee YC, Chiou YY, Cheng FY	Adv Healthc Mater			e1801358	e1801358	5.609	否
2019.2	SOX17 overexpression sensitizes chemoradiation response in esophageal cancer by transcriptional down-regulation of DNA repair and damage response genes	Kuo IY, Huang YL, Lin CY, Lin CH, Chang WL, Lai WW, Wang YC	J Biomed Sci	26	20	doi: 10.1186/s12929-019-0510-4		3.466	否
		<b>N=65</b> <b>IF&gt;5=45</b>							
2019.3	Low CD8 <sup>+</sup> T cell infiltration and high PD-L1 expression are associated with CD44 <sup>+</sup> /CD133 <sup>+</sup> cancer stem cells and predict an unfavorable prognosis in pancreatic cancer	Hou YC, Chao YJ, Hsieh MH, Tung HL, Wang HC, Shan YS	Cancers	11	4	E541	E541	5.326	是
2019.4	Exercise alleviates osteoporosis in rats with mild chronic kidney disease by decreasing sclerostin production	Liao HW, Huang TH, Chang YH, Liou HH, Chou YH, Sue YM, Hung PH, Chang YT, Ho PC, Tsai KJ	Int J Mol Sci	20	8	E2044	E2044	3.687	是

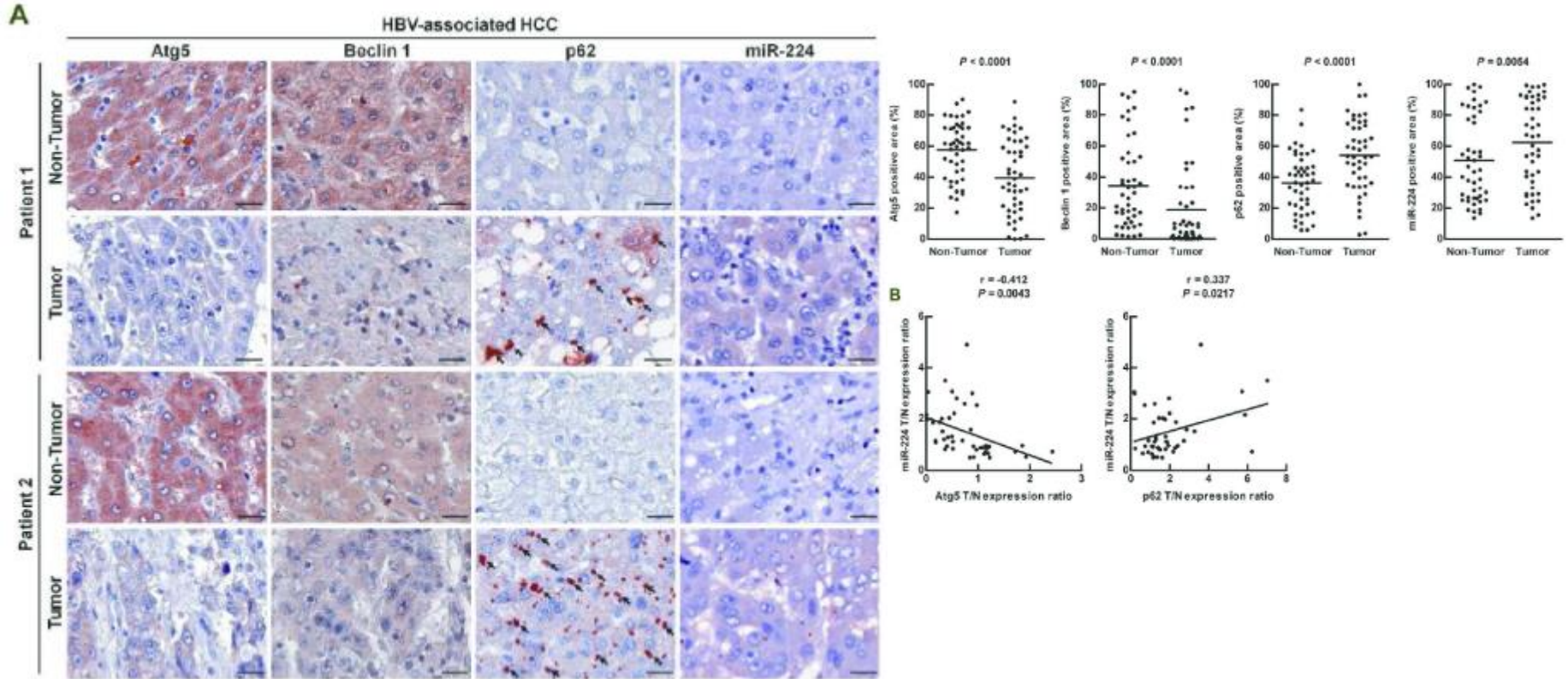


# Application



**Autophagy Activators Rescue and Alleviate Pathogenesis of a Mouse Model with Proteinopathies of the TAR DNA-binding Protein 43. 2012 Sep. I-Fang Wang et al., PNAS.**

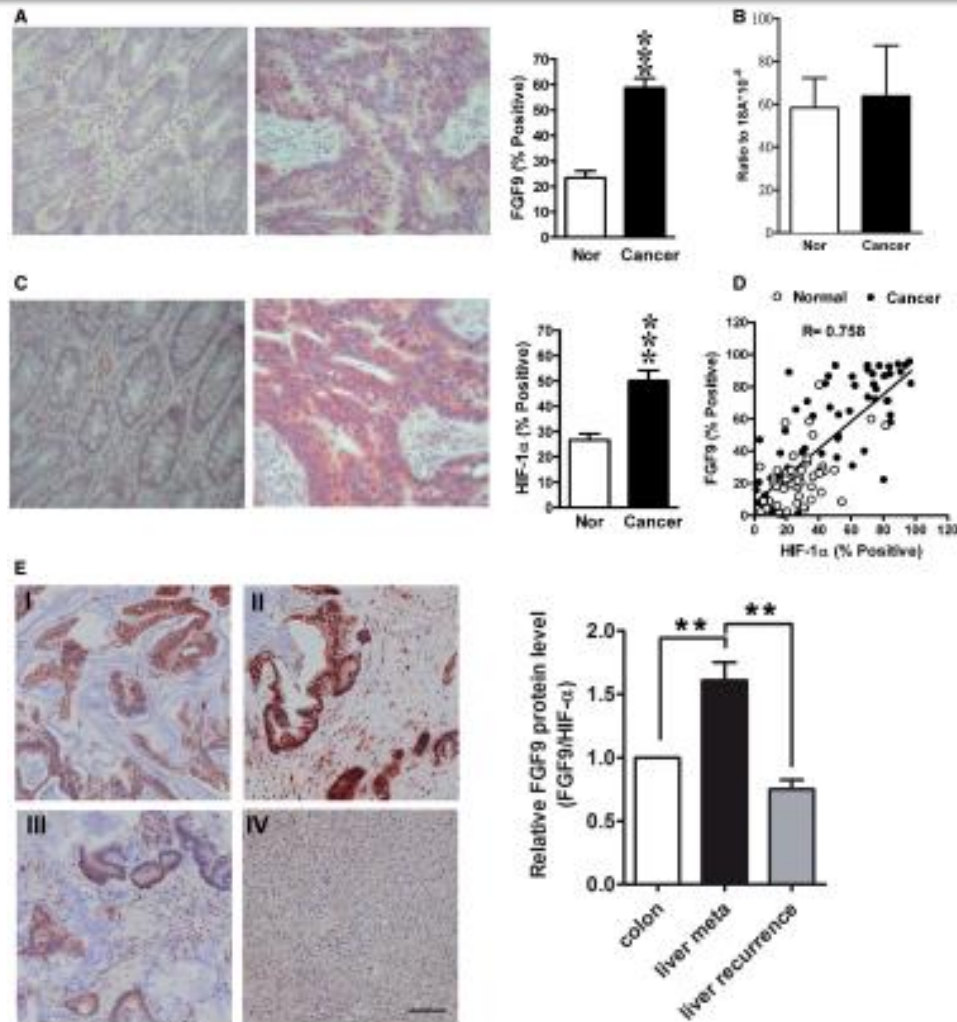
# Application



**Autophagy suppresses tumorigenesis of hepatitis B virus-associated hepatocellular carcinoma through degradation of miR-**

