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Conference on Biology, 20-23
June 2016, Athens, Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH



Biology Abstracts
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Edited by Gregory T. Papanikos

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TABLE OF CONTENTS

(In Alphabetical Order by Author's Family name)

Preface		9
Conference Program		11
1.	The Effects of Different Types of Taxes on Soft-Drink Consumption <i>Abdulfatah Adam & Sinne Smed</i>	17
2.	Modified Lysozymes as Novel Broad Spectrum Natural Antimicrobial Agents in Foods <i>Mahmoud Aminlari</i>	18
3.	A Highly Quantitative Multi-Well Format Assay for Studying the Effect of Extracellular Matrix Mechanics on the Bacterial Infection of Endothelial Cells <i>Effie Bastounis & Julie Theriot</i>	19
4.	A Sex-Specific Audience Effect on Tibetan Macaque Sexual Behavior <i>Sofia Bernstein, Lori Sheeran, R. Steven Wagner, Jin-hua Li & Hiroki Koda</i>	20
5.	Aligning Financing, Governance and Service Delivery to Build Up Better Health Systems, the Kazakhstan Reform Experience <i>Tata Chanturidze & Antonio Duran</i>	22
6.	Advancing Population Health Through Universal Health Coverage for Primary Health Care in Low- and Middle-Income Countries <i>Vivian Chia-Rong Hsieh</i>	23
7.	Effect of Pay-For-Performance on Cervical Cancer Screening Uptake in France <i>Panayotis Constantinou, Jonathan Sicsic & Carine Franc</i>	24
8.	A Multilevel Analysis of the Determinants of Health at Work in the EU15: The Impact of Commercial and Financial Integrations <i>Marine Coupaud</i>	26
9.	Development and Initial Characterization of a Staphylococcus Collection Obtained from Healthy Student Volunteers <i>Jeremiah Davie</i>	27
10.	Physical Activity and Childhood Obesity amongst SNAP Participants <i>Paramita Dhar & Christina Robinson</i>	28
11.	Albanian Health Policy in Prevention of Chronic Kidney Disease <i>Marsida Duli & Qamil Dika</i>	29
12.	Phage Peptide Libraries: Development, Ligand Identification and Characterization <i>Abdulrahim Hakami</i>	30

13.	Association between Treatment and Disease Free Survival for an Exhaustive Cohort of Epithelial Ovarian Carcinoma Patients in the Rhône-Alpes Region (France) Using a Counterfactual Approach <i>Marius Huguét, Fadila Farsi, David Benayoun, Pierre De Saint Hilaire, Dominique Beal Ardisson, Patrick Arveux, Anne-Valérie Guizard, Magali Morelle, Nathalie Havet, Xavier Joutard, Claire Chemin-Airiau, Amandine Charreton, Isabelle Ray-coquard & Lionel Perrier</i>	31
14.	Butyrate, a Microbiota-Derived Metabolite, in Gut Regulates the Innate Lymphoid Cells and Contributes the Homeostatic Maintenance of Peyer's Patches of Terminal Ileum <i>Yong-Suk Jang, Sae-Hae Kim & Yu Na Kim</i>	33
15.	Statins as Adjunctive, Host-Directed Therapy for Tuberculosis <i>Petros C. Karakousis</i>	34
16.	Benchmarking of the Strategies of Polypharmacy and Medication Non-Adherence Management in European Elderly - Results of the Pilot Study <i>Przemyslaw Kardas, Pawel Lewek, Mary Kontouli - Geitona, Anastasia Balasopoulou & Alpana Mair</i>	35
17.	Equity in the Utilization of Health Care Services in Turkey; Evidence from 2012 Health Survey <i>Dilek Kilic & Selcen Ozturk</i>	37
18.	Influence of Patients and Stakeholders on Hospital Healthy Policy Making - A Qualitative and Quantitative Approach <i>Mirella Koenjer, José G.M. Hofhuis & Peter Spronk</i>	39
19.	Modulation of Tau Protein Aggregation by Synthetic Short Peptides "Novel Treatments for Tauopathies" <i>Farzad Mokhtari, Gholamhossein Riazi, Saeed Balalaei & Mansoureh Ghezlou</i>	40
20.	Bioactive Peptide with Antioxidant and ACE Inhibitory Activities Purified from <i>Kluyveromyces Marxianus</i> Protein Hydrolysates <i>Mahta Mirzaei, Shahr-e-Qods Branch, Saeed Mirdamadi & Mohamad Reza Ehsani</i>	41
21.	Folding of β-structures via the Polarized Structure-specific Backbone Charge (PSBC) Model <i>Yew Mun Yip</i>	42
22.	Does Matter the Prevention Campaign in the Cervix Cancer? Case Study from Brazil <i>Anne Oduber Penaloza</i>	44
23.	Spatial Determinants of Individual Weight Status and Obesity Risk in Spain: A Multilevel Approach <i>Athina Raftopoulou</i>	45
24.	Beyond a Health-related Issue: Socioeconomic Determinants of Patient Mobility in Turkey <i>Sayin San, Selman Delil & Rahmi Nurhan Celik</i>	46
25.	Cloning, Characterization and Expression Studies of Argonaute Gene from Barley <i>Muhammad Umar Bhatti</i>	48

26.	Does a Telemedicine's Public Policy Improve Healthcare Quality and Save Costs? Evidences from a French Telestroke Project <i>Laure Wallut & Christine Peyron</i>	49
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Preface

This abstract book includes all the abstracts of the papers presented at the *2nd Annual International Conference on Biology, 20-23 June 2016, Athens, Greece*, organized by the Athens Institute for Education and Research. In total there were 26 papers and 28 presenters, coming from 15 different countries (Albania, Colombia, Denmark, France, Iran, Korea, Pakistan, Poland, Singapore, Spain, Taiwan, the Netherlands, Turkey, UK, and USA). The conference was organized into nine sessions that included areas such as Protein and Peptide Sciences, Cancer Issues, Obesity and Other Essays, and other related fields. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books and/or journals of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 150 international conferences and has published over 100 books. Academically, the Institute is organized into six research divisions and twenty-seven research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

Gregory T. Papanikos
President

FINAL CONFERENCE PROGRAM
2nd Annual International Conference on Biology, 20-23 June 2016,
Athens, Greece

Conference Venue: [Titania Hotel](#), 52 Panepistimiou Street, 10678 Athens, Greece

Monday 20 June 2016
(all sessions include 10 minutes break)

08:00-08:30 Registration and Refreshments

08:30-09:00 Welcome & Opening Address (ROOM B-Mezzanine Floor)

- Gregory T. Papanikos, President, ATINER.
- George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

09:00-10:30 Session I (ROOM B-Mezzanine Floor): Panel on Protein and Peptide Sciences

Chair: George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.

1. Mahmoud Aminlari, Professor, Shiraz University, Iran. Modified Lysozymes as Novel Broad Spectrum Natural Antimicrobial Agents in Foods.
2. Yew Mun Yip, Ph.D. Candidate, Nanyang Technological University, Singapore. Folding of β -structures via the Polarized Structure-specific Backbone Charge (PSBC) Model.
3. Abdulrahim Hakami, Ph.D. Student, The University of Nottingham, U.K. Phage Peptide Libraries: Development, Ligand Identification and Characterization.
4. Mahta Mirzaei, Academic Member Department of Food Science and Technology, Shahr-e-Qods Branch, Islamic Azad University, Tehran, Iran, Saeed Mirdamadi, Academic Member, Iranian Research Organization for Science & Technology (IROST), Iran, Mahmoud Aminlari, Academic Member, Shiraz University, Iran & Mohamad Reza Ehsani, Academic Member, Science and Research Branch, Islamic Azad University, Iran. Bioactive Peptide with Antioxidant and ACE Inhibitory Activities Purified from *Kluyveromyces Marxianus* Protein Hydrolysates.

