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Abstract Book

**7th Annual International Conference on
Biology
21-24 June 2021, Athens, Greece**

Edited by
Gregory T. Papanikos

2021

Abstracts
7th Annual International
Conference on Biology
21-24 June 2021, Athens,
Greece

Edited by Gregory T. Papanikos

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8 Valaoritou Street
Kolonaki, 10671 Athens, Greece
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Preface

This book includes the abstracts of all the papers presented at the *7th Annual International Conference on Biology (21-24 June 2021)*, organized by the Athens Institute for Education and Research (ATINER).

A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER 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 to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

Gregory T. Papanikos
President

7th Annual International Conference on Biology, 21-24 June 2021, Athens, Greece

Organizing & Scientific Committee

All ATINER's conferences are organized by the Academic Council. This conference has been organized with the assistance of the following academic members of ATINER, who contributed by reviewing the submitted abstracts and papers.

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, U.K.
2. Christopher Janetopoulos, Head, Biology Unit, ATINER & Associate Professor of Biological Sciences, University of the Sciences, USA.
3. George Zahariadis, Academic Member, ATINER & Associate Professor, Faculty of Medicine, Memorial University of Newfoundland, Canada.
4. Vickie Hughes, Director, Health & Medical Sciences Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.
5. Andriana Margariti, Head, Medicine Unit, ATINER & Professor, Queen's University Belfast, U.K.
6. Steven Jonas, Academic Member, ATINER & Professor Emeritus, Stony Brook Medicine, Stony Brook University, USA.
7. Paul Contoyannis, Head, Health Economics & Management Unit, ATINER & Associate Professor, McMaster University, Canada.
8. Jean Moraros, Academic Member, ATINER & Dean and Professor, Faculty of Health Studies, Brandon University, Canada.

FINAL CONFERENCE PROGRAM
7th Annual International Conference on Biology, 21-24 June 2021,
Athens, Greece

PROGRAM

Monday 21 June 2021

10.30-11.00
Registration

11.00-11.30

Opening and Welcoming Remarks:

- **Gregory T. Papanikos**, President, ATINER.
 - **George Zahariadis**, Associate Professor, Faculty of Medicine, Memorial University of Newfoundland, Canada.
-

11.30-12.00

Stephan Tobler, PhD Student, Institute for Management and Economics in Health Care UMIT Tirol, Austria.

Harald Stummer, Professor, Institute for Management and Economics in Health Care UMIT Tirol, Austria.

Title: Effects of Public Reporting Programs: Organising and Synthesising the Literature.

12.00-12.15 Break

12.15-12.45

Violeta Zanaj, Lecturer, Aleksander Moisiu University of Durres, Albania.

Title: Lung Cancer.

12.45-13.00 Break

13:00-13:30

Ana Lucía Oña Macías, PhD Student, University of Lucerne, Switzerland.

Title: Health Inequalities and Income for People with Spinal Cord Injury - A Comparison between and within Countries.

13:30-13:45 Break

13:45-14:15

Andriana Margariti, Head, Medicine Unit, ATINER & Professor, Queen's University Belfast, UK.

Title: Targeting QKI-7 in vivo Restores Endothelial Cell Function in Diabetes: A Journey from Cell Reprogramming to Targets of Endothelial Dysfunction.

14:15-15:00 Lunch

15:00-15:30

Jean-Claude Leners, Lecturer, University of Luxembourg, Luxembourg.

Title: Public Health and End of Life: Ethical and Legal Aspects on Palliative Care and Euthanasia.

15:30-15:45 Break

15:45-16:15

George Zahariadis, Associate Professor, Faculty of Medicine, Memorial University of Newfoundland, Canada.

Title: COVID-19 Genomic Surveillance – Lessons being Learned.

16:15-16:30 Break

16:30-17:00

Aristide Laurel Mokale Kognou, PhD Student, Lakehead University, Canada.

Title: Characterization and Optimization of Five Novel Cellulose-Degrading Bacteria Isolated from Kingfisher Lake and the University of Manitoba Campus.

Tuesday 22 June 2021

11:00-11:30

Ka-Cheng Lo, Student, University of Macau, China.

