Professor Xinghua (Victor) PAN, PhD, MD

Professor, Medical Sciences Division (MSD), Macau University of Science and Technology (MUST); PhD supervisor for Biomedical Sciences, PhD and Master of Science Supervisor for Pharmacy

潘星華：理學博士，醫學碩士，醫學學士；澳門科技大學醫學部教授，生物醫學科學博士生導師，藥學博士生和碩士生導師，澳門青年學者導師

MUST scholar: https://scholar.must.edu.mo/scholar/106820
ORCID: https://orcid.org/0000-0002-7421-8155

Email：panxinghua@must.edu.mo

CURRENT RESEARCH INTERESTSIN IN BRIEF 當前研究方向
（1）單細胞組學技術創新和應用
Single cell technology innovation and application
（2）腫瘤異質性與精準醫學
Cancer heterogeneity and precision medicine
（3）幹細胞與衰老和再生醫學
Stem cell and aging and regenerative medicine
（4）基因組醫學和疾病組學
Genome medicine and disease omics
（5）組學生物資訊學
Bioinformatics for omics data
（6）中醫藥組學
Chinese medicine omics

*****中文版，潘星華*****

一，工作和學習簡歷

1，工作簡歷：

2024-至今擔任澳門科技大學醫學部精準再生醫學研究中心教授（負責科研），兼澳門科技大學中藥質量研究國家重點實驗室教授；醫學院生物醫學科學博士生導師；藥學院藥學博士生和碩士生導師、澳門青年學者導師。

2016-2024 年擔任南方醫科大學教授和生物醫學科學博士生、碩士生和博士後指導導師，基礎醫學院學術委員會委員、生物化學與分子生物學教研室（原基因工程研究所）主任、廣東省單細胞技術與應用重點實驗室創始人和主任（現學術委員會副主任）。2016-2017 年擔任廣東省生物晶片重點實驗室主任。期間還分別申報省珠江學者學科和省特支計劃學科，成功獲批並擔任學科負責人，並先後兼任深圳灣實驗室開放基金 PI、南方醫院、珠江醫院、廣東省人民醫院、東莞婦幼保健院雙聘教授，橫琴愛姆斯坦生物技術有限公司（ImStem Biotech）博士後導

師，也兼教育部精神健康研究重點實驗室和教育部華南傳染病防治重點實驗室骨幹 PI。

2004-2017 年在美國耶魯大學（Yale University）醫學院遺傳系及分子醫學 Boyer 中心初入時為副研究員，隨後晉升為研究員和項目 PI，並兼耶魯卓越基因組中心（YCEGS）、癌症中心（YCC）和幹細胞中心（YSC）成員，在耶魯大學 Sterling 講座教授及 YCEGS 共同主任 Sherman M. Weissman 院士領導下參加 ENODE 專案，從事單細胞基因組學技術創新及相關幹細胞和腫瘤研究。隨後擔任顧問（Consultant）至 2019 年。

2000-2004 年在美國分子平臺公司（Molecular Staging Inc., 2004 年獲 Qiagen 並購）基因組學部擔任研究員和酶學主任，兼耶魯大學客座研究員，聚焦開發 REPLIg 試劑盒。

1994-1997 年在上海海軍醫科大學之細胞生物學與醫學遺傳學教研室擔任副教授、碩士生導師，並以博士生副導師身份聯合培養博士生 2 名。

先後培養博士後/訪問學者、博士、碩士 60 多名，親自指導本科生和醫學生 40 多位；先後為 10000 多名本科生和研究生授課（生物化學與分子生物學，醫學遺傳學，細胞生物學，及前沿進展講座等）。

2，教育簡歷：

潘星華在南方醫科大學臨床醫學（1980-1985）和基礎醫學院（1985-1988）獲得醫學學士和碩士學位，在復旦大學遺傳與遺傳工程系及遺傳學研究所（1989-1993）獲得理學博士學位，在中國醫學科學院暨北京協和醫學院（CAMS & PUMC）腫瘤醫院分子腫瘤學國家重點實驗室（1993-1994）和美國耶魯大學遺傳學系暨分子醫學 Boyer 中心之分子腫瘤學與發育專案（1997-1999）獲得了 2 期博士後（分子腫瘤學和基因組學）培訓。他先後師從於導師復旦大學談家楨教授（中國遺傳學奠基人，師從導師 TH 摩爾根在加州理工大學獲得 PhD）、北京協和醫學院吳旻教授（中國腫瘤遺傳學先驅，蘇聯醫學科學院醫學科學博士）和耶魯大學 Sherman M. Weissman 教授（美國遺傳學與基因組學先驅，哈佛大學醫學博士）等中國和美國國家科學院三位院士。期間在北京大學生物系（1987 年學習果蠅染色體技術）、澳大利亞墨爾本大學及 Ludwig 癌症研究所（1994 年獲得日內瓦國際抗癌聯盟/UICC Scholarship 資助學習分子腫瘤學）和美國紐約冷泉港實驗室（1995 年受 CSHL Scholarship 支持學習人工酵母染色體技術）短期進修。

二，研究興趣和貢獻

潘星華課題組的主要研究方向主要是單細胞組學技術創新和應用、腫瘤異質性與精準醫學、幹細胞與衰老和再生醫學、基因組醫學和疾病組學、組學生物資訊學、中醫藥組學，及基因檢測新技術研發等。

1，技術創新：

作為單細胞組學技術創新的一位早期探索者和持續創新者，近二十餘年來專攻單細胞組學核心技術創新及其生物醫藥多個領域的應用研究，先後創新單細胞技術 10 餘項：

單細胞基因組：參與開發 REPLIg 試劑盒（2003），創建了基於 MDA 原理的單

細胞全基因組擴增技術 WPA（2008），在早期的單細胞基因組測序中發揮了重要作用。提出中通量單細胞測序的理念，據此創建的中通量拷貝數變異測序技術 msCNVS（2021，2025）在臨床檢測上具有巨大潛力。

單細胞轉錄組：創建 2 種全長轉錄組測序技術 PMA 和 SMA（2013）；創建多樣品微群體細胞轉錄組測序技術 MUST-seq（2021）。PMA 技術開創了基於 mRNA 環化和 phi29 DNA 聚合酶的多重滾環擴增（RCA）的一類 mRNA 擴增新技術，獲得評論認為是在 PCR 擴增和體外轉錄擴增外的第三類代表性 scRN-seq 技術，後續獲得進一步發展和再創新。

單細胞表觀組：創建 2 種 DNA 甲基化測序技術: scCGI-seq（2016）和 msRRBS，（2021，2023）及緻密染色質圖譜技術（2015），其中 scCGI-seq 技術是最早的不依賴於城基轉化的全基因組 DNA 甲基化測序代表性技術。

單細胞多樣品測序：雙重單細胞多樣品測序方案 NAMUL-seq（2025），及在無標記混樣測序基礎上結合 SNV 和轉錄組譜的雙重樣品解碼方案（2026），大大提高了單細胞轉錄組測序效率。

單細胞多維組學：首報單細胞轉錄組和基因組共分析技術（2014），獲得評論認為: 為單細胞多組學測序的發展探明了道路；並報告了轉錄組與端粒長度共分析技術（2021）。

