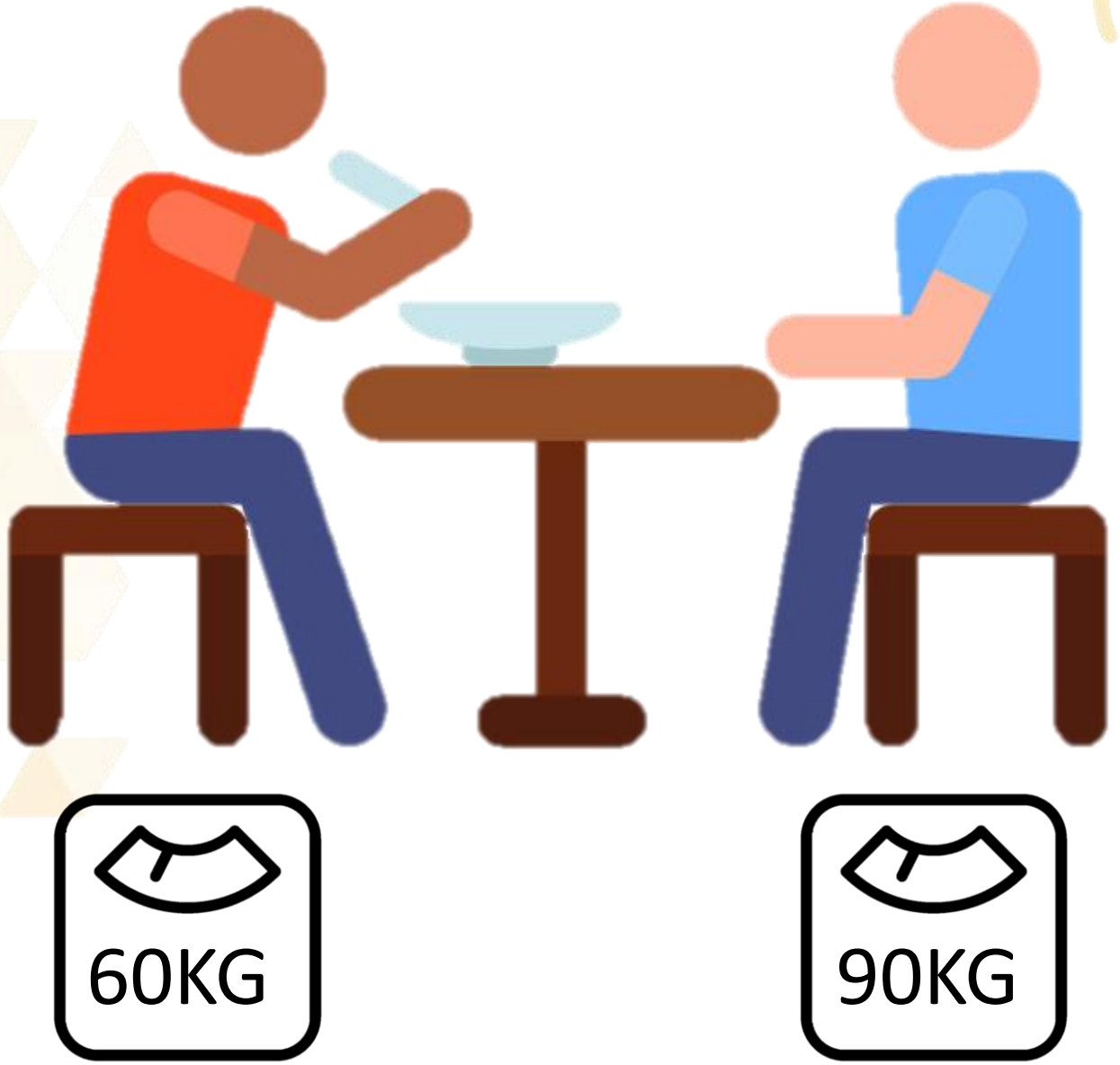
Εύρηκα

MTTP 蛋白與 PRAP-1 蛋白的關聯

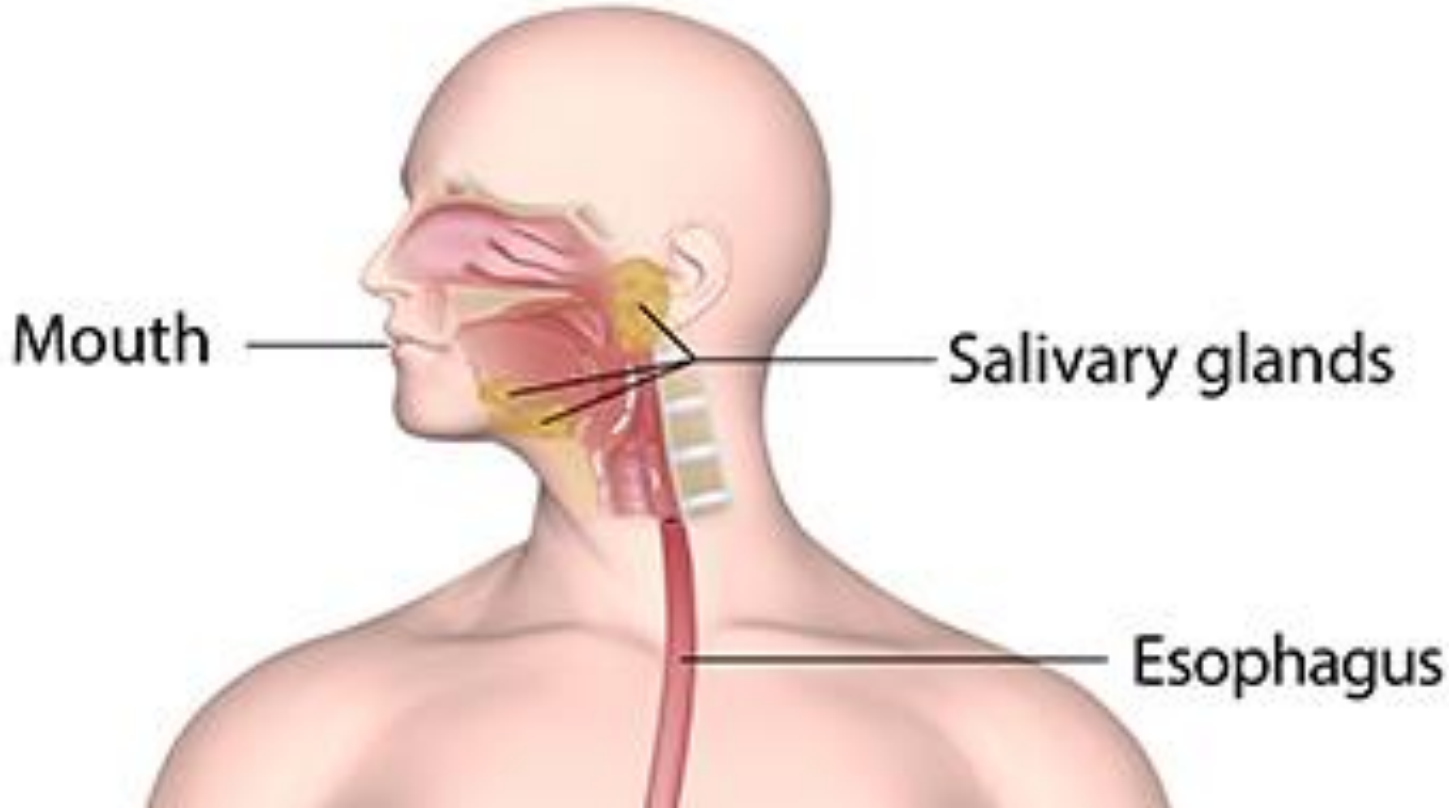
林政佑
曾茂家
中研院 分生所 楊性芳 教授
魏宏仁 老師

Εύρηκα

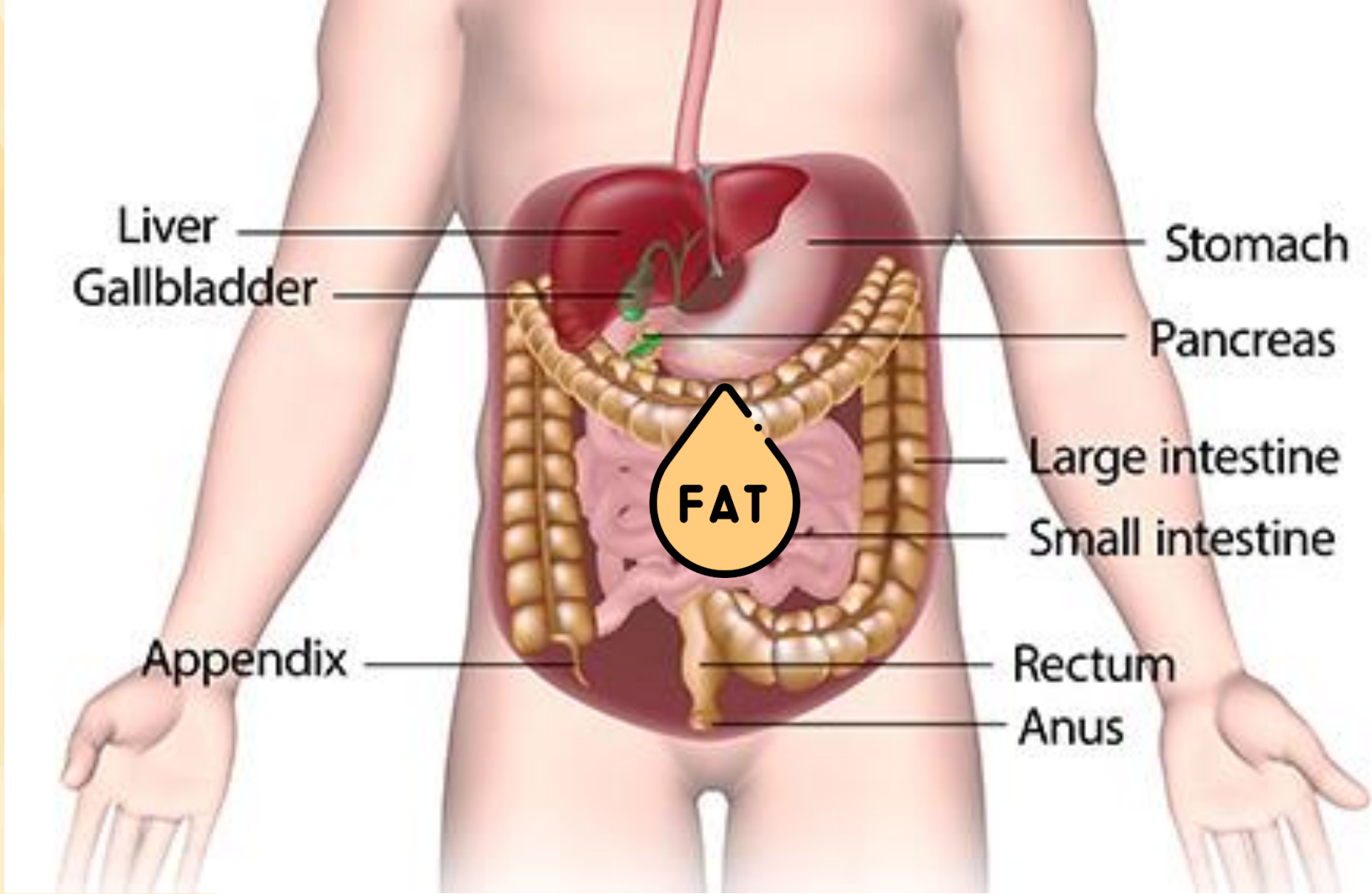


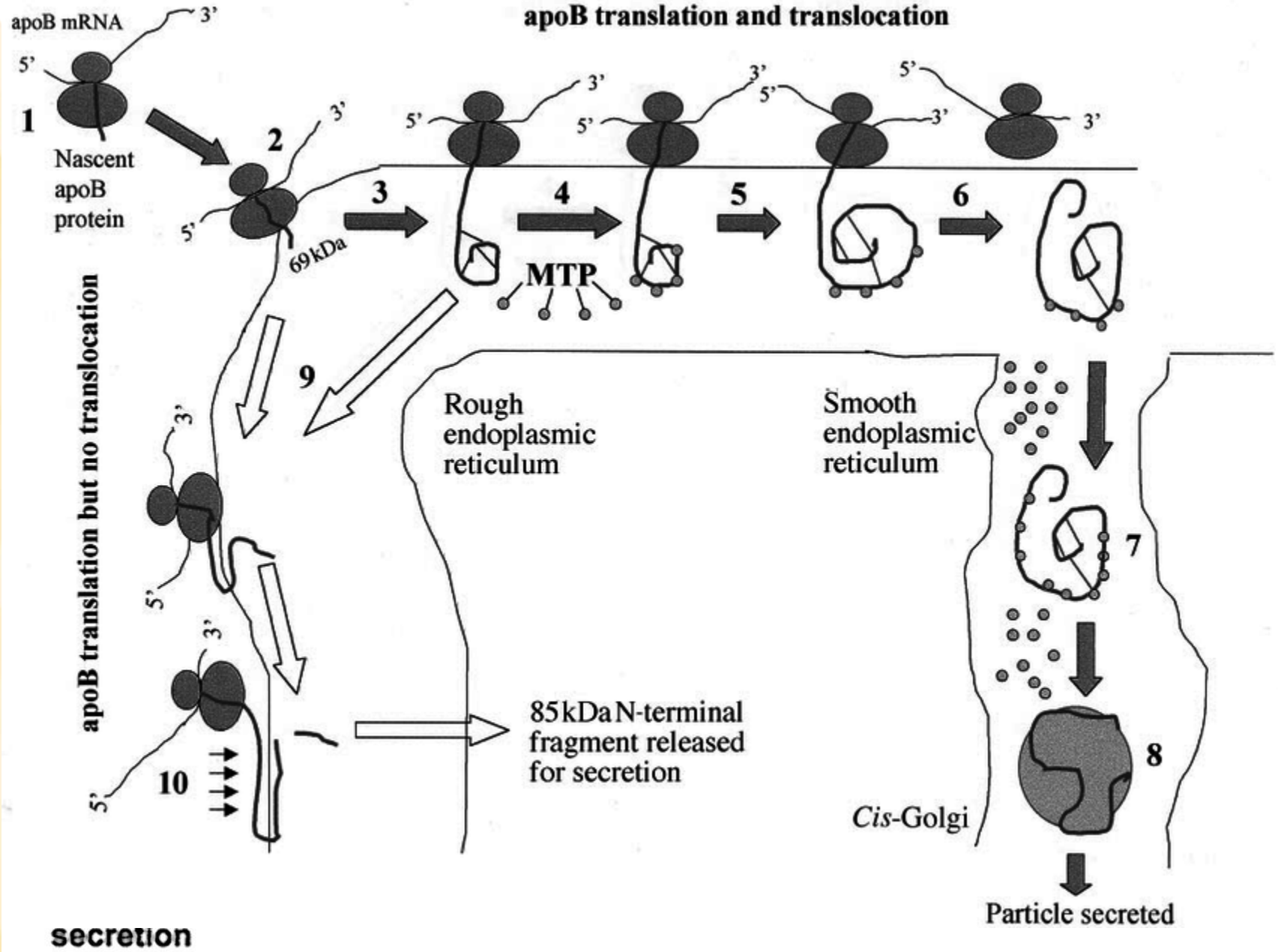
