



The Outlook of DR. Chip

DR. Chip Biotechnology Incorporation



Market of Food safety testing

Year	Country	Total value	
2004	American	277 million dollars	
2009	American	416 million dollars	1.5 times
2012	American	3.35 billion dollars	8.1 times
2017	American	4.4 billion dollars	+1.05 billion dollars
2004	Taiwan	117 million NTD	
2009	Taiwan	175 million NTD	
2012	Taiwan	<700 million NTD	
2020	Taiwan	3 billion NTD	
2020	China	792 million dollars	
2018	Global	19.7 billion dollars	

Resource : Taiwan Institute of Economic Research



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Pioneer of Biochip Products



Product Advantage of DR. Chip

The technology of DR. Chip will lead the food testing toward miniaturization



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The Difference of DR. Chip



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Customers need to prepare



All you need is 30 m² space and 1 operator

Services of DR. Chip

- Lab planning and design
- Operate equipment
- Procedure teaching
- After-sales service
- Professional advice



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Food safety detection system

DR. ELISA

Extract



Centrifuge



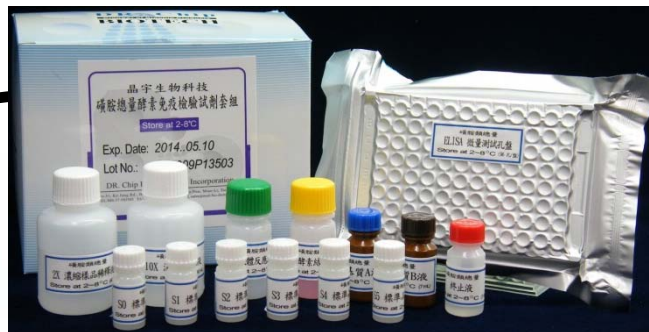
Concentrate



Screen & Result



Operating



Only in 2 hours



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The Advantage of DR. Chip's ELISA Kit



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「食品安全鐵三角」

食安黑心無良廠商在台灣無法立足





They all choose DR. Chip



Industrial development of DR.CHIP

✓ **Human Diagnostics**

- 1) DR. HPV Genotyping IVD Kit
- 2) DR. MTBC Screen IVD Kit
- 3) DR. Microorganism IVD Kit
- 4) Contact lens(Subsidiary Operating)

✓ **Pathogen Screening Reserch**

- 1) DR. HBV IVD Kit
- 2) DR. RV (Respiratory Virus) IVD Kit
- 3) DR. EV (Enterovirus) IVD Kit

✓ **Food & Plant Science**

- 1) DR. Food-10 Kit
- 2) Betagro DR. Salmonella Kit
- 3) DR. Milk Kit
- 4) DR. Brewery Kit
- 5) DR. Orchid Kit

✓ **Apparatus**

- 1) DR. Mini Oven
- 2) DR. Fluidic Station
- 3) DR. AiM Reader





DR. Food-10

solve all problems of microorganism assay

DR. Chip

Ensure Food Safety

DR. Food-10™ Kit



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TROUBLES

when you use traditional microorganism assay method



Lots of people/materials



Mass experiment space



Pollutions of microorganism



Plenty of time



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DR. Food-10

solve all problems of microorganism assay



Immediately

Production line never stop



Cost Down !

(People/Time/Supplies)



Simple & Fast

Result comply with CNS



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Certification of DR. Food-10 Chip



b) 検出キット類 **食品衛生検査指針(2004)**

製品名	用途	製造または販売元
PYR キット	鑑別用	アスカ純薬, 三菱ヤトロン, Oxoid
サルモネラチェック	イムノアッセイ	三菱ヤトロン
F-サルモネラ「生研」	イムノアッセイ	デンカ生研
サルモネラアッセイ	イムノアッセイ	Gene Trak
Dynabeads anti Salmonella	イムノアッセイ	Dynal
Salmonella-Tek ELISA	イムノアッセイ	オルガノ
Reveal	イムノアッセイ	Neogen
Assurance Salmonella EIA	イムノアッセイ	BioControl
Path-Stik Salmonella IC, Dip stick	イムノアッセイ	Lumac
TECRA Salmonella VIP	イムノアッセイ	セティ
Salmonella immunoassay	イムノアッセイ	Transia
Taq Man Salmonella PCR Amplification / Detection Kit	DNA アッセイ	PE ビオシステムズ
核さんテストサルモネラ Amplification / Detection Kit	DNA アッセイ	日本製粉
サルモネラ菌 (invA) 遺伝子, One Step PCR Screening Kit	DNA アッセイ	PE ビオシステムズ
DR. Food™ chip	DNA アッセイ	関東化学



