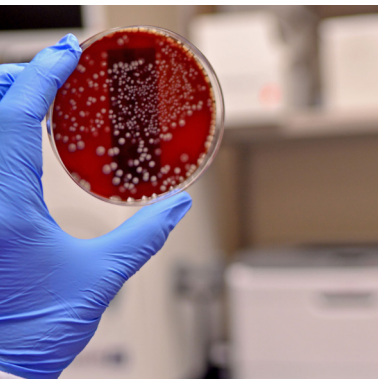
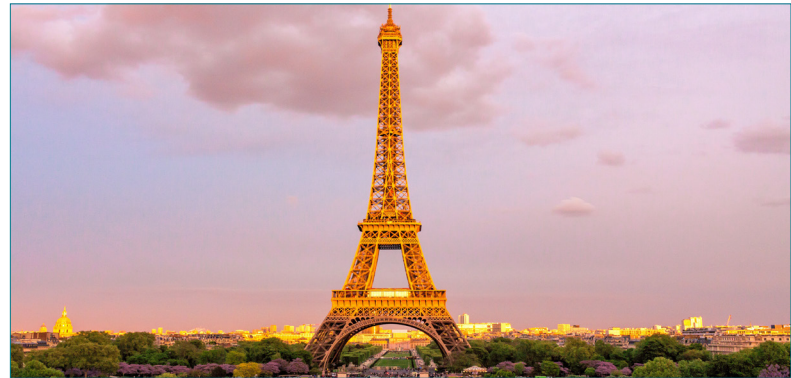

Video Presentation

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The centers of premeltons signal the beginning and ends of genes

Henry M Sobell

University of Rochester, USA

Premeltons are examples of emergent structures (i.e., structural solitons) that arise spontaneously in DNA due to the presence of nonlinear excitations in its structure. They are of two kinds: B-B (or A-A) premeltons form at specific DNA-regions to nucleate site-specific DNA melting. These are stationary and, being globally nontopological, undergo breather motions that allow drugs and dyes to intercalate into DNA. B-A (or A-B) premeltons, on the other hand, are mobile and being globally topological, act as phase-boundaries transforming B- into A- DNA during the structural phase-transition. They are not expected to undergo breather-motions. A key feature of both types of premeltons is the presence of an intermediate structural-form in their central regions (proposed as being a transition-state intermediate in DNA-melting and in the B- to A- transition), which differs from either A- or B- DNA. Called beta-DNA, this is both metastable and hyperflexible-and contains an alternating sugar-puckering pattern along the polymer-backbone combined with the partial-unstacking (in its lower energy-forms) of every other base-pair. Beta-DNA is connected to either B- or to A- DNA on either side by boundaries possessing a gradation of nonlinear structural-change, these being called the kink and the antikink regions. The presence of premeltons in DNA leads to a unifying theory to understand much of DNA physical-chemistry and molecular-biology. In

particular, premeltons are predicted to define the 5' and 3' ends of genes in naked-DNA and DNA in active-chromatin, this having important implications for understanding physical aspects of the initiation, elongation and termination of RNA-synthesis during transcription. For these and other reasons, the model will be of broader interest to the general audience working in these areas. The model explains a wide variety of data, and carries within it a number of experimental predictions – all readily testable – as will be described in my talk.

Speaker Biography

Henry M Sobell was born in Los Angeles, California November 7, 1935, and grew up in Brooklyn, New York, where he attended Brooklyn Technical High School (1948-1952), Columbia College (1952-1956) and the University of Virginia School of Medicine (1956-1960). Instead of practicing clinical medicine, He went to the Massachusetts Institute of Technology, Cambridge, Massachusetts, to join Professor Alexander Rich in the Department of Biology (1960-1965) where, as a Helen Hay Whitney Postdoctoral Fellow, he learned the technique of single-crystal X-ray analysis. He joined the Chemistry Department at the University of Rochester, College of Arts and Sciences and was then jointly appointed to the Department of Biophysics at the University of Rochester School of Medicine and Dentistry, becoming a full professor in both departments (1965-1993). He is internationally renowned for his pioneering contributions to the understanding of how the anticancer agent, actinomycin D, binds to DNA and exerts its mechanism of action. Using the technique of X-ray crystallography, he and his research colleague, Shri C. Jain, solved the structure of a crystalline complex containing actinomycin and deoxyguanosine, and the information obtained from their study led them to propose a model to understand the general features of how actinomycin binds to DNA.

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Permanent treatment of vitiligo: Irrianna, immigration of cells in vitiligo disorder

Akbar Mohammadrezaei and Nooshin Mohammadiasl
Dermatologist, Iran

This paper is about a skin disorder manifesting itself as white spots in different parts of the body. This disorder is categorized as segmented, focal, generalized and universal vitiligo. The current methods used such as UV rooms may expose many risks and long term side effects to the patients. Furthermore, at the end of the treatment, the patient leaves the clinic in grief and without being really cured. I was suffering from the same disorder for 14 years, so I can understand the sadness of those patients. My motivation to find the medicine was myself. Once, I was a vitiligo patient. Because of my financial problems, I did not have access to laboratories. As a result, my only chance was to do a broad self-study to enlarge my understanding about human biology. Thanks to it, I cured myself in 5 months and afterwards, many other patients from England, Iran, Turkey and Azerbaijan. In this treatment, I ask my patients to take blood tests. And according to the affected area, I prescribe the vitamins, pills and my own compost creams (different for kids and adults). One time visit every two months will be enough to adjust the dose of the medicine (mostly herbal). My only purpose to write this paper is to provide all my dermatologist coworkers with some information about this treatment. There are many vitiligo patients all around the world waiting for the medicine, praying for it. I hear them, we all do.

It is our humanitarian duty to let them know yes, your prayings have been answered. The whole treatment takes about five months and financially is affordable by everyone. If they follow my advice mentioned in the paper, the disorder will not come back. I would kindly ask you to drive through my paper and read it deep. I have cured myself and many others, so I can replicate the medicine on the cases offered by you. The treatment and the progress is easily recognizable from the first month.

Note of the translator: My family doctor trusted me with his paper. That is why I could not consult about the translation to anybody. I present my sincere appologies for any terminological mistakes in the abstract. Nooshin Mohammadiasl, Urmia, Iran, 1985.

Speaker Biography

Akbar Mohammadrezaei was born in Urmia in 1986/03/29, in west Azerbaijan state of Iran. He is a married men with two children, one son and one daughter. He finished his primary education in 1981 and secondary education in 1985, both in Urmia. He was accepted in medicine department in Tabriz, in 1986. He graduated from medicine department in 1995. He did his military service as a doctor in army. He was afflicted by vitiligo for 14 years. The motivation behind this treatment was his own suffering. For years and years, he did a lot of studies and then could cure himself in 5 months. He hopes all people suffering from this disease will hear their voice and good news.