Εύρηκα

The Digestive System

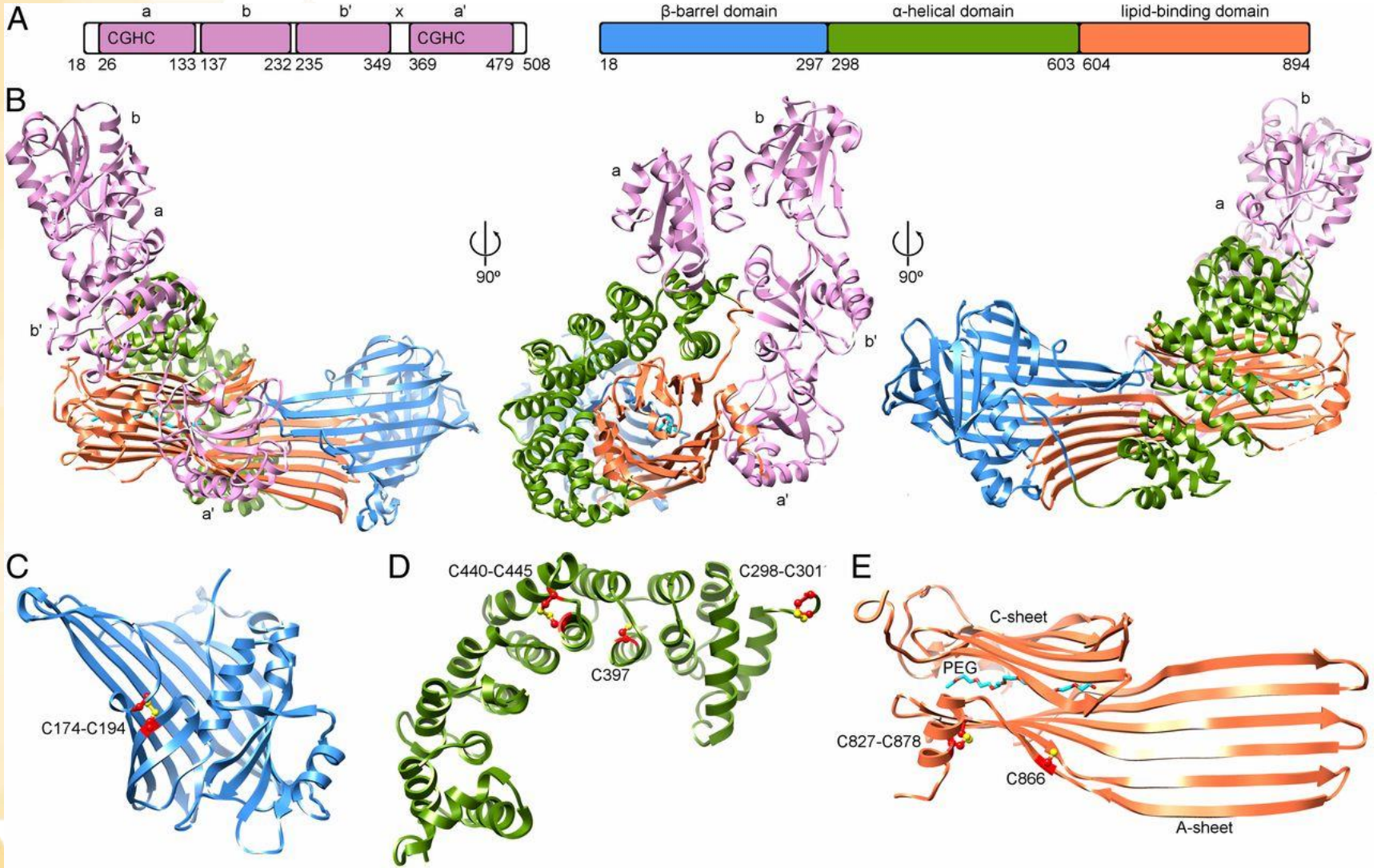


β

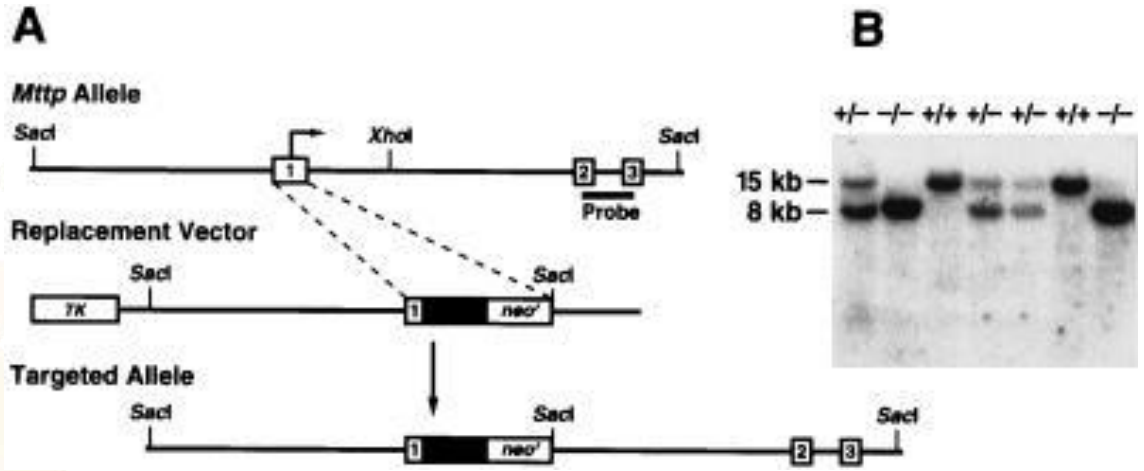

Liver
Gallbladder
Stomach
Pancreas
FAT
Large intestine
Small intestine
Appendix
Rectum
Anus