單細胞端粒長度檢測：含平均長度測定技術 SCT-pqPCR（2013）、和短端粒長度測定技術 USC-STELA（2019）。

目前聚焦深入探索 msCNVS 和 msRRBS 在腫瘤（液體活檢，循環癌細胞 CTC/殘留病/MRD）和產前及植入前胚胎遺傳病（PGT，NIPT）的基因組突變和表觀基因組檢測等；並進行其高通量升級為基礎科研服務。

2，基礎理論研究：

主要應用單細胞組學、空間組學、多維組學、生物資訊學和機器學習等前沿技術和分析手段，結合先進的細胞和分子生物學方法、動物實驗、大型臨床樣本和公共數據，闡明不同生理系統和疾病的內在組學機制及精準防治，和他們的共同內在規律。

聚焦研究多種**實體瘤**（尤其是肝纖維化和肝癌，以及甲狀腺癌、結直腸癌、肺癌）以及**白血病** MDS/AML 和 ALL 的瘤內異質性（ITH）和瘤間異質性、启动和恶性演化、耐藥抵抗、侵袭和转移及細胞微環境調控机制，探索鑒定診斷和治療靶标，并基於多佇列大樣本構建精準醫疗（診斷、治療、藥物反應、預後風險及分層）模型。

深入調查多種**幹細胞和祖細胞**（特別是造血幹祖細胞/HSPC、間充質幹細胞/MSC、器官再生幹細胞）及其在發育、衰老、退變、損伤和再生中的作用；关注研究腫瘤幹細胞及其可塑性，和腫瘤幹細胞在腫瘤發生、復發和抵抗中的作用。

積極探索神經元與神經系統疾病（如唐氏綜合征）、感染性及炎症性等免疫相關疾病的細胞異質性及其調控機制，關注單細胞多組學在中藥機制及其開發中的應用。

熱情尋求與不同學科的臨床醫生和科學家的合作，探討生命基本機制及創新技術的轉化和應用。

3，論文、專利及基金支持：

先後獲中美發明專利授權 15 項，及發明專利多項在審查中，獲得廣泛應用或成功轉化產品或試劑盒 5 項。迄今學術著作獲 GoogleScholars 收錄 160 餘篇，總影響因數超 1000，總被引用 10500 多次，Google Scholar H 指數 44，i10 指數 73。主要論文包括權威期刊 PNAS x7、Adv Science x4、Nat Comm x4、Nucleic Acids Res x3、J Adv Res x2、Cell Mol Life Sci x3、Stem Cell Reports x3、Cancer Res x2、Cell Discov x1、Developmental Cell x1、Mol Cancer x1、Oncogene x1 及 Cell x1 篇等，作為人類基因組 DNA 元素百科全書計劃/ENCODE 聯盟成員參與 Nature x4 篇。主編的電子書 Introduction to Single Cell Omics（單細胞組學導論，基於其主編的 Frontiers 研究專題 Single Cell Omics）2019 年出版，迄今已有 38 萬次總閱讀和 6 萬次文章下載。

潘博士在中美兩國已獲授權發明專利 15 項，提交多項 PCT 國際專利申請，並有數項專利正在審理中；獲得軟體著作權 10 餘項。

根據 ScholarGPS 百分位排名統計（標準排名，剔除合作作者超過 20 人的論文），截至 2025 年底，潘博士的學術成果標準統計在所有研究領域中終身綜合排名位於全球前 1.7%，在單細胞分析領域位列全球前 1.12%。

基於其部分單細胞組學研究成果，獲得美國 GEN（Genetic Engineering & Biotechnology News，2015）獨家報導、美國國家科學院進展雜誌俱樂部的采訪（PNAS Club，2013）及歐洲 Technology Networks 的專門綵訪和報導（2018）。

研究課題獲得澳門科學技術發展基金（FDCT）、澳門科技大學教師基金（FRG）、中國國家自然科學基金（NSF）、科技部重大專項基金（MOST）、國家衛健委基金、國家教育部基金、廣東省自然科學基金重大基礎培育項目、廣東省基礎與應用基礎研究重點項目、廣東省自然科學基金面上項目、廣東省珠江領軍人才創新團隊、廣東省重點實驗室基金、深圳市科技發展專案等資助。早前獲得美國國立衛生研究院（NIH）、自然科學基金會（NSF）及康州幹細胞基金會和中國博士後科學基金及中國自然科學基金青年基金支持。

三，學術兼職、服務和榮譽，

1，學會兼職：

潘星華擔任廣東省生物化學與分子生物學學會副理事長，中華醫學會廣東省醫學遺傳學會常務理事，中國生物化學與分子生物學會基礎醫學專委會委員，全國僑聯特聘專家和生物醫藥專委會委員，海峽兩岸醫藥衛生交流協會遺傳與生殖專委會常委，中國抗癌協會生物標志專委會委員，澳門幹細胞研究協會理事，江西省系統生物醫學重點實驗室學術委員會主任（後擔任顧問），精準醫學四川省重點實驗室學術委員；曾任印度 Advances in NGS 國際顧問委員會委員；獲選相繼分別擔任中國旅美科技協會全美總會第 26-28 屆會長、董事會主席和理事會主席（第 32 屆再任理事會主席）。

2，雜誌服務：

獲邀擔任 Nature Protocols、Nature Communications、Nucleic Acids Res、Genome Biology、Genome Research、Genome Medicine、Aging Cell、Protein and Cell、Genomics Proteomics and Bioinformatics 、 EMBO Molecular Medicine 、 Computational and Structural Biotechnology、Science Bulletin 等 30 多種 SCI 雜誌特邀評審專家或編輯及數種新興專業雜誌顧問。是 Monocytomics （MCM）及 Precision Clinical Medicine 雜誌（牛津大學出版社/OUP 出版）創刊副主編，美國 Single Cell Biology 創刊主編，也曾擔任歐洲出版社雜志 Frontiers 的《Single Cell Omics》研究專題執行主編、中國生物化學與分子生物學學報 40 周年《單細胞與空間組學》主題專刊執行主編。擔任多部著作/教材編委，如教育部 101 計劃核心教材《醫學分子細胞遺傳基礎》編委等。

3，組織會議：

在國際國內專業大會發表主題報告或專題報告 200 餘次，主持組織和參與組織國際學術會議多次 30 次以上，包括主導發起和擔任大會共同主席的首屆至迄今第三屆國際單細胞和空間組學大會（TICSSO, 2022-2026，杭州/廣州、深圳、上海/廣州，計劃中的 2026 北京 TICSSO-4），擔任主席組織了國際壹細胞菁英論壇第一到十期（FOSCE, 2021-2023），參與組織第二至十屆華西精準醫學國際學術論壇（2016-2024）、澳門科技大學國際精準再生醫學研討會（2024/2025）等。

4，學術評審：

獲邀擔任英國醫學研究理事會（MRC）、比利時癌症研究基金會和中國國家自然科技基金委、科技部、中國科學院及佛山、成都、杭州、西安等多個省市科研基金的特邀評審/論證專家。是教育部學位與研究生教育發展中心博士論文評審專家（答辯前盲審，答辯後抽檢）；廣東省、浙江省、廣西省及深圳、東莞、九江等地市科技專家委員會委員。曾為清華大學深圳研究院、中山大學、上海交通大學、華南理工大學、廣東醫科大學、廣州醫科大學等博士學位論文答辯、論文評審或教授職稱評審服務。

