



Editorials

1. 

Taoist Medicine: A Gift from China's Unique Folk Religion to TCM



Prof. Xuanbin Wang at the Wudang summit

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Youyou Tu, the Nobel winner of 2015 said that the discovery of artemisinin was a gift from traditional Chinese medicine (TCM) to the world^[1], because she had referred to *Zhou Hou Bei Ji Fang* (ZHBGF, over-the-counter formulae for emergency), a Taoist medicinal classic in East Jin Dynasty before she discovered artemisinin from Huanghuahao (*Artemisia annua* Linn.) as a new anti-malarial drug. She developed a good methodology to extract artemisinin at room temperature instead of extracting from decoctions, because Hong Ge, the author of ZHBGF, described that Huanghuahao should be soaked in water and squeezed to extract the fraction without heating.

In fact, the emergence and development of TCM in China has benefited hugely from the development of Taoism, the folk religion originated from the Dao Theory by Er Li (known as Laozi), the author of the great work *Dao De Jing* in Zhou Dynasty (1046 BC – 256 BC). It can be said that TCM largely stemmed from Taoist medicine and almost 90 percent of Taoists were TCM doctors in the history^[2].

Most TCM theories are based on Taoism, in which *Qi* (also named *Dao*) is the original element in the universe. TCM also follows other Taoist theories, e.g. the concept of Ying-Yang balance and the Five-Elements theory. Furthermore, interactions, balance and harmony between human beings and the environment, the Five *Zang* (heart, liver, spleen, lung and kidney) and Six *Fu* (gallbladder, stomach, small intestines, large intestines, bladder and three *Jiao*) are the basic concepts of TCM derived from Taoism^[3]. And indeed, one of the four greatest TCM classics, *Huang Di Nei Jing* (Inner Canon of Yellow Emperor), was written by Taoists in the name of Yellow Emperor (2717 BC - 2599 BC), the tribal leader in the ancient China.

In history, many famous Taoists were among the most famous TCM doctors, including Que Bian (407 BC - 310 BC), Tuo Hua (145?-208) and the centenarian “Drug King” Simiao Sun (541 or 581– 682), who authored the great work *Qian Jin Yao Fang* in the Tang Dynasty^[4]. On the other hand, most TCM practitioners believed in Taoism and integrated their medical philosophy and skills with Taoist medicine. Among of them Shizhen Li (1518–1593) was the famous doctor in Ming Dynasty. He had critically studied and referred more than 140 Taoist classics out of 277 medical books in his great work *Ben Cao Gang Mu* (Compendium of Materia Medica)^[5].

Nowadays, Taoist medicine is still practiced by Taoist doctors in many Taoist temples and clinics. It integrates treatment with prevention and rehabilitation, summarizing into “Four Ones^[6]”

- The first “one”: a stove of pills (regarding the human body as a stove, which can be mobilized to make its own pills by integrating essence, *Qi* and spirit to fend off disease and keep the body strong);
- The second: a pair of hands (hitting at certain acupoints and massaging by hands);
- The third: a needle (the acupuncture technique); and
- The last: a handful of herbs (materia medica)^[7].



Taoist doctor Mr. Taike Wang and Prof. Xuanbin Wang at the Taoist clinic in the Jingle Taoist Temple in Danjiangkou, Hubei



Wudang Mountain has been the center of Taoism and the most popular Taoist tourist site since Ming Dynasty. Even until today, most of the 200 Taoists in the mountain still treat local citizens for free, applying the “Four Ones”.

Acknowledgements: The study was financially supported by a Young Scientist Innovation Team Project of Hubei Colleges, a Key Project of Health and Family Planning Commission of Hubei Province, an Open Project of Hubei Key Laboratory of Wudang Local Chinese Medicine Research, Hubei University of Medicine, a Key Discipline Project of Hubei University of Medicine, a Foundation for Innovative Research Team of Hubei University of Medicine, and a Key Discipline Project of Hubei Province. We thank Taoists Yongxing Guan, Yang Yu and Xinye Han for their technical support.

References

- 1) Tu Y. Artemisinin - A Gift from Traditional Chinese Medicine to the World (Nobel Lecture). *Angew Chem Int Ed Engl*. 2016;55:10210-10226.
- 2) 邱若虹, 鲍健欣. 医道同源, 浅谈道医学、道教服食方与中医学的关系. *中国道教*, 2016, (4):23-25.
- 3) 江幼李原撰, 宋天彬新订, 道家文化与中医学. 中国中医药出版社. 北京: 2017 年第一版:71-134.
- 4) 江幼李原撰, 宋天彬新订, 道家文化与中医学. 中国中医药出版社. 北京: 2017 年第一版:308-309.
- 5) 程雅群. 李时珍《本草纲目》与道教神仙方术. *宗教学研究*, 2015, (4): 40-43.
- 6) 陈吉炎, 主编. 中国武当中草药志, 湖北科学技术出版社, 武汉: 2009, 第一版: 5.
- 7) Li H, et al, Wang XB*. Quality Evaluation of Heshouwu, a Wudang Taoist Medicine in China. *Exp Ther Med* 2016;12:2317-2323.

Further reading: WeChat article in Chinese entitled “Why are famous TCM doctors are often Taoist?” 为啥中医名家多道士? <http://mp.weixin.qq.com/s/miBzDV-X65J0affxADbPqg> (中文)

2.

Bioinformatics for TCM



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In the past decades, bioinformatics has emerged as a new inter-discipline dealing with biomedical data collection, storage and retrieval, and predictive modeling and simulation. Its fundamental and critical support to biomedical progress can be found in almost every highly cited paper, particularly in the current omic era. With the increasing data generated from the TCM field, bioinformatics is more and more applied to facilitate research. Special themes on TCM bioinformatic database and omic or systems biology approaches for TCM studies are common place at large TCM meetings and conferences. Several national associations dedicated to TCM bioinformatics, network pharmacology and systems sciences have been set up in China, each boasting a couple of hundred of members.

Bioinformatics has typically been applied in the following fields.

