



中药全球化联盟

CONSORTIUM FOR GLOBALIZATION OF CHINESE MEDICINE



Regional Report

European Chapter

Report by Prof. Dr. Rudolf Bauer,
Chairman of the European Chapter of CGCM



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The GP-TCM Research Association

中医药规范研究学会





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6 Interest Groups (updated): Chairs and co-chairs

Quality Control



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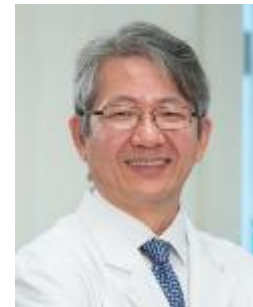


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The 6th Annual Meeting of Good Practice in Traditional Chinese Medicine Research Association



The meeting addressed the current challenges and opportunities that face the global development of TCM:

- Availability and quality of the genetic resources used in TCM
- Regulatory environment associated with modern drug development
- Advances in analytical technique that further our understanding of the complex mixtures used in TCM
- Standardization – quality and safety of TCM
- New guidelines of, and evidence from clinical studies
- Integration of acupuncture

Aims of conference:

1. To provide an overview of new methods that can be used to enhance our knowledge about plants and fungi used in TCM.
2. To identify what evidence is needed to further the development of TCM in the West.
3. To identify key issues associated with the supply and quality of plants and fungi used in TCM and how this could be improved.
4. What are the regulatory challenges that TCM faces in the East and West and how could these be addressed?
5. What are the commercial opportunities for quality TCM products in China and the West: how can scientists help?



All activities
are published in the
Newsletters
(Editor in Chief: Qihe Xu,
Deputy Editors-in-chief:
Pierre Duez (Mons),
Jinping Liu (Beijing),
Yuan Shiun Chang (Taichung))



<http://www.gp-tcm.org/news-list/>

The June 2018 Newsletter of
The GP-TCM Research Association



Editorials

1. Honoring the 500th Anniversary of Li Shizhen (李時珍) : A Season of Celebration



Professor Zhongzhen Zhao
Associate Dean and Chair Professor
Teaching and Research Division
Hong Kong Baptist University
Hong Kong, China
zhongzhenzhao2@gmail.com
(Translation and English editing by Eric Brand)

On May 26th, a group of over 800 scholars, scientists and leaders from around the world came together in Li Shizhen's hometown of Qichun to honor the man behind the Ming dynasty masterpiece, the *Ben Cao Gang Mu* 《本草綱目》 (Compendium of Materia Medica). While enthusiasm for the 500th anniversary celebration of Li Shizhen had been building for years among experts in the field of Chinese materia medica, none were prepared for the pinnacle event that was to come. Beyond the sights and ceremony itself, it felt as though the celebration marked a moment in history, an event that we will one day look back on as the pivotal moment when Li Shizhen moved into the mainstream.



The name of Li Shizhen and his *Ben Cao Gang Mu* have been well-known for centuries among scholars and medical scientists in both the East and West, but recent years have seen a spike in interest in LI, and his profound contributions are attracting more and more attention worldwide. For example, the *Ben Cao Gang Mu* was listed in UNESCO's Memory of the World Register in 2011, and Li Shizhen was honored at the UNESCO Center in Paris to mark the 500th anniversary just before the main event in Qichun (蕪春).



Why all the passion for a doctor that lived 500 years ago? In many ways, Li Shizhen embodies the
Archives (2008-2018): www.gp-tcm.org/news-list/

Elaboration of Monographs for TCM herbs by the European Pharmacopoeia (since 2008)

TCM-Working Party

建立传统中药研究团队

Chairman: Rudolf BAUER 鲍儒德

Surname	First name	Country
BALD	Melanie	EDQM
BAUER	Rudolf	Austria
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GASSER	Uwe Michael	Germany
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GUO	De-An	China
HOENOW	Ruth	Germany
KEITEL	Susanne	EDQM
LAENGER	Reinhard	Austria
REICH	Eike	Switzerland
ROSE	Ulrich	EDQM
SABATINI-SAMORI	Cristiana	EDQM
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WANG-TSCHEN	Shu-Yuan	Switzerland
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WHALEY	Michael	United Kingdom



Elaboration of Monographs for TCM herbs for the European Pharmacopoeia 欧洲药典的中草药专著的确立和发展

- >70 Monographs adopted by the Eur. Pharmacopoeia Commission
欧洲药典委员会已接纳>70篇专著
- Ca. 30 attributed to Specialists
约30人取得专家资格认证
- Monographs published as drafts in *PHARMEUROPA*
篇论文作为草案在欧洲药典官网上发表
- Monographs for *General Methods* 通用方法论著:
 - Chapter on processing: published 加工制作: 已发表
 - Test for aristolochic acids: published 马兜铃酸的检测: 已发表
 - Test for pyrrolizidine alkaloids: pending 咯烷类生物碱的测试: 待定



<http://www.edqm.eu/en/Knowledge-Database-707.html>

Monograph Number	2431
English Name	Chinese lovage (root and rhizoma)
French Name	Livèche de Chine (racine et rhizome de)
Latin Name	Angelicae sinensis radix
State of Work	1
Pharmeuropa	N/A
Published in Supplement	
Revision in progress	No
Chromatogram	N/A
Additional information	N/A
History	N/A



University of Munich

Prof. Hildebert Wagner

Hildebert Wagner · Stefanie Pöls · Talee Barghouti
Anton Staudinger · Dieter Melchart *Editors*

Chromatographic Fingerprint Analysis of Herbal Medicines

Thin-Layer and High Performance
Liquid Chromatography of Chinese Drugs

Volume 5

Springer



TLC and HPLC methods for quality control of Chinese herbs

- Monographs for analytical investigation of >140 Chinese herbs (in 5 Volumes)
- TLC, HPLC and GC analytical methods
- TLC results are shown in numerous colour figures.
- Bioactive constituents, pharmacological and biological activities as well as their therapeutic applications are outlined