5，其他榮譽：

曾獲聘兼任杭州市引進智力專家及杭州市腫瘤醫院特邀研究員，暨南大學研究員，四川大學和廣東藥科大學等客座教授等；獲得廣州市高層次人才、南京市領軍人才、江西省贛鄱英才-高端柔性特聘教授，以及黃埔優秀領軍人才、南沙優秀領軍人才等；獲得美國卓越人才、英國皇家醫學會會士、國際科學組織 VEBLEO 會士、PolyGenomics 多基因組學學術獎及 CastUSA 單細胞基因組學先鋒獎。

GoogleScholars:
https://scholar.google.com/citations?user=64M5V5wAAAAJ&hl=zh-CN
ScholarGPS:
https://scholargps.com/scholars/15886116861365/xinghua-pan

四，代表性文章、專著和專利列表 SELECTED RECENT PUBLICATIONS：
（*Corresponding author; #First author; IF refers to the highest impact factors）

1. Wen Z, Zhang Y, Lin G, Li X, Xiao C, Xu S, Wang J, Cao S, Chen Y, Liu H, Luo X, Chen Y, Tam PKH*, **Pan X***. Profiling Cell-state Fingerprints Based on Deep

Learning Model with Meta-programs of Pan-cancer. **Genomics Proteomics & Bioinformatics** (GPB) 2025 Dec 2; qzaf123. doi: 10.1093/gpbjnl/qzaf123.PMID: 41329499 DOI: 10.1093/gpbjnl/qzaf123 **(IF 11.5)**

2. Lin G, Xu M, Chen C, Peng B, Dong Z, Zhou X, Gao J, Yu J, Jia B, Luo C, Hua R, Xiao C, Mai L, Zhang Y, He Y, Song Y, Marjani SL, Luo X, Zhang W, Zhong M, Quan S, Weissman SM, Hong X, Zhu H*, Tam PKH*, **Pan X***. A medium throughput approach for single cell copy number variation sequencing towards efficient application in clinics. **J Adv Res** 2025 Nov 13; S2090-1232(25)00881-1.DOI: 10.1016/j.jare.2025.11.005. PMID: 41241182 **(IF 13.0)**

3. Zhang Y, Lu Y, Mai L, Wen Z, Dai M, Xu S, Lin X, Luo Y, Qiu Y, Chen Y, Dong Z, Chen C, Meng W, Luo X, Lin G*, Tam PKH*, **Pan X***. Dynamic heterogeneity towards drug resistance in AML cells is primarily driven by epigenomic mechanism unveiled by multi-omics analysis. **J Adv Res** 2025 May 21:S2090-1232(25)00358-3. doi: 10.1016/j.jare.2025.05.038 **(IF 13.0)**

4. Su H, Zhou X, Lin G, Luo C, Meng W, Lv C, Chen Y, Wen Z, Li X, Wu Y, Xiao C, Yang J, Lu J, Luo X, Hong X, Chen Y, Tam PKH*, Li C*, Sun H*, **Pan X***. Deciphering the Oncogenic Landscape of Hepatocytes through Integrated Single-Nucleus and Bulk RNA-Seq of Hepatocellular Carcinoma. **Adv Sci** (Weinh), 2025 Apr;12(14), e2412944, doi:10.1002/advs.202412944 **(IF 15.1)**

5. Huang Y, Wang Q, Zhou W, Jiang Y, He K, Huang W, Feng Y, Wu H, Liu L, Pan Y, Huang Y, Chen Z, Li W, Huang Y, Lin G, Zhang Y, Ren Y, Xu K, Yu Y, Peng Y, **Pan X***, Pan S*, Hu H*, Hu Y*. Prenatal p25-activated Cdk5 induces pituitary tumorigenesis through MCM2 phosphorylation-mediated cell proliferation. **Neoplasia** 2024 Nov;57, 101054, doi:10.1016/j.neo.2024.101054 **(IF 6.3)**

6. Mai L, Wen Z, Zhang Y, Gao Y, Lin G, Lian Z, Yang X, Zhou J, Lin X, Luo C, Peng W, Chen C, Peng J, Liu D, Marjani SL, Tao Q, Cui Y, Zhang J, Wu X, Weissman SM, **Pan X***. Shortcut barcoding and early pooling for scalable multiplex single-cell reduced-representation CpG methylation sequencing at single nucleotide resolution. **Nucleic Acids Res** 2023 Nov 27;51(21):e108. doi: 10.1093/nar/gkad892 **(IF 19.1)**

7. Bai X, Guo ZQ, Zhang YP, Fan ZZ, Liu LJ, Liu L, Long LL, Ma SC, Wang J, Fang Y, Tang XR, Zeng YJ, **Pan X***, Wu DH*, Dong ZY*. CDK4/6 inhibition triggers ICAM1-driven immune response and sensitizes LKB1 mutant lung cancer to immunotherapy. **Nat Commun** 2023 Mar 4;14(1):1247. doi:10.1038/s41467-023-36892-4 (2023) **(IF 24.9)**

8. Qu R, He K, Yang Y, Fan T, Sun B, Khan AU, Huang W*, Ouyang J*, **Pan X***, Dai J*. The role of serum amyloid A1 in the adipogenic differentiation of human adipose-derived stem cells basing on single-cell RNA sequencing analysis. **Stem Cell Res Ther** 2022 May 7;13(1):187. doi: 10.1186/s13287-022-02873-5 **(IF 8.1)**

9. Trubetskoy V, Pardiñas AF...... **Pan X** (as a member of PsychENCODE project consortium), ... Ripke S, Walters JTR, O'Donovan MC; Schizophrenia Working

Group of the Psychiatric Genomics Consortium. Mapping genomic loci implicates genes and synaptic biology in schizophrenia. **Nature** 2022 Apr;604(7906):502-508. doi: 10.1038/s41586-022-04434-5. Epub 2022 Apr 8 (**IF 83.4**)

10. Lu Y, Liu M, Yang J, Weissman SM, **Pan X***, Katz SG*, Wang S*. Spatial transcriptome profiling by MERFISH reveals fetal liver hematopoietic stem cell niche architecture. **Cell Discovery** 2021 Jun 29;7(1):47. doi: 10.1038/s41421-021-00266-1**(IF 38.9)**

11. Luo C, Peng W, Kang J, Chen C, Peng J, Wang Y, Tang Q, Xie H, Li Y, **Pan X*.** Glutamine Regulates Cell Growth and Casein Synthesis through the CYTHs/ARFGAP1-Arf1-mTORC1 Pathway in Bovine Mammary Epithelial Cells **(cover story)**. **J Agric Food Chem** 2021 Jun 23;69(24):6810-6819. doi: 10.1021/acs.jafc.1c02223 (**JCR Q1**)

12. Wang H, Gong P, Chen T, Gao S, Wu Z, Wang X, Li J, Marjani SL, Costa J, Weissman SM, Qi F*, **Pan X***, Liu L*. Colorectal Cancer Stem Cell States Uncovered by Simultaneous Single-Cell Analysis of Transcriptome and Telomeres. **Adv Sci** (Weinh) 2021 Feb 8;8(8):2004320. doi: 10.1002/advs.202004320 (**IF 15.1**)