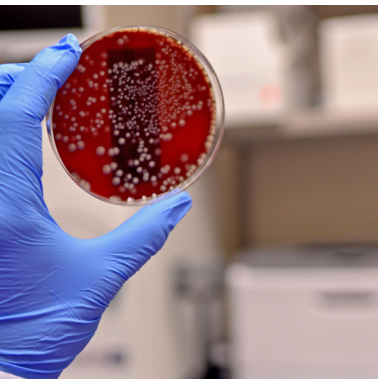
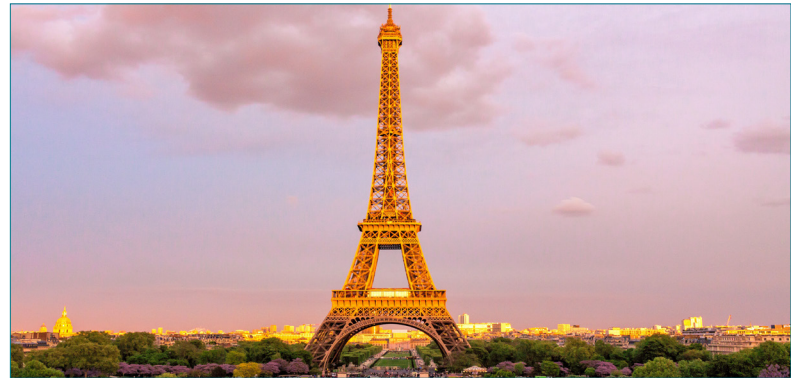
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Scar formation and patient satisfaction after thyroidectomy with and without surgical drains

Hyungsuk Yi

Kosin University College of Medicine, South Korea

Background: Several comparative studies have documented the outcomes of negative pressure drain use after thyroidectomy. However, these previous studies did not focus on scar formation. The aim of this study was to compare thyroidectomy outcomes with and without negative pressure drain use in terms of scar formation.

Methods: Nine hundred seventy-five patients who underwent thyroidectomy between January 2012 and December 2013, at Kosin University Gospel Hospital were enrolled in this study. Patients were assigned to one of two groups at the surgeon's discretion: the negative pressure drain group (n=515) or the no drain group (n=460). Medical records were reviewed, and the incidence and severity of scar formation were compared. We estimated patient satisfaction seven months postoperatively based on esthetic and functional outcomes using the Patient and Observer Scar Assessment Scale.

Results: The incidence of mild scarring was higher in the no

drain group, but this difference was not statistically significant (P=0.069). The incidence of severe scarring was significantly higher in the negative pressure drain group (5.83%, P<0.001). Based on the Patient and Observer Scar Assessment Scale data from 205 patients, patient satisfaction was significantly higher in the no drain group (P=0.006). Itching was reported significantly less frequently in the no drain group (P=0.034). There were no significant differences between groups with respect to pain or observer scar scale score.

Conclusion: This study suggests that not using a drain after thyroidectomy leads to high patient satisfaction and reduces the likelihood of severe scar formation.

Speaker Biography

Hyungsuk Yi is a plastic surgeon. He is an assistant professor of Kosin University, Busan, South Korea. He is the chairman of Department of Plastic and Reconstructive Surgery. He is an academic director at the Wound Research Society of Busan, South Korea.

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Wound healing of oral mucositis by the use of preventive laser photobiomodulation in patients with head and neck cancer undergoing radiochemotherapy

Alena Ribeiro Alves Peixoto Medrado¹, Juliana Borges de Lima Dantas², Gabriela Botelho Martins³, Manoela Carrera⁴ and Hayana Ramos Lima⁵

¹School of Medicine and Public Health, Brazil

²Northeast Brazil College, Brazil

³Health Sciences Institute of the Federal University of Bahia, Brazil

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⁵Federal University of Southern Bahia, Brazil

Objective: To evaluate the preventive effect of laser photobiomodulation in the development of radio/chemotherapy treatment in patients with head and neck cancer.

Methods: This randomized clinical study included patients undergoing radiotherapy with or without associated chemotherapy. The patients were allocated randomly to the laser (LG, n = 30) and control (CG, n = 26) groups. The LG (AsGaAl, 660 nm laser, 86.7 mW, 2 J/cm²) participated in the preventive protocol, while the CG underwent a simulated procedure without light emission (sham). The degree of oral mucositis (OM), salivary flow and referred pain were evaluated at the beginning of radiation therapy and during the 6th, 12th, 18th and 24th sessions.

Results: Patients of both groups showed a significant increase in the degree of OM, according to the progression of the radiotherapy sessions (p < 0.01). Regarding OM, salivary flow, and pain related to the oral cavity, there was no significant

difference between the groups in all periods assessed (p > 0.05). There was a significant reduction of salivary flow from the 6th session when compared to the values from the start of radiotherapy. The photobiomodulation laser did not affect the experience of pain in patients during treatment (p < 0.001) when compared to that during the start of treatment.

Conclusions: The photobiomodulation laser protocol used in this study was not effective in preventing OM radiation-chemotherapy-induced OM in patients with head and neck cancer.

Speaker Biography

Alena Ribeiro Alves Peixoto Medrado has completed her PhD at the age of 25 years from Federal University of Bahia, BR. She is professor of Federal University of Bahia, BR. Currently, working as assistant professor at Bahiana – School of Medicine and Public Health, BR. She has over 200 publications that have been cited over 200 times and her publication h-index is 20 and has been serving as an editorial board member of reputed Journals.

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Slight improvement of the effectiveness in treating cleft lip scars with silicone gel versus silicone sheet: A secondary analysis

Yensheng Wang^{1,2} and Qiaowan Lee³

¹Yale University School of Public Health, USA

²Chang-gung Memorial Hospital, Taiwan

³Taipei City Hospital, Taiwan

Introduction: Silicone sheet is often used for preventing cleft lip scar postoperatively with concerns of ingestion, application site irritation and short application time. Silicone gel has day-long application duration with better safety. Previous study suggested no difference between forms of silicone in treating cleft lip scarring without controlling potential confounders. We aimed to evaluate the effectiveness of silicone gel versus sheet in a different model, controlling surgical gap, side and patient effects.

Method: Data was retrieved from previous study with additional information from the author. In short, silicone gel/sheets were randomly assigned to the patients. Clinical scar evaluation scores (VSS, VAS, width) were measured 6 month after application. Transformation was performed for normalization and direction purpose. Generalized linear model was performed controlling the measurement, age, gap and patient effects with Tukey's adjustment. Sensitivity analysis was performed to compare the result.

