### **Novel genetic polymorphism in BNC2 associated with susceptibility to rheumatoid arthritis**

Your name1,2, xxxx, xxxx, xxxx, xxxxx, Shicheng Guo3, Dongyi He1,2

1, Department of Rheumatology, Shanghai Guanghua Hospital of Integrated Traditional and Western Medicine, Shanghai 200052, China.

2, Arthritis Institute of integrated Traditional and Western medicine, Shanghai Chinese Medicine Research Institute, Shanghai 200052, China.

3, Computation and Informatics in Biology and Medicine, University of Wisconsin-Madison, Madison, WI, USA

3, Center for Human Genetics, Marshfield Clinic Research Institute, Marshfield, WI, USA

4, Division of Hematology, The Ohio State University, Columbus, OH, USA

5, Biomedical Informatics Research Center, Marshfield Clinic Research Institute, Marshfield, WI, USA

6, Department of Biochemistry and Molecular Biology, Medical College, Soochow University, Suzhou, China

7, Clinical Research Center, Marshfield Clinic Research Institute, Marshfield, WI, USA

8, Integrated Research and Development Laboratory, Marshfield Clinic Research Institute, Marshfield, WI, USA

9, Department of Pediatrics, School of Medicine and Public Health, University of Wisconsin-Madison, Madison

These authors contributed equally to this work

\*Correspondence:

Dongyi He, M.D., Ph.D.

Department of Rheumatology

Shanghai Guanghua Hospital of Integrated Traditional and Western Medicine,

Shanghai, China

Email: [dongyihe@medmail.com.cn](mailto:dongyihe@medmail.com.cn)

Shicheng Guo, Ph.D.

Computation and Informatics in Biology and Medicine

University of Wisconsin-Madison,

Madison, WI, USA

Tel: 715-221-6443

Email: [Guo.Shicheng@Marshfieldresearch.org](mailto:Guo.Shicheng@Marshfieldresearch.org)

Abstract:

The heritability of RA has been shown from twin studies to be 60%. In the past decades, genome-wide association studies have > 100 genetic risk or protective factors for rheumatoid arthritis. However, the reported genetic variants could only explain less than 40% heritability of RA. Majority of the heritability is still missing which require to be identified with more studies. BNC2 belongs to Basonuclin gene family and shows xxxxxxxx function indicating it may be involved in the etiology and pathology of RA. Therefore, in this study, we conducted association study to investigate the role of polymorphism of BNC2 and its paralog genes including BNC1, ZNF669 and AHCTF1 in rheumatoid arthritis. In the first stage, we collected 1,078 seropositive RA and 1,045 matched control while 117 SNPs were genotyped. We found rs75958865 located in intron region of BNC2 was significantly associated with RA, OR=1.37, P=1.65x10-5, 95%CI=1.19-1.58. In summary, we identified a novel risk susceptibility SNPs forseropositive RA in a large Chinese Han population.

# Background

# Material and Methods

# Results

# Discussion

# Reference

# Declarations

**Acknowledgements**

We thank all participating subjects for their kind cooperation in this study.

# Authors’ contributions

xx and xx contributed to the conception, design and final approval of the submitted version. xx, xx and xx contributed to the integrated analysis of multiple microarray datasets, batch effect elimination and statistical analysis. xxxx collected samples and helped to data cleaning, statistic and draft the manuscript. The final manuscript was completed by xx, xx and xx. All authors read and approved the final manuscript.

# Competing interests

No potential conflicts of interest was disclosed for all the authors

# Funding

This work was funded by the National Natural Science Funds of China (81774114), Shanghai clinical base construction of traditional Chinese medicine (ZY3-LCPT-1-1009, ZY-LCPT-1), Shanghai intensive entity construction of integrated traditional and western medicine [rheumatoid arthritis](http://www.baidu.com/link?url=iT4ATL3sR6yg06cPHgVkbWxtLah4KbbGMOTKi-SQ9uMAjpCCVUsmrIFNHQtlWbRrIUgRFAMxUJ7_lQZh6RW0w9FcG5RyLZskoFBvt8TFc7_) (ZXBZ2012-05), Shanghai clinical intensive subject construction of traditional Chinese medicine-traditional Chinese [rheumatology](http://www.baidu.com/link?url=4Qku9Zb2wBIua7s1DyxfDyF0XZzIFL0m6nyz4LW66UiC3TyBDc31URXd5h_2afOtUNo74DSjURDzbTz6pNjZfkyaRMFKEfnfwCYRjU9oLDu&wd=&eqid=e102a46600012e760000000355827dac) (ZYXK2012012), Shanghai Municipal Planning Commission of science and Research Fund (201640192).

# Availability of data and material

Data and materials are available upon the request to the authors.