高雄醫學大學研發電子報

一、研究新知

SEC14L2 enables pan-genotype HCV replication in cell culture

Mohsan Saeed, Ursula Andreo, Hyo-Young Chung, Christine Espiritu, Andrea D. Branch, Jose M. Silva & Charles M. Rice. Nature. August 2015, Volume 524, pp 471-475.

Since its discovery in 1989, efforts to grow clinical isolates of the hepatitis C virus (HCV) in cell culture have met with limited success. Only the JFH-1 isolate has the capacity to replicate efficiently in cultured hepatoma cells without cell culture-adaptive mutations. We hypothesized that cultured cells lack one or more factors required for the replication of clinical isolates. To identify the missing factors, we transduced Huh-7.5 human hepatoma cells with a pooled lentivirus-based human complementary DNA (cDNA) library, transfected the cells with HCV subgenomic replicons lacking adaptive mutations, and selected for stable replicon colonies. This led to the identification of a single cDNA, SEC14L2, that enabled RNA replication of diverse HCV genotypes in several hepatoma cell lines. This effect was dose-dependent, and required the continuous presence of SEC14L2. Full-length HCV genomes also replicated and produced low levels of infectious virus. Remarkably, SEC14L2-expressing Huh-7.5 cells also supported HCV replication following inoculation with patient sera. Mechanistic studies suggest that SEC14L2 promotes HCV infection by enhancing vitamin E-mediated protection against lipid peroxidation. This provides a foundation for development of in vitro replication systems for all HCV isolates, creating a useful platform to dissect the mechanisms by which cell culture-adaptive mutations act.

原文連結：http://www.nature.com/nature/journal/v524/n7566/pdf/nature14899.pdf

二、研究論文分享

題目：Chondroitin sulfate-polyethylenimine copolymer-coated superparamagnetic iron oxide nanoparticles as an efficient magneto-gene carrier for microRNA-encoding plasmid DNA delivery

作者：Lo, Yu-Lun; Chou, Han-Lin; Liao, Zi-Xian; Huang, Shih-Jer; Ke, Jyun-Han; Liu,

Yu-Sheng; Chiu, Chien-Chih; Wang, Li-Fang. Nanoscale. 2015, Volume 7, Issue 18, pp 8554-8565.

摘要：

MicroRNA-128 (miR-128) is an attractive therapeutic molecule with powerful glioblastoma regulation properties. However, miR-128 lacks biological stability and leads to poor delivery efficacy in clinical applications. In our previous study, we demonstrated two effective transgene carriers, including polyethylenimine (PEI)-decorated superparamagnetic iron oxide nanoparticles (SPIONs) as well as chemically-conjugated chondroitin sulfate-PEI copolymers (CPs). In this contribution, we report optimized conditions for coating CPs onto the surfaces of SPIONs, forming CPIOs, for magneto-gene delivery systems. The optimized weight ratio of the CPs and SPIONs is 2 : 1, which resulted in the formation of a stable particle as a good transgene carrier. The hydrodynamic diameter of the CPIOs is similar to 136 nm. The gel electrophoresis results demonstrate that the weight ratio of CPIO/DNA required to completely encapsulate pDNA is = 3. The in vitro tests of CPIO/DNA were done in 293 T, CRL5802, and U87-MG cells in the presence and absence of an external magnetic field. The magnetofection efficiency of CPIO/DNA was measured in the three cell lines with or without fetal bovine serum (FBS). CPIO/DNA exhibited remarkably improved gene expression in the presence of the magnetic field and 10% FBS as compared with a gold non-viral standard, PEI/DNA, and a commercial magnetofection reagent, PolyMag/DNA. In addition, CPIO/DNA showed less cytotoxicity than PEI/DNA and PolyMag/DNA against the three cell lines. The transfection efficiency of the magnetoplex improved significantly with an assisted magnetic field. In miR-128 delivery, a microRNA plate array and fluorescence in situ hybridization were used to demonstrate that CPIO/pMIRNA-128 indeed expresses more miR-128 with the assisted magnetic field than without. In a biodistribution test, CPIO/Cy5-DNA showed higher accumulation at the tumor site where an external magnet is placed nearby.

