# Chinese Women in Science

By Huang Haidong et al.

NEW WORLD PRESS

# Chinese Women in Science

By Huang Haidong et al.

NEW WORLD PRESS

**First Edition 2014**

Written by Huang Haidong et al.
Translated by Li Yao et al.
Cover Design by Gao Jia
Edited by Ge Wencong



ISBN 978-7-5104-4737-2

*Published by*
NEW WORLD PRESS
24 Baiwanzhuang Street, Beijing 100037, China

*Distributed by*
NEW WORLD PRESS
24 Baiwanzhuang Street, Beijing 100037, China
Tel: 86-10-68995968
Fax: 86-10-68998705
Website: www.newworld-press.com
E-mail: frank@nwp.com.cn

*Printed in the People's Republic of China*

**图书在版编目（CIP）数据**

中国女科学家：英文 / 黄海东等著；李瑶等译.
—北京：新世界出版社，2013.12
ISBN 978-7-5104-4737-2

Ⅰ.①中… Ⅱ.①黄… ②李… Ⅲ.①女性—科学家
—生平事迹—中国—现代—英文 Ⅳ.①K826.1

中国版本图书馆CIP数据核字(2013)第292922号

# 中国女科学家（英文版）

作　　者：黄海东等
翻　　译：李　瑶等
责任编辑：葛文聪
英文审定：许靖国
装帧设计：高　佳
责任印制：李一鸣　黄厚清
出版发行：新世界出版社
社　　址：北京市西城区百万庄大街24号（100037）
总编室电话：+ 86 10 6899 5424　68326679（传真）
发行部电话：+ 86 10 6899 5968　68998705（传真）
本社中文网址：http://www.nwp.cn
版权部电子信箱：mailto:frank@nwp.com.cn
版权部电话：+ 86 10 6899 6306
印　　刷：北京京华虎彩印刷有限公司
经　　销：新华书店
开　　本：710 × 1000　1/16
字　　数：160千字　　印　　张：14.25
版　　次：2014年1月第1 版　2014年1月北京第1次印刷
书　　号：ISBN 978-7-5104-4737-2
定　　价：78.00元

# CONTENTS

# Hou Fanfan

*Dean of the Department of Nephrology of the Southern Hospital Affiliated to the Southern Medical University, academician of the Chinese Academy of Sciences*

**Motto:**

"Taking care of the patient comes first."

# "I AM A DOCTOR"

Hou Fanfan always says that she is first and foremost a doctor. She has been the only female academician of the Chinese Academy of Sciences (CAS) in Guangdong Province in the past 10 years and Dean of the Department of Nephrology of the Southern Hospital Affiliated to the Southern Medical University. Her work is on chronic kidney failure. She wants to relieve the pain and economic burden of the patients.

## Patients' Suffering Is Hou's Suffering

She cannot forget a patient whom she had to silently face a dozen years ago suffering chronic kidney failure and had to do dialysis. When he learned that his dialysis would cost 60,000 to 70,000 yuan annually, the patient suddenly grabbed his wife, crying desperately and kneeling down, and begged Hou to find another treatment that he could afford.

"Otherwise, our family will be ruined! Death means nothing to me but I want to live three more years to see my daughter go to college."

The eyes of desperation and helplessness touched her deeply.

"To the lifetime of a man, three to five years may be negligible, but when it comes to a uremic patient...."

At that time, it was a common belief in the medical field that the kidney function of a patient with chronic kidney disease was doomed to fail. If he wanted to prolong his life, there were only two ways for him to choose: either dialysis or a kidney transplant. Thus, chronic kidney disease and renal failure was recognized not only as "a global public health problem" which cost substantial health resources, but also as "the most expensive disease."

"Hold on! Wait a moment," Hou Fanfan shouted loudly at chronic kidney disease. And she resolutely made a determinination – "I must change this situation!"