Result: There are 29 observations in sheet group with mean VSS 0.46 (SD 0.11), mean 10/VAS 1.42 (SD 1.20) and mean width 2.75 (SD 1.44). There are 26 observations in gel group, with mean VSS 0.41 (SD 0.13), mean 10/VAS 1.35 (SD 0.18) and mean width 2.06 (SD 1.71). Silicone gel had a lower score compared to sheet after tukey's adjustment($p=0.0048$, 95CI: 0.05, 0.26). Sensitivity analysis showed a similar result.

Conclusion: Silicone gel appeared to slightly improve post-operative cleft lip scars compared to silicon sheet. With the advantage of safety and patient-friendly features, silicon gel could be recommended for postoperative care of cleft lip scars in infants.

Speaker Biography

Yensheng Wang has completed his MD at Chang-gung Memorial Hospital, Taiwan in 2015. He devoted to clinical studies that discover potential treatments for surgical wounds. He also engaged in discovering investigation techniques and treatment for allergic diseases and cancers. Yensheng is currently a graduate student at Yale University School of Public Health.

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Slight improvement of the effectiveness in treating cleft lip scars with silicone gel versus silicone sheet: A secondary analysis

Qiaowan Lee¹ and Yensheng Wang^{2,3}

¹Taipei City Hospital, Taiwan

²Yale University School of Public Health, USA

³Chang-gung Memorial Hospital, Taiwan

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Speaker Biography

Qiaowan Lee has completed her MD at Chang-gung Memorial Hospital, Taiwan in 2015. She devoted to clinical studies that discover potential treatments for surgical wounds. Qiaowan is currently a resident doctor at Taipei City Hospital, Taiwan.

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A Study on prevalence of *Escherichia Coli* O157 in healthy camels, cattle, sheep and goat from slaughterhouse in Al Ain, the United Arab Emirates

Dawood Sulaiman Al Ajmi, Sharmila Banu and Shafeeq Rahman
UAE University, UAE

Shiga toxin-producing *Escherichia coli* (STEC) are *E. coli* strains, which are associated with major food illness around the world. *E. coli* O157 has been widely reported as the most common STEC serogroup, which have emerged as important enteric pathogen since their identification. These bacterial strains are colonized in animals and are excreted through animal feces, which can contaminate the farm, water and food processing environment. This study aims to evaluate the prevalence of *E. coli* serotype O157 in feces of cattle, camel, sheep and goat slaughtered in UAE for meat consumption. This study was carried out on fecal samples of healthy cattle (n=137), camel (n=140), sheep (n=141) and goat (n=150) during the period of September 2017 to August 2018. It was found that *E. coli* O157 was present in the fecal samples of goat, camel and cattle at 2%, 3.3%, and 16% respectively. Surprisingly, from the samples collected from sheep we failed to detect any *E. coli* O157 strains. We have

used the traditional sensitive Immuno-magnetic separation technique (IMS) coupled with culture plating method for detecting the *E. coli* O157 pathogen. All isolates were confirmed as *E. coli* O157 using latex agglutination test (Oxoid) and the virulent genes were confirmed using multiplex PCR. These results comprise the first report on *E. coli* O157 prevalence in the UAE and prove the presence of these pathogens in the slaughtering animals, which could possibly contaminate the meat products. This study also indicated that there were no breed and seasonal effect on these strains in the UAE.

Speaker Biography

Dawood Sulaiman Al Ajmi has completed his PhD in animal production from the University of Queensland in 2008. He is currently working as an assistant professor in college of food and agriculture at arid land agriculture department, UAE University. His main area of research is in veterinary science and have publications in reputed journals.

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Immobilization and application of laccase preparation

Vladimir Elisashvili

Agricultural University of Georgia, Georgia

The application of the white rot basidiomycetes (WRB) and especially their lignin-modifying enzymes in various industrial biotechnologies and in bioremediation of wastewater and soil polluted with the emerging organic pollutants (EOP) requires their huge production and stabilization. In this study, production of laccase by two most promising enzyme producers (*Trametes versicolor* and *Cerrena unicolor*), isolated and identified from the Georgian forest, was optimized in submerged fermentation conditions and laccase preparations were isolated from the culture liquids by ammonium sulfate precipitation. Two obtained laccase preparations and, for comparison, commercial laccase from *Trametes versicolor* were immobilized on the fumed silica nanoparticles (fsNP) with APTES modification in order to increase their stability and to provide their separation from the reaction mixture and reusability. The coupling procedure for fsNP–laccase conjugates was optimized to bind as much as possible of the initially applied laccase and to obtain the highest loads of laccase activity on the fsNP. Among the enzyme preparations, immobilization of *T. versicolor* laccase was the most effective - 4.0 U g⁻¹ fsNP, with

immobilization yield of 121% and the washing loss of 3.1%. Immobilization yield of *C. unicolor* laccase achieved 133% with the least washing loss - 0.9%; however, enzyme load was only 2 U g⁻¹. Finally, the immobilization yield for commercial laccase preparation was the highest (172%), but the washing loss was 3.2% and enzyme load was 2.5 U g⁻¹. We have tested laccase preparations for degradation of micropollutants of wastewater. There was shown that immobilized laccase preparations appeared to be appropriate tools for elimination of diclofenac and Bisphenol A.

Speaker Biography

Vladimir Elisashvili is a director of the Animal Husbandry and Feed Production Institute of the Agricultural University of Georgia. In 1974, he obtained his PhD in microbiology at the Saint Petersburg (Leningrad) State University. Then, he continued his work at the chair of microbiology as a scientist and assistant professor. In 1983, he joined the Durmishidze Institute of Biochemistry and Biotechnology, Tbilisi, Georgia and in 1993, he obtained the Doctor of Biological Sciences degree in biochemistry. In 1976/77, he obtained a postdoc position at the Institute of Molecular Biology, Paris VII, France. In 2001-2006, he worked at the Free University of Brussels and in two biotechnological companies in Israel. He has over 190 publications and supervised 21 PhD theses. He is serving as an editorial board member of three reputed Journals.

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Prevalence of human papilloma virus (HPV) and its genotypes in cervical lesions among Egyptian women by the linear array HPV genotyping test

Reem Abdelhameed Harfoush
Alexandria University, Egypt

One of the major concerns in designing of prestressed beams in ultra-high performance fiber reinforced concrete (UHPFRC) is improvement of their ductility fracture due to the nature of the materials used in their manufacture. This can induce plastic behaviours which it is necessary to take into account by designing of such structures, especially when they are of large spans. In the present work, it is proposed an analytical model in large deformation of a rigid plastic prestressed UHPFRC beam embedded at one end and having at other end rolled support. She is approached by a local uniform load and external moments to supports. The proposed non-linear model can find exact analytical solutions for the determination of the local arrows and

the associated charge by the technique of Lagrange multiplier which allows finding the stationary points of differentiable function of one or several variables under constraints. The results of this work can be useful in designing and calculation of long span prestressed structures with plastic rigid behavior.