ISO 13485(2003)



SN/T 1543(2005)

SN

中华人民共和国出入境检验检疫行业标准

SN/T 1543—2005

食源性致病菌基因芯片鉴定方法

GeneChip methods for identification of foodborne pathogens

2005-02-17 发布

2005-07-01 实施

中华人民共和国
国家质量监督检验检疫总局 发布



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Worried about fake meat?

You may trust DR. Meat

DR. Chip

DR. Meat™ Kit

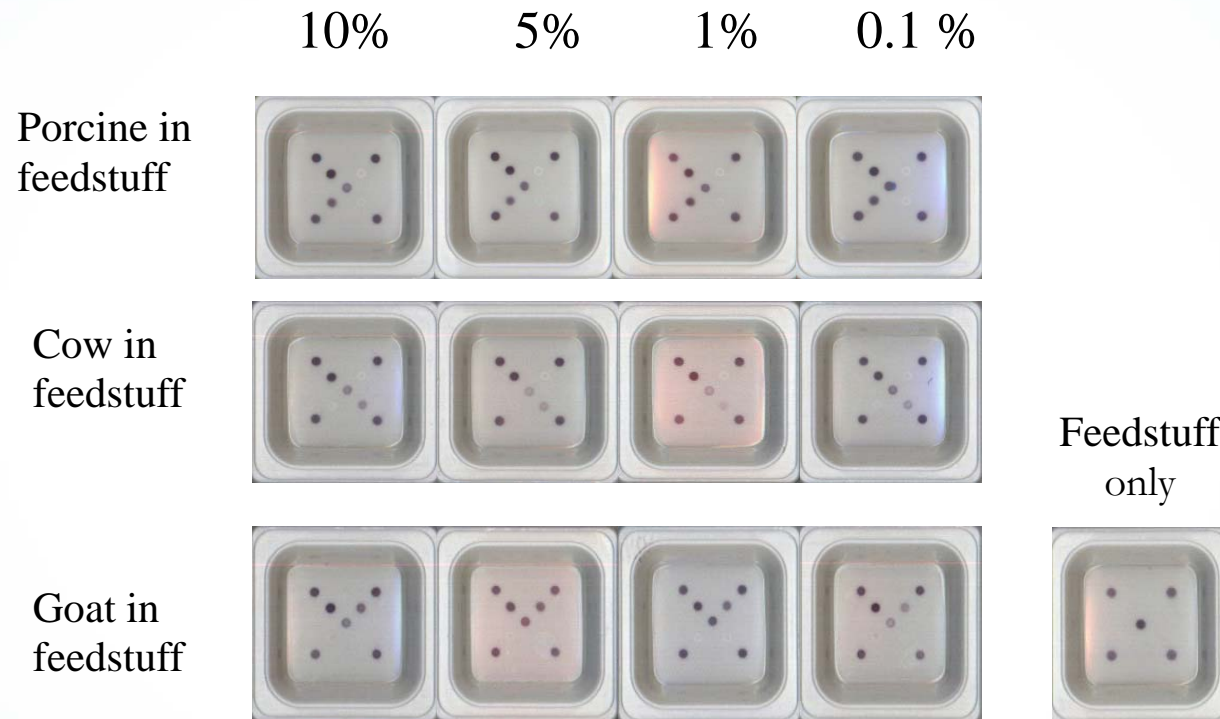


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DR. Meat

Extremely few meat also can be tested



⇒ Even though only 0.1% meat in feedstuff, it also can be tested.