- **Explore the “multi-ingredient multi-target” mode of action (MOA) for herbal formula based on TCM database and network analysis.** Firstly, a number of databases on herbal recipes, compounds, ingredient targets, and *in vivo* metabolites have been created and made freely accessible online, providing convenient support to retrieval of established herbal multi-ingredients and their molecular targets. Specialized bioinformatics has also been established for predicting herbal molecular targets. Moreover, computational models have been successfully designed to predict synergy among multiple ingredients^[1]. These databases and pioneering computing technology, combined with network-based analysis and increasing richness of omic data, have enabled MOA exploration from a target-network perspective for different herbal entities.
- **Investigate biological basis of TCM syndromes.** Similarly, omic data from patients and animal models have been collected for TCM syndrome differentiation, e.g. those typical syndromes caused by chronic HBV infection, and those cold/hot syndromes. Genomics, transcriptomics, metabolomics, and even metagenomics are tested and compared before and after TCM treatment, followed by



integrative bioinformatics analysis, aiming to discover TCM syndrome-differentiating marker genes or marker modules. This is a promising but highly challenging direction, because of difficulties in sample selection and the inherent sparse connections between multi-levels of omic data.

- **Study herbal genomics.** After the completion of the Human Genome Project, various high-throughput technologies have been rapidly applied to uncover the hidden secrets in genomes of Chinese herbs. Initially, only those markers, barcodes or important genes are sequenced for the purposes of herbal authentication and quality control. This has been followed by full sequencing of some well-known herbs, e.g. *Panax ginseng*, *Glycyrrhiza glabra* and *Glycyrrhiza uralensis*. Latest, hundreds of herbs have been added into this sequencing pipeline. The huge sequencing data requires intensive bioinformatics support to assembly and annotate the genomes context, and to analyse epigenetic events and metabolic pathways, as already done in the Human Genome Project.

Despite the aforementioned applications, bottlenecks remain in data coverage and quality, and in the severe shortage of algorithms tailored for TCM. For instance, among the 20-30k genes only over 200 direct targets of herbal compounds have been validated experimentally so far, making the MOA of different formulas heavily biased to this small reference background. And the omic data under standard negative and positive controls needs to be accumulated to expand the limited database. Furthermore, it is noted that the mature bioinformatics tools derived from the western fields are far not enough to solve our own problems in TCM, for which creative and specialized computational models are highly expected to make further breakthroughs in TCM.

References and further readings

- 1) Sun Y, et al, Cao ZW* Combining genomic and network characteristics for extended capability in predicting synergistic drugs for cancer, *Nature Communications*, 2015, Sep 28;6:8481.
- 2) Poon JK, Poon S, eds. *Data Analytics for Traditional Chinese Medicine Research*. Springer 2014.

Special Features

1. Warmest congratulations go to GP-TCM RA BoD Member Prof. Rob Verpoorte, Leiden University, the Netherlands, for being awarded the 2017 Egon Stahl Award in Gold! The Egon-Stahl-Award in Gold is the highest scientific honour of the Society for Medicinal Plant and Natural Product Research (GA). It acknowledges the outstanding scientific lifetime work of a research scientist who has been closely attached to Pharmaceutical Biology, in its whole range, through scientific work. Congratulations have poured in from the GP-TCM RA BoD and different corners of the world. In an e-mail to Rob, the GP-TCM RA President Dr Tai-Ping Fan acclaimed: "Many many congratulations to you on your marvellous achievements! We are all so proud of you!" In return, Rob wishes to acknowledge everyone whom he has collaborated with in the past: "As you may have seen in this newsletter, recently I was awarded the 2017 Egon Stahl Award in Gold by the GA. In my presentation at the GA meeting in Basel, I already thanked all people that during the past years has been in our lab in Leiden for longer or shorter periods and all other friends and colleagues with whom I have collaborated. Also along this way I want to spread my gratitude to all of you, for your contributions to our scientific community that help to create an ambiance of mutual respect and friendship needed to build a strong basis for creative and innovative research to face the future challenges of our society concerning food, health and medicines. Many thanks!"





2. Congratulations to 2017 Lasker Award winners!

They are: Michael N. Hall, Recipient of the 2017 Albert Lasker Basic Medical Research Award; and Douglas R. Lowy and John T. Schiller, Recipients of the 2017 Lasker-DeBakey Clinical Research Award. The Cell Magazine published a special collection in celebration of these awards: "Cell is pleased to celebrate the 2017 Lasker Awards with articles highlighting the winners' groundbreaking contributions to science and society. In this year's collection, which includes opening remarks from Joseph L. Goldstein, Chair of the Albert Lasker Medical Research Awards jury, we present features on the scientific achievements underpinning the awards, and we hear from the winners themselves as they recount their unique paths to scientific advance."



http://www.cell.com/cell/lasker-2017/home?utm_campaign=Lasker%20Awards%202017&utm_source

3. Hall MN. An Amazing Turn of Events. *Cell* 2017; August In Press Corrected Proof. DOI: <http://dx.doi.org/10.1016/j.cell.2017.08.021>. The recipient of the 2017 Albert Lasker Basic Medical Research Award tells how the master regulator of cell growth, TOR, came to be identified and understood. Indeed, "due to an amazing turn of events, rapamycin has had impact in medicine, fundamental biology, and the pharmaceutical industry. It all started with an unknown scientist bending over to pick up a handful of dirt in a faraway land and time."

[http://www.cell.com/cell/fulltext/S0092-8674\(17\)30946-7](http://www.cell.com/cell/fulltext/S0092-8674(17)30946-7)

European Reports

1. UK Government Publishes Future Partnership Paper on Science and Innovation. The paper outlines the UK's objectives for an ambitious science and innovation agreement with the EU. It sets out examples of where the UK sees potential mutual benefit in a close working relationship, exploring precedents for each. The paper invites discussion...

<https://www.gov.uk/government/publications/collaboration-on-science-and-innovation-a-future-partnership-paper>

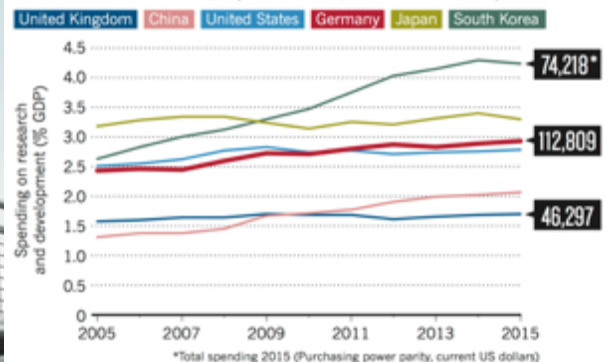
2. Abbot A, et al. The secret to Germany's scientific excellence. *Nature* 2017;549:18-22. Ask any German researcher why the country's science base is blooming, and they are bound to mention Chancellor Angela Merkel. The world's most powerful woman, they say, has not forgotten her roots as an East German physicist...