Speaker Biography

Reem Abdelhameed Harfoush has completed her PhD at the age of 35 years from Alexandria University as well as publications to obtain professor degree. She is the quality manager of "Diagnostic Medical Microbiology Lab, Faculty of Medicine, Alexandria University", that serves Alexandria Main University Hospital. She has published more than 20 papers that were cited 68 times and has been serving as a reviewer in (Alexandria Journal of Medicine). Her h- index is 5.

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Isolation and characterization of phenol-degrading yeasts from industrial effluent (Petrochemical Seaport Mahshahr, Iran)

Atena Alirezaei Dizicheh¹, Mohammad Ghayyomi Jazeh², Mansour Bayat¹ and Mahmood Alimohmmadi²

¹Islamic Azad University, Iran

²Tehran University of Medical Science, Iran

Nowadays environmental pollutants are one of the problems facing the industrial world. Among these compounds, phenolic compounds are toxic pollutants to which belongs chlorophenols known as xenobiotic chemicals. 4-Chlorophenol (4-CP) is one of the chlorophenols with a high solubility in water, so it is most detected in wastewater and also can accumulate in their bodies biologically.

In present study 13 strains of bacteria and 6 strains of yeast and mold phenol degradation was purified from Shahid Tondgooyan Petrochemical wastewater treatment unit was first carried out within about 15 days. Then, capability of the isolated microorganisms in biodegradation of 100ppm 4-chlorophenol in presence of 2 g/l glucose as a growth substrate was examined. Two microorganisms, selected as superior species. The strains were designated TY1 and TY2 and Strains were identified by molecular method using amplification of ITS gene region. The phenol degradation was determined by the spectrophotometric method 4-amino antipyrine. The results showed that 100% removal of 100ppm 4-Chlorophenol by TY1

in 45 hrs, TY2 in 21 hrs and mixed culture of TY1TY2:50/50 in presence of 2 gr/l glucose within 18 hrs. Percentage of pure cultures in mixed culture had no significant effect on 4-CP removal efficiency. Furthermore, the results of the sequencing showed that the isolates with the genus *Trichosporon sp.* The significance and impact of the study is the utilization of native yeast strains isolated from the wastewater itself having potential for environmental bioremediation in petroleum refinery and petrochemical industries.

Speaker Biography

Atena Alirezaei Dizicheh is an Iranian university teacher at Rasht, in the north of Iran. She was graduated in the Foundry field at Tehran University and earned master degree in 2005. She began to work as research and development unit Manager at Gilan Steel Complex in 2006 and simultaneously taught corrosion in the building, steel project, principles of building maintenance in University of Applied Science and Technology of Rasht Academic Center for Education. In recent fourteen years, she has taught many courses in Karaj House of Worker University of Applied Science and Technology, Rasht Academic Center for Education and Mouj Nonprofit University. She has codified 5 single course and one single module in University of Applied Science and Technology that is in the stage of approval.

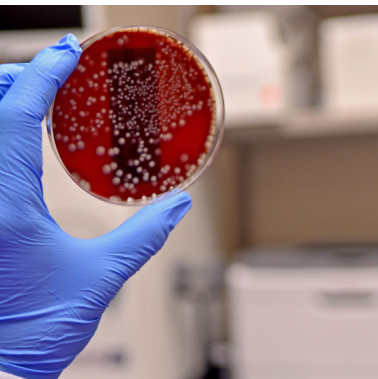
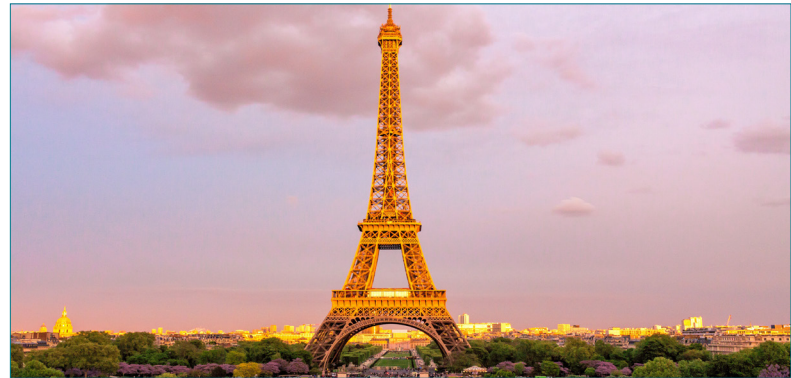
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Immobilization and application of laccase preparation

Aza Kobakhidze

Agricultural University of Georgia, Georgia

The application of the white rot basidiomycetes (WRB) and especially their lignin-modifying enzymes in various industrial biotechnologies and in bioremediation of wastewater and soil polluted with the emerging organic pollutants (EOP) requires their huge production and stabilization. In this study, production of laccase by two most promising enzyme producers (*Trametes versicolor* and *Cerrena unicolor*), isolated and identified from the Georgian forest, was optimized in submerged fermentation conditions and laccase preparations were isolated from the culture liquids by ammonium sulfate precipitation. Two obtained laccase preparations and, for comparison, commercial laccase from *Trametes versicolor* were immobilized on the fumed silica nanoparticles (fsNP) with APTES modification in order to increase their stability and to provide their separation from the reaction mixture and reusability. The coupling procedure for fsNP–laccase conjugates was optimized to bind as much as possible of the initially applied laccase and to obtain the highest loads of laccase activity on

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Speaker Biography

Aza Kobakhidze has completed her PhD at the age of 28 years from Georgian Technical University, Georgia. she is the researcher scientist of Agricultural University of Georgia, Tbilisi, Georgia. She has over 14 publications that have been cited over 30 times.

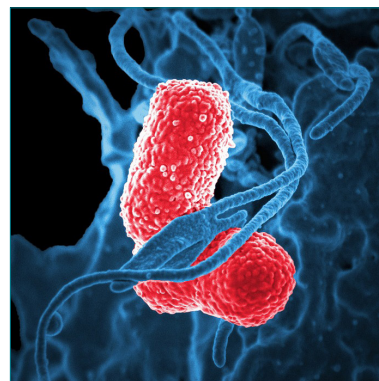
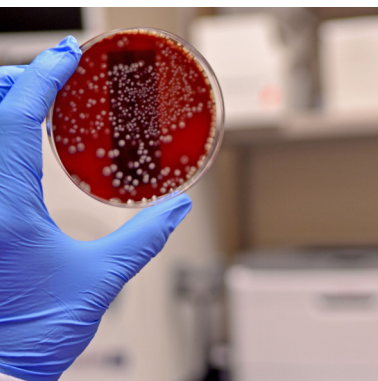
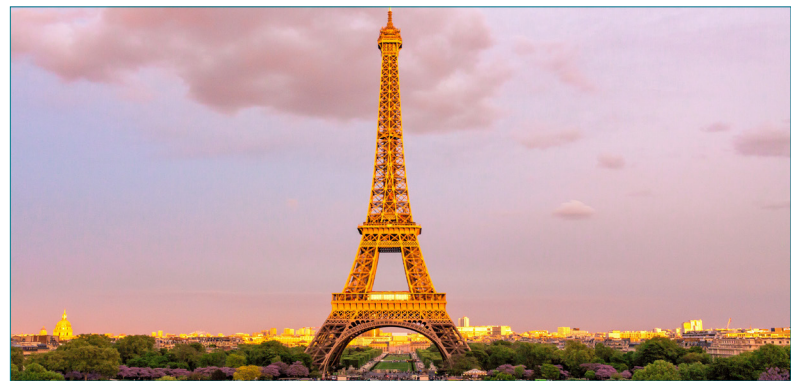
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Combining advanced treatment modalities for complex wounds

