Beyond Sciences Initiative

5th Annual International Remote Conference

SCIENCE & SOCIETY

February 15-16, 2020

BEYOND SCIENCES INITIATIVE

## PARTICIPANT BOOKLET

CANCER

CHRONIC DISEASES

GLOBAL HEALTH

BIOTECHNOLOGY

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Contents

Welcome Address

Dear Colleagues and Friends,

It is with pleasure that we extend a warm welcome to all participants of the 5th International Remote Conference: Science and Society, hosted by the Beyond Sciences Initiative (BSI). A wonderful start to the new decade!

This meeting will connect research scientists, educators and trainees around the globe - representatives from over 58 different countries. We look forward to hearing about scientific advances from our local and international colleagues, including the social, cultural and political contexts in which they conduct their academic activities.

Our scientific program is once again notably interdisciplinary and comprehensive, with specific foci on global health, cancer, chronic diseases and biotechnology. Our goal is to enable high caliber discussions surrounding research and community activities in order to foster international collaboration.

On behalf of members of Organizing Committees from BSI chapters around the globe, we thank you for your participation in our 5th International Remote Conference. We anticipate that this Conference will provide the impetus for ongoing collaboration and networking.

Sincerely Yours,

The BSI Executive Team

Welcome to Our Global Participants

Europe
Albania
Austria
England
Finland
France
Germany
Greece
Ireland
Italy
Norway
Poland
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Ghana
Kenya
Lesotho
Mali
Morocco
Nigeria
Rwanda
Senegal
South Africa
Sudan
Tanzania
Tunisia
Uganda

Keynote Speakers

Dirk Gewart, PhD Head of Bioproduction, Horizon Discovery, Ltd., Cambridge, UK.

Dr. Gewert studied at the Universities of Edinburgh and London before 2 post-doctoral fellowships, first at the Hospital for Sick Children in Toronto, Canada, and then the Imperial Cancer Research Fund in London, UK. He then joined industry to focus on drug discovery and manufacturing, and has held positions in multinational biopharmaceutical companies, including the Wellcome Foundation (now part of GSK) and Astra (Now AstraZeneca) before 'downsizing' to start up biotech companies. He was CSO at Gemini Genomics, a population genetics company in the UK, and also founded his own biotech venture, QT Genetics. More recently Dirk has worked as a freelance consultant helping companies raise non-dilutive funding (e.g. government grants). He is currently Head of the Bioproduction Business unit at Horizon Discovery in Cambridge, UK.

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Archana Bhaw-Luximon is an Associate Professor at the Center for Biomedical and Biomaterials Research (CBBR), University of Mauritius.
Archana has a PhD in Polymer Chemistry. She leads the Biomaterials, Drug Delivery and Nanotechnology Unit at CBBR. The main focus of the Unit is on the use of sustainable biomaterials from land and marine resources to engineer nano-enabled 3D scaffolds for tissue regeneration. The Unit is involved in the complete product development pipeline from biomaterials selection to scaffold conception to *in vitro/in vivo* testing and finally clinical trials. The goal is for nanoscaffolds to reach clinical application especially in addressing diabetic wound healing targeting developing countries. The research Unit is the National Focal point for Nanotechnology. She is highly involved with her students in community outreach activities, especially in promoting STEM education both with secondary school students and teachers. Archana is a Visiting Professor, Zhejiang Sci-Tech University, Hangzhou, PR China, for the period 2018-2021. She was awarded the UNESCO Merck Best African Woman Researcher Award, November 2017.
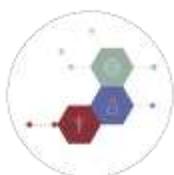
Keynote Speakers

Luke O'Neil, PhD School of Biochemistry and Immunology, Trimnity College Dublin, Ireland

Luke O'Neill is Professor of Biochemistry in the School of Biochemistry and Immunology, Trinity Biomedical Sciences Institute at Trinity College Dublin, Ireland. He is a world expert on innate immunity and inflammation. His main research interests include Toll-like receptors, Inflammasomes and Immunometabolism. He is listed by Thompson Reuters/ Clarivates in the top 1% of immunologists in the world, based on citations per paper. Professor O'Neill is co-founder of Inflazome and Sitryx, which aim to develop new medicines for inflammatory diseases. He was awarded the Royal Dublin Society / Irish Times Boyle Medal for scientific excellence, the Royal Irish Academy Gold Medal for Life Sciences, The Society for Leukocyte Biology (SLB) Dolph O. Adams Award, the European Federation of Immunology Societies Medal and in 2018 the Milstein Award of the International Cytokine and Interferon Society. He is a member of the Royal Irish Academy, EMBO (European Molecular Biology Organisation) and a Fellow of the Royal Society. Luke also has a passion for communicating science to the public. He has a weekly radio slot on the Pat Kenny show on Newstalk. In 2018 he published with Gill the best-selling 'Humanology: a scientist's guide to our amazing existence.' This October sees the publication also with Gill of 'The Great Irish Science Book', a Science book for 10-12 year olds.

Rae S M Yeung, MD, PhD Professor, University of Toronto Senior Scientist & Rheumatologist, The Hospital of Sick Children, Toronto, Canada

Rae Yeung is Professor of Paediatrics, Immunology and Medical Science at the University of Toronto, and Senior Scientist in Cell Biology Research, Scientific Director - Sickkids Biobank and the Hak-Ming and Deborah Chiu Chair in Translational Paediatric Research at The Hospital For Sick Children, University of Toronto. The goal of Rae's research is to understand the mechanisms governing autoimmunity, specifically the mechanisms involved in initiating and sustaining the immune response in childhood arthritis and rheumatic diseases. Basic science findings have been translated into clinical correlates, which in turn are leading to new therapeutic interventions to improve the outcome in affected children. Dr. Yeung is leading both national and international efforts to understand the biologic basis for heterogeneity in childhood arthritis and rheumatic diseases towards personalized treatment decisions. Rae's research is supported by The Canadian Institutes of Health Research, Genome Canada, The Arthritis Society, Canadian Arthritis Network, Province of Ontario Ministry of Economic Development and Innovation, Arthritis and Autoimmunity Research Center, Heart and Stroke Foundation of Canada, ZonMw and Reumafonds (The Netherlands) and The Arthritis Foundation (USA).

Online Conference Program: Day 1
## Saturday, February 15, 2020

Time (EST)	Topic	Speaker
7:00 – 7:15 am	**Opening Ceremony – Introduction and Welcome from BSI**	**Dr. Eleanor Fish,** Univ. of Toronto, Canada
Scientific Session 1: Inflammation		
7:15–7:50 am	**Keynote –** **Adventures in Inflammation Research**	**Dr. Luke O'Neil,** Trinity College, Dublin, Ireland
7:55–8:10 am	**Effects of Vit. D supplementation and seasonality on circulating cytokines in adolescents: lessons from a feasibility trial in Mongolia**	**Dr. Sergey Yegorov,** Suleyman Demirel University, Kazakhstan
8:15–8:30 am	**Glycerol phosphate shuttle enzyme GPD2 regulates macrophage inflammatory responses**	**Dr. Kent Langston,** Harvard University, USA
8:35–8:50 am	**Malonylation of GAPDH is an inflammatory signal in macrophages**	**Dr. Silvia Galvván-Peña** Trinity College/ Harvard University, Ireland/USA
8:55–9:10 am	**Polyunsaturated fatty acids and p38 MAPK pathway – Bridging the gap between metabolic reprogramming and cytoprotective gene expression during dietary restriction**	**Anita Goyala,** National Institute of Immunology, India
9:15–9:30 am HotDoc	**Beyond Sciences Initiative Moi University Chapter - Projects and Experiences**	**BSI Moi** Moi University, Kenya
9:30–9:45 am	**Break**	
Scientific Session 2: Chronic Diseases and Cancer		
9:45–10:20 am	**Keynote – Towards Precision Medicine: Data-driven Machine Learning Approaches Towards Understanding Autoimmunity**	**Dr. Rae Yeung** University of Toronto, Canada
10:25–10:40 am	**Increased metformin dosage suppresses pro-inflammatory cytokine levels in systemic circulation and might contribute to its beneficial effects**	**Benjamin Amoani,** Cape Coast University, Ghana
10:45-11:00 am	**Vitamin C increases the potential of human T cells for cancer immunotherapy**	**Dr. Léonce Kouakanou,** University of Kiel, Germany
11:05–11:20 am	**Profiling of chemotherapeutic drugs as modulators of MRP1 protein expression in cancer cells**	**Vivian Osei Poku,** South Dakota State U., USA
11:25–11:40 am	**Gene expression analysis of the TRIM family genes reveals TRIM8 as an independent adverse prognostic factor in acute myeloid leukemia**	**César Alexander Ortiz Rojas,** University of Sao Paulo, Brazil
11:45-12:00 pm	**Screening of the ARX gene in Moroccan patients with non syndromic X-linked intellectual disability**	**Yousra Benmakhlouf,** U. Abdelmalek Essadi, Morocco
12:05-12:20 pm	**Reduced VIP content accompanied by disrupted innervation in young Cystic Fibrosis (CF) mice**	**Anna Semaniakou,** Dalhousie University, Canada
12:20-12:45 pm HotDocs	**Environmental Contaminants: a population-based study to explore association with relevant cancers in Newfoundland and Labrador** **Wash a Hand, Wash Another**	**Md Arifur Rahman** Memorial University, Canada **Diego Gonçalves Fernandes,** University of Franca, Brazil
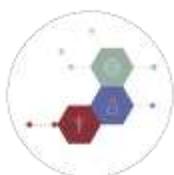
Day 2: Sunday, February 16, 2020