Pathogens and Disease, 75, 2017, ftx065

doi: 10.1093/femspd/ftx065

Advance Access Publication Date: 20 June 2017

Short Communication

Lupeol from *Hemidesmus indicus* inhibits HIV-1

Ribonuclease H activity binding to a novel RT binding site

SHORT COMMUNICATION

Multi-target activity of *Hemidesmus indicus* decoction against innovative HIV-1 drug targets and characterization of Lupeol mode of action

Francesca Esposito^{1,†}, Manuela Mandrone², Claudia Del Vecchio³, Ilaria Carli³, Simona Distinto¹, Angela Corona^{2,†}, Mariacaterina Lianza², Dario Piano¹, Massimo Tacchini⁴, Elias Maccioni¹, Filippo Cottiglia¹, Elisa Saccon³, Ferruccio Poli², Cristina Parolin³ and Enzo Tramontano^{1,5,*}

¹Department of Life and Environmental Sciences, University of Cagliari, 09042 Monserrato, Italy, ²Department of Pharmacy and Biotechnologies, University of Bologna, 40126 Bologna, Italy, ³Department of Molecular Medicine, University of Padova, 35121 Padova, Italy, ⁴Department of Life Sciences and Biotechnology, University of Ferrara, 44100 Ferrara, Italy and ⁵Genetics and Biomedical Research Institute, National Research Council (CNR), 09042 Monserrato, Cagliari, Italy

*Corresponding author: Department of Life and Environmental Sciences, University of Cagliari, Cittadella Universitaria di Monserrato SS554, 09042 Monserrato (Cagliari), Italy. Tel: +39-070-6754538; Fax: +39-070-6754536; E-mail: tramont@unica.it

One sentence summary: This article describes a promising approach to treat HIV-1 with a multi-pronged mechanism, targeting both the RT associated RNase H and RNA dependent DNA polymerase activities and the α -glucosidase.

Editor: Alfredo Garzino-Demo

†Francesca Esposito, <http://orcid.org/0000-0001-9725-7977>

†Angela Corona, <http://orcid.org/0000-0002-6630-8636>

4 Pathogens and Disease, 2017, Vol. 75, No. 6

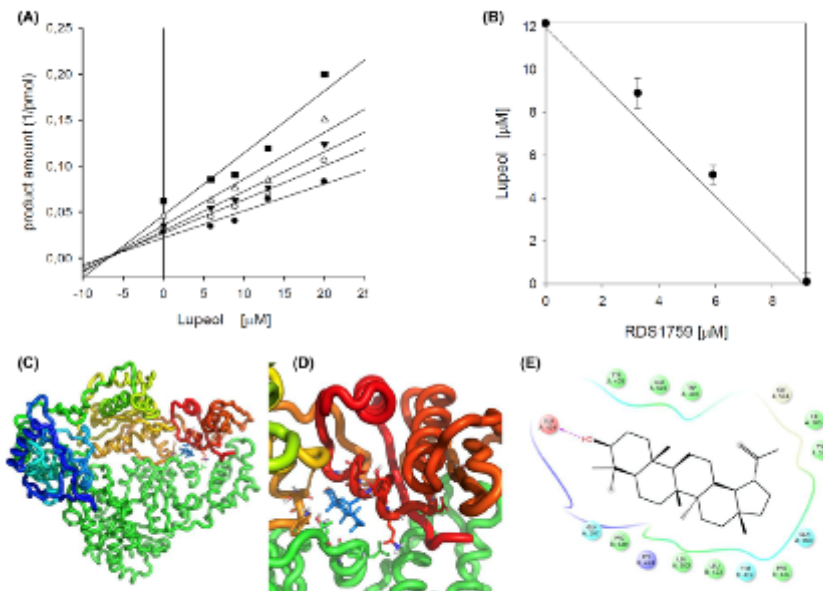


Figure 1. (A) Yeast two-hybrid analysis. Combination of Lupeol and RDS1750 on HIV-1 RT-associated RNase H activity. HIV-1 RT was incubated in the presence of lupeol alone (filled circles) or combined with increasing concentrations of RDS1750: 2.5 μ M (open circles), 4.6 μ M (inverted filled triangles), 6.6 μ M (inverted open triangles) and 10 μ M (filled squares). (B) Isothermogram analysis. Effect of combination of Lupeol and RDS1750 on the HIV-1 RT-associated RNase H activity. (C, D) Lupeol putative binding mode. C: Lupeol HIV-1 RT complex; D: close up into the Lupeol binding site; E: corresponding 2D representation and binding pocket interacting residues: green, hydrophobic; cyan, polar; violet, positive; red, negative charged residues.



RESEARCH ARTICLE

Prenylated phloroglucinols from *Hypericum scruglii*, an endemic species of Sardinia (Italy), as new dual HIV-1 inhibitors effective on HIV-1 replication

Cinzia Sanna¹*, Monica Scognamiglio², Antonio Fiorentino³, Angela Corona¹, Vittoria Graziani³, Alessia Caredda¹, Pierluigi Cortis¹, Mariofilippo Montisci¹, Elisa Rita Ceresola⁴, Filippo Canducci^{4,5}, Ferruccio Poli⁶, Enzo Tramontano¹, Francesca Esposito¹

1 Department of Life and Environmental Sciences, University of Cagliari, Cagliari, Italy, 2 Max Planck Institute for Chemical Ecology—Beutenberg Campus, Jena, Germany, 3 Department of Environmental Biological and Pharmaceutical Sciences and Technologies, University of Campania, Caserta, Italy, 4 Department of Biotechnology and Life Sciences, University of Insubria, Varese, Italy, 5 Laboratory of Microbiology, San Raffaele Hospital, IRCCS, Milan, Italy, 6 Department of Pharmacy and Biotechnology, University of Bologna, Bologna, Italy

Compounds from *Hypericum scruglii* inhibit HIV-1 replication Targeting both Ribonuclease H and Integrase activities

