

Tongue Diagnostics

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Tongue diagnostics

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Introduction of the Editors in Chief

Prof. Naimin Li was born in 1939. He is a guest professor and Ph.D. supervisor at the Bio-computing Research Center of Computer College, Harbin Institute of Technology (HIT), and the chief physician of ordinary and liver-and-gall surgery at the Harbin No. 211 Hospital, the chairman of the Diagnosis Professional Committee of Chinese Academy of Integrated Traditional and Western Medicine (CAIM), the vice-chairman

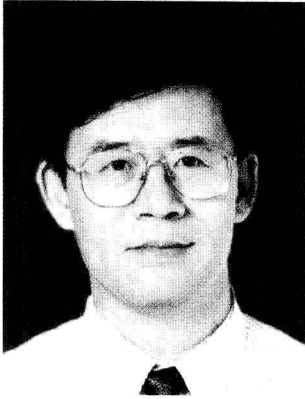


of International Association of Medical Biometrics, the chief specialist in the research of Chinese tongue diagnosis and the major specialist in the clinical identification of medical biometrics of human beings based on pulse diagnosis, inspection of complexion, iris examination, hand diagnosis, etc.

For more than 40 years Prof. Li has persevered in and made arduous efforts for the research of the diagnostic methods and research level of Chinese diagnosis of tongue and pulse, etc., and has obtained remarkable success under the support of the National Natural Science Foundation of China, the National 863 Program and the program of great scientific research of army on Chinese medicine.

Up to now, Prof. Li has composed and published 278 papers and 13 medical monographs, e.g., the *Diagnosing Diseases by Observing Tongue*, the *Figure Collection on Tongue Appearances of Stasis Pattern*, the *Figure Collection on Tongue Appearances of Acute Abdominal Disease*, the *Collections of Tongue Diagnosis in China*, the *Tongue Diagnostics*, and so on.

Introduction of the Editors in Chief



Prof. & Dr. Dapeng Zhang was born in 1950. He is an IEEE Senior Member, the director and professor of Biometrics Research Center of Computer College, Hong Kong Polytechnic University, and the director of Bio-computing Research Center of Computer College, Harbin Institute of Technology (HIT), the Ph.D. supervisor at HIT. He has been working at the image processing and biometrics research for more than 20 years. Prof. Zhang has

been considered to be an international famous specialist in biometrics. He has composed and published 7 international monographs and more than 180 papers in various journals and conference proceedings. Prof. Zhang at present is the chairman of International Association of Medical Biometrics and the editor or associated editor of many international and national journals, including International Journal of Image and Graphics; Pattern Recognition; IEEE Transactions on Systems, Man and Cybernetics; International Journal of Robotics and Automation; Neural, Parallel and Scientific Computations; International Journal of Pattern Recognition and Artificial Intelligence; Information International Journal; Chinese Journal of Computer; Journal of Computer Science and Technology.

In 1997, Prof. Zhang first suggested applying the biometrics to the research of traditional Chinese medical tongue diagnosis. With the fund given by the NSFC and the National High-Tech Program (863 Program), he did comprehensive research on digital tongue image capturing and processing, and traditional medical diagnosis model, and obtained plentiful and substantial production.

Introduction of the Editors in Chief

Prof. & Dr. Kuanquan Wang was born in 1964. He is a professor and Ph.D. supervisor at Harbin Institute of Technology (HIT), associate director of HIT Computer College and associate director of HIT Bio-computing Research Center. Prof. Wang is a member of the IEEE, an editorial board member of International Journal of Image and Graphics. Also he is a reviewer of IEEE Trans. SMC and Pattern Recognition, and cochairman and academic secretary of YOCSEF in Harbin branch.



For many years, Prof. Wang has been studying the biometrics based automatic individual identification and verification technologies and biometrics based diagnosis technology for traditional Chinese medicine (TCM). He has accumulated plenty of theoretical foundation and practical experience in computer aided diagnosis technology, which is based on tongue, sphygmus, palmprint, auricle and iris. He has successively published more than 70 papers both in internal and overseas academic journals and conferences, and also published 8 teaching materials. Prof. Wang has been cooperated with Prof. Naimin Li and Prof. Dapeng Zhang since 1988. They investigated intensively the objective tongue diagnosis of TCM, and invented a capturing device for digital tongue image, and got the national patent. By this device they created the biggest tongue sample database in the world, and got the plentiful and substantial production on tongue image processing and diagnosis modeling.