⇒ DR. Meat can be used on “Vegetarian identification” and

“HALAL certification”



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DR. HPV Genotyping IVD Kit

(晶宇人類乳突病毒基因分型檢測套組)

第三類查登許可證 - 第004934號



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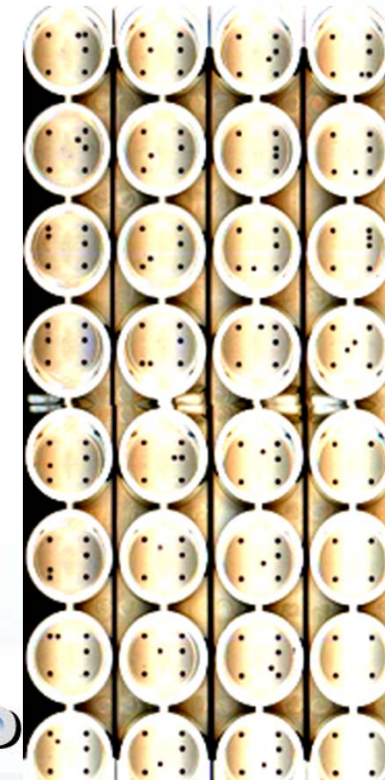
DR. HPV Genotyping IVD KIT

(晶宇人類乳突病毒基因分型檢測套組)

- 可同時偵測27種HPV型別，並具有一HPV共通性探針
- 階段式品管：PCR control (β -globin)，Hybridization control
- 高風險型別：HPV16/18/31/33/35/39/45/51/52/56/58/59/68/73/82
- 中低風險型別：HPV6/11/53/54/61/62/66/69/70/72/81/84

晶片判讀方向

B1	●	HPV16	A4	●	HPV68
C1	●	HPV18	B4	●	HPV69
D1	●	HPV31	D4	●	HPV70
E1	●	HPV33	E4	●	HPV73
A2	●	HPV35	F4	●	HPV82
B2	●	HPV39	A5	●	HPV6
C2	●	HPV45	B5	●	HPV11
D2	●	HPV51	C5	●	HPV54
E2	●	HPV52	D5	●	HPV61
F2	●	HPV53	E5	●	HPV72
A1, A6, F1, F6	●	Hybridization Positive Control	B3	●	HPV56
C4, D3	●	β -globin	C3	●	HPV58
A3	○	Negative control	E3	●	HPV59
C6	●	HPV consensus	F3	●	HPV66





DR. MTBC Screen IVD Kit

(晶宇結核分枝桿菌群檢驗試劑套組)
第三類查登許可證 - 第003020號

DR. Chip Microorganism IVD Kit

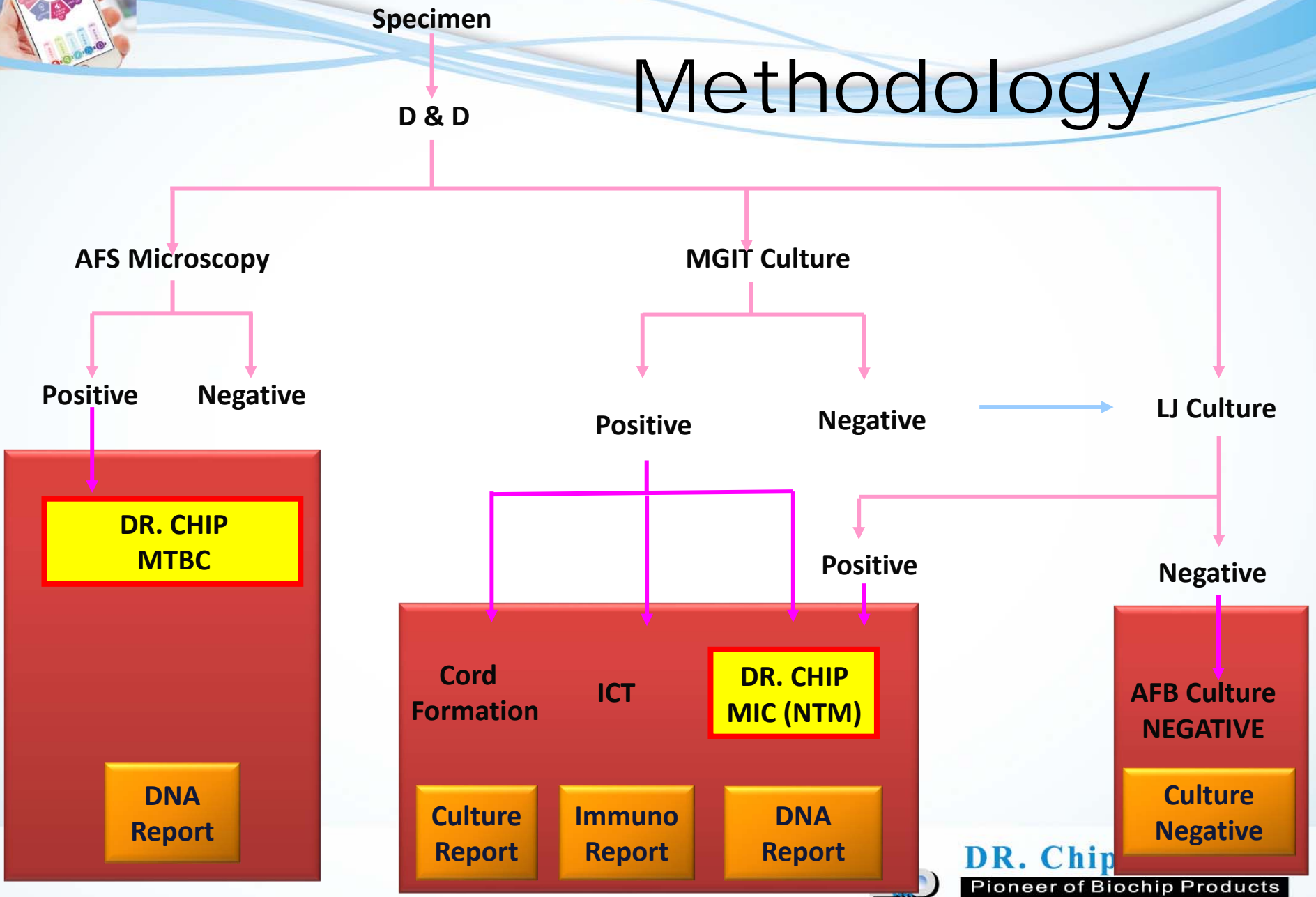
(晶宇微生物檢驗試劑套組)
RIF抗藥檢驗及17種非結核分枝桿菌分型
第一類查登許可證 - 第004446號



