Curriculum Vitae

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Education

1998	B.Sc.	University of Science and Technology of China (USTC).
2001	M.S.	University of Science and Technology of China (USTC).
2007	PhD.	Albert Einstein College of Medicine, Bronx, New York. (USA)

Postdoctoral Training

2007-2011 Research Associate.
Advisor: Robert Lefkowitz, James B. Duke Professor of Medicine and Biochemistry and Investigator, Howard Hughes Medical Institute (2012 Nobel Prize)

Honors and Awards

2014 The first prize of young scholar forum at the 11th Biochemistry and Molecualr Biology academic meeting at china.
2015 Shandong Province college scientific award, first prize for the Pharmacological research by targeting GPCR and phosphatases.

Personal Statement

Since starting my laboratory in 2011, I has focused on G protein coupled receptors, in particular, the molecular mechanism of biased signaling of GPCRs. Our first main research aspect are the working mechanism of GPCR. For arrestin mediated biased signaling, we have proposed a “flute model” to explain the arrestin mediated GPCR functions (Nature communications, 2015; Molecular Pharmacology, 2017; Recommended by Faculty 1000, Nature Chemical Biology 2018). We proposed that the 10 distinct phosphorylation interacting sites along the N-terminal of arrestin is the “phospho-code” reader of the arrestin, which recognized the information passed by GPCR, then translated to more then 1000 distinct functions. Our discovery can partially explain how limited effector proteins (16 G protein subtype and 4 arrestin subtype) can translate sophisticated information dictated from more than

800 GPCR to numerous cellular functions. We identified a new mechanism in activation of ion channel by GPCRs. A prototype thinking is that the ion channels are activated by GPCRs through either direct G protein interaction or second messengers downstream of G protein activation. We identified that arrestin can mediated AT1R/TRPC3 or M3R/TRPC3 coupling by forming a complex of AT1R/β-arrestin-1/PLCγ/TRPC3 or M3R//β-arrestin-1/TRPC3 (Nature communications, 2017, Nature communications, 2018). We also identified that orphan receptor GPR64 forms complex with β-arrestin-1 and CFTR at apical membrane of efferent ductules to regulate the salt/water metabolism (eLife 2018, Faculty 1000 recommendation). These work provided new mechanisms for GPCR activated ion channel, which may be relevant to many physiological or pathological processes. Our second research aspect is the physiological and pathological functions of GPCRs. We have elucidated how biased signaling of CCK1R, β adrenergic receptors and adhesion GPCRs regulated different pancreatic islet function and homeostasis. We also identified that short term activation of β2AR signaling improved learning and memory by increased lactate metabolism and astrocyte-neuron lactate shuttle (ANLS), whereas long term stress or activation of β2AR signaling has harmful effect on learning and memory through a desensitization mechanism.

PUBLICATIONS (#, correspondence author)

Correspondence author:

1. Ping YQ, Xiao P, Yang F, Zhao RJ, Guo SC, Yan X, Wu X, Zhao FH, Zhou FL, Xi YT, Yin WH, He FD, Zhang DL, Zhu ZL, Jiang Y, Torsten Schöneberg, Ines Liebscher#, Xu H. Eric#, **Sun JP#**. **Structural basis for the tethered peptide activation of adhesion GPCRs. Nature（IF 46.486）.** 2022.Apr;604(7907):763-770. doi: 10.1038/s41586-022-04619-y.
2. Xiao P, Guo SC, Wen X, He QT, Lin H, Huang SM, Gou L, Zhang C, Yang Z, Zhong YN, Yang CC, Li Y, Li SL, Tao XN, Yang ZS, Lu Y, He JY, Wang CX, Zhang L#, Kong LL#, **Sun JP#**, Yu X#. **Tethered peptide activation mechanism of adhesion GPCRs ADGRG2 and ADGRG4**. **Nature（IF 46.486）.** 2022 Apr;604(7907):771-778. doi: 10.1038/s41586-022-04590-8.
3. Cheng J, Yang Z, Ge XY, Gao MX, Meng R, Xu X, Zhang YQ, Li RZ, Lin JY, Tian ZM, Wang J, Ning SL, Xu YF, Yang F, Gu JK, **Sun JP#**, Yu X#. **Autonomous sensing of the insulin peptide by an olfactory G protein-coupled receptor modulates glucose metabolism. Cell Metablism（IF 27.28）.** 2022 Feb 1;34(2):240-255.e10. doi: 10.1016/j.cmet.2021.12.022. **（Contemporaneous Preview Thematic commentary）**
4. An W, Lin H, Ma L, Zhang C, Zheng Y, Cheng Q, Ma C, Wu X, Zhang Z, Zhong Y, Wang M, He D, Yang Z, Du L, Feng S, Wang C, Yang F, Xiao P#, Zhang P#, Yu X#, **Sun JP#**. **Progesterone activates GPR126 to promote breast cancer development via the Gi pathway. Proc Natl Acad Sci USA.（IF11.21）**.2022 Apr12;119(15):e2117004119.doi: 10.1073/pnas.2117004119.
5. Yang F, Guo LL, Li Y, Wang GP, Wang J, Zhang C, Fang GX, Chen X, Liu L, Yan X, Liu Q, Qu CX, Xu YF, Xiao P, Zhu ZL, Li ZJ, Zhou JY, Yu X, Gao N#, **Sun JP#**. **Structure, function and pharmacology of human itch receptor complexes. Nature（IF 46.486）.** 2021. Dec;600(7887):164-169. doi: 10.1038/s41586-021-04077-y.
6. Ping YQ, Mao C, Xiao P, Zhao RJ, Jiang Y, Yang Z, An WT, Shen DD, Yang F, Zhang H, Qu C, Shen Q, Tian C, Li ZJ, Li S, Wang GY, Tao X, Wen X, Zhong YN, Yang J, Yi F, Yu X, Xu HE#, Zhang Y#, **Sun JP#. Structures of the glucocorticoid-bound adhesion receptor GPR97-G_o complex. Nature（IF 46.486）.** 2021 Jan;589(7843):620-626. **（Faculty 1000 recommendation）**

7. Yang F, Mao C, Guo LL, Lin J, Ming Q, Xiao P, Wu X, Shen Q, Guo S, Shen DD, Lu R, Zhang L, Huang S, Ping Y, Zhang C, Ma C, Zhang K, Liang X, Shen Y, Nan F, Yi F, Luca VC, Zhou J, Jiang C, **Sun JP#**, Xie X#, Yu X#, Zhang Y#. **Structural basis of GPBAR activation and bile acid recognition. Nature（IF 46.486）.** 2020 Nov;587(7834):499-504. doi: 10.1038/s41586-020-2569-1.

8. Xiao P, Yan W, Gou L, Zhong YN, Kong L, Wu C, Wen X, Yuan Y, Cao S, Qu CX, Yang X, Yang CC, Xia A, Hu Z, Zhang Q, He YH, Zhang DL, Zhang C, Hou GH, Liu H, Zhu L, Fu, Yang S, Daniel M. Rosenbaum, **Sun JP#**, Du Y#, Zhang L#, Yu X#, Shao Z#. **Ligand recognition and allosteric regulation of DRD1-Gs signaling complexes. Cell**（IF 38.620）. 2021 Feb; doi: 10.1016/j.cell.2021.01.028.（**Cover paper, feature recommendation**）

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