題目：Recent trends in nanomaterial-based microanalytical systemsfor the speciation of trace elements: A critical review

作者：Tseng, Wei-Chang; Hsu, Keng-Chang; Shiea, Christopher Stephen; Huang, Yeou-Lih. Analytica Chimica Acta. July 2015, Volume 884, pp 1-18.

摘要：

Trace element speciation in biomedical and environmental science has gained increasing attention over the past decade as researchers have begun to realize its importance in toxicological studies. Several nanomaterials, including titanium dioxide nanoparticles

(nano-TiO2), carbon nanotubes (CNTs), and magnetic nanoparticles (MNPs), have been used as sorbents to separate and preconcentrate trace element species prior to detection through mass spectrometry or optical spectroscopy. Recently, these nanomaterial-based speciation techniques have been integrated with microfluidics to minimize sample and reagent consumption and simplify analyses. This review provides a critical look into the present state and recent applications of nanomaterial-based microanalytical systems in the speciation of trace elements. The adsorption and preconcentration efficiencies, sample volume requirements, and detection limits of these nanomaterial-based speciation techniques are detailed, and their applications in environmental and biological analyses are discussed. Current perspectives and future trends into the increasing use of nanomaterial-based microfluidic techniques for trace element speciation are highlighted.

三、最新消息

1. 健康資料庫研究設計諮詢服務預約：**服務對象**：凡有興趣申請健康資料加值中心之資料庫者，含高醫教職員工生及校外研究人員，皆可申請資料庫研究諮詢服務。**費用**：免費。**預約辦法**：請先找出您方便的開放時段填寫並送出線上預約單，完成預約後本中心將寄送確認信給您。相關服務網址如下：http://cchia.kmu.edu.tw/index.php/健康資料庫協作諮詢預約。

2. 本校 104 年研究績優教師之「研究成果績優」自即日起受理申請，竭誠歡迎各位教師踴躍提出申請。欲申請者請於 104 年 9 月 7 日（星期一）前將申請表及相關佐證資料送至研發處學研組辦理。詳細資訊請詳見研發處網頁。

3. 本校申請科技部 104 年度專題研究計畫，本校共計提出 322 件(專題研究計畫 299 件、優秀年輕學者計畫 21 件及私立大學校院發展研發特色專案計畫 2 件)，獲補助計 154 件，通過率為 47.8%。

四、徵求計畫

1. 科技部 104 年度「傑出研究獎」自即日起受理申請。採線上申辦方式，申請人應至科技部傑出研究獎線上作業系統，參照科技部傑出研究獎遴選作業要點及申請表單進行申請，並於 104.9.25 中午 12:00 前完成申請作業，同時副知研發處，以利彙整函送科技部申請。

2. 科技部公開徵求 2016 年台菲(律賓)雙邊科技合作計畫書，詳細申請辦法請參閱科技部網站。有意申請者請於 104.12.28(一)下午 5 時前完成線上申請作業並副本通知研發處，以利彙整函送科技部申請。

3. 科技部公開徵求 104 年度「中央與地方防救災情資整合研究先期計畫」。詳細申請辦法請參閱科技部網站。有意申請者請於 104.9.1(二)下午 5 時前完成線上申請作業並副本通知研發處，以利彙整函送科技部申請。

4. 科技部公開徵求 2016-2018 年度臺法(MOST-INRIA)聯合團隊人員交流計畫！本項方案係依科技部與法國國家資訊暨自動化研究院 (Institut national de recherche en informatique et en automatique, INRIA) 所簽署之科學合作協定辦理，由雙方共同補助兩國研究團隊合作研究之交流互訪及舉辦研討會費用。申請截止日為 2015 年 10 月 1 日 12:00 止(校內截止日)，詳細申請方式，請參閱附錄徵求說明；申請所需表格及經費使用說明請至科技部科國司網頁內下載參考法方公告網址為：http://www.inria.fr/en/research/international-mobility/associate-teams/call-for-projects 。

