

The May 2013 Newsletter of The GP-TCM Research Association



IMPORTANT - The 12th Meeting of the Consortium for Globalization of Chinese Medicine (27-29 August 2013) and the 2nd Annual Meeting of the GP-TCM Research Association (30 August 2013) will be held at Karl-Franzens-University in Graz, Austria.

The following themes will be addressed at the CGCM Meeting:

1. Acupuncture
2. Bioinformatics and Database
3. Bioinformatics: Application of "Omics" in TCM Research
4. Clinical Investigation
 - Cancer, Liver Disease and Inflammation
 - Other Diseases and Safety
5. Education
6. Herbal Resources
 - Cultivation and Herbal Quality
 - Identification, Formulation and Manufacturing
7. Interregional Collaborations in Industry and Academia
8. Natural Products
 - Biological Activity
 - Cancer, Virus and Inflammation
 - Identification, Bio-transformation and Metabolism
9. Polychemical Activities and Mechanism Study
 - Cancer, Immunomodulation inflammation
 - Metabolic, Neural Diseases, Aging Process and Others
 - Metabolism, Drug Interaction and Toxicity

The following speakers have confirmed to give keynote lectures at GP-TCM-RA Meeting:

- Prof. Tommy Yung-Chi Cheng, New Haven, USA
- Prof. Geoffrey Burnstock, London, UK
- Prof. Jan van der Greef, Leiden, the Netherlands

In addition, short lectures and poster presentations are invited.

Both meetings will provide an excellent platform for regulatory-industrial-academic exchanges and potential research collaborations on various frontiers of Traditional Chinese Medicine. The organizers and the local organizing committee cordially invite you to participate in these important events.

You can find the exact programme, as well as more detailed and constantly updated information about the meetings on the internet at <http://www.cgcm2013.org/>

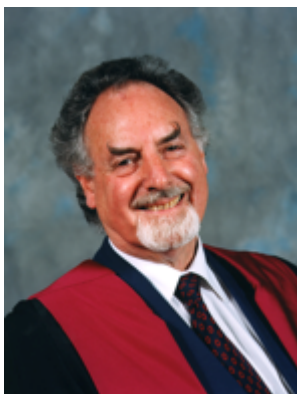
IMPORTANT DEADLINES

Abstract submission for CGCM MEETING:	May 31, 2013
Abstract submission for GP-TCM RA MEETING:	June 30, 2013
Early registration:	June 30, 2013
Hotel reservation:	July 26, 2013

This monthly newsletter is for GP-TCM RA members. To recommend anyone to join GP-TCM RA, please advise them to apply: www.gp-tcm.org/about/membership/. Anything to share? Please e-mail: secretary-general@gp-tcm.org. Thanks!



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Prof. Geoffrey Burnstock, PhD,
DSc, FAA, FMedSci, FRS,
FRCS(Hon), FRCP(Hon),
University College London
UK



Prof. Yung-Chi Cheng, PhD,
Fellow of Academia Sinica;
Chairman, CGCM; Co-Chair, FP7
GP-TCM Advisory Board;
Yale University, USA



Prof. Brian Clark, BA, MA,
PhD, DSc; Chairman, the FP7
GP-TCM Advisory Board;
University of Aarhus,
Denmark



Prof. Jan van der Greef, PhD,
Member of the FP7 GP-TCM
Advisory Board; TNO &
Leiden University
The Netherlands

Now Honorary Memberships: To mark the 1st Anniversary, the Board of Directors (BoD) of the GP-TCM RA has decided to award Honorary Memberships to Professor Geoffrey Burnstock, Professor Yung-Chi Cheng, Professor Brian Clark and Professor Jan van der Greef (in alphabetic order), whose profiles are highlighted below. These awards are made according to the bylaws of the Association on the appointment of Honorary Members (<http://www.gp-tcm.org/wp-content/uploads/2012/04/GP-TCM-RA-Rules-V4.pdf>) and are in recognition of the outstanding leadership and long-term contributions of the awardees in vigorous research on traditional Chinese medicine (TCM).