Time (EST)	Topic	Speaker
Scientific Session 3: Bioinformatics/ Biotechnology		
7:00−7:35 am	**Keynote –** **Nanotechnology Opportunities in Health**	**Dr. Archana Bhaw-Luximon** Univ. of Mauritius, Mauritius
7:40−7:55 am	**A Machine Learning based algorithm for deciphering complex chemical structures of secondary metabolites by genome mining**	**Priyesh Agrawal,** National Institute of Immunology, India
8:00−8:15 am	**Hyaluronic acid-dihydroartemisinin conjugate: synthesis, characterization and *in-vitro* evaluation of its anti-proliferative potential**	**Mamta Singh** National Institute of Immunology, India
8:20−8:35 am	**Biodegredation of plastics by bacteria and fungi isolated from a solid waste plant in Zarumilla-Tumbe**	**Miluska Baylon,** Incabiotec SAC, Peru
8:40−8:55 am	**Cell free DNA-sequencing detects breast cancer in majority of newly diagnosed women in Ghana**	**Samuel Ahuno,** KNUST, Ghana
8:55−9:10 am	**Different flavors of T cells: single cell analysis of colonic lymphocytes following infection**	**Dr. Evgeny Kiner,** Harvard Medical School, USA
9:15−9:30 am	**Exploring the potential of *Acinetobacter baumanii Carbapenemase* Bla-Oxa proteins in the design of B and T Cell M-ES vaccine using an immunoinformatics approach**	**Mary Kaka** Adeleke University, Nigeria
9:35−9:50 am HotDoc	**Uhai – the blood donation integrated system**	**Pavanraj Chana** Moi University, Kenya
9:50−10:00 am	**Break**	
Scientific Session 4: Infectious Diseases		
10:00-10:35 am	**Keynote – Crossing channels: from academic research to the corporate boardroom**	**Dr. Dirk Gewert** Horizon Discovery, UK
10:40-10:55 am	**The effect of riboflavin analogues on the intraerythrocytic stage of Plasmodium and identification of flavokinase as a potential antimalarial target**	**Ayman Hemasa,** Australian National University, Australia
11:00−11:15 am	**Resistance pathways for potent and broadly active HIV-1 maturation inhibitors**	**Phuong Pham,** Oxford University, England
11:20 −11:35 am	**Cholera toxin promotes pathogen acquisition of host-derived nutrients**	**Dr. Fabian Rivera-Chavez,** Harvard Medical School, USA
11:40−11:55 am	**IgaA : a unique key for tuning E.coli "connectivity"**	**Dr. Nahla Hussein,** U. Louvain/ AM U Cairo Belgium/ Egypt
12:00−12:15 pm	**Polyoxometallates inhibit ZIKA virus by targeting the viral E protein**	**Ana Enderle,** CIBION-CONICET, Argentina
12:20-12:35 pm	**Role of RHIM proteins in bacterial gut infection**	**Vik Ven Eng,** Monash University, Australia/Malaysia
12:40-12:55 pm	**Macrophage function and underlying mechanisms in TB-IRIS development**	**Lalit Pal,** National Institute of Immunology, India
1:00−1:25 pm HotDocs	**Cross-Sectional Study on Rejection and Its Effects on Students Of Moi University College of Health Sciences.** **Towards a Europe free of cancer: Youth Ambassadors of the European Code Against Cancer Program**	**Faith Chepkorir** Moi University, Kenya **Christos Tsagkaris** University of Crete, Greece
1:30 pm	**Closing Ceremony**	

Online Conference Program: Day 3
## Saturday, February 22, 2020

Career session and short talks

Time (EST)	Topic
Career development session and round table	

Featured panelists include:

Dr. Nana (Hyung-Ran) Lee
Director of Graduate Professional Development
Assistant Professor, Teaching Stream
Dept. of Biochemistry and Immunology
University of Toronto, Canada

8:00–10:00 am

Dr. Deepali Ravel
Curriculum Fellow, Harvard Infectious Diseases
Consortium
Lecturer, HMS Dept. of Microbiology and HSPH
Dept. of Immunology and Infectious Diseases,
USA

Dr. Menattallah Elserafy
Assistant Professor, Center for Genomics
Zewail City of Science and Technology,
Egypt

Marion Girth
Career Service Project Coordinator, DKFZ,
Heidelberg, Germany

Dr. Rodrigo Javier Gonzalez
Immunology Research Fellow, Harvard
Medical School, USA

Poster session/ short talks	

10:00-11:30 am	**Moderated poster session**

Instructions for Conference Participants

Quick Instructions

1. Register to join the conference: http://www.beyondsciences.org/conference2020/ .

2. All registrants (**participants & presenters**) will receive an email invitation by **Monday February 10th ,** with details of how to join the conference on the conference days. If you have registered but have not received an invitation by this date, please e-mail beyondsciencesinitiative@gmail.com.

3. The invitation email will include the details of the event as well as the option to *accept* or *decline*. Click *Accept* once you are ready to join the conference. Note that the conference "room" will not only start to exist/ be available at the time of the first talk on each day.

4. Enter your name and email address to complete your conference registration. This acts as your "login" for the platform. No additional passwords or info are required.

5. Once you have successfully joined the conference, you may access various features such as the live *chat* and the *status update* (accessed by clicking the smiley icon).

Detailed Instructions

Before the Conference

1. Be sure to have the following up-to-date:
   o Adobe Flash Player
   o Web browser (we have tested Chrome & Firefox)

2. All registrants (**participants & presenters**) will receive an email invitation by **Sunday January 26, 2020** with details of how to join the conference for the days they
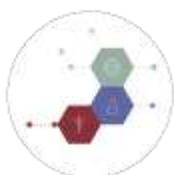
have registered. If you have registered but have not received an invitation by this date, please e-mail beyondsciencesinitiative@gmail.com.

Joining the Conference

1. The email invitation will include details of the event as well as the option to *accept* or *decline*. Choosing *accept* will let us know that you are attending the event and will provide you with a link to the event.

Instructions for Conference Participants

2. Upon clicking this link (on the appropriate conference date) you will be prompted to enter your name and email address to complete your conference registration. You also have the option of testing your connection via the "Test my connection first" checkbox, which might prompt you to download any additional plugins required to utilize the Clickmeeting platform.

3. Alternatively, you may choose to login via your Facebook account.
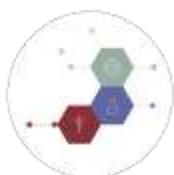
4. For further clarification on the previous three steps, please view the following Youtube video that illustrates the login procedure: https://www.youtube.com/watch?v=N5fp1G4BuZ4

# Instructions for Conference Participants

5. For last minute access on conference days, we will be providing a *WEBINAR ID* on our website which may be used to access the conference. First, visit the Clickmeeting website, clickmeeting.com, then clicking the "JOIN WEBINAR" button on the top right of the page, and finally enter the *WEBINAR ID*.

6. Once logged in, you should have a view like this:
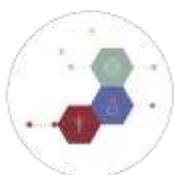
Instructions for Conference Participants

During the Conference

1. During the conference, the *chat* box in the bottom right corner may be used to share your thoughts, or to pose questions for the presenters.

2. The interface language may be toggled by clicking the *flag icon* and choosing a language from the resultant drop-down menu. Note, however, that English will be the primary conversational language in the chat and for the presentations.

3. The grey *smiley* icon may be selected to indicate your status. For example, there exists a *Speak louder* status, which communicates a clear message to the presenter.
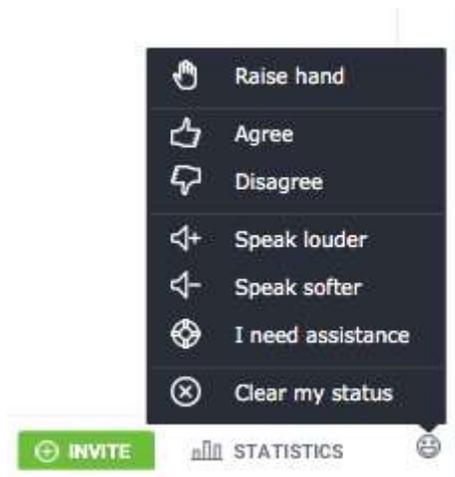
4. At any time during the presentation, you may choose to exit via the green *Exit* button. Note that you may access the presentation again, later, via the same link.
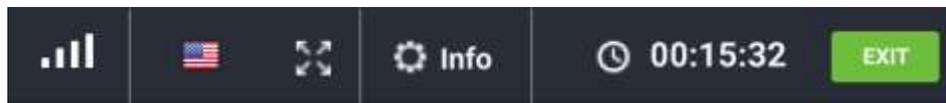
PRESENTER ABSTRACTS

SS1-2: Inflammation

Timeslot: 7:55 – 8:10 am

Presenter: Dr. Sergey Yegorov [1]
Institution: Suleyman Demirel University, Kazakhstan
Co-Authors: Sergey Yegorov[1,2*], Sabri Bromage[3], Ninjin Boldbaatar+and Davaasambuu Ganmaa[3,5]

[1]Department of Pedagogical Mathematics and Natural Science, Faculty of Education and Humanities, Suleyman Demirel University, Almaty, Kazakhstan
[2]Department of Biology, School of Science and Humanities, Nazarbayev University, Nur-Sultan, Kazakhstan
[3]Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, United States
[4]Department of Radiation Oncology, Dana-Farber Cancer Institute, Brigham and Women's Hospital, Boston, MA, United States
[5]Channing Division Network of Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, United States"

Effects of Vitamin D Supplementation and Seasonality on Circulating Cytokines in Adolescents: Analysis of Data From a Feasibility Trial in Mongolia

Background: Vitamin D deficiency is prevalent in human populations and has been linked to immune dysfunction. We explored the effects of vitamin D supplementation on circulating cytokines in severely vitamin D deficient [blood 25(OH)D << 30 nmol/L] adolescents aged 12–15 from Mongolia.
Methods: The study included 28 children receiving 800 IU daily cholecalciferol for 6 months spanning winter and spring, and 30 children receiving placebo during the same period. The levels of 25(OH)D were assessed at baseline, 3 and 6 months, and 21 cytokines were measured in serum at baseline and at 6 months. Changes in 25(OH)D and cytokines were assessed using paired parametric tests.
Results: The median blood 25(OH)D concentration at baseline was 13.7 nmol/L (IQR = 10.0–21.7). Supplementation tripled blood 25(OH)D levels ($p < 0.001$) and was associated with elevated interleukin (IL)-6 ($p = 0.043$). The placebo group had reduced macrophage inflammatory protein (MIP)-1α ($p = 0.007$) and IL-8 ($p = 0.034$) at 6 months.
Conclusions: Although limited by a small sample size, these findings suggest that cholecalciferol supplementation and seasonality may impact systemic immunity in adolescents, identifying chemokines as potentially important biomarkers of vitamin D status in this Northeast Asian population. Larger clinical trials are warranted to validate these results.
Note: This study was recently published in Frontiers in Nutrition:
https://www.frontiersin.org/articles/10.3389/fnut.2019.00166/full.

References
1. Founou, R. C., Founou, L. L. & Essack, S. Y. Clinical and economic impact of antibiotic resistance in developing countries: A systematic review and meta-analysis. PLoS ONE 12, (2017).
2. Busche, T. et al. Comparative secretome analyses of human and zoonotic Staphylococcus aureus isolates of CC8, CC22 and CC398. Mol. Cell. Proteomics mcp.RA118.001036 (2018). doi:10.1074/mcp.RA118.001036
3. Fernandes, P. & Martens, E. Antibiotics in late clinical development. Biochem. Pharmacol. 133, 152–163 (2017).
4. Meaden, S. & Koskella, B. Exploring the risks of phage application in the environment. Front. Microbiol. 4, (2013).
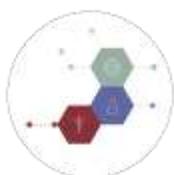
SS1-3: Inflammation

Timeslot: 8:15 – 8:30 am

Presenter: Dr. Kent Langston[1,2]
Institution: Harvard Medical School, Boston, USA
Co-Authors: H. Ibrahim Aksoylar[1], Jiahui Lei[1], Peining Xu[4], Mary T. Doan[4], Helen Jiang[4], Michael R. MacArthur[1], Xia Gao[5], Edward T. Chouchani[6], Jason W. Locasale[5], Nathaniel W. Snyder[4] and Tiffany Horng [1,7*]

[1]Department of Genetics & Complex Diseases, Harvard T.H. Chan School of Public Health, Boston, MA, USA.
[2]Department of Immunology, Harvard Medical School, Boston, MA, USA.
[3]School of Medicine, University of Glasgow, Glasgow, UK.
[4]A.J. Drexel Autism Institute, Drexel University, Philadelphia, PA, USA.
[5]Department of Pharmacology & Cancer Biology, Duke University School of Medicine, Durham, NC, USA.
[6]Department of Cell Biology, Harvard Medical School, Boston, MA, USA.
[7]School of Life Sciences and Technology, ShanghaiTech University, Shanghai, China.