10:30-12:00 Session II (ROOM A-Mezzanine Floor): Cancer Issues

Chair: David Hotchkiss, Professor and Vice Chair, Department of Global Community Health and Behavioral Sciences, Tulane University, USA.

1. Anne Oduber Penaloza, Economics Research Director, Universidad Autonoma de Bucaramanga, Colombia. Does Matter the Prevention Campaign in the Cervix Cancer? Case Study from Brazil.
2. Panayotis Constantinou, Resident/Junior Doctor in Public Health, INSERM (French National Institute of Health and Medical Research), France, Jonathan Sicsic, Statistician and Economist, Post-doctorate in Health Economics, INSERM (French National Institute of Health and Medical Research), France & Carine Franc, Economist, Researcher in Health Economics, INSERM (French National Institute of Health and Medical Research), France. Effect of Pay-For-Performance on Cervical Cancer Screening Uptake in France.
3. Marius Huguet, MPhil Student, University of Lyon, France, Olivia Bally, Oncologist, Centre Léon Bérard, France, Fadila Farsi, Coordinator of the "Reseau Espace Sante Cancer Rhône-Alpes", Centre Léon Bérard, France, David Benayoun, Gynecologist Oncologist, Centre Hospitalié Lyon Sud, France, Pierre De Saint Hilaire, Gynecologist Oncologist, Hospices Civils de Lyon, France, Dominique Beal Ardisson, Oncologist, Hôpital Privé Jean Mermoz, Lyon, France, Patrick Arveux, Epidemiologist, Centre Georges François Leclerf, Dijon, France, Anne-Valérie Guizard, General Practitioner, Centre François Baclesse, Caen, France, Magali Morelle, Statistician, Centre Léon Bérard, France, Nathalie Havet, Associate Professor, University of Lyon, France, Xavier Joutard, Professor, University of Aix-Marseille, France, Claire Chemin-Airiau, Clinical Research Associate, University of Lyon, France, Amandine Charreton, Clinical Research Associate, Centre Léon Bérard, France, Isabelle Ray-coquard, Oncologist, Centre Léon Bérard, France & Lionel Perrier, Manager of the Area "Innovations and Strategies", Clinical Research and Innovation Direction (DRCI), Centre Léon Bérard, France. Association between Treatment and Disease Free Survival for an Exhaustive Cohort of Epithelial Ovarian Carcinoma Patients in the Rhône-Alpes Region (France) Using a Counterfactual Approach.

12:00-13:30 Session III (ROOM A-Mezzanine Floor): Obesity and Other Essays

Chair: Anne Oduber Penaloza, Economics Research Director, Universidad Autonoma de Bucaramanga, Colombia.

1. Vivian Chia-Rong Hsieh, Assistant Professor, China Medical University, Taiwan. Advancing Population Health Through Universal Health Coverage for Primary Health Care in Low- and Middle-Income Countries.
2. Paramita Dhar, Assistant Professor, Central Connecticut State University, USA & Christina Robinson, Associate Professor, Central Connecticut State University, USA. Physical Activity and Childhood Obesity amongst SNAP Participants.
3. Athina Raftopoulou, Ph.D. Candidate, University of Barcelona, Spain. Spatial Determinants of Individual Weight Status and Obesity Risk in Spain: A Multilevel Approach.

13:30-14:30 Lunch

14:30-16:00 Session IV (ROOM B-Mezzanine Floor): Issues on Biology Science I

Chair: Mahmoud Aminlari, Professor, Shiraz University, Iran.

1. Jeremiah Davie, Assistant Professor, D'Youville College, USA. Development and Initial Characterization of a Staphylococcus Collection Obtained from Healthy Student Volunteers.
2. Muhammad Umar Bhatti, Ph.D. Scholar, Lecturer, University of the Punjab, Pakistan. Cloning, Characterization and Expression Studies of Argonaute Gene from Barley.
3. Farzad Mokhtari, Ph.D. Student, University of Tehran, Iran, Gholamhossein Riazi, Faculty Member, University of Tehran, Iran, Saeed Balalaei, Faculty Member, K. N. Toosi University of Technology, Iran & Mansoureh Ghezlou, MSc Student, Islamic Azad University, Iran. Modulation of Tau Protein Aggregation by Synthetic Short Peptides "Novel Treatments for Tauopathies".
4. Sofia Bernstein, Ph.D. Student, Kyoto University, Japan, Lori Sheeran, Professor, Central Washington University, USA, R. Steven Wagner, Associate Professor, Central Washington University, USA, Jin-hua Li, Professor, Hefei Normal University, China & Hiroki Koda, Assistant Professor, Kyoto University, Japan. A Sex-Specific Audience Effect on Tibetan Macaque Sexual Behavior.

17:30-20:00 Session V (ROOM A-Mezzanine Floor): A Round Table Discussion on 'The Future of Sciences, Engineering and Technology'

Chair: Lampros A. Pyrgiotis, Scholar & President, Greek Society of Regional Scientists, Greece.

1. Dr **Miryam Barad**, Professor, Tel Aviv University, Israel.
2. Dr **Rolf Steinbuch**, Professor, Reutlingen University, Germany
3. Dr **Venkatachalam Rapur**, Professor, National Institute of Technology, India.
4. Dr **Ru-Shi Liu**, Professor, National Taiwan University, Taiwan.
5. Dr **Mahmoud Aminlari**, Professor, Shiraz University, Iran.
6. Dr **Ingo Ehrlich**, Professor, Ostbayerische Technische Hochschule Regensburg, Germany.
7. Dr **Theodore Trafalis**, Head, [Industrial Engineering Research Unit](#), ATINER, Professor of Industrial and Systems Engineering & Director, Optimization & Intelligent Systems Laboratory, The University of Oklahoma, USA.

21:00-23:00 Greek Night and Dinner (Details during registration)

Tuesday 21 June 2016

08:00-09:30 Session VI (ROOM A-Mezzanine Floor): Contemporary Challenges

Chair: *Wenjiang Fu, Professor, University of Houston, USA.

1. Przemyslaw Kardas, Head of the First Department of Family Medicine, Medical University of Lodz, Poland, Pawel Lewek, Research Fellow, Medical University of Lodz, Poland, Mary Kontouli - Geitona, Associate Professor, University of Peloponnese, Greece, Anastasia Balasopoulou, President and CEO, Hospital Management Scientific Center, Greece & Alpana Mair, Deputy Chief Pharmaceutical Officer for Scotland, Healthcare Quality and Strategy Directorate, Scottish Government Health Department, Scotland. Benchmarking of the Strategies of Polypharmacy and Medication Non-Adherence Management in European Elderly - Results of the Pilot Study.
2. Laure Wallut, Ph.D. Student, Université de Bourgogne France Comté, France & Christine Peyron, Lecturer, Université de Bourgogne France Comté, France. Does a Telemedicine's Public Policy Improve Healthcare Quality and Save Costs? Evidences from a French Telestroke Project.
3. Marsida Duli, Health Advisor of Minister of Health, Albania & Qamil Dika, Professor, "Ismail Qemali" University, Albania.

Albanian Health Policy in Prevention of Chronic Kidney Disease.

09:30-11:00 Session VII (ROOM D-1st Floor): Issues on Biology Science II

Chair: Jeremiah Davie, Assistant Professor, D'Youville College, USA.

1. Petros C. Karakousis, Associate Professor, Johns Hopkins Bloomberg School of Public Health, USA. Statins as Adjunctive, Host-Directed Therapy for Tuberculosis.
2. *Effie Bastounis, Postdoctoral Scientist, Stanford University, USA & Julie Theriot, Professor, Stanford University, USA. A Highly Quantitative Multi-Well Format Assay for Studying the Effect of Extracellular Matrix Mechanics on the Bacterial Infection of Endothelial Cells.