Title: Which Chinese Herbal Products Work Best for Survival Outcome and Improvement of Hepatic Function in the Treatment of Hepatocellular Carcinoma(HCC)? Statistical Analysis by Frequentist Network Meta-Analytic Approach.

11:30-11:45 Break

11:45-12:15

Kevin Francis U. Ang, Medical Doctor, ValuCare Health Systems, Inc., Philippines.

Title: Philippine Healthcare Expenditure Utilization Data from an HMO.

12:15-12:30 Break

12:30-13:00

Rory Dyke, Core Surgical Trainee, Imperial College Healthcare Trust, UK.

Title: Trainee Satisfaction for Remote & Cross-Site Learning (TSAR XL) Survey: The COVID Emergency Related Trauma and Orthopaedics (COVERT) Collaborative.

13:00-13:15 Break

13:15-13:45

Violeta Zanaj, Lecturer, Aleksander Moisiu University of Durrës, Albania.

Klementina Vogli, Researcher, Aleksander Moisiu University of Durrës, Albania.

Title: Thoracic Trauma.

13:45-14:00 Break

14:00-14:30

Gregory T. Papanikos, President, ATINER.

Title: Deaths due to COVID-19, Lockdowns, Vaccinations and Weather Temperatures: The Case of Greece. (Full Paper) (Slides)

14:30-15:00 Lunch

15:00-15:30

Francesca Pantaleone, Graduate Student, University of Siena, Italy.

Title: Determinants of Vaccine R&D in the Pharmaceutical Sector.

15:30-15:45 Break

15:45-16:15

Nileena Velappan, Research Technologist, Los Alamos National Laboratory, USA.

Title: Developing Visual Analytics for Investigation of Disease Outbreaks.

16:15-16:30 Break

16:30-17:00

Sarita Shrestha, PhD Student, Lakehead University Canada.

Title: Phylogenetic Analysis of a Novel Pectinase Producing Bacteria (Streptomyces sp. S-5) from Soil and Optimisation of Fermentation Conditions for Pectinase Production.

Kevin Francis U. Ang

Medical Doctor, ValuCare Health Systems, Inc., Philippines

Philippine Healthcare Expenditure Utilization Data from an HMO

Majority of the Philippine healthcare expenditure is in the private sector, composed of for-profit healthcare institutions, non-profit providers and health maintenance organizations (HMOs). This sector caters to 30-35% of the country's population. Up to date, there are still concerns of misdistribution, coordination and implementation between government and the private sectors; hence, leading to a fragmented and inadequate form of health care delivery in the Philippines. Established three decades ago in the country, the health maintenance organization industry served as managed-care institutions that supplement government coverage for private sector patients nationwide and aid in their access to good quality hospital care services at a reasonable cost. The Philippines is an archipelago that comprises of 3 island groups (Luzon, Visayas and Mindanao), further broken down into 17 regions (National Capital Region, Cordillera Administrative Region, Bangsamoro Autonomous Region of Muslim Mindanao and Regions I-XIII). This study presents regional utilization data (January 1 to August 31, 2019) derived and generated from a currently existing Filipino HMO, ValuCare Health Systems. As of August 2019, The HMO provides healthcare coverage for 296,661 Filipinos (0.3% of the total population), most of which are residing in the national capital region. Diseases with the highest utilization expense, ranked from highest to lowest, include diabetes mellitus type II, hypertension, pneumonia, urinary tract infection, acute gastroenteritis, cholelithiasis, Dengue fever, cancer and coronary artery disease. Fifty seven percent of the expenditure was utilized in the outpatient care setting, 27% and 16% in the emergency care and inpatient care setting, respectively. Fifty six percent of expenditure was utilized in the National Capital Region, while 18% was utilized in Region IVA, comprising of Batangas, Cavite, Rizal and Laguna. There was no utilization in Bangsamoro Autonomous Region of Muslim Mindanao. The results of the study exhibit a healthcare utilization pattern, mostly localized in the capital of the country since a majority of the HMO-accredited Filipinos reside in that region. Lifestyle diseases like diabetes mellitus and hypertension are prevalent in the country, as shown in the utilization data. Higher utilization is spent in the outpatient scenario than in the emergency and inpatient scenarios combined. This is likely due to different utilization

management methods. Socioeconomic concerns play a causative role in the different utilization expenses in the various regions of the country. The study is limited since data was derived and generated only from one HMO. There is an opportunity to generate and present more utilization reports from the industry. At the end of 2018, the Philippine HMO industry posted 63% growth as compared to 2017. There is immense potential to enhance and maximize the impact of these institutions to facilitate and improve healthcare in the Philippines.

