

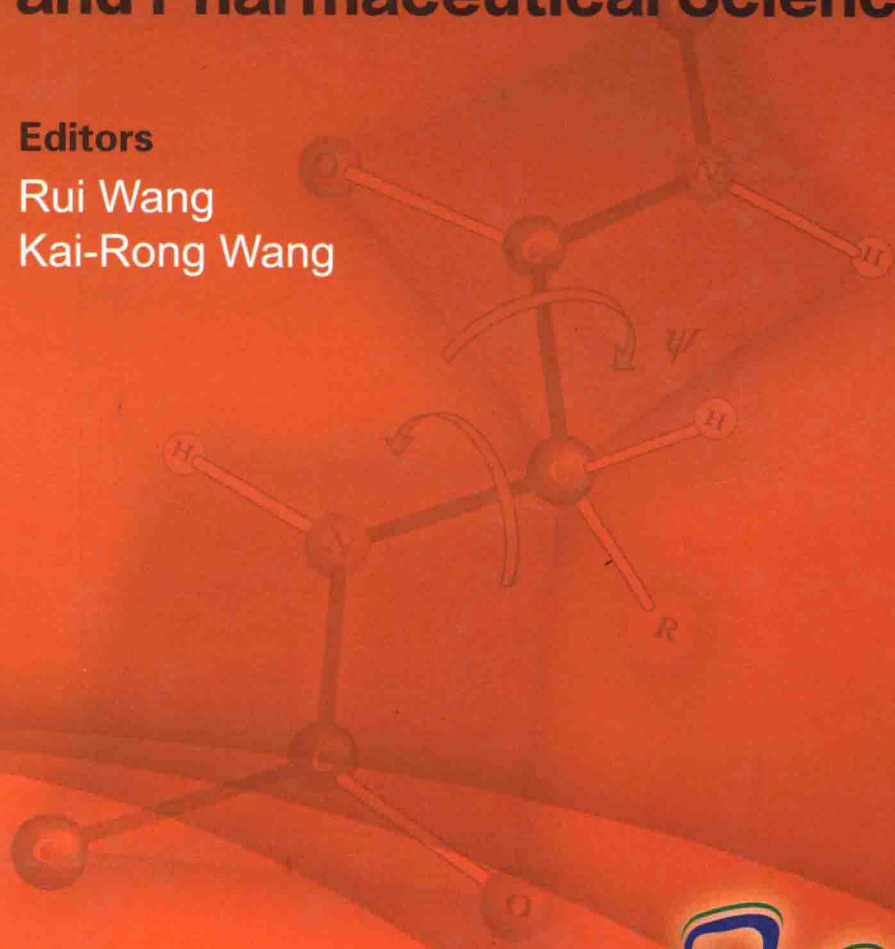
Peptides

Chemistry, Biology
and Pharmaceutical Sciences

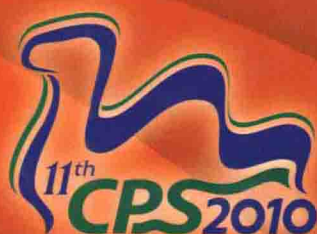
Editors

Rui Wang

Kai-Rong Wang



Chemical Industry Press



Peptides

Chemistry, Biology and Pharmaceutical Sciences

Proceedings of the 11th Chinese International Peptide Symposium
July 5-8, 2010, Lanzhou, China

Edited by

Rui Wang and Kai-Rong Wang

School of Basic Medical Sciences, Key Laboratory of Preclinical Study for New
Drugs of Gansu Province, Lanzhou University, Lanzhou, China



Chemical Industry Press

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Peptides

**Chemistry, Biology
and Pharmaceutical Sciences**

Preface

The 11th Chinese International Peptide Symposium (CPS-2010), hosted by Lanzhou University, was held in Lanzhou, China, July 5-8, 2010. More than 300 participants, from 12 countries and districts as well as represents from 30 or so related companies attended this symposium. Thus, it was gratifying to see that this meeting retained both its international flavor and participants loyalty at a time when there are a great many symposia held each year on similar subjects. The goal of this symposium was to provide a forum for exchange of ideas, review of the progress in the field of peptide research, encourage the cooperation between the international and Chinese scientific communities. We believe that this goal had been achieved.

The scientific program, thanks to the insights and efforts of the program committee, was extraordinary rich, diverse and exciting. It was comprised of 14 sessions with 22 plenary lectures, 37 invited lectures and 116 poster presentations, concerning bioactive peptides, peptide immunology, structure and conformation of peptides and proteins, molecular diversity and peptide libraries, synthetic methods, de novo design and synthesis of proteins and peptides, ligand-receptor interactions, the chemistry-biology-interface, self-assembling peptides and challenging problems in peptides.