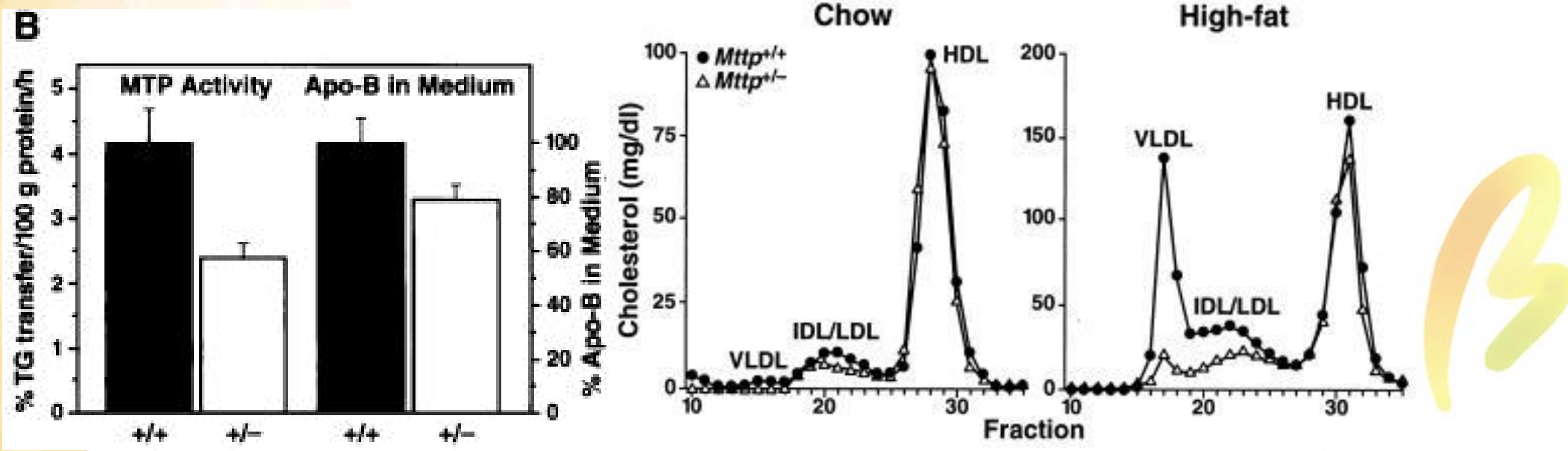

apoB translation and translocation
apoB mRNA
5'
3'
1
Nascent apoB protein
2
69kDa
3
4
MTP
5
6
9
apoB translation but no translocation
Rough endoplasmic reticulum
Smooth endoplasmic reticulum
7
8
10
85kDa N-terminal fragment released for secretion
Cis-Golgi
Particle secreted
secretion