Rory Dyke

Core Surgical Trainee, Imperial College Healthcare Trust, UK

Kapil Sugand

Orthopaedic Registrar, Imperial College Healthcare Trust, UK

Ravi Popat

Orthopaedic Registrar, Imperial College Healthcare Trust, UK

Chang Park

Orthopaedic Registrar, Imperial College Healthcare Trust, UK

Rishi Dhir

Orthopaedic Consultant, Princess Alexandra Hospital, UK

Khaled Sarraf

Orthopaedic Consultant, Imperial College Healthcare Trust, UK

&

Naveethan Sivandarajah

Orthopaedic Consultant, Imperial College Healthcare Trust, UK

**Trainee Satisfaction for Remote & Cross-Site Learning
(TSAR XL) Survey: The COVID Emergency Related
Trauma and Orthopaedics (COVERT) Collaborative**

In response to the COVID-19 pandemic, courses and formal teaching sessions that would have previously required the attendance of Trauma & Orthopaedic trainees in person were moved on to an online format. To obtain a multi-centre and national perspective, a web-based survey was conducted to compare online learning to in-person physical attendance.

Participants were asked to use a 4-point Likert scale (4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree) to express their extent of agreement with 23 statements to assess learning experience, accessibility, acceptability and overall satisfaction of online vs in-person teaching experience. The questionnaire was developed and validated using a multi-round modified Delphi technique with 5 experts. Mode, median (\pm median absolute deviation [MAD]) and Bonnet-Price 95% confidence intervals were presented. Mann-Whitney U test calculated statistical significance between pooled responses of agreement against disagreement, set at $p < 0.05$. The questionnaire abided by the CHERRIES statement. Results: 76 responses were collected. All responders agreed or strongly agreed that the online format provided an important source of learning during the pandemic. 69% agreed or strongly agreed that in-person teaching should still be considered the gold standard (overall 3 ± 0 [95% CI: 3– 3]). However, 97% found online teaching more convenient and accessible as it offered more flexibility

than attending in-person (4 ± 0 [95%CI:4-4]) and almost all would recommend online teaching to their colleagues. 69% also agreed or strongly agreed that they were more likely to attend online teaching compared to in-person (3 ± 0 [95%CI:3-3]). In addition, over three-quarters of responders felt that they achieved their learning goals just as well through online teaching (3 ± 1 [95%CI:3-3]). When comparing the extents of pooled agreements (scores 3 and 4) to pooled disagreements (scores 1 and 2), every question reached a statistical significance of $p < 0.0001$.

This study demonstrated the numerous benefits that online teaching has over in-person attendance. Online learning can be utilised to deliver effective teaching in more convenient, flexible and accessible ways than is possible through in-person attendance. It is thought that a blended approach of online and in-person teaching going forward is likely to afford the best education to Orthopaedic trainees.

Jean-Claude Leners

Lecturer, University of Luxembourg, Luxembourg

**Public Health and End of Life:
Ethical and Legal Aspects on Palliative Care and
Euthanasia**

Since more 10 years now, Luxembourg has passed simultaneously two laws on legal rights for palliative care and euthanasia. The debate was and still is very contradictory in the medical field. Since than a medical society for palliative care was created and some doctors are working more closely with the association for euthanasia.

1) Palliative care: Every person in our country can ask for optimal palliative care, when the diagnosis of an incurable disease is declared. The locations varies, as patients are not always in the same medical setting: either at home cared by the GP and specialized palliative home care teams; or in long term care facilities for persons with physical and/or neuro-cognitive decline (mostly organized by the GPs or in relation with some specialists (for an expert advice); or in hospitals, where the oncologists and palliative care specialists work hand in hand in the oncological and/or palliative wards; finally a 4th option: admission in the unique hospice (15 beds institution) in the country. From a legal point of view all patients can fill-in an "advanced directive", where all details on his/her wishes concerning medical end of life decisions are notified and these personal wishes must be executed by the physician of confidence. For ethical reasons it is still very often a huge debate, as p.ex. in nursing homes, people with dementia are admitted and in less than 2% they have an advanced written directive, which makes the discussion on probable wishes of concerned patients very difficult and hypothetical.