Dr. John D. Wade and Dr. Yanmei Li were the recipients of 'Cathay Award' sponsored by H. H. Liu Education Foundation, offering their seminal contributions to peptide science and the Chinese International Peptide Symposium. Dr. Saburo Aimoto and Dr. Luhua Lai were the recipients of 'Xiaoyu Hu Memorial Award' sponsored by Hainan Zhonghe (Group) Co. Ltd, offering their great contributions in peptide science, peptide application and Chinese International Peptide Symposium. Especially, it should be mentioned that 'Xiaoyu Hu Memorial Award' was first set up at the 11th CPS to commemorate Professor Xiaoyu Hu for his great contribution to the development of peptide science and peptide application in China. Four young outstanding scientists were selected by the International Program Committee to receive the Young Peptide Scientist Award, which was sponsored by Hainan Zhonghe (Group) Co. Ltd.

The enthusiastic cooperation and prominent contributions were gratifying and the active response of the invited speakers contributed to the success of the symposium. The presentations were of excellent caliber and represented the most current and significant aspects of peptide science.

I would like to acknowledge academicians of chinese academy of sciences, Professor Youshang Zhang and Professor Yundong Wu for their kindness in supporting and serving as the chairman of the awarding committee for the ‘Cathay Award’ and ‘Xiaoyu Hu Memorial Award’ respectively. The success of the 11th CPS was largely due to the dedication, enthusiasm and hard work of the local organizing committee, who for the most part consisted of volunteers. As Symposium Chair, I am appreciated for their contributions very much.

We are especially grateful for the generous financial assistance of Sponsors who are listed on the following pages. It is their support that enabled this symposium perfect. Special thanks go to the National Natural Science Foundation of China and Lanzhou University.

Rui Wang

The Eleventh Chinese Peptide Symposium (CPS-2010)

July 5-8, 2010, Lanzhou, China

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Key Laboratory of Preclinical Study for New Drugs of Gansu Province

The 11th Chinese International Peptide Symposium organizing committee also greatly appreciates the support and generous financial support of the following organizations:

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CPS-2010	Luhua Lai <i>Peking University, China</i>	Saburo Aimoto <i>Osaka University, Japan</i>
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Chinese Peptide Symposium

Symposium	Year	Chairperson(s)	Location
First	1990	Yucang Du <i>Shanghai Institute of Biochemistry, CAS</i>	Shanghai
Second	1992	Yucang Du <i>Shanghai Institute of Biochemistry, CAS</i>	Hangzhou
Third	1994	Guishen Lu <i>Institute of Meteria Medica, CAMS</i>	Beijing
Fourth	1996	Xiaojie Xu & Yunhua Ye <i>Peking University</i>	Chengdu
Fifth	1998	Xiaoyu Hu & Rui Wang <i>Lanzhou University</i>	Lanzhou
Sixth	2000	Jiecheng Xu & Hongyan Xu <i>Shanghai Institute of Organic Chemistry, CAS</i>	Huangshan
Seventh	2002	Yucang Du <i>Institute of Biochemistry & Cell Biology, Shanghai Institutes for Biological Sciences, CAS</i> James P. Tam <i>Nanyang Technological University, Singapore</i>	Dalian
Eighth	2004	Keliang Liu <i>Institute of Pharmacology and Toxicology</i> James P. Tam <i>Nanyang Technological University, Singapore</i>	Kunming
Ninth	2006	Dawei Ma & Hongyan Xu <i>Shanghai institute of Organic Chemistry, CAS</i>	Shanghai
Tenth	2008	Yanmei Li <i>Tsinghua University</i> Chuanguang Qin <i>Northwestern Polytechnical University</i>	Xi'an
Eleventh	2010	Rui Wang <i>Lanzhou University</i>	Lanzhou

Abbreviations

Abbreviations of common amino acid and units of measurements based on the IUPAC nomenclature are not enumerated. However, other abbreviations used in this proceedings are defined below:

ACE	angiotensin I converting enzyme
ACEI	angiotensin I converting enzyme inhibitory
Ach	γ -amino cyclohexylcarboxyl acid
ADM	driamycin
AFM	atomic force microscopy
AMD	Actinomycin D
AML	Acute myelogenous leukemia
AMP	antimicrobial peptide
ANOVA	one-way analysis of variance
ASODN	antisense oligodeoxynucleotide
ATP	adenosine triphosphate
Bcp	4'-[N-((4'-phenyl)-phenethyl)carbox-amido]phenylalanine
Boc	tert-butyloxycarbonyl
BOP	benzotriazole-1-yl-oxy-tris-(dimethylamino)-phosphonium hexafluorophosphate
Bzl	benzyl
CBD	chitin-bindingomain
CCK	cholecystokinin
Cd	cadmium
CD	circular dichroism
CF	carboxyfluorescein
CMC	critical micelle concentration
CPNP	cell penetrating non-peptides
CPPs	cell-penetrating peptides
CPS	Chinese Peptide Symposium
CT	caner-tesis
CTL	cytotoxic T lymphocyte
DAPI	4',6-diamidino-2-phenylindole