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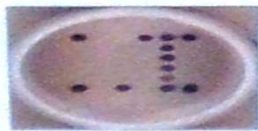


Methodology

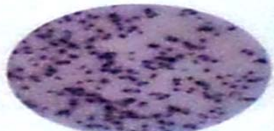




USE STATUS



Chip assay



Interferon- γ release assay

Investigation of the Distribution in *Mycobacteria* spp. with ITS Probe

利用ITS雜交探針探討分枝桿菌屬分布情形

Laboratory Department, Chest Hospital, Department of Health, Executive Yuan, Taiwan
行政院衛生署胸腔病院檢驗科
Meng-Hsun Chen, Shao-Tsung Huang, Chia-Jung Chiang, Han-ni Tsai, Su-Yin Chang, Mei-Heng Tseng
陳盟勳 黃紹宗 蔣佳蓉 張素英 曾美亨

研究背景
分枝桿菌 (*Mycobacterium*)，該屬細菌包括許多已和疾病相關動物中造成嚴重疾病的病原菌，尤其為結核分枝桿菌 (MTBC, *Mycobacterium tuberculosis* complex) 最為重要。過去台灣結核盛行率甚高，但隨著抗結核治療進步，結核菌的比率逐漸下降，但結核分枝桿菌 (NTM, *Non-tuberculous mycobacterium*) 的比率也逐漸上升。臨床上也發現NTM感染人的病例也增加趨勢。因此，建立分枝桿菌混合MTBC及NTM不能充分鑑定醫藥的意義，故發展其他分枝桿菌分型的快速工具，亦即探討交與聯合鑑定意義。

實驗目的
依結核分枝桿菌及臨床常見之非結核分枝桿菌屬共計12型設計DNA探針，分析各屬種的感染病人之情形。

實驗設計
實驗流程
本研究利用分枝桿菌屬16S-23S rDNA中間之內轉錄間隔 (ITS, internal transcribed spacer) 之具備高度變異性，被利用其鑑定分枝桿菌的型別。以ITS設計為引子進行聚合鏈鎖反應擴增核酸，並依結核分枝桿菌及臨床常見之非結核分枝桿菌屬設計DNA探針，PCR產物與探針進行雜交反應，利用Biotin-streptavidin方式呈色之雜交膜。最後依呈色之雜交膜即可判讀分枝桿菌屬之屬種，統計各屬種之數量，得到各屬種感染病人之比率。