13. Zhou Y, Yang D, Yang Q, Lv X, Huang W, Zhou Z, Wang Y, Zhang Z, Yuan T, Ding X, Tang L, Zhang J, Yin J, Huang Y, Yu W, Wang Y, Zhou C, Su Y, He A, Sun Y, Shen Z, Qian B, Meng W, Fei J, Yao Y*, **Pan X***, Chen P*, Hu H*. Single-cell RNA landscape of intratumoral heterogeneity and immunosuppressive microenvironment in advanced osteosarcoma. **Nat Commun** 2020 Dec 10;11(1):6322. doi: 10.1038/s41467-020-20059-6 (**IF 24.9**)

14. ENCODE Project Consortium (**Pan X** as a member); Moore JE, Purcaro MJ, Pratt HE, Epstein CB, et al. Expanded encyclopaedias of DNA elements in the human and mouse genomes. **Nature** 2020 Jul;583(7818):699-710. doi: 10.1038/s41586-020-2493-4 (**IF 83.4**)

15. ENCODE Project Consortium (**Pan X** as a member); Snyder MP, Gingeras TR, Moore JE, Weng Z, et al. Perspectives on ENCODE. **Nature** 2020 Jul;583(7818):693-698. doi: 10.1038/s41586-020-2449-8. Epub 2020 Jul 29.**(IF 83.4)**

16. Huang P, Zhao Y, Zhong J, Zhang X, Liu Q, Qiu X, Chen S, Yan H, Hillyer C, Mohandas N, **Pan X***, Xu X*. Putative regulators for the continuum of erythroid differentiation revealed by single-cell transcriptome of human BM and UCB cells. **Proc Natl Acad Sci U S A** 2020 Jun 9;117(23):12868-12876. doi: 10.1073/pnas.1915085117 (**IF 12.8**)

17. Cen B, Wei Y, Huang W, Teng M, He S, Li J, Wang W, He G, Bai X, Liu X, Yuan Y, **Pan X***, Ji A*. An Efficient Bivalent Cyclic RGD-PIK3CB siRNA Conjugate for Specific Targeted Therapy against Glioblastoma In Vitro and In Vivo. **Mol Ther Nucleic Acids** 2018 Dec 7;13:220-232. doi: 10.1016/j.omtn.2018.09.002 (**IF 8.1**)

18. Cen B, Liao W, Wang Z, Gao L, Wei Y, Huang W, He S, Wang W, Liu X, **Pan X***, Ji A*. Gelofusine Attenuates Tubulointerstitial Injury Induced by cRGD-Conjugated

siRNA by Regulating the TLR3 Signaling Pathway. **Mol Ther Nucleic Acids** 2018 Jun 1:11:300-311. doi: 10.1016/j.omtn.2018.03.006 **(IF 8.1)**

19. Han L, Wu HJ, Zhu H, Kim KY, Marjani SL, Riester M, Euskirchen G, Zi X, Yang J, Han J, Snyder M, Park IH, Irizarry R, Weissman SM, Michor F*, Fan R*, **Pan X***. Bisulfite-independent analysis of CpG island methylation enables genome-scale stratification of single cells. **Nucleic Acids Res** 2017 Jun 2;45(10):e77. doi: 10.1093/nar/gkx026 **(IF 19.1)**

20. Yang J, Tanaka Y, Seay M, Li Z, Jin J, Garmire LX, Zhu X, Taylor A, Li W, Euskirchen G, Halene S, Kluger Y, Snyder MP, Park IH, **Pan X***, Weissman SM*. Single cell transcriptomics reveals unanticipated features of early hematopoietic precursors. **Nucleic Acids Res** 2017 Feb 17;45(3):1281-1296. doi: 10.1093/nar/gkw1214 **(IF 19.1)**

21. Wu H, Zhang XY, Hu Z, Hou Q, Zhang H, Li Y, Li S, Yue J, Jiang Z, Weissman SM, **Pan X***, Ju BG*, Wu S*. Evolution and heterogeneity of non-hereditary colorectal cancer revealed by single-cell exome sequencing. **Oncogene** 2017 May 18;36(20):2857-2867. doi: 10.1038/onc.2016.438. Epub 2016 Dec 12.**(IF 9.9)**

22. Han L, Zi X, Garmire LX, Wu Y, Weissman SM, **Pan X***, Fan R*. Co-detection and sequencing of genes and transcripts from the same single cells facilitated by a microfluidics platform. **Sci Rep** 2014 Sep 26:4:6485. doi: 10.1038/srep06485**(IF 5)**

23. Wang F#, **Pan X***, Kalmbach K, Seth-Smith ML, Ye X, Antumes DM, Yin Y, Liu L*, Keefe DL*, Weissman SM*. Robust measurement of telomere length in single cells. **Proc Natl Acad Sci U S A** 2013 May 21;110(21):E1906-12. doi: 10.1073/pnas.1306639110 **(IF 12.8)**. It was Interviewed by **PNAS club**: http://firstlook.pnas.org/new-ruler-for-telomere-length/, New ruler for telomere length, May 10, 2013 by Sarah CP Williams; featured in "This week in PNAS - In this Issue": http://www.pnas.org/content/110/21/8315.full, May 21, 2013 by C.R., and featured as "Telomere length measurement in single cells" by Hannah Stower published in **Nature Reviews Genetics**, 2013. 14, 444, doi:10.1038/nrg3529, June 18, 2013.

24. **Pan X#***, Durrett RE, Zhu H, Tanaka Y, Li Y, Zi X, Marjani SL, Euskirchen G, Ma C, Lamotte RH, Park IH, Snyder MP, Mason CE, Weissman SM. Two methods for full-length RNA sequencing for low quantities of cells and single cells. **Proc Natl Acad Sci U S A** 2013 Jan 8;110(2):594-9. doi: 10.1073/pnas.1217322109 **(IF 12.8)**

25. **Pan X#***, Urban AE, Palejev D, Schulz V, Grubert F, Hu Y, Snyder M, Weissman SM. A procedure for highly specific, sensitive, and unbiased whole-genome amplification. **Proc Natl Acad Sci U S A** 2008 Oct 7;105(40):15499-504. doi: 10.1073/pnas.0808028105. **(IF 12.8)**

26. **Pan X#** & Weissman SM. An approach for global scanning of single nucleotide variations. **Proc Natl Acad Sci U S A** 2002 Jul 9;99(14):9346-51. doi: 10.1073/pnas.132218699. PMID: 12093903 **(IF 12.8)**

27. **Pan X#***, Fu J*. Molecular evolution of MHC DQA genes: II. Phylogenetic analysis based on nucleotide substitution and SCU bias. **Acta Genetica Sinica** (now known as: **Journal of Genomics and Genomics**, or JGG) 1997;24(5):394-402. PMID: 9494291 **(IF 7.1)**

28. **Pan X#***, Fu J*. Molecular evolution of MHC DQA genes: I. The maintenance of interallelic divergence and the influence of GC content on gene structure. **Acta Genetica Sinica** (now known as: **Journal of Genomics and Genomics**, or JGG) 1997;24(3):195-205. PMID: 936145124 **(IF 7.1)**

Selected reviews and books/chapters

29. Zhang Y, Xu S,Wen Z, Gao JY, Li S, Weissman SM, **Pan X***. Sample-multiplexing approaches for singlecell sequencing. **Cellular and Molecular Life Sciences** 2022 Aug 5;79(8):466.https://doi.org/10.1007/s00018-022-04482-0. PMID: 35927335 PMCID: PMC11073057 **(IF=9.2)**