Glycerol phosphate shuttle enzyme GPD2 regulates macrophage inflammatory responses

Macrophages are activated during microbial infection to coordinate inflammatory responses and host defense. Here we find that in macrophages activated by bacterial lipopolysaccharide (LPS), mitochondrial glycerol 3-phosphate dehydrogenase (GPD2) regulates glucose oxidation to drive inflammatory responses. GPD2, a component of the glycerol phosphate shuttle, boosts glucose oxidation to fuel the production of acetyl coenzyme A, acetylation of histones and induction of genes encoding inflammatory mediators. While acute exposure to LPS drives macrophage activation, prolonged exposure to LPS triggers tolerance to LPS, where macrophages induce immunosuppression to limit the detrimental effects of sustained inflammation. The shift in the inflammatory response is modulated by GPD2, which coordinates a shutdown of oxidative metabolism; this limits the availability of acetyl coenzyme A for histone acetylation at genes encoding inflammatory mediators and thus contributes to the suppression of inflammatory responses. Therefore, GPD2 and the glycerol phosphate shuttle integrate the extent of microbial stimulation with glucose oxidation to balance the beneficial and detrimental effects of the inflammatory response.

SS1-4: Inflammation

Timeslot: 8:35 – 8:50am

Presenter: Dr. Silvia Galván-Peña[1,2]
Institution: Harvard Medical School, Boston, USA.
Co-Authors:, Richard G. Carroll[3], Carla Newman[4], Eva Palsson-McDermott[1], Elektra K. Robinson[5], Sergio Covarrubias[5], Alan Nadin[6], Moritz Haneklaus[1], Susan Carpenter[5], Michael P. Murphy[6], Louise Modis[2], Luke A. O'Neill[1,2]

[1]School of Biochemistry and Immunology, Trinity Biomedical Science Institute, Trinity College Dublin, Ireland.
[2]Immunology Catalyst, GlaxoSmithKline, Stevenage, United Kingdom.
[3]Department of Molecular and Cellular Therapeutics, Royal College of Surgeons in Ireland, Dublin, Ireland.
[4]In Vitro/In Vivo Translation, GlaxoSmithKline, Stevenage, United Kingdom.
[5]Department of Molecular Cell and Developmental Biology, UC Santa Cruz, California, USA.
[6]NCE Molecular Tools Group, GlaxoSmithKline, Stevenage, United Kingdom.
[7]MRC Mitochondrial Biology Unit, University of Cambridge, Cambridge, United Kingdom

Malonylation of GAPDH is an inflammatory signal in macrophages

Several studies have recently highlighted the role of metabolic reprogramming in determining the function of immune cells, with macrophages being a particular focus in this regard. These front line cells of innate immunity, inflammation and tissue repair, undergo metabolic changes during activation which are coupled to functional responses. The gram negative bacterial product lipopolysaccharide (LPS) is especially potent at driving metabolic reprogramming, enhancing glycolysis and altering Krebs cycle. We have uncovered a role for the citrate-derived metabolite malonyl-CoA in the effect of LPS in macrophages. Malonylation of a wide variety of proteins occurs in response to LPS. We focused on one of these, glyceraldehyde-3-phosphate dehydrogenase (GAPDH). In resting macrophages GAPDH binds to and suppresses translation of several inflammatory mRNAs, including those encoding TNFα. Upon LPS stimulation, GAPDH undergoes malonylation on lysine 213, leading to its dissociation from TNFα mRNA, promoting translation. We therefore identify for the first time malonylation as a signal, regulating GAPDH to promote inflammation. Further characterization of this post-translational modification is likely to advance our understanding of underlying processes in infection and inflammation, and potentially indicate new therapeutic strategies to limit inflammation in disease.

SS1-5: Inflammation

Timeslot: 8:55 – 9:10am

Presenter: Ms. Anita Goyala[1]
Institution: National Institute of Immunology, Delhi, India.
Co-Authors: Manish Chamoli[2], Syed Shamsh Tabrez[3], Atif Ahmed Siddiqui[1],
Anupama Singh[1], Gordon J. Lithgow[2], Jennifer L. Watts[4] and Arnab Mukhopadhyay[1,*].

[1]Molecular Aging Laboratory, National Institute of Immunology, Aruna Asaf Ali Marg, New Delhi 10067, India.
[2]Buck Institute for Research on Aging, 8001 Redwood Blvd., Novato, CA 94945, USA.
[3]Current address: Buck Institute for Research on Aging, 8001 Redwood Blvd., Novato, CA 94945, USA.
[4]School of Molecular Biosciences, Washington State University, Pullman, WA 99164-7520, USA
*Lead author, to whom correspondence may be sent (arnab@nii.ac.in)

Polyunsaturated fatty acids and p38 MAPK pathway – Bridging the gap between metabolic reprogramming and cytoprotective gene expression during Dietary Restriction.

Background: Aging is defined as a progressive decline in the well-being of an individual. It was considered to be stochastic until studies proved it to be a genetically-controlled process, with many signalling mechanisms functioning downstream to it. Various genetic and non-genetic manipulations in these pathways have led to extension in life span. A well-documented environmental intervention is Dietary restriction (DR) that positively affects health and life span across species. It has been shown to delay age-associated diseases like type-II diabetes, cardiovascular and neurodegenerative diseases in many model organisms tested, including non-human primates. Fundamentally, DR reprograms metabolism towards utilizing fatty acid oxidation for energy generation. The direct consequence of this reprogramming is the upregulation of genes involved in cytoprotective xenobiotic detoxification program (XDP). However, we have little idea of how these metabolic changes signal to alter the expression of XDP genes.

Methods: By exploiting an easily tractable model organism, C. elegans with a short life span of average 18days, we studied the life span dependence of DR models on PUFA biosynthetic genes. Also, with so many transgenic strains available like Pcyp-35b1::gfp, it became easy for us to monitor the activation of the cytoprotective response. PUFA molecules were quantified by GC-MS and to bypass DR, we supplemented these PUFAs externally which increased the phosphorylated state of the p38 MAPK (seen through Western Blot).

Results: Here, by employing a novel DR gene, drl-1 and a conventional genetic model of DR, eat-2, we show that the polyunsaturated fatty acids (PUFAs), especially linoleic acid (LA) and eicosapentanoic acid (EPA) are important mediators of life span following DR. These PUFA molecules were found to be elevated under DR, which activate the XDP genes. Interestingly, this activation of XDP genes is mediated by the conserved p38 mitogen activated protein kinase (p38 MAPK) pathway. Importantly, we show that PUFA is able to directly activate p38 MAPK and XDP genes, bypassing the requirement of DR.

Conclusions: Our study shows that PUFAs and p38 MAPK pathway function downstream of DR to help communicate the metabolic state of an organism to regulate expression of cytoprotective genes, ensuring extended life span.
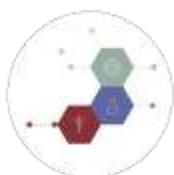
SS2-2: Inflammation

Timeslot: 10:25 – 10:40am

Presenter: Dr. Benjamin Amoani[1*]
Institution: University of Cape Coast,   Cape Coast, Ghana.
Co-Authors: Samuel A. Sakyi[2], Richard Mantey[2], Edwin F. Laing[2], Richard Ephraim Dadzie[3], Osei Sarfo kantanka[4], Simon Koffie[2], Ernest Obese[5]

[1]Department of Biomedical Sciences, College of Health and Allied Sciences, School of Allied Health Sciences, University of Cape Coast, Cape Coast
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Increased metformin dosage suppresses pro-inflammatory cytokine levels in systemic circulation and might contribute to its beneficial effects.

Background: Type 2 diabetes Mellitus (T2DM) is a metabolic disorder, characterized by persistent elevation of blood glucose either due to insulin resistance or insulin insufficiency. Inflammatory responses plays significant role in the pathogenesis and progression of T2DM. Cytokines play a pivotal role in modulation of immune reactions and disease pathogenesis. T-helper type 1 (Th1) and type 17 (Th17) cells, are important pro-inflammatory CD4+ T cell subsets secreting TNF-α, and INF-γ (Th1), and interleukin 17 (Th17). These cytokines has been shown to play a crucial role in inflammation, insulin resistance, and development of T2DM. Metformin is the recommended first line of medication for the management of T2DM and is known to improve insulin sensitivity and prevents hyperglycemia by reducing chronic inflammatory responses. Here, we provide the first report on the therapeutic effect of metformin dosage on pro-inflammatory cytokine levels among T2DM patients.

Methodology: Two hundred and ninety eligible male and female participants admitted to or receiving treatment at the diabetic unit of the Komfo Anokye Teaching Hospital (KATH) in the Ashanti region of Ghana were recruited in a hospital-based cross-sectional study design. Serum samples collected from the participants were analyzed for the concentrations of TNF-α, INF-γ, GM-CSF and IL-17 cytokine levels by solid phase sandwich ELISA

Results: We found that participants on 3000 mg/day dose of metformin had significantly lower levels of TNF-α ($p<0.001$) and IFN-γ ($p=0.014$) compared to the other dosages (1000 mg and 2000 mg/day). However, GM-CSF and IL-17 levels were not affected by increased metformin dosages. After adjusting for age, gender, dose and duration of metformin use, we observed that participants who took higher doses of metformin had significantly reduced levels of TNF-α (β= -0.0297, 95% CI = (-0.005 to -0.002) $p<0.001$. Metformin dosage independently predicted TNF-α levels which explained 14.4% of the variations in the dosage levels.