數據討論
依照圖二探討分型的結果，觀察其探針呈色顯示，即為該屬種之屬名。

實驗結果

Species	Strain	No.	Percentage
M. tuberculosis complex	M. tuberculosis	58	31.17%
	M. bovis	1	0.53%
	M. goodii	1	0.53%
Non-tuberculous mycobacteria	M. abscessus	1	0.53%
	M. fortuitum	8	4.38%
	M. chelonae	8	4.38%
	M. neoaurum	8	4.38%
	M. goodii	8	4.38%
	M. fortuitum	1	0.53%
	M. neoaurum	1	0.53%
	M. fortuitum	1	0.53%
	M. neoaurum	1	0.53%

圖二、探針分型圖

1800株結核菌分型，MTBC、NTM與混合感染 (mix infection) 所佔之比率分別為40.78% (734/1800)、56.67% (1020/1800) 與2.55% (46/1800)。其中非結核分枝桿菌中以MAC (*M. avium* complex) 為21.17% (281/1800)、*M. abscessus* 17.28% (311/1800) 與 *M. fortuitum* 7% (126/1800) 所佔比例最高。其他如 *M. chelonae* 或 *M. mageritense* 及 *M. szulgai* 佔比例較少 (0.33%、0.22% 與 0.39%) 佔是仍會造成臨床病人的疾病與治療。

由以上可知，臨床非結核分枝桿菌 (56.67%) 造成感染之比率大於結核菌 (40.78%)。其中MAC (21.17%) 為非結核分枝桿菌之多數，表示非結核分枝桿菌在臨床感染病人的情形已趨於普遍。過去，由於結核病是社會相當重要之傳染病，如非結核菌感染率下降，而NTM感染逐漸顯著，因此，未來非結核分枝桿菌的分型亦將趨於重要。

圖二、分枝桿菌屬16S-23S ITS引子

Application of Genetic Diversity at 16S-23S rDNA Internal Transcribed Spacer for Identifying *Mycobacterium* by Probe Hybridization

利用探針雜交之方式鑑定分枝桿菌：16S-23S rDNA內轉錄間隔變異性的應用

Laboratory Department, Chest Hospital, Department of Health, Executive Yuan, Taiwan
行政院衛生署胸腔病院檢驗科
Meng-Hsun Chen, Shao-Tsung Huang, Chia-Jung Chiang, Tung-Huan Wu
陳盟勳 黃紹宗 蔣佳蓉 吳東桓

目的
臨床感染非結核分枝桿菌 (Non-tuberculous mycobacterium, NTM) 之病例增加趨勢，因此分枝桿菌之屬種鑑定趨於重要。現今研究發現許多非結核分枝桿菌屬之基因片段，可針對這些基因片段於不同種類的生物晶片上，以分子雜交方式進行分枝桿菌屬之屬種鑑定。

實驗設計
實驗流程
收集臨床感染非結核分枝桿菌 (NTM) 之菌株，進行消化去污物後置於L-J培養基，將培養物接種於含有DNA探針之Hsp-PCR探針，以生物雜交為標準，以評估ITS雜交之效果，如圖一所示。

實驗結果
本研究分析分枝桿菌屬共計105株 (25株MTBC、80株NTM)，此種方法能將結核菌屬25株，正確率為100% (25/25)。如表二，15株非結核菌Hsp-PCR進行分析，結核菌屬一致性百分比 (PPA, Positive Percent Agreement) 為100% (4/4)；結核菌屬一致性百分比 (NPA, Negative Percent Agreement) 為100% (12/12)。與 *M. tuberculosis*、*M. goodii*、*M. intracellulare*、*M. abscessus* 等結核菌屬皆符合。

表一、聯合鑑定反應條件

Species	Strain	No.	Percentage
M. tuberculosis complex	M. tuberculosis	58	31.17%
	M. bovis	1	0.53%
	M. goodii	1	0.53%
Non-tuberculous mycobacteria	M. abscessus	1	0.53%
	M. fortuitum	8	4.38%
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表二、分枝桿菌屬16S-23S ITS引子

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	M. neoaurum	1	0.53%
	M. fortuitum	1	0.53%
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表三、Hsp-PCR一致性

Species	Strain	No.	Percentage
M. tuberculosis complex	M. tuberculosis	58	31.17%
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	M. fortuitum	1	0.53%
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	M. fortuitum	1	0.53%
	M. neoaurum	1	0.53%