2) Euthanasia: the debate on where (and if?) to practice euthanasia is still a regular field for discussion in the public and medical opinion, but the acceptance of this personal choice increases. Legal aspects arise sometimes, when the policy of a private hospital forbids the act, or if the physician refuses euthanasia for ethical considerations. In this specific situation, when the doctor refuses, it is up to the patient! to find another physician for the act and this is very unsatisfactory in some situations. Of course a lot more people are writing the "declaration for end of life", knowing that maybe they will not ask for euthanasia, when their physical and emotional distresses are well managed medically. The most difficult ethical consideration happens

when you are confronted to a patient (p.ex. with amyotrophic lateral sclerosis, or with a brain tumor), who writes the declaration, but in the evolution of the disease, she/he might no more be able to express this death-wish.

In conclusion, the patient's pathway will never be an easy one: sometimes patient's will is totally in accordance with the medical treatment till death, sometimes death appears before all wishes can be fulfilled.

Ka-Cheng Lo

Student, University of Macau, China

Which Chinese Herbal Products Work Best for Survival Outcome and Improvement of Hepatic Function in the Treatment of Hepatocellular Carcinoma(HCC)? Statistical Analysis by Frequentist Network Meta-Analytic Approach

Accounting for 90% of the liver cancers, Hepatocellular carcinoma (HCC) has resulted in high mortality rate and global burden. In addition to the conventional western treatments, HCC patients are actively seeking adjuvant therapies, such as traditional Chinese medicine (TCM), with the aim of achieving better treatment outcomes and prolonging survival. Until 2021, there are only two network meta-analyses (NMAs) comparing different HCC treatment strategies. The past NMAs, however, did not compare all forms of TCM formulations, and there is no evidence informing which TCM works best for an outcome. To fill the knowledge gaps, this NMA, conducted in a frequentist approach with R (version 4.0.2) under the random-effect model, ranks TCM treatments with its 'netmeta' package for two outcomes (survival and hepatic function), providing comprehensive evidence for TCM practitioners.

There 283 RCTs for survival outcome and 10 RCTs for Child-Pugh score improvement retrieved from six English/Chinese databases for network meta-analysis. All TCM integrative treatments are ranked by P-scores, with survival outcome being measured in hazard ratio and hepatic function (improvement in Child-Pugh score) being measured in odds ratio. The statistical analysis of this NMA shows that the integrative therapy of Buxu Huadu decoction, Jinshuibao capsule and western treatment ranks first overall for survival outcome (P-score 0.9745, HR 0.1962). Fugan injection ranks first among all TCM injections in survival (P-score 0.9809, HR 0.3051). The results are robust as demonstrated by the sensitivity analysis. Moreover, Shugan Huazhuo decoction (P-score 0.9448, HR 0.3728) and Peiyuan Guben capsule (P-score 0.9677, HR 0.2946) are the best among decoctions and products for oral administration respectively. On the other hand, Aidi injection ranks first among all forms of TCM formulations in the outcome of improvement in Child-Pugh score (P-score 0.7539, OR 4.3429).

Accommodating to the demands of different forms of TCM formulations in various patient groups, the results of this study cater to the needs of clinical decision making in all kinds of settings. With statistical evidence, the present study maximizes the therapeutic

potential of TCM as well as directs further research in this field. Multi-centered randomized controlled clinical trials are warranted to verify the results of this NMA.