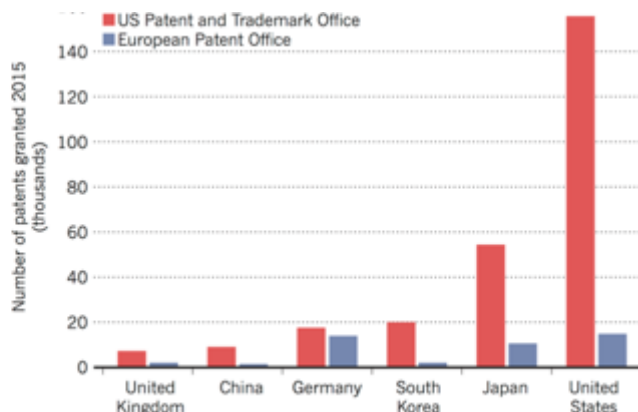
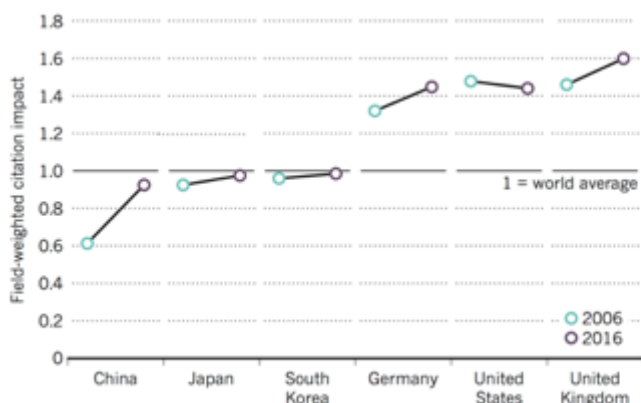
https://www.nature.com/polopoly_fs/1.22563!/menu/main/topColumns/topLeftColumn/pdf/549018a.pdf



GERMANY BY THE NUMBERS

SPENDING German investments in research and development have risen steadily, relative to gross domestic product (GDP). The country spends less in absolute terms than the United States, Japan and China, but more than other powerhouses.





3. Science Europe Report on Research Infrastructures.

Science Europe, a Brussels-based association that combines Research Funding Organisations and Research Performing Organisations, has released their report on their January 2017 Dublin workshop "Cross-border Collaboration and Portfolio Management of Research Infrastructures". The workshop looked at how to establish effective cross-border collaborations in Research Infrastructures and how to establish balanced portfolios, and the report covers the main outputs from this event.

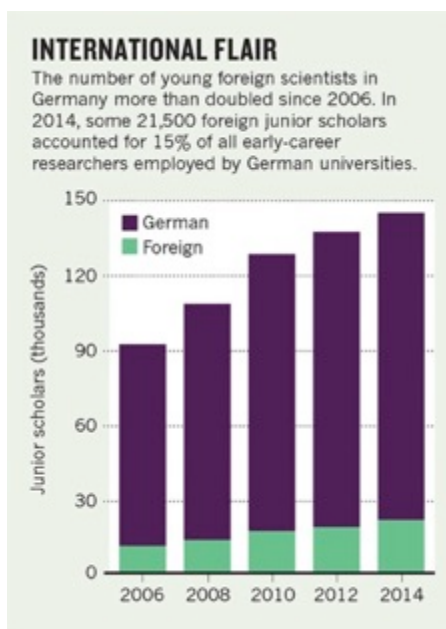
http://www.scienceeurope.org/wp-content/uploads/2017/09/SE_WS_Report_Research_Infrastructures_CBC.pdf

4. Schiermeier Q. Academic excellence: Golden Germany.

Nature 2017;549:119-121. Government's push for excellence is creating a golden age of opportunity for scientists flocking to the country...

<http://www.nature.com/nature/journal/v549/n7670/index.html>

Science Europe, a Brussels-based



China Reports

1. Editorial. Facing forwards along the Health Silk Road.

The Lancet Global Health 2017; 5:e948. Last month, China made a significant move towards the consolidation of its role as a major player in global health policy. At the Belt and Road High-level Meeting for Health Cooperation in Beijing, delegates from between 20 and 30 countries plus WHO, UNAIDS, the GAVI Alliance, and the Global Fund signed a communiqué aimed at increasing collaboration on research, health security, and education among the countries of China's proposed Belt and Road Initiative...

The role of traditional medicine within the health system was also championed in the communiqué, via support for WHO's 2014–23 traditional medicine strategy. Elsewhere the focus was on the importance of reproductive, maternal, and child health and of emerging infectious diseases.

[http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(17\)30349-2/fulltext?elsca1=etoc](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(17)30349-2/fulltext?elsca1=etoc)

2. The Thirteenth Five-year Plan Strategic Report of the National Natural Science Foundation 国家自然科学基金“十三五”发展战略研究报告

http://mp.weixin.qq.com/s/OkN7oF-izS4uT9d_cTyXeQ (中文)

3. Normile D. Science suffers as China plugs holes in Great Firewall.

Science 2017;357: 856. China is tightening the screws on internet access, again. The latest crackdown—an evolving effort to ban virtual private networks (VPNs) not under government control—could seriously erode scientists' ability to stay connected with peers abroad. China's Great Firewall routes virtually all incoming





international internet traffic through a handful of access points, where government servers block access to blacklisted domain names and internet protocol addresses. Blocked sites include Google Scholar, Google Docs, and Dropbox. Many scientists in China routinely bypass the Great Firewall using VPN software that routes traffic through foreign servers. The central government had long tolerated VPNs, but these are now in the crosshairs.

<http://science.sciencemag.org/content/357/6354/856.full>

Now Murphy F. **Young science in an old city.** *Nature* 2017; 549:S5-9

Careers: Spotlight on Beijing. The political, cultural and scientific capital of the world's most populous nation is on the hunt for global talent.

http://www.nature.com/nature/journal/v549/n7672_suppl/full/549S5a.html?WT.ec_id

TCM and Other Traditional Medicines in Spotlight

Now 1. Two *The Economist* Articles on TCM and Comments by Your Editor and Other Readers

The two papers are:

1.1. *State-sponsored quackery: China is ramping up its promotion of its ancient medical arts*

That is dangerous for humans as well as rhinos...