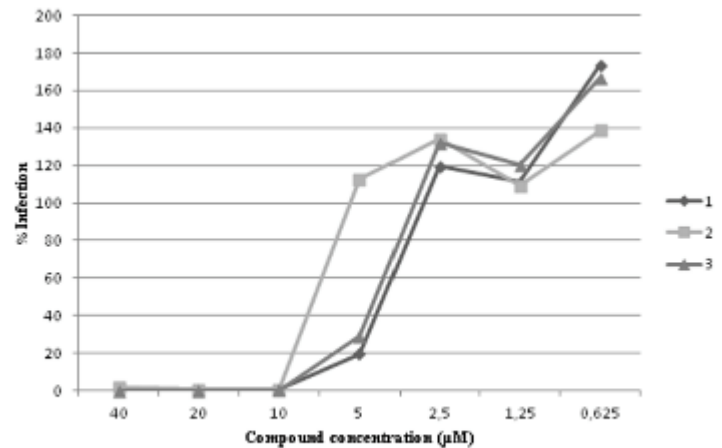


Fig 4. Antiviral activity of compounds 1, 2 and 3 on HIV-1 laboratory strain in TZM-bl cells. Cells were infected with 300 TCID50/mL and treated with compounds isolated from *H. scruglii* at seven different concentration. EC₅₀ values ranged from 3.5 to 8 µM. Only active compounds were shown.

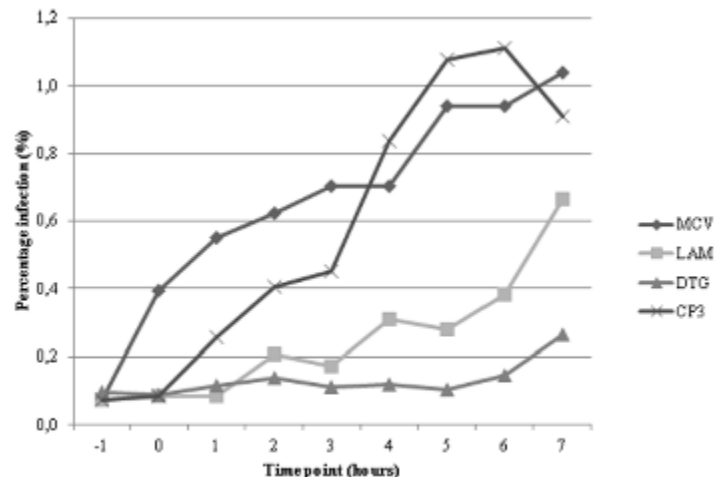


Fig 5. Time-of-addition assay. The target of the antiviral compound 3 (Cp3) was identified by comparing its activity in the title scale to those of reference drugs: Maraviroc (MCV, entry inhibitor), Lamivudine (LAM, RT inhibitor), Dolutegravir (DTG, IN inhibitor). Cp3 was ineffective once the virus retrotranscribed its genome.



Natural Product Kuwanon-L Inhibits HIV-1 Replication through Multiple Target Binding

Riccardo Martini^{+, [a]} Francesca Esposito^{+, [b]} Angela Corona,^[b] Roberto Ferrarese,^[c] Elisa Rita Ceresola,^[d] Laura Visconti,^[c] Cristina Tintori,^[a] Alessandro Barbieri,^[a] Andrea Calcaterra,^[e] Valentina Iovine,^[e] Filippo Canducci,^[c, d] Enzo Tramontano,^[b] and Maurizio Botta^{*, [a, f]}

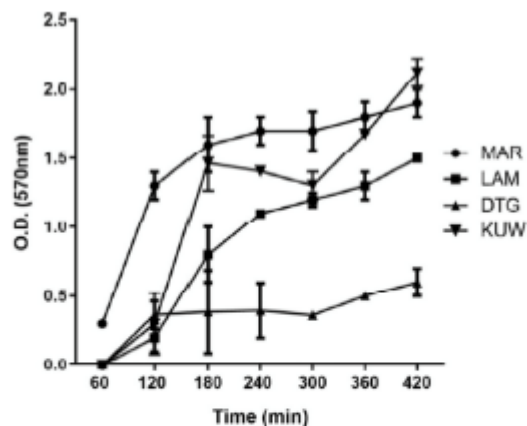


Figure 1. TOA assay. MAR: maraviroc. LAM: lamivudine. DTG: dolutegravir. KUW: kuwanon-L. O.D: optical density measured on TZM-bl indicator cell lines 48 h post-infection by use of the CPRG assay. Means \pm SEMs of two independent experiments. Each compound was tested in quadruplicate in each experiment.



PUBLICATIONS RELATED TO TCM plants and constituents

1. Guccione C., Ros G., Gallori S., Bergonzi MC., Bilia AR. Rapid and Efficient Extraction and HPLC Analysis of Sesquiterpene Lactones from *Aucklandia lappa* Decne. Root Nat Prod Comm. 2017, 12: 213 – 216.
2. Bergonzi MC, Righeschi C, Isacchi B, Bilia AR. Identification and quantification of constituents of *Gardenia jasminoides* Ellis (Zhizi) by HPLC-DAD-ESI-MS. Food Chem. 2012 Sep 15;134(2):1199-204.
3. Karioti A, Timoteo P, Bergonzi MC, Bilia AR. A Validated Method for the Quality Control of *Andrographis paniculata* Preparations. Planta Med. 2017 Oct;83(14-15):1207-1213.
4. Graverini G, Piazzini V, Landucci E, Pantano D, Nardiello P, Casamenti F, Pellegrini-Giampietro DE, Bilia AR, Bergonzi MC. Solid lipid nanoparticles for delivery of **andrographolide** across the blood-brain barrier: in vitro and in vivo evaluation. Colloids Surf B Biointerfaces. 2018 Jan 1;161:302-313. doi: 10.1016/j.colsurfb.2017.10.062.
5. Guccione C, Oufir M, Piazzini V, Eigenmann DE, Jähne EA, Zabela V, Faleschini MT, Bergonzi MC, Smiesko M, Hamburger M, Bilia AR. **Andrographolide**-loaded nanoparticles for brain delivery: Formulation, characterisation and in vitro permeability using hCMEC/D3 cell line. Eur J Pharm Biopharm. 2017 Oct;119:253-263. doi: 10.1016/j.ejpb.2017.06.018.