Microsomal triglyceride transfer protein
微粒體三酸甘油酯轉移蛋白



Microsomal triglyceride transfer protein
微粒體三酸甘油酯轉移蛋白

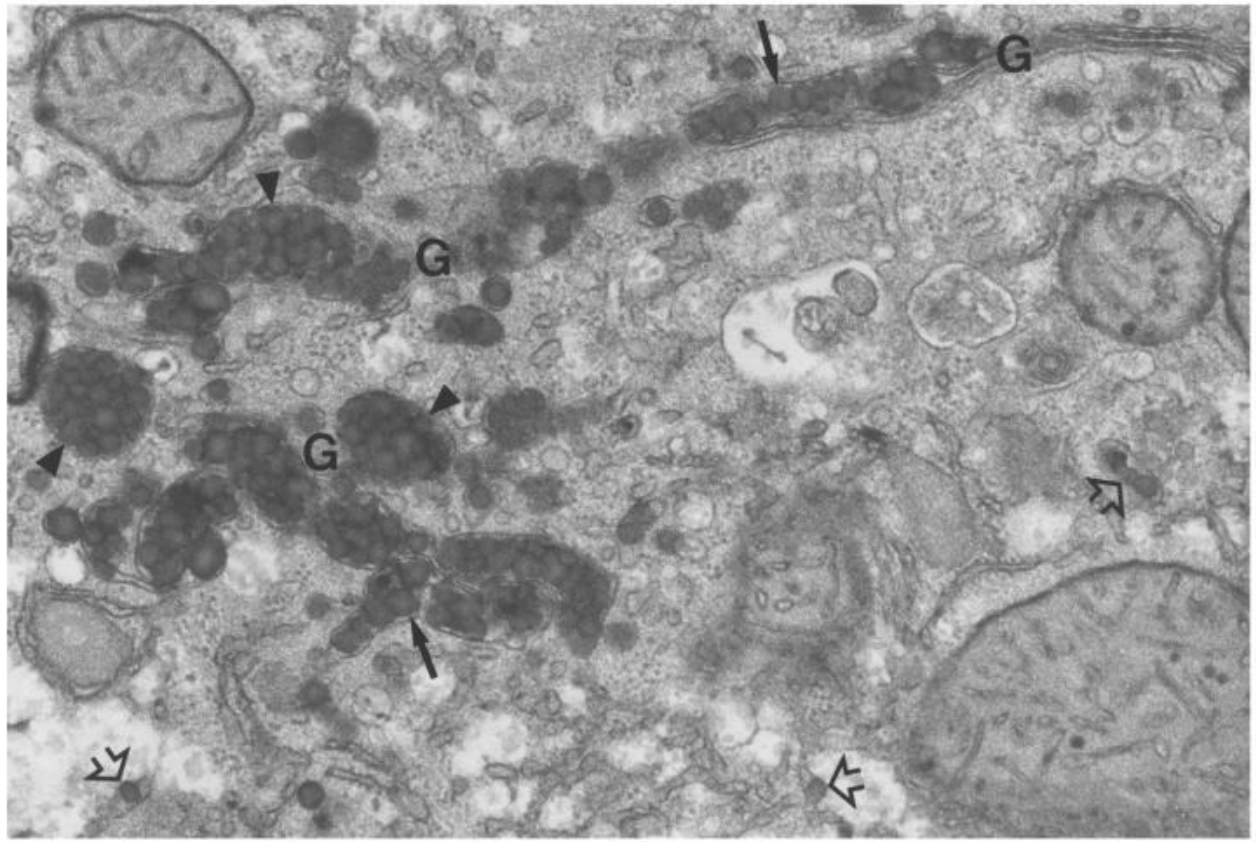




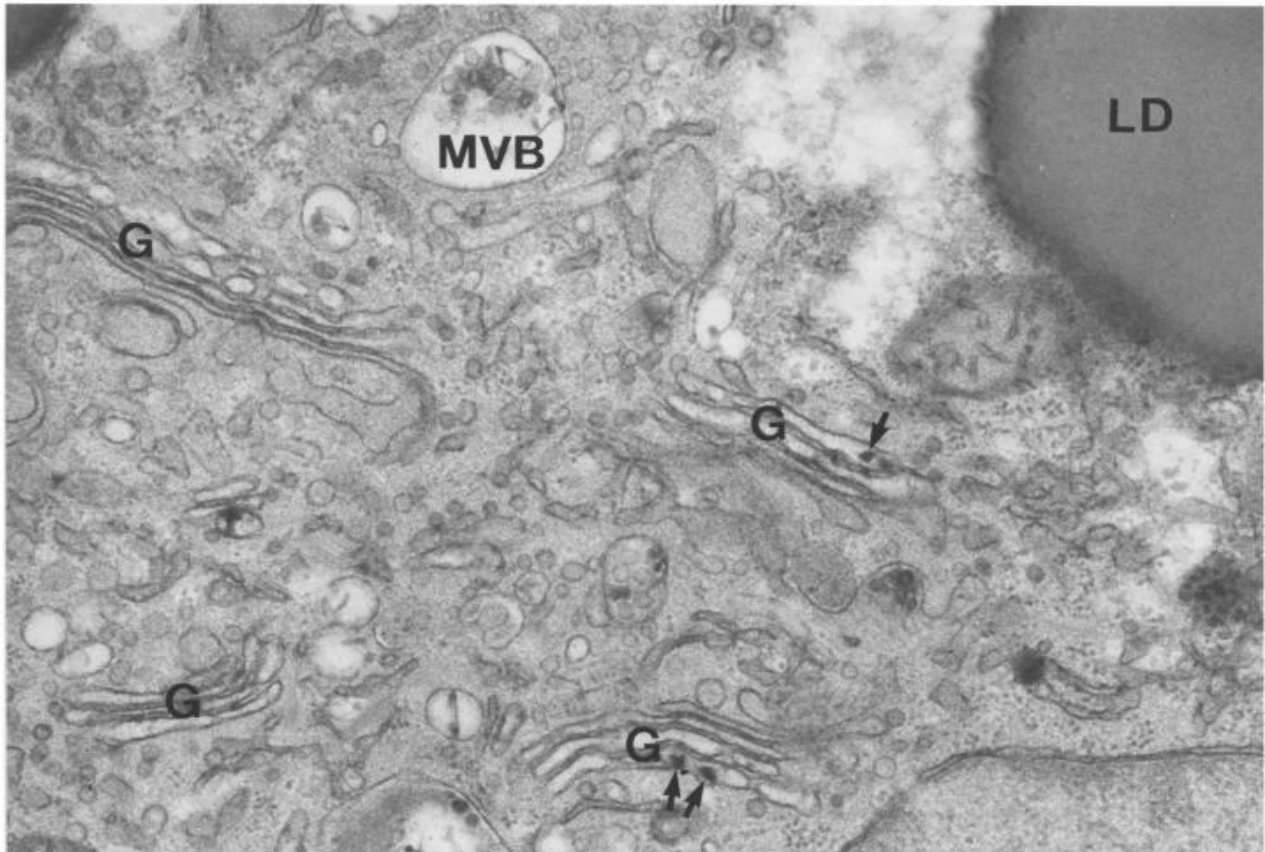
電子顯微鏡

