

GUANGCHUANG YU

Professor of Bioinformatics at [Southern Medical University](#). I have developed more than 20 R packages, including [clusterProfiler](#), [ChIPseeker](#), [treeio](#) and [ggtree](#), to help biologists to explore and understand their data.

I am broadly interested in bioinformatics, metagenomics, molecular evolution, data integration and visualization.



💻 RESEARCH EXPERIENCE

- present | 2018 ● **Professor**
School of Basic Medical Sciences 📍 Southern Medical University
 - 2021-present, Director, Department of Bioinformatics
 - 2019-2021, Associate director, Department of Bioinformatics
- 2018 | 2017 ● **Post-doctoral Fellow**
State Key Laboratory of Infectious Diseases 📍 The University of Hong Kong
- 2013 | 2009 ● **Bioinformatician**
Key Laboratory of Functional Protein Research of Guangdong Higher Education Institutes 📍 Jinan University

🎓 EDUCATION

- 2017 | 2013 ● **PhD., Bioinformatics**
The University of Hong Kong 📍 Hong Kong, CN
 - Thesis: Big-data computational methods for studying molecular evolution: from accurate genome assembly to phylogenetic analysis and data integration
- 2009 | 2006 ● **M.S., Biochemistry and Molecular Biology**
Anhui Medical University 📍 Hefei, CN
 - Thesis: miRNA靶基因计算分析新方法及其应用研究
- 2005 | 2001 ● **B.S., Biotechnology**
South China Agricultural University 📍 Guangzhou, CN
- 2019 ● **Antigenic cartography and antibody landscapes course**
University of Cambridge 📍 Cambridge, UK
- 2018 ● **南方医科大学高层次人才“不忘初心 牢记使命”学习教育**
延安干部培训学院 📍 Yan'an, CN

CONTACT

- ✉ gcyu1@smu.edu.cn
- 🐦 [guangchuangyu](#)
- 🔗 [github.com/YuLab-SMU](#)
- 🔗 <https://yulab-smu.top/>
- wechat [YuLabSMU](#) (公众号)
- 📞 (86) 13826432521

Citation = 18408

H-index = 24

I10-index = 35



Last updated on 2022-05-17

- **Train the Trainers**
Institut Pasteur 📍 Paris, FR
2015
- **Visiting student**
Beijing Institute of Radiation Medicine 📍 Beijing, CN
2009
|
2007

≡ CERTIFICATE

- **高等学校教师资格**
广东省教育厅
2019
- **Certificate of Teaching and Learning in Higher Education**
Centre for Enhancement of Teaching and Learning
The University of Hong Kong
2015



🏆 SCHOLARSHIPS & AWARDS

- **2020学年教学优秀一等奖**
南方医科大学
2022
- **2021年中国高被引学者**
Elsevier
2021
- **2020全球前2%顶尖科学家**
美国斯坦福大学
2021
- **2020年中国高被引学者**
Elsevier
2021
- **Postgraduate studentships**
The University of Hong Kong
2017
|
2013
- **Best paper of the year 2010**
Journal of Integrated OMICS
2012



↗ GRANTS

- **大样本多组学数据联合分析系统研究与构建**
主持, CNY ¥600,000, 国家级项目
2022
|
2020
- **南方医科大学第三层次人才引进科研项目 (G618289088)**
主持, CNY ¥1,500,000
2020
|
2018
- **病毒性新发传染病的研究与防治 (2017YFE0190800)**
参与, CNY ¥990,000, 中华人民共和国科学技术部, 国家重点研发计划
2017
|
2013

- 2013
- hnRNP蛋白在调控人肺癌细胞周期胞质分裂中的作用研究 (21613414)
主持, CNY ¥100,000, 中央高校基本科研业务费专项资金
- 2011
- Hela细胞周期动态蛋白质组学分析 (21611303)
主持, CNY ¥20,000, 中央高校基本科研业务费专项资金

BOOKS

- 2022
- **Data Integration, Manipulation and Visualization of Phylogenetic Trees**
ISBN: 9781032233574
 - G Yu
 - Chapman and Hall/CRC
- 2020
- **Gene Ontology Semantic Similarity Analysis Using GOSemSim**
Methods in Molecular Biology, 2117:207-215.
 - G Yu
 - In: Kidder B. (eds) *Stem Cell Transcriptional Networks*, ISBN: 978-1-0716-0300-0
 - Humana, New York, NY