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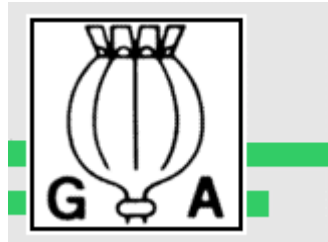


University of Florence Prof. Anna Rita Bilia

PHYTOLAB Some International Involvements

Society for Medicinal Plant and Natural Product Research

President: Prof. A.R. Bilia



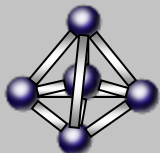
<http://www.ga2018.cn>



The 66th
Annual Meeting of the Society for Medicinal Plant and
Natural Product Research (GA)

jointly with
The 11th Shanghai International Conference on Traditional
Chinese Medicine and Natural Medicine (S-TCM)

August 26-29th, Parkyard Hotel Shanghai, China



TCM Research
Cluster Austria



Life Style
Associated
Diseases - the
Potential of TCM
and MM for the
treatment of colo-
rectal cancer



Anti-inflammatory
potential of TCM
drugs – new
bioactive
compounds and
quality issues



Theory,
Methodology,
and Structure of
TCM in Respect
to Lifestyle
Related
Diseases

Sino-Austrian
TCM Research
on Lifestyle-
Related
Diseases –
Innovative
Acupuncture
Research



Interaction of
Chinese herbal
medicine with the
human intestinal
microbiome in
order to treat and
prevent lifestyle
related diseases



Sino-Austrian TCM research on lifestyle related diseases

Evaluation of Chinese
herbal medicine
therapy of lifestyle
related diseases:
Myocardial infarction,
prostate cancer and
depression - from
biomedical research to
translational medicine



Novel analytical
tools for the quality
assessment of
Chinese herbs with
metabolic, immune
related
neuromodulatory
effects



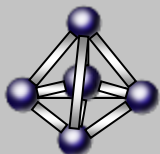
Identification of
natural products
from Paridis rhi-
zoma (Chonglou)
as liver X receptor
(LXR) and
farnesoid X
receptor (FXR)
ligands



Sino-Austrian TCM
research on lifestyle
related diseases:
Research on the
ancient Chinese
medicinal formula
Fang Feng Tong
Sheng as modern
therapeutic against
gout



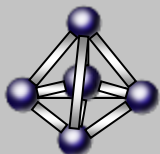
Sino-Austrian TCM research on lifestyle related diseases



TCM Research
Cluster Austria



PP	Principal Investigator (Austria)	PI and Project Partners in China	Topic
01	Univ.-Prof. Dr. Friedrich Wallner, Sigmund-Freud-University, Vienna	Prof. Jingqing Hu, Institute of Basic Theory for Chinese Medicine, CACMS, Prof. Shijie Xu, CAMS, Prof. Xiaotong Ma, CAMS, Dr. Song Du, CAMS	Theory, Methodology, and Structure of TCM in Respect to Lifestyle Related Diseases
02	Univ.-Prof. DDr. Gerhard Litscher, TCM Research Center Graz, Medical University of Graz	Peijing RONG, Prof. D.C.M. Ph.D., Institute of Acupuncture and Moxibustion, CACMS, Xinyan GAO, Assoc.Prof. M.D. Ph.D., Department of Physiology, Institute of Acupuncture and Moxibustion, CACMS, Xiaochun YU, Prof. M.D. Ph.D., Institute of Acupuncture and Moxibustion, CACMS, Bing ZHU, Prof. M.D. Ph.D., Institute of Acupuncture and Moxibustion, CACMS; Hua WANG, Prof. M.D. Ph.D., Hubei University of Chinese Medicine, Wuhan, Fengxia LIANG, Prof. Ph.D., Institute of Acupuncture and Moxibustion, Hubei University of Chinese Medicine, Wuhan	Sino-Austrian TCM Research on Lifestyle-Related Diseases – Innovative Acupuncture Research
03	Univ.-Prof. Dr. Rudolf Bauer, Institute of Pharmaceutical Sciences, TCM Research Center Graz, University of Graz	Prof. Dr. TONG Xiaolin, Endocrinology, Guang'anmen Hospital, CACMS, Dr. TIAN Jiaying, Endocrinology, Guang'anmen Hospital, CACMS, Academician Prof. Dr. HUANG Luqi, Institute of Chinese Materia Medica, CACMS, Dr. Yanqin Bian, Institute of Basic Research in Clinical Medicine, CACMS, Prof. Dr. Xijun WANG, Heilongjiang University of Chinese Medicine, Harbin, Prof. Dr. Yong Liu, Beijing University of Chinese Medicine	Interaction of Chinese herbal medicine with the human intestinal microbiome in order to treat and prevent lifestyle related diseases
04	Assoc. Univ.-Prof. Dr. Adelheid H. Brantner, Institute of Pharmaceutical Sciences / Pharmacognosy, University of Graz	Prof. Baolin Bian, Institute of Chinese Materia Medica, CACMS	Sino-Austrian TCM research on lifestyle related diseases: Research on the ancient Chinese medicinal formula Fang Feng Tong Sheng as modern therapeutic against gout
05	Univ.-Prof. Dr. Verena Dirsch, Department of Pharmacognosy, University of Vienna	Prof Dr. Huimin Gao, Institute of Chinese Material Medica, CACMS	Identification of natural products from Paridis rhizoma (Chonglou) as liver X receptor (LXR) and farnesoid X receptor (FXR) ligands
06	Univ.-Prof. Dr. Christian Huck, O. Univ.-Prof. Dr. Günther Bonn; Institute of Analytical Chemistry and Radio-chemistry, CCB-Center of Chemistry and Biomedicine, University of Innsbruck	Prof. Dr. Bin Yang, Institute of Chinese Materia Medica, CACMS	Novel analytical tools for the quality assessment of Chinese herbs with metabolic, immune related neuromodulatory effects
07	Assoc. Prof. Dr. Yan Ma, Division of Comparative Immunology and Oncology, Department of Pathos- physiology and Allergy Research, Center of Pathophysiology, Infectiology & Immunology, Vienna General Hospital, Medical University of Vienna	Prof. Dr. Jiping Fan, CACMS, Prof. Dr. Dazhuo Shi, Xiyuan Hospital, CACMS, Assoc. Prof. Lixia Lou, Beijing Dongzhimen Hospital, Beijing University of Chinese Medicine, Dr. Lu Liu, Beijing Traditional Chinese Medicine Hospital, Beijing Capital Medical University	Evaluation of Chinese herbal medicine therapy of lifestyle related diseases: Myocardial infarction, prostate cancer and depression - from biomedical research to translational medicine
08	Assoc. Prof. Dipl. Ing. Dr. Wolf Dieter Rausch, Institute for Chemistry and Biochemistry, University of Veterinary Medicine, Vienna	Dr. Shanshan Guo, Institute of Chinese Materia Medica, CACMS, Prof. Cai Peking University Health Center, Prof. Weimin Tong, Department of Pathology, Center for Experimental Animal Research, Institute of Basic Medical Sciences, CACMS and Peking Union Medical College, Prof. Baoquan Bao, Inner Mongolian Medical University, Hohot	Life Style Associated Diseases - the Potential of TCM and MM for the treatment of colorectal cancer
09	Univ.-Prof. Dr. Hermann Stuppner, Institute of Pharmacy/ Pharmacognosy, CCB-Center of Chemistry and Biomedicine University of Innsbruck	Prof. Dr. Jiannong Wang, Xiyuan Hospital, CACMS	Anti-inflammatory potential of TCM drugs – new bioactive compounds and quality issues