5. 科技部 105 年度跨領域整合型研究計畫補助案自即日起受理申請!本項跨領域整合型研究計畫構想書,請總計畫主持人務必至科技部網站(http://www.most.gov.tw)進入「學術研發服務網」點選「跨領域研究計畫構想書」製作，並請於 104 年 11 月 5 日（星期四）前依徵求公告規定將構想申請書線上傳送科技部（免備文）。

6. 科技部「博士後研究人員學術著作獎」即日起受理申請!「科技部博士後研究人員學術著作獎遴選作業要點」修正,並自即日生效,申請人線上填寫並繳交送出申請書時，須為申請機構內任職一年以上之博士後研究人員。104 年度申請案採線上申請，請各申請機構及申請人務必先行詳閱各項規定。申請人須於 104 年 10 月 2 日(星期五)下午 5 時前完成線上申請作業，同時副知本校研發處，以利彙整後函送科技部申請。

7. 科技部公開徵求 2016-2017 年臺英（MOST-RS）雙邊科技合作人員交流計畫，依科技部與英國皇家科學院(Royal Society in London)2008 年簽署之合作研究備忘錄,共同補助自然科學領域相關合作研究之人員互訪及研究耗材費用。申請日期自 2015 年 8 月 14 日起至 2015 年 10 月 15 日中午 12 時止(校內截止日)，詳細申請方式、所需表格及經費使用說明請至科技部科國司相關網頁內下載及參考。英方公告網址：http://royalsociety.org/grants/schemes/international-exchanges/

8. 衛生福利部國民健康署公開徵求辦理「105 年度委託科技研究計畫」,投標期限至 104 年 10 月 9 日中午(校內截止日期)，欲投標者請於政府電子採購網系統領標（政府電子採購網 web.pcc.gov.tw）。國民健康署公告內容：http://www.hpa.gov.tw/BHPNet/Web/Announce/Announce.aspx?No=201508280001

五、校外合作專區

高醫大中山大學學術交流

1. 104 學年度「國立中山大學與高雄醫學大學合作計畫」期中書面報告請於 104.09.04 繳交至研發處。
2. 104 學年度「國立中山大學與高雄醫學大學合作計畫」期中口頭報告簡報請於 104.09.04 繳交至研發處。兩校計畫主持人請於 104.09.08 至中山大學國研大樓 5 樓作口頭簡報。舉辦。
3. 本處已於 104.08.12 與中山大學討論 a.期中報告暨辦理兩校教師聯誼會。b.105 年合作計畫之相關規範與時程。c.研究工作圈的後續處理事宜。
4. 經費變更表請至 http://devel.kmu.edu.tw/front/bin/ptlist.phtml?Category=293 網站下載，謝謝！

六、研究榮譽榜

（一）論文（感謝圖書資訊處提供資料）

1. 本單元定期收錄高醫研究論文發表於 SCI/SSCI 資料庫且發表期刊影響指數(Imapact Factor>5)或該領域排名前 10%之優良期刊。本期資料庫更新日期：2015 年 07 月 01 日至 2015 年 07 月 31 日。網址如下：
   http://olis.kmu.edu.tw/index.php/zh-TW/notice/sci-ssci-awards.html

2015 年 07 月份本校研究人員發表 SCI/SSCI 論文榮譽榜

序號	作者/單位	篇名	出處	影響指數
1	Chang, Yi-Wen; Chiu, Ching-Feng; Lee, Kang-Yun; Hong, Chih-Chen; Wang, Yi-Yun; Cheng, Ching-Chia; Jan, Yi-Hua; Huang, Ming-Shyan(附院 胸腔內科 黃明賢); Hsiao, Michael; Ma, Jui-Ti; Su, Jen-Liang	CARMA3 Represses Metastasis Suppressor NME2 to Promote Lung Cancer Stemness and Metastasis	AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE v.192 n.1 p.64-75	11.986