**224. 2013. Sheng-Hui Lan et al., *Hepatology*.**

# Application

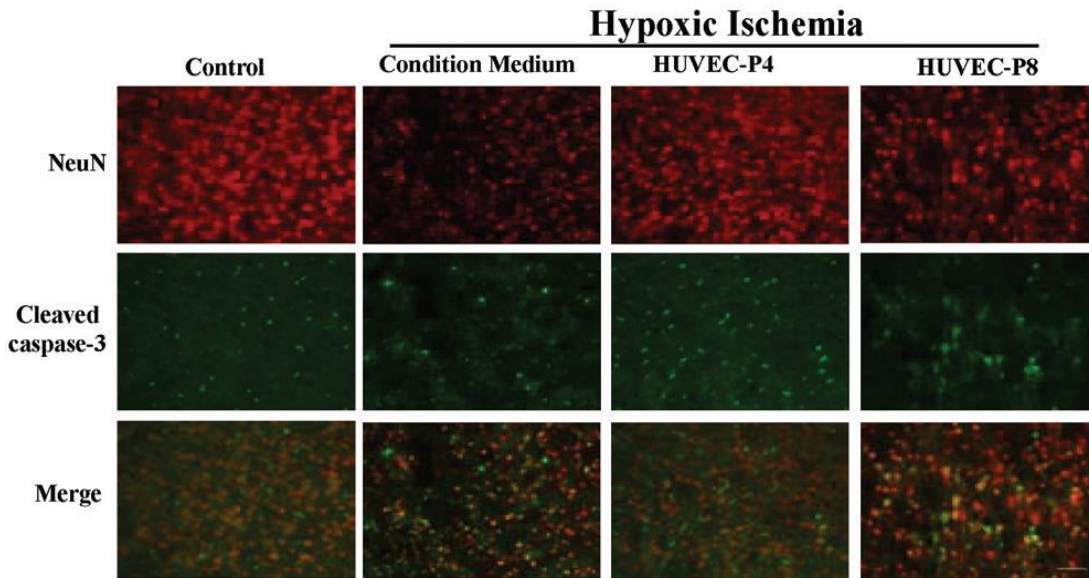


**Overexpression of FGF9 in colon cancer cells is mediated by hypoxia-induced translational activation**

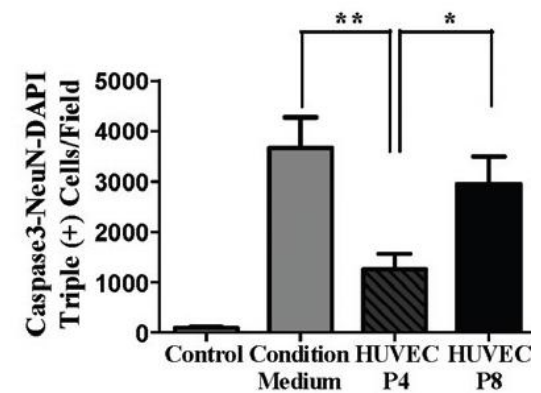
2013 Dec. Tsung-Ming Chen et al., *Nucleic Acids Research*.