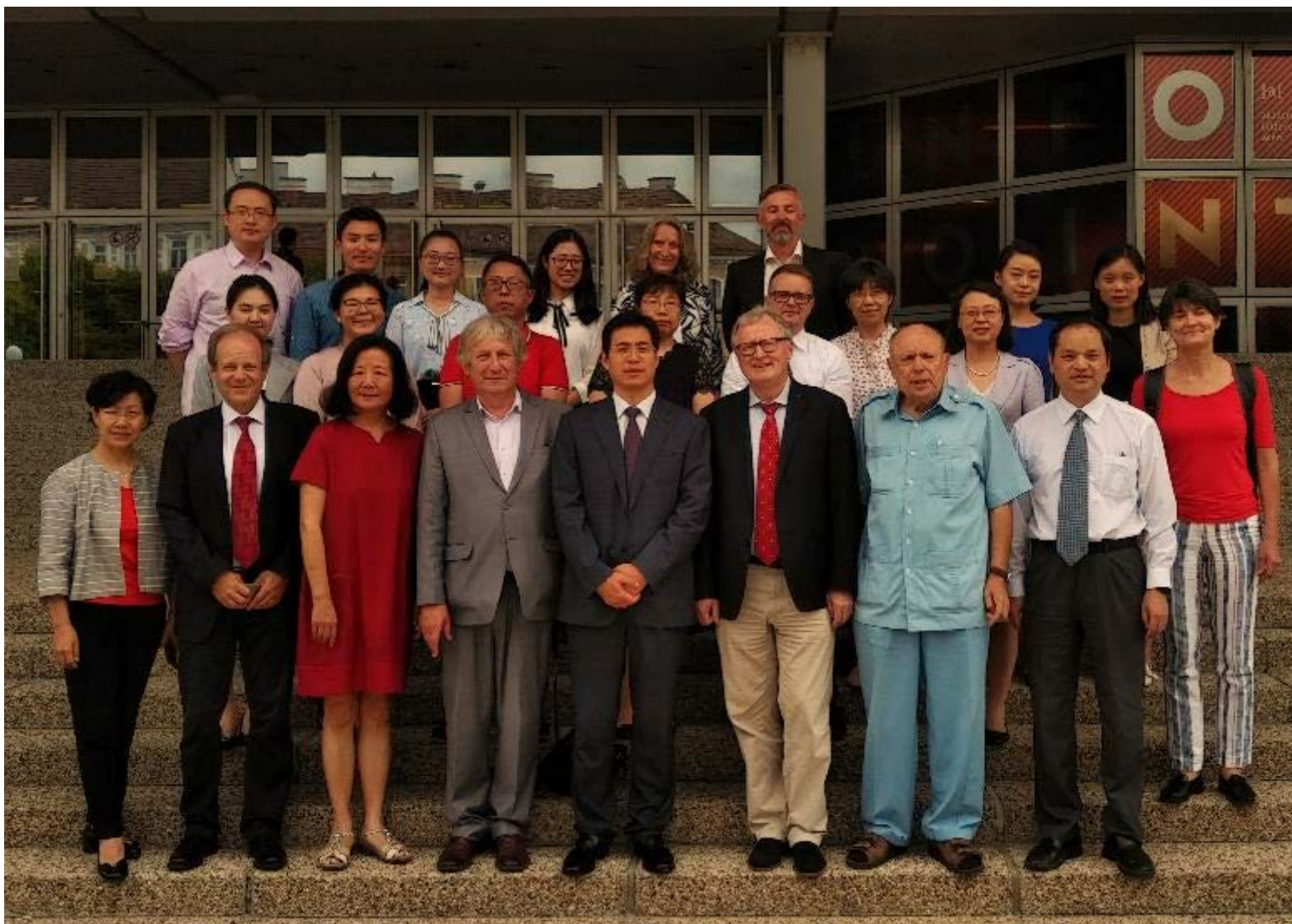


TCM Research
Cluster Austria



Sino-Austrian TCM research on lifestyle related diseases

Progress Meeting, Vienna July 10th, 2018





中药全球化联盟

CONSORTIUM FOR GLOBALIZATION OF CHINESE MEDICINE



TCM at the Medical University of Vienna

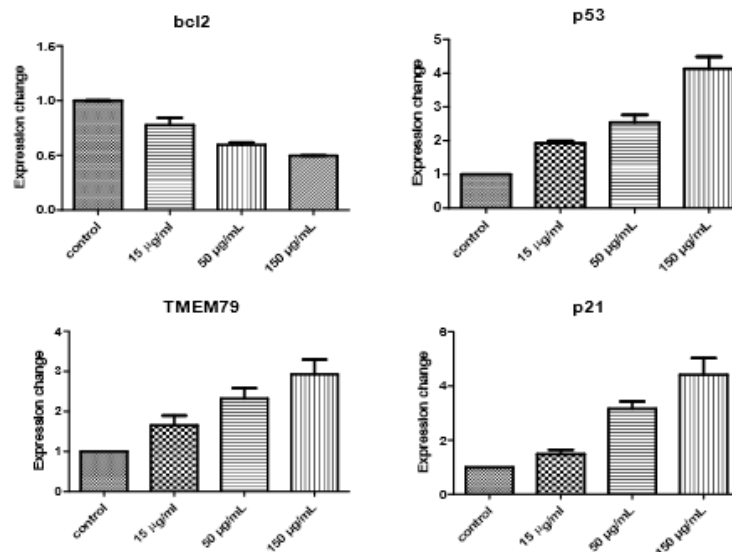
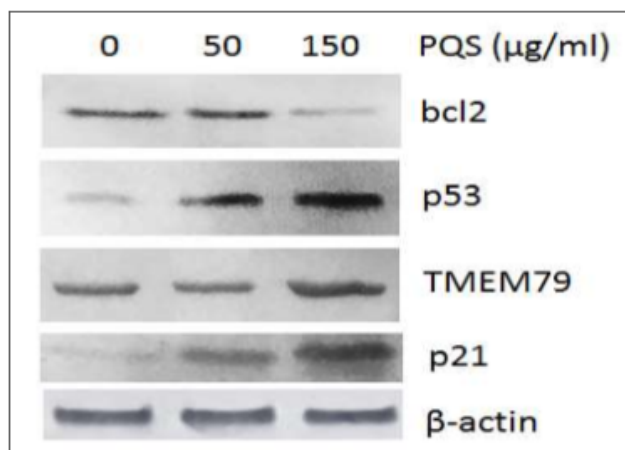
Yan Ma

Division of Comparative Immunology and Oncology
Department of Pathophysiology and Allergy Research
Center of Pathophysiology, Infectiology & Immunology
Vienna General Hospital
Medical University of Vienna



TCM herbal medicine research

Anti-tumor effects of *Panax quinquefolius* saponins (PQS) on prostate cancer cells DU145.



PQS treatment regulated the expression level of multiple cancer-related genes: bcl2, p53, TMEM79 and p21.

TCM Education at the Medical University of Vienna School of TCM (MSc) since 2010



TCM Education at the Vienna Children University

- We gave two lectures for the young students at the Vienna Children University with the topic "What are Chinese medicine and Chinese culture?" in summer 2018.
- Around 120 children aged from 7 to 12 years visited the lectures.



Exchange of TCM knowledge between Universities

The Delegation of China Academia of Chinese Medicine Sciences with Vice President Longhui Yang and his team visited the Vienna General Hospital, Medical University of Vienna in July 2018 for cooperation in education, research and clinical studies.