Εύρηκα

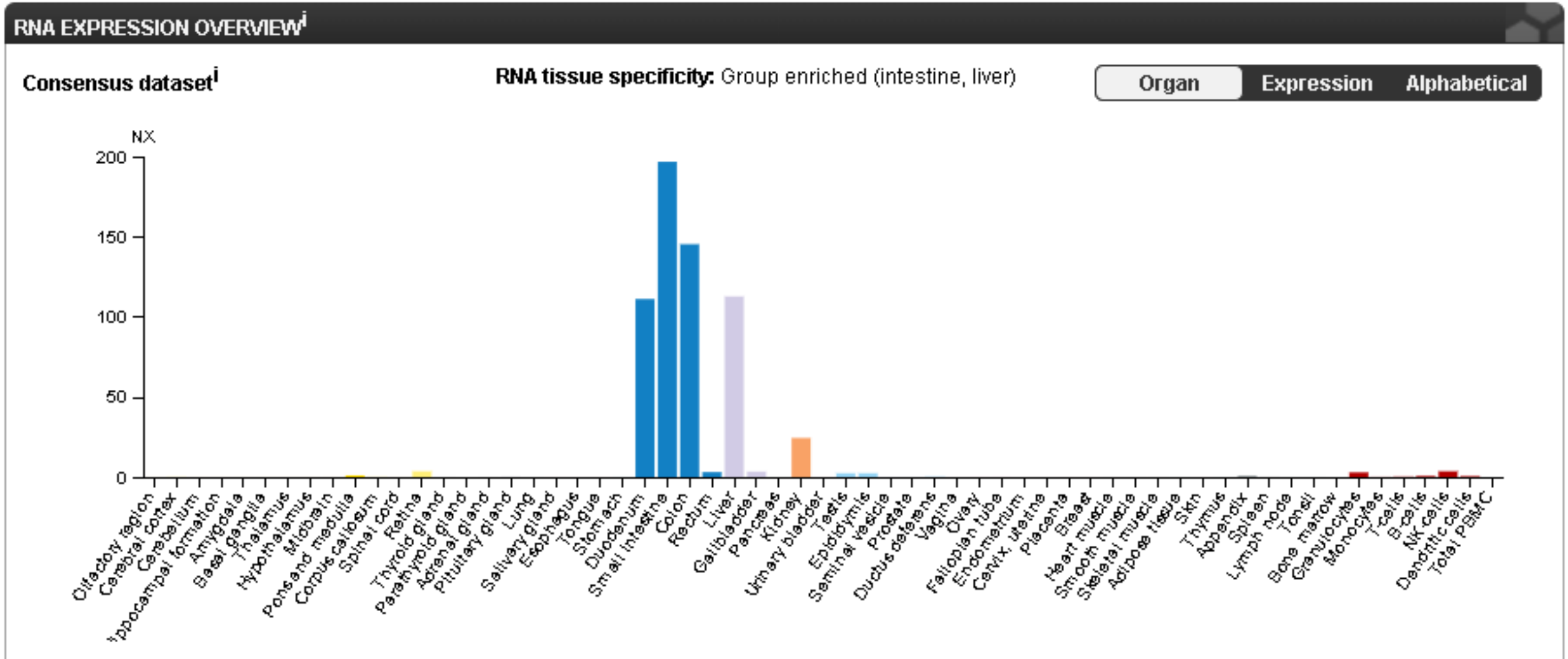
WT



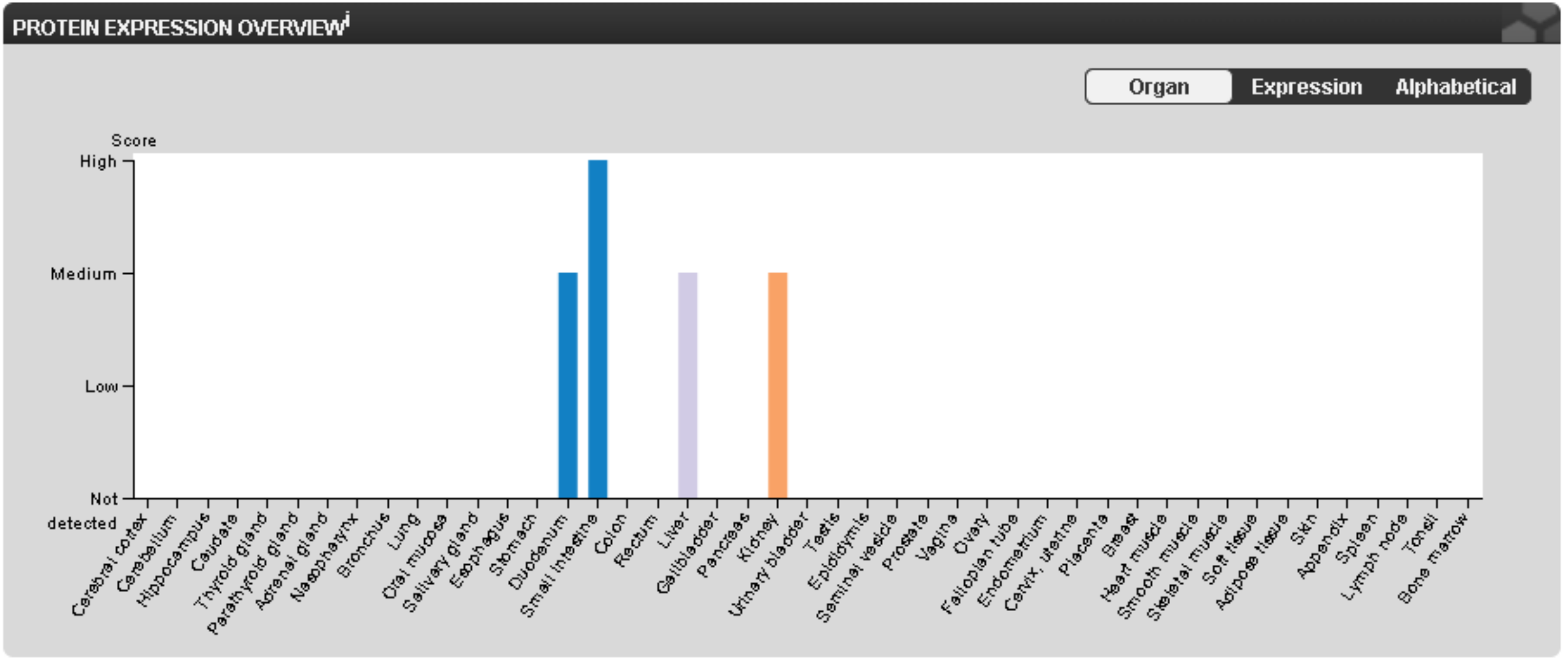
KO



Proline rich acidic protein 1
富含脯胺酸酸性蛋白質1



Proline rich acidic protein 1
富含脯胺酸酸性蛋白質1



Proline rich acidic protein 1
