Xiang-Qun (Sean) Xie, PhD, EMBA. Editor-in-Chief of AAPS Advanced | Springer Nature
xix15@pitt.edu Mobile: **832-755-1268**. WeChat: **xxie678** LinkedIn https://www.linkedin.com/in/xiangqun-sean-xie-70339527/

Currently, Dr. Xiang-Qun (Sean) Xie is a tenured full Professor of Pharmaceutical Sciences and the Principal Investigator (PD/PI) of an integrated AI Data Science Computing and Experimental Medicinal ChemBio Laboratory at the University of Pittsburgh School of Pharmacy/Drug Discovery Institute ($15 M NIH & DoD grants as PD/PI). Dr Xie is also an **Executive Committee Member/CoP** of the UPitt **AI** Data Science Initiative (RDS@Pitt). His passion for innovation and excellence has propelled him to spearhead transformative initiatives. ***As former Associate Dean for Research Innovation and later Associate Dean for PharmacoAnalytics***, Dr. Xie served as Director and PD/PI, leading the establishment of the NIH-funded P30 Center of Excellence for CDAR ($5.6 million) (https://www.cdarcenter.org/about-us/contact-us/) in 2014, a collaborative ***Big Data and AI computing*** initiative with Carnegie Mellon University (CMU). CDAR has fostered groundbreaking ***AI-driven data science research***, advancing interdisciplinary collaboration and innovation across Pittsburgh and beyond. Subsequently, Dr Sean Xie, as a Founding Director, launched **the nation's Pharmacometrics & Systems Pharmacology** (PSP) *PharmacoAnalytics AI data science program* in 2017, equipping PharmD and graduate students (over 132 registered students and $1.26 M tuition revenues) with cutting-edge skills and knowledge in **AI data science and drug discovery for future innovation**.

Nationally, Dr. Xie's expertise and leadership have earned him the esteemed role of *Charter Member* of ***the US FDA Science Board***. He is a dedicated member of the **Editorial Board** of the AAPS Journal. He serves on the ***Editorial Review Board*** of the NIH Directors' New Innovator Award Program and the NIH major center grant BTOD. In recognition of his scientific impact, Dr. Xie was recently named **Editor-in-Chief of AAPS Advanced Book Series | *Springer Nature***, a top-ranked, prestigious academic publisher globally and in the United States.

Internationally, Dr Xie's insight and expertise have been sought after as an expert reviewer for numerous international research foundations, including the UK MRC Foundation, the Wellcome Trust, the Netherlands Organization for Scientific Research Council, the Austrian Science Fund (FWF), and the Chinese Natural Science Foundation. Dr. Xie is also an **Associated Partner of the European Research Executive Agency (REA):** Targeting Circadian Clock Dysfunction in Alzheimer's Disease (TClock4AD), Marie Skłodowska-Curie Doctoral Networks. Dr. Xie has previously held honorary professorships at prestigious institutions, further underscoring his global influence.

As the Founding Director of the Computational Chemical Genomics Screening (CCGS) Center and former Associate Dean for PharmacoAnalytics, Dr. Xie and his CCGS center faculty made prolific contributions to PharmacoAnalytics PSP computational and experimental pharmaceutical sciences drug discovery. His laboratory excels in developing disease-specific chemical genomics knowledgebases, Alzplatform, Deep-MGM, and drug TargetHunter®, which attract over 1**.9 million online users**. His groundbreaking research integrates GPU ML/DL Generative AI computing to revolutionize cryo-EM structure-based pharmaceutical science drug design and discovery, as exemplified by his over 250 publications and numerous patents in high-impact journals, such as ***Cell, Nature Communications, PNAS, Leukemia, Scientific Reports, AAPS Journal, Journal of Medicinal Chemistry, Kidney International, and Cells***.

Among his most impactful ***translational research*** accomplishments is the discovery of pioneering, first-in-class drug technologies. He successfully secured ***an SBIR award*** to advance his novel oncology drug platform, and recently ***received FDA IND approval - "Study May Proceed"*** *human clinical trials*. His broad scientific contributions have been recognized with the prestigious ***AAPS Award for Outstanding Research Achievement***.