Warmest congratulations go to Professor Geoffrey Burnstock, who is President of the Autonomic Neuroscience Centre, University College London (UCL), UK. He became Professor and Chairman of Zoology at Melbourne University in 1964, Head of Department of Anatomy and Developmental Biology at UCL in 1975, and Director of the Autonomic Neuroscience Institute at UCL in 1997. Elected to the Australian Academy of Sciences (1971), Royal Society (1986), Academy of Medical Sciences (1998) and Honorary Fellow of the Royal College of Surgeons (1999) and Physicians (2000) and awarded the Royal Society Gold Medal (2000), the Copernicus Gold Medal (Ferrara) in 2009, the 2010 Gaddum Memorial Award and most recently the Academia Europaea Erasmus Medal 2012 and the IUPS Paton Lecture 2013. He has been given Honorary Degrees from the Universities of Antwerp, Frankfurt and Leipzig. He is Editor-in-Chief of *Autonomic Neuroscience*, *Purinergic Signalling*, *Open Neuroscience Journal*, and *Open Pharmacology Journal*. His major research interest stems from his seminal discovery of purinergic signalling. In particular, Geoff published a working hypothesis on how acupuncture could work through purinergic signalling and is currently supporting scientists based in Germany, USA and China to test the hypothesis (<http://the-scientist.com/2011/09/01/puncturing-the-myth/>). Geoff has supervised over 100 PhD and MD students and has published over 1,400 papers, reviews and books. He was the most cited scientist in Pharmacology and Toxicology (1994-2006) and his papers have been cited over 80,000 times with a Hirsch (h)-index of 127. To learn how the late Nobel Laureate (1988) Professor Sir James Black commented on Geoff and his work, please refer to <http://www.ucl.ac.uk/ani/Prof/Memories%20of%20a%20Senior%20Scientist.pdf>. To learn more about Geoff's achievements as a scientist and artist, please read: <http://www.ucl.ac.uk/ani/prof-GB.htm>

We warmly congratulate Professor Tommy Yung-Chi Cheng, who is the Henry Bronson Professor

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of Pharmacology at Yale University since 1989, Fellow of Academia Sinica since 1994 and the founding Chairman of the Consortium for Globalization of Chinese Medicine (CGCM) since 2003. Tommy has an illustrious and outstanding career in drug research and development. Four approved and clinically important anti-viral drugs (gancyclovir, lamivudine, clevudine, and entricitabine) were discovered in his laboratory. He has authored ~400 papers, including publications in *Nature* and *Science*. In 1998 he founded PhytoCeutica Inc., a biotech company committed to the development of TCM and FDA-approved prescription drugs for the treatment of cancer. With PhytoCeutica, Tommy developed the *Phytomics* QC technology platform, which was approved by the FDA for monitoring the consistency of herbal formulations through both chemical and biological fingerprinting. PhytoCeutica applied Phytomics QC to the modernization of a TCM formula “Huang Qin Tang” into a new type of botanical drug, PHY906 (KD018), which is in advanced clinical trials and its preclinical work has been published in leading journals such as *Science Translational Medicine* (<http://stm.sciencemag.org/content/2/45/45ra59.abstract>). Tommy supports TCM research in Europe, by promoting development of CGCM membership in Europe, serving as Co-Chair of the Advisory Board of the FP7 GP-TCM consortium and firmly supporting their initiatives. Among many honours Tommy has received, he is a recent recipient of the *Cheung On Tak International Award for Outstanding Contribution to Chinese Medicine* (http://scm.hkbu.edu.hk/en/cm-award/intro/bio_tommy.html). For more information about Tommy at Yale and CGCM, please refer to <http://medicine.yale.edu/pharm/people/yccheng-2.profile>; <http://www.tcmedicine.org/>

Warmest congratulations go to Professor Brian F. C. Clark, who has been Professor of Biostructural Chemistry at The University of Aarhus, Denmark since 1974 and Emeritus Professor since 2006. Between 2006-2011, he was Coordinator of the EU Integrated Project PROTEOMAGE. Brian has been widely involved in international activities. He was President of the International Union of Biochemistry and Molecular Biology (IUBMB), Vice-Chairman of the European Molecular Biology Organization (EMBO) and is Vice-President of the European Federation of Biotechnology (EFB) and Chairman of the EFB Task Group on International Relations & Co-Chairman, European Focus on Biotechnology in China. In a highly successful career spanning across more than 40 years, he pioneered in many fields such as protein engineering of factors involved in protein synthesis and explanation of function in terms of 3-dimensional structure from X-ray crystallography; macromolecular mimicry and molecular mechanism of protein synthesis; molecular and cellular mechanism of ageing; use of phage display to identify differential cellular gene expression and to characterise mutant proteins; and molecular mechanism of cancer and age-related diseases. Brian has published ~200 papers and five books and his achievements include discovery of the Initiation Codon for protein synthesis and hence start of protein coding; first crystallisation of tRNA; determination of the first structure of a GTP-binding protein; structural determination of the ternary complex, etc. To celebrate the career of Brian, his university established a named lecture series after him in 2012 (<http://mbg.au.dk/en/scientific-talks/brian-clark-biotech-lectures/brian-clark/>). In particular, as Chairman of the FP7 GP-TCM Consortium, Brian whole-heartedly supported the initiatives of the project and has played an important bridging role between EU and Chinese scientific communities: http://www.efb-central.org/index.php/Main/european_focus_on_biotechnology_in_china_efbic