Conclusion: Increased metformin dosage suppresses pro-inflammatory cytokine levels in systemic circulation and hence might contribute to its beneficial effects.
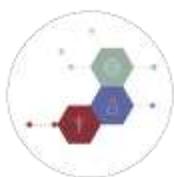
SS2-3: Cancer & Chronic Diseases

Timeslot: 10:45–11:00am

Presenter: Dr. Léonce Kouakanou[1]
Institution: University of Kiel, Kiel, Germany
Co-Authors: Christian Peters[1], Dieter Kabelitz[1]

[1]Institute for Immunology, Christian-Albrechts University of Kiel, Kiel, Germany

Vitamin C increases the potential of human T cells for cancer immunotherapy

Ex vivo expanded human gamma delta (gd) T cells display different effector functions and can exert potent anti-tumor activity both in vitro and in vivo. However, more effective methods to specifically induce a high cytotoxic potential in gd T cells are required to increase the efficacy of gd T-cell based cancer immunotherapy. Here, we investigate the capacity of Vitamin C to modulate the differentiation and the effector functions of human Vdelta2 T cells, the major gd T-cell population within the peripheral blood. We demonstrate that phospho-Vitamin C (pVC), a more stable derivative of Vitamin C, promotes a strong Vdelta2 T-cell proliferation in combination with TCR-specific stimulation by bromohydrin pyrophosphate (BrHPP). The microscopic inspection of the microwell cultures revealed a pVC-induced increase in the number of proliferation clusters, which correlated with higher cell numbers determined by flow cytometry. Moreover, we found the pVC-induced proliferation to correlate with enhanced cell cycle progression, but not with reduced apoptosis upon TCR-stimulation. pVC can directly exert cytotoxic effects on some types of cancer cells. We therefore examined if pVC also augments the Vdelta2 T-cell mediated anti-tumor cell cytotoxicity and observed that in the presence of pVC, Vdelta2 T cells exhibited a pronounced cytotoxic activity (determined by chromium-release assay) against a variety of tumor cells. This increase in cytotoxic activity was associated with an increased IFN-gamma release. Our results suggest that the supplementation with pVC during in vitro expansion of gd T cells will allow for their expansion up to higher cell numbers. This, together with the enhanced cytotoxic potential, could constitute the basis for a better clinical efficacy of gd T cells, when used for adoptive transfer into cancer patients.

SS2-4: Cancer & Chronic Diseases

Timeslot: 11:05–11:20am

Presenter: Ms. Vivian Osei Poku[1],
Institution: South Dakota State University, Brookings, USA.
Co-Authors: Surtaj Iram[1]
[1]Department of Chemistry and Biochemistry, South Dakota State University, Brookings, South Dakota, USA

Profiling of Chemotherapeutic Drugs as Modulators of Multidrug Resistance Protein 1 (MRP1) Protein Expression in Cancer Cells.

Background: Multidrug resistance protein 1 (MRP1) is an ATP-dependent drug efflux pump that plays a pivotal role in the efflux of a wide variety of drugs, toxic chemicals and physiological substrates across the plasma membrane. Several studies have shown that MRP1 can significantly impact the efficacy and toxicity profiles of many therapeutic drugs including antivirals, antimalarials, and antibiotics, as well as chemicals found in the environment and diet. MRP1 can also efflux newly developed anticancer agents that target specific signaling pathways and is a major clinical marker found to be associated with Multidrug resistance (MDR) of several types of cancers. This unique role of MRP1 makes it essential to profile all new and potential drugs for their interaction with this transporter. Hence, my current research seeks to screen for modulators of MRP1 using cell-based functional and transport assays.

Methods: An initial screening of a unique anticancer library (consisting of 383 drugs) was successfully conducted using In-Cell Elisa Assay in two independent studies. Assay development and optimization were performed with Human Embryonic Kidney (HEK293) and HEK293/MRP1 (MRP1 overexpressing) cells lines. HEK293/MRP1 cells were treated with drug concentration of 10 uM for 48 hours. Data obtained was statistically analyzed using Microsoft Excel and Graph Pad Prism version 6.0. Dunnett test was applied for multiple comparison, statistical testing was performed at 5% level of significance. Hits compounds (modulators of MRP1 protein expression) identified from the screening would be confirmed using traditional western blot and further characterized using cell-based and in vitro MRP1 transport activity assays.

Results: Screening of the 383 anticancer drugs revealed 89 hit compounds that changed the MRP1 expression levels, representing 23.2% of total compounds screened. Among the identified hits, 57 drugs increased expression levels whereas 32 drugs lowered expression levels of MRP1 after drug treatment.

Conclusion: Findings from our initial screening have identified a significant number of chemotherapeutic agents as modulators of MRP1. Further experiments are ongoing to further validate these hit compounds. Data from this project would provide essential information to improve drug efficacy and reduce drug toxicity of various cancer chemotherapies.
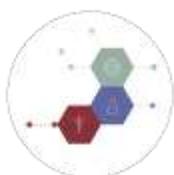
SS2-5: Cancer & Chronic Diseases

Timeslot: 11:25–11:40am

Presenter: Mr. Cesar Ortiz[1]
Institution: University of Sao Paulo, Ribeirao Preto, Brazil.
Co-Authors: Candy Bellido[2], Diego A Pereira-Martins[1], Juan L. Coelho-Silva[1], Virginia Mara De Deus Wagatsuma[1], Daniel Enriquez[3], Elizabeth Cervantes[3] and Eduardo M Rego[1].

[1]Department of Medical Images, Hematology and Clinical Oncology, Medical School of Ribeirao Preto and Center for Cell Based Therapy, University of São Paulo, Ribeirão Preto, Brazil.
[2]Department of Pediatrics, Ribeirao Preto Medical School, University of Sao Paulo.
[3]Instituto Nacional de Enfermedades Neoplásicas, Lima-Perú.

Gene expression analysis of the TRIM family genes reveals TRIM8 as an independent adverse prognostic factor in acute myeloid leukemia

Background: Since the establishment of the European LeukemiaNet research network, risk stratification of acute myeloid leukemia (AML) was significantly improved. However, more prognostic factors would be welcome since less than half of patients respond well to chemotherapy or hematopoietic stem cell transplantation. Accumulating evidence has shown that some TRIM proteins can regulate carcinogenesis, mainly by their expression levels.
Aims: Here, we evaluated the expression of TRIM genes as a potential marker of prognosis in AML.
Methods: Publicly available RNA-seq and clinical data of 119 de novo AML non-M3 adult patients from TCGA were enrolled in the study. To confirm the findings, we evaluatedd expression data of five cohorts, retrieved from GEO: GSE6891 (n=416), GSE71014 (n=104), GSE12417 cohort A and B (n=161 and n=79, respectively), and GSE14468 (n=237). Survival data were retrieved from GEO and PRECOG. Finally, publicly available RNA-seq data of 108 patients from Beat AML project was obtained at the Vizome. For all cohorts, all patients included were non-M3 and were treated using 3+7 scheme. Survival ROC curve and youden index were used to calculate optimal cutoff to dichotomize patients in "high" and "low" expression groups. Univariate and multivariate models, and area under curve (AUC), were used to define the prediction value of each TRIM gene on overall survival. The multivariate model included age, gender, leukocyte count and cytogenetic risk stratification.
Results: From seventy-one, fourteen TRIM genes were differentially expressed in AML patients compared to normal CD34+ cells (p<0.001) ("BloodPool: AML samples with normal cells", BloodSpot). From these, three genes presented lower levels in specific AML subtypes: TRIM5 in complex karyotype (CK)-AML, TRIM6 in CK and NK-AML, and TRIM8 in t(8;21). High expression of seven genes were independently associated with OS in our screening cohort and had the best risk predictive values. However, only TRIM8 expression demonstrated be associated with less OS 5 from 7 cohorts: TCGA (5y OS: 21% vs 44%, p=0.004), GSE6891 (5y OS: 30% vs 43%, p=0.005), GSE71014 (5y OS: 48% vs 70%, p=0.012), GSE12417 cohort A (3y OS: 26% vs 45%, p=0.028) and GSE14468 (5y OS: 29% vs 51%, p=0.014). No association was found between TRIM8 expression and mutations in NPM1, FLT3, DNMT3A, RUNX1, CEBPA, IDH1, IDH2 and TP53.
Conclusions: TRIM8 gene expression predicts survival outcome in de novo AML non-M3 patients.

SS2-6: Cancer & Chronic Diseases

Timeslot: 11:45–12:00 pm

Presenter: Mrs. Yousra Benmakhlouf[1]
Institution: Faculty of Sciences and Techniques of Tangier, University Abdelmalek Essaadi, Tangier, Morocco
Co-Authors: Renaud Touraine[2], Ines Harzallah[2], Naima Ghailani Nourouti[1], Amina Barakat[1] and Mohcine Bennani Mechita[1]

[1]Biomedical Genomics and Oncogenetics Research Laboratory, Faculty of Sciences and Techniques of Tangier, University Abdelmalek Essaadi, Morocco,
[2]Clinical, Chromosomal and Molecular Genetics Department - CHU Saint Etienne, France

Screening of the duplication 24pb of ARX gene in Moroccan patients with non syndromic X-linked intellectual disability

Background: Intellectual Deficiency (ID) is a general term for a neurological impairment, due to abnormalities of brain structure or function. Causal factors related with cognitive disability are multiples and can be classified as genetic, acquired (congenital and developmental), or environmental.
Mutations of the ARX gene constitute a major contributor to X-linked mental retardation (XLMR). They are associated with a broad spectrum of disorders, including nonsyndromic and syndromic X-linked ID. The 24bp duplication in the exon 2 of this gene lead to expansions of the polyalanine tracts. It is the most frequent mutation.
Methods: Our research comprises 186 Moroccan patients with mild ID (Intellectual Quotient IQ 50-55 to 70) from «Attawassol center for mentally retarded», « Mafatih Arrahma » and « Prince Moulay Abdellah foundation » in Fez, engaged between between October 2014 and July 2017, and during April and July 2019. The main objective of this molecular, prospective and exploratory monocentric study was to determine the prevalence of ID, the symptoms and to screen for the 24 bp duplication mutation in males (118 patients) in our series living in Fez city and their regions.
Results: The results were processed and analyzed with Statistical Package for the Social Sciences (SPSS 24), and the mutation screening was performed by fragment size analysis of PCR (polymerase chain reaction) product of ARX exon 2, performed in the Molecular Genetics Laboratory in Saint Etienne (France). The average age of patients was 15.52 ± 6.59 years (2-36 years). Our results showed that the prevalence of ID was 67.2% in boys versus 32.8% in girls, and several symptoms of ID were observed in our patients. The 24 bp duplication of ARX was not identified in any of the male patients tested.
Conclusions: The prevention of ID is obviously based on the genetic, the social, the toxic and the infectious causes.

S2-7: Cancer & Chronic Diseases

Timeslot: 12:05–12:20 pm

Presenter: Ms. Anna Semaniakou
Institution: Dalhousie University, Halifax, Canada
Co-Authors: A. Semaniakou[1], S. Brothers[1], G. Gould[1], F. Chappe[1], Y. Anini[1], R. P. Croll[1], V. Chappe[1]

[1]Dalhousie University, Physiology and Biophysics, Faculty of Medicine

Reduced VIP content accompanied by disrupted innervation in young CF mice

Background: The major physiological agonist of the Cystic Fibrosis Transmembrane conductance Regulator (CFTR) chloride channel is the Vasoactive Intestinal Peptide (VIP), a 28-amino acid neuropeptide that functions as a neuromodulator and neurotransmitter secreted by intrinsic neurons innervating exocrine glands. Previous studies from the Chappe lab have demonstrated that VIP is important to maintain functional CFTR chloride channels at the cell surface of airways and intestinal epithelium as well as normal exocrine tissue morphology. Interestingly, in patients with CF, it was shown that VIP-positive nerve fibers of the skin and intestinal mucosa are sparse compared to healthy individuals, but the mechanism behind this phenomenon remains unknown.

