

## Science Bridges China Research Profile

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### SUMMARY OF MY RELEVANT RESEARCH AREAS:

*Cancer bioinformatics, Genomics and Proteomics*

癌症生物信息学、基因组学和蛋白质组学

### Primary Research interests:

In the past several years, he has been conducting some research work on cancer genomics and gene expression profiling of tumors. His primary interests includes:

1. On the basis of mathematics and statistics and bioinformatics, he integrated the published gene array data using meta-analysis, the dys-regulated pathways and genes associated with head and neck cancer have been revealed, the results will, to some extent, help the mechanism research and clinical drug development of head and neck cancer.
2. By the gene array technology, he successfully studied Gene Expression Profiling in Human High-Grade Astrocytomas.
3. He has been finished a systematic review and meta-analysis of the reported Colorectal Cancer (CRC). Secondly, followed by the Luminex-200 analyzer with multiplexed immunobead-based technology was used to test the concentrations of the selected markers in serum samples, the markers with expression stability within-group, significantly differentiated expression between-group, more high sensitivity and specificity and the large weight values shall be selected as the candidate markers of CRC combination marker. The second selected markers will be tested by ELISA, an effective classification model for clinical early dignosis of CRC has been finally successfully established.

### Topics in which you would like to develop collaborative research:

1. **ultrasound-triggered drug targeting of tumors**
2. **Anti-tumor novel agents and therapy medicine and technology , especially targeting to colorectal cancer**
3. **Early-diagnosis agents for colorectal cancer**

## Relevant existing collaborations (academic/clinical/commercial) inside or outside China.

State Key Lab of Polymer Materials Engineering, Sichuan University

## Publications and other outputs relevant to your interest in this programme (up to 5)

### Publications:

1. **Zhongyu Liu**, Xufeng Li , Xianping Ding and Yi Yang. In Silico and Experimental Studies of Concanavalin A: Insights into Its Antiproliferative Activity and Apoptotic Mechanism. *Appl Biochem Biotechnol*. 2010;**162(1)**:134-45.
2. **Zhongyu Liu**, Zhiqiang Yao, Chao Li, Yicheng Lu and Chunfang Gao . Gene Expression Profiling in Human High-Grade Astrocytomas. *Comparative and Functional Genomics*. (2011), doi:10.1155/2011/245137.
3. **Zhongyu Liu**, Yulong Niu, Chao Li, Chunfang Gao, et al . Integrating Multiple Microarray Datasets on Oral Squamous Cell Carcinoma to Reveal Dys-regulated Networks . *Head and Neck*. (2011). Online. DOI: 10.1002/hed.22013.
4. **Zhongyu Liu**, Zhiqiang Yao, Mengyu Xie, Chunfang Gao, et al. gene expression profiling for the grade II oligodendrogliomas and ependymoma. *African Journal of Biotechnology*. (2012) **11(15)** 3663-3672. DOI: 10.5897/AJB11.2942
5. Menggen Li, Yiwen Chen, **Zhongyu Liu** , Fubing Shen, et al. Anti-tumor activity and immunological modification of ribosome-inactivating protein (PIR) from *Momordica Charantia* by covalent attachment of polyethylene glycol. *Acta Biochim Biophys Sin* (2009) 1-9.

## Relevant graphics, figures, pictures:

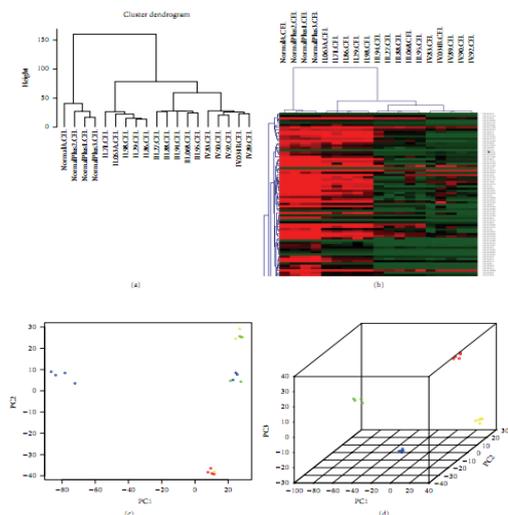


Fig 1: The exhibition of results of HCL and PCA

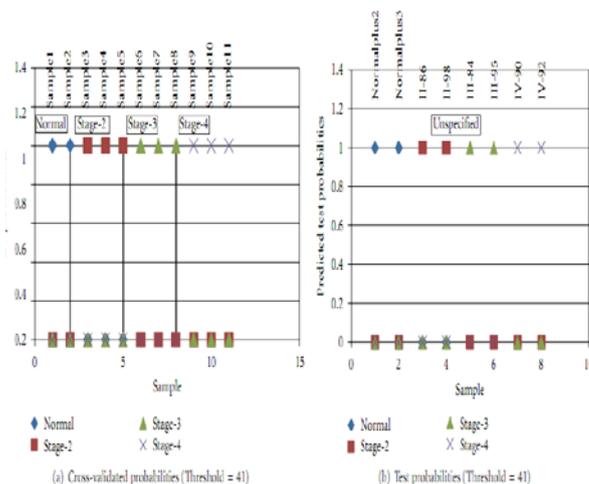


Fig 2: Estimated probabilities for the cross-validation and test data

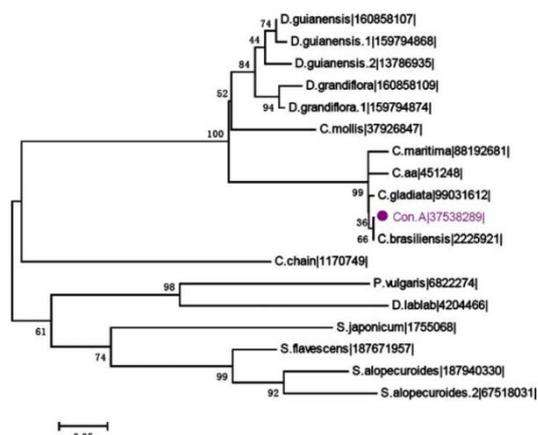


Fig 3: The phylogenetic evolutionary tree of ConA

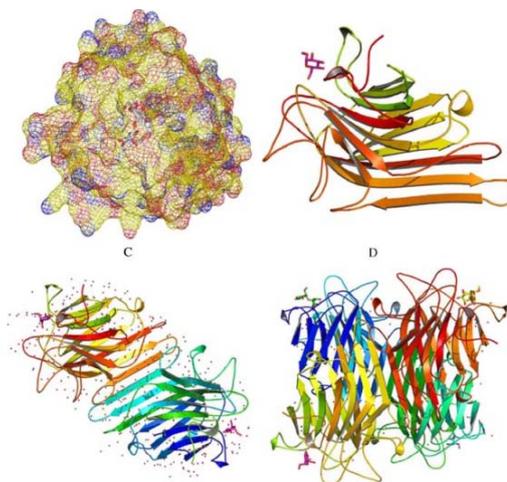


Fig 4. Molecular modeling of ConA