30. Zhang J#*, Späth SS#, Marjani SL, Zhang W, **Pan X***. Characterization of cancer genomic heterogeneity by next-generation sequencing advances precision medicine in cancer treatment. **Precision Clinical Medicine** 2018 Jun;1(1):29-48. doi: 10.1093/pcmedi/pby007. PMID: 30687561 **(IF=5.3)**(contributed to the inaugural issue of the journal as funding **Associate Editor**)

31. Zhu W, Zhang XY, Marjani SL, Zhang J, Zhang W, Wu S, **Pan X***. Next-generation molecular diagnosis: single-cell sequencing from bench to bedside. **Cell Mol Life Sci** 2017 Mar;74(5):869-880. doi: 10.1007/s00018-016-2368-x.PMID: 27738745. IF=5.79 **(IF=9.2)**

32. Zhang X, Marjani SL, Hu Z, Weissman SM, **Pan X***, and Wu S*. (2017) Single-Cell Sequencing for Precise Cancer Research: Progress and Prospects. **Cancer Res** 2016 Mar 15;76(6):1305-12. doi: 10.1158/0008-5472.CAN-15-1907. PMID: 26941284 **(IF=11.2)**

33. Liu N, Liu L*, **Pan X***. Single-cell analysis of the transcriptome and its application in the characterization of stem cells and early embryos. **Cell Mol Life Sci.** 2014 Jul;71(14):2707-15. doi: 10.1007/s00018-014-1601-8. Epub 2014 Mar 21 **(IF=9.2)**

34. **Pan X#***. Single Cell Analysis: From Technology to Biology and Medicine. **Single Cell Biol** 2014;3(1):106. doi: 10.4172/2168-9431.1000106. PMID: 25177539, PMCID: PMC4147859 (2014)(co-founded the journal and served as its founding **Editor-in-Chief**).

35. **Pan X**, Urban AE and Weissman SM. Chapter 20: Enriching DNA sequencing with nucleotide variation by thymidine glycosylase combined with suppression PCR. In: **PCR Technology: Current Innovations (3rd Edition)**, edited by Tania Nolan and Stephen A. Bustin, **CRC Press**. 2013June 17. pp. 285-297 (total 475 pages). ISBN 9781439848050.

36. **Pan X**, Weissman SM. Chapter 16: Global analysis of DNA allelic variation (GADAV) by specific enrichment of mismatches and selective amplification of heterohybrids. In: **PCR Technology: Current Innovations (2nd edition)**, edited by Thomas Weissensteiner, Hugh G. Griffin and Annette Griffin. **CRC Press**. 2003 November 13. pp. 163-174(total 475 pages). ISBN 9780849311840.

37. **Pan X**, Wu S, Weissman SM. eds. **Introduction to Single Cell Omics**. Lausanne (Switzerland): Frontiers Media August 1, 2019. (total 128 pages) ISSN 1664-8714, ISBN 978-2-88945-920-9, DOI 10.3389/978-2-88945-920-9. **(Invited Editors)**.

38. Lin G-C#, **Pan X-H***. The Technological Frontiers, Computational Paradigms and Emerging Challenges of Single-cell and Spatial Omics. **Chinese Journal of Biochemistry and Molecular Biology** Nov 2025, 41(11):1559-1565.=-6 林貫川，潘星華（單細胞與空間組學專欄**特約執行主編**）。單細胞與空間組學的技術前沿、技術範式及新興挑戰。中國生物化學與分子生物學報，41(11):1559-1565=-6 **(invited review)**

39. 潘星華，李亞子。第 57 章，單細胞測序技術（第 1127-1149 頁）。《**表觀遺傳學**》（於文強、徐國良主編）。**科學出版社**，ISBN：9787030737892。2023 年 3 月 1 日。

40. 潘星華，殷志新。第三章 遺傳資訊的複製、轉錄與翻譯。《**醫學分子生物學**》第三版(胡維新、劉靜主編)。**科學出版社**, ISBN：9787030666680。2021-01（國家精品課程教材，國家精品資源共用課配套教材）。

41. 趙紅珊，楊玉霞，**潘星華**，李傳洲。第十七章，人類基因組和染色體。《**醫學分子細胞遺傳基礎**》（喬傑、高國全、左伋主編),第 413-428 頁。北京大學醫學出版社，ISBN：978-7-5659-3196-3, 2024 年 7 月(教育部 101 計劃核心教材)。

42. 易霞，**潘星華**。第二十二章，基因表達調控。《**醫學分子細胞遺傳基礎**》（喬傑、高國全、左伋主編），第 524-546 頁。北京大學醫學出版社，ISBN：978-7-5659-3196-3, 2024 年 7 月(教育部 101 計劃核心教材)。

部分近期發明專利 SELECTED RECENT INNOVATION PATENTS：

1．Weissman SM, **Pan X**. Methods for preparing cDNA from low quantities of cells. 2018-07-10, USPTO，US10017761 B2.（美國專利）

2．**Pan X**, Weissman SM. Methods for closed chromatin mapping and DNA methylation analysis for single cells, 2019-11-19, USPTO，US10480021 B2.（美國專利）

3．Keefe D, Weissman SM, Liu L, Wang F, **Pan X**. A method for a single cell analysis of telomere length. 2018-10-09, USPTO，US10093970 B2.（美國專利）

4．Weissman SM, Lasken R, **Pan X**. Methods for reducing the complexity of DNA sequences, 2001-09-11, US6,287,825B2; 2002-04-16, US6,372,434B2; 2002-04-12, US6,346,399B2 (3 patents in a series).（3 相美國專利）

5．Weissman SM, **Pan X**. Methods for identifying genes associated with diseases or specific phenotypes. 2005-08-02, US6924104 B2.（美國專利）

6．Marchese FP, **Pan X**, Harold J. Trehalose-containing topical drying composition and method of using same. 2011-11-29, US 8067037B2. PCT Filing date 6/24/2008.（美國專利）

7．Wang J, Zhang J, Huang Z, and **Pan X**. A method for accurately identification of molecular interactions and their polarity and directionality. China Patent authorization number # ZL201910571327.7; Authorization date: June 19, 2020. （中國專利）汪佳宏......潘星華。一種準確識別分子相互作用及其極性和方向性方法。授權號#ZL201910571327.7；授權日：2020 年 6 月 19 日。

8．Wang J, Zhang J, Huang Z, and **Pan X**. A method for screening gene keywords from PubMed literature. China Patent Authorization Number # ZL201910571336.6; Authorization date: June 16, 2020. （中國專利）汪佳宏......潘星華。一種從 PubMed 文獻篩選基因關鍵字的方法。授權號#ZL201910571336.6,授權日：2020 年 6 月 16 日。

9．Huang Z, Zhang J, Wang J, Lin X, and **Pan X**. A method for annotating cell identity based on single-cell transcriptome clustering results. China patent authorization number # ZL201910242519.0; Authorization date: February 28, 2020.（中國專利）黃仲曦......潘星華。一種基於單細胞轉錄組聚類結果注釋細胞身份的方法，專利授權號#ZL201910242519.0；授權日：2020 年 2 月 28 日。