Methods: We investigated changes in VIP innervation in the duodenum and sweat glands of C57Bl/6 WT and CF mice. Tissues were immunostained for VIP, PGP9.5 (a general neuronal marker) and ChAT (choline acetyltransferase), then imaged with conventional light microscopy (sweat glands) or 3D fluorescence confocal microscopy.

Results: VIP innervation was found to be sparse and disrupted in the duodenum of CF mice at the mucosa and circular muscle layer, with fewer fine axons in the villi. PGP9.5 signal showed that two layers of the myenteric plexus in the CF duodenum tissue were lost, but no significant changes were observed in the mucosal part. In the sweat glands, PGP9.5 signal was similar between CF and WT tissues. Interestingly, ChAT signal was very low in the duodenum of CF mice, especially in the crypt and lamina propria area, indicating a significant disruption of the cholinergic neuronal network.

Conclusion: As both VIP and ChAT signals were found to be affected, we propose that the deficiency in VIP is not attributed to disease progression or a general neuronal damage, but rather results from a disruption of the intrinsic cholinergic innervation network.

SS3-2: Bioinformatics/Biotechnology

Timeslot: 7:40 – 7:55am

Presenter: Mr. Priyesh Agrawal[1]
Institution: National Institute of Immunology, INDIA

Co-Authors: Debasisa Mohanty[1].

[1] Bioinformatics Center, National Institute of Immunology, New Delhi, INDIA.

A Machine Learning based algorithm for deciphering complex chemical structures of secondary metabolites by genome mining

Secondary metabolites (SMs) are groups of small molecules, secreted by microorganisms which play crucial role in defense mechanism for producing organism. Identification of novel SMs is vital for drug discovery and translational research. Genes involved in biosynthesis of these SMs are clustered together on microbial genomes constituting Biosynthetic Gene Cluster (BGC). Nonribosomal peptides (NRPs) and Polyketides (PKs) constitute major classes of SMs which are biosynthesized by multi-functional enzymes Nonribosomal peptide synthetases (NRPS) and Polyketide synthases (PKS), respectively. These multifunctional enzymes, having functional domains organized into modules, biosynthesize linear chemical structure in an assembly line manner which get cyclized usually by Thioesterase (TE) domain present in BGC. With the advancement of sequencing techniques, a number of computational tools have been developed for analysis NRPS and PKS BGC. However, none of them are able to predict complete chemical structures of PKs and NRPs where major bottleneck being prediction of cyclization patterns. Here, we have developed a machine learning based algorithm for predicting cyclization patterns of PKs and NRPs. For known PKs and NRPs, we generated their linear precursor by retro-analysis, these linear precursors were then used to enumerate library of all theoretically possible cyclization. Each chemical structure in library was converted into feature vector using Morgan circular fingerprint and Random Forest (RF) model was trained over the set. The model is trained over more than 800 known NRPs and PKs and have it integrated with SBSPKS tool suit developed earlier in our laboratory. SBSPKSv3 can predict complete chemical structure of NRPs and PKs starting from microbial genomic sequences.
We benchmarked prediction accuracy of SBSPKSv3 by carrying out extensive ROC based cross-validation analysis (Blind Test and n-Fold cross validation). In all these analysis, AUC value was around 0.90 which suggested a good predictive power of our RF model. Further parameters like MCC score, precision, recall and accuracy were calculated which also suggested the same. We also benchmarked our method on 250 known BGCs of NRPs/PKs. Lastly, we compared output of our method with tools like antiSMASH and PRISM for prediction accuracy of linear chemical structures of PKs/NRPs. where SBSPKSv3 was found to outperform these tools significantly.
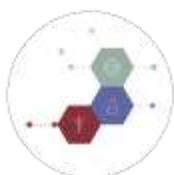
SS3-3: Bioinformatics/Biotechnology

Timeslot: 8:00 – 8:15am

Presenter: Mr. Albert Doughan[1]
Institution: Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Co-Authors: Pandam Salifu[1,2]
[1]Department of Biochemistry and Biotechnology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
[2]Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), Kumasi-Ghana.

Genomics of Burkitt's Lymphoma: RNA-seq analysis reveals the implication of c-MYC gene in Burkitt's lymphoma oncogenesis.

Background: Burkitt lymphoma (BL) is the most common pediatric cancer in sub-Saharan Africa. The pattern and distribution of diagnosed BL vary depending on age, sex, geography, and ethnicity suggesting the roles of genetics and environmental factors in the development of the disease. Interestingly, in equatorial Africa, BL accounts for about half of all childhood cancers and some 80% and in sub-Saharan Africa, it is the most common childhood cancer, accounting for up to 36% of childhood cancers and 70% of childhood lymphomas. Genomics research is failing on demographic diversity, with a bias (81%) of genomics data being generated for patients of European ancestry, followed by Asian ancestry (14%), and African ancestry, a distant third (3%). Towards our contribution to the achievement of UN sustainable development goal number 3 (Good health and well-being), this study sought to identify differentially expressed genes (DEGs) between BL patients and normal individuals. The goal was to assess the associated gene ontology functions, molecular pathways and human phenotypes of the enriched genes.

Methods: Firstly, we assessed the quality of the reads with FastQC and trimmed low-quality bases and technical sequences with Trimmomatic. Reads that passed quality trimming were aligned to the human reference genome (GRCh38) using BWA-MEM and bowtie2. Alignment with BWA-MEM achieved the highest exon mapping rates greater than 74 %. Data from BWA-MEM and bowtie2 provided 1604 and 1741 DEGs between the two conditions.

Results: A total of 1004 genes were common to both tools. The common gene list was then used in gene enrichment analyses (Reactome Pathway database) and approximately 81% of the genes were involved in c-MYC Signaling Pathway implicated in Burkitt Lymphoma pathogenesis.

Next steps: The next phase of the study will see the sequencing of c-MYC genes in Ghanaian BL patients using Nanopore MinION technology. These sequences would then be globally aligned to c-MYC gene sequences from publicly available databases. We aim to discover unique mutations in c- MYC that are specific to African ancestry which will promote the development of population-specific diagnostics to ensure accurate detection and treatment.
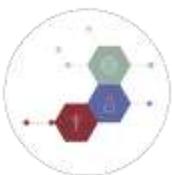
SS3-4: Bioinformatics/Biotechnology

Timeslot: 8:20 – 8:35am

Presenter: Prof. Cuba Baylon, Vanessa Miluska[1,2]
Institution: INCABIOTEC SAC, Tumbes, Perú
Co-Authors: Cordova Campos, Jose Stalyn[1,2], Perez Novecilla, Yovan[2,] Trujillo Chavez, Jean Paul[2]

[1]INCABIOTEC SAC
[2]IEPq San Agustin

Biodegradation of plastics: tereftalate polyethylene, oxopolyethylene and expanded polystyrene, through bacteria and fungi isolated from a solid waste plant in zarumilla-tumbes.

Background: Plastics are materials of high molecular weight formed by long chains of carbon, hydrogen, water or sulfur, which are obtained from raw materials and petroleum products. The objective of the study was to identify bacteria and fungi, which degrade plastics: oxopolyethylene, polyethylene terephthalate and expanded polystyrene.
Materials and methods: A soil sample was collected from a solid waste landfill, as well as the three types of plastics, the plastic powder and the growth medium were prepared, for the preparation of the inoculum three groups were formed where 2 grams were added of each plastic plus 1 gram of soil sample and incubated for 30 days, where the temperature, humidity, pH and optical density of the culture were evaluated. Subsequently, the microorganisms were isolated, then sheets of the three plastic types were added to each growth medium for 30 days. The molecular identification of the microorganisms was carried out using the MALDI TOF / TOF mass spectrometry technique.
Results: Weight changes were calculated, taking as the initial weight of group 1, which had no consortium of microorganisms and were used to compare the effectiveness of biodegradation between fungi and bacteria. After 30 days of the investigation period, the microorganisms were identified. A total of 9 bacterial strains were isolated and purified, among these were Gram negative. For fungi a total of 9 isolates.
Conclusions: In this project we conclude that it was possible to identify bacteria and fungi molecularly by means of their proteins by identifying Bacillus stratosphericus, Bacillus velenzesis, Bacillus thermoamylovorus, Bacillus sp, Bacillus cerus, Bacillus gabiensis, Bacillus mezaterium, Pseudomona citronellalis a, in addition, Fusarium culmorum, Fusarium pesudograminearum, Penicillum sp, Fusarium heterosporum.
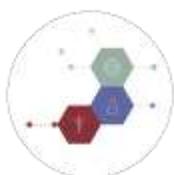
SS3-5: Bioinformatics/Biotechnology

Timeslot: 8: 40 – 8:55am

Presenter: Mr Avinash Kumar Singh
Institution: National Institute of Immunology, New Delhi, India
Co-Author: Rajendra Prasad Roy

Sortase-Mediated Semi-Synthesis of Ubiquitin Conjugates

Background: Post-translational modifications (PTMs) of proteins increase the functional diversity of the proteome and play crucial regulatory roles in cellular processes. Ubiquitination, conjugation of ubiquitin via isopeptide linkage to protein targets, is a very complex post-translational event and involves the action of several ubiquitinating enzymes (E1-E3) as well as Dubs. Ubiquitination performs crucial regulatory functions in several cellular processes. The availability of well-defined Ub-conjugates is necessary for untangling the mechanism of ubiquitination. However, assembly of homogeneous Ub-conjugates represents a challenge because of the multi-step synthesis involved and the unwieldiness of the reconstituted biosynthetic systems. Here we describe a simple one-step sortase-mediated chemoenzymatic strategy for semi-synthesis of ubiquitin conjugates.

Methods: Sortase recognition motif 71LRLPXTGG78 was generated by engineering PXT substitution/insertion for R74 in the Ub C-terminal 71LRLRGG76. Three mutants having position X substituted with Leu, Asn and Glu, respectively, were prepared. A Gly-Gly appended peptide LMFK(ε-GG)TEG encompassing Ub target site of p53 corresponding to residues 383LMFKTEG389 was synthesized using Fmoc chemistry as a donor nucleophile. The peptide conjugation reactions were carried out using SaSrtA and the deconjugation reactions were carried out with DUBs.

Results: Ubiquitin conjugates were successfully generated from a recombinant ubiquitins and a Gly-Gly appended peptide derived from p53. However, semi-synthetic ubiquitin conjugates were recalcitrant to hydrolysis by deubiquitinases (DUBs).

Conclusions: These results suggest that each and every individual residue of the dynamic unstructured Ub C-terminal tail LRLRGG is necessary for their recognition by the DUBs and any mutation in them could make the Ub-conjugates resistant to cleavage by DUBs.

SS3-6: Bioinformatics/Biotechnology

Timeslot: 8:55 – 9:10am

Presenter: Mr. Daouda L. Massaoud[1]
Institution: University of Jos, Plateau state/Nigeria
Co-Authors: Olanike C. Poyi1, Jacob Kolawole[1]

[1]Department of Pharmaceutical Chemistry, University of Jos

Identification of potential inhibitors of Acetylcholinesterase enzyme in Alzheimer disease using virtual screening.

