

Changshan Niu, Ph.D.

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EDUCATION

Ph.D in Medicinal Chemistry

2014-2017

Peking Union Medical College & Tsinghua University, Beijing, China

Dissertation title: Study on the chemical constituents and bioactivities of the roots of *Pieris formosa*.

Advisor: Prof. Shishan Yu

M.S in Medicinal Chemistry

2011-2014

Peking Union Medical College & Tsinghua University, Beijing, China

Dissertation title: Study on the chemical constituents and bioactivities of the twigs of *Pieris formosa*.

Advisor: Prof. Shishan Yu

B.S. in Pharmacy

2007-2011

Hebei Medical University, Hebei, China

EXPERIENCE

Postdoctoral fellow

2021-current

College of Pharmacy, University of Utah

Project: Genome mining to dig difunctional terpene cyclase

Advisor: Prof. Jaclyn M. Winter

Postdoctoral fellow

2017-2021

College of Pharmacy, University of Utah

Project: Novel Strategies for Accelerating Non-Opioid Drug Discovery (DOD).

Advisor: Prof. Eric W. Schmidt

Intern student

2010-2011

Department of Pharmacy, The Second Hospital of Hebei Medicinal University

RESEARCH INTEREST

- Focus on Traditional Chinese Medicine (TCM), especially poisonous medicinal plants, using a broad approach to identify novel natural products that can be developed for pain management.
- Guided by chemical-ecology and bioassay screening, discover neuroactive molecules from marine invertebrates (cone snails, sponge, nudibranchs) and their symbiotic bacteria, trying to illustrate the mechanism of their defense-offence relationship.
- Using genome mining strategy to dig the difunctional terpene cyclase involved in the biosynthetic pathway of diterpenes or sesterterpenes.

SKILLS

Chemistry

- Familiar with the whole process of separation, purification and identification of natural products from plants, marine invertebrates and their symbiotic bacteria.
- Experienced in NMR, HPLC, LC-MS, GC-MS and IR.

Microbiology

- Microbe isolation, identification and bioassay screening.

Molecular Biology

- Marine invertebrates and microbes DNA extraction, RNA extraction; gene cloning; PCR; plasmid construction and transformation; *E. coli* protein expression system; *A. nidulans* and yeast heterologous gene expression systems.

Pharmacology

- Mouse dorsal root ganglion (DRG) dissection and culture; DRGs classification and related bioassay
- In vivo mouse pain assay model, hot plate, running-wheel, formalin, writhing test.

FUNDING

- PUMC Youth Fund (No. 333201606) **2016.3-2017.4**

HONORS AND AWARDS

- Excellent Ph.D. graduate student award of Beijing. **2017**
- Second class scholarship of Peking Union Medical College. **2016**
- First class scholarship of Peking Union Medical College. **2015**
- Second class scholarship of Peking Union Medical College. **2013**

PUBLICATIONS

1. **Changshan Niu**, Lee S. Leavitt, Zhenjian Lin, Noemi D. Paguigan, Lili Sun, Jie Zhang, Joshua P. Torres, Shrinivasan Raghuraman, Kevin Chase, Roberto Cadeddu, Manju Karthikeyan, Marco Bortolato, Christopher A. Reilly, Ronald W. Hughen, Alan R. Light, Baldomero M. Olivera, Eric W. Schmidt. Neuroactive Type-A γ -Aminobutyric Acid Receptor Allosteric Modulator Steroids from the Hypobranchial Gland of Marine Mollusk, *Conus geographus*. *Journal of Medicinal Chemistry*, **2021**, 64, 7033-7043. (Q1, IF=7.446)
2. **Changshan Niu**, Sheng Liu, Yong Li, Yunbao Liu, Shuanggang Ma, Fei Liu, Li Li, Jing Qu, Shishan Yu. Diterpenoids with diverse carbon skeletons from the roots of *Pieris formosa* and their analgesic and antifeedant activities. *Bioorganic chemistry*, **2020**, 95, 103502. (Q1, IF=5.275)
3. **Changshan Niu**, Yong Li, Yunbao Liu, Shuanggang Ma, Xiaojing Wang, Fei Liu, Sheng Liu, Jing Qu, Shishan Yu. Diverse epoxy grayanane diterpenoids with analgesic activity from the roots of *Pieris formosa*. *Fitoterapia*, **2019**, 133, 29-34. (Q3, IF=2.527)
4. **Changshan Niu**, Yong Li, Yunbao Liu, Shuanggang Ma, Fei Liu, Li Cui, Haibo Yu, Xiaojing Wang, Jing Qu, Shishan Yu. Grayanane diterpenoids with diverse bioactivities from the roots of *Pieris formosa*. *Tetrahedron*, **2018**, 74, 375-382. (Q3, IF=2.379)
5. **Changshan Niu**, Yong Li, Yunbao Liu, Shuanggang Ma, Fei Liu, Li Li, Song Xu, Xiaojing Wang, Rubing Wang, Jing Qu, Shishan Yu. Pierisketolide A and Pierisketones B and C, Three Diterpenes with an Unusual Carbon Skeleton from the Roots of *Pieris formosa*. *Organic Letter*, **2017**, 19, 906-909. (Q1, IF=6.492)
6. **Changshan Niu**, Yong Li, Yunbao Liu, Shuanggang Ma, Fei Liu, Li Li, Song Xu, Xiaojing Wang,