Warmest congratulations go to Professor Jan van der Greef, who is Scientific Director of Systems Biology & Personal Health Research at The Netherlands Organisation for Applied Scientific Research (TNO). His group is within TNO Quality of Life, a programme with special emphasis on the synergy between pharma and food research. Jan is also Professor of Analytical Biosciences at Leiden University within the Leiden/Amsterdam Centre for Drug Research and Director of the Sino-Dutch Centre for Preventive and Personalised Medicine, a joint initiative of the Chinese Academy of

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Sciences, Netherlands Metabolomics Centre, Leiden University and TNO. He is co-founder of SU BioMedicine, a spin-off company of TNO, based on an innovative scientific concept developed for herbal medicine. His current research interest is the development of systems biology as a way to scientifically bridge different healthcare concepts. In a prior responsibility as Managing Director of TNO Pharma, he has successfully developed this innovative business organisation to become an internationally respected organisation for drug discovery and development. Jan is a co-founder of BG Medicine, arguably the first systems biology company in the world and developed the concept of systems biology for pharmaceutical industry and life sciences. He is also a scientific co-founder of Kiadis, an additional spin-off company of Leiden University, which is based on novel high-resolution screening platforms for natural products. He has published over 300 papers in international journals, supervised more than 20 PhD projects and has given more than 250 opening, plenary and keynote lectures at major life sciences, analytical chemistry and pharmaceutical conferences. He is co-inventor of several patents in life sciences and TCM related technologies. He is also an inspiring thinker and photographer. For more information about Jan, his science and art, please refer to: <http://abs.lacdr.gorlaeus.net/people/van-dergreef>; <http://www.insightintonature.com/index.html>; or <http://vimeo.com/user3182172>.

CNN Breaking News: Scientists Taking Chinese Medicine West

<http://edition.cnn.com/2013/05/27/world/asia/chinese-western-medicine-trials>

Hong Kong (CNN) -- At Chi-Med's labs in Shanghai, a group of 70 chemists has been working for a decade to try and crack the mysteries of Chinese medicine. The company's scientists are attempting to break 1,300 medicinal herbs into their component parts and then test them for global use against diseases. ... If Chi-Med and Nestle succeed in winning U.S. Food and Drug Administration (FDA) approval, the companies will be at the forefront of efforts to export Chinese medicine beyond its loyal following at home. They'll also have tackled the central problem in taking Chinese medicine global: how do you get a centuries-old remedy through the rigors of modern government regulation? ... "The simpler the product, the better at this stage," says Chi-Med CEO Christian Hogg. "The more similar it is to conventional drugs, the better from the FDA standpoint." That's why the company has started with a drug called HMPL-004, which treats inflammatory bowel disease (IBD) including ulcerative colitis and Crohn's disease ... By Chinese medicine standards, HMPL-004 is a simple drug. It's a single extract from a single herb, called andrographis (*Andrographis paniculata*; Chuan Xin Lian 穿心莲; http://en.wikipedia.org/wiki/Andrographis_paniculata), which has a long history of use in Asia for stomach problems.

Meeting Reports

- 1.  The 3rd Executive Council (ExC) Teleconference** was held, 1pm-2.40pm BST/ 2pm-3.40pm CEST on Friday 17th May 2013. Chaired by Prof. Rudolf Bauer, the t/c was attended by Prof. Peter Hylands and Dr. Qihe Xu. The meeting reviewed monthly report by President, Vice President, Secretary-General and Treasurer and especially focused on the 2nd Annual Meeting to be held in Graz and its programme, finance and bursary.
- 2.  The 8th BoD Teleconference of GP-TCM RA** was held at 9:00-11:15 BST (10:00-12:15 CEST; 16:00-18:15 Beijing Time; 18:00-20:15 Sydney local time), Thursday 2nd May 2013. Chaired by Prof. Rudolf Bauer, the t/c was attended by 9 other BoD members: Prof. Kelvin Chan, Prof. Pierre Duez, Dr. Tai-Ping Fan, Prof. De-an Guo, Prof. Peter Hylands, Prof. Aiping Lu, Prof. Monique Simmonds, Prof. Vivian Wong and Dr. Qihe Xu. The meeting approved the minutes of the 7th BoD t/c