Background: In several cases the words Alzheimer Disease and dementia are used to describe one same illness, mostly because AD is the most common type of dementia accounting for 60% to 80% of the cases, but there are numerous types of dementia. This work will focus exclusively on Alzheimer disease. A report by the world Health Organization in 2005 estimated that 0.379% of the world population had dementia. The incidence of Alzheimer disease in indigenous population of Africa particularly needs to be known. In Ibadan Nigeria, earlier studies have shown that the prevalence of dementia and Alzheimer disease was 2.29%.

Methods: we have used high resolution crystal structure of human acetylcholinesterase enzyme a PDB ID: 4PQE from data bank (www.pdb.org). A library of 404 was obtained from Zinc database using Swiss Similarity in its option Zinc Drug Like. A receptor grid was created around the protein binding residues. ADMET parameters were predicted using Swiss ADME and Protox webserver. For docking study of the ligands in acetylcholinesterase the PyRx software was used.

Result: the result demonstrate that the lead molecules Zinc90411664, Zinc90411665, and Zinc90411518 were found to have a good binding affinity with the active site of the Acetylcholinesterase enzyme in docking studies. The best binding compounds with Acetylcholinesterase enzyme compared to known drug (Rivastigmine) for Alzheimer's disease were reported in the study. Furthermore, these compounds along with standard compound Rivastigmine have shown the hydrogen bond interaction with key amino acid residues of acetylcholinesterase enzyme.

Conclusion: In view of the results obtained in the present study, it may be concluded that identification of potential inhibitors of acetylcholinesterase enzyme using virtual screening technique can be carried out.

SS3-7: Bioinformatics/Biotechnology

Timeslot: 9:15 – 9:30am

Presenter: Ms. Mary Kaka[1]
Institution: Adeleke University, Osun, Nigeria
Co-Authors: Tosin Senbadejo[2]

[1]Department of Microbiology, Adeleke University, Ede, Osun State, Nigeria
[2]Department of Microbiology, Fountain University, Osogbo, Osun State, Nigeria

Exploring the Potentials of Acinetobacter baumanii Carbapenemase Bla-Oxa Proteins in the Design of B and T Cell Multi-Epitope Subunit Vaccine Using Immunoinformatics Approach.

Background: Acinetobacter baumanii is currently being listed by the WHO as one of the priority organisms implicated in antimicrobial resistance which has mostly been ascribed to plasmid- and chromosome-encoded Carbapenemases such as the OXA genes. This protein is a membrane porin of A. baumanii and the action of specific antibodies against it would exert bactericidal or bacteriostatic effect in-vitro. Thus, this study used an immunoinformatic approach to design a multi-epitope based vaccine that is targeted against A. baumanii infections using Bla-Oxa carbapenemase gene protein sequences.
Methods: Designed subunit vaccine was evaluated for its antigenicity, immunogenicity, allergenicity and physicochemical parameters.
Results: A total of 109 CTL epitopes (9-mer) were predicted using NetCTL 1.2 server, among them only 4 epitopes with highranked binding affinity score were chosen as final CTL epitopes. Similarly, the HTL epitopes were identified using IEDB MHC-II prediction module based on the higher binding affinity with MHC- II, the mouse alleles used for the prediction were H2-1Ad, H2-1Ed, and H2-1Ab. A maximum immune response TLR-4 agonist (APPHALS) was used as an adjuvant and CTL epitopes were combined together by EAAAK linker, intra-CTL and intra-HTL epitopes joint by AAY and GPGPG linker to make a final vaccine construct of 472 amino acid residues designed using 4 CTL and 7 HTL epitopes
Conclusion: Collectively, this research provides novel candidates for epitope-based peptide vaccine design against Acinetobacter baumanii.

SS4-2: Cancer

Timeslot: 10:40–10:55 am

Presenter: Mr. Hemasa Ayman[1]
Institution: Australian National University, Canberra, Australia
Co-Authors: Kevin J Saliba[1,2]

[1]Research School of Biology, Australian National University, Canberra, ACT, Australia
[2]Medical School, Australian National University, Canberra, ACT, Australia

The effect of riboflavin analogues on the intraerythrocytic stage of Plasmodium and identification of flavokinase as a potential antimalarial target.

Very little is known about the riboflavin (vitamin B2) requirements of the intraerythrocytic stage of Plasmodium falciparum. We previously found that two riboflavin analogues, roseoflavin and 8-aminoriboflavin, inhibit malaria parasite proliferation by targeting riboflavin metabolism or utilisation. To identify more potent analogues, we screened an additional eight compounds. Unfortunately, none of the analogues possessed improved activity (IC50 values of 15-89 μM) and none appeared to target riboflavin metabolism or utilisation. To determine the mechanism of action of roseoflavin, we generated roseoflavin-resistant parasites by culturing the parasites under continuous drug pressure for 27 weeks. Drug pressure was discontinued when the roseoflavin IC50 had increased 10-fold. The roseoflavin-resistant parasites were found to be cross-resistant to 8-aminoriboflavin. Cloned parasites were subjected to whole genome sequencing and a non-synonymous mutation (L672H) found in the flavokinase, of roseoflavin-resistant parasites. Flavokinase is the enzyme responsible for converting riboflavin into flavin mononucleotide (FMN). FMN is then adenylated into flavin adenine dinucleotide (FAD), by FAD synthetase. These flavins are essential cofactors for flavoproteins, many of which are involved in essential metabolic pathways. Roseoflavin and 8-aminoriboflavin were also tested against P. knowlesi, a species that mainly infects simians. Roseoflavin was equally potent against both Plasodium species, but 8-aminoriboflavin was >4 times more potent against P. falciparum compared to P. knowlesi. A parasite line expressing GFP-tagged flavokinase was successfully generated and used to show that flavokinase localises to the cytosol and nucleus. Purified PfFK-GFP phosphorylated riboflavin into flavin mononucleotide. This parasite's sensitivity to roseoflavin is unaltered, whereas the IC50 of 8-aminoriboflavin increased by 3.5-fold. These results show the importance of flavokinase as a potential antimalarial target.
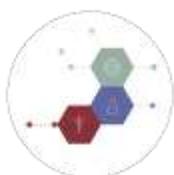
SS4-3: Cancer

Timeslot: 11:00– 11:15 am

Presenter: Ms. Phuong Pham[1]
Institution: University of Oxford, Oxford, England
Co-Authors: Justin Kaplan[1], Emiko Urano[1], Sherimay Ablan[1], David E. Martin[2], T. J. Nitz[2], Ritu Gaur[3], Carl T. Wild[2], and Eric O. Freed[1]

[1]HIV Dynamics and Replication Program, National Cancer Institute, Frederick, MD
[2]DFH Pharma, Inc. Gaithersburg, MD
[3]South Asian University, New Delhi, India"

Resistance Pathways for Potent and Broadly Active HIV-1 Maturation Inhibitors

Background: Maturation Inhibitors (MI), a new class of anti-HIV-1 compounds, act by blocking the maturation of virions into infectious particles. Bevirimat (BVM), a first-in-class betulinic acid-based compound, acts by blocking a late step in protease-mediated Gag processing: the cleavage of the capsid-spacer peptide 1 (CA-SP1) intermediate into mature CA. BVM was shown to be safe and effective in reducing viral loads in patients. However, polymorphisms in the SP1 region of Gag reduced HIV-1 susceptibility to BVM in patients, effectively halting BVM's clinical development.
Methods: We carried out extensive screening to identify BVM derivatives with both increased potency against multiple HIV-1 clades and activity against primary isolates containing polymorphisms in SP1. Compound activity was tested in biochemical and biological assays measuring CA-SP1 processing and virus replication kinetics. Selection experiments with both clade B and clade C isolates were performed to identify mutations that confer resistance. Virological, structural, and molecular approaches were applied to elucidate the mechanism of resistance for each mutant.
Results: We identified a set of BVM derivatives that are markedly more potent than BVM against clade B HIV-1 and show robust activity against SP1 polymorphic strains, clinical isolates, and some BVM-resistant mutants. Selection experiments with a clade B isolate identified an SP1-A1V mutation, and a CA-P157A mutation located in the major homology region (MHR) of CA. Selections with a clade C isolate identified several mutations in SP1. The P157A mutant was resistant to not only BVM and the second-generation BVM analogs but also to the structurally distinct maturation inhibitor PF-46396. Analysis of the HIV-1 database reveals that Ala1 of SP1 and Pro157 of CA are conserved in ~99.95% of available sequences.
Conclusions: This study identifies a panel of BVM derivatives that display improvements upon BVM in antiviral potency and breadth of activity. The characterization of resistant mutants provides insights into the structure of the maturation inhibitor binding site and the role of SP1 and the CA MHR in virus assembly and maturation. This study supports ongoing clinical development of this class of inhibitors.
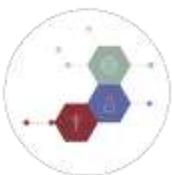
SS4-4: Cancer

Timeslot: 11:20 – 11:35am

Presenter: Dr. Fabian Rivera-Chavez
Institution: Harvard, Boston, MA, USA
Co-Authors: John J. Mekalanos

Cholera toxin promotes pathogen acquisition of host-derived nutrients.

Vibrio cholerae is the causative agent of cholera, a potentially lethal enteric bacterial infection. Cholera toxin (CTX), a protein complex that is secreted by V. cholerae, is required for V. cholerae to cause severe disease. CTX is also thought to promote transmission of the organism, as infected individuals shed many litres of diarrhoeal fluid that typically contains in excess of 10^{11} organisms per litre. How the pathogen is able to reach such high concentrations in the intestine during infection remains poorly understood. Here we show that CTX increases pathogen growth and induces a distinct V. cholerae transcriptomic signature that is indicative of an iron-depleted gut niche. During infection, bacterial pathogens need to acquire iron, which is an essential nutrient for growth. Most iron in the mammalian host is found in a chelated form within the porphyrin structure of haem, and the ability to use haem as a source of iron is genetically encoded by V. cholerae. We show that the genes that enable V. cholerae to obtain iron via haem and vibriobactin confer a growth advantage to the pathogen only when CTX is produced. Furthermore, we found that CTX-induced congestion of capillaries in the terminal ileum correlated with an increased bioavailability of luminal haem. CTX-induced disease in the ileum also led to increased concentrations of long-chain fatty acids and l-lactate metabolites in the lumen, as well as the upregulation of V. cholerae genes that encode enzymes of the tricarboxylic acid (TCA) cycle that contain iron–sulfur clusters. Genetic analysis of V. cholerae suggested that pathogen growth was dependent on the uptake of haem and long-chain fatty acids during infection, but only in a strain capable of producing CTX in vivo. We conclude that CTX-induced disease creates an iron-depleted metabolic niche in the gut, which selectively promotes the growth of V. cholerae through the acquisition of host-derived haem and fatty acids.

SS4-5: Cancer

Timeslot: 11:40– 11:55 am

Presenter: Dr. Nahla A. Hussein[1,2,3]
Institution: Université catholique de Louvain, the American University in Cairo, Egypt
Co-Authors:, Seung-Hyun Cho[1], Géraldine Laloux[1], Rania Siam[2], Jean-François Collet[1].