TEACHING EXPERIENCE

- present
|
2022
- **生物信息学**
School of Basic Medical Sciences  Southern Medical University
 - Undergraduate level class (基础医学院士创新班)
- present
|
2021
- **基础医学研究与医学发展**
School of Basic Medical Sciences  Southern Medical University
 - Undergraduate level class
- present
|
2019
- **基因组学**
School of Basic Medical Sciences  Southern Medical University
 - Undergraduate level class
 - **基础医学新进展讲座**
School of Basic Medical Sciences  Southern Medical University
 - Undergraduate level class
- 2022
- **毒理学原理与方法**
School of Public Health  Southern Medical University
 - Graduate level class
- 2021
|
2019
- **生物信息学科研训练**
School of Basic Medical Sciences  Southern Medical University
 - Undergraduate level class

2019

- **BMB209: Workshops in Applied Bioinformatics**

Department of Biochemistry and Molecular Biology

📍 University of Southern Denmark

- PhD level class, invited lecture

2012

- **功能蛋白质研究**

College of Life Science and Technology

📍 Jinan University

- Graduate level class

|
2011

☰ PUBLICATIONS

2022

- **ggmsa: a visual exploration tool for multiple sequence alignment and associated data**

Briefings in Bioinformatics. 2022.

- L Zhou[#], T Feng[#], S Xu, F Gao, TT Lam, Q Wang, T Wu, H Huang, L Zhan, L Li, Y Guan, Z Dai*, G Yu*

- **CBNplot: Bayesian network plots for enrichment analysis**

Bioinformatics. 2022, 38(10):2959-2960.

- N Sato, Y Tamada, G Yu, Y Okuno*

- **Editorial: Biomedical Data Visualization: Methods and Applications**

Frontiers in Genetics. 2022, 13:890775.

- T Wu, CL Xiao, TT Lam, G Yu*

- **Altered gut microbiota as an auxiliary diagnostic indicator for patients with fracture-related infection**

Frontiers in Microbiology. 2022, 13:723791.

- X Zhao[#], W Tang[#], H Wan[#], Z Lan H Qin, Q Lin, Y Hu, G Yu*, N Jiang*, B Yu*

2021

- **Use ggbreak to effectively utilize plotting space to deal with large datasets and outliers**

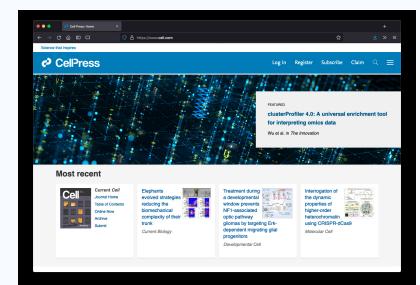
Frontiers in Genetics. 2021, 12:774846.

- S Xu[#], M Chen[#], T Feng, L Zhan, L Zhou, G Yu*

- **clusterProfiler 4.0: A universal enrichment tool for interpreting omics data**

The Innovation. 2021, 2(3):100141.

- T Wu[#], E Hu[#], S Xu, M Chen, P Guo, Z Dai, T Feng, L Zhou, W Tang, L Zhan, X Fu, S Liu, X Bo*, G Yu*



clusterProfiler (Wu et al. 2021),
the featured article in 2021-08-24's website banner of Cell Press

- 2020
- **ggtreeExtra: Compact visualization of richly annotated phylogenetic data**
Molecular Biology and Evolution. 2021, 38(9):4039-4042.
· S Xu, Z Dai, P Guo, X Fu, S Liu, L Zhou, W Tang, T Feng, M Chen, L Zhan, T Wu, E Hu, Y Jiang*, X Bo*, G Yu*
 - **ggVennDiagram: An intuitive, easy-to-use, and highly customizable R package to generate Venn diagram**
Frontiers in Genetics. 2021, 12:706907.
· CH Gao, G Yu, P Cai*
 - **IOBR: Multi-Omics Immuno-Oncology Biological Research to Decode Tumor Microenvironment and Signatures**
Frontiers in Immunology. 2021, 12:687975.
· D Zeng#, Z Ye#, R Shen, G Yu, J Wu, Y Xiong, R Zhou, W Qiu, N Huang, L Sun, X Li, J Bin, Y Liao, M Shi, W Liao*
 - **nCov2019: an R package for studying the COVID-19 coronavirus pandemic**
PeerJ. 2021, 9:e11421.
· T Wu, E Hu, X Ge*, G Yu**
 - **TreeSummarizedExperiment: a S4 class for data with hierarchical structure**
F1000Research. 2021, 9:1246.
· R Huang, C Soneson, FGM Ernst, KC Rue-Albrecht, G Yu, SC Hicks, MD Robinson*
 - **Identification of prognostic Stromal-Immune Score-Based Genes in Hepatocellular Carcinoma microenvironment**
Frontiers in Genetics. 2021, 12: 625236.
· S Liu, G Yu*, L Liu*, X Zou, L Zhou, E Hu, Y Song
 - **Gut microbiota and metabolite alterations associated with reduced bone mineral density or bone metabolic indexes in postmenopausal osteoporosis**
Aging (Albany NY). 2020, 12(9):8583-8604.
· J He#, S Xu#, B Zhang, C Xiao, Z Chen, F Si, J Fu, X Lin, G Zheng*, G Yu*, J Chen*
 - **Using ggtree to Visualize Data on Tree-Like Structure**
Current Protocols in Bioinformatics, 69(1):e96
· G Yu*