Over the decades, Dr. Xie and his team have achieved significant milestones as proof of their AI-driven drug discovery and design technology platform, including reported in highly prestigious journals below:

- **The development of novel cannabinoid CB2-targeted** agonists, inverse agonists, neutral antagonists, and positive/negative allosteric modulators with therapeutic potential for cancers, cocaine attenuation, osteoporosis, renal fibrosis (**Patents, *Cell, JMC, PNAS, Cells, Neuropharm, Kidney International)***.
- **The creation of the first INK4C/p18-targeted chemical probes** (**patent**) for the *ex vivo* expansion of hematopoietic stem cells (HSC) (***Nature Comm, AAPS J, Scientific Reports***) and novel molecular glue degraders and PROTOCs for HSC.
- **The pioneering of the first-in-class SQSTM-1 modulators for** hematologic malignancy tumors (**multi-patents, *Leukemia, Nature Comm, PNAS***). Notably, one of his technologies has advanced to the FDA IND-approved oncology drug clinical trials, marking a pivotal step in Dr Xie's translational science journey.
- **The AI cutting-edge antibody drug discovery.** We are advancing next-generation antibody therapeutics by publishing ***IsAB***, a novel AI algorithm suite for antibody design; implementing AI DL-based modeling with GPU-accelerated docking; developing MCCS to decode protein-ligand and protein-protein interactions; launching a user-friendly, cloud-based platform that integrates 3D structural data with NLP-enhanced design tools; and establishing seamless experimental validation workflows (***Brief Bioinform, Computers in Biology and Medicine, AAPS J,* Nat Comm, *Springer Nature Book***).

Illustrations 20 of +250 publications & books showcasing advancements in the fields of AI Data Science, GPU-computing, Biophysics, Pharmaceutical Sciences, preclinical/clinical Data PharmacoAnalytics:

AI Data Science ML/DL Algorithms Innovation for small and antibody drugs design and discovery (selected):

1. **AI Deep Learning Molecular Generative Modeling of Scaffold-Focused Cannabinoid CB2 Target-Specific Small-Molecule Sub-libraries**. Bian Y and **Xie X-Q***. ***Cells***, 2022 Mar; 11(5):915. PMID: 35269537. ***DeepMGM**, is Dr Xie's lab-developed Generative AI chemistry for drug-target specific molecules with desired properties using the large *chemistry language*. Unlike OpenAI ChatGPT, which generates LLMs in human languages, Dr Xie's Lab DeepMGM is tailored to the sophisticated task of drug discovery.
2. **Integrated multi-class classification and prediction of GPCRs allosteric modulators by machine learning intelligence**. Hou, T., Bian, Y., McGuire, T., **Xie, X.-Q.*** ***Biomolecules*** 2021 11(6):870. PMID:34208096
3. ***IsAb:* a computational protocol for antibody design.** Liang T, Chen H, Yuan J, Jiang C, Hao Y, Feng Z*, **Xie X-Q*.** ***Brief Bioinform***. 2021 Apr 20:bbab143. doi:10.1093/bib/bbab143. PMID: 33876197
4. ***Structural insight into CD20/CD3-bispecific antibodies by molecular modeling***. Sun, Z. Y., Liang, T., Zhang, Y., Hou, G., Chu, X., Hou, J. Z., Li, W*., **Xie, X-Q***, & Feng, Z*. (2025) ***Comput Bio and Med***, *185, 109497. PMID:* 39674067
5. **MCCS: a novel recognition pattern-based method for fast-track discovery of anti-SARS-CoV-2 drugs**. Feng Z, Chen M, Xue Y, Liang T, Chen H, Zhou Y, Nolin TD, Smith RB, **Xie X-Q***: ***Briefing Bioinformatics*** 2020:Oct 20 : bbaa260. doi: 10.1093/bib/bbaa260 PMID: 33078827

Experimental *In vitro/in vivo* Medicinal ChemBio Validations and Drug Design FDA IND-enabling (selected):

6. **Cryo-EM structure of human cannabinoid receptor CB2-Gi signaling complex.** Xing C, Zhuang Y, Xu T, Feng Z, … Zhang C*, Xu E*, & **Xie XQ*** ***Cell*** 2020,180(4):645-654, PMID:32004460. (J Impact factor IF **66.23**)
7. **Xie2-64, a novel CB2 receptor inverse agonist, reduces cocaine abuse-related behaviors in rodents.** Jordan CJ, Feng Z-W, Galaj E, Bi G-H, Xue Y, Liang Y, McGuire T, **Xie X-Q***, Xi Z-X*: ***Neuropharmacology*** 2020, **176**:108241. PMID: 32712273 (IF5.25)
8. **Targeted inhibition of the type 2 cannabinoid receptor is a novel approach to reduce renal fibrosis**. Zhou L, Zhou S, Feng ZW**, Xie X-Q*,** Liu Y*. ***Kidney Int.*** 2018, 94(4):756-772. PMID: 30093080 (IF18.74)
9. **Small-molecule inhibitors targeting INK4 protein p18INK4C enhance ex vivo expansion of hematopoietic stem cells**" Gao Y, Yang P, Shen HM, Yu H, Xie ZJ, Cheng T* and **Xie X-Q*. *Nature Communications***, 2015, 6:6328. PMID: 25692908 (IF11.32)
10. ***Leukemia*** 2016: **First-in-class Sequestosome1/p62 antagonist to multiple myeloma** DOI: 10.1038/leu.2015.229 ***Nat Commun*** 2017: **P62/Sequestosome-1 autophagosome biogenesis** DOI: 10.1038/s41467-017-00085-7 (**IF17.69**)