11:00-14:00 Educational and Cultural Urban Walk Around Modern and Ancient Athens (Details during registration)

14:00-15:00 Lunch

15:00-16:30 Session VIII (ROOM A-Mezzanine Floor): Policy & Reforms

Chair: *Peter Spronk, Director, ICU and Research, Gelre Hospitals Apeldoorn, The Netherlands.

1. *Mirella Koenjer, Head, Department of ICU, Gelre Hospitals Apeldoorn, The Netherlands, José G.M. Hofhuis, Gelre Hospitals Apeldoorn, The Netherlands & Peter Spronk, Director, ICU and Research, Gelre Hospitals Apeldoorn, The Netherlands. Influence of Patients and Stakeholders on Hospital Healthy Policy Making - A Qualitative and Quantitative Approach.
2. Dilek Kilic, Assistant Professor, Hacettepe University, Turkey & Selcen Ozturk, Assistant Professor, Hacettepe University, Turkey. Equity in the Utilization of Health Care Services in Turkey; Evidence from 2012 Health Survey.
3. Sayin San, Assistant Professor, Sakarya University, Turkey, Selman Delil, Ph.D. Candidate, Istanbul Technical University, Turkey & Rahmi Nurhan Celik, Professor, Istanbul Technical University, Turkey. Beyond a Health-related Issue: Socioeconomic Determinants of Patient Mobility in Turkey.
4. Tata Chanturidze, Principal Consultant, Health Policy and Financing, Oxford Policy Management, U.K. & Antonio Duran, Principal Consultant, Health Service Governance, Organization and Purchasing, Andalusian School of Public Health, Spain. Aligning Financing, Governance and Service Delivery to Build Up Better

Health Systems, the Kazakhstan Reform Experience.

5. *Abdulfatah Adam, Ph.D. Student, University of Copenhagen, Denmark & Sinne Smed, Associate Professor, University of Copenhagen, Denmark. The Effects of Different Types of Taxes on Soft-Drink Consumption.

16:30-18:00 Session IX (ROOM A-Mezzanine Floor): Special Issues

Chair: *Effie Bastounis, Postdoctoral Scientist, Stanford University, USA.

1. Marine Coupaud, Ph.D. Student, University of Bordeaux, France. A Multilevel Analysis of the Determinants of Health at Work in the EU15: The Impact of Commercial and Financial Integrations.
2. Yong-Suk Jang, Professor, Chonbuk National University, Korea, Sae-Hae Kim, Associate Professor, Chonbuk National University, Korea & Yu Na Kim, Graduate Student, Chonbuk National University, Korea. Butyrate, a Microbiota-Derived Metabolite, in Gut Regulates the Innate Lymphoid Cells and Contributes the Homeostatic Maintenance of Peyer's Patches of Terminal Ileum.

21:00-22:30 Dinner (Details during registration)

Wednesday 22 June 2016
Cruise: (Details during registration)

Thursday 23 June 2016
Delphi Visit: (Details during registration)

Abdulfatah Adam

Ph.D. Student, University of Copenhagen, Denmark

&

Sinne Smed

Associate Professor, University of Copenhagen, Denmark

The Effects of Different Types of Taxes on Soft-Drink Consumption

Monthly data from GfKConsumerscan Scandinavia for the years 2006 – 2009 are used to estimate the effects of different tax scenarios on the consumption of sugar sweetened beverages (SSB's). Most studies fail to consider demand interrelationships between different types of soft-drinks when the effects of taxation are evaluated. To add to the literature in this aspect we estimated a two-step censored dynamic almost ideal demand system where we include the possibilities that consumers have to substitute between diet and regular soft-drinks, between discount and non-discount (normal) brands as well as between different container sizes. Especially the large sizes and discount brands provide considerable value for money to the consumer. Three different type of taxes is considered; a tax based on the content of added sugar in various SSB's, a flat tax on soft-drinks alone and a size differentiated tax on soft-drinks that remove the value for money obtained by purchasing large container sizes. The scenarios are scaled equally in terms of obtained public revenue. Largest effect in terms of reduced intake of calories and sugar are obtained by applying the tax on sugar in all beverages, even though detrimental health effects in terms of increased intake of diet soft-drinks has to be considered. A flat tax on soft-drinks decreases the intake of sugar, but implies a small increase in total calorie intake due to substitution with other SSB's. A tax aimed at removing the value added from purchasing large container sizes increase sugar and total calorie intake due to substitution towards discount brands. Hence the results show the importance of considering substitution between different sizes, brands and discount versus normal brands when simulating the effects of soft-drinks taxation and point toward a tax on the sugar content of SSB's as the most effective in the regulation of obesity.

Mahmoud Aminlari
Professor, Shiraz University, Iran

Modified Lysozymes as Novel Broad Spectrum Natural Antimicrobial Agents in Foods

In recent years much attention and interest have been directed toward application of natural antimicrobial agents in food and pharmaceutical industries. Some naturally occurring proteins such as lactoperoxidase, lactoferrin, and lysozyme have received considerable attention and are being considered as potential antimicrobial agents. Lysozyme kills bacteria by hydrolyzing the peptidoglycan layer of the cell wall of certain bacterial species, hence its application as a natural antimicrobial agent has been suggested. However, limitations in the action of lysozyme against only Gram-positive bacteria have prompted scientists to extend the antimicrobial effects of lysozyme by several types of chemical modifications. During the last 2 decades extensive research in our laboratory as well as others has focused modification of lysozyme in order to improve its antimicrobial properties. This review will report on the latest information available on lysozyme modifications and examines the applicability of the modified lysozymes in controlling growth of Gram-positive and Gram-negative bacteria. The results of modifications of lysozyme using its conjugation with different small molecule, polysaccharides, as well as modifications using proteolytic enzymes will be reviewed. These types of modifications have not only increased the functional properties of lysozyme (such as solubility and heat stability) but also extended the antimicrobial activity of lysozyme. Many examples will be given to show that modification can decrease the count of Gram-negative bacteria *in vitro* and *in vivo* and in some cases essentially eliminate them. In conclusion this review demonstrates that modified lysozymes are excellent natural food preservatives, which can be used in food and pharmaceutical industries.

Effie Bastounis

Postdoctoral Scientist, Stanford University, USA

&

Julie Theriot

Professor, Stanford University, USA

A Highly Quantitative Multi-Well Format Assay for Studying the Effect of Extracellular Matrix Mechanics on the Bacterial Infection of Endothelial Cells

Bacterial pathogens can cause systemic infections by disseminating from the initial focus of infection to other organs of the body, usually through the blood vasculature. To be able to colonize different organs Bacteria need to adhere to endothelial cells (ECs) that line the inner lumen of our vessels, invade them and then spread from cell to cell. ECs are highly mechanosensitive and respond to varying mechanical cues, including the stiffness of the matrix on which they adhere by dynamically re-arranging their cytoskeleton, cell-ECM and cell-cell adhesions. That led us hypothesize that EC bacterial infection might also be affected by the mechanics of the host ECs, the latter being influenced by the mechanics of the extracellular matrix (ECM) on which host ECs reside. To test our hypothesis we developed a novel multi-well format assay that allows assessing in a highly quantitative manner the differential effect of matrix mechanics on EC bacterial infection. Briefly, polyacrylamide gels of varying physiologically relevant stiffness ranging from 0.6 to 70 kPa were manufactured on 24-well glass-bottom plates using a custom made 24-pin replicator to ensure surface flatness and 6 replicates per stiffness. Gels were functionalized with collagen, sterilized and ECs were seeded on the gels for 48 h. ECs were then infected with a *Listeria monocytogenes* strain carrying a fluorescent marker that is expressed only after internalization. EC infection was performed using centrifugation to synchronize bacterial invasion. 8 h post-infection the cells were detached from their matrix using a mixture of trypsin and collagenase and ECM-stiffness dependent infection efficiency was assessed through flow cytometry. Our data indicate that matrix stiffness has an effect on the infection of ECs by *Listeria monocytogenes*. Our method allows for a high throughput analysis of the effect of tissue-relevant mechanics on EC bacterial infection, which is a critical first step towards understanding the biomechanical interactions between ECs, their extracellular matrix and pathogenic bacteria.