- **treeio: an R package for phylogenetic tree input and output with richly annotated and associated data**
Molecular Biology and Evolution. 2020, 37(2):599-603.
 • LG Wang, TTY Lam, S Xu, Z Dai, L Zhou, T Feng, P Guo, CW Dunn, BR Jones, T Bradley, H Zhu, Y Guan, Y Jiang, **G Yu***
 • Impact Factor = 14.797
 - **Rideogram: drawing SVG graphics to visualize and map genome-wide data on the idiograms**
PeerJ Computer Science. 2020, 6:e251.
 • Z Hao, D Lv, Y Ge, J Shi, D Weijers, **G Yu***, J Chen*
- 2018
- **Two methods for mapping and visualizing associated data on phylogeny using ggtree**
Molecular Biology and Evolution. 2018, 35(12):3041-3043.
 • G Yu*, TTY Lam, H Zhu, Y Guan*
 • Impact Factor = 14.797
 - **Using meshes for MeSH term enrichment and semantic analyses**
Bioinformatics. 2018, 34(21):3766–3767.
 • G Yu*
- 2017
- **ggtree: an R package for visualization and annotation of phylogenetic trees with their covariates and other associated data**
Methods in Ecology and Evolution. 2017, 8(1):28-36
 • G Yu, DK Smith, H Zhu, Y Guan, TTY Lam*
 • 🏆 ESI Highly Cited Paper
- 2016
- **ReactomePA: an R/Bioconductor package for reactome pathway analysis and visualization**
Molecular BioSystems. 2016, 12(2):477-479
 • G Yu, QY He*
 • 🏆 ESI Highly Cited Paper
 - **Integrated Translatomics with Proteomics to Identify Novel Iron-Transporting Proteins in *Streptococcus pneumoniae***
Frontiers in Microbiology. 2016, 7:78
 • XY Yang, K He, G Du, X Wu, G Yu, Y Pan, G Zhang*, X Sun*, QY He*
 - **Genetic characterization of highly pathogenic H5 influenza viruses from poultry in Taiwan, 2015**
Infection, Genetics and Evolution. 2016, 38:96-100
 • PY Huang, CCD Lee, CH Yip, CL Cheung, G Yu, TTY Lam, DK Smith, H Zhu*, Y Guan*



The ggtree (Yu et al. 2017) paper was selected as a feature article to celebrate the 10th anniversary of the launch of *Methods in Ecology and Evolution*.