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and received reports by President, President-elect, Vice President, Secretary-General and Treasurer. Prof. Bauer especially congratulated the GP-TCM RA for its 1st anniversary and congratulated Prof. Vivian Wong for inauguration of the Vivian Taam Wong Endowed Professorship in Integrative Medicine at the University of Hong Kong on April 19th 2013. Some important decisions were made on scientific committee, young investigators awards panel, fees, theme and programme of the 2nd Annual Meeting to be held in Graz in August 2013. Proposal for the 2nd GP-TCM RA annual meeting was invited for further discussion and approval. Updated GP-TCM RA brochure, membership issues and financial rules were discussed and it was decided that four Honorary Memberships would be awarded to mark the 1st Anniversary of the GP-TCM RA. The next (9th) BoD t/c will be held on 1st July 2013.

3. AFERP & STOLON International Symposium, Brussels, 22-24 May 2013. (to follow)

4. International Conference of Traditional and Complementary Medicine on Health 2013 (ICTCMH 2013) will be held in Taiwan in 24-26 May 2013. (to follow)

5. Sino-Austrian Summer (Spring) School for Chinese Herbal Medicine in Beijing and Nanning 2013

The Sino-Austrian Summer School for Chinese Herbal Medicine, organized by Prof. Dr. Rudolf Bauer, Head of the Institute of Pharmaceutical Sciences, University of Graz, and Head of TCM Research Center Graz, took place from 21st March – 12th April 2013 in Beijing and Nanning.

It has been organized in collaboration between University of Graz, Guangxi Botanical Garden of Medicinal Plants Nanning (Director Prof. Miao Jianhua), Institute of Medicinal Plant Development (IMPLAD) in Beijing (Prof. Xiao Peigen and Prof. Peng Yong), Beijing University of Chinese Medicine (Prof. Liu Yong), and the Herbal Medicinal Products Platform Austria (HMPPA). It was financially supported by the Eurasia-Pacific Uninet.

28 pharmacy students from Graz, Innsbruck and Vienna participated in the summer school. The program was a stimulating mixture of lectures, practical work, and excursions, and covered all traditional Chinese medicine (TCM) related topics, but also gave an introduction into Chinese culture.

The summer school started in Beijing with a visit of School of Chinese Pharmacy at Beijing University of Chinese Medicine, and Institute of Medicinal Plant Development. Moreover, there was time to visit Tong Ren Tang pharmacy and the Palace Museum, and to climb the Great Wall at Badaling.

The major part of the summer school was organized at Guangxi Botanical Garden of Medicinal Plants in Nanning, which is with 7200 cultivated medicinal plants the biggest of its kind in the world. The lectures given by experts from Guangxi Botanical Garden of Medicinal Plants, Guangxi University of TCM, and Nanning and Guangxi Medical University, covered the theoretical and philosophical background of TCM, traditional TCM treatment and its history, toxicity and pharmacological effects of Chinese herbs, clinical practice of TCM, plant diversity in Guangxi,



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identification of TCM plants and adulterations, quality standards of the Chinese Pharmacopoeia, and clinical practice of TCM.



Practical courses and excursions enlightened the program like visits of the laboratories and the herbarium including plant tissue cultivation of the botanical garden, the Exhibition Center of Guangxi TCM College, the laurel forest at Daming mountain, Beihai Mangrove research center, and the medicinal plant market in Yulin. The excursions provided an overview of TCM in daily life in China and Chinese culture in general. One of the highlights was the guided visit of one of the TCM hospitals in Nanning. The students could experience TCM manipulation techniques like acu-

puncture, fire cupping, and massages. Other excursions led to Yilin Cave and to Guangxi Museum of Nationalities. To get introduction into TCM products manufacturing and trading in economic scale, the company PuraPharm in Nanning was visited. A long weekend excursion to Guilin included a visit of Longji Rice Terraces, Guilin Tea Science and Research Institute, and a boat trip on river Li to Yangshuo with its phantastic scenery.