富含脯胺酸酸性蛋白質1

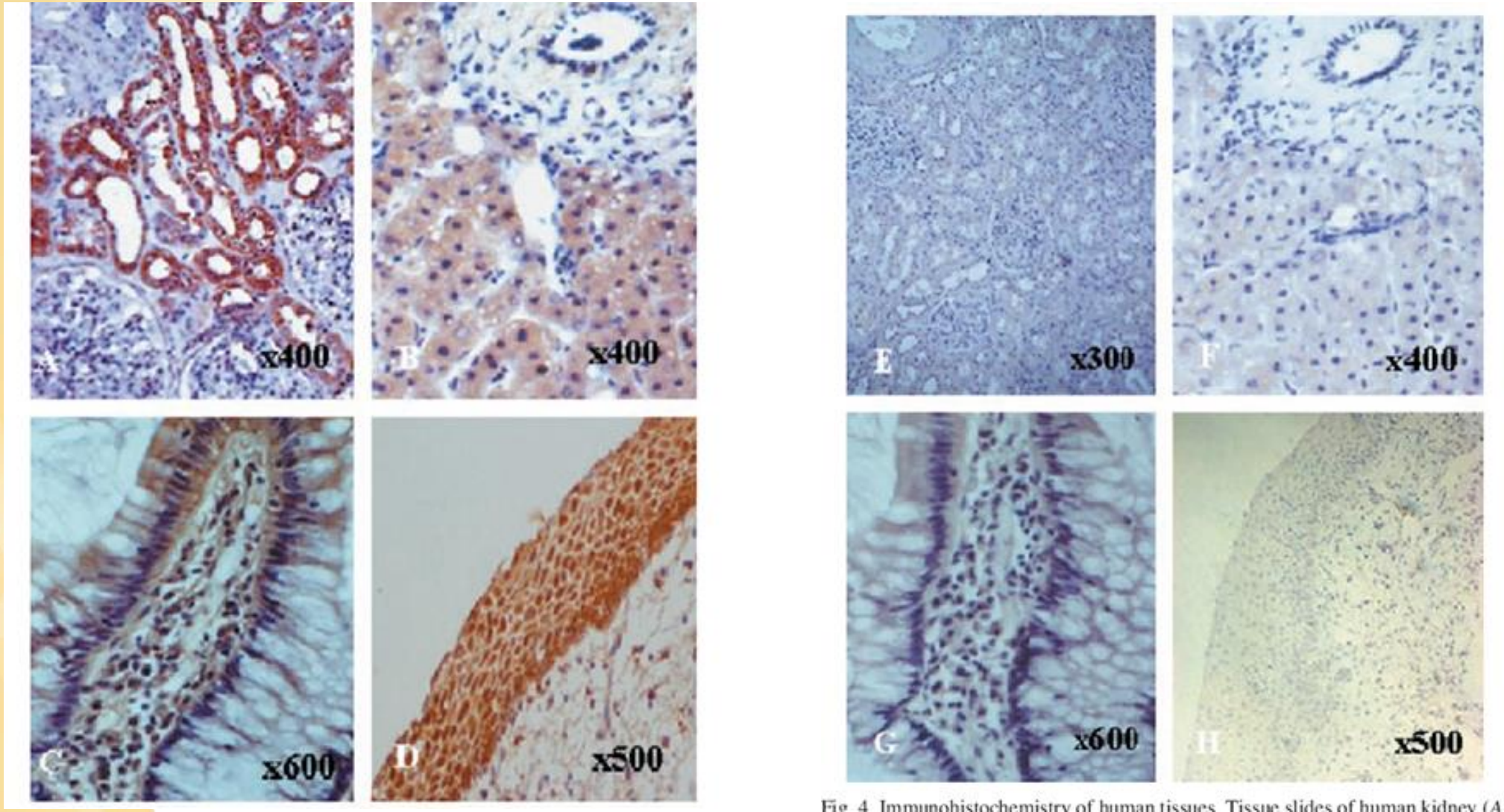


Fig. 4. Immunohistochemistry of human tissues. Tissue slides of human kidney (A a

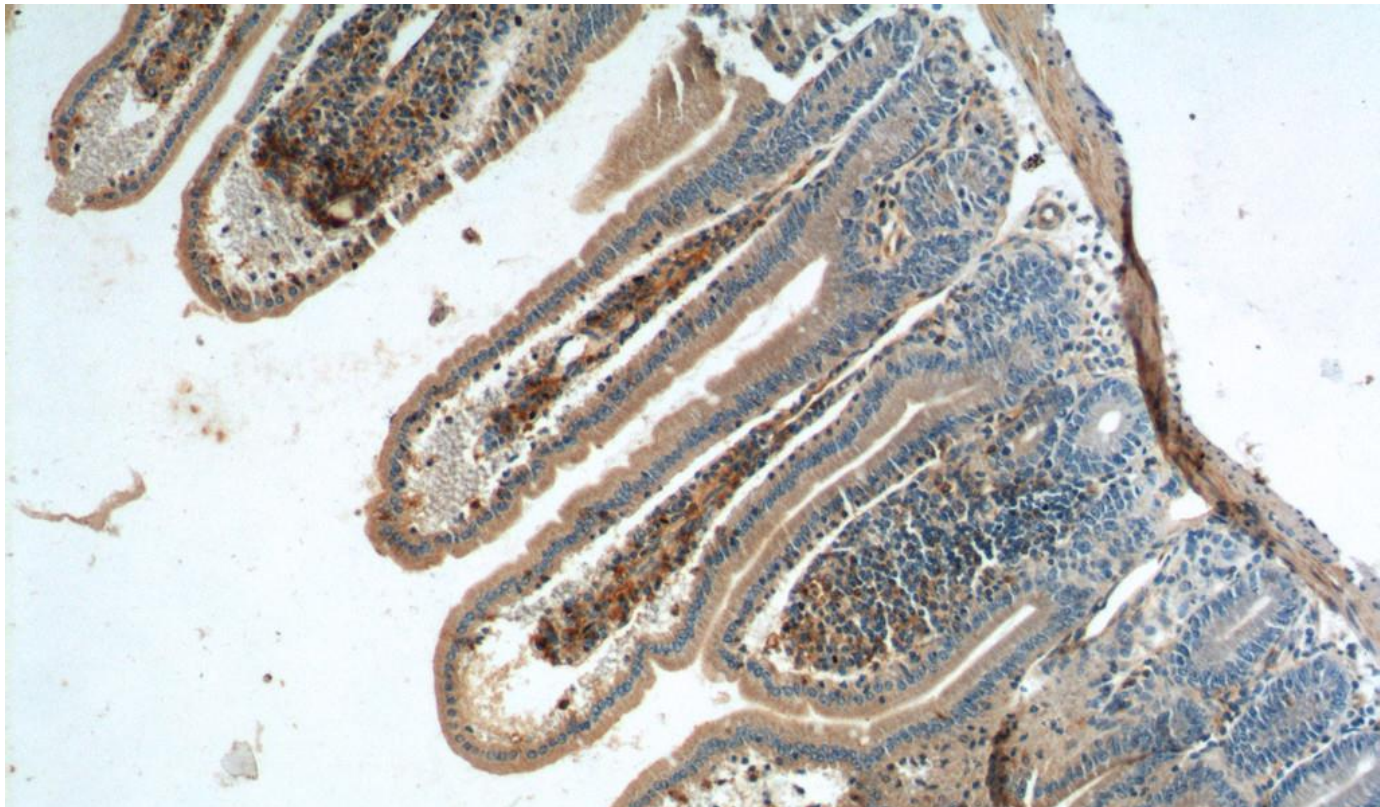
PRAP-1(發現)