Research Unit for Complementary



and Integrative Laser Medicine

互补医学及激光综合医学科研中心

Sino-Austrian TCM Research on Lifestyle-Related Diseases – Innovative Acupuncture Research

Gerhard Litscher, Univ-Prof MSc PhD MDsc

Research Unit for Complementary and Integrative Laser Medicine,
Research Unit of Biomedical Engineering in Anesthesia and Intensive Care Medicine,
and TCM Research Center Graz, Medical University of Graz, Graz , Austria

互补医学及激光综合医学科研中心
格拉兹医科大学 麻醉和重症监护医学院
生物医学技术研究所及中国传统医学科研中心

G. Litscher et al.: Clinical Acupuncture Studies – Lifestyle-related Diseases - 2018

Gender Differences in Laser Acupuncture

2018 Dr. Wang Junying



Post-Stroke Patients Laser vs. Needle Acup.

2018 Dr. Zhang Xiaoning
Prof. Jing Xianghong

in prep.

Burnout Syndrome – Acup. & Moxib.

2018 Study Protocol; 2016 Study
Prof. Liang Fengxia
Prof. Wang Hua



Low Back Pain & Acup.

2018 Review (Tiaw-Kee Lim)
Prof. Ma Yan



Tinnitus – Acup.

2018 Dr. Jian-Feng Tu
Prof. Liu Cun-Zhi
Beijing Hosp. TCM, Dongfang Hosp.

subm.

Lifestyle Myopia – Acup. & Moxib.

2018 Dr. Shang Xiaojuan
Prof. Chen Luquan
Beijing Tongren Hospital

subm.

Protective Effects – Electroacupuncture Animal Experiments

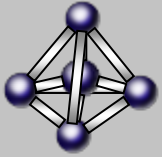
PLA General Hospital

subm.