Andriana Margariti

Head, Medicine Unit, ATINER & Professor, Queen's University Belfast,
UK

**Targeting QKI-7 in vivo Restores Endothelial Cell Function
in Diabetes: A Journey from Cell Reprogramming to
Targets of Endothelial Dysfunction**

NOT AVAILABLE

Aristide Laurel Mokale Kognou
PhD Student, Lakehead University, Canada
Zi-Hua Jiang
Professor, Lakehead University, Canada
Chunbao Xu
Professor, Western University, Canada
&
Wensheng Qin
Professor, Lakehead University, Canada

Characterization and Optimization of Five Novel Cellulose-Degrading Bacteria Isolated from Kingfisher Lake and the University of Manitoba Campus

The search for efficient routes to produce glucose from cellulose is a great interest and importance, as glucose is a highly attractive substrate in the conversion of cellulosic biomass into biofuels, chemicals and bioproducts. Cellulosic biomass needs specific pre-treatments before undergoing microbial fermentation, such as those composed of complex polymeric materials, which first need to be converted to smaller or monomeric molecules to be accessible and metabolized by microorganisms. Different types of microorganisms can be used as biocatalysts, including pure or mixed cultures of aerobic and anaerobic bacteria, yeasts and fungi in general, as well as algae. Bacteria are good cellulose degraders because they grow fast at low temperature and possess a high synergy between cellulases. This work aimed to find efficient cellulolytic bacteria for the conversion of cellulose into glucose.

Five cellulose degrading bacteria, *Bacillus* sp, *Paenathrobacter* sp, *Mycobacterium* sp *Chryseobacterium* sp, and *Hymenobacter* sp isolated from mixture soil samples collected at Kingfisher Lake and University of Manitoba campus were identified by 16S rRNA gene sequencing. Morphological and biochemical characteristics of these isolates were investigated. Their cellulase production was optimized by controlling different environmental and nutritional factors such as pH, temperature, incubation period, nitrogen and carbon sources and salts by dinitrosalicylic acid (DNS) method. The molecular weight of cellulases produced by these isolates was also determined.

Except for *Paenathrobacter* sp, all tested isolates are motile (flagellated). All isolates could not produce indole, hydrogen sulfide, gas, citrate lyase, lysine decarboxylase and lysine deaminase. Except for *Mycobacterium* sp, all isolates produced catalase and hydrolyzed DNA and esculin. *Bacillus* sp exhibited maximum cellulase activity at the

culture conditions of 2% CMC, 35° C and pH5. *Hymenobacter* sp showed maximum cellulase activity at the culture conditions of 2% CMC, 40° C and pH6. *Paenathrobacter* sp and *Chryseobacterium* sp exhibited maximum cellulase activity at the culture conditions of 1.5% CMC, 35° C and pH6. *Mycobacterium* sp showed maximum cellulase activity at the culture conditions of 1% CMC, 35° C and pH6. Yeast extract, casein hydrolysate, peptone, Tryptone and sucrose significantly boosted the cellulase production. The molecular weight of their cellulase was estimated between 60-75 kDa.

These isolates could be promising bacteria for cellulose conversion into useful compounds. The co-culturing of bacteria and enzyme immobilization for maceration, liquefaction, extraction and clarification processes are being studied.

Ana Lucía Oña Macías

PhD Student, University of Lucerne, Switzerland

Vegard Strøm

Researcher/Head of Research Group Spinal Cord Injuries, Sunnaas
Rehabilitation Hospital, Norway

Bum-Suk Lee

Researcher, National Rehabilitation Center, South Korea

Marc Le Fort

Professor, Universitaire de Médecine Physique et Réadaptation, France

James Middleton

Senior Academic, The University of Sydney, Australia

Christoph Gutenbrunner

Chief Physician and Head, Department of Rehabilitation Medicine,
Hannover Medical School, Germany

&

Diana Pacheco Barzallo

Assistant Professor, University of Lucerne, Switzerland

Health Inequalities and Income for People with Spinal Cord Injury - A Comparison between and within Countries