<https://www.economist.com/news/leaders/21727907-dangerous-humans-well-rhinos-china-ramping-up-its-promotion-its-ancient>

1.2. *Health care with Chinese characteristics: Why China's traditional medicine boom is dangerous.*

Unproven remedies, promoted by the state...

<https://www.economist.com/news/china/21727945-unproven-remedies-promoted-state-why-chinas-traditional-medicine-boom-dangerous>

Commentary by your Editor Dr Qihe Xu (ID on the TE website: guest-aaewjwis):

This TE article and another related one were clearly written by those who knew little about TCM and its research. It may thus be helpful if they read the official deliverable reports and publications of EU's first Coordination Action dedicated to TCM under its 7th Framework Programme. Widely known as the FP7 GP-TCM project (2009-2012), the consortium involved 200 scientists, clinicians and practitioners from 112 institutions in 24 countries.

It concluded: 'Modern medicine can learn from traditional practices.'

http://cordis.europa.eu/project/rcn/90960_en.html

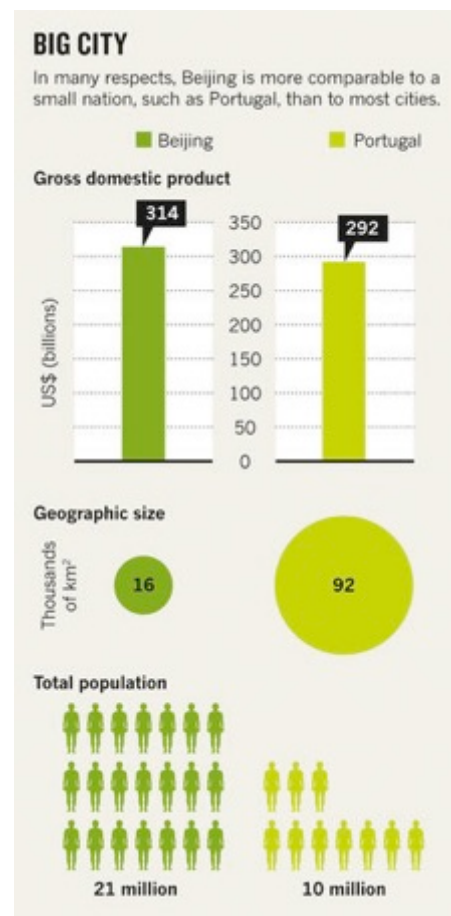
The consortium have agreed on the opportunities, challenges, priorities and guiding principles ahead, emphasising that the future of TCM must strive for good practices and should concentrate on consolidating the scientific basis and clinical practice of TCM through interdisciplinary, interregional and intersectoral collaborations.

<http://www.sciencedirect.com/science/article/pii/S0378874112001110>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3689083/>

Since 2012, the missions of the FP7 GP-TCM project have been carried on by the GP-TCM Research Association, a charity registered in the United Kingdom, an international society and an Interested Party of the Committee on Herbal Medicinal Products, European Medicines Agency.

<http://www.gp-tcm.org/about/objectives/>



The GP-TCM Research Association Newsletter September 2017

A Special Edition in Celebration of the Chinese National Day and the Mid-Autumn Festival



As the Coordinator of the FP7 GP-TCM consortium and a BoD member of the GP-TCM RA, I certainly disagree with statements such as 'TCM is about to take over the world' or the World is 'entering a TCM era'. However, just as China has learnt much from 'West medicine', it is high time for the West to learn from the East too. Eventually, tomorrow's medicine would be neither West medicine nor East medicine, but an integrated West-East Medicine, or WE medicine, as Professor Yung-Chi Cheng, Yale University, put it at a recent meeting in Guangzhou, China.

A motto of the FP7 GP-TCM Project was 'Sharing is good practice' and a member of the project Professor Ian Sutherland, Brunel University London, has famously said that 'We are what we share'. As TE rightly pointed out, TCM is popular among Chinese people and the Chinese government is striving to promote it further nationwide and to share with the world. To share national knowledge, resources and treasures openly should be regarded a virtue, rather than a sin like opium export.

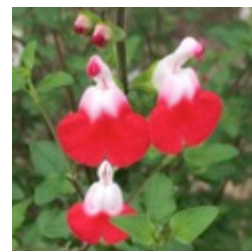
Yesterday was the 41st anniversary of the death of Chairman Mao Zedong, founder of the New China. The TE articles criticised that Mao and President Xi Jinping are politically motivated in supporting TCM. However, have the authors ever asked themselves whether the dubious quotation 'Even though I believe we should promote Chinese medicine, I personally do not believe in it' is politically motivated?

In recognition of Mao's role in promoting TCM, which has directly led to the Nobel Prize-winning discovery of artemisinin, and to balance views, it might be a good idea to conclude this comment by quoting Mao's remark cited by Professor Tu Youyou at her Nobel Prize Awarding Ceremony:

'Chinese medicine and pharmacology are a great treasure house and efforts should be made to explore them and raise them to a higher level.'

Comments on the 1st article most recommended by other readers:

By SNLD, Sep 1st: "Problem with this article is it views TCM from the angle that CCP is shoving up its credibility through the exploitation of Chinese culture. There are a few flaws in the argument.



In a related article, TE mentions that 910m patient visited TCM hospitals and doctors in 2015. Could TCM expansion, therefore, be viewed as Chinese government responding to the public demand rather than some cynical plot to revive tradition? Note that while it's expanding TCM it doesn't cut the funding for western medicine (or "modern medicine" in TE's term). If TCM is not working, surely the public who is gambling with their health will opt for "modern" medicine. I would have expected TE, a magazine that promotes free choices, to be more supportive of offering options.

The claim about damage to the environment and endangered species are probably overdone too. First, the majority of the medical supplies are from grown plants/ herbs. There are also substitutes to caterpillar fungus and rhinos' horns. Besides the black-market demand exists with or without the promotion for TCM. The trade has in fact shrunk in recent years due to law enforcement and greater public awareness. Applying TE's reasoning, shouldn't it discourage new medical drug research on the ground that animal testing is cruel?"

Guest-aaealewn, Sep 1st: "You note two key examples, Rhino horn and caterpillar larvae harvesting, as the reason we should be against the advancement of TCM in the West; while equally noting that the examples are part of the blackmarket. In order words you've noted what is technically an illegal practice in China, as the base argument for your reasoning against the use of TCM. Meaning that the invisible hand is corrupt because there are black markets? Western, scientifically based, medicine is highly intrusive, suffers from interesting side effects and it is absolutely harmful to animals! Should we quit that too?"