發現脂肪堆積在Knockout 小鼠小腸細胞

➔ApoB分泌減少,

➔MTP蛋白活性下降

➔PRAP-1與 MTTP蛋白形成複合體



實驗

PRAP-1 與 MTTP 的關聯

0. *PRAP-1* (+/+ & +/- & -/-)
1. PCR(*PRAP-1*)
2. PCR(*MTTP*)
3. 找出PRAP1 和MTTP 相互作用之區域

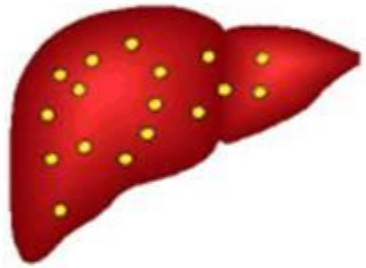
實驗

PRAP-1 與 MTTP 的關聯

0. *PRAP-1* (+/+ & +/- & -/-)
1. PCR(*PRAP-1*)
2. PCR(*MTTP*)
3. 找出PRAP1 和MTTP 相互作用之區域

NAFLD疾病譜

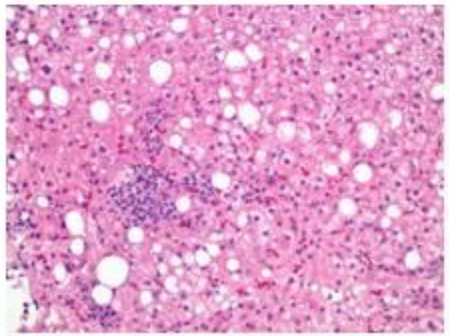
一般脂肪肝　非酒精性脂肪性肝炎　肝硬化

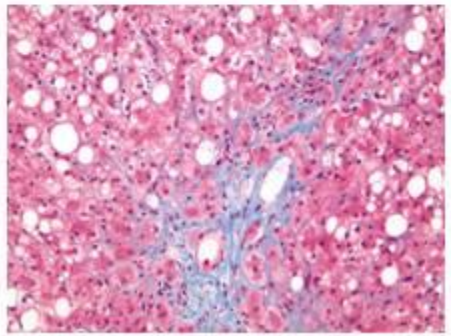


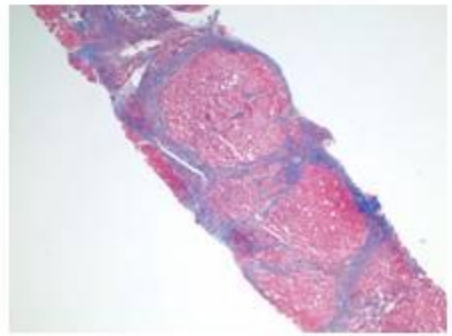
肝內脂肪積聚

肝內脂肪積聚加
炎症及肝臟纖維化

肝臟纖維化組織
取代正常肝細胞







PRAP-1

~~1. Chow~~

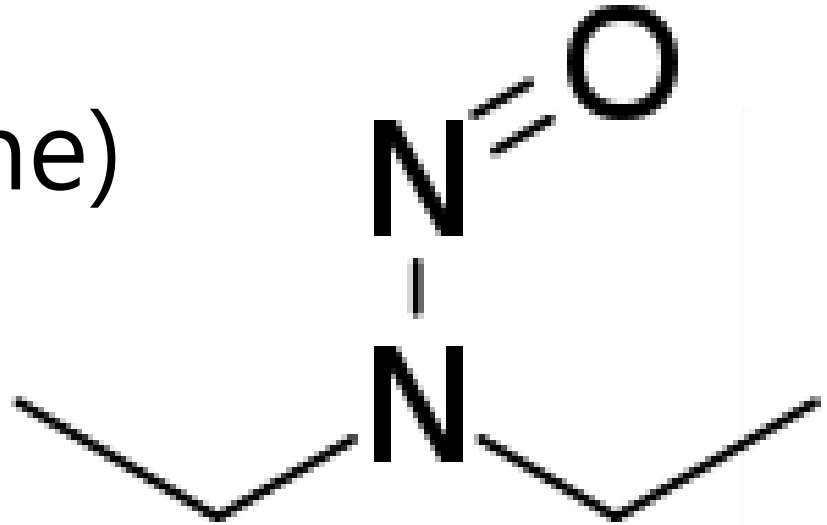
~~2. HFD~~

3. DEN+HFD

4. DEN+HFD+CCl4

*DEN(diethylnitrosamine)