Income and health have a bi-directional relationship. People in poorer households tend to experience worse health status and higher mortality rates than people in richer households, and, at the same time, poor health could lead to less income. This gap exists in almost every country, and it is more pronounced in more unequal countries and in vulnerable populations, such as people experiencing disability. The goal of this paper is to estimate the health income gap in people with a Spinal Cord Injury (SCI), which is a chronic health condition often associated with multiple comorbidities that leads to disability. As data on mortality is inexistent, to estimate the health-income gap for persons with SCI, this paper uses two health outcomes: the number of years a person has lived with the injury, and a comorbidity index. Data was obtained from the International Spinal Cord Injury survey (InSCI), which is the first worldwide survey on community-dwelling persons with SCI. To compare across countries, the health outcomes were adjusted through hierarchical models, accounting for country fixed-effects, individual characteristics such as age and gender, and injury characteristics (cause, type and degree). Our results suggest that for the years with SCI, the gap varies from 1 to 6 years between the lowest and the highest income groups. The main driver of such a difference is the cause of injury, where injuries caused by work accidents showed the

biggest gap. Similarly, for the comorbidity index, persons with SCI in poorer deciles reported significantly more comorbidities, forty times more, than people in richer deciles.

Francesca Pantaleone
Graduate Student, University of Siena, Italy

Determinants of Vaccine R&D in the Pharmaceutical Sector

The aim of this dissertation is to analyse the economic and financial assets that influence vaccine research investments by pharmaceutical companies. Starting from vaccine manufacturing process, the first part describes EU and US regulatory systems and the relative IPRs. Then, the main obstacles to vaccine research and the main strategies suitable to enhance it are discussed. The second part introduces an empirical analysis of 10 pharmaceutical companies' corporate R&D from the 2008-2015 period by using STATA 12, through a Fixed Effect estimation of two models. The three hypotheses considered regard the main assets that influence vaccine research and why, the relevance of properties acquisition as a substitute for R&D as whether regulatory framework does obstruct investments choices or not. The results confirm that Liquidity and Size have a positive impact on vaccine research, whereas Leverage influences it negatively. In addition, more acquisitions lead to fewer R&D investments, since companies find less expensive to acquire knowledge rather than investing on it. Finally, a Chow Test that considers 2010 as a breaking point, led to no structural breaks for panel data, which implies that the new European Regulatory Directive on Pharmacovigilance has no influence on the pharmaceutical companies' behaviour.

Gregory T. Papanikos
President, ATINER

Deaths due to COVID-19, Lockdowns, Vaccinations and Weather Temperatures: The Case of Greece

The aim of this paper is to present Greek daily descriptive statistics on confirmed deaths due to COVID-19, the days of lockdown and their effect on the number of deaths, the outcomes of vaccinations and the influence of weather temperatures. Do lockdowns work in bringing the number of deaths down? The descriptive evidence shows that this is the case even though there is a considerable lagged effect. On the other hand, vaccinations, during the time period of examination, do not seem to have diminished the number of deaths, but the reason might be that it takes time for their full effect to occur. Finally, this paper also examines the hypothesis that during the summer months the daily deaths from COVID-19 are relatively lower than during the winter months. Using average daily weather temperatures, this hypothesis cannot be falsified. Simple calculations of the functional relation between weather temperatures and deaths show that temperatures above 28.5 degree Celsius (°C) were associated with zero deaths.

Sarita Shrestha

PhD Student, Lakehead University Canada

&

Wensheng Qin

Professor, Lakehead University, Canada

Phylogenetic Analysis of a Novel Pectinase Producing Bacteria (*Streptomyces* sp. S-5) from Soil and Optimisation of Fermentation Conditions for Pectinase Production

Commercial application of pectinase is continuously increasing and not limited only to industries like fruit juice industries, textile industries, tea and coffee industries, oil industries, wine industries. Its application is expanding in wastewater treatment, animal feed production, and medical sector, etc. This study aims to isolate the novel pectinase producing bacteria from the soil that has the potential to produce high pectinase activity and have a broad range of stability such as temperature and pH. The numbers of bacteria were isolated on nutrient agar (NA) after serial dilution and incubated at 37°C following the spread plate method. The pure culture was obtained after several times of sub-culturing on NA by the streak plate method. The bacterial isolate was screened as pectin hydrolyzing bacteria when the isolated bacteria are grown on pectin containing media plate and flooded with potassium iodide solution. From the morphological study, biochemical tests, and 16s rDNA analysis, the bacterium was identified as *Streptomyces* sp. S-5. The isolate was observed to produce maximum pectinase at 35°C with pH 7 upon incubation for 48 hours and in yeast extract containing pectinase producing media. The pectinase activity of *Streptomyces* sp. S-5 was also found to be maximum in the media containing 1% of pectin, 1% SDS, and 5mM of NaCl. The pectinase has shown activity in a wide range of temperature (30°C to 80°C) but the maximum pectinase activity was observed at 70°C. The bacterium isolated from soil has the potential to be used in industries to cope with the increasing demand for pectinase in various sectors.