TCM is largely preventive and while the economist might not believe in the Qi it too is largely preventive which is not a bad thing. No doubt that Western Medicine is good for after the fact cures



and I am not going to devolve here to discuss its endless flaws. My point is simple TCM works without proof other than customer satisfaction.

Regardless of your enlightened adulation for science science cannot cure nor know everything. The scientific method is one method by which we may approach some aspects of existence. Its dominance is waning in much the same manner that the Catholic church lost it after the inquisitions. There are plenty of voices out there calling for the end of the current empirical inquisitions. Like the catholic church has done, it would be wise for science to find a middle ground to its logical fanaticism else it will go extinct. I can see a not so distant future where science will promote alchemy much as Issac Newton did, and just like the, wiser than thou, pope promotes democracy without seeing the contradiction.

As a final note, the cold war is over, can we get away from your incessant articles bashing China and appreciate that there are different approaches to running countries? Its funny the economist promotes diversity except when it comes to thinking outside of the post WWII mindset.

May the Qi be with you.”

To read more comments and write your own comment? Please visit here:

<http://www.economist.com/node/21727907/comments>

Comments on the 2nd article can be found here:

<http://www.economist.com/news/china/21727945-unproven-remedies-promoted-state-why-chinas-traditional-medicine-boom-dangerous/comments?sort=3#sort-comments>

2. Shi X. TCM becomes part of primary school curriculum. | China Daily 14 September 2017. TCM education has been made part of the primary school curriculum in Zhejiang province, a decision which provoked heated discussion online. The province published the country's first TCM textbook for primary school students. According to the plan issued by the provincial education authority, students in Grade 5 will learn about Chinese traditional medicine starting this semester. The two-volume textbook consists of 36 sessions and students have to take one course every week within two semesters, Qianjiang Evening News quoted Fang Jianqiao, the chief editor of the textbook and the head of Zhejiang Chinese Medical University.

http://www.chinadaily.com.cn/china/2017-09/14/content_31980606.htm

3. The Seventh Sino-Austrian TCM Summer School in Guangxi Botanical Garden of Medicinal Plants in Nanning. Organised by Prof Rudolf Bauer, Founding President (2012-2014) and current BoD member of the GP-TCM RA, the Summer School started in Beijing in late August and was mainly hosted by Guangxi Botanical Garden of Medicinal Plants in 1-15 September 2017. The School was attended by 26 Pharmacy students from three Austrian universities.

<http://www.worldtcm.org/170905/2031615G5.shtml?from=groupmessage&isappinstalled=0> (中文)



The GP-TCM Research Association Newsletter September 2017

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- 4. 30 episodes of bilingual videos on acupuncture, excellent archive teaching materials.**
<http://873813619.scene.eqh5.cn/s/QFliQsY2>
- 5. Marchat J. Pains and needles: brain scans point to hidden effects of acupuncture | Global Development Professionals Network | The Guardian.** 7th September 2017. Placebo acupuncture can ease short-term pain but the real thing might help to reverse the underlying pathology of a disease.
<https://www.theguardian.com/global-development-professionals-network/2017/sep/07/pains-and-needles-brain-scans-point-to-hidden-effects-of-acupuncture>
- 6. A WeChat report on TCM granules: Will TCM decoction pieces become a future luxury?**
【专题】中药颗粒剂调查实录（医生篇）：中药饮片未来会变成奢侈品吗？
<http://mp.weixin.qq.com/s/O92y03c38zoBwV0bMk0INw> (中文)
- 7. A WeChat report on the CFDA decision made in 2016 to exclude *Cordyceps sinensis* (冬虫夏草) from materials for dietary use.** The CFDA warns that the medicinal material may contain arsenite contents 4-10-fold higher than the criteria for foodstuff...
<http://www.bioon.com/3g/id/6679609/> (中文)
- 8. A WeChat report on a *Chinese Traditional & Herbal Drugs* paper by Academician Prof. Changxiao Liu on establishing a quality-markers-based quality control system for TCM drugs** (刘昌孝. 基于中药质量标志物的中药质量追溯系统建设 [J]. 中草药, 2017, 48(18):3669-3676)
<http://mp.weixin.qq.com/s/hvQFWCCGvmF5U6mF19KT3A> (中文)
- 9. *Chinese Medicine is 10!*** In celebration of the 10th anniversary for the publication of the journal, the editors published an editorial entitled *Ten years of exploration, a new journey to start: advancing Chinese Medicine to the next level.*
<https://cmjournal.biomedcentral.com/articles/10.1186/s13020-017-0147-8>
- 10. Liu M, et al. A national survey of Chinese medicine doctors and clinical practice guidelines in China.** BMC Complement Altern Med. 2017;17:451.
Background: Clinical practice guidelines (CPGs) for Chinese medicine (CM) are being developed to assist doctors with appropriate decisions concerning CM care. To date, there has been little investigation on the perspectives of those to whom the guidelines are directed.
Methods: A self-administered questionnaire was sent to 4503 doctors in 28 provinces of China in the latter half of 2012. Questions were organized around the topics of knowledge, application, practice changes, beliefs and outcomes of implementation. Basic classificatory data on specialties and years of qualification were also collected.
Results: Replies were received from 4495 CM doctors (99.82%). Of these, 85.56% of CM doctors reported being familiar with CPG recommendations, but the overall adherence rate was only 50.39%. The length of time practicing CM may influence the rate of adherence, since 709 doctors (51.90%) with less than 5 years of experience reported never having followed CPGs. Doctors in nine specialties showed a modest degree of homogeneity in their attitudes towards CM diagnosis and treatment,
[Archives \(2008-2017\): www.gp-tcm.org/news-list/](http://www.gp-tcm.org/news-list/)



which were generally positive. Most doctors regarded CPG-recommended therapies as safe (92%), economic (84%), and effective (76%). Approximately four-fifths of those questioned selected 'acceptable' (60.84%) and 'acceptable after revision' (19.23%) regarding their comprehensive assessment of the CPGs.

Conclusions: An encouraging result from this survey is that the majority of CM doctors support the concept of CPGs for the practice of CM. However, the results of this survey also suggest that improving the adherence of CM doctors to the guidelines remains a major challenge to improving the practice standards for CM.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5588680/>

11. Yu W, et al. Traditional Chinese Medicine and Constitutional Medicine in China, Japan and Korea: A Comparative Study. *Am J Chin Med.* 2017;45:1-12.