Sofia Bernstein

Ph.D. Student, Kyoto University, Japan

Lori Sheeran

Professor, Central Washington University, USA

R. Steven Wagner

Associate Professor, Central Washington University, USA

Jin-hua Li

Professor Hefei Normal University, China

&

Hiroki Koda

Assistant Professor, Kyoto University, Japan

A Sex-Specific Audience Effect on Tibetan Macaque Sexual Behavior

Hypotheses concerning the evolution of acoustic mating signals have focused on female copulation calls as male-oriented signals of sexual receptivity. More recently, a quantitative model hypothesizes that interspecific variation in female promiscuity predicts copulation call emission. However, communication rarely occurs in a closed setting between the signaler and the receiver, and usually involves a wider audience that may affect signal production. Few studies have assessed how these audience effects mediate mating behavior and potentially vocal control of copulation calls. Previous research on the sexual behavior of Tibetan macaques has focused on male tactics, although females show unique behaviors that are rare in primates. For example, females harass copulatory dyads and emit acoustically distinct copulation calls from the rest of the macaque genus. We investigated the copulation calling behavior of wild female Tibetan macaques (*Macaca thibetana*) and what social factors potentially influence call production. We analyzed the effects of rank, promiscuity, harassment, and audience on copulation call emission. Our results did not support the existing hypotheses or model. There was no positive correlation between promiscuity and call rate, and females did not call significantly more with high-ranking males. Call rate was low and did not incite harassment by conspecifics. Instead, we found a sex-specific audience effect. The number of males in the audience did not affect call emission, but females suppressed copulation calls the more females were present. Our results suggest that female copulation calls are a flexible sexual strategy influenced by female-female competition, and it is necessary to reevaluate the role both sexes play in the evolution of this acoustic signal. The adaptive significance of female copulation calls in primates has been the topic of debate for many years, and our results support

recent studies suggesting that signalers adjust signal output strategically depending on the audience.

Tata Chanturidze

Principal Consultant, Health Policy and Financing, Oxford Policy Management, UK

&

Antonio Duran

Principal Consultant, Health Service Governance, Organization and Purchasing, Andalusian School of Public Health, Spain

Aligning Financing, Governance and Service Delivery to Build up Better Health Systems, the Kazakhstan Reform Experience

Attaining better health of the population through health system reform has been a long standing challenge globally and especially in the so-called countries in rapid transition to a market economy. While the issue is multi-dimensional, aligning health financing, governance and service delivery transformations has been postulated with renewed emphasis recently. The complexity is mainly rooted in Government's capability to articulate synchronised developments in these three directions, and translate them into an effective implementation process with the right resources, capabilities, and commitment.

A decade ago, Kazakhstan embarked in an ambitious health sector reform to improve the effectiveness and efficiency of its health system, including transformations in health financing and service purchasing, as well as in health service organization, management, delivery and regulation. The role of the State has changed by pulling back from a direct service provider to mostly a regulatory role, followed with the recent initiatives to delegate the service purchasing function to a Social Health Insurance Fund (to be fully operational from 2017, with modern service purchasing mechanisms for inpatient and outpatient care). New approaches to provider organization and governance have stimulated greater autonomy in service provision. The latest move has been to accelerate the achievement of UHC by merging budget and SHI funding.

While the reform is still ongoing and economic resources are, in general, sufficient, the quite ambitious and very much needed reform pathway followed by the Kazakhstan Government offers numerous lessons. This paper examines some of the critical accomplishments and challenges in implementing the concerned changes. It suggests that the success of compound health sector reforms in similar settings would depend on (i) aligning health system governance, service delivery and financing policies in terms of objectives, approaches and instruments, and (ii) recognising and addressing the practical operational realities of the implementation process.

Vivian Chia-Rong Hsieh

Assistant Professor, China Medical University, Taiwan

Advancing Population Health through Universal Health Coverage for Primary Health Care in Low- and Middle-Income Countries

Since the 2010 World Health Report, the call for universal health coverage (UHC) has been reiterated amongst countries globally. There is currently an emerging consensus on the approaches to achieve UHC, although much empirical evidence is still imperative to elucidate the causal relationship between population health and its effective predictors. This study will build on our previous work [Asia Pac J Public Health July 15, 2013], which identifies a significant positive impact on population health through health service coverage expansion using a cross-sectional design.

In this panel analysis, we aim to describe the link between primary health care coverage and the change in health outcomes of low-and middle-income countries (LMICs) from year 2000 to 2012. A national-level panel dataset is compiled from two time points at 2000 and 2012 accounting for 144 LMICs by World Bank income grouping. Primary data sources include World Health Organization's World Health Statistics and United Nation's Human Development Report. We measure explanatory variables encompassing health financing, public health provision and primary care, to try to measure access to essential care and financial contribution to health systems. They are examined for their association with health indicators: life expectancy at birth and under-5 mortality. We derive effect estimates from multiple linear regression approach conducted separately by year, and compare their relative contribution to population outcomes. Models are adjusted for country's gross national income and weighted by its population size.

In general, our results show a strong link between expansions in public health provision and improvement in population health. Higher total expenditure on health, however, do not give rise to similar gains in LMICs. Thus, we suggest it is not so much about the magnitude of expenditure invested in health care as it is about making public health and primary care services available and be used by everyone.

Panayotis Constantinou

Resident/Junior Doctor in Public Health, INSERM (French National Institute of Health and Medical Research), France

Jonathan Sicsic

Statistician and Economist, Post-doctorate in Health Economics, INSERM (French National Institute of Health and Medical Research), France

&

Carine Franc

Economist, Researcher in Health Economics, INSERM (French National Institute of Health and Medical Research), France

Effect of Pay-For-Performance on Cervical Cancer Screening Uptake in France

Background: Pay-for-Performance (P4P) has been increasingly used across different healthcare settings to incentivize the provision of targeted services. In France, a nationwide P4P scheme for general practitioners (GPs) has been implemented in 2012. From 2012 onwards, GPs are rewarded annually for the rate of eligible women having performed a Pap smear at least once over three years. Using a longitudinal representative dataset, we investigated the effect of P4P on cervical cancer screening.

Methods: We identified eligible women aged 25 to 65 among a permanent nationally representative sample of individuals covered by public French health insurance (Échantillon Généraliste des Bénéficiaires), for the years 2006 to 2014. Different measures of cervical screening were defined: (1) annual smear use; (2) recommended screening uptake (at least one smear over three years). We specified binary panel-data models to estimate annual probabilities and compare them to 2011, the baseline level. We adjusted for available screening determinants, including the implementation of organized screening in some areas.

Results: Our longitudinal sample comprised 188274 women eligible from one to nine years each. When compared to 2011, before P4P implementation: annual smear use (1) was not significantly different in 2012, significantly higher in 2013 ($p < 0.001$) and again not significant in 2014; recommended uptake (2) was lower in 2012 ($p < 0.001$), not significant in 2013 and significantly higher than 2011 in 2014 ($p < 0.001$). When focusing on the areas experimenting organized screening, uptake was significantly lower in 2013 than in 2011 for both measures.