In the closing ceremony, Prof. Christa Neuper, Rector of University of Graz, who was visiting Guangxi Botanical Garden of Medicinal Plants with a big delegation, signed an MOU for a Joint Laboratory. All students received a certificate and everybody was invited to plant a tree in the botanical garden of Nanning.



Future Meetings

1. The 4th Annual Meeting of The Specialty Committee of TCM Pharmaceutical Analysis of WFCMS & International Conference on Phytopharmaceutical Analysis will be held on 21-23 June 2013 in Tianjin, China. With Professor De-an Guo as a core organiser, the scientific topics of this meeting include: (1) Current quality standards of different pharmacopoeia and harmonization, (2) New technologies, methods and trends of TCM quality control, (3) Quality control in processing of Chinese crude drugs, decoction slices, and (4) New technologies, methods and progress of in vivo analysis of TCM. For more information, please contact Xingyun Hou: Telephone: +886 021-81886192 Fax: +886 021-81886191; e-mail: hxy0122@163.com.

2. The 54th Natural Products Annual Meeting of the American Society of Pharmacognosy will be held in July 2013 in St Louis MO, USA. Over 500 international attendees are expected. The ASP 2013 website is now live: www.asp2013.org

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3. NEW The 4th International Conference on Modernization of Traditional Chinese Medicine will be held in Chengdu, Sichuan, China on September 26-27, 2013: A meeting series held once every 3-5 years since 2002, the conference is organised by the Sichuan Provincial Government and co-sponsored or co-organised by China's Ministry of Science & Technology, Ministry of Health, State Administration of TCM, State Food and Drugs Administration and many other governmental ministries, research institutions and international organisations. This year, with the theme of **"TCM Concerted Innovation & Industrial Development"** the conference will comprise 8 panels, each covering an important aspect of TCM. For example, the Panel 2 of the conference is entitled **Heritage and Development of Basic Theories of TCM** and focuses on research of (i) theory of TCM *zang-fu* visceral manifestation and biological basis (中医藏象理论及生物学基础研究); (ii) aetiology, pathogenesis and therapeutic methods and principles in TCM (中医病因、病机与治则治法研究); (iii) theory of TCM drug properties and actions (中药药性和功效的理论研究); (iv) TCM drug formulation and compatibility, and mechanism of action (中药复方配伍规律与作用机制研究); and (v) new technologies and methods of TCM heritage research (中医传承研究的新技术、新方法). For details of all panels, please visit the official website of the conference: <http://www.icetcm.org>. Any inquiries please be addressed to: icetcmcd@163.com. **The conference cordially invites international submission of abstracts before the deadline on July 15, 2013.** Structure of abstracts is as follows.

Title
Authors' full names
Institute, City, Zip code, Country
Text (300~500 words)
Biography (including name, title, specialty, E-mail, Tel./Mobile)

Invitations from HMPC and Journals

1. NEW A couple of HMPC draft documents are currently out for public consultation on herbal substances that might be of interest for GP-TCM-RA members to comment (either monograph or public statement that can be found under 'consultation'):

- Angelicae sinensis radix – Dang Gui (當歸):
http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/herbal/medicines/herbal_med_000197.jsp&mid=WC0b01ac058001fa1d
- Andrographidis paniculatae folium - Chuan Xin Lian (穿心蓮):
http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/herbal/medicines/herbal_med_000173.jsp&mid=WC0b01ac058001fa1d
- Camelliae non fermentatum folium - Lu Cha (綠茶):
http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/herbal/medicines/herbal_med_000175.jsp&mid=WC0b01ac058001fa1d
- Ginseng radix – Ren Shen (人參):
http://www.ema.europa.eu/ema/index.jsp?curl=pages/medicines/herbal/medicines/herbal_med_000106.jsp&mid=WC0b01ac058001fa1d

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- Withaniae somniferae radix – Shui Qie (睡茄) :

http://www.ema.europa.eu/ea/index.jsp?curl=pages/medicines/herbal/medicines/herbal_med_000187.jsp&mid=WC0b01ac058001fa1d