表四、標準菌種分型結果

Species	Strain	No.	Percentage
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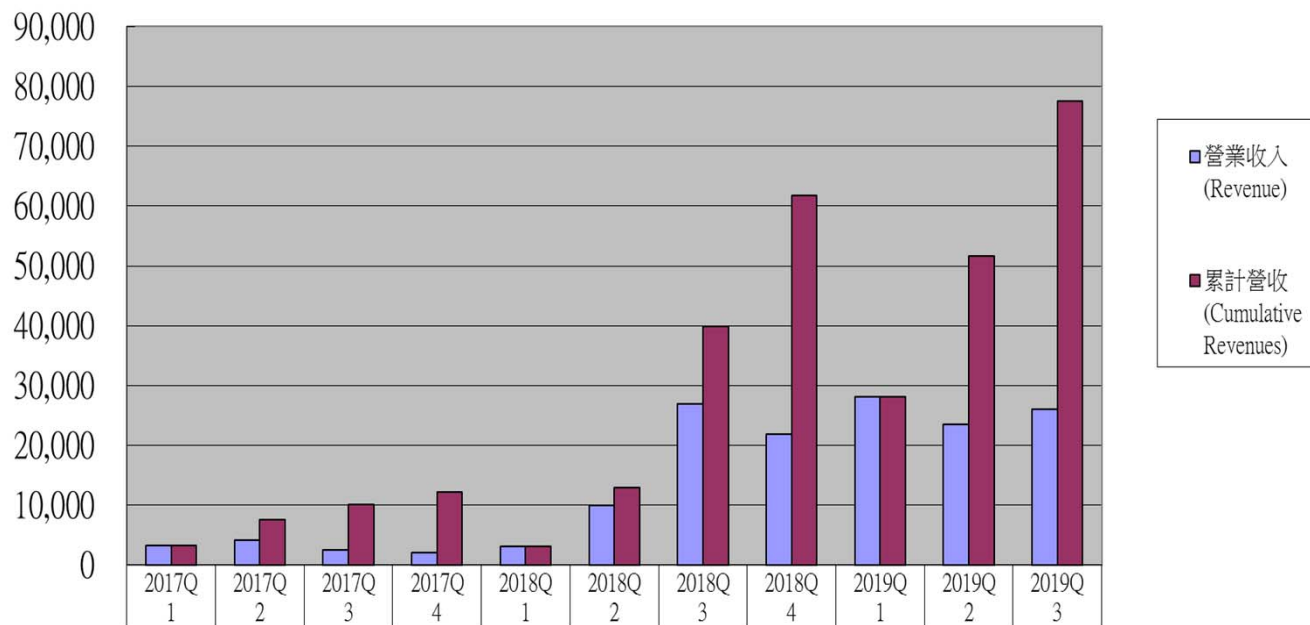
由實驗數據顯示，利用分枝桿菌ITS region之雜交膜可判讀結核菌的屬種，其結果與Hsp-PCR一致。同時也可進行非結核分枝桿菌屬的分型，而此分子雜交膜從生物晶片鑑定快速，可以大幅減少人力與時間，提高檢驗報告的準確性。除此之外，雜交膜也可以使用分枝桿菌屬不同屬種，未來可以解決更多屬種的問題。



Financial status and risk of DR.CHIP

DR.CHIP is still at a loss state in recent years , so please investors should be prudent investment.

單位:仟元,每季(UNIT:THOUASND,QUARTER)



營業收入 (Revenue)	3,318	4,223	2,599	2,097	3,064	9,916	26,945	21,867	28,150	23,495	25,984
累計營收 (Cumulative Revenues)	3,318	7,541	10,140	12,237	3,064	12,980	39,925	61,792	28,150	51,645	77,629