Conclusions: Given that the expected positive effect on annual use (1) was only observed for 2013, recommended uptake's increase (2) is likely to be transient. Hence, P4P did not seem to sufficiently address

barriers to screening. Understanding the effects of combined incentives such as organized screening and P4P could help better promote screening and fully achieve proven mortality reduction.

Marine Coupaud

Ph.D. Student, University of Bordeaux, France

A Multilevel Analysis of the Determinants of Health at Work in the EU15: The Impact of Commercial and Financial Integrations

The workers' health in developed countries is a key topic and numerous studies have highlighted its determinants. The question now needs to be investigated within a larger spectrum including sectoral and national level determinants. In this paper, we expose the links between macroeconomic indicators and workers' health controlling for individual characteristics and working conditions variables. We introduce measures of trade and financial integration in order to test the impact of globalization on workers' declared health in the EU15. We find that workers' health is mostly impacted by individual characteristics and direct work features, globalization seems to have no effect even if some changes are observed when we analyze different samples.

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Development and Initial Characterization of a Staphylococcus Collection Obtained from Healthy Student Volunteers

Here, we announce the availability of a collection of Staphylococci isolated from healthy student volunteers enrolled in Biology or Allied Health majors. Undergraduate students preparing for careers in healthcare or healthcare-associated fields frequently complete clinical rotations as part of their education while remaining members of the general college community. This positions them as possible source of both community-acquired and healthcare-acquired MRSA. From Fall 2012 to Fall 2013, 153 healthy individuals consented to sampling and characterization of bacterial isolates from the anterior nasal nares or skin. Participation was strictly voluntary and with informed consent; all data were handled confidentially and anonymously. Participants provided their age, sex, major, ethnicity, and site of specimen isolation. Gram reaction, mannitol fermentation, growth on selective media, and hemolysis activity were used to provide a preliminary biochemical characterization. 27 putative *S. aureus* (18%) and 126 putative coagulase-negative Staphylococci (CoNS) (82%) isolates were recovered. To provide an initial survey, 15 isolates from each group (20% of the collection) were selected for additional characterization, including repeated hemolysis and coagulase assays, as well as antibiotic sensitivity profiling and 16S rRNA gene sequencing. Among putative *S. aureus* isolates, clinically significant resistance to ampicillin was widespread, yet resistance to other antibiotics was infrequent. Among putative CoNS isolates, clinically significant resistance to ampicillin and erythromycin was widespread; oxacillin resistance was infrequent. The relative paucity of colonization by oxacillin-resistant (MRSA) organisms suggests students are unlikely to be colonized prior to formal entry into their field. Notably, volunteer-harbored CoNS may serve as a reservoir of antibiotic resistance genes that could be made spread to other organisms via lateral gene transfer. Further analysis of this collection of non-clinical isolates is on-going and as is intended to serve as a resource for the biomedical research community.

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&

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Physical Activity and Childhood Obesity amongst SNAP Participants

More than one-third of American children and teenagers are considered overweight or obese. Obesity is often persistent, dangerous, and costly to manage. It is also one of the leading causes of preventable death and the importance of reducing the prevalence of obesity cannot be overstated. To combat obesity the most common recommendations are: eat a healthier diet and exercise more. In conjunction with the increase in childhood obesity rates, participation rates in Supplemental Nutrition Assistance Program (SNAP) have grown substantially.

Moreover, children growing up in SNAP families are more likely to be overweight/obese than otherwise similar children whose families do not participate in the programs. One possible explanation may be that children in these environments find that they have limited accesses to recreational facilities and/or activities. Using data from the National Longitudinal Survey of Youth 1979 Child and Young Adult Sample (NLSY79CYA) this paper seeks to quantify the relationship between physical activity and a child's propensity to be overweight or obese for SNAP participants.

More specifically, this study employs both non-parametric and semi-parametric duration analysis techniques to identify factors that make an exit from an overweight or obese state more likely. Strikingly, the results indicate that participation in a moderate amount of physical activity reduces the time a child who does not live in a SNAP family spends in an overweight or obese state but does not do the same for SNAP participants. This suggests that there are significant benefits from physical activity that are not being realized by one of the most vulnerable groups and indicates that this is an area where public programming and education may be needed.

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&

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Albanian Health Policy in Prevention of Chronic Kidney Disease

Nowadays Chronic Kidney Disease (CKD) has increasingly come and constitutes a public health problem of paramount importance. International institutions such as the "Center for Disease Control and Prevention" identify Chronic Kidney Disease as one of the main priorities in the era of the epidemiological transition. In Great Britain were articulated operational plans for identifying subjects with renal dysfunction or low-grade of renal failure. Refer to the data is estimated that in the adult population, about 1 adult individual in every 10 individuals has a moderate degree of renal failure, which means a renal function (expressed as glomerular filtrate) half or less than half of the normal rate. In Albania the problem is virtually unknown by the population, yet little-known and widely underestimated by doctors and by the policy makers, regional and/or national government public health authorities. What is proposed is intended to create the basis of data, knowledge and determine the functional organizational structure for the prevention of kidney disease (primary prevention), to slow down their development (Secondary prevention), and to prevent dangerous cardiovascular complications caused by renal insufficiency (tertiary prevention). The end result is intended to reduce morbidity and mortality from renal diseases, and improve the quality of health care provided to patients with kidney disease.

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**Phage Peptide Libraries:
Development, Ligand Identification and Characterization**

Phage display approach has long been used as a promising application for the development of miniprotein scaffolds and identification of novel peptides. Preliminary data showed that selected phage clones bind non-specifically to polystyrene surfaces, which can negatively impact peptide selection experiment (biopanning). This study aims at understanding the nature of phage non-specific interaction to improve the quality of biopanning against different target proteins. Other interfering factors have also been implicated such as the nature of protein bait and library diversity. This would result in selecting notorious and target-unrelated peptides. By utilizing our optimized method, various monoclonal antibodies (mAbs) and hepatitis c virus (HCV) envelope glycoprotein E2 have been used to screen phage libraries. Weak affinity binding was a characteristic of HCV-E2-selected clones suggesting an intricate virus, while strong binders were evident with anti-non-primate hepacivirus (NPHV) mAb and other linear antibodies but not with Herpes Simplex Virus (HSV)-specific Fab region. Peptide homology with the natural ligand of the target bait underpins the positive binding data with the target protein. Another interesting finding was the discovery of a ligand capable of binding to various human mAbs raised against HCV as well as HIV. This observation has been reinforced by competitive inhibition and peptide synthesis. Random mutagenesis is ongoing to enhance the potency of HCV weak inhibitors. All in all, phage display of peptide libraries proves to be useful in various applications if the technique is properly normalized and the results are well characterized.

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**Association between Treatment and Disease Free Survival
for an Exhaustive Cohort of Epithelial Ovarian Carcinoma
Patients in the Rhône-Alpes Region (France)
Using a Counterfactual Approach**

Background: Epithelial Ovarian Carcinoma (EOC) is a disease with poor prognosis, most often diagnosed at an advanced stage, thus necessitating aggressive and complex surgery to ensure complete removal of the abdominal disease. Improving clinical outcomes by optimizing surgery and management of EOC patients remains a

challenge. Volume activity is a controversial factor in predicting the quality of surgery and survival. The aim of this study was to compare Progression Free Survival (PFS) as 1st line treatment of EOC patients treated in high- (i.e. >10 cases/year) vs. low-volume hospitals.

Methods: This retrospective study using prospectively implemented databases was conducted on an exhaustive cohort of 267 patients treated in first line during 2012 in the Rhone-Alpes Region (authorized by the National Committee for Protection of Personal Data authorization (CNIL, n°913466)). In order to control for selection bias, a counterfactual approach was adopted. More specifically, the Inverse Probability Weighting (IPW) using the propensity score, which in this case was the matching method that best balanced the covariates, was retained. An Adjusted Kaplan Meier Estimator (AKME) and a univariate Cox model in the weighted sample were then applied in order to determine the impact of the centralization of care on EOC.