10．**Pan X**, Xu S, Zhang Y, Zhang J, Lin X, Wang J. Unmarked multisample mixed single cell sequencing technology based on sample genotype data splitting. China Patent Authorization Number #ZL202211555116.2, Authorization date: May 14, 2024.（中國專利）潘星華等。基於樣品基因型的數據拆分的無標記多樣品混合單細胞測序技術。專利號# ZL202211555116.2, 授權日 2024 年 5 月 14 日。

11．Huang Z, Shen W, Wen Y, Zhang J, and **Pan X**. A tumor suppressor gene and its application. Invention patents. China Patent Authorization Number # ZL201911152615.5; Authorization date: January 10, 2023.（中國專利）黃仲曦...潘星華。一種以抑癌基因及其應用。專利號#ZL201911152615.5, 授權日 2022 年 1 月 10 日。

12．**Pan X**, Lin G, Huang Z, Zhang J. A unique fragment sequence capture method based on single cell sequencing data. Application date: Oct 30, 2020. China authorization# ZL 202011200039.X. Authorization announcement# CN 112309500 B, and announcement date: Aug 30, 2024. （中國專利）潘星華等。一種基於單細胞測序數據唯一片段序列捕獲方法。專利號#ZL 202011200039.X, 授權日 2024 年 8 月 30 日。

13．**Pan X**, Mai L, Wang L, Qiu Y, Yin Y, Wang S. A new method, primer set, and reagent kit for high-throughput RNA sequencing and their application. China patent authorization # ZL2020 10248230.5; Authorization date: April 15, 2022.（中國專

利）潘星華等。一種新的 RNA 高通量測序的方法、引物組和試劑盒及其應用。專利號#ZL202010248230.5，授權日：2022 年 4 月 15 日。

14．**Pan X**, Mai L, Lian Z, Zhang Y, Lin X, Li S, Yang X, Peng J. A set of barcode connectors and a medium throughput multiplex single-cell representative DNA methylation library construction and sequencing method. China patent application number CN2021103368157, application date: March 25, 2021; Patent acceptance number # 202110336815.7; Publication number CN115125624A, publication date: September 30, 2022. PCT application acceptance on January 21, 2022, PCT/CN2022/073322.（中國專利，國際專利 PCT）一組條形碼接頭以及中通量多重單細胞代表性 DNA 甲基化建庫和測序方法。

15．**Pan X**，Mai L, Lian Z. Method for medium-throughput multi-single-cell representative DNA methylation library construction and sequencing. USPTO submission: EFS ID #48631744, application #18372695, mailed date: Nov 15th, 2023; Confirmation Number: #2711. This applicant is a CIP of PCT/CN2022/073322.（美國專利）

16．**Pan X**, Lin G, Chen C, Dong Z. A method for constructing a medium throughput single-cell copy number library and its application. China patent application number CN2021101331285, application date 2021-02-01; Patent acceptance number 202110133128.5; Publication number CN114836838A, publication date: August 2, 2022. PCT application accepted on January 21, 2022, PCT/CN2022/073321.（中國專利，國際專利 PCT）一種中通量單細胞拷貝數文庫構建的方法及其應用。

17．**Pan X**, Lin G, Caiming C, Dong Z. Method for traceable medium- throughput single-cell copy number sequencing. USPTO submission: EFS ID #48631744, application #18372695, mailed date: Nov 15th, 2023; Confirmation Number: #2711. US Patent App. 18/228,664. This applicant is a CIP of PCT/CN2022/073321.（美國專利）

***** English Version CV: Xinghua Pan, PhD, MD*****

CURRENT POSITION AND RECENT WORKING EXPERIENCES
2024-present, services as Professor, Precision Regenerative Medicine Research Centre (PRMRC), Medical Sciences Division (MSD), Macau University of Science and Technology (MUST), Macao, China, also affiliated with State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM) at MUST. He is a Supervisor for PhD candidate in Biomedical Science program in Faculty of Medicine, and a Supervisor for PhD of Pharmacy and for Master candidate in Faculty of Pharmacy in MSD, MUST.

2017-2024, held the position as the Chairman and Professor in Department Biochemistry and Molecular Biology at Southern Medical University (SMU) in Guangzhou, China. During his tenure, he founded and served as the Director of

Guangdong Provincial Key Laboratory of Single Cell Technology and Application (2018-2025), and currently Vice Chairman of its Academic Committee, and an adjunct Professor. In SMU he directed the Guangdong Provincial Key Laboratory of Biochip (2016-2018). Dr. Pan has been held Adjunct Professor at several leading hospitals, including Nanfang Hospital, Zhujiang Hospital, Guangdong Provincial People's Hospital, and Dongguan Maternal and Child Health Hospital. In addition, he has also been an adjunct PI of the Key Laboratory of Infectious Disease Prevention and Control of the Ministry of Education in South China, and adjunct PI of the Key Laboratory of Mental Health Research of the Ministry of Education, both at SMU. He was a Principal Investigator of an Open Fund Grant of Shenzhen Bay Laboratory, and he has been invited as an Adjunct Professor at Hangzhou Cancer Hospital, Sichuan University, Guangdong Pharmaceutical University, and Jiujiang University.

2004-2017, Dr. Pan worked at Yale University School of Medicine in the United States. He joined as an Associate Research Scientist serving at Department of Genetics, and was later promoted to Research Scientist with the qualification of Principle Investigator. During this period, he was also an active member of Yale Center Excellence in Genomics, Yale Cancer Center, and Yale Stem Cell Center.

2000-2004, Dr. Pan was employed as a Research Scientist and Enzymology Director at the Genomics Section of Molecular Staging Inc. (later acquired by Qiagen) in USA. Concurrently he worked as a Visiting Researcher at Yale University.

As part of his academic commitment, Dr. Pan has trained over 60 postdoctoral researchers, visiting scholars, and PhD, MS and BS candidates. He has also given lectures in biochemistry, molecular biology, medical genetics, and cell biology to nearly 10,000 undergraduate undergraduates and postgraduates including those in medical degree programs.

EDUCATIONS AND TRAINING EXPERIENCES
Academic Degree Educations:
1980-1988, Bachelor of Medicine (MD equivalent, 1980-1985) and Master of Science in Medicine (1985-1988) from Southern Medical University, Guangzhou, China.

1989-1993, PhD in genetics, Fudan University School of Life Sciences, Shanghai, China, under the supervision of Professor CC Tan (Jiazhen Tan, an Academician of both Chinese Academy of Sciences and US National Academy of Sciences, with his PhD obtained with Thomas H. Morgan at California Institute of Technology) .

Postdoctoral appointments:
1993-1994, trained in molecular oncology at the State Key Laboratory of Molecular Oncology, Cancer Hospital of Chinese Academy of Medical Sciences and Peking Union Medical College (CAMS & PUMC) in Beijing, China, under Professor Min Wu (an academician of Chinese Academy of Sciences).

1997-1999, conducted genomics research at Yale University School of Medicine mentored by Professor Sherman M. Weissman, Yale Sterling Professor, and the Director of the Molecular Oncology and Development Program of Boyer Center for Molecular Medicine (an Academician of US National Academy of Sciences).