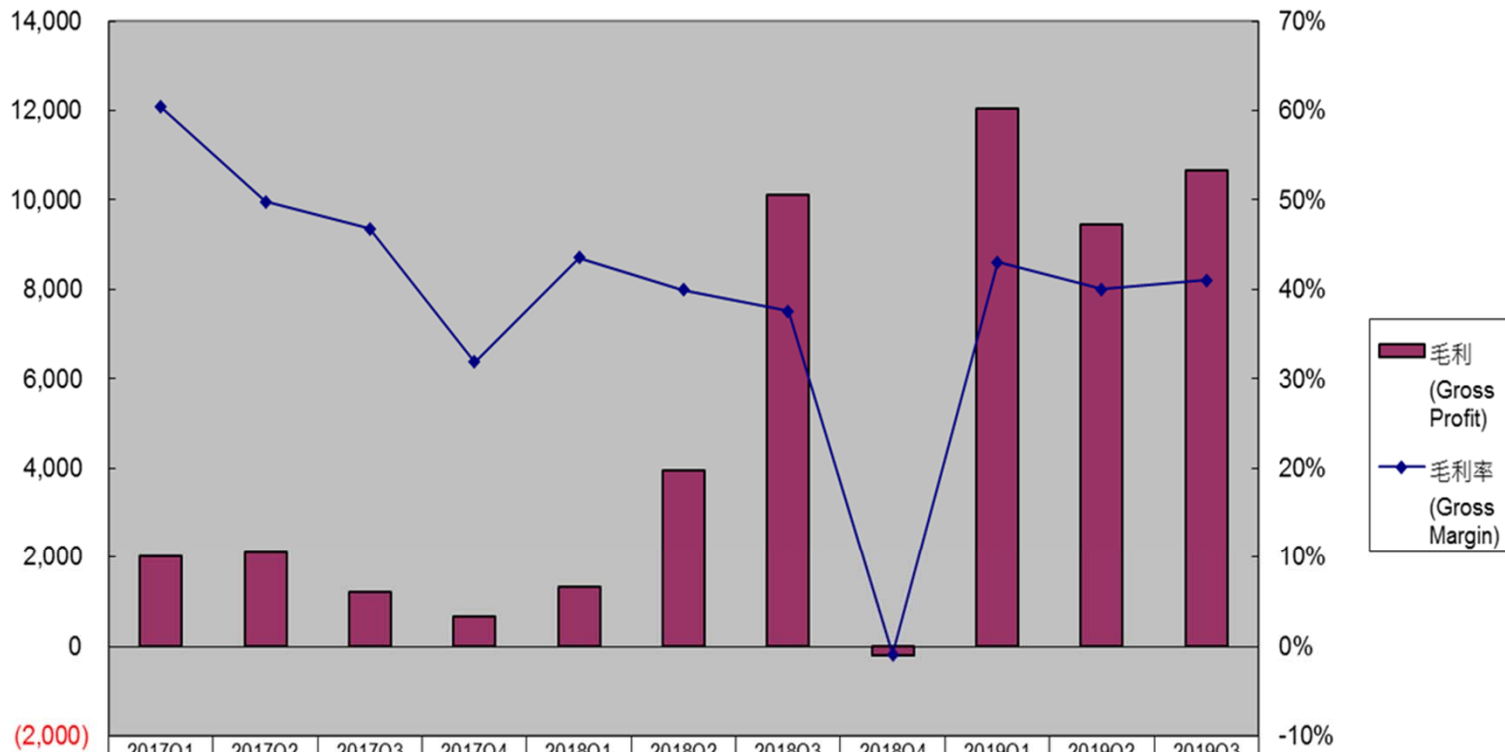


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單位:千元,每季(UNIT:THOUSAND,QUARTER)



(2,000)

