Presenting Tuesday through Friday

Alagappa University

1 S. Karutha Pandian and R. Beema Shafreen: *Molecular Docking of Levofloxacin Derivatives Against Glucosyl Transferase (Gtfs) of Streptococcus pyogenes: Effects on Exopolysaccharide (EPS)*

2 Sanjeev Kumar Singh and Chandrabose Selvaraj: *Combined Approach of Ligand Based and Molecular Dynamics Simulation for Understand Suitable Drug Candidates for Sortase-A in Gram Positive Pathogens*

All India Institute of Medical Sciences

3 D. N. Rao and Geetanjali Gupta: *Developing New Mucosal Vaccine Strategy by Increasing Cytolytic CD4+/CD8+ T Cells Ratio Using B-T Constructs of Y. pestis in Microspheres*

Arabian Gulf University

4 Sonia Bourguiba-Hachemi; Dana Ashoor; and Dahmani Fathallah: *Production of Recombinant Soluble FcγRIIa (CD32), FcγRIIIa (CD16) and IgG Fc Region in Pichia pastoris*

Catholic University of Korea

5 Do Nyun Kim; Min Koo Seo; Hoyun Choi; Su Yeon Kim; Hee Jong Shin; A-Ran Yoon; Qian Tao; Sun Young Rha; and Suk Kyeong Lee: *Characterization of Naturally Epstein–Barr Virus-Infected Gastric Carcinoma Cell Line YCCEL1*

China Medical University

6 Hui-Chin Wen; Wei-Guang Liang; Sheng-Chieh Lin; Hsiao-Wei Yuan; Cheng-Wen Wu; Wun-Shaing Wayne Chang; and Ruey-Hwang Chou: *Potential Therapeutic SERPINB Genes and RCL-Derived Peptides for Inhibition of Malignancy of Lung Cancer Cells*

DiaCarta, Inc.

7 L. Zhang; T. Hollen; R. Diaz; L. Chen; P. Okunieff; A. Zhang; and James Erickson: *Development of a Patient Management Tool for Head and Neck Cancer Based on the Detection of Oral HPV Using Branched DNA (bDNA) Signal Amplification Technology*

8 L. Zhang; T. Liu; R. Chuang; X. Li; R. Diaz; L. Chen; P. Okunieff; A. Zhang; and James Erickson: *Directly Detect High-Risk HPV Oncogenes E6/E7 mRNAs from Pap Smear Without RNA Purification, Reverse Transcription or PCR*

Gyeongsang National University

9 Sugunadevi Sakkiah; Mahreen Arooj; Guang Ping Cao; Keun Woo Lee; and Venkatesh Arulalapperumal: *Prediction of Tolrestat Off-Targets with Biological Pathways, Target Diseases by Validating Protein-Protein Interaction Based on Chemical Systems and Structure Based Systems Biology Approach*

Hangzhou Dianzi University

10 Shen Wang; Lihua Li; and Nanjiao Ying: Study on the *Molecular Mechanism of Cisplatin Resistance Based on Bayesian Network Method in Ovarian Carcinoma*

K. S. Rangasamy College of Technology

11 Sri Ram Arunachalam: *Cloning of NBS-LRR Gene and Its Application as a Biocontrol Agent*

Korea Research Institute of Bioscience and Biotechnology

12 Euijoen Woo and Hyungnam Song: *Engineering and Purification of Reversible Myoglobin Antibody*

Monash University

13 Ezharul Hoque Chowdhury: *Simultaneous Knockdown of ABCG2 and ABCB1 Transporter Genes Sensitizes Breast Cancer Cells to Classical Anti-Cancer Drugs*

Soniya Education Trust's College of Pharmacy

14 Veeresh Veerapur and Shriram Purohit: *In-Silico Docking Studies of Phthalazines and Pyridazines as Aldose Reductase Inhibitors*

University of Missouri

15 Karen A. Kirby; Atsuko Hachiya; Dandan Liu; Leslie A. Chiang; Yun Pan; Bruno Marchand; Kamalendra Singh; Thomas P. Quinn; Fabio Gallazzi; George P. Smith; Toshio Murakami; Shuzo Matsushita; Stefan G. Sarafianos; and Yee Tsuey Ong: *Genetic Engineering of KD-247 Antibody Fragments to Bind HIV-1 V3 Loop Peptides from Multiple Clades*

University of Queensland

16 Michael Monteiro; Zhongfan Jia; Trent Munro; Martina Jones; Stephen Mahler; and Stephen Goodall: *Targeting Nanoparticles with Engineered Antibody Fragments*

17 Lawrence Wong; Karin Taylor; Martina Jones; Trent Munro; Stephen Mahler; and Christopher Howard: *Bispecific Antibodies for Cancer Therapeutics*

18 Karin Taylor; Christopher Howard; Stephen Mahler; Trent Munro; and Martina Jones: *Engineering Bispecific Antibodies and the Implications of Design on Expression Levels, Stability and Binding of Targets*

19 Martina Jones; Stephen Mahler; and Kebaneilwe Lebani: *Development of a Serotyping NS1 Capture Assay for Diagnosis of Acute, Primary Dengue Virus Infections*

Potential Therapeutic SERPINB Genes and RCL-derived Peptides for Inhibition of Malignancy of Lung Cancer Cells

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Abstract

We focus on the investigation of proteases and protease inhibitors in lung cancer metastasis. By using our patented *in vitro* invasion assay system, we have screened for more than 240 protease/inhibitor genes and identified 32 invasion-enhancing genes and 34 invasion-suppressing genes, in which 19 genes belong to serine proteases/inhibitors. In terms of serine protease inhibitors (serpins), except *SERPINB2* and *SERPINB5*, the roles of the rest of all 13 members in human *SERPINB* family on cancer metastasis are still unknown. In this study, we found that most of them differentially expressed in the tumorous tissue comparing to that in the matched normal tissue from lung or breast cancer patients. By functional analysis of the effects on the malignancy of cancer cells, we demonstrated that among all 13 *SERPINB* genes, the *SERPINB1*, *SERPINB5* and *SERPINB7* genes were more potent to suppress cancer cells invasion and migration, and the inhibitory effect was further enhanced by co-expression of any two of them. Serpins are known to suppress their target proteases via a distinct 20-residue of their reactive center loop (RCL). Based on our result from the functional analysis, we synthesized the peptides corresponding to the P5-P5' sequences of the RCL of SERPINB1, SERPINB5, or SERPINB7. Each of the RCL-peptides markedly suppressed the invasive and migratory properties of the cancer cells in a dose-dependent manner. More significantly, combination treatment of these peptides in cancer cells further improved the suppressive effect by 20-40%. Here, we identified those members with potent inhibitory ability toward invasion and migration, and designed the RCL-derived peptides to suppress the malignancy of cancer cells. Forced re-expression of these anti-invasive *SERPINB* genes or application of the SERPINB RCL-derived peptides may provide a potential strategy against lethal cancer metastasis.