Short-term specialized training programs through his early career:
1987, Drosophila cytogenetics, Peking University Department of Biology, China.
1994, Molecular oncology, University of Melbourne and Ludwig Cancer Institute, Australia, supported by an International Union Against Cancer (UICC) Scholarship.
1995, Artificial yeast chromosome technologies at Cold Spring Harbor Laboratory (CSHL), New York, under a CSHL Scholarship.

RESEARCH INTERESTS AND ACHIEVEMENTS
Technological Explorations:
Dr. Pan began his pioneering work in single-cell sequencing as a member of the international ENCODE consortium. He has since developed over a dozen innovative technologies for single-cell analysis across multiple domains, such as the follows:

Single-cell Genomics: medium throughput scCNV-seq (msCNVS 2025), and Single cell whole genome amplification based on phi29 DNA polymerase with trehalose (WPA 2008), and contributions to the REPLIg system based on MDA principle (2003).

Single-cell Transcriptomics: Two methods for single cell full-length RNA-seq (PMA and SMA, 2013), and medium throughput microbulk RNA-seq (MUST-seq 2021). PMA is recognized as a representative method of the 3rd scRNA-seq, based on mRNA cyclization and RCA amplification, beyond PCR-based scRNA-seq and reverse transcription-based scRNA-seq technologies.

Single-cell Epigenomics: Two methods for DNA methylome sequencing (scCGI-seq 2016, and msRRBS 2023) and a technique for closed chromatin profiling (2015). scCGI-seq is recognized as a representative method for single cell DNA methylome sequencing independent of nucleotide conversion.

Single-Cell Multi-Omics: Co-analysis of the transcriptome and genome within the same single cells (2014, the first approach leading single cell multiomics); co-analysis of mRNA and telomere length in single cells (2021).

Single-cell sample-multiplex sequencing: Single-cell dual-multiplexing sequencing (NAMUL-seq 2025), and demultiplexing and annotating samples from label-free scRNA-seq combined gene expression profiles and genetic variation patterns (2026).

Single-cell Telomere Length Measurement: SCT-pqPCR (the average length, 2013) and USC-STELA (the short telomere load, 2019).

Dr. Pan particularly continues to advance the methods msCNVS and msRRBS for clinical detection of genomic and epigenomic variations, particularly in embryo screening (PGT, NIPT) and cancer diagnostics and monitoring (liquid biopsy, circulating tumor cells/CTCs, minimal residual disease/MRD). He is also making efforts to scale up throughput for broader research applications.

Basic Biomedical Researches:
Dr. Pan employs cutting-edge technologies in single cell omics, spatial omics, multiomics, bioinformatics and machine learning, and integrates them with advanced cellular and molecular approaches, animal experiments, large clinical samples and public datasets. His work aims to elucidate both the unique mechanisms and fundamental principles underlying diverse physiological systems and disease states.

In recent years, his research has been focusing on the following areas:

Solid Tumors: studying the heterogeneity (Intratumoral Heterogeneity or ITH, and Intratumoral Heterogeneity), initiation and malignant evolution, invasion and metastasis, drug resistance, and cellular microenvironment regulatory mechanisms of various solid tumors (especially liver cancer and related liver fibrosis, as well as thyroid cancer, colorectal cancer, and lung cancer). Furthermore, combining multiple large-sample cohorts to explore and identify diagnostic and therapeutic targets and develop precision medicine models (diagnosis, treatment, drug response/repurposing, prognostic risk, and stratification).

Leukemia: similarly, exploring myelodysplastic syndromes (MDS), acute myeloid leukemia (AML), and acute lymphoblastic leukemia (ALL) with a focus on leukemia initiation, progression and evolution, focusing on the role stem cells and bone marrow immuno-microenvironment (TIME) regulation, and elucidating drug response, and construct models for therapeutic stratification.

Stem Cells & Regeneration: investigating various stem cells and progenitor cells (particularly hematopoietic stem/progenitor cells/HSPCs, mesenchymal stem cells/MSCs, and organ regeneration stem cells) for their roles in development, aging, degeneration, injury, and regeneration. Attention is also given to studying cancer stem cells.

In addition, he is also interesting in neuroscience and neurological disorders (ex. T21 syndrome), inflammatory and immune diseases, and traditional Chinese medicine - integrating multiomics approaches to study its mechanisms and applications.

Dr. Pan actively pursues interdisciplinary collaborations with clinicians and scientists across multiple fields to translate technological innovation into biomedical insight and clinical impact.

Summary of Publications and Innovations:
Publications: Dr. Pan has authored or co-authored 160 publications (Google Scholar) with a total impact factor exceeding 1,000, accumulating approximately 10,500 citations. His current H-index is 44 and i10-index is 73 (as of December 31, 2025). His work has appeared in leading journals including: PNAS (7 papers), Advanced Science (4), Nature Communications (4), Nucleic Acids Research (3), Cellular and Molecular Life Sciences (3), Stem Cell Reports (3), Journal of Advanced Research (2), Cancer Research (2), Cell Discovery (1), Oncogene (1), Developmental Cell (1), Molecular Cancer (1), Cell (1) and so on. He has also contributed to Nature (4 papers) through his participation in the ENCODE and PsychENCODE consortia. In 2019, Dr. Pan served as lead editor for the e-book Introduction to Single-Cell Omics (edited from Frontiers Research Topic "Single Cell Omics"), which has received over 380,000 total views and 60,000 article downloads to date.

Patents: Dr. Pan holds 15 issued invention patents in the United States and China, along with several PCT applications, with additional patents pending. His research has been featured in interviews with Genetic Engineering & Biotechnology News (GEN, 2015), PNAS Club (2013), and Technology Networks (2018).

ScholarGPS Percentile Rankings (standard ranking, excluding papers with more than 20 co-authors) indicate that Dr. Pan's work ranks in the top 1.7% lifetime overall across all research fields, and in the top 1.12% globally in single-cell analysis as of the end of 2025.

Summary of Grant Supports：
The research conducted by Dr. Pan and his team has been supported by a range of competitive grants spanning different stages of his career:

Early Career in China: National Natural Science Foundation of China (NSFC Youth Fund) and China Postdoctoral Science Foundation (1990s);

Work in the United States: U.S. National Institutes of Health (NIH), National Science Foundation (NSF), and the State of Connecticut (early 2000s);

Recent Work in Mainland China: National Natural Science Foundation of China (NSFC), Ministry of Science and Technology (MOST), National Health Commission / Ministry of Education, Guangdong Natural Science Foundation, and Shenzhen Municipal Science and Technology Program (vis open fund from Shenzhen Bay Laboratory);

Current Work in Macau: Macau Science and Technology Development Fund (FDCT, AKP) and internal grants from Macau University of Science and Technology (FRG).

SCHOLASTIC SERVICES AND HONORS
Journal Reviewer and Editor:
Dr. Pan holds several key editorial positions in leading academic publications and educational initiatives. He serves as Founding Associate Editor of Precision Clinical Medicine (Oxford University Press) and Monocytomics (MCM), Executive Editor for the special topic "Single Cell and Spatial Omics" of the Chinese Journal of Biochemistry and Molecular Biology, Associate Editor for the research topic "Single Cell Omics" for Frontiers, and Founding Editor-in-Chief of Single Cell Biology. Additionally, he is an Editorial Board Member of Scientific Reports and the Journal of Biological Methods (JBM), and serves on the editorial board of couples of books, including the core textbook Fundamentals of Medical Molecular and Cell Genetics under the Ministry of Education's 101 Plan.