Results: The AKME showed that patients treated in higher volume hospitals had a significantly better relapse-free survival ($p=0.02$). The univariate weighted Cox model revealed that patients treated in lower volume hospitals had a probability of relapse (including death) that was 1.5 times higher than for patients treated in higher volume hospitals ($p=0.02$).

Conclusion: To our knowledge, this is the first study conducted in this setting in France. As reported in other countries, the centralization of care for EOC has a significant positive impact on patient outcomes, although other factors are also very important, such as the quality of the resection.

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**Butyrate, a Microbiota-Derived Metabolite, in Gut
Regulates the Innate Lymphoid Cells and Contributes
the Homeostatic Maintenance of Peyer's Patches of
Terminal Ileum**

In the intestinal immune system, anatomical and physiological distinctions in the gut contribute to its regional specialization by microbiota and immunomodulatory agents from the diet. Given that the ileal Peyer's patch (PP) belongs anatomically to the small intestine, while it is physiologically exposed to an environment similar to the large intestine with respect to microbes and microbial metabolites, its characteristics may differ from those in PPs in the jejunum. As the terminal ileal PP is a key mucosal organ where host defense and oral immune tolerance in the gut develop, identification of the specific factors regionally specialized in the tissue is essential to understanding mucosal homeostasis. Among the various cell types present in PPs, group 3 innate lymphoid cells (ILC3s) are closely associated with the regulation of commensal bacteria through the suppression of commensal bacteria-specific CD4⁺ T cells, although the regulation of ILCs in ileal PPs is poorly defined. In this study, we found that butyrate plays a role as a regional specific factor involved in the repression of ILC3s in PPs of the terminal ileum. This butyrate-mediated negative regulation of ILC3s alleviates the tolerogenic mucosal microenvironment by suppressing regulatory T cells in PPs. Collectively, we conclude that the inhibition of ILC3s by microbiota-derived butyrate can confer the functional ability to induce antigen-specific immunity, and that this network contributes to homeostatic regulation of the mucosal immune inductive site. (S.-H. Kim and Y. N. Kim were supported by BK21 Plus program in the Department of Bioactive Material Sciences. This study was supported by the Basic Science Research Program, NRF-2014R1A1A3051207 to S.-H. Kim and NRF-2013R1A2A2A01014459 to Y.-S. Jang.)

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**Statins as Adjunctive, Host-Directed Therapy for
Tuberculosis**

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**Benchmarking of the Strategies of Polypharmacy and
Medication Non-Adherence Management in European
Elderly - Results of the Pilot Study**

Background: Inappropriate polypharmacy and medication non-adherence in the older population are significant public health issues throughout the world. In order to accelerate innovation in healthcare, there is a need to inform policymakers, healthcare professionals and patients about evidence-based guidance on strategies to address these problems. SIMPATHY (Stimulating Innovation Management of Polypharmacy and Adherence in The Elderly) - a consortium of 10 European organizations - is going to answer this need by performing comprehensive benchmarking of strategies currently employed across the European Union. In order to collect quantitative and qualitative data from stakeholders, a benchmarking survey will be conducted in 10 European countries. Analysis of survey results will allow for categorisation of identified strategies, as well as their assessment against the criteria of effectiveness, cost-effectiveness, applicability and scalability.

Aim of study: The aim of this study was to test SIMPATHY benchmarking survey questionnaire for validity and reliability in pilots in 3 European countries.

Methods: Study questionnaire has been designed on the basis of the findings of the review of recent published and grey literature, as well as the analysis of the case studies, performed within SIMPATHY project. Original questionnaire was drafted in English, and translated into Greek, and Polish, and then back-translated by another individual in order to verify the translation and assure the coherent dataset collected across studied countries. Finally, the study questionnaire was made

available online in a dedicated surveying platform (SurveyMonkey.com), and the invitation to take part in it was sent to local stakeholders in Greece, Poland, and UK. The survey was kept opened for 2 weeks, and the re-invitations were sent, whenever needed, in order to increase the chances of obtaining the target number of surveyed stakeholders (up to 10 per country).

Results: Results of the pilot have been collected, and analysed in details. Whenever necessary, relevant modifications have been adopted to both source English version of the questionnaire, as well as its local language versions (Greek and Polish).

Conclusion: Pilots of the SIMPATHY benchmarking survey proved that the questionnaire is well-designed, and able to collect valuable data on the management of polypharmacy and medication non-adherence in Europe. Careful analysis of the pilots allowed for fine-tuning of the tool, and designing of its final version. This version will be used in the main benchmarking study, participation in which is now available for European stakeholders through the SIMPATHY web site, www.simpathy.eu.

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Equity in the Utilization of Health Care Services in Turkey; Evidence from 2012 Health Survey

Utilization of health care services, which is defined as a basic human right, plays an important role in the evaluation of the performances of health care systems and in reforming the health sector. On the other hand, equity in utilization of health care services has been a widely discussed topic for a long time, and has been a fundamental issue for health policies in almost all countries. Equity in utilization of health care services is a phenomenon where all individuals can access health care services when and as much as they need, regardless of their ability to pay. Thus, equity in any health care system in terms of utilization depends on the fact that equity is founded on need.

In this context, the primary aim of this paper is to investigate the equity phenomenon in the utilization of health care services in Turkey (for GP, out-patient and in-patient treatment services, separately) using the "Health Survey" obtained from Turkish Statistical Institute for 2012. "Health Survey" is conducted by Turkish Statistical Institute on a large scale every 2 years, which includes detailed individual level information and represents the whole country. The survey has been conducted in 2014 however yet not released to public use; therefore 2012 is the most recent survey available.

The investigation of the utilization of health care services in Turkey is especially important, considering the fact that the reform process that the Turkish health care system is undergoing since 2003. Inequities in utilization of health care services have been regarded as one of the most important problems of the Turkish health care system persistent for a long time and eliminating these inequities is one of the most important aims of the Health Transformation Program. However, inequity in the utilization of health care services which is highly observed even in developed countries has not yet been investigated for Turkey. In this respect this paper aims to fill a vast gap in the existing literature.

This paper aims to investigate equity in the utilization of health care services using inequity indices which are widely used in the existing literature. We propose to use the classical Gini index and present the Lorenz curves for these indices. However more importantly the horizontal inequity index (HI) proposed by Wagstaff and Doorslaer (2000) which proposes an alternative to the classical method of calculating the concentration index and therefore inequity, will be used in this study. Calculation of these indices for Turkey will enable easy comparison in terms of the extent of inequity in utilization of health care services with other countries. In this regard, this paper aims to provide policy implications for the utilization of health care services and equity in utilization for policy makers especially by evaluating the effects of health policies.

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Influence of Patients and Stakeholders on Hospital Healthy Policy Making - A Qualitative and Quantitative Approach

Introduction: Hospital health care policy makers most often do not take the patient's perspective into account

Objective: The aims of the study were to evaluate the perceptions of patients regarding care delivery in the hospital, and their potential wish to be involved in policy making. Secondly, the perceptions and experiences of hospital policy makers were explored.

Method: A qualitative approach using a semi-structured focused interview in 9 patients from 3 different general wards was used (part 1). Separately, 8 hospital policy makers were interviewed in a similar way (part 2). Results were analyzed in two phases according to Maso to define categories and themes.

Results: From part 1, four main themes emerged from the interviews, although communication and information dominated as the most important key theme. Patients were generally more interested in the way care was delivered, rather than the choice which type of care was chosen to be delivered by hospital health policy makers. Interestingly, the interviews with the hospital policy makers were in line with this expectation, i.e. patient participation in policy making was considered to be important, but hampered by the lack of a common representation of patient's wishes and expectations, financial considerations, and rulings by government and health insurance companies. They were not considering involving patient representatives in the ways of delivering care.