Dbcp	2',6'-dimethyl-4'-[<i>N</i> -((4'-phenyl)-phenethyl)carboxamido] phenylalanine
DBT	dibenzothiophene
DCC	dicyclohexycarbodiimide
DCM	dichloromethane
Dcp	3-(2,6-dimethyl-4-carbamoylphenyl)-propanoic acid
Dhp	3-(2,6-dimethyl-4-hydroxyphenyl)-propanoic acid
DIC	diisopropylcarbodiimide
DIEA	<i>N,N'</i> -diisopropylethylamine
DLS	dynamic light scattering
DMAP	4-dimethylaminopyridine
DMF	<i>N,N</i> -dimethylformamide
DMSO	dimethyl sulfoxide
Dmt	2',6'-dimethytyrosine
DNA	deoxyribonucleic acid
DPDS	2-dipyridyl disulfide
DPPA	dPPA Phosphoric acid diphenyl ester azide
DPPC	dipalmitoyl phosphatidylcholine
DPPG	1,2-dipalmitoyl-sn-glycero-3-phosphoglycerol
DTT	dithiothreitol
EDT	1,2-ethanedithiol
EEG	electroencephalogram
EI-MS	electron ionization mass spectrometry
ELISA	enzyme-linked immunosorbent assay
EM1	endomorphin 1
EM2	endomorphin 2
EMG	electromyogram
EPR	enhanced permeability and retention effect
ERK	extracellular signal regulated kinases
ESI-MS	electrospray ionization mass spectrometry
FAB-MS	fast atom bombardment mass spectrometry
FITC	fluorescein isothiocyanate
Fmoc	9-fluorenylmethoxy-carblonyl
GHSR-1a	Growth Hormone Secretagogue Receptor type 1a

GPCRs	G-protein-coupled receptors
GPI	guinea pig ileum
GSH	glutathione
HAT	histone acetyltransferase
HATs	histone acetyltransferases
HATU	<i>O</i> -(7-azabenzotriazol-1-yl)- <i>N,N,N,N</i> -tetramethyluronium hexafluorophosphate
HBTU	<i>O</i> -(1 <i>H</i> -benzotriazole-1-yl)- <i>N,N,N',N'</i> -tetramethyluronium hexafluorophosphate
HBV	hepatitis B virus
HCCA	α -cyano-4-hydroxycinnamic acid
HCCE	α -cyano-4-hydroxycinnamic methyl ester
HCTU	<i>O</i> -(6-Chloro-1-hydrocibenzotriazol-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate
HDAC	Histone deacetylase
HDL	high density lipoprotein
HDLP	HDAC-like protein
HFIP	1,1,1,3,3,3-hexafluoro-2-propanol
HIV	human immuno-deficiency virus
HK-1	hemokinin-1
HOAT	1-hydroxy-7-azabenzotriazole
HOBt	1-hydroxybenzotriazole
HOCT	1-hydroxy-1 <i>H</i> -1,2,3-riazole-carboxylate
HOObt	<i>N</i> -hydroxyoxodihydrobenzotriazine
HPLC	high performance liquid chromatography
h-RBCs	human red blood cells
i.c.v.	intracerebroventricular
i.v.	intravenously
IP	isoelectric point
IPTG	isopropyl-D-thiogalactoside
LDH	lactate dehydrogenase
LDL	low density lipoprotein
LPO	lipid peroxidation
LSD	least significant difference

MALDI-MS	matrix-assisted laser desorption mass spectrometry
MAP	mean arterial pressure
MBHA	methylbenzhydramine
(2 <i>S</i>)-Mdc _p	(2 <i>S</i>)-2-methyl-3-(2,6-dimethyl-4-carbamoylphenyl)-propanoic acid
(2 <i>S</i>)-Mdp	(2 <i>S</i>)-2-methyl-3-(2,6-dimethyl-4-hydroxyphenyl)-propanoic acid
MESNA	2-mercaptoethane sulfonic acid sodium salt
MIP	monomeric precursor
MMPs	matrix metalloproteinases
MMTS	methyl methanethiolsulfonate
MS	mass spectrometry
MST	marinostatin
MTT	3-(2-yl)-2,5-diphenyl-tetrazolium bromide
MVD	mouse vas deferens
MW	mass weight
NIRF	near infrared fluorescence
NKA	neurokinin A
NKB	neurokinin B
NMP	1-methyl-2-pyrrolidinone
NMR	nuclear magnetic resonance
NO	nitric oxide
NPFF	neuropeptide FF
NPS	neuropeptide S
NPSR	NPS receptor
NR	neutron reflection
OEM	oxyethylmercaptan
OR	opioid receptor
OSu	<i>O</i> -succinimide ester
PBMC	peripheral blood mononuclear cell
PBS	phosphate buffered saline
PCL-PEO	poly(ϵ -caprolactone)- <i>b</i> -poly(ethylene oxide)
PCO	protein carbonyl
PCR	polymerase chain reaction
PeF	perifornical nucleus
PEG	polyethylene glycol
PEG-PDLLA	poly(ethyleneglycol)blockpoly(D,L-lactide)
PFA	paraformaldehyde