Protective Effects – Electroacupuncture Animal Experiments

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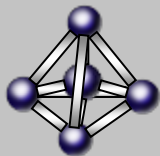
Sino-Austrian TCM research on lifestyle related diseases

Project Part 3

**Interaction of Chinese herbal
medicine with the human intestinal
microbiome in order to treat and
prevent lifestyle related diseases**

PI-Austria: Prof. Dr. Rudolf Bauer, Graz

PI-China: Prof. Dr. TONG Xiaolin, Endocrinology,
Guang'anmen Hospital, CACMS



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ORIGINAL ARTICLE

Structural modulation of gut microbiota during alleviation of type 2 diabetes with a Chinese herbal formula

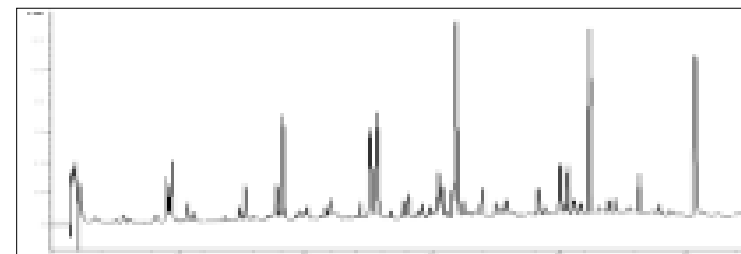
Jia Xu^{1,4}, Fengmei Lian^{2,4}, Linhua Zhao², Yufeng Zhao³, Xinyan Chen², Xu Zhang¹, Yun Guo², Chenhong Zhang¹, Qiang Zhou², Zhengsheng Xue¹, Xiaoyan Pang¹, Liping Zhao^{1,3} and Xiaolin Tong²

¹State Key Laboratory of Microbial Metabolism, School of Life Sciences and Biotechnology, Shanghai Jiao Tong University, Shanghai, People's Republic of China; ²Guang'anmen Hospital, China Academy of Chinese Medical Sciences, Beijing, People's Republic of China and ³Ministry of Education Key Laboratory of Systems Biomedicine, Shanghai Center for Systems Biomedicine, Shanghai Jiao Tong University, Shanghai, People's Republic of China



Gegen Qinglian Decoction (GQD): Gegen 葛根 (Radix Puerariae), Huangqin 黃芩 (Radix Scutellariae), Huanglian 黃連 (Rhizoma Coptidis), and Zhi Gancao 炙甘草 (Honey-fried Licorice Root)

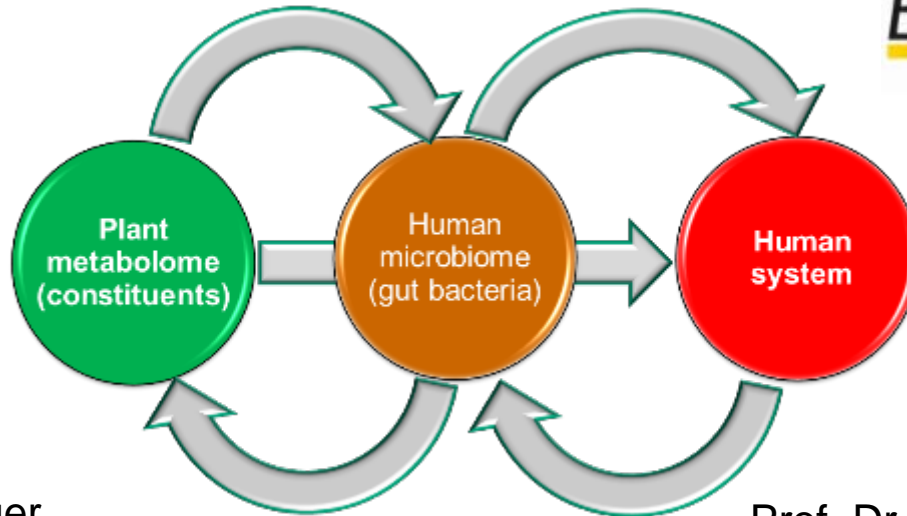
A treatment for diarrhea in Shang Han Lun since the East Han Dynasty: Zhongjing Zhang (AD 150–219)



Metabolomics platform for investigations of microbiome – drug interactions



Prof. Dr. Rudolf Bauer



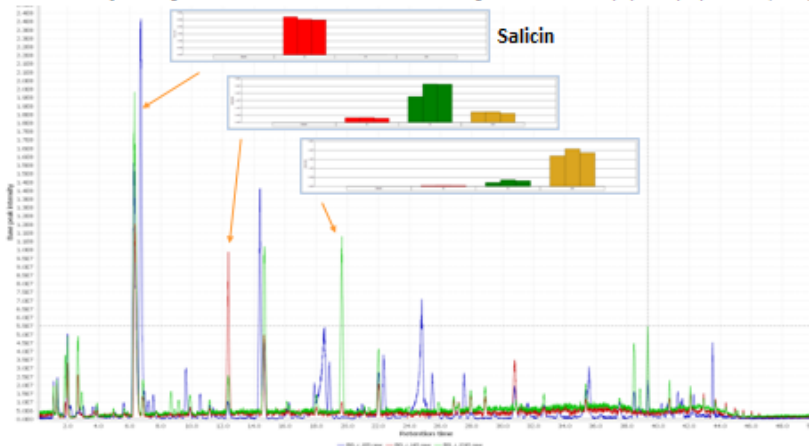
BioTechMed[®]
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Prof. Dr. Christine Moissl-Eichinger