The data from part 1 were additionally used for a quantitative analysis using a patient survey amongst all hospital admissions during 1 month in 3 different patient groups. These data will be discussed at presentation.

Conclusions: Patients want to be involved in the way hospital care is delivered, not in the choices which type of care they receive. Health care policy makers consider patients' expectations to be important, but insufficiently involve them in communication and information about care processes.

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Modulation of Tau Protein Aggregation by Synthetic Short Peptides “Novel Treatments for Tauopathies”

Tau is a microtubule - associated protein and its main role is modulating microtubule (MT) dynamics and instability. Additionally tau protein is essential for controlling axonal transport in the brain neurons. Under unknown conditions tau protein aggregated and this assembly is a critical mediator in the pathology of Alzheimer Disease (AD) and other tauopathies. Recently many researches target the inhibition or modulation of tau aggregation as a new target in the development of novel treatments for AD and other neurodegenerative disease.

The aim of this study was design and synthesis of short peptides for reducing toxic tau aggregate species *in vitro*. Therefore, tau aggregation kinetics and behavior studied in the presence of selected synthesized peptides.

The production of peptides was carried out using standard Fmoc strategy and validated by mass spectrometry using LC/MSS Agilent QQQ 6410. The aggregation of purified recombinant tau protein analyzed by fluorescence, circular dichroism (CD), dynamic light scattering (DLS) and Atomic force microscopy (AFM) in the presence of peptides. The results showed that tau aggregated in divers form rather than formal oligomer and fibrils in the presence of peptides. Interestingly, DLS and AFM results elucidated that toxic granular-shaped tau oligomers reduced in peptide-treated samples. Therefore, selected peptides could be suitable candidates for further studies in tau-directed drug discovery.

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**Bioactive Peptide with Antioxidant and ACE Inhibitory
Activities Purified from *Kluyveromyces Marxianus*
Protein Hydrolysates**

Kluyveromyces marxianus protein hydrolysate was used as a source of food proteins for producing peptides with possible biological activities. Yeast protein hydrolysates were prepared by two different physical-enzymatic hydrolysis (sonication-trypsin and chymotrypsin hydrolysis) and autolysis. Hydrolysates prepared by trypsin and chymotrypsin treatment for 5 h showed highest antioxidant and ACE-inhibitory activities. After fractionation using ultrafiltration and reverse phase high performance liquid chromatography (RP-HPLC), a novel peptide with amino acid sequences Val-Leu-Ser-Thr-Ser-Phe-Pro-Pro-Lys (MW=1118 Da) was identified. The antioxidant and ACE inhibitory activity of the purified peptide was 5568 μM TE/mg protein and IC_{50} =0.017 mg/ml, respectively. These results indicate that the *K. marxianus* protein hydrolysates are sources of bioactive peptides possessing ACE inhibitor and antioxidant activities which have the potential to substitute synthetic antihypertensive and antioxidants.

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Folding of β -structures via the Polarized Structure-specific Backbone Charge (PSBC) Model

Proteins are the biological machinery that executes specific vital functions in every cell of the human body by folding into their 3D structures. When a protein misfolds from its native structure, the machinery will malfunction and lead to misfolding diseases. Although in vitro experiments are able to conclude that the mutations of the amino acid sequence lead to incorrectly folded protein structures, these experiments are unable to decipher the folding process. Therefore, molecular dynamic (MD) simulations are employed to simulate the folding process so that our improved understanding of the folding process will enable us to contemplate better treatments for misfolding diseases.

MD simulations make use of force fields to simulate the folding process of peptides. Secondary structures are formed via the hydrogen bonds formed between the backbone atoms (C, O, N, H). It is important that the hydrogen bond energy computed during the MD simulation is accurate in order to direct the folding process to the native structure. Since the atoms involved in a hydrogen bond possess very dissimilar electro negativities, the more electronegative atom will attract greater electron density from the less electronegative atom towards itself. This is known as the polarization effect. Since the polarization effect changes the electron density of the two atoms in close proximity, the atomic charges of the two atoms should also vary based on the strength of the polarization effect. However, the fixed atomic charge scheme in force fields does not account for the polarization effect.

In this study, we introduce the polarized structure-specific backbone charge (PSBC) model. The PSBC model accounts for the polarization effect in MD simulation by updating the atomic charges of the backbone hydrogen bond atoms according to equations derived between the amount of charge transferred to the atom and the length of the hydrogen bond, which are calculated from quantum-mechanical calculations. Compared to other polarizable models, the PSBC model does not require quantum-mechanical calculations of the peptide simulated at every time-step of the simulation and maintains the dynamic update of atomic charges, thereby reducing the computational cost and time while accounting for the polarization effect dynamically at the same time. The PSBC model is applied to two different β -peptides, namely the Beta3s/GS peptide, a de novo designed three-stranded β -sheet whose structure is folded in vitro and studied by

NMR, and the trpzip peptides, a double-stranded β -sheet where a correlation is found between the type of amino acids that constitute the β -turn and the β -propensity.

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Does Matter the Prevention Campaign in the Cervix Cancer? Case Study from Brazil

The health system in more countries have been focus in the prevention campaign, because is more cheap the treatment for the initial disease than surgeries or utilization bed hospital. The cancer is must common in the last year, doesn't the principal mortality causes in the Brazilian woman, but the nearly years is more cases reported. The health system in Brazil is organized according to the complexity of treatment. Primary care services for disease prevention are free and distributed throughout the country. In Brazil there are 38,442 center healthcares, within a minimum distance of 10 km.

The incidence of cervical cancer in women in Brazil has been increase in recent years, even with the news laws and programs that the government has created to motived the practice that preventive cytopathology test. Is really important the public health in prevention the cancer? Is a problem that the healths supply?

Based on the data from the Program for Quality in the Health Service, we calculated a structural equation model -SEM- from a previous factorial analysis of the 405 variables that the condition of the physical and human resources in the center healthcare. The relationship established seeks to identify whether the existence of the necessary resources for the realization of cytopathology examination determined the decision of women to do it. The number of women who took the exam was characterized by age, sex, race and income.

We are finding three conclusions. First the social and economic variables respond significantly in the woman decision to cervical test. Second, the center healthcare has the available resources for the cervical test, although it doesn't have enough specific prevention programs. Third, the aims of the public health system regarding prevention can be different for the regions.

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Spatial Determinants of Individual Weight Status and Obesity Risk in Spain: A Multilevel Approach

This paper aims to understand the basic determinants of individual weight status and obesity risk in Spain by concurrently examining individual and ecological characteristics, taking into account any spatial interdependencies that may exist. The data are from the National Health Survey of Spain for the year 2011-2012 (INE-National Statistical Institute of Spain) and contain information of a representative sample of 12,671 adults over 50 Provinces of Spain. A spatial autocorrelation analysis is performed in order to check for any spatially persistent areas of high obesity rates across Spain and control for socio-economic heterogeneity related to obesity spatial clustering. A multilevel analysis is carried out to examine the determinants of individual weight status and obesity controlling not only for the individual's approximate environment but also for the broader setting to which both people and their approximate environments belong. Findings suggest that socioeconomic status (proxied by education) and health behaviors have the expected association with BMI and obesity risk, as well as that obesity risk is higher in low-income regions. The interactions we include in the analysis, insinuate that the criminality level constitutes an obesity risk factor only for women.