Lucian G Vlad
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As wound care practitioners we are facing increasing number of patients with complex wounds and sometimes high recurrence rates, especially for diabetic foot ulcers or venous leg ulcers. As such, after the “standard of care” has failed, we are forced to come up with different and sometime innovative approaches to treatment plan. There is an ever-increasing number of treatment options and products available presented as “advanced treatment modalities”. Each of these treatment modalities have more or less complete data that show 50% or 70% of patient that heal or close at 12 or 16 weeks, etc. Sometimes these patients are facing severe and advanced disease state that interfere with wound healing no matter what treatment plan is used.

I would like to present/share my clinical experience with combination of some of the treatment methods used for challenging situations that allowed a good outcome. Considering that wounds and patients present in different

stages or healing it would make sense to consider a standardized approach based on the presentation stage.

Case 1: Refractory VLU treated with collagen scaffold, NPWT, compression, epidermal grafting

Case 2: DFU with osteomyelitis treated with outpatient bone resection, dermal matrix, NPWT, total contact casting and HBO

Case 3: DFU/ abscess treated with dermal scaffold followed by micrografting procedure in outpatient settings

Case 4: Refractory DFU treated with hyaluronic acid dermal matrix followed by epidermal grafting

Case 5: refractory elbow pressure ulcer treated with NPWT, collagen scaffold, micrografting technique and cast immobilization.

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An improved bio fabrication process to enhance cell survival of cartilage regeneration and functionality of the osteoarthritic knee when enriched with bone marrow mesenchymal stem cells (MSC)

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Tissue regeneration (TR) is currently one of the most challenging biotechnology unsolved problems. Tissue engineering (TE) is a multidisciplinary science that aims at solving the problems of TR. TE could solve pathologies and improve the quality of life of billions of people around the world suffering from tissue damages. New advances in stem cell (SC) research for the regeneration of tissue injuries have opened a new promising research field. However, research carried out nowadays with two-dimensional (2D) cell cultures do not provide the expected results, as 2D cultures do not mimic the 3D structure of a living tissue. Some of the commonly used polymers for cartilage regeneration are Poly-lactic acid (PLA) and its derivatives as Poly-L-lactic acid (PLLA), Poly(glycolic acids) (PGAs) and derivatives as Poly(lactic-co-glycolic acids) (PLGAs)

and Poly caprolactone (PCL). All these materials can be printed using fused deposition modelling (FDM), a process in which a heated nozzle melt a thermoplastic filament and deposit it in a surface, drawing the outline and the internal filling of every layer. All this procedure uses melting temperatures that decrease viability and cell survival. Research groups around the world are focusing their efforts in finding low temperature printing thermoplastics or restricted geometries that avoid the contact of the thermoplastic and cells at a higher temperature than the physiologically viable. This has mainly 2 problems; new biomaterials need a long procedure of clearance before they can be used in clinical used, and restrictions in geometries will limit the clinical application of 3D printing in TE.

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Multimodal and synergistic approach to treat diabetic foot wound using regenerative medicine techniques: A case report

Elisabetta Adelaide Baglioni, Parisi Andrea, Agata Russo, Elisa Fassero, Laura Bernocco, Giuseppe Pristerà and Maria Alessandra Bocchiotti
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Diabetic foot wound (DFW) represents a major cause of leg amputation. Risk factors implicated in DFW development are mainly vascular, neuropathic and mechanical. A multidisciplinary approach is mandatory to treat the wound and avoid amputation. We present a case of a 57 years man, affected by peripheral vascular disease and already subjected to revascularization, with diabetic foot complicated by a third grade heel wound, a forth grade hallux wound and fifth metatarsal bone osteomyelitis.

First of all, we have cleaned all the wounds using a surgical debridement and we have removed the fifth infected metatarsal bone. The heel wound bed was necrotic and edges were inactive. Second of all we have made a hydrosurgery debridement followed by fifteen days of local oxygen therapy performing a wound bed preparation and reducing tissue

hypoxia. Then we have obtained wound healing reactivation exploiting the sinergy beetween platelet rich plasma and autologous adipous micrograft injected into the bed and the edges of the wound, in addition to another cycle of local oxygen therapy. In order to guide the healing advanced dressings were applied. The affected leg was kept from carrying body weight for 30 days and gradually was helped to carry the body weight by a specific footwear. The wound size reduced itself by more than 50% after 60 days and healed completly in 120 days, allowing the affected leg to carry full body weight.

The wound has healed completely thanks to the synergy of a multidisciplinary wound care team and throughout the different regenerative techniques used at the right timing according to wound healing process.

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Sustainability and innovation: A multidisciplinary approach to improve health outcomes while reducing costs

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Introduction: Since 2012, our University Hospital has defined new policies for wound healing management for both hospital and outpatient setting. It has been created a multidisciplinary team of wound care experts with the role to define new treatments and protocols in order to standardize the wounds care approach.

Materials and Methods: The whole wounds were assessed in terms of total number, anatomical region involved and dressing change per year; we have proceeded in dividing them by each aetiology in sub-groups and then we have created 12 protocols treatments. A modified DELPHI panel was applied to validate these profiles and define a consensus document. Using this method, based on current evidence, the treatment profiles, the better technologies to use and the implementation protocols have been selected. Each new treatment (according to Wound Bed Preparation approach) was compared with the available treatment currently used: A cost/opportunity analysis of the dressings was then carried out for exclusive acquiring purposes.

Results: Applying the treatments profile for each wound saved 150.000 euro per year out of a total expense of 430.000 euro. The amount saved (about 30% of annual cost) has been used to get innovative technological dressings (iso-resources). The accuracy of the new treatments has allowed an increase of treated cases (around 33% more); furthermore, due to the less frequent dressings change, the new treatments reduce social costs (around 30% less).