Hou Fanfan noted in the course of clinical treatment that commonly-used drugs, angiotensin-converting-enzyme inhibitors (ACEI) to cure hypertension have a protective effect on the kidneys of the patient suffering from renal insufficiency at the mild to the moderate level (serum creatinine level $\leq 3.0$ mg / dl). But it was a conventional belief that such drugs were prohibited to be used on patients of terminal diseases. In order to see if such drugs could be used to slow the progression of chronic kidney disease, Hou Fanfan decided to cross this forbidden territory. She led her team to conduct randomized controlled clinical trials, which took them more than five years.

In the end they proved, for the first time, in the international arena that ACEI could remarkably reduce the risk of developing into terminal uremia from chronic kidney disease. With the right application, this once prohibited drug could reduce the risk by 43 percent so that patients' dialysis could be delayed by three to five years.

"If the phase of uremic dialysis can be effectively delayed, a great deal of medical expense will be saved for both the country and the patients." Hou says.

Statistics from the United States also show that a delay of one year in dialysis for chronic kidney disease could save $ 2 billion in health costs.

In 2006, the exciting conclusion made by Hou Fanfan and her team was

released in the *New England Journal of Medicine*. It immediately aroused strong interest in academia at home and abroad. That was the first time that a clinical research achievement by Chinese scholars researching on kidney disease was published in the world's most prestigious medical journal on its 200th anniversary. It was as if they had plucked a jewel from a crown.

Hou Fanfan doing research in the lab

The journal's editorial said, "It is time to change our treatment strategy for patients with chronic renal insufficiency."

The next year, *Annals of Internal Medicine (Ann Intern Med)* of America, in concluding the development of internal medicine, said that the research finding of Hou Fanfan and her team was one of "the most significant research findings in the clinical practice of internal medicine in recent years." It introduced their paper as "one of the most important treatises in 2006" and pointed out that their research

achievement could be regarded as the foundation for changes in clinical practice.

## Overcoming Difficulties and Achieving Excellence

Through her perseverance, her efforts helped prevent patients from developing cardiovascular diseases and other complications as well. She also achieved an unforeseen outcome. She discovered new pathogenic molecules such as protein oxidation products that could accelerate the progress of chronic kidney disease. Now she had an additional way to learn how to control and delay the uremia.

Hou Fanfan also analyzed in detail the differences between Chinese and foreign patients with chronic kidney disease. Chinese patients undergoing dialysis were 50 years old on average, 10 years older than those abroad. However, Chinese patients had a higher rate of cardiovascular disease than the foreign patients.

In view of these features, she led her team to conduct an epidemiological survey on the primary fatal complications of chronic kidney disease in China. They discovered that the main cause of terminal renal disease in Chinese patients was chronic glomerulonephritis. This significantly differed from the main cause of uremia in foreign patients, diabetes. This information provided an important basis for the prevention of cardiovascular complications of chronic kidney disease for Chinese patients.

"Everyone acclaims that Hou Fanfan is 'a person who bravely trespasses

into the forbidden zone in the medical field'," says professor Zhang Xun, Hou's mentor and colleague who enjoys a high reputation in this field. "How many people realize how much pressure has been put on Hou, as she tries to make a breakthrough in the restricted medical zone? I have never seen among my students anyone else like her who is so devoted to work and so dedicated to caring patients!"

Once, he saw for himself that Hou Fanfan, while treating an allergic patient suffering from a sudden shock and a near cardiac arrest, lean immediately over the patient to give mouth-to-mouth resuscitation and suck out the patient's phlegm.

Hou Fanfan and her colleagues in the lab

Hou Fanfan is persistent in and devoted to her medical career.

"At that moment only one thought flashed through my mind – to save his life!" Hou said.

It was only a while after did she realize that there was the patient's phlegm in her mouth. She could not help rushing to the toilet and vomiting heavily.

## Persistence and Tenacity

Speaking of this outstanding student, Professor Zhang cannot help mention this, "She has one characteristic – once she gets something on her mind, she will become so concentrated on it that she will neglect everything else. She'd stay awake all night and sometimes think deeply over something even while she is walking. She'll get lost in this reverie and fail to hear someone calling her. That's why she is thought to be unsociable."