[1]De Duve Institute, Université catholique de Louvain, Brussels, Belgium.
[2]The Biotechnology Graduate Program, American University in Cairo, Cairo, Egypt.
[3]Molecular Biology Department, National Research Centre, Cairo, Egypt (current affiliation).

IgaA : a unique key for tuning E.coli "connectivity".

Background: T-cell acute lymphoblastic leukemia (T-ALL) is an aggressive lymphoid malignancy due to the oncogenic transformation of immature T-cell progenitors. The emergence of microRNAs as gene expression regulators identifies them as emerging diagnostic candidates and potential therapeutic targets. microRNAs play a crucial role in the progression of T-ALL by regulating proliferation and apoptosis through targeting major signaling pathways or transcription factors. miR-34a is a tumor suppressor with reduced expression levels in many cancers, including T-ALL. The purpose of the present study was to investigate the effect of miR-34a on induction of apoptosis in the jurkat cell line.

Methods: Jurkat cells which are related to T-cell acute lymphoblastic leukemia (T-ALL) were cultured in RPMI1640 medium supplemented with 10% fetal bovine serum (FBS) at 37°C and 5% CO_2. miR-34a mimic was transfected using jetPEI in vitro DNA transfection reagent and the expression of miR-34a was detected using quantitative real-time PCR. Cell viability of jurkat cells was detected using 3-(4, 5-dimethylthiazol-2-yl)- 2, 5-diphenyltetrazolium bromide (MTT) assay. Then, flow cytometry assay was exploited measure the percentage of apoptotic cells. Finally, Cell cycle assay was used to differentiate different phases of the cell cycle.

Results: qRT-PCR analyses showed that in Jurkat cells after transfection with miR-34a mimic at the concentration of 5nmol the expression of miR-34a mRNA was significantly increased compared to the control group. MTT assay results demonstrated that transfection by miR-34a at the concentration of 5nmol decreased the viability of jurkat cells and reduction in cell viability obeyed a dose-dependent course. According to the flow cytometry assay result, in the transfected cells, miR-34a mimic at the concentration of 5nmol was able to induce apoptosis the in Jurkat cell line. Data derived from cell cycle assay revealed that cell cycle arrest in cancer cells which have been under treatment of miR-34a occurred at G2/M phase.

Conclusions: Our results have obviously demonstrated that the miR-34a effectively decreased the viability of jurkat cells, induced apoptosis in this cell line, and therefore could serve as a potential therapeutic agent for the treatment of T-ALL as well as biomarkers for diagnosis of this cancer.

SS4-6: Cancer

Timeslot: 12:00– 12:15 pm

Presenter: Mrs. Ana Enderle[1][3,4]
Institution: Laboratorio de Química Medicinal, Centro de Investigaciones en Bionanociencias (CIBION)-CONICET, Buenos Aires, Argentina
Co-Authors: Rüdiger Groß[2], Bollini Mariela[1], Maria Julia Culzoni[3], Carsten Streb[4]

[1]Laboratorio de Química Medicinal, Centro de Investigaciones en Bionanociencias (CIBION)-CONICET, Argentina
[2]Institute of Molecular Virology, Ulm University Hospital, Ulm, Germany
[3]Laboratorio de Desarrollo Analítico y Quimiometría (LADAQ), Facultad de Bioquímica y Ciencias Biológicas, Universidad Nacional del Litoral, Argentina
[4]Institute of Inorganic Chemistry I, Ulm University, Ulm, Germany

Polyoxometallates inhibit ZIKA virus by targeting the viral E protein.

Background: ZIKA virus (ZIKV) is a re-emerging pathogen which could cause several diseases such us meningoencephalitis and microcefaly, for which no specific antiviral treatment so far exists. Polyoxometalates (POMs) are anionic clusters comprised of early transition metal (mostly Mo, V and W) oxides exhibiting, as reported, anti-ZIKV activity. Here, we describe a new approach that combines experimental data and docking studies to investigate the mechanism of action of Dawson-POMs against ZIKV.
Methods: Dawson-POMs were synthesized and purified according to published procedures and were characterized by FT-IR spectroscopy. Anti-ZIKV activity of POM was assessed by infecting VeroE6 cells and intracellular immunodetection of the ZIKV-E protein 2 days post infection. Toxicity of compounds was evaluated by CellTiter-Glo assay. Molecular docking studies were performed using AutoDock 4.2 software and Mercury CSD 4.0.0. The structures of the envelope protein of ZIKV and crystallographic models of POMs were from the RSC Protein Data Bank and CCDC database. DFT and Lamarckian genetic algorithm were employed for the calculations.
Results: All D-POMs tested were active against ZIKV-MR766, yielding IC 50 values ranging from 128.3 nM to 148.4 nM (0.55 μg/ml to 0.67 μg/ml) and their antiviral activity is exerted on the viral particles. Blind docking to the entire E protein results showed two potential binding sites corresponding to the patch of residues ARG138, ARG164 y LYS166 (site 1) and the area around the fusion loop (99-110) (site 2), with the first being more favorable (70%) compared to the second. The second search for $K_6P_2W_{18}O_{62}$ was done to study interactions of 1:1 with two cleavage sites of the E-protein. The predicted binding free energies calculated are low -values of -9.3 for site 1 and -9.42 kcal/mol for site 2, indicating two different binding sites where this POM is potentially interacting (fusion loop and positive patch regions).
Conclusion: In conclusion, by combining molecular docking studies and biological assays we identified the potential binding site of W-Dawson POMs on the ZKV E protein, which could explain their antiviral activity. These results are expected to highlight the impact of POMs as antiviral compounds and their interaction with biomolecules.
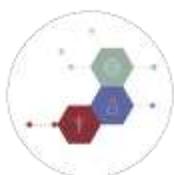
SS4-7: Cancer

Timeslot: 12:20– 12:35 pm

Presenter: Ms. Vik Ven Eng[1,2]
Institution: Monash University, Melbourne, Australia
Co-Authors: Annabell Bachem[3], Nikola Baschuk[1,4], Sammy Bedoui[3], Elizabeth L. Hartland[1,4] and Jaclyn S. Pearson[1,2,4]

[1]Centre for Innate Immunity and Infectious Diseases, Hudson Institute of Medical Research,
[2]Department of Microbiology, Monash University,
[3]Department of Microbiology and Immunology, The Peter Doherty Institute for Infection and Immunity, University of Melbourne,
[4]Department of Molecular and Translational Sciences, Monash University

Role of RHIM proteins in bacterial gut infection

Background: Enteropathogenic Escherichia coli (EPEC) is a diarrhoeagenic gut bacteria that utilises a type III secretion system (T3SS) to translocate effector proteins into host cells to modify cell signaling pathways. One such effector is EspL, which has been characterised to inhibit necroptosis and associated inflammatory pathways by directly cleaving RHIM domain-containing proteins, RIPK1 and RIPK3. As such, our study sought to clarify if there is a novel role for RHIM proteins in bacterial clearance.

Methods: Various single and compound RHIM protein knockout mice were infected with an EPEC-like mouse pathogen, Citrobacter rodentium, then assessed for disease severity through weight loss, gut histopathology, as well as colonic and systemic bacterial loads. At 10 days post-infection, mouse colons were harvested and processed for flow cytometric analysis on T-cell changes or qPCR evaluation of inflammatory cytokine expression.

Results: The RHIM protein knockout mice demonstrated heightened susceptibility to infection. Notably, examination of disease in single knockout mice found that RIPK3 plays a larger role in mediating pathology within the gut, whereas RIPK1 restricts bacterial systemic dissemination. Flow cytometry analysis of colonic lamina propria from infected Ripk1 and Ripk3 compound knockout mice found a significant reduction in Th17 cells important for bacterial clearance, relative to wildtype controls. This was consistent with qPCR evaluation of inflammatory cytokine levels where a larger fold reduction in Saa2, Il22 and Il17a gene expression was exhibited in mice infected wildtype C. rodentium compared to those with an espL deletion mutant.

Conclusion: These results show for the first time, a link between RHIM proteins (innate immunity) and Th17 responses (adaptive immunity), which will be further investigated to better inform the significance of these proteins in bacterial pathogenesis and maintenance of gut homeostasis.

SS4-8 : Cancer

Timeslot: 12:40– 1:00 pm

Presenter: Mr. Mohd Anees Ahmed[1]
Institution: [1]National Institute of Immunology, New Delhi, India
Co-Authors: Ayub Qadri[1]

[1]National Institute of Immunology, New Delhi, India

Signaling via the TLR adaptor MyD88 produces transient immune unresponsiveness during infection of mice with pathogenic Salmonella.

Infection of mice with pathogenic Salmonella activates innate immune receptors including Toll-like receptors (TLRs) and Nod-like receptors (NLRs) leading to secretion of inflammatory cytokines and chemokines. These inflammatory responses while contributing to innate immunity also bring about splenomegaly largely through expansion of immature reticulocytes. Whether these changes in splenic cellularity influence immune responses to non-Salmonella antigens that an infected host might encounter during this period has not been studied. Here, we show that infection of mice with live but not antibiotic - treated Salmonella Typhi produced an early inflammatory response that led to splenomegaly accompanied by increased numbers of TER119+ reticulocytes and F4/80+ macrophages, and reduced numbers of T and B lymphocytes. These changes, mediated through signaling from the TLR adaptor MyD88, did not affect antibody response to Salmonella, and both WT and MyD88 deficient mice produced comparable levels of antibodies. However, mice infected with Salmonella responded poorly to tetanus toxoid (TT) and ovalbumin administered at the time of splenomegaly. The ability of mice to elicit antibodies to non-Salmonella antigens was restored only after reversion of splenic cellularity back to normal state. These results suggest that changes in splenic cellularity brought about by infection with Salmonella might have previously unappreciated impact on immune response to non-Salmonella antigens. These findings have significant implications for host defense against other pathogens during typhoid fever and vaccine development against pathogenic Salmonella.

Hot Doc

Presenter: Pavanraj Chana

Institution: Moi University, Eldoret, Kenya

Co-Authors: Pavanraj Chana1, Atiyya Tul Munim1, Bahati Ernestine2 and Naomi Gudu3.

1. School of Medicine, College of Health Sciences, Moi University, Eldoret, Kenya.
2. School of Nursing, College of Health Sciences, Moi University, Eldoret, Kenya.
3. Department of Internal Medicine, School of Medicine, College of Health Sciences, Moi University, Eldoret, Kenya.

Uhai: The Blood Donation Integrated System

Background: Blood transfusion is the process of intravenously receiving blood from donor(s). Transfusions replace blood and blood products lost from injury, surgery, or various diseases. There is a constant need as blood has a limited shelf-life and is frequently needed. One blood donation can save up to 3 lives and it is reported that 1% of a population could be enough to for a nation's basic blood need, which is not reflected for many countries. While the importance is evident, there still exists delays and inadequacies causing morbidity and mortalities. In order to address these, practices need to be rekindled and innovative sustainable strategies need to be sought to enhance processes, intensify urgency and address knowledge gaps.