Conclusion: Introducing innovative dressings in the management of wound care and wound healing system achieves an improvement both technological and conceptual in the treatment of complex wounds. It represents the main element of improvement for enhancing services and outcomes. The assistance path and the possibility of using more resources allow to better define the best treatment and to raise the standards of care, reducing at the same time the margin of discretion and promoting costs saving.

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The synergy of different negative pressure wound therapy fillers combined with surgery to treat Fournier's gangrene disease

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Fournier's gangrene (FG) is a soft tissue acute necrotizing bacterial infection of perineal and male genitalia, rapidly progressive, with a mortality rate between 10-83%. We present a case of diabetic and overweight 65 year male with FG involving the left side of scrotum, perineum, lower abdominal wall, inguinal region and left hip.

Due to the septic status at the arrival, the patient has been undergone to several massive surgical debridement removing necrotic tissue and protective colostomy, then supportive therapies and systemic antibiotic therapy were administered.

A left side abdominal wound and the perineal one, with the testis exposed, were still open. We applied on these latter ones the a negative pressure wound therapy (NPWT) with continuous wound cleaning (30 minutes every 4 hours) with polyhexamethylene biguanide (PHMB) solution for 15 days. Due to the wounds improvement, a NPWT dressing at -175mmHg with poliurethan foam filler was applied above a layer of gauze

with PHMB on abdominal and perineal wounds and with a polyalcoholic foam filler with low adhesivity to cover the testis. As wound bed preparation, the wound dressing was changed twice a week for 8 week. The perineal and scrotal wounds were then sutured and dressed with incisional NPWT, together with NPWT above abdominal wound, in order to remove excess exudate and promote the suture edges healing. The abdominal wound was covered using an autologous dermal-epidermal graft in addition to NPWT with polyalcoholic filler foam to ensure the engraftment process. After 90 days, the patient healed and was discharged. The multimodality and synergic approach by massive debridement, the NPWT with different fillers depending on the wound needs and anatomic region, the supportive therapy, together with the systemic antibiotic therapy and the nutritional implementation have saved the patient life with minimal discomfort and acceptable aesthetic outcomes.

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Approach of the patient with burn in Portugal

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For an international congress only the comparison of the burn approach makes sense. Thus, this presentation aims above all to give evidence to the treatment of the patient burn victim in Portugal for later comparison. This approach becomes differentiated in the sense that it is dependent on the Portuguese National Health Service, which translates into a more time-consuming approach but with its advantages

and disadvantages. Another very important aspect is the organization of the treatment of burnt in Portugal, of the resources available since there are not yet such centers of reference, known as Burn Treatment Center but only Burn Unit. As such, with the presentation that I propose, I intend to highlight all these issues.

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Demand for biogas state of the art and future prospective

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Sudan is an agricultural country with fertile land, plenty of water resources, livestock, forestry resources, and agricultural residues. Energy sources are divided into two main types; conventional energy (woody biomass, petroleum products, and electricity); and non-conventional energy (solar, wind, hydro, etc.). Sudan possesses a relatively high abundance of sunshine, solar radiation, moderate wind speeds, hydro, and biomass energy resources. Like many tropical countries, Sudan has ample biomass resources that can be efficiently exploited in a manner that is both profitable and sustainable. Fuel wood farming offers cost-effective and environmentally friendly energy solutions for Sudan, with the added benefit of providing sustainable livelihoods in rural areas. Biogas from

biomass appears to have potential as an alternative energy in Sudan, which is potentially rich in biomass resources. This is an overview of some salient points and perspectives of biomass technology in Sudan. This current literature is reviewed regarding the ecological, social, cultural and economic impacts of biomass technology. This chapter provides an overview of biomass energy activities and highlights future plans concerning optimum technical and economical utilisation of biomass energy available in Sudan. It is concluded that renewable environmentally friendly energy must be encouraged, promoted, implemented, and demonstrated by full-scale plan especially for use in remote rural areas.

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Diversity of ligninolytic enzymes and their genes in the genus *Ganoderma* - application for biodegradation of xenobiotic compounds

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White Rot Fungi (WRF) and their ligninolytic enzymes are considered promising biotechnological tools to remove persistent organic pollutants from industrial waste waters and polluted ecosystems. A high diversity within the genus *Ganoderma* has been reported in Cuba; in spite of this, the diversity of their ligninolytic enzymes, their genes and the biotechnological potential of well adapted autochthonous strains belonging to genus *Ganoderma* remains underexplored. The objectives of this study were: To analyze the diversity of ligninolytic enzymes and genes of Cuban native strains from the genus *Ganoderma* and to evaluate their potential for degradation of textile dyes and polycyclic aromatic hydrocarbons (PAHs). Thirteen WRF strains were isolated from decayed wood in urban ecosystems in Havana and identified as *Ganoderma* sp. using a multiplex ITS-based PCR-method. The strains were cultured in SB-U medium with sugarcane molasses and the ligninolytic enzymes activities as well as isozyme analyses were measured on extracellular enzyme extracts. The diversity of

genes encoding laccases and peroxidases was determined using a PCR and cloning approach with basidiomycete specific primers. The results showed that *Ganoderma* sp. strains isolated differed in their ligninolytic enzyme activities, isozymatic profiles, laccase and peroxidase gene repertoires. A high diversity of laccase genes was found among the strains; while only one gene encoding manganese or versatile peroxidases were detected. The translated laccases and peroxidases amino acid sequences have not been described before. The strains were able to significantly degrade textile dyes, naphthalene, phenanthrene and fluorene. We found that the PAH oxidation performed by their extracellular enzymes generated non-toxic intermediate metabolites; the possible degradation pathways of these PAHs were determined. These findings hold promises for the development of a practical application for the treatment of textile industry wastewaters, as well as for bioremediation of polluted ecosystems by well-adapted native WRF strains.

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Why Salmonella Dublin is a big deal?

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Salmonellosis is one of the most common foodborne diseases worldwide that causes a huge burden of morbidity and mortality in humans. Although non typhoidal Salmonella serovars including Salmonella Dublin are associated primarily with self-limiting gastrointestinal illness they have adapted to cause invasive disease and systemic illness in humans particularly children, elderly and immunocompromised people. *Salmonella enterica* serovar Dublin is a zoonotic infection that can be transmitted from cattle to humans through consumption of contaminated milk and milk products. Outbreaks of human infections by Salmonella Dublin have been reported in several countries including high-income countries. The genetic basis of virulence and invasiveness of Salmonella Dublin is not well characterized. We apply next generation sequencing and associated bioinformatics analyses tools is

characterize the invasome of Salmonella Dublin that enable the bacteria to cause systemic illness in humans. We identified several virulence factors that enable the bacteria to cause invasive disease in humans however no genomic markers were detected that differentiate among invasive and non-invasive isolates suggesting that host factors and immune response play a significant role in the disease outcome. There is no vaccine against non-typhoidal Salmonella however our understanding of the molecular basis of virulence in invasive Salmonella Dublin will provide insights into the development of an effective vaccine through identification of novel virulence-attenuated strains with a potential for use as vaccine candidates for high-risk groups.