# Application

A

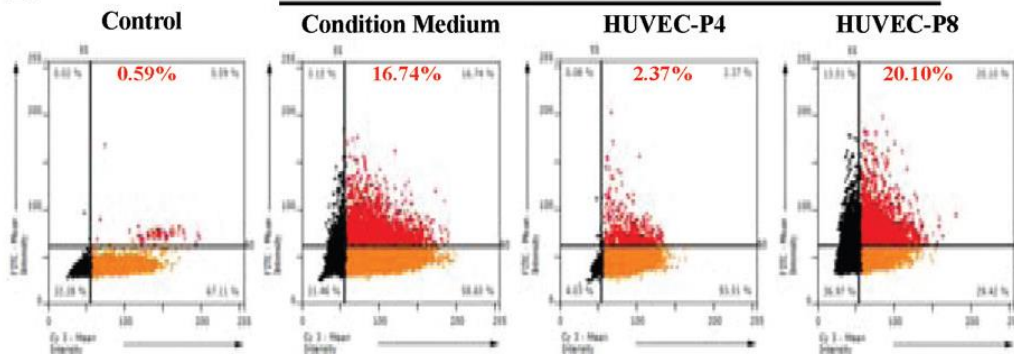


C



B

## Hypoxic Ischemia



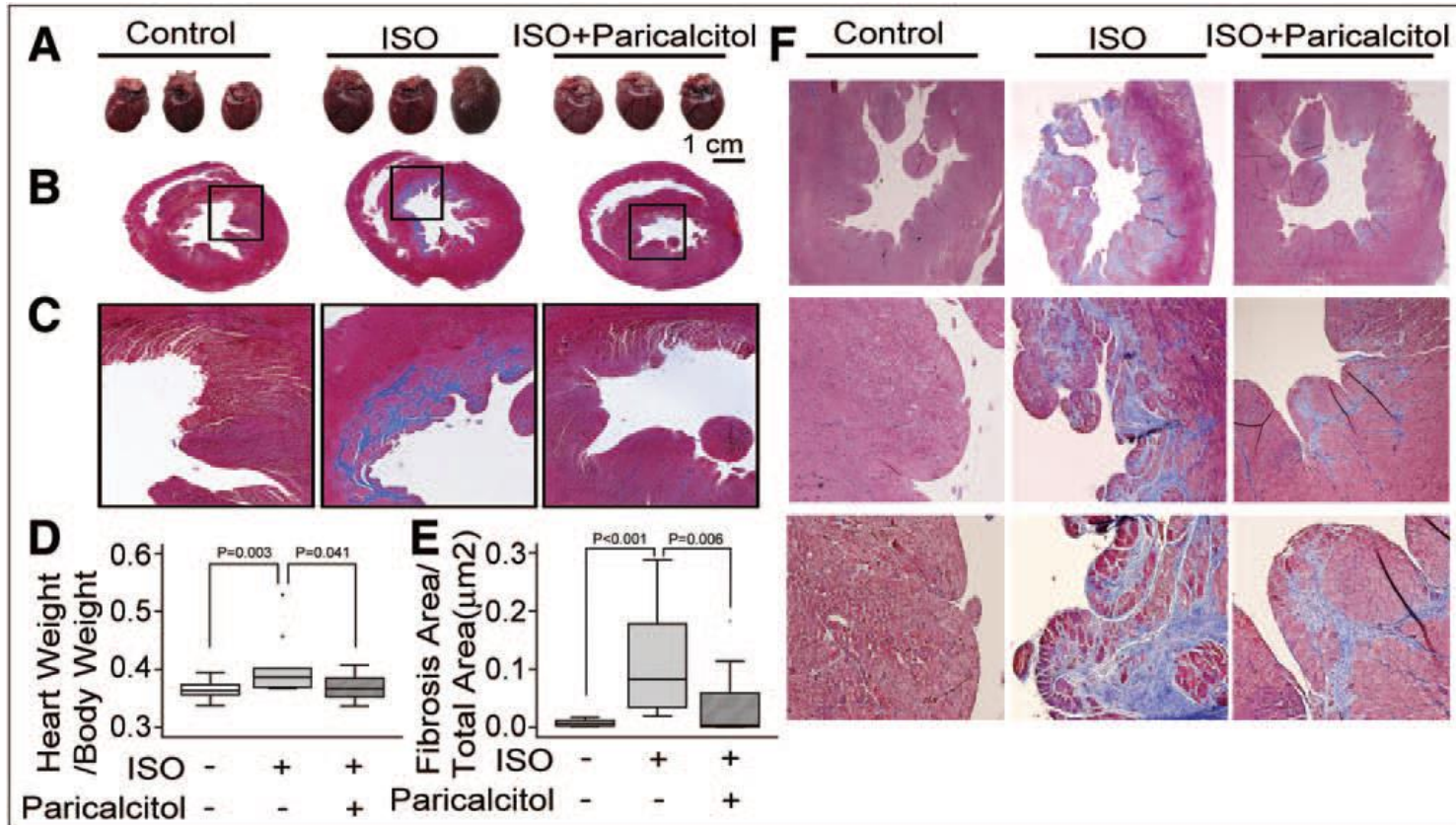
**Human Umbilical Vein Endothelial Cells Protect Against Hypoxic-Ischemic Damage in Neonatal Brain via Stromal Cell-derived Factor 1/C-X-C Chemokine Receptor Type 4.** 2013 Feb