Stephan Tobler

PhD Student, Institute for Management and Economics in Health Care
UMIT Tirol, Austria

&

Harald Stummer

Professor, Institute for Management and Economics in Health Care
UMIT Tirol, Austria

Effects of Public Reporting Programs: Organising and Synthesising the Literature

Public Reporting (PR) of performance or quality data is a common instrument to support transparency, accountability, and quality improvement in modern health care systems. Although, programs exist for 30 years, signals for its efficacy are mixed (see Campanella et al. 2016; Vukovic et al. 2017; Metcalfe et al. 2018). Despite this limited knowledge, new measurement schemes enjoy great popularity.

The aim and novelty of this study is the assignment of evidence into an organizing framework and to find answers on the broad and often unquestioned use of PR by health authorities.

This review picks up the current state of the literature from relevant databases and considers all type of studies. Mainly based on Berwick et al.'s (2003) framework 'Connections between Quality Measurement and Improvement', authors categorized how patients` and providers` reaction on publicly released data are. The theoretical anchoring of the potential pathways plays an essential role. In a kind of map, authors unite research based on different paradigms and theories. Results: PR is looked at from different angles that can be seen by using a broad field of theories, paradigms, concepts, terms, and definitions. However, the studies from different settings show relatively clearly that patients rarely use the reported data. Patients often do not know about an existing PR and orientate much more on own experiences, recommendations of relatives, and referring physicians (see Merle et al. 2009; Schwartz et al. 2005). On the other side, providers show limited evidence as well. Nevertheless, it is the more promising pathway which could lead to quality improvement. It is known that PR stimulates quality improvement on provider level, but not on individual level of a single health professional (see Fung et al. 2008). A considerable problem remains missing awareness of an existing PR program (see Waelli et al. 2016).

This review suggests that PR is a popular topic in different academic fields and health care policy. Despite of its high use, PR often

does not show its full potential. Pure rational approaches to describe the effect of PR fall short. For this discrepancy, Brunsson (2006) names 'Mechanisms of Hope' to establish rational organizations to be key drivers for such initiatives. Hope that continued efforts with the same approach will bring the intended benefit.

Further research should effort to do better by taking increased notice of the broadness of the field and collective solution finding across academics, policy, and practice.

Nileena Velappan

Research Technologist, Los Alamos National Laboratory, USA

Developing Visual Analytics for Investigation of Disease Outbreaks

Historical disease outbreaks provide enhanced contextual information for an unfolding outbreak. Utilizing this concept, we have developed a visual analytic tool known as Analytics for Investigation of Disease Outbreaks (AIDO), a web accessible decision support tool available at <https://aido.bsvgateway.org/>. AIDO currently contains more than 650 representative historical outbreaks for 40 human infectious diseases. Our disease library and analytics were developed with global data and can be utilized to evaluate an unfolding outbreak trajectory during its early stages. AIDO uses epidemiological features determined to have statistically significant association with outbreak magnitude and or duration, and a similarity algorithm to identify closest matching historical outbreaks to the user's scenario. The analytic provides information on possible case count, duration, critical outbreak features, and effective control measures. AIDO also features a short-term forecast based on method of analogs analysis and an anomaly detection algorithm for identification of unusual outbreak presentation. Recently, we have evaluated AIDO's ability to identify an outbreak pathogen in syndromic disease families (e.g., gastrointestinal illness). Development of our pathogen identification algorithm and its utility in identifying specific pathogens of gastrointestinal and mosquito-borne illnesses will be discussed. We are currently evaluating the ability of AIDO disease families to identify emerging pathogens from syndromic families utilizing the similarity algorithm and anomaly detection algorithm. The talk will feature methods used in identifying disease specific epidemiological features and the development of a user interface for web-based epidemiological tools. The utility of AIDO for outbreak investigation will be demonstrated using case studies. We offer these analytics to the global infectious disease surveillance community as a rapid and facile decision support tool that can be easily accessed – a simple yet useful resource that is the first of its kind.