AI PharmacoAnalytics for Clinical Data Science ML/DL Analytics -selected:

11. **(Book）Artificial Intelligence Technologies for Clinical Data PharmacoAnalytics Case Studies on Alzheimer's Disease.**" Zhao G, Zhao S, and **Xie X-Q*.** Book Chapter 32, 2023 in *The Quintessence of Basic and Clinical Research* (G. Jagadeesh ***Springer Nature***, ISBN 978-981-99-1283-4 (Book).
12. **The Association between Metformin Use and Risk of Developing Severe Dementia among AD Patients with Type 2 Diabetes**. Xue Y and **Xie X-Q** ***Biomedicines*** 2023, *11*(11), 2935. PMID: 38001936
13. **Synergism of antihypertensives and cholinesterase inhibitors in Alzheimer's disease.** Hu Z, Wang LR, Ma S, Kirisci L, Feng ZW, Xue Y, Klunk WE, Kamboh MI, Sweet RA, Becker J, Lv Q-z, Lopez OL*, and **Xie X-Q*** ***Alzheimer's Dement (N.Y.): Translational Research & Clinical Interventions***, 2018 4:542-555. PMID: 30386819.
14. **Analysis of Substance Use and Its Outcomes by Machine Learning: II. Derivation and Prediction of the Trajectory of Substance Use Severity. *Drug and Alcohol Dependence***. Jing Y, Hu Z, Fan P, Xue Y, Tarter RE, Kirisci L, Wang J, Vanyukov M, Ralph ET and **Xie X-Q***. 2020, 206:107604; PMID: 31839402. Hu Z, **Xie X-Q*** et al. PMID: 31615693.

AI GPU-Computing Power Innovation for ML/DL PharmacoAnalytics-selected:

15. **GraphDeep-hERG: Graph Neural Network PharmacoAnalytics for Evaluating hERG-Related Cardiotoxicity.** Jing YK, Zhang YY, Zhao GY, McGuire T, Zhao J, Gibbs Ben, Hou GQ, Feng ZW*, Xue Y* and **Xie X-Q*** ***Pharmaceutical Research*** 2025 Mar 26 DOI: 10.1007/s11095-025-03848-w
16. **(Book) Artificial Intelligence Generative Chemistry Design of Target-specific Scaffold-Focused Small Molecule Drug Libraries**. Bian Y, Hou G, and **Xie X-Q***. **Book Chapter 31**, 2023 in *The Quintessence of Basic and Clinical Research (G*. Jagadeesh), ***Springer Nature***, ISBN 978-981-99-1283-4 (Book).
17. **(Book) Blood-Brain Barrier (BBB) Permeability Assessment for Small Molecule Drug Discovery Using Computational Techniques**. Jing YK and **Xie X-Q.** Chapter 45 in Book: *Oral Bioavailability and Drug Delivery*: From Basics to Advanced Concepts and Applications. ***Wiley*** (pp.857-870), 2024. SN - 9781119660651 *Wiley.*
18. **TargetHunter: In Silico Target Identification Tool for Predicting the Therapeutic Potential of Small Organic Molecules Based on a Chemogenomic Database.** Wang L, Ma C, Wipf P, Liu H, Su W and **Xie XQ*. *AAPS J.*** 2013, 15, 395-406. PMID: 23292636
19. **AlzPlatform: An Alzheimer's Disease Domain-Specific Chemogenomics Knowledgebase for Polypharmacology and Target Identification Research.** Liu H, Wang L, Lv M, Pei R, Li P, Pei Z, Wang Y, Su W, **Xie* X-Q**. ***Journal of Chemical Information and Modeling***. 2014;54(4):1050-60. PMID: 24597646.
20. **GPU Accelerated Chemical Similarity Calculation for Compound Library Comparison**. Chao Ma, L Wang, **X-Q Xie*** ***Journal of Chemical Information and Modeling*** 2011, 51 (7), 1521–1527. PMID: 21692447