Chia-Ching Wu et al., *Stroke* 20

Chia-Ching Wu et al., *Stroke*

20

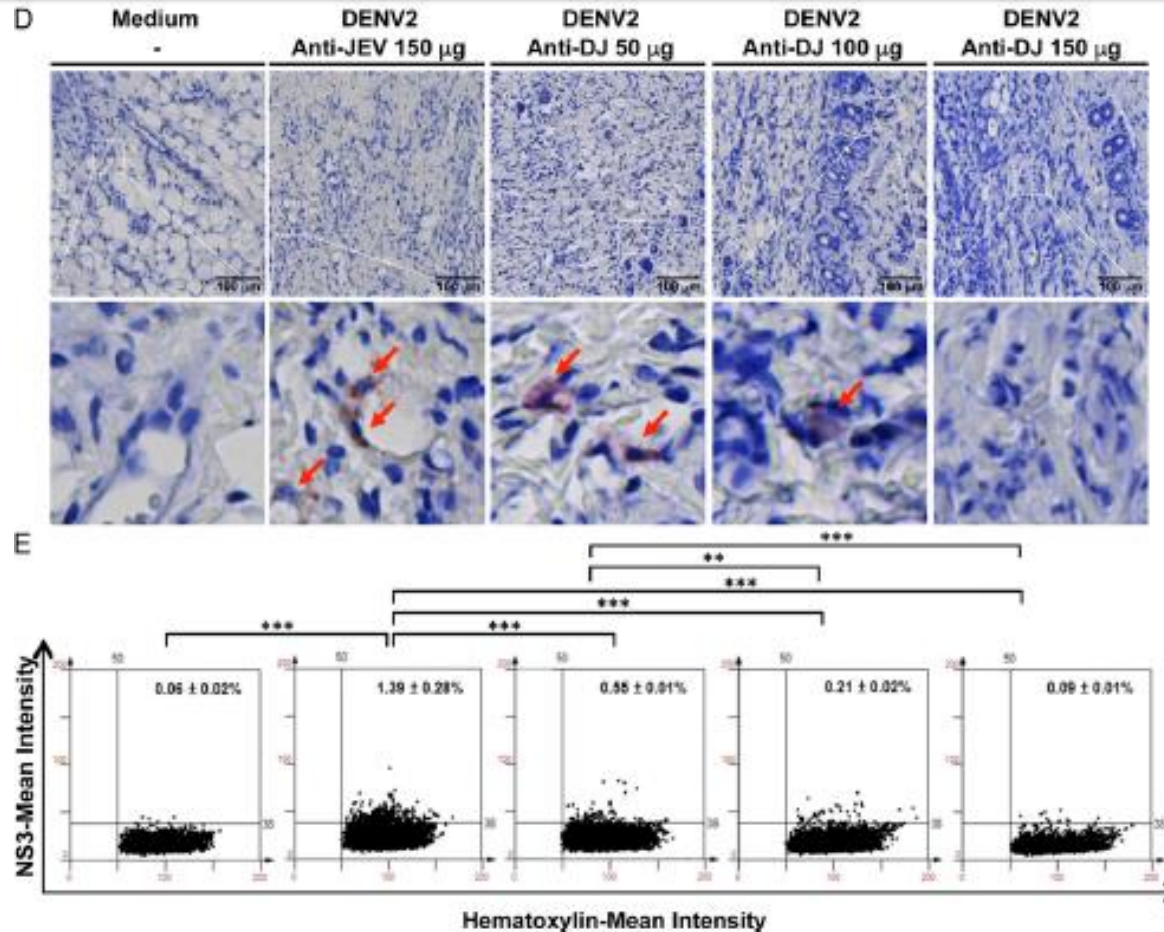
# Application



**Paricalcitol Attenuates Cardiac Fibrosis and Expression of Endothelial Cell Transition markers in Isoproterenol-Induced Cardiomyopathic Rats**