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Beyond a Health-related Issue: Socioeconomic Determinants of Patient Mobility in Turkey

In 2007, it was given the right to patients to choose their health care providers in order to improve the accessibility to the health care services in Turkey. Moreover, patients have the right to apply to a hospital/medical center without any extra cost even if the center is outside of the residential provinces. As a result of “the universal health coverage” arrangement, nearly 7 million patients (10% of all provisions) have received health care services outside their residential provinces every year. The aim of the paper is to identify the factors that led to patient mobility in Turkey. In this study, not only that the health-related variables, but socioeconomic, demographic, and geographic variables take into account to analyze the patient mobility.

The numbers of patients who apply for the health care providers different from their residents among Turkish provinces between 2010 and 2013 was selected from the most common medical specialties which are cardiology, paediatric, obstetric, and internal diseases. The right to choose their health care providers has been given since 2007, the post-2010 period was chosen for analysis in order to better detect the impact of the arrangement. Data set for analysis at the provincial level for four specialties was created by matching the patient mobility information (the Turkish Social Security Institute); the number of patients per specialist (the Turkish Ministry of Health); provinces information on population, migration, distance, and income per capita (the Turkish Statistical Institute).

The health model of immigration suggests that the differences in the number of patients per specialist between origins and destinations are incentives to patient mobility. Another factor that positively affecting the patient movements is population; the larger population in the origins is likely to cause the patient flows. The difference in income level between provinces is expected to increase the patient movements. The presence of contact people at the destination, as a result of past migration, increases the flows. The data used in this paper consists of a sample of longitudinal data set which includes both time-variant and time-invariant variables at provincial level over the period 2010-2013.

Thus, the Random effects model of panel-data models used due to the presence of time-invariant variables (e.g., distance and contiguous) that they make impossible to use the Fixed effects model.

There are statistically significant positive relationship between the number of patients per specialist and the patient mobility for all the medical specialties studied. When the number of people who was born in i and is living in j changes 100 units, patient movements change in the range of 4.1% to 4.8% in all specialties. Consistent with the literature, the distance between i and j has a negative impact on patient movements. Patient mobility increases in the range of 2.13% to 2.32%, when the two provinces are contiguous.

This study has been identified the factors that led to patient mobility in Turkey and questioned whether the freedom of patient mobility is an effective policy option for healthcare services, on the case of Turkey. At the selected medical specialties, especially the cardiology clinics, that need the specific treatments, it is observed that patients are moving from the provinces that are lower socioeconomic status to higher profile provinces. Moreover, family relations (e.g., internal migration among provinces) and distance are other factors that are important determinants of patient mobility. Travel and accommodation expenses can create a disadvantage for patients in areas with low income. Policy makers, in addition to the health characteristics of each location, have to consider the socioeconomic status of provinces to balance the spatial distribution of the healthcare services.

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Cloning, Characterization and Expression Studies of Argonaute Gene from Barley

Argonaute protein family members are the major players in the gene regulation guided by small-RNA. Argonaute proteins are guided by short interfering RNAs (siRNAs) to target m-RNA molecules for silencing or destruction. Very little is known about different Argonaute proteins and their expression. This study was conducted to clone and characterize Argonaute gene in barley and also for significant protein expression studies.

DNA was isolated from the leaves of Barley. Specific primers were designed to amplify 1.6kb fragment of Ago1 gene. Repeated PCR analyses at the elongation temperature 61.0 °C, confirmed the amplification of our desired fragment. After successful amplification, Argonaute gene was ligated in TA cloning vector and transformed in cloning host *Escherichia coli* (dh5α) competent cells using heat-shock method. Inserted gene in E.coli cells was confirmed by PCR, restriction digestion and Sequencing. Sequence obtained was analyzed by Basic Local Alignment Search Tool (BLAST), and it showed 99.8% homology with reported gene. Subsequently, argonaute gene was cloned in *E. coli* expression vector pET30a for protein expression. E.coli expression host, Rosetta, was chosen for protein expression because of its efficiency to express proteins. Transformation in Rosetta was performed by heat shock method and colonies were confirmed positive for the construct by PCR and restriction-digestion. Positive cultures were then induced with different concentrations of IPTG for Protein expression. Estimated size of our protein was 62.8 kDa, which was confirmed using SDS-PAGE. Further expression studies were carried with Western Blotting. After repeated experiments, the Histag polyclonal antibodies successfully detected the presence of approximately 62.8 kDa band of Argonaute protein.

Barley Argonaute gene was cloned, characterized and expressed in a strain of *E.Coli*. Characterization of Argonaute gene in barley will help us to analyze the genetic diversity of this gene and to observe its expression closely, so as to benefit from its role as major protein in RNA- silencing.

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Does a Telemedicine's Public Policy Improve Healthcare Quality and Save Costs? Evidences from a French Telestroke Project

Increasing the use of telemedicine is currently considered a major lever for changing patterns of healthcare organization. In 2011 the French government launched a national deployment strategy of telemedicine (1).

Telestroke's project was piloted in three regions including Burgundy. The implementation of Telestroke is one of the policy's overall objectives (2). Stroke is the third most prevalent cause of death and the leading cause of acquired adult disability. It is not only a leading public health issue but also an important economic burden due to the costs of hospital care and the cost of disability.

Stroke management is an absolute emergency because "time is brain" (3). Public stakeholders' concerns centre on improving access to healthcare for stroke patients, whilst trying to control health expenditures.

Telestroke utilizes a remote evaluation of a stroke patient by an expert from a specialized stroke unit to a satellite hospital, involving the information and telecommunication technologies (ICT). The reliability and efficacy of this neurological assessment has been demonstrated. (4) Its purpose is to save time thereby increasing the chance of access to a diagnosis and treatment, especially to thrombolysis, the current gold standard for ischemic stroke.

This study reveals which benefits public stakeholders can expect about quality and equity of access to health care and expenditure control from a Telestroke project.

Clinical data were reported retrospectively from 742 patients from two stroke centers and five satellite hospitals in a French region, before (01.10.10/30.09.11) and after (01.10.12/30.09.13) the implementation of the Telestroke project. Cost data encompasses the health expenditures related to the hospital stay and to the rehabilitation care, fully covered by Statutory National Health Insurance.

We show that as the situation currently stands, if access time and territorial equity are certain, the telemedicine device does not reduce the costs of acute stroke care. Our results allow us to give recommendations about hospital funding arrangements in France.

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- (1) Simon, *Télémédecine enjeux et pratiques*, Le Coudrier, coll Synthèses et Repères, octobre 2015
- (2) Guide d'aide à l'élaboration des programmes régionaux de télémédecine, Direction Générale de l'Offre de Soins, décembre 2012
- (3) Hill, M D, Hachinski V, *Stroke Treatment: Time Is Brain*. *The Lancet* 1998; 3:352 - 10.
- (4) Wang S, Gross H, Lee SB, et al. Remote evaluation of acute ischemic stroke in rural community hospitals in Georgia. *Stroke* 2004; 35: 1763-68 ; Audebert HJ, Kukla C, Clarmann von Claranau S, et al. Telemedicine for safe and extended use of thrombolysis in stroke: the telemedic pilot project for integrative stroke care (TEMPiS) in Bavaria. *Stroke* 2005; 36: 287-91 ; Audebert HJ, Kukla C, Vatankhah B et al. Comparison of tissue plasminogen activator administration management between telestroke network hospitals and academic stroke centers: the telemedical pilot project for integrative stroke care in Bavaria/Germany. *Stroke* 2006; 37: 1822-27 ; Audebert HJ, Schenkel J, Heuschmann PU, et al. Effects of the implementation of a telemedical stroke network: the telemedic pilot project for integrative stroke care (TEMPiS) in Bavaria, Germany. *Lancet Neurol* 2006; 5: 742-48 ; Amarenco P, Nadjari M. Telemedicine for improving emergent management of acute cerebrovascular syndromes. *Int J Stroke* 2007; 2: 47-50.