2015

- **ChIPseeker: an R/Bioconductor package for ChIP peak annotation, comparision and visualization**
Bioinformatics. 2015, 31(14):2382-2383
· G Yu*, LG Wang, QY He*
· 🏆 ESI Highly Cited Paper
- **DOSE: an R/Bioconductor package for Disease Ontology Semantic and Enrichment analysis**
Bioinformatics. 2015, 31(4):608-609
· G Yu*, LG Wang, GR Yan, QY He*
· 🏆 ESI Highly Cited Paper
- **ACK1 Promotes Gastric Cancer Epithelial-Mesenchymal Transition and Metastasis through AKT-POU2F1-ECD Signaling**
Journal of Pathology. 2015, 236(2):175-185
· SH Xu, JZ Huang, ML Xu, G Yu, XF Yin, D Chen*, GR Yan*
- **Proteomic analysis on the copper resistance of *Streptococcus pneumonia***
Metalomics. 2015, 7(3):448-454
· Z Guo, J Han, XY Yang, K Cao, K He, G Du, G Zeng, L Zhang, G Yu, Z Sun, QY He*, X Sun*
- **Proteomic analysis on the antibacterial activity of a Ru(II) complex against *Streptococcus pneumonia***
Journal of Proteomics. 2015, 115:107-116
· XY Yang, L Zhang, J Liu, N Li, G Yu, K Cao, J Han, G Zeng, Y Pan, X Sun*, QY He*
- **Proteomic analysis of putative heme-binding proteins in *Streptococcus pyogenes***
Metalomics. 2014, 6(8):1451-1459
· N Wang#, J Zhang#, L Zhang, XY Yang, N Li, G Yu, J Han, K Cao, Z Guo, X Sun*, QY He*
- **Putative cobalt- and nickel-binding proteins and motifs in *Streptococcus pneumonia***
Metalomics. 2013, 5(7):928-935
· X Sun#, G Yu#, Q Xu, N Li, C Xiao, X Yin, K Cao, J Han, QY He*
- **A novel andrographolide derivative AL-1 exerts its cytotoxicity on K562 cells through a ROS-dependent mechanism**
Proteomics, 2013, 13(1):169-178
· YY Zhu#, G Yu#, Y Zhang, Z Xu, YQ Huang, GR Yan*, QY He*

2014

- **Proteomic analysis of putative heme-binding proteins in *Streptococcus pyogenes***
Metalomics. 2014, 6(8):1451-1459
· N Wang#, J Zhang#, L Zhang, XY Yang, N Li, G Yu, J Han, K Cao, Z Guo, X Sun*, QY He*

2013

- **Putative cobalt- and nickel-binding proteins and motifs in *Streptococcus pneumonia***
Metalomics. 2013, 5(7):928-935
· X Sun#, G Yu#, Q Xu, N Li, C Xiao, X Yin, K Cao, J Han, QY He*
- **A novel andrographolide derivative AL-1 exerts its cytotoxicity on K562 cells through a ROS-dependent mechanism**
Proteomics, 2013, 13(1):169-178
· YY Zhu#, G Yu#, Y Zhang, Z Xu, YQ Huang, GR Yan*, QY He*

- **A DNA-Based Semantic Fusion Model for Remote Sensing Data**
PLoS One. 2013, 8(10):e77090
 · H Sun*, J Weng, G Yu, RH Massawe
- **Quantitative Proteomics Characterization on the Anti-tumor Effects of Isodexyelephantopin against Nasopharyngeal Carcinoma**
Proteomics. 2013, 13(21):3222-3232
 · GR Yan#, Z Tan#, Y Wang, ML Xu, G Yu, Y Li*, QY He*
- **Design, SAR, angiogenic activities evaluation and pro-angiogenic mechanism of new marine cyclopeptide analogs**
Current Medicinal Chemistry. 2013, 20(9):1183-1194
 · J Li, X Lu, Q Wu, G Yu, Z Xu, L Qiu, Z Pei, Y Lin, J Pang*
- **Proteomic investigation of the interactome of FMNL1 in hematopoietic cells unveils a role in calcium-dependent membrane plasticity**
Journal of Proteomics. 2013, 78:72-82
 · Y Han, G Yu, H Sarioglu, A Caballero-Martinez, F Schlott, M Ueffing, H Haase, C Peschel, AM Krackhardt*
- **LXtoo: an integrated live Linux distribution for the bioinformatics community**
BMC Research Notes. 2012, 5(1):360
 · G Yu#, LG Wang#, XH Meng, QY He*
- **clusterProfiler: an R package for comparing biological themes among gene clusters**
OMICS: A Journal of Integrative Biology. 2012, 16(5):284-287
 · G Yu, LG Wang, Y Han, QY He*
 · 🏆 ESI Highly Cited Paper
- **Cellular MicroRNA let-7c Inhibits M1 Protein Expression of the H1N1 Influenza A Virus in Infected Human Lung Epithelial Cells**
Journal of Cellular and Molecular Medicine. 2012, 16(10):2539-2546
 · Y Ma#, J Yang#, X Fan#, H Zhao, W Hu, Z Li, G Yu, X Ding, J Wang, X Bo, X Zheng, Z Zhou*, S Wang*
- **Genistein-induced mitotic arrest of gastric cancer cells by downregulating KIF2oA, a proteomics study**
Proteomics. 2012, 12(14):2391-2399
 · GR Yan#, FY Zhou#, BL Dang, Y Zhang, G Yu, X Liu, QY He*
- **Functional similarity analysis of human virus-encoded miRNAs**
Journal of Clinical Bioinformatics. 2011, 1(1):15
 · G Yu, QY He*