<https://doi.org/10.1142/S0192415X1750001X>

12. Zou P. Traditional Chinese Medicine, Food Therapy, and Hypertension Control: A Narrative Review of Chinese Literature. *Am J Chin Med* 2016;44:1579

<http://www.worldscientific.com/doi/abs/10.1142/S0192415X16500889>

13. Gong C-Z and Liu W. To Be, Or Not To Be: The Calculated Politics of Acupuncture in JAMA. *Chin J Integr Med* 2017. Ten acupuncture-related articles were published in The Journal of the American Medical Association (JAMA) between 1998 and 2017. Five studies showed positive results in terms of the effectiveness of acupuncture/Chinese medicine (CM); five studies showed negative results. This article summarizes the acupuncture-related clinical trials published over the last 20 years in JAMA, and addresses what seems to be a fundamental ambivalence in Western medical journals regarding the scientific validity of acupuncture / CM. As yet there has been no consensus on the role of acupuncture in healthcare in Western countries. This is hardly surprising, considering the conflicting evidence found in published studies. Skepticism regarding acupuncture/CM is largely grounded in the fact that an accurate model for assessing the true clinical effects of acupuncture has yet to be created. This article discusses some of the pitfalls which result from applying Western-based scientific principles to CM, and suggests that in many cases, "negative" studies have been misinterpreted. The clinical experience of acupuncture practitioners is often in direct conflict with many of the negative conclusions published in journals. We are in need of an accurate model for sham and placebo treatments, and must analyze all published studies for design flaws and faulty conclusions.



<https://doi.org/10.1007/s11655-017-2787-2>

Omics in Progress

1. Meier JA, et al. GUIDES: sgRNA design for loss-of-function screens. *Nat Methods.* 2017;14:831-832. Genome-scale CRISPR–Cas9 knockout libraries have emerged as powerful tools for unbiased phenotypic screens. These libraries contain a fixed number of Cas9 single-guide RNAs (sgRNAs) targeting each gene in the genome and typically require large numbers of cells ($>10^8$) to maintain genome-scale representation. However, there are many applications for which it would be preferable to design a custom library targeting specific gene sets (for example, kinases, transcription factors, chromatin modifiers, the druggable genome) with higher coverage for these specific genes. To address this need, we developed Graphical User Interface for DNA Editing Screens (GUIDES), a web application that designs CRISPR knockout libraries to target custom subsets of genes in the human or mouse genome (<http://guides.sanjanalab.org/> and <https://github.com/sanjanalab/GUIDES>). <http://www.nature.com/nmeth/journal/v14/n9/full/nmeth.4423.html>

2. Park J, et al. Informed-Proteomics: open-source software package for top-down proteomics. *Nat Methods.* 2017;14:909-914. Top-down proteomics, the analysis of intact proteins in their endogenous form, preserves valuable information about post-translation modifications, isoforms and proteolytic processing. The quality of top-down liquid chromatography–tandem MS (LC-MS/MS)



data sets is rapidly increasing on account of advances in instrumentation and sample-processing protocols. However, top-down mass spectra are substantially more complex than conventional bottom-up data. New algorithms and software tools for confident proteoform identification and quantification are needed. Here we present Informed-Proteomics, an open-source software suite for top-down proteomics analysis that consists of an LC-MS feature-finding algorithm, a database search algorithm, and an interactive results viewer. We compare our tool with several other popular tools using human-in-mouse xenograft luminal and basal breast tumor samples that are known to have significant differences in protein abundance based on bottom-up analysis.

http://www.nature.com/nmeth/journal/v14/n9/full/nmeth.4388.html?WT.ec_id

3. Perkel JM. Plot a course through the genome. *Nature* 2017; 549:117-8. Inspired by Google Maps, a suite of tools is allowing researchers to chart the complex conformations of chromosomes...
https://www.nature.com/polopoly_fs/1.22553!/menu/main/topColumns/topLeftColumn/pdf/549117a.pdf

4. Letai A. Functional precision cancer medicine—moving beyond pure genomics. *Nature Medicine* 2017;23:1028–1035. Anthony Letai proposes wider adoption of functional assays in efforts to match the right drug to the right patient and discusses why these assays might be complementary to existing genomics-based approaches.

http://www.nature.com/nm/journal/v23/n9/full/nm.4389.html?WT.ec_id

5. Fessenden M. Protein maps chart the causes of disease. *Nature* 2017;549:293-5. Improvements in mapping protein–protein interactions are allowing researchers to deconstruct the delicate mechanics of cells.

http://www.nature.com/nature/journal/v549/n7671/full/549293a.html?WT.ec_id

6. Lloyd-Price J, et al. Strains, functions and dynamics in the expanded Human Microbiome Project. *Nature* 2017; doi:10.1038/nature23889. The characterization of baseline microbial and functional diversity in the human microbiome has enabled studies of microbiome-related disease, diversity, biogeography, and molecular function. The National Institutes of Health Human Microbiome Project has provided one of the broadest such characterizations so far. Here we introduce a second wave of data from the study, comprising 1,631 new metagenomes (2,355 total) targeting diverse body sites with multiple time points in 265 individuals. We applied updated profiling and assembly methods to provide new characterizations of microbiome personalization. Strain identification revealed subspecies clades specific to body sites; it also quantified species with phylogenetic diversity under-represented in isolate genomes. Body-wide functional profiling classified pathways into universal, human-enriched, and body site-enriched subsets. Finally, temporal analysis decomposed microbial variation into rapidly variable, moderately variable, and stable subsets. This study furthers our knowledge of baseline human microbial diversity and enables an understanding of personalized microbiome function and dynamics.

http://www.nature.com/nature/journal/vaop/ncurrent/full/nature23889.html?WT.ec_id