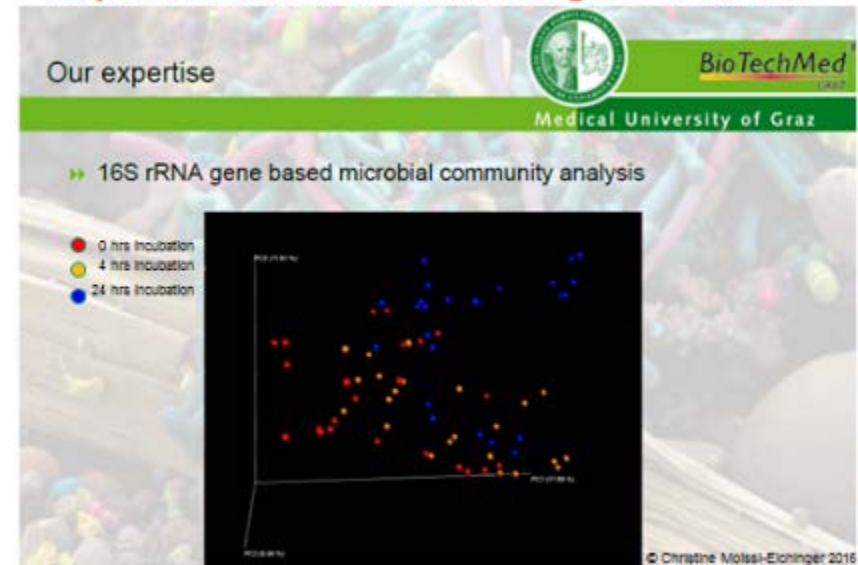
Metabolic transformation of Salix extract by fecal suspension

Eva Pferschy-Wenzig, Kaisa Koskinen, Christine Moissl-Eichinger, Rudolf Bauer, *paper in preparation* (2018)



Salix 70% ethanol extract 2 mg/ml fecal suspension; background subtracted LC-HRMS chromatograms ; Overlay 0h (blue), 4h (red), 24h (green)

Impact of willow bark extract on gut microbiome



Eva Pferschy-Wenzig, Koskinen, Christine Moissl-Eichinger, Rudolf Bauer, *paper in preparation* (2018)

Metabolomics platform for investigations of microbiome – drug interactions



A Combined LC-MS Metabolomics- and 16S rRNA Sequencing Platform to Assess Interactions between Herbal Medicinal Products and Human Gut Bacteria *in Vitro*: a Pilot Study on Willow Bark Extract

OPEN ACCESS

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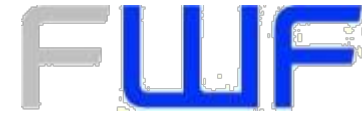
Anna Karolina Kiss,
Medical University of Warsaw, Poland

Eva-Maria Pferschy-Wenzig¹, Kaisa Koskinen^{2,3}, Christine Moissl-Eichinger^{2,3*} and Rudolf Bauer^{1,2*}

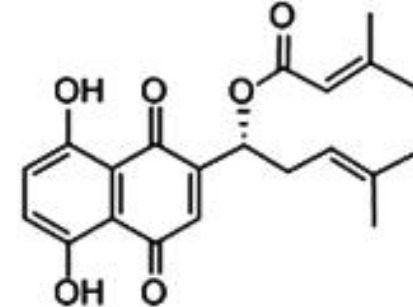
¹ Department of Pharmacognosy, Institute of Pharmaceutical Sciences, University of Graz, Graz, Austria, ² Section of Infectious Diseases and Tropical Medicine, Department of Internal Medicine, Medical University of Graz, Graz, Austria,

³ BioTechMed-Graz, Graz, Austria

Elucidation of specific cytotoxic effects of dimethylacrylshikonin in melanoma cells



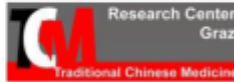
Project number P 27505 (28.01.2015-27.01.2018)
PI: Rudolf BAUER



University of Graz –
Institute of Pharmaceutical Sciences
Department of Pharmacognosy

Responsibilities:
Applicant, derivatization of shikonin,
Pharmacological *in vitro* assays

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Medical University of Graz –
Center for Medical Research, Core Facility of
Flow Cytometry

Responsibilities:
Mechanistic studies, *in vitro* experiments

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The University of Queensland– School of
Medicine, Dermatology Research Centre

Responsibilities:
Supervisor in melanom biology

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ZENTRUM FÜR MEDIZINISCHE
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*Prof. Schaider works mainly in Australia, but is still several months per year at the Medical University of Graz and, therefore, also personally available for the research team.

Medical University of Graz –
Internal Medicine, Department of Hematology

Responsibilities:
Mechanistic studies, *in vitro* experiments

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Phone: +43 316 385 72816
E-mail: alexander.deutsch@medunigraz.at

Novel mechanisms of adaptation to endothelial stress

Project number P 27682 (01.03.2015-28.02.2018)
PI: Valery BOCHKOV (Co-PI: Rudolf BAUER)



TCM Research Center Graz, Herbal Medicine, University of Graz | Prof. Rudolf Bauer

Published papers on TCM related topics in 2017 and 2018:

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- Wang, L., Palme, V., Schilcher, N., Ladurner, A., Heiss, E.H., Stangl, H., Bauer, R., Dirsch, V.M., Atanasov, A.G. The Dietary Constituent Falcarindiol Promotes Cholesterol Efflux from THP-1 Macrophages by Increasing ABCA1 Gene Transcription and Protein Stability. *Frontiers in Pharmacology* 8, 596 (2017), DOI=10.3389/fphar.2017.00596
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- Xu, D., Lin, Y., Bauer, R., Chen, H.-R., Yang, R.-Q., Zou, H.-Q., Yan Y.H. Organoleptic evaluation of *Amomi Frutuosus* and its further background verified via morphological measurement and GC coupled with E-nose. *Evidence-Based Complementary and Alternative Medicine*, Article ID 4689767, 9 pages (2018); doi: 10.1155/2018/4689767
- Bauer, R. Pharmakognostische Untersuchungen zum Einfluss von Paozhi-Methoden auf die Inhaltsstoffe von chinesischen Arzneidrogen. In: *Paozhi: Die Aufbereitung chinesischer Arzneimittel - Methoden und klinische Anwendung* (Eds. Hu, C., Nögel, R., Hummelsberger, J., Engelhardt, U.) Springer-Verlag Berlin Heidelberg, pp 88-95 (2018); DOI 10.1007/978-3-662-55846-1



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Changjiang Hu · Rainer Nögel
Josef Hummelsberger · Ute Engelhardt *Hrsg.*

Paozhi: Die Aufbereitung chinesischer Arzneimittel

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