Disease outbreaks among crops have been a cause of economic devastations in the course of history. One of our current projects aims to develop to outbreak analysis tools for wheat rust, based on historical outbreak information. However, the information available for plant diseases differs from outbreak data for human diseases. Developing visual analytics for wheat rust outbreaks presents challenges in data

collection, algorithm development, and visual analytics presentation. We will also present methods in-development for web-based easy-to-use outbreak analysis for plant diseases with specific focus on wheat.

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Abstract Book

George Zahariadis

Associate Professor, Faculty of Medicine, Memorial University of
Newfoundland, Canada

COVID-19 Genomic Surveillance - Lessons being Learned

NOT AVAILABLE

Violeta Zanaj

Lecturer, Aleksander Moisiu University of Durres, Albania

Lung Cancer

The term lung cancer, or bronchogenic carcinoma, refers to malignant conditions that originate in the airways or pulmonary parenchyma. About 95% of cases of lung cancer are classified as small cell lung cancer or non-small cell lung cancer. This distinction is required for staging, treatment, and prognosis. Other cell types make up 5% of lung malignancies. Risk factors for developing lung cancer are smoking, the long term radiotherapy, environmental toxins, the pulmonary fibrosis, and the genetic factors. The key parts in assessing and discovering if a person is suspected of having lung cancer are the cell type, the definition of disease stage, and the his functional status of his lungs. Histological evaluation is necessary to determine whether the lung cancer is a small cell type or not, and also to detect and analyze the possibility that the disease represents pulmonary metastasis from a tumor originating from another organ. Staging for non-small cell cancer is important to determine the treatment of the individual with cancer, in such cases the patient can be operated in order to avoid undergoing the patient to the surgery in advanced cases. Its history is relatively new, it counts 200 years. The first concept of lung cancer was first introduced by Bayle in 1810, and Walsche was the first to use the term lung cancer. It poses a worrying problem for medicine today. Lung cancer is the most common primary malignant tumor and accounts for 95% of all lung tumors. Usually, in patients with lung cancer the subjective data and objective symptoms are not characteristic. Even a comprehensive X-ray examination may not give an accurate diagnosis. Lung cell cancer typically occurs like in the other epithelial tumors.

Violeta Zanaj

Lecturer, Aleksander Moisiu University of Durres, Albania

&

Klementina Vogli

Researcher, Aleksander Moisiu University of Durres, Albania

Thoracic Trauma

Closed thoracic trauma is an injury, caused by a strong blow, or a direct collision of the chest surface. In many cases, closed thoracic trauma can occur, from a force or object that is thrown directly on the person's chest, or when the person himself fall over an object or on a surface. Closed thoracic trauma is often encountered in car accidents and in the cases of physical violence. Another major cause is the child abuse. Closed thoracic trauma affects the various structures located within the thoracic wall and its cavities. It can directly involve the chest, sternum or lungs. It is often accompanied by contusions, fractures and internal hemorrhages. In many cases, closed thoracic trauma can cause the collapse of one or both lungs. This occurs when a fractured rib pierces the lung tissue. Compromised (irregular) breathing and coughing up blood can be the signs of a serious trauma. Pneumothorax, or otherwise the collapse of the lungs, can be life threatening if those are not treated quickly. A high percentage of closed thoracic trauma comes as a result of explosive burst or the biting with a strong tool. This type of injury can cause bleeding inside the chest. Hemorrhage, which can be life-threatening, requires immediate intervention to stop it. Often, after a closed thoracic trauma, start to rise also some heart problems. This is especially true when broken ribs are involved. The heart muscle itself can be weakened, damaged or swollen and as a result we may have damage to the heart valves. Another damage can be a ruptured aorta, which causes massive hemorrhage and death if surgery is not performed on time. In some cases, when closed thoracic trauma has caused death, it is necessary to perform an autopsy. An autopsy determines whether the death occurred as a result of an accident or suicide. It is the anatomopathologist who can discover evidence that leads to a murder, despite the fact that at first glance the impression of an accident or suicide is created.