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Direct evidence of viral infection and mitochondrial alterations in the brain of fetuses at high risk for schizophrenia

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There is increasing evidences that favour the prenatal beginning of schizophrenia. These evidences point toward intra uterine environmental factors that act specifically during the second pregnancy trimester producing a direct damage of the brain of the fetus. The current available technology doesn't allow observing what is happening at cellular level since the human brain is not exposed to a direct analysis in that stage of the life in subjects at high risk of developing schizophrenia.

Methods: In 1977, we began a direct electron microscopic research of the brain of fetuses at high risk from schizophrenic mothers in order to finding differences at cellular level in relation to controls.

Results: In these studies we have observed within the nuclei of neurons the presence of complete and incomplete viral particles

that reacted in positive form with antibodies to herpes simplex hominis type I [HSV1] virus and mitochondria alterations.

Conclusion: The importance of these findings can have practical applications in the prevention of the illness keeping in mind its direct relation to the aetiology and physiopathology of schizophrenia. A study of the gametes or the amniotic fluid cells in women at risk of having a schizophrenic offspring is considered. Of being observed the same alterations that those observed previously in the cells of the brain of the studied foetuses, it would intend to these women in risk of having a schizophrenia descendant, previous information of the results, the voluntary medical interruption of the pregnancy or an early anti HSV1 viral treatment as preventive measure of the later development of the illness.

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Diversity, anti-quorum sensing and antimicrobial activities of endophytic actinobacteria isolated from Mongolian plants

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With the aim to find endophytic actinomycetes that synthesize anti-quorum sensing (QS) compounds and antimicrobials over 1000 strains were isolated from plants of the desert and mountain areas of Mongolia. As a result, 11.9% of our actinomycetes strains were found to possess the anti-QS activity and 23.8% of the strains were active against gram positive and negative bacteria. These strains also showed anti-QS activity and antibacterial activity by bioautography assay. The 16 strains exhibiting the highest activity were analyzed by HPLC, which showed that all of them produced flavonoids and phenolic

compounds. These results suggest that those actinomycetes could be potential candidates for the production of unique biologically active compounds. Based on morphology and 16S rRNA gene sequences analysis, 84 actinomycete strains were assigned to the genera *Streptomyces*, *Promicromonospora*, *Pseudonocardia*, *Nocardia*, *Saccharothrix*, *Friedmanniella*, *Micromonospora*, *Actinocatenispora* and *Geodermatophilus*, the latter two genera were registered in Mongolia for the first time.

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Bacteriophages as promising biomedical tools

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Bacteriophages or phages are natural predators of bacteria. Despite their discovery one century ago, phages are nowadays proposed as interesting tools in biomedical fields, mainly due to the emergence of multi drug resistant bacteria. Indeed, phages can be used in prevention, diagnosis and as therapeutic tools against not only pathogenic bacteria. In this view, phages can be engineered to fight against other pathogens like viruses, fungi, or even to specifically treat tumour cells. Drug discovery, vaccine development, antibody engineering,

epitope mapping, gene/drug delivery or enzyme technology are examples of the potential use of phages in clinics. The large potential of phages as biomedical tools is increasing, thanks to their easy manipulation, high specificity and low production cost. Creation of adequate regulatory protocols and ethical concerns will help in the success of phage in clinics, and to the general acceptance by the general public.

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The conservation of the microbial deteriorated wooden art works

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Microbial deterioration is a common problem in wooden art works, especially in Taiwan. Because of Taiwan belongs in sea island weather, with high humidity all the years. And most of Taiwanese culture heritages are made by wood which are located in the semi- open space, for instance, temples, where the temperature and humidity could not be controlled. Furthermore, some artists are used to use

driftwood, unfumigated wood or untreated wood as their material and fungal deterioration would be occurred much easier. Besides ethanol treatment, essential oil will also be a method to deal with the fungal problem of wooden art works. According to different cases, art conservators would choose the most suitable treatment for the art works.

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Management disaster infection control acute and chronic wound in Palu, Central Sulawesi, Indonesia

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Introduction: Natural disasters that occurred in Palu, Indonesia on 28 September 2018, namely the earthquake, tsunami and liquefaction. The disaster sacrificed thousands of people died. The number of victims who died as many as 2045 people, while the injured as many as 10.679 with details of 2549 serious injuries and 8130 minor injuries.

Background and aims: Management of acute and chronic wound care after natural disasters in Palu, Central Sulawesi, Indonesia.

Methods: 1. Standard of Wound Washing (Washing Wounds, Removing Necrotic Tissue, Choose Topical Therapy), 2. Select (PHMB) wound washing fluid, 3. WBP, 4. Time, 5. Ozone (O₃), 6. Dressing & Antimicrobial (Cadexomer Iodine, Aquacel Ag).

Results: Treatment of acute and chronic wound care is carried out using modern dressing methods and TIME management. The first step in this method is to do 3M PHMB, wash the wound, remove the necrotic tissue and choose the right dressing the moist principle in an evident base.

Conclusion: Post-disaster wound care has a very important role in TIM work. The management used is TIME. Wounds were treated according to the procedure will be spared from infection and acute wounds will heal according to the wound healing process. Acute and chronic wounds will not continue to become infected wounds.

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Biosynthetic regulation of echinocandin B: From pathway specific to environmental cues responsive regulation

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Echinocandin B is a well-known potent antifungal which is considered to be the front-line antifungal against the treatment of candida infections due to the rare emergence of resistance. It is a cyclic hexapeptide synthesized by the two *ecd* and *hty* gene clusters of *Emericella rugulosa* NRRL 11440. It acts on the fungal cell wall by blocking the 1,3 β -glucan synthase activity. The present work is targeted to elucidate the regulation of echinocandin B biosynthesis. For this, we have deleted the *ecdB* transcription factor encoded gene, located in the *ecd* gene cluster by homologous recombination. This deletion of *ecdB* in *Emericella rugulosa* NRRL 11440 was successfully made and completely abrogated the *ecdB* expression. The *ecdB* deletion did not significantly affect the echinocandin B production and found to be similar to the wild type. Furthermore, the expressions of other genes of the *ecd* and *hty* cluster were also

not significantly altered in the knockout background. We also focused to explore the role of pH and nitrogenous sources on echinocandin B production. Unlike Nitrate which has repressive function, arginine remarkably increased the echinocandin B production by 10 folds as compared to the nitrate. Remarkably production of echinocandin B was induced suitably at acidic pH (range 4.5- 6.6), highest production was observed at 6.6 pH which is two folds higher than 4.5 pH. Taken together our results indicate that in-clustered transcription factor *ecdB* may have no direct role in the regulation of echinocandin B biosynthesis while environmental cues, nitrogen and pH-responsive global regulatory factors are involved in the regulation of Echinocandin B biosynthesis in *Emericella rugulosa* NRRL 11440.