7. Garon SL, et al. Pharmacogenomics of off-target adverse drug reactions. *Br J Clin Pharmacol.* 2017;83:1896-1911. Off-target adverse drug reactions (ADRs) are associated with significant morbidity and costs to the healthcare system, and their occurrence is not predictable based on the known pharmacological action of the drug's therapeutic effect. Off-target ADRs may or may not be associated with immunological memory, although they can manifest with a variety of shared clinical features, including maculopapular exanthema, severe cutaneous adverse reactions (SCARs), angioedema, pruritus and bronchospasm. Discovery of specific genes associated with a particular ADR phenotype is a foundational component of clinical translation into screening programmes for their prevention. In this review, genetic associations of off-target drug-induced ADRs that have a clinical phenotype suggestive of an immunologically mediated process and their mechanisms are highlighted. A significant proportion of these reactions lack immunological memory and current data are informative for these ADRs with regard to disease pathophysiology, therapeutic targets and biomarkers which may identify patients at greatest risk. Although many serious delayed immune-



mediated (IM)-ADRs show strong human leukocyte antigen associations, only a small subset have successfully been implemented in screening programmes. More recently, other factors, such as drug metabolism, have been shown to contribute to the risk of the IM-ADR. In the future, pharmacogenomic targets and an understanding of how they interact with drugs to cause ADRs will be applied to drug design and preclinical testing, and this will allow selection of optimal therapy to improve patient safety. <https://www.ncbi.nlm.nih.gov/pubmed/28345177>

Other Recommended Readings

NEW 1. **PURE diet: two studies assess the intake of specific food groups and effects on cardiovascular events and mortality.**

NEW 1.1. Miller V, et al. **Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries (PURE): a prospective cohort study.** *Lancet*; Published online August 29, 2017. It concluded: "Higher fruit, vegetable, and legume consumption was associated with a lower risk of non-cardiovascular, and total mortality. Benefits appear to be maximum for both non-cardiovascular mortality and total mortality at three to four servings per day (equivalent to 375–500g/day)." [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32253-5/fulltext?dgcid](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32253-5/fulltext?dgcid)

NEW 1.2. Toledo E, Martínez-González MA. **Fruits, vegetables, and legumes: sound prevention tools.** *Lancet*; Published online August 29, 2017. The authors commented: "...Miller and colleagues' findings raise the important issue of isocaloric replacements: the relevant question is not whether to consume more plant-based foods or not, but to know which are the detrimental foods that should be replaced by fruits, vegetables, and legumes and in what amount. Importantly, fruits and vegetables



are consumed as part of an overall dietary pattern. It has been observed that plant-based diets can have differential effects if these plant-based diets fall on the healthier or unhealthier side of the spectrum. Therefore, a healthy diet rich in fruits and vegetables needs to be considered as part of a high-quality overall eating pattern, and this pattern should be based on country-specific dietary traditions to be fostered as an effective tool for prevention of cardiovascular disease and premature mortality. Increased consumption of fruits and vegetables should be at the expense of reducing other foods and drinks, such as sugar-sweetened beverages, red and processed meats, saturated and

trans fat, refined cereals, and sugar-rich desserts, not in isolation or as a mere addition to the rest of the dietary pattern."

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32251-1/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32251-1/fulltext)

NEW 1.3. Dehghan M, et al. **Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study.** *Lancet*; Published online August 29, 2017. The authors concluded: "High carbohydrate intake was associated with higher risk of total mortality, whereas total fat and individual types of fat were related to lower total mortality. Total fat and types of fat were not associated with cardiovascular disease, myocardial infarction, or cardiovascular disease mortality, whereas saturated fat had an inverse association with stroke. Global dietary guidelines should be reconsidered in light of these findings." [http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(17\)32252-3.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(17)32252-3.pdf)

NEW 1.4. Ramsden CE, Domenichiello AF. **PURE study challenges the definition of a healthy diet: but key questions remain.** *Lancet*; Published online August 29, 2017. The authors commented: "...The PURE study is an impressive undertaking that will contribute to public health for years to come. Initial PURE findings challenge conventional diet–disease tenets that are largely based on observational associations in European and North American populations, adding to the uncertainty about what constitutes a healthy diet. This uncertainty is likely to prevail until well designed randomised controlled trials are done. Until then, the best medicine for the nutrition field is a healthy dose of humility." [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32241-9/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32241-9/fulltext)

WeChat Report in Chinese: http://www.toutiao.com/i6460108545437205006/?tt_from (中文)



2. Ma WJ. The stories behind a CV. *Science* 2017;357:942. “Based on my CV, you might think my path to becoming a tenured faculty member was pretty smooth: master's degree, Ph.D., two postdocs, faculty position. The true story, however, is much more twisted. During my graduate work in physics, I was so out of my depth that, as an escape, I spent more time on online chess, political activism, and volunteering than on work. After my Ph.D., I almost left science for business consulting or politics. I ended up staying, but I changed fields. I published zero papers with my first postdoc adviser. In my second postdoc, I constantly felt inferior to a fellow researcher who seemed to come up with all the good ideas. All that time, I often thought that I was the only one struggling, and that everyone else was sailing smoothly along...”
http://science.sciencemag.org/content/357/6354/942?utm_campaign

3. Pain, emotions and the placebo effect: In a pioneering study, researchers at the University of Luxembourg used fMRI technology to show that a person’s ability to reinterpret negative events and to control feelings influences how strongly a placebo will work to reduce pain. Dr Marian van der Meulen gave us additional input...
https://wwen.uni.lu/universite/actualites/a_la_une/pain_emotions_and_the_placebo_effect

4. Konkiel S. Productivity for researchers: 9 brilliant tips. Do you wish you could get more done in a week, or just do things better? Here are some helpful research workflow tips...
http://blogs.nature.com/naturejobs/2017/09/04/productivity-for-researchers-9-brilliant-tips/?WT.mc_id

5. E.C. Schneider and D. Squires. From Last to First — Could the U.S. Health Care System Become the Best in the World? *N Engl J Med* 2017;377:901-904. **Healthcare performances of high-income countries: What can countries learn from each other?**
<http://www.nejm.org/doi/full/10.1056/NEJMp1708704?query=TOC>



Relative Health Care System Performance and Spending in 11 High-Income Countries.
 System performance was measured as described by Schneider et al.¹ Health care spending was reported as percent of gross domestic product. Spending data are from the Organization for Economic Cooperation and Development for 2014 (and exclude spending on capital formation of health care providers).