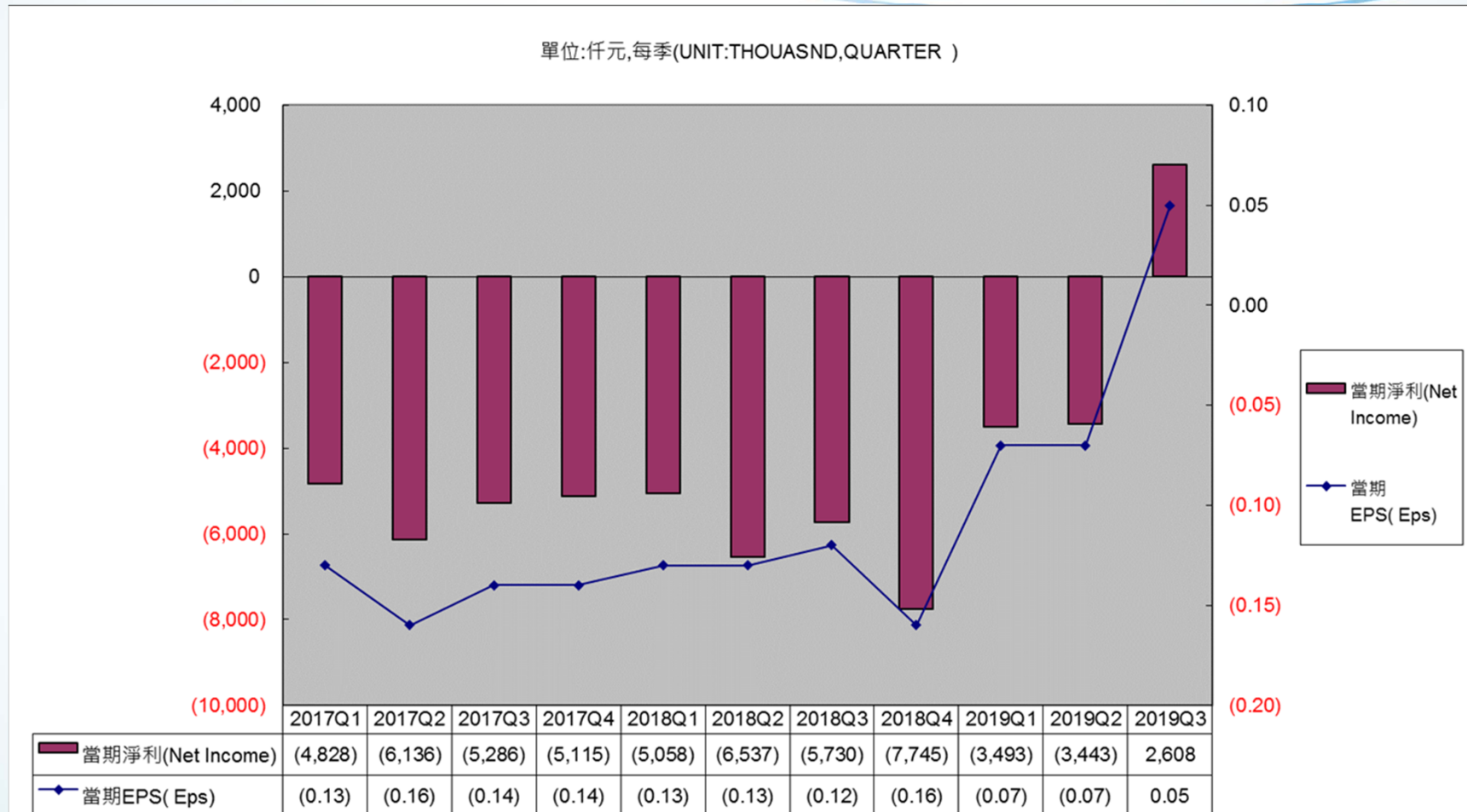
毛利(Gross Profit)	2,004	2,103	1,215	668	1,334	3,960	10,115	(195)	12,043	9,449	10,649
毛利率(Gross Margin)	60%	50%	47%	32%	44%	40%	38%	-1%	43%	40%	41%



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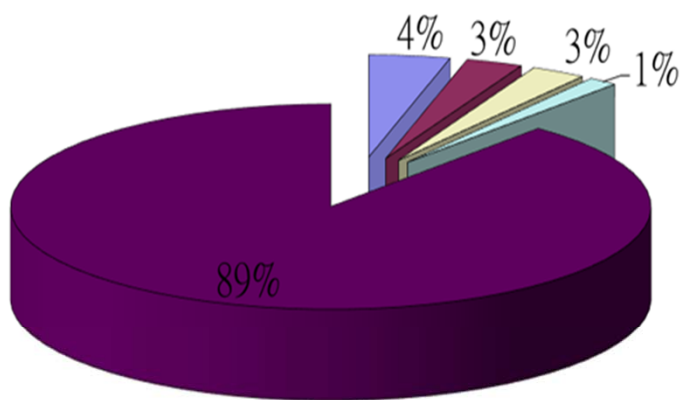


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2019 YEAR PRODUCT CATEGORY (UNIT:THOUASND)



- 子宮頸乳突病毒檢測套組(HPV KIT)
- 肺結核暨其抗藥性產品檢測套組銷售(TB KIT)
- 食安類檢測產品(FOOD KIT)
- 其他類(OTHER)
- 子公司隱型眼鏡營收(Subsidiary Operating revenue)





THE END



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