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Identification of biosurfactant producing *Bacillus sp.* isolated from Sirri Island petroleum contaminated soils

Mohammad Ghayyomi Jazeh, Atena Alirezaei Dizicheh, Ayat Nasrollahi Omran, Seyed Mansour Meybodi and Mansour Bayat
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Biosurfactant are amphiphilic compounds produced by microorganisms which either adhere to cell surfaces or are excreted extracellularly in the growth medium. The aim of this study was to isolate biosurfactant producing bacteria and optimize the conditions like temperature, pH and using crude oil, glucose and diesel as source for maximum biosurfactant production. Samples were collected from 8 selected points of oil contaminated soils in Sirri Island-Iran. Primary screening tests including hemolytic activity, drop collapse technique and oil spreading method were performed and species with the best results were picked for complementary screening tests like emulsification activity, foaming and surface tension measurement. The isolated biosurfactant were identified using TLC method. Totally, 81 bacteria species were isolated.

During primary and complementary screening tests, 29 species showed hemolytic activity, 23 had drop collapsing ability and 18 species showed positive results in emulsification, foaming and surface tension reduction. Finally, two *Bacillus sp.* were found to be able to reduce surface tension less than 40mNm⁻¹. Two strains with a high amount of biosurfactant production and emulsification ability were resulted from the present study. According to the high potential of *Bacillus sp.* especially for microbial enhanced oil recovery (MEOR) and bioremediation of oil contamination we can hope that further study of the isolates characteristics and looking for new local strains can play an important role in their application in oil industry.

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Isolation and characterization of *Klebsiella pneumoniae* bacteriophage

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Klebsiella pneumoniae is a gram-negative, non-motile bacteria that are found ubiquitously in nature. It frequently causes human nosocomial infections especially in immune compromised patients, leading to respiratory tract, urinary tract and blood stream infections. Due to the extensive usage of broad-spectrum antibiotics in hospitalized patients, the incidence of multidrug resistance producing strains among clinical isolates has been increasing. Consequently, this has rekindled the interest in using phage therapy as a safe and effective treatment for multidrug resistance pathogens. The rapid ability of phages to lyse bacteria and their specificity make them effective alternative to antibiotics. Results demonstrated a successful isolation of a *Klebsiella* bacteriophage isolated from sewage water. The bacteriophage was able to host and

completely lyse the *Klebsiella* bacterium as a first case reported in Palestine. The results were confirmed several times to ensure consistency. It also gave positive results when spotted on different *Klebsiella* strains. In addition, one-step growth curve using a double layer plaque assay was performed to determine the phage life cycle phases of infection. It showed a latent period of about 3.5h, burst period of 10h and a burst size of about 102.5×10^6 PFU /plaque, furthermore, SDS-PAGE results revealed that four major bands have been detected for phage structure proteins their size : 75KDa, 100KDa, 135KDa and 180KDa. We believe the isolated phage can be used as an effective and simple replacement to antibiotics used in the treatment of *Klebsiella pneumoniae*.

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Production of 4-methyl-1-pentanol biofuel from monomers of poly(3-hydroxy-4-methylvalerate)

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Sustainable alternatives for petroleum-based products such as plastics and gasoline must be developed promptly. *Herbaspirillum seropedicae* is an endophyte that naturally produces polyhydroxyalkanoates (PHAs), like many bacteria. PHAs are widely considered to be bioplastics, and poly-3-hydroxybutyrate, PHB, which is most commonly produced by many bacteria is stiff, brittle and has few applications. Copolymers like poly-3-hydroxybutyrate-co-3-hydroxyvalerate, P(3HB-co-3HV), on the other hand, are more flexible, durable and more like polypropylene. What is not appreciated or reported in the literature is that monomers of other PHAs, e.g., poly(3-hydroxy-4-methylvalerate), PH(4me)V, can be chemically or biochemically reduced to branched-chain higher alcohols which are next generation biofuels, for PH(4me)V conversion is to 4-methyl-1-pentanol. Development of biofuels from PHAs with higher energy density and lower vapor pressure than ethanol, e.g., 4-methyl-1-pentanol, significantly expands use of PHAs as alternatives for petroleum based products and well beyond use as bioplastics.

Our previous studies showed that *H. seropedicae* accumulates PHB when grown on glucose in which two acetyl-CoAs are condensed to form the 3HB monomer substrate. We also showed that the co-polymer, P(3HB-co-3HV), was produced when this bacterium was grown on glucose and nonanoic acid as co-substrate. Beta-oxidation of nonanoic acid results in formation of propionyl-CoA which condenses with acetyl-CoA to form the 3HV monomer substrate. We also found that a PrPC mutant of this bacterium, in which propionate is not effectively catabolized, produced significantly higher amounts

of P(3HB-co-3HV). For production of a PHA with a six carbon monomer, we propose to overexpress an ilvHCD operon in *H. seropedicae* such that a high level of 2-ketoisovalerate, valine metabolite, is produced. Condensation of the CoA derivative of 2-ketoisovalerate (i.e., isobutyryl-CoA) with acetyl-CoA forms PHA monomer substrate, 3-hydroxy-4-methylvaleryl-CoA. The PHA produced is PH(4me)V, a naturally occurring PHA that should accumulate in *H. seropedicae*. Monomers of this PHA will then be isolated and reduced to the corresponding aldehyde and alcohol, i.e., PHA monomer 3-hydroxy-4-methyl pentanoic acid (3-hydroxy-4-methyl valeric acid) to 4-methyl pentanoic acid then to 4-methyl pentanal and then to 4-methyl pentanol. Removal of the 3-hydroxy group will make use of part of a glutamate fermentation pathway used by some Clostridia that involves conversion of 3-hydroxybutyryl-CoA to butyryl-CoA (Dawes & Sutherland, 1992). Also, extracts of Clostridium butyricum can be used to reduce a fatty acyl-CoA to the corresponding aldehyde and alcohol (Day et al., 1970). A large number of PHA depolymerases have also been described, e.g., in various Clostridia.

The 4-methyl pentanol produced will then be tested as fuel like ethanol. Our proposed study will focus on PH(4me)V production in the lab using standard methods for PHA production, isolation and characterization. Recombinant *H. seropedicae* overexpressing an ilvHCD operon from another *Herbaspirillum* sp., an Oxalobacteraceae or Burkholderiales will be tested for PH(4me)V production.

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