2012



2011

clusterProfiler (Yu et al. 2012) 被中国科学技术信息研究所列为“2011-2021我国高被引论文中被引次数最高的10篇国际论文” (2021年中国科技论文统计报告)

- **A new method for measuring functional similarity of microRNAs**
Journal of Integrated OMICS. 2011, 1(1):49-54
· G Yu[#], CL Xiao[#], X Bo, CH Lu, Y Qin, S Zhan, QY He^{*}
 - **Phosphoproteome profile of human lung cancer cell line A549**
Molecular BioSystems. 2011, 7(2):472-479
· G Yu[#], CL Xiao[#], CH Lu[#], HT Jia, F Ge, W Wang, XF Yin, HL Jia, JX He^{*}, QY He^{*}
 - **Proteomic Analysis of Membrane Proteins from *Streptococcus pneumoniae* with Multiple Separation Methods plus High Accuracy Mass Spectrometry**
OMICS: A Journal of Integrative Biology. 2011, 15(10):683-694
· X Sun[#], XY Yang[#], XF Yin, G Yu, CL Xiao, X He, QY He^{*}
- 2010
- **GOSemSim: an R package for measuring semantic similarity among GO terms and gene products**
Bioinformatics. 2010, 26(7):976-978
· G Yu[#], F Li[#], Y Qin, X Bo^{*}, Y Wu, S Wang^{*}
· 🏆 ESI Highly Cited Paper
- 2009
- **结合基因组分析预测炎症相关miRNA及其靶标**
军事医学科学院院刊. 2009, 33(3):245-247
· 余光创, 王超, 许尹, 伯晓晨, 王升启^{*}, 秦宜德^{*}
- 2007
- **依赖于5'端非编码区高级结构的真核生物mRNA翻译调控**
中国生物化学与分子生物学报. 2007, 23(11):881-887
· 余光创, 秦宜德, 伯晓晨, 王升启^{*}

CONFERENCE PROCEEDINGS

- 2021
- **clusterProfiler 4.0: A universal enrichment tool for interpreting omics data**
The 7th National Conference on Computational Biology and Bioinformatics
- 2020
- **Data integration and visualization of phylogenetic trees**
BioC Asia, Oct 2020  Virtual Conference
- 2019
- **R语言在生物信息学数据可视化中的应用**
第八届南方医院博士论坛 - 研而有信之修“生”养“信”, Oct 2019  Southern Medical University
 - **Data integration and visualization of phylogenetic trees**
Managing Zoonotic Infections in the era of One Health, Oct 2019  Guangzhou Medical University

- **R包开发十条建议**
第一届生信人才发展论坛  Zhuhai, CN
- **Two methods for mapping and visualizing associated data on phylogeny using ggtree**
第一届南方医科大学基础医学学术年会, Jan 2019  Southern Medical University
- 2017
 - **ggtree for tree visualization & annotation**
Phylogenetic tree visualization workshop/hackathon, May 2017  The Field Museum of Natural History
 - **Computational Methods in Ecology and Evolution**
The Second International Workshop on Environmental Microbiomes, Apr 2017  Sun Yat-sen University
- 2016
 - **R语言与生物信息学**
潮博沙龙  Guangzhou, CN
 - **ggtree for visualization and annotation of phylogenetic trees**
The 9th China-R Conference, May 2016  Renmin University of China

🏡 PROFESSIONAL AFFILIATIONS

- | | |
|----------------------|--|
| present

2022 | ● The Innovation
Youth Editor |
| | ● 南方医科大学基础医学院第二届学术分委员会
委员 |
| present

2021 | ● 中国生物工程学会
计算生物学与生物信息学专业委员会委员 |
| present

2020 | ● 广东省精准医学应用学会
微生态医学分会常务委员  Guangdong, CN |
| | ● 广东省医学会
医学遗传学分会青年委员会副主任委员  Guangdong, CN |
| present

2019 | ● 中国计算机学会
会员 |
| present

2017 | ● 香港大学校友会
会员 |
| present

2014 | ● 广东潮博智库
专家  Guangdong, CN |

2016

- International Society for Influenza and other Respiratory Virus Disease

Member

2015

- International Network for Data Analysis

Steering Committee

 Institut Pasteur