2	Lin, Liang-Tzung; Chung, Chueh-Yao; Hsu, Wen-Chan; Chang, Shun-Pang; Hung, Ting-Chun; Shields, Justin; Russell, Rodney S.; Lin, Chih-Chan; Li, Chien-Feng; Yen, Ming-Hong(藥學系 顏銘宏); Tyrrell, D. Lorne J.; Lin, Chun-Ching; Richardson, Christopher D.	Saikosaponin b2 is a naturally occurring terpenoid that efficiently inhibits hepatitis C virus entry (vol 62, pg 541, 2015)	JOURNAL OF HEPATOLOGY v.63 n.1 p.292-292	10.401
3	Gedda, Gangaraju; Pandey, Sunil; Lin, Yu-Chih; Wu, Hui-Fen(藥學系 吳慧芬)	Antibacterial effect of calcium oxide nano-plates fabricated from shrimp shells	GREEN CHEMISTRY v.17 n.6 p.3276-3280	6.852
4	Lo, Yu-Lun; Chou, Han-Lin; Liao, Zi-Xian; Huang, Shih-Jer; Ke, Jyun-Han; Liu, Yu-Sheng; Chiu, Chien-Chih(生物科技系 邱建智); Wang, Li-Fang(醫藥暨應用化學系 王麗芳)	Chondroitin sulfate-polyethylenimine copolymer-coated superparamagnetic iron oxide nanoparticles as an efficient magneto-gene carrier for microRNA-encoding plasmid DNA delivery	NANOSCALE v.7 n.18 p.8554-8565	6.739
5	Kung, Mei-Lang; Hsieh, Shu-Ling; Wu, Chih-Chung; Chu, Tian-Huei; Lin, Yu-Chun; Yeh, Bi-Wen; Hsieh, Shuchen(藥學系 謝淑貞)	Enhanced reactive oxygen species overexpression by CuO nanoparticles in poorly differentiated hepatocellular carcinoma cells	NANOSCALE v.7 n.5 p.1820-1829	6.739
6	Ke, Chen-Yi; Wu, Yun-Tse; Tseng, Wei-Lung(藥學系 曾韋龍)	Fluorescein-5-isothiocyanate-conjugated protein-directed synthesis of gold nanoclusters for fluorescent ratiometric sensing of an enzyme-substrate system	BIOSENSORS & BIOELECTRONICS v.69 p.46-53	6.451
7	Tang, Paul Wei-Hua(附院 心臟內科 陳偉華); Chen, Chao-Wen; Lai, Wen-Ter(附院 心臟內科 賴文德); Lee, Kun-Tai(附院 心臟內科 李坤泰)	Predictors of return of spontaneous circulation in patients resuscitated from out-of-hospital cardiac arrest	INTERNATIONAL JOURNAL OF CARDIOLOGY v.190 p.181-182	6.175