Methods: Uhai, a Swahili word for "life", is a blood donation integrated system that connects those in need of blood with potential donors willing to donate, who do not know when and where it is needed. This will be done through two mobile platforms: (1) Application for smart phones (internet enabled and having global positioning system (GPS) services) and (2) Unstructured supplementary service data (USSD) for the others. An integrated computer system will be availed to health institutions to coordinate multiple in-house blood requests. Other functions include being a learning platform; having scheduled donation reminders; trackable donation history; emergency mobilization alerts; nearby blood drive/events notifications; and blood buddy for those requiring frequent transfusions.

Results: Uhai is expected to interconnect patients, health facilities, donors and blood transfusion centres through one device, educate and create awareness, improve timely access to blood, ensure adequate stores in blood banks, mobilize donors in times of crises, reduce expenditures in sending out blood recruitment parties, and prevent needless fatalities and ill-health brought from blood deficits.

Conclusions: Just as evolution is needed in every aspect of health care one was needed for transfusions. Uhai originated when thinking about the youth, who form a large population, and the technology they most frequently use in this time and age to come up with an efficient platform linking the various stakeholders to ensure efficient donation and fluidity in transfusion of blood.

Hot Doc:

Presenter: Pavanraj Chana

Institution: Moi University, Eldoret, Kenya

Co-Authors: Pavanraj Chana1, Atiyya Tul Munim1 and Ashwinder Bhamra1.

1. School of Medicine, College of Health Sciences, Moi University, Eldoret, Kenya.

Beyond Sciences Initiative Moi University Chapter - Projects and Experiences

Beyond Sciences Initiative (BSI) is a non-profit consortium of various academic institutions, including Moi University, consisting of scholars from across the globe. BSI's aim is to provide a platform for intercultural dialogue and through collaborations promote intercultural understanding, bridge academic deficits, and assist in local and global outreach initiatives. BSI - Moi comprises of a multi-disciplinary faculty of medical, dental, nursing, psychology and physiotherapy students. We also have support from a number of medical doctors. Apart from actively participating in research programmes, the team has been organizing and engaging in a number of projects including developing a sustainable mentorship program and aiding in vocational training at Tumaini Children's Innovation Centre for street children and assisting in Antiretroviral drug compliance among young children in Amani Children's Home in Eldoret. We have conducted health education and motivational talks frequently at Orphaned Separated Children 's Assessments Related to their Health Centre (OSCAR) for street youth in Moi Teaching and Referral hospital, as well as in local high schools and at Kakuma Refugee camp (Lodwar), not only understanding challenges but advocating against dangerous practices such as female genital mutilation frequently practiced in Kakuma and providing an avenue for multi-dimensional aid. BSI-Moi, with the efforts of various partners and several non-governmental organizations, has also been able to food stuffs, clothes, menstrual pads and cups for women, and educative materials and tools during such projects. Several members have additionally got the opportunities to collect research data and advocate for development of curricula, protocols and policies.

Hot Doc:

Presenter: Diego Gonçalves Fernandes

Institution: University of Franca, Franca, São Paulo, Brazil
s
Co-Authors: Diego Gonçalves Fernandes[1], Mateus Matos da Silva[2], Nhaypi Iasmin Taveira Moreira[3], Inglity Lorrane da Silva Cruz[3], Inglity Lorrane da Silva Cruz[3], Heloisa de Castro Freire[3], Augusto César de Oliveira Dias[3], Maria Eduarda Souza Moreira[3], Samanta de Souza Mendonça[3], Maria Eduarda Nascimento Sales[3], Rafaela Simei Popolim[3], Silvio de Almeida Junior[1] [3].

[1] University of Franca (UNIFRAN).
[3] University of Alfenas (UNIFAL)
[3] Euro Anglo Professional courses

Wash a Hand, Wash Another - Hand Hygiene Project

Background: Hands are considered the main task execution tools as they are essential in almost every day to day activity. Even so, they receive little attention, becoming a disseminating source of microorganisms, among them the pathogens for humans. Faced with this, the entire academic community of a vocational school in partnership with the University of Franca (SP) and the University of Alfenas (MG) developed an important social role, making students aware of the importance of handwashing in the home and nosocomial environment. .

Methods: Through social actions, information on hand washing was brought to the academic community of vocational courses of a vocational school in the interior of São Paulo, being the city of purchasing power.

Results: Healthcare-related infections are closely linked to direct transmission, and it is estimated that 30% of all infections could be eliminated with proper handwashing and are characterized as the most effective combat activity. The hands are responsible for transmitting various microorganisms, whether through direct, patient-collaborator or indirect, object-collaborator. Handwashing is the recommended operation for most procedures and should be performed before and after physiological functions, procedures or personal operations.

Conclusions: Works such as these are of paramount importance in developing countries such as Brazil, since public health expenditure on treatment rather than prevention is exorbitant. It is also emphasized the importance of the union of universities, public and private in their social role today.

Hot Doc:

Presenter: Inglity Lorrane da Silva Cruz

Institution: Euro Anglo, Franca, São Paulo, Brazil

Co-Authors: Inglity Lorrane da Silva Cruz[1], Nhaypi Iasmin Taveira Moreira[1], Heloisa de Castro Freire[1], Augusto César de Oliveira Dias[1], Maria Eduarda Souza Moreira[1], Samanta de Souza Mendonça[1], Maria Eduarda Nascimento Sales[1], Diego Gonçalves Fernande[2], Rafaela Simei Popolim[1], Silvio de Almeida Junior[1] [2].

[1] University of Franca (UNIFRAN)
[2] Euro Anglo Professional courses

Toxicology and Health Promotion Study and Research Group and its Impact on Young People's Lives

Background: Life changes everything after becoming a member of the GEToS (Health Promotion and Toxicology Research Group), because you have a huge responsibility to take inspiration from typing your article, to go after answers to the questions. forms, you have a date for the job, and by then everything has to be typed. With GEToS, you learn this and more, getting into the life of medicine is out of this world, and the group shows it to you, it teaches you health and teaches you beyond basic knowledge. You build immense future knowledge, for you will have a notion of health beyond people who are only in basic research and have all the knowledge and can pass it on to other people for help, either by showing society a cure for a disease or teaching you to avoid something that makes you ill, so passing it on to everyone is immensely rewarding and GEToS gives you that and more. Being a member of this group is inexplicable, it is a great pride and gratitude. Being a scientist and taking care of your personal life is not easy, apart from all the day to day obligations that we have to take care of, we need to take care of the biology itself, go after new results for society, pass on knowledge to people about how to prevent them, help yourself, and help others is both rewarding and very complicated, as you need to take hours out of your day to study the cause, consequence and cure. of a disease or other factors in biology, and study how I will pass it on to people, if the way I understand it can be easy for the other to understand. So it's not easy being a woman and being a scientist, but it's not impossible either.

Hot Doc:

Presenter: Christos Tsagkaris

Institution: University of Crete, Heraklion, Greece

Co-Authors: Christos Tsagkaris1,2
1. University of Crete, Faculty of Medicine
2. Youth Ambassador of the European Code Against Cancer

Towards a Europe free of Cancer: The Youth Ambassadors of the European Code Against Cancer Program

Background: Cancer is a leading morbidity and mortality factor globally. Communication of scientific knowledge to the public, civil society engagement and advocacy can play a crucial role in cancer's prevention and management. It has been estimated that about 50% of cancer related mortality in the WHO Europe region could have been prevented. Hence advocating and spreading the word for cancer prevention towards the European Institutions and the general public can have a significant impact in the future.

Methods: The European Code Against Cancer (ECAC) is an initiative of the European Commission, developed by the World Health Organization's International Agency for Research on Cancer (IARC). The Code consists of 12 key points, whose implementation may lead to a Europe Free of Cancer. The Association of European Cancer Leagues (ECL) and its Youth Ambassadors (YAs) are actively involved in spreading the word about the ECAC and enhancing cancer's prevention and treatment all over the European Union.

Results: The ECAC has been communicated in scientific, formal and informal ways. Scientific activities include presenting and or publishing relevant information in an academic environment as well as delivering workshops in scientific events. Formal communication pertains to approaching EU, national and regional authorities advocating about the ECAC whereas informal communication includes social media campaigns.

Conclusions: Our experience indicates the lack of communication channels between the scientific community, the authorities and the general public. A fair understanding of EU politics and a set of communication skills (from empathy to mediation and advocacy) addition to our scientific - technical background.

Hot Doc:

Presenter: Md Arifur Rahman

Institution: Memorial University of Newfoundland, St John's, Canada

Co-Authors: Md Arifur Rahman1, Atanu Sarkar1 Atanu.Sarkar, Farah McCrate2

1Department of Community Health and Humanities, Faculty of Medicine, Memorial University St. John's, NL, A1B 3V6, Canada
2Department of Research and Innovation, Eastern Health, Newfoundland and Labrador, St. John's, NL, A1B 3V6, Canada

Environmental Contaminants: a population-based study to explore any association with relevant cancers in Newfoundland and Labrador

Background: People in Newfoundland and Labrador (NL) are exposed to arsenic and Disinfection by-products (DBPs) by drinking contaminated water and pesticides used in the golf courses. Arsenic is a naturally occurring potent carcinogen found in ground water. DBPs are considered as possible human carcinogens and they are formed by chlorination of raw water containing organic substances. Several pesticides used in the golf courses are linked to certain types of cancers. However, there is no population-level spatial data on any association between the exposure to these contaminants and related cancers. The study aims to compare cancer prevalence rates between high and low exposure risk communities in NL.

This ecological study was conducted to explore any association between the exposure to arsenic and DBPs in drinking water and living close proximity to golf courses and prevalence of the relevant cancers at the community level of NL.

Methods: Based on the water quality data from provincial reports, the communities exposed to higher levels of arsenic and DBPs (Trihalomethanes and Halo-acetic acids) were identified. List of neighborhoods living within 500 meters of golf courses in NL were selected from google map. Communities with similar demographic characteristics except for the exposure to these contaminants were selected as low-risk groups. Literature search was done to make lists of cancers induced by arsenic, DBPs, and pesticides. Cancer data (histology and topography of cancers, sex, age, and postal code of the cases at the time of diagnosis) were extracted from the NL Cancer Registry for the cases diagnosed between 2007-2016. Relative risk and 95% confidence intervals (CIs) were calculated for statistical analysis.

Results: Communities with high arsenic, DBPs, and neighborhoods living within close proximity of golf courses had greater risk of developing certain cancers (RR 1.3, 95%CI, 1.03-1.51; RR 1.8, 95%CI 1.7-1.9; RR 1.8, 95%CI 1.5-2.0 respectively), than the low exposure communities. Males were at higher risk in both groups.

Conclusions: Population-level spatial distribution of environmental contaminants were significantly associated with higher risk of cancer. However, further studies are needed to explore genotoxicity to establish causal relationship.
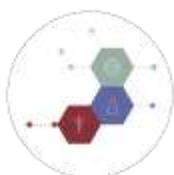