2. European Journal of Integrative Medicine announces a special issue: Clinical Guidelines for Integrated Practice. The journal is affiliated with the Research Council for Complementary Medicine (www.elsevier.com/eujim); Editor-in-Chief: Prof. Nicola Robinson (UK). The Co-Editors of this Clinical Guidelines special issue will be Prof. Jianping Liu, Dr. Myeong Soo Lee and Prof. Nicola Robinson. The invitation from the journal reads: "Clinical guidelines are designed to support decision-making processes in patient care. How relevant are they to practice, are they used in practice, do they improve care, how are they constructed and disseminated? Often the content of a guideline is based on a systematic review of clinical evidence as well as best practice and expert opinion. Evidence-based healthcare is now regarded as gold standard motivated and has been supported by clinicians, politicians and management who are rightly concerned about quality, consistency and costs. Many have been developed, though the process is time- and resource consuming. Many have been disseminated, but have they had a major impact on practice? This special issue will be open access (all articles free to access and download) to facilitate access to and use of the guidelines. This means publication charges will apply for successful submissions. For more information, please see www.elsevier.com/eujim.

3. An earlier invitation from the European Journal of Integrative Medicine: Ensuring and Improving patients safety in Integrative health care: Keeping patients safe is a vital part of all healthcare. Improving patient safety involves assessing how patients could be harmed, preventing or managing risks, reporting and analysing incidents. This special issue will be co-edited by Dr. Hugh MacPherson, Prof. Heather Boon and Prof. Nicola Robinson. For details, please visit: <http://www.gp-tcm.org/2013/01/call-for-papers-ensuring-and-improving-patients%C2%92-safety-in-integrative-health-care-the-europeanjournal-of-integrative-medicine/>

The European Journal of Integrative Medicine invites authors to contribute to this special issue planned for late 2013. Please submit your articles to www.elsevier.com/eujim

4. Invitation from Evidence-Based Complementary and Alternative Medicine (eCAM): eCAM would like to inform GP-TCM RA members about an upcoming Special Issue on "Efficacy and Safety of Medicinal Plants used in the Management of Diabetes Mellitus," which will be published in November 2013. The deadline for submission is 5th July, 2013. The Special Issue is open to both original research articles as well as review articles. You can find the Call for Papers for this Special Issue at: <http://www.hindawi.com/journals/ecam/si/681090/cfp/>

5. A special eCAM issue on *From Sound Design to Practical Implementation in Clinical Trials for Traditional Chinese Medicine.* <http://www.hindawi.com/journals/ecam/si/834743/cfp/>

Prof. Hongcai Shang (Tianjin University of TCM) and his co-editors invite GP-TCM RA members to contribute original research articles as well as review articles that focus on sound design and practical implementation in clinical studies with TCM. The information obtained from these studies shall be clearly evidence-based. Potential topics include, but are not limited to:

- The practicability of study designs in clinical research of TCM
- The need for unblinded clinicians to administer certain treatments
- Comparisons between different types of therapies, for example, acupuncture against a medication


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- Factors influencing quality control in clinical research of TCM
- Compliance control in clinical research of TCM
- Methodology for process assessment in clinical research of TCM
- Global lessons on keeping the balance between a scientific design and practicability in implementation
- Experiences with and lessons learned from past clinical studies with TCM

Manuscript Due	Friday, 2 August 2013
First Round of Reviews	Friday, 25 October 2013
Publication Date	Friday, 20 December 2013


Recommended Readings


1.  **Acupuncture-inspired research of non-specialised connective tissue and Rho by Lee-Yan Sheen (Taiwan) Director of the Osher Center for Integrative Medicine at Brigham and Women's Hospital, Harvard Medical School:**

<http://www.the-scientist.com/?articles.view/articleNo/35301/title/The-Science-of-Stretch/>

2.  **Fong SY, et al. Establishing the Pharmaceutical Quality of Chinese Herbal Medicine: A Provisional BCS Classification. Mol Pharm. 2013 May 6;10(5):1623-43.**

<http://pubs.acs.org/doi/abs/10.1021/mp300502m>

3.  **Bayer buys herbal drugmaker Steigerwald:** http://www.pharmatimes.com/Article/13-05-17/Bayer_buys_herbal_drugmaker_Steigerwald.aspx?utm_source=dlvr.it&utm_medium=twitter

4.  **Acne bacteria to blame for back pain? Breakthrough in management of back pain?** <http://thebrainbank.scienceblog.com/2013/05/12/acne-bacteria-to-blame-for-back-pain/>

<http://www.guardian.co.uk/society/2013/may/12/back-pain-ask-doctor-antibiotics>

<http://www.guardian.co.uk/society/2013/may/07/antibiotics-cure-back-pain-webchat>

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