N-亞硝基二乙胺



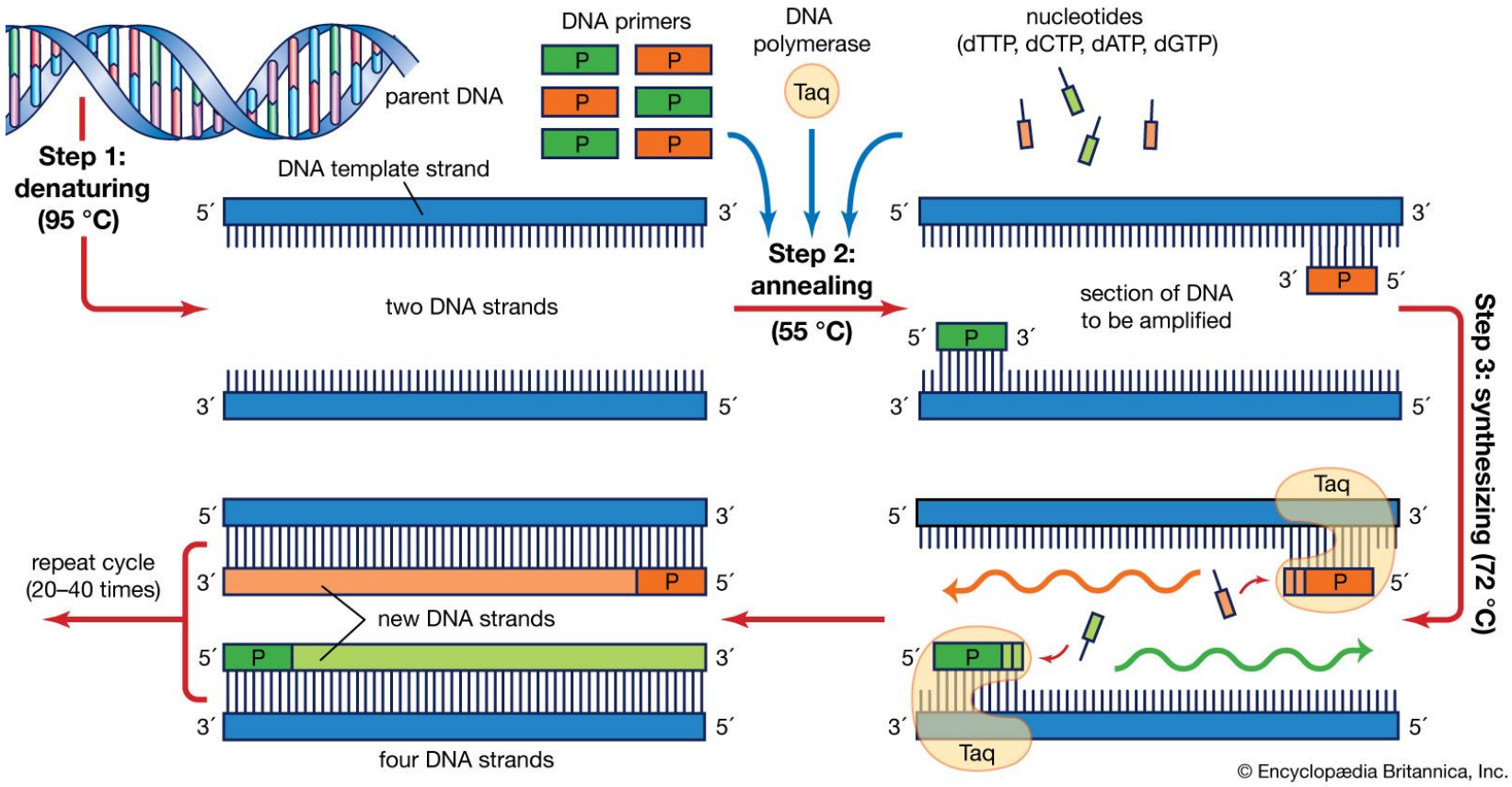
實驗

PRAP-1 蛋白與 MTTP 蛋白的關聯

0. *PRAP-1* (+/+ & +/- & -/-)
1. PCR(*PRAP-1*)
2. PCR(*MTTP*)
3. 找出PRAP1 和MTTP 相互作用之區域

實驗

0. 不同序列
1. 設計flag
2. 溫度測試
3. 限制酶切割
(NotI,HindIII/ScaII-HF,BamHI)
4. *E.coli* 培養



找出PRAP1 和MTTP 相互作用之區域

0. *PRAP-1* (+/+ & +/- & -/-)
1. PCR(*PRAP-1*)
2. PCR(*MTTP*)
3. 探討PRAP1 和MTTP 相互作用之區域

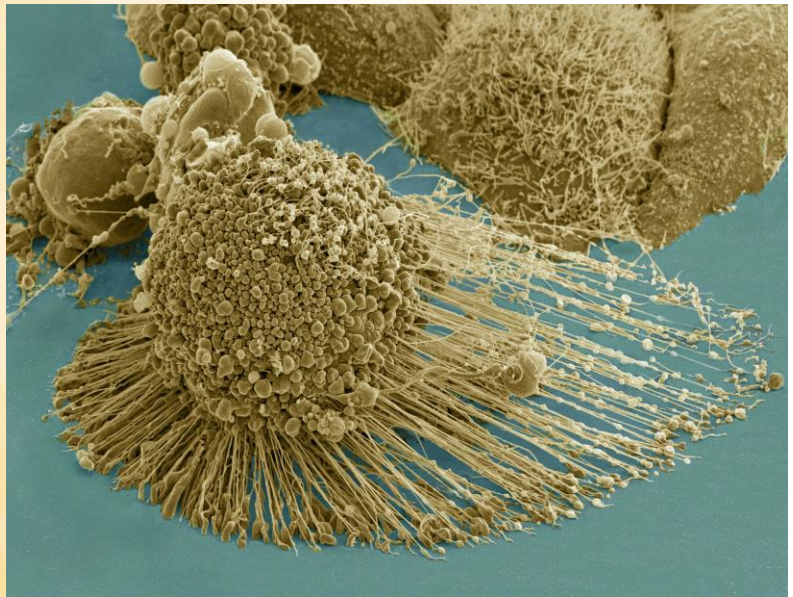

CDC.gov/COVID19

探討PRAP1 和MTTP 相互作用之區域 (未完成,未來展望)

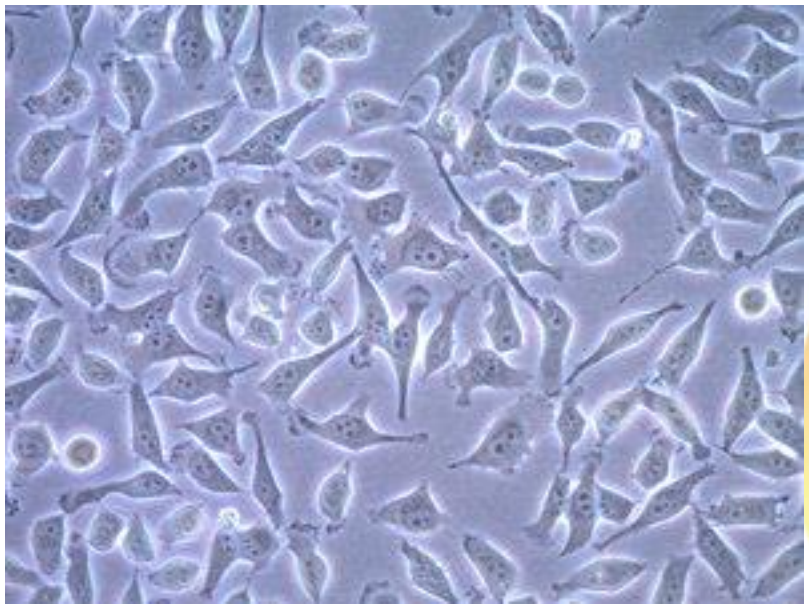
1. 將DNA放入HeLa細胞中表現
2. 將獲得的PRAP-1蛋白&MTTP蛋白加進脂質

(觀察形成複合體之情形)

3. 查看成果、結構(電子顯微鏡)



HeLa cell



參考資料

1. Knockout of the abetalipoproteinemia gene in mice: reduced lipoprotein secretion in heterozygotes and embryonic lethality in homozygotes.

Raabe M, Flynn LM, Zlot CH, Wong JS, Véniant MM, Hamilton RL, Young SG. PNAS July 21, 1998 95 (15) 8686-8691

2. Analysis of the role of microsomal triglyceride transfer protein in the liver of tissue-specific knockout mice. Raabe M, Véniant MM, Sullivan MA, Zlot CH, Björkegren J, Nielsen LB, Wong JS, Hamilton RL, Young SG. J Clin Invest. 1999 May;103(9):1287-98.

3. The proline-rich acidic protein is epigenetically regulated and inhibits growth of cancer cell lines.

Jinqiu Zhang, H. Wong, Sriram Ramanan, Denis Cheong, Adrian Peng Kheong Leong, Shing Chuan Hooi. Cancer Res. 2003 Oct 15;63(20):6658-65.

感謝

- 中研院分生所楊性芳教授
- 實驗室學長姊
- 專題老師 魏宏仁老師
- 生物專題的夥伴們
- 25、26班的同學們
- 背後支持的家長們