When it comes to this, Hou embarrassedly clarifies, "I'm really not putting on airs!"

Hou, working together with her mentor, Professor Zhang, discovered that due to immunodeficiency, the rate of tuberculosis infection for patients with chronic renal failure is six times higher than that of normal people. Moreover, 70 percent of the causes of TB occur outside the lungs, and the high death rate of the patients lies in the delay of treatment. It was this discovery that treated over 20 percent patients with chronic renal failure and enabled them to go back to work after their recovery. The infection rate of patients in more than 10 medical units decreased by 26 to 30 percent.

## Thanks to the Teachers

"I am very lucky that all the teachers I have encountered are good ones."

In 1963, Hou Fanfan was admitted to the prestigious High School Affiliated to Nanjing Normal University (now one of the top 10 high schools in China).

"Looking back, it was my experience in high school that laid the solid foundation for my career."

Recently, Hou Fanfan has delivered a speech on behalf of her alumni at her alma mater.

"The High School Affiliated to Nanjing Normal University then was so all-embracing that all examinations were open-book ones. For instance, in the math test, teachers encouraged students to solve the problems in a variety of methods and students were permitted to ex-

press their ideas freely in a writing test. We students often went to the countryside, living there for over 10 days for the purposes of experiencing labor practice."

The deepest impression left on Hou Fanfan was by a senior biology teacher who once assigned a task for his students to draw a paramecium (a kind of protozoa).

After meticulous observation, Hou Fanfan drew a shoe with the shape of an insect as the model, and handed it in after leaving a few points on it with a pencil. She did not expect that the teacher would fail her and order her to repaint it.

"You're not observing carefully. To draw a paramecium, you should also draw its various organelles. How could you show respect for science if you are so careless when observing a life?" This remark had had significant influence on Hou.

In 1979, Hou Fanfan was admitted to the Nanjing General Hospital to receive further academic training. She was then unwilling to go to sleep when the lights were turned off, and she would continue to read English till the wee hours of the next day.

"In Nanjing General Hospital it was Professor Zhang Xun who introduced me into the Urology Department," says Hou.

In 1989, she was asked by Professor Zhang to join him at the Southern

Hospital Affiliated to the Southern Medical University where there was no Urology Department at all at the time. She was elected associate professor.

Later, she was enrolled as a doctoral candidate at Sun Yat-sen Medical University. Without a formal undergraduate degree, the then 40-year-old associate professor had to start off from scratch with students 20 years younger than her. She had to study almost every post-graduate course in order to meet the credit requirement.

However three years later she ranked higher than other students. Her four most distinctive characteristics in her school years were wide spread – the oldest age, the highest rank, the lowest academic qualification, and the best performance.

Her Ph.D. subject settled an international academic dispute with its experimental results. This paper also won, in 1995, the first prize of "Science and Technology Progress Award" by the National Board of Education. This led to her promotion to professor and chief physician, the highest teaching and clinic level.

Later that year, Hou earned the opportunity of a one-year study at Harvard Medical School. This was undoubtedly another "hurdle" for her who had never received a systemic study of English.

In the United States, Hou Fanfan learned that there was a subsidy from the International Society of Nephrology (ISN, its members come from

about 130 countries and regions). It is the highest academic organization in the global field of nephrology.

"If I could successfully apply for it, I would be able to study in the United States for another two years!"

She soon received the reply of her application. "All your credentials are superior, but unfortunately, your age exceeds the age limitation of our subsidy."

She was 45 years old that year.

She was so anxious that she recklessly picked up the phone and called the Secretary-General of the International Society of Nephrology who was then in the Netherlands.

She began without preamble in order to gain the initiative, "Do you know why I applied for this fund at my age?"

The other side replied politely, "I am all ears...."

Then Hou began to talk about her story and her aspiration. "...I did not have the same opportunity to receive education at the same age as my peers, but this did not hinder me from self-study to match your requirements."

The only worry of the Secretary-General then was that her lack of for-