- Sheng Liu, Rubing Wang, Jing Qu, Shishan Yu. Biological and chemical guided isolation of 3, 4-secograyanane diterpenoids from the roots of *Pieris formosa*. *RSC advances*, **2017**, 7, 43921-43932. (Q3, IF=2.936)
7. **Changshan Niu**, Yong Li, Yunbao Liu, Shuanggang Ma, Li Li, Jing Qu, Shishan Yu. Analgesic diterpenoids from the twigs of *Pieris formosa*. *Tetrahedron*, **2016**, 72, 44-49. (Q3, IF=2.651)
 8. **Changshan Niu**, Yadan Wang, Jing Qu, Shishan Yu, Yong Li, Yunbao Liu, Shuanggang Ma, Xia Chen, Haining Lv, Song Xu. Chemical constituents from roots of *Illicium majus*. *China Journal of Chinese Materia Medica*, **2014**, 39, 2689-2692. (Chinese Core Journal)
 9. Zhenjian Lin, Joshua P Torres, Maren Watkins, Noemi Paguigan, **Changshan Niu**, Julita S Imperial, Jortan Tun, Helena Safavi-Hemami, Rocio K. Finol-Urdaneta, Jorge LB Neves, Samuel Espino, Manju Karthikeyan, Baldomero M. Olivera, Eric W. Schmidt. Non-Peptidic Small Molecule Components from Cone Snail Venoms. *Frontiers in Pharmacology*, **2021**, 12, 685. (Q2, IF=5.810)
 10. Joshua P. Torres, Zhenjian Lin, David S. Fenton, Lee U. Leavitt, **Changshan Niu**, Puiying Lam, Jose Miguel Robes, Randall T. Peterson, Gisela P. Concepcion, Margo G. Haygood, Baldomero M. Olivera, Eric W. Schmidt. Boholamide A, an APD-Class, Hypoxia-Selective Cyclodepsipeptide. *Journal of natural products*, **2021**, 83, 1249-1257. (Q2, IF=4.050)
 11. Fei Liu, Yanan Wang, Yong Li, Shuanggang Ma, Jing Qu, Yunbao Liu, **Changshan Niu**, Zhonghai Tang, Yuhuan Li, Li Li, Shishan Yu. Triterpenoids from the twigs and leaves of *Rhododendron latoucheae* by HPLC-MS-SPE-NMR. *Tetrahedron*, **2019**, 75, 296-307. (Q3, IF=2.233)
 12. Yanan Wang, Fei Liu, Yong Li, Shuanggang Ma, Jing Qu, Yunbao Liu, **Changshan Niu**, Zhonghai Tang, Yuhuan Li, Rubing Wang, Shishan Yu. New glycosides from the twigs and leaves of *Rhododendron latoucheae*. *Journal of Asian natural products research*, **2019**, 21, 299-307. (Q4, IF=1.345)
 13. Fei Liu, Yanan Wang, Yong Li, Shuanggang Ma, Jing Qu, Yunbao Liu, **Changshan Niu**, Zhonghai Tang, Yuhuan Li, Li Li, Shishan Yu. Minor Nortriterpenoids from the Twigs and Leaves of *Rhododendron latoucheae*. *Journal of natural products*, **2018**, 81, 1721-1733. (Q2, IF=4.257)
 14. Shumeng Xiao, **Changshan Niu**, Yong Li, Zhishu Tang, Jing Qu. Chemical constituents from roots of *Pieris formosa* and their bioactivity. *Zhongguo Zhong yao za zhi= Zhongguo zhongyao zazhi= China journal of Chinese materia medica*, **2018**, 43, 964-969. (Chinese Core Journal)
 15. Fei Liu, Yanan Wang, Yong Li, Shuanggang Ma, Jing Qu, Yunbao Liu, **Changshan Niu**, Zhonghai Tang, Tiantai Zhang, Yuhuan Li, Li Li, Shishan Yu. Rhodoterpenoids A-C, Three New Rearranged Triterpenoids From *Rhododendron Latoucheae* by HPLC-MS-SPE-NMR. *Scientific reports*, **2017**, 7, 1-10. (Q3, IF=4.122)
 16. Jing Qu, Xia Chen, **Changshan Niu**, Shishan Yu. Chemical constituents from *Vaccinium bracteatum*. *China Journal of Chinese Materia Medica*, **2014**, 39, 684-688. (Chinese Core Journal)
 17. Li Ding, **Changshan Niu**, Zhiqing Zhang, Sumei Wang, Dehou Fan, Dongyan Shi. *In vitro* antibacterial activity of combined antimicrobial agents against *Acinetobacter baumannii*. *China Journal of Hospital Pharmacy*, **2012**, 7, 516-518. (Chinese Core Journal)