Introduction of the Editors in Chief

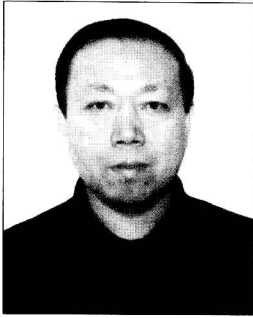


Yuzhen Zhu was born in 1970. She is an associate professor, and has always devoted herself to the compiling, translation, and publishing of scientific and technical literatures. Ms. Zhu has rich experience in the translation of medical literatures, has participated in the publishing of many medical works, issued more than 10 high-quality papers in academic journals, reviewed more than 100 papers in academic symposiums and many prestigious

magazines, including the *CAAI Transactions on Intelligent Systems*, the *Journal of Marine Science and Application* (JMSA), etc. which are issued in public internally and internationally. Besides, Ms. Zhu has ever participated in the compiling of Heilongjiang provincial standards, teaching materials, and the literatures for propaganda of Heilongjiang.

In recent years, Ms. Zhu has cooperated with Prof. Li, etc. to research the tongue diagnosis, devoted herself in the sorting and compiling of clinical application of tongue diagnosis, playing an active role in the internationalization of TCM research.

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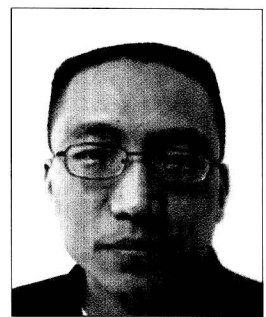
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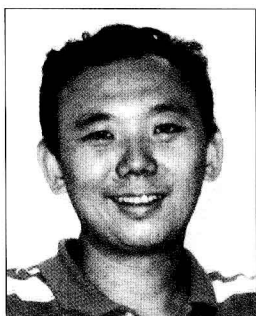


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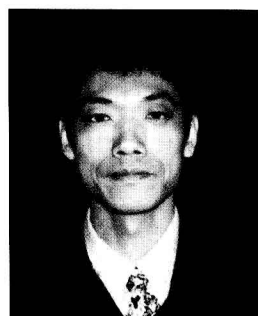
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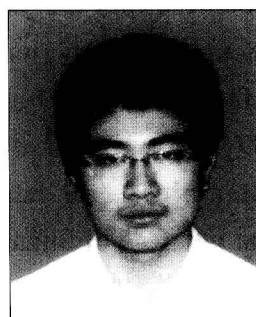
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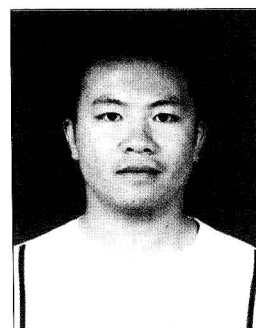
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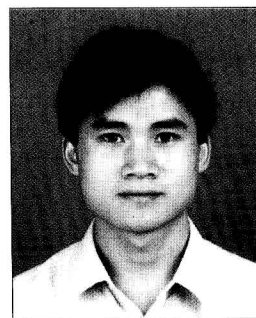
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Preface

In the boundless universe, everything springing into lives has its own origin, and is represented with certain form, which may be intangible and exist in different forms. From the sun, the moon, and the stars, to the fruits on the trees and the melons on the earth, the living beings with nine orifices are viviparous and the eight orifices are oviparous, emerging with different reproduction methods and showing different phenomena. The different internal causes must be appeared in different external forms.