8	Hsu, Chin-Wei; Huang, Yaw-Bin(藥學系 黃耀斌); Chen, Chung-Yu	Effect of antithrombotic and antiplatelet agents for ischemic stroke in atrial fibrillation patients with dialysis	INTERNATIONAL JOURNAL OF CARDIOLOGY v.190 p.349-349	6.175
9	Huang, Chung-Feng(附院 肝膽胰內科 黃釧峰); Chen, Jyh-Jou; Yeh, Ming-Lun((附院 肝膽胰內科 葉明倫); Huang, Ching-I; Hsieh, Ming-Yen(附院 肝膽胰內科 謝明彥); Yang, Hua-Ling(附院 肝膽胰內科 楊華齡); Dai, Chia-Yen(附院 肝膽胰內科 戴嘉言); Huang, Jee-Fu(附院 肝膽胰內科 黃志富); Lin, Zu-Yau(附院 肝膽胰內科 林子堯); Chen, Shinn-Cherng(附院 肝膽胰內科 陳信成); Chuang, Wan-Long(附院 肝膽胰內科 莊萬龍); Chen, Yao-Li; Yu, Ming-Lung(附院 肝膽胰內科 余明隆)	PNPLA3 genetic variants determine hepatic steatosis in non-obese chronic hepatitis C patients	SCIENTIFIC REPORTS v.5 文獻號碼: 11901	5.078
10	Liu, Chen-Hua; Huang, Chung-Feng(附院院 肝膽胰內科 黃釧峰); Liu, Chun-Jen; Dai, Chia-Yen(附院 肝膽胰內科 戴嘉言); Huang, Jee-Fu(附院 肝膽胰內科 黃志富); Lin, Jou-Wei; Liang, Cheng-Chao; Yang, Sheng-Shun; Lin, Chih-Lin; Su, Tung-Hung; Yang, Hung-Chih; Chen, Pei-Jer; Chen, Ding-Shinn; Chuang, Wan-Long(附院 肝膽胰內科 莊萬龍); Kao, Jia-Horng; Yu, Ming-Lung(附院 肝膽胰內科 余明隆)	Peginterferon plus weight-based ribavirin for treatment-naive hepatitis C virus genotype 2 patients not achieving rapid virologic response: a randomized trial	SCIENTIFIC REPORTS v.5 文獻號碼: 11710	5.078
11	Machiela, Mitchell J.; Hsiung, Chao Agnes; Shu, Xiao-Ou; Seow, Wei Jie; Wang, Zhaoming; Matsuo, Keitaro; Hong, Yun-Chul; Seow, Adeline; Wu, Chen; Hosgood, H. Dean, III; Chen, Kexin; Wang, Jiu-Cun; Wen, Wanqing; Cawthon, Richard; Chatterjee, Nilanjan; Huang, Ming-Shyan(附院 胸腔內科 黃明賢).....等多名作者	Genetic variants associated with longer telomere length are associated with increased lung cancer risk among never-smoking women in Asia: a report from the female lung cancer consortium in Asia	INTERNATIONAL JOURNAL OF CANCER v.137 n.2 p.311-319	5.007

12	Sung, Hsin-Ching; Liang, Chan-Jung; Lee, Chiang-Wen; Yen, Feng-Lin(香妝品系 顏峰霖); Hsiao, Chien-Yu; Wang, Shu-Huei; Jiang-Shieh, Ya-Fen; Tsai, Jaw-Shiun; Chen, Yuh-Lien	The protective effect of eupafolin against TNF-alpha-induced lung inflammation via the reduction of intercellular cell adhesion molecule-1 expression	JOURNAL OF ETHNOPHARMACOLOGY v.170 p.136-147	2.939
13	Pai, Chi; Su, Chung-Jui; Hsieh, Yi-Ting; Chen, Po-Yu(醫藥暨應用化學系 陳泊余); Sun, I-Wen	Voltammetric Study of Selenium and Two-Stage Electrodeposition of Photoelectrochemically Active Zinc Selenide Semiconductor Films in Ionic Liquid Zinc Chloride-1-Ethyl-3-Methylimidazolium Chloride	JOURNAL OF THE ELECTROCHEMICAL SOCIETY v.162 n.7 p.D243-D249	2.859
14	Tseng, Wei-Chang; Hsu, Keng-Chang; Shiea, Christopher Stephen; Huang, Yeou-Lih(醫學檢驗生物技術學系 黃友利)	Recent trends in nanomaterial-based microanalytical systems for the speciation of trace elements: A critical review	ANALYTICA CHIMICA ACTA v.884 p.1-18	4.517
15	Ma, Xiao; Wang, Moo-Chin(香妝品系 王木琴); Feng, Jinyang; Zhao, Xiujian	Aspect ratio control of Au nanorods via covariation of the total amount of HAuCl4 and ascorbic acid	JOURNAL OF ALLOYS AND COMPOUNDS v.637 n.0 p.36-43	2.726
16	Goggins, William B.; Yang, Chunyuh(公共衛生學系 楊俊毓); Hokama, Tomiko; Law, Lewis S. K.; Chan, Emily Y. Y.	Using Annual Data to Estimate the Public Health Impact of Extreme Temperatures	AMERICAN JOURNAL OF EPIDEMIOLOGY v.182 n.1 p.80-87	4.975
17	Cheng, Ta-Chun; Pan, Chu-Hsiang; Chen, Chien-Shu; Chuang, Kuo-Hsiang; Chuang, Chih-Hung; Huang, Chien-Chaio; Chu, Yu-Yi; Yang, Ya-Chun; Chu, Pei-Yu(醫學檢驗生物技術學系 褚佩瑜); Kao, Chien-Han; Hsieh, Yuan-Chin; Cheng, Tian-Lu	Direct coating of culture medium from cells secreting classical swine fever virus E2 antigen on ELISA plates for detection of E2-specific antibodies	VETERINARY JOURNAL v.205 n.1 p.107-109	2.165