2016 *sep.* Chi-Cheng Lai et al., *Crit Care Med.*

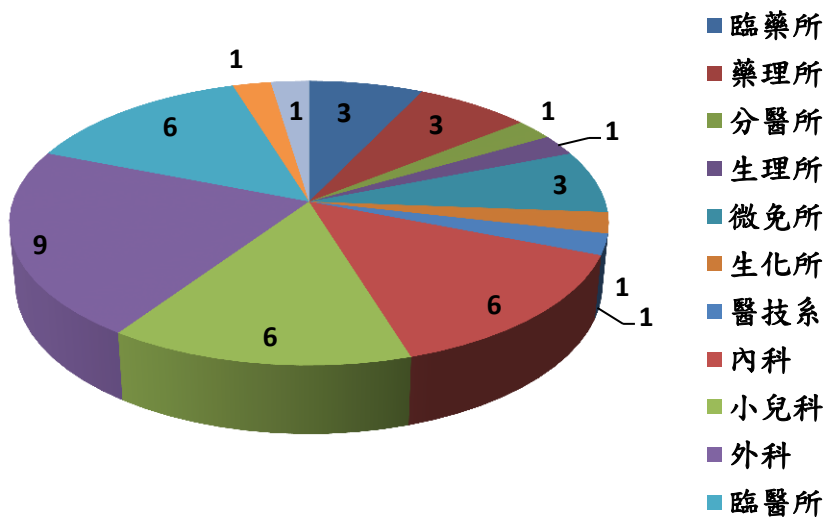
# Application



**Therapeutic Effects of Monoclonal Antibody against Dengue Virus NS1 in a STAT1 Knockout Mouse Model of Dengue Infection.** 2017 sep. Shu-wen Wang et al., *The Journal of Immunology*.

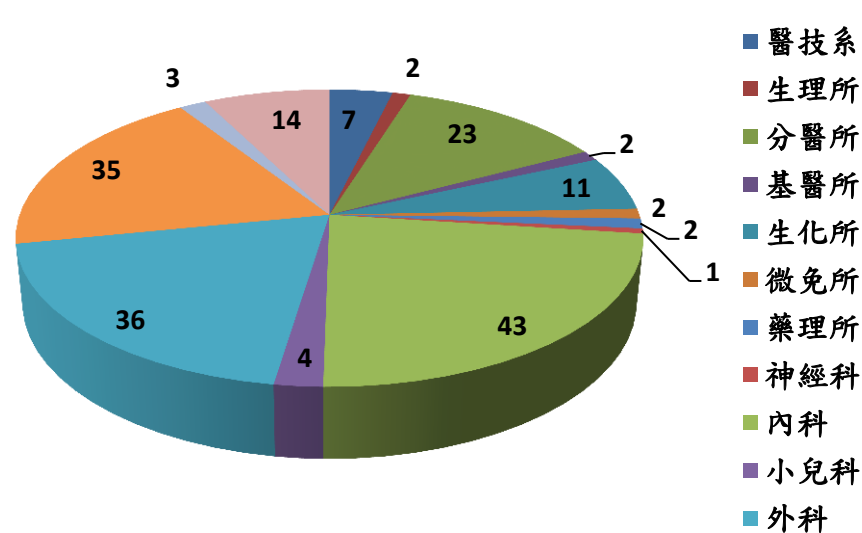
# 使用單位分佈

2019年代檢



共42人次

2019年分析



共185人次

**NCFB** 成功大學 National Cheng Kung University  
生技醫藥核心設施平台  
National Core Facility for  
Biopharmaceuticals

## 生醫光學影像核心平台 Bioimaging Core Facility

首頁 最新消息  
關於我們 儀器簡介  
成果專區 訓練課程及代檢服務  
收費標準 儀器預約  
表單下載 相關連結  
聯絡我們



**【公告】** 108年04月04日及108年04月05日因逢國定假期，故核心平台儀器皆暫停預約使用。

### 最新訊息

- ◆ 2019-03-27 **【公告】** 108年04月04日及108年04月05日因逢國定假期，故核心平台儀器皆暫停預約使用。
- ◆ 2019-03-15 **【實驗室公告】** 高通量螢光顯微藥物開發系統(HTS)系統已維修完畢，重新開放預約使用
- ◆ 2019-03-04 **【實驗室公告】** 高通量螢光顯微藥物開發系統(HTS)故障維修中，造成不便請見諒。
- ◆ 2019-02-25 **【認證課程】** 3/26(二)-3/28(四)舉辦「全內反射螢光顯微影像系統」訓練暨認證課程
- ◆ 2019-02-20 **【公告】** 108年02月28日及108年03月01日因逢國定假期，故核心平台儀器皆暫停預約使用。

[更多訊息 >>](#)

[訓練課程](#) [代檢服務](#)