The four diagnostic methods of traditional Chinese medicine (TCM) are to observe *yin yang* changes in people's viscera, and study different reproduction methods with the same theory as above. We should emphasize studying the application value of the biological characteristics of the tongue diagnostics, which is one of the four diagnostic methods of TCM, and the measures of inspection and diagnostics as well. The tongue diagnostics of TCM has a long history. It can be originated from the "ill tongues" in the inscriptions on bones or tortoise shells of the Shang Dynasty. The *Huangdi Neijing* (*Internal Classic*) is one of the earliest medicinal literatures. Year in, and year out, the tongue diagnostics of TCM is developed with the Chinese civilization, answering and explaining the viscera, physiology, pathology, and biological characteristic changes of human beings. It is said that the heaven doesn't speak, while all the things of it are flourishing; the earth doesn't speak, while the *yin* and *yang* take form. It is the same in the reproduction of people. Today, when studying the tongue diagnostics of TCM, we must pay attention to applying the whole medical theory and holo-biological theory of TCM, give full play to the experiences of TCM accumulated day by day in the thousands of years, and develop it. This is the aim for us to study the tongue diagnostics of TCM.

TCM considers that tongue, the only viscera exposing outside human body, is one part of the digestive system connecting the esophagus, stomach, intestines, and lungs. The tongue is open to the five viscera and six bowels through the 12 channels in human body, and connects to the trunk and four limbs. Therefore, we can know the kind of disease, deficiency and excess, and waxing and waning of body fluid through inspection of tongue nature (tongue body). By inspecting the tongue fur, the nature,

extent, and progress of disease can be known; by inquiring the feeling of tongue, the disease's position and the chill and fever of the viscera and bowels can be ascertained; by inspecting the tongue veins, people's *qi* stagnation, blood stasis and pulse states can be ascertained. In recent years, people get to know from related theories of the viscera and bowels and body surface that the tongue, similar with the face, eyes, ears, noses, hands, feet, etc., has pathological characteristics under the pathological conditions, and biological characteristics that may be related with genes as well. Different shapes, textures, veins, and tangible substances of the tongue may manifest different reproduction causes or inherit information. Therefore, the study on the tongue and the purpose of it has broader prospects.

This book has introduced the origin and development of the tongue diagnostics in China all roundly, the physiological anatomy, and the biological and pathological characteristics of the tongue, clinical application, related technology, and the objective study methods and the meanings of the tongue diagnostics in modern times. At the same time, with the aid of computer, the book elaborated the study and application experiences of the tongue diagnostics for more than 30 years of the author. Together with Professor Dapeng Zhang and many of the doctoral students, the author made a complete introduction to the tongue diagnostics of TCM on the basis of explanation with words. Especially, this book has many illustrations on the biological and pathological characteristics of the tongue, differentiation and diagnostics of diseases with the tongue, and the new research achievements made in respect of the tongue diagnostics.

The book has shown more than 577 figures of the tongue diagnostics, more than 720 computer analysis figures of the tongue diagnostics and more than 50 other related illustrations. The total number comes to more than 1,354, all of which were the materials of the tongue diagnostics collection from the Bio-computing Research Center of the author and Professor Zhang. The pictures came from normal crowd and the patients that had been confirmed by clinical diagnosis.

The author had considered whether there's any difference of the tongue manifestations between the yellow race and the white race during the writing of the book. We've collected related materials of the tongue manifestations of 3,400 white race people of Kazak nationality in a hospital of Xinjiang, and proved that the yellow and white races in different regions don't have essential distinction. This may be the reason that in 1671 the Polish churchman Michael Boym translated the old literature

on the tongue diagnostics of TCM into French and published them in France, Germany, Italy, etc., which made them handed down in some western European countries. In the 19th century, some medical workers in western countries began studying on the pathological mechanism with the optical and electrical mirrors, and recorded the basic data on the manifested characteristics of the tongue manifestations in some diseases, which showed further that the Chinese tongue diagnostics can be used to diagnose and treat diseases for all kinds of races in the world. It is a medical scientific subject shared by the mankind like other medicinal methods.

Certainly, the acceptance or reject of some materials will inevitably have problems of this or that. Especially, it is still in the initial period to put forward and research on the biological characteristics of the tongue, and the states of the textures and veins of the tongue, which will inevitably have many shortcomings and disadvantages. Let's show a nice prospect of research and application on the tongue diagnostics of our country with a positive attitude in the 21st century.

Review the past and look forward to the future, we are convinced of the research and application on the tongue diagnostics, and will devote ourselves to the cause of it as long as life endures. Any comments and criticisms are welcome to the shortcomings of this book.

This book was supported by the National Natural Science Fund under the grant No. (60871033) (60620160097).

Naimin Li

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