Dr. Pan serves as an invited peer reviewer for over 30 internationally recognized journals. These include:

Nature Portfolio: Molecular Psychiatry, Nature Communications, Nature Protocols, Scientific Data, Scientific Reports.

BMC Series: Molecular Cancer, BMC Genomics, BMC Biotechnology, BMC Medical Genetics.

Frontiers Series: Frontiers in Immunology, Frontiers in Cell and Developmental Biology, Frontiers in Genetics, Frontiers in Bioengineering and Biotechnology.

Genomics & Bioinformatics: Genome Biology, Genome Medicine, Aging Cell, Protein & Cell, GigaScience, Gene, Genomics Proteomics & Bioinformatics, Journal of Genetics and Genomics, Current Bioinformatics, Computational and Structural Biotechnology;

Cancer Researches: Cancer Communications, Cancer Letters, JNCC (Journal of the National Cancer Center), BBA Reviews on Cancer, Oncology Reports, Cancers.

Other Leading Journals: EMBO Molecular Medicine, Cell Proliferation, Science China Life Sciences, Science Bulletin, Bone Research, Biology of Reproduction, Molecular Ecology Resources, Clinical and Translational Medicine, International Journal of Molecular Sciences, JoVE, Zoological Research, Hereditas (Chinese), Acta Academiae Medicinae Sinicae (Chinese), Chinese Journal of Cell Biology (Chinese).

Grant Reviewer:

Dr. Pan has served or currently serves as a committee member or invited reviewer for numerous research funding bodies, including:

International: Medical Research Council (MRC, UK), Foundation against Cancer Belgium (Stichting tegen Kanker / Fondation contre le Cancer).

National (China): National Natural Science Foundation of China (NSFC), Ministry of Science and Technology (MOST), Chinese Academy of Sciences (CAS).

Provincial & Municipal: Guangdong Natural Science Foundation; foundations of Zhejiang, Fujian, and Guangxi provinces; and municipal research foundations in Shenzhen, Guangzhou, Foshan, Dongguan, Nanjing, Zhongqing, Chengdu, Xi'an, and Jiujiang.

Academic degree and professional title reviewer:
Dr. Pan has been appointed as an invited expert for doctoral dissertation review by the Degree and Graduate Education Development Center of the Ministry of Education (blind trial before defense and spot check after defense). He has also served as a committee member and invited reviewer for doctoral degree defenses and professorship evaluations at numerous universities, including Shanghai Jiao Tong University, Tsinghua University, Sun Yat-sen University, South China University of Advanced Technology, Guangdong Medical University, and Guangzhou Medical University, and so on.

Conference organization and speeches:
Dr. Pan leads or co-organizes academic conferences both nationally and internationally, He has initiated and co-Chaired the 1st to the 4th International Conference on Single-cell and Spatial Omics (TICSSO) and associated summits hold from 2022 to 2026 (TICSSO-1 at Hangzhou/Guangzhou, TICSSO-2 at Shenzhen, TICSSO-3 at Shanghai/Guangzhou, and TICSSO-4 at Beijing- to be hold 2026). He is also the Chairman of the Forum of Single Cell Elite (FOSCE) for the session number 1 to 10, held from 2021 to 2023. He also co-organized the West China International Conference on Precision Medicine (2016-2024), and the MUST International Precision Regenerative Medicine Symposium (2024, 2025). In addition, he has delivered invited speeches on over 200 prestigious academic meetings in the past 20 years.

Scholastic organization leadership and services:
Dr. Pan currently is a Vice Chairman of Guangdong Biochemical and Molecular Biology Society of Chinese Society of Biochemistry and Molecular Biology (CSBMB), a member of CSBMB Basic Medical Professional Committee, a member of the Biomedical Professional Committee of the All-China Federation of Overseas Chinese, an Executive Committee member of the Guangdong Medical Genetics Society, an Executive Committee member of the Genetics and Reproduction

Committee of the Cross Strait Medical and Health Exchange Association. He is also a member of the Academic Committee of the Key Laboratory of Precision Medicine in Sichuan Province, and the Chief Advisory of the Academic Committee (former Committee Chairman) of the Jiangxi Provincial Key Laboratory of Systemic Biomedical Sciences.

He was elected as the President, then the Chairman of Board of Governor, and the Chairman of Board consecutively of the 26th, 27th and 28th committees consecutively from 2018 to 2020, and again the Chairman of Board of the 32nd committee in 2024 of Chinese Association of Science and Technology in USA. He was invited as a member of the International Advisory Committee for Advances in NGS in India.

He was invited as an Expert of Hangzhou Cancer Hospital, an Researcher (Professor) of Jinan University (Guangzhou), a Guest Professor of Sichuan University, and of Guangdong Pharmaceutical University. He was granted as Nanjing Leading Talent, Guangzhou High Level Talent, and Ganpo Talent- Distinguished Professor of Jiangxi Province. He once was granted UICC (International Union Against Cancer) Scholarship, CSHL (Cold Spring Harbor Laboratory) Scholarship, PolyGenomics Fellowship, international science organization VEBLEO Fellow, and CastUSA Single Cell Genomics Pioneer Award.

References:
Being interviewed by scientific magazines:
https://www.genengnews.com/insights/single-and-loving-it/?q=fluidigm
https://www.technologynetworks.com/genomics/articles/studying-the-genome-one-cell-at-a-time-308054
http://blog.pnas.org/2013/05/new-ruler-for-telomere-length/

An the leading Editor of a research topic and its corresponding eBook
https://www.frontiersin.org/research-topics/4004/single-cell-genomics-technology-andapplication

Precision Clinical Medicine editorial board in OUP Oxford Press:
https://academic.oup.com/pcm/pages/Editorial_Board

Monocytomics editorial board:
https://www.accscience.com/journal/MCM/about/editorial_board

The international conference 2023 TICSSO-1, 2024 TICSSO-2, 2025 TICSSO-3 and 2026 TICSSO-4:
https://www.prnewswire.com/news-releases/the-first-international-conference-on-single-cell-and-spatial-omics-is-held-in-guangzhou-china-the-golden-age-of-single-cell-analysis-301819021.html;
http://www.fimmu.com/info/1139/17590.htm;

https://www.ticsso.org.cn/
https://www.prnewswire.com/news-releases/the-second-international-conference-on-single-cell-and-spatial-omics-ticsso-2--showcasing-the-state-of-the-art-bioscience-achievements-302111962.html
https://www.tmcnet.com/usubmit/2024/04/09/9991594.htm
https://baijiahao.baidu.com/s?id=1795218461823037932&wfr=spider&for=pc
https://zhuanlan.zhihu.com/p/664535376
https://cj.sina.com.cn/articles/view/7691243227/1ca6f0edb00101eufw
https://mp.weixin.qq.com/s?__biz=MzI2NjQxNjkwNg==&mid=2247490240&idx=1&sn=bda1af9c7261d93b22a8f810cb77efc6&chksm=ea8f3ca5ddf8b5b325146560908dae93c5ec523f38999be84d857ef6bdec14adb7a856269b98&scene=27
https://www.singleseq.com/
https://mp.weixin.qq.com/s/Mw8nRo5ZwCFIjeXk8AYpqA