Health Care System Performance Rankings. ^a											
Variable	Australia	Canada	France	Germany	Netherlands	New Zealand	Norway	Sweden	Switzerland	United Kingdom	United States
Overall ranking	2	9	10	8	3	4	4	6	6	1	11
Care process	2	6	9	8	4	3	10	11	7	1	5
Access	4	10	9	2	1	7	5	6	8	3	11
Administrative efficiency	1	6	11	6	9	2	4	5	8	3	10
Equity	7	9	10	6	2	8	5	3	4	1	11
Health care outcomes	1	9	5	8	6	7	3	2	4	10	11

^a Rating methods described in Schneider et al.¹

6. Choudhry NK. The Changing Face of Clinical Trials: Randomized, Controlled Trials in Health Insurance Systems. *N Engl J Med* 2017;377:957-964. The well-recognized limitations of traditional randomized, controlled trials (RCTs), including their cost, the nature of the patients and providers included in them, and even the types of interventions that they can evaluate, have led to the search for alternative methods and settings for conducting these types of studies. Pragmatic trials, also referred to as “practical” or “effectiveness” trials, have been widely advocated as means of addressing these limitations. These designs rely on simplified data-collection processes, strategies such as broad eligibility criteria for both patients and providers, and an acceptance of protocol “violations” such as crossover, nonadherence, and loss to follow-up that make the trial conditions similar to the way in which care is delivered in routine practice...
<http://www.nejm.org/doi/full/10.1056/NEJMra1510058?query=TOC>

7. Wallach R. Postdocs power research. *Science* 2017;357:951. Later this month, postdoctoral researchers and representatives from research associations around the United Kingdom will gather in Cambridge, UK, for the first National Postdoc Meeting, also the inaugural event of the latest Postdoc Centre of the University of Cambridge. This gathering coincides with the United States National Postdoc Appreciation Week and marks increasing, though long overdue, attention for this group of early-career researchers. What are the major challenges?
http://science.sciencemag.org/content/357/6355/951?utm_campaign



8. Scientific rigour and reproducibility: A Nature Collection. Science progresses by standing on the shoulders of giants, to paraphrase Newton. But what if those shoulders aren't steady? Read about how to assess and improve the reliability of biomedical research. Science moves forward by corroboration – when researchers verify others' results. Progress is faster when people waste less time pursuing false leads. No research paper can ever be considered to be the final word, but there are too many that do not stand up to further study. There is growing alarm about results that cannot be reproduced... Nature has taken substantive steps to improve the transparency and robustness in what we publish, and to promote awareness within the scientific community. We hope that the articles contained in this collection will help.

https://www.nature.com/collections/byblhcfwhw?WT.mc_id=TOC_NA_517_ReproducibilityWebCollection&spMailingID

9. On Tea: Everything you would wish to know about different types of tea in one WeChat report <http://mp.weixin.qq.com/s/8B5erXharOeXyG8wiHhpOg> (中文)

10. Seeing DNA Clearly Now. A gentle new technique allows scientists to see the fine structure and 3-D organization of individual strands of chromatin in living cells. It turns out that the textbooks are wrong... <https://www.biotechniques.com/news/366170>

Reports on Meetings & Events

1. Pictorial Reports on the 9th TCM Expo, China (Yulin), 14th September 2017.

<http://mp.weixin.qq.com/s/uv98pkZ-PJOMvmVDvLstrQ> (中文)

http://mp.weixin.qq.com/s/t21MCCzEpNW5eDM_RyjCnA (中文)



2. Pictorial report on the 13th Meeting of the Chinese Society of TCM Experimental Pharmacology and the Launch of the Hong Kong Society of TCM Experimental Pharmacology in Ningbo, Zhejiang, China, 21st-24th September 2017.

<http://www.shutcm.com/shutcm/zy/xxsd/kydt/76904.shtml> (中文)





Future Meetings & Events

1. **The Lancet–CAMS Health Summit 2017: A Lancet call for abstracts from China.** Abstracts are invited from China for *The Lancet–CAMS Health Summit 2017*, to be held on **Oct 13–14 2017** in Beijing. Submissions are invited from all aspects of health science including, but not limited to: translational medicine, clinical medicine, public health, global health, health policy, the environment and ecological systems and health, health professionalism, and medical education.

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)30130-7/fulltext?elsca1=etoc](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)30130-7/fulltext?elsca1=etoc)

2. **WeChat report on international celebration of the 500 anniversary of Li Shizhen's birth to be held in Li's hometown Jichun County, Hubei Province, China, on 26th May, 2018.**

http://mp.weixin.qq.com/s?__biz=MzAxMjMyMTEwNA==&mid=2660692447&idx=1&sn=3895e03e994d2f1c98befd9f4beb8eca&chksm (中文)


Invitation from Journals


1. **Invitation from *World Journal of Traditional Chinese Medicine (WJTCM)*, including special calls on TCM network pharmacology and TCM for cerebral disease.** WJTCM, ISSN 2311-8571, a new peer-reviewed journal (quarterly) launched in 2014, is the official journal of the World Federation of Chinese Medicine Societies (WFCMS) and the GP-TCM RA. **Aim & Scope:** Introduce clinical efficacy and mechanism of TCM to doctors and biomedical researchers around the world, so as to provide new ideas and methods for solving the complicated and difficult cases.

- WJTCM includes reviews and original articles focused on four aspects:
- Modern Research on Chinese Materia Medica: theories of processing, property, and compatibility of Chinese materia medica; safety of Chinese materia medica; active principles and mechanism and efficacy of crude drugs and Chinese compound formulas
- Research on TCM Theory: scientific connotation and biological foundation of TCM basic theories
- TCM clinical Research: disease and syndrome, TCM safety, efficacy evaluation, evidence-based and systematic evaluation
- Acupuncture and Moxibustion: effect mechanism of acupuncture and moxibustion, specificity of acupoint effect, acupoints compatibility, efficacy evaluation of acupuncture and moxibustion.

Submission to the Journal: All the articles can be submitted via ScholarOne: <https://mc03.manuscriptcentral.com/wjtcn>, Detailed information about requirements of manuscript and format can be found in "Instruction&Forms" by the above URL, or by accessing WJTCM home page www.wjtcn.org. All WJTCM articles will be published online via WJTCM website (www.wjtcn.org). PDF articles and electronic/online versions are freely available to global readers.

Sounding Board.

 1. We wish all our Chinese readers a happy National Day and wish everyone a merry Mid-Autumn Festival!

 2. This column is reserved for comments, personal views, proposals for collaborations or any other features from our readers across the world. We look forward to hearing from you! Please get in touch with your editors: Dr Qihe Xu (qihe.xu@kcl.ac.uk), Prof. Pierre Duez (pierre.duez@umons.ac.be) and Prof. Yuan Shiun Chang (yschang0404@gmail.com)



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