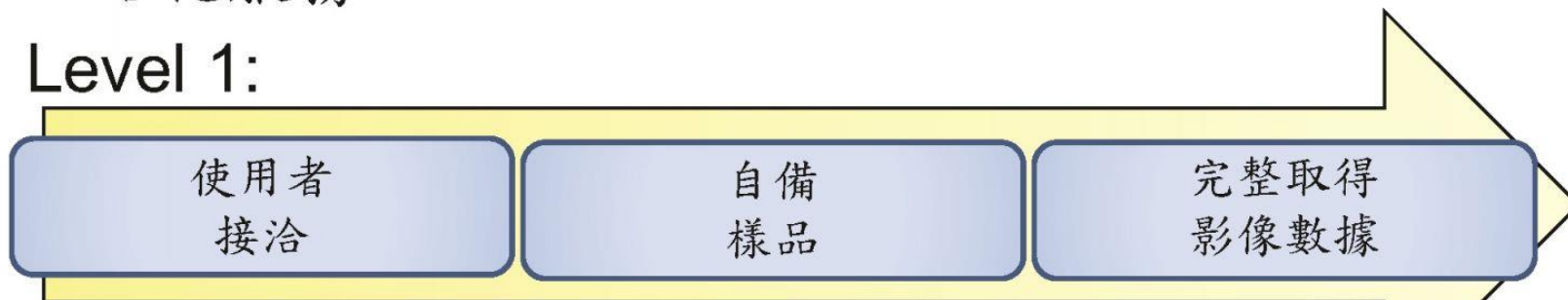
寄件地址：701 台南市東區大學路1號 國立成功大學 醫學院6樓核心實驗室  
TEL：06-2353535 ext.4931、5735、3115 | E-mail：bioimagencku@gmail.com  
訪客人數：132942

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## 一站化服務

### Level 1:



### Level 2:



# 申請表單

首頁

最新消息

關於我們

儀器簡介

成果專區

訓練課程及  
代檢服務

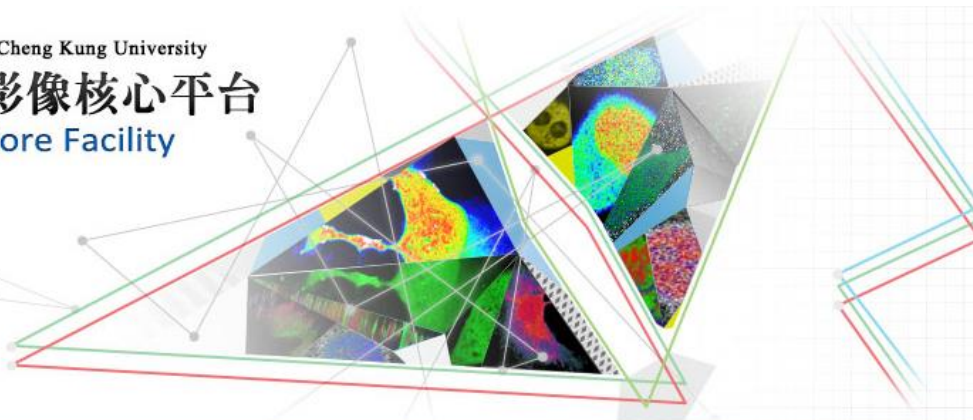
收費標準

儀器預約

表單下載

相關連結

聯絡我們



【認證課程】12/27(三)-12/29(五)舉辦共軛焦顯微影像系統與多光子顯微影像系統儀器使用認證課程

表單下載

↑ 首頁 > 表單下載

發佈時間:2017-11-21 10:39:21

◆ 核心設施使用同意證明單\_106.11.10更新 ([點此下載同意證明單](#))

◆ 服務登錄單 ([點此下載服務登錄單](#))

◆ 服務滿意度調查表 ([點此下載調查表](#))

◆ 生醫光學影像核心平台服務合約內容 ([點此下載服務合約](#))

◆ 成大醫院光學影像代檢申請單 ([點此下載代檢申請單](#))

◆ 核心平台協助教師/廠商辦理儀器講座合約書 ([點此下載合約書](#))

◆ MetaMorph 分析軟體轉介單 ([點此下載轉介單](#))

# 代檢服務及管理項目、收費標準

(104年5月1日加入科技部核心平台)