18	Chang, Yo-Chen(附院 眼科 張祐誠); Lin, Wei-Ning; Chen, Kuo-Jen; Wu, Horng-Jiun(附院 眼科 吳弘鈞); Lee, Chia-Ling(附院 復健科 李佳玲); Chen, Chia-Hui; Wu, Kwou-Yeung(附院 眼科 吳國揚); Wu, Wen-Chuan(附院 眼科 吳文權)	Correlation Between the Dynamic Postoperative Visual Outcome and the Restoration of Foveal Microstructures After Macular Hole Surgery	AMERICAN JOURNAL OF OPHTHALMOLOGY v.160 n.1 p.100-106	4.021
19	Abdelhamid, Hani Nasser; Wu, Hui-Fen(藥學系 吳慧芬)	Synthesis of a highly dispersive sinapinic acid@graphene oxide (SA@GO) and its applications as a novel surface assisted laser desorption/ionization mass spectrometry for proteomics and pathogenic bacteria biosensing	ANALYST v.140 n.5 p.1555-1565	3.906
20	Hsieh, Ping-Chieh; Lee, Chon-Lin(公共衛生學系 李宗霖); Jen, Jen-Fon; Chang, Kuei-Chen	Complexation-flocculation combined with microwave-assisted headspace solid-phase microextraction in determining the binding constants of hydrophobic organic pollutants to dissolved humic substances	ANALYST v.140 n.4 p.1275-1280	3.906

（二）產學合作（感謝產學營運處提供資料）

專利、技轉及產學合作榮譽榜 http://ooiuc.kmu.edu.tw/index.php/zh-TW/榮譽榜

發行人：劉景寬校長

編輯委員：陳宜民、楊俊毓、辛錫璋、莊麗月、顏正賢、蔡英美、鄭添祿、鄭丞傑、蔡哲嘉、傅伊志、楊淵韓、陳泊余、田育彰、孫昭玲、謝翠娟、楊奕馨、黃啟清、王彥雄、石啟仁、楊詠梅、劉旺達、陳武宗、謝志昌

編輯小組：呂明姍、林妍吟、劉美淇、劉玟妦、黃馨儀、林慧姿、劉育君、陳淑真、蘇勤雅、郭淨紋、許幼青

執行編輯：莊麗月、田育彰、許幼青

發行單位：高雄醫學大學研究發展處

參與單位：七學院研發組、產學營運處、國際事務處、圖書資訊處、研究資源整合中心、附院臨床醫學研究部、小港研究暨教育訓練室、大同研究暨教育訓練室

電話：07-3121101-2322

傳真：07-3223170

網址：http://devel.kmu.edu.tw/front/bin/ptlist.phtml?Category=254