教育訓練

預約管理

儀器代檢

技術諮詢

收費項目	收費標準	
	學術界	業界
代檢	1100元/小時	1450元/小時
自行分析	外來影像200元/小時	外來影像250元/小時

\*收費以小時為單位，未滿一小時以一小時計費

\*使用全景拍照系統者可免費使用分析軟體

# 全景組織體細胞核心實驗室

位 置：成大醫院門診大樓六樓光學影像核心實驗室

顧問研究員：蔡坤哲 老師 ext. 06-2353535#4254

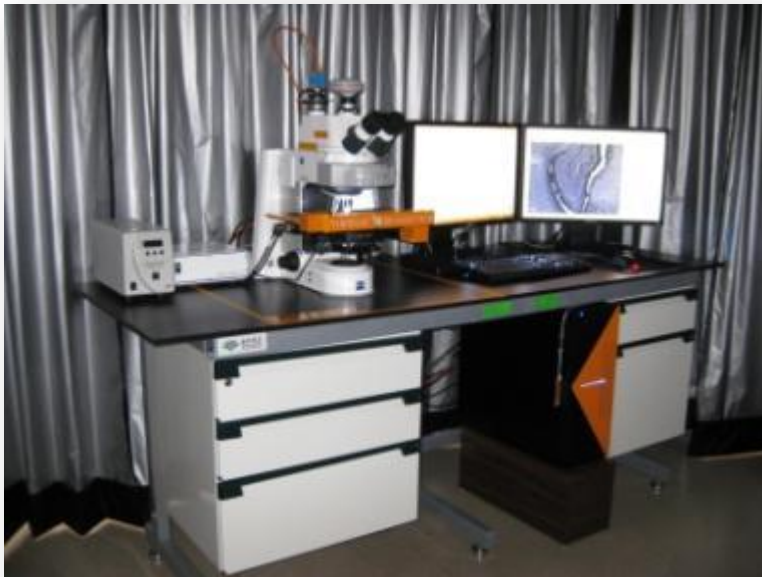
Email: kjtsai@mail.ncku.edu.tw

技術員：蕭雅純 小姐 ext. 06-2353535#3115

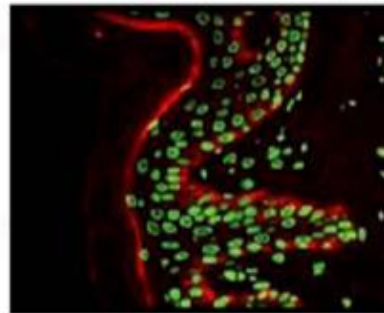
Email: n953438@mail.hosp.ncku.edu.tw

核心技術：將組織切片影像數位化，並定量組織細胞資訊。

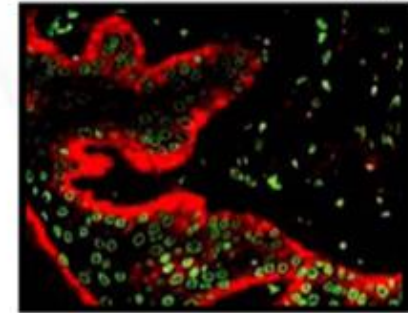
儀器設備：影像擷取→代檢；離線分析電腦系統→獨立使用



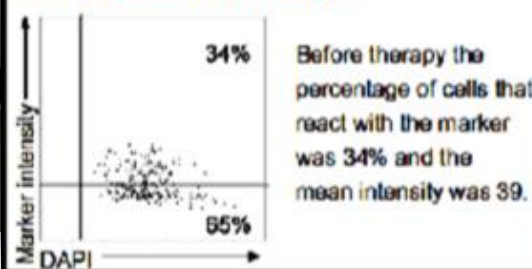
Normal skin before therapy



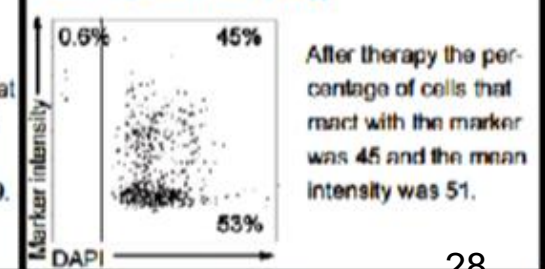
Normal skin after therapy



Marker expression before therapy



Marker expression after therapy



精準率高、有效率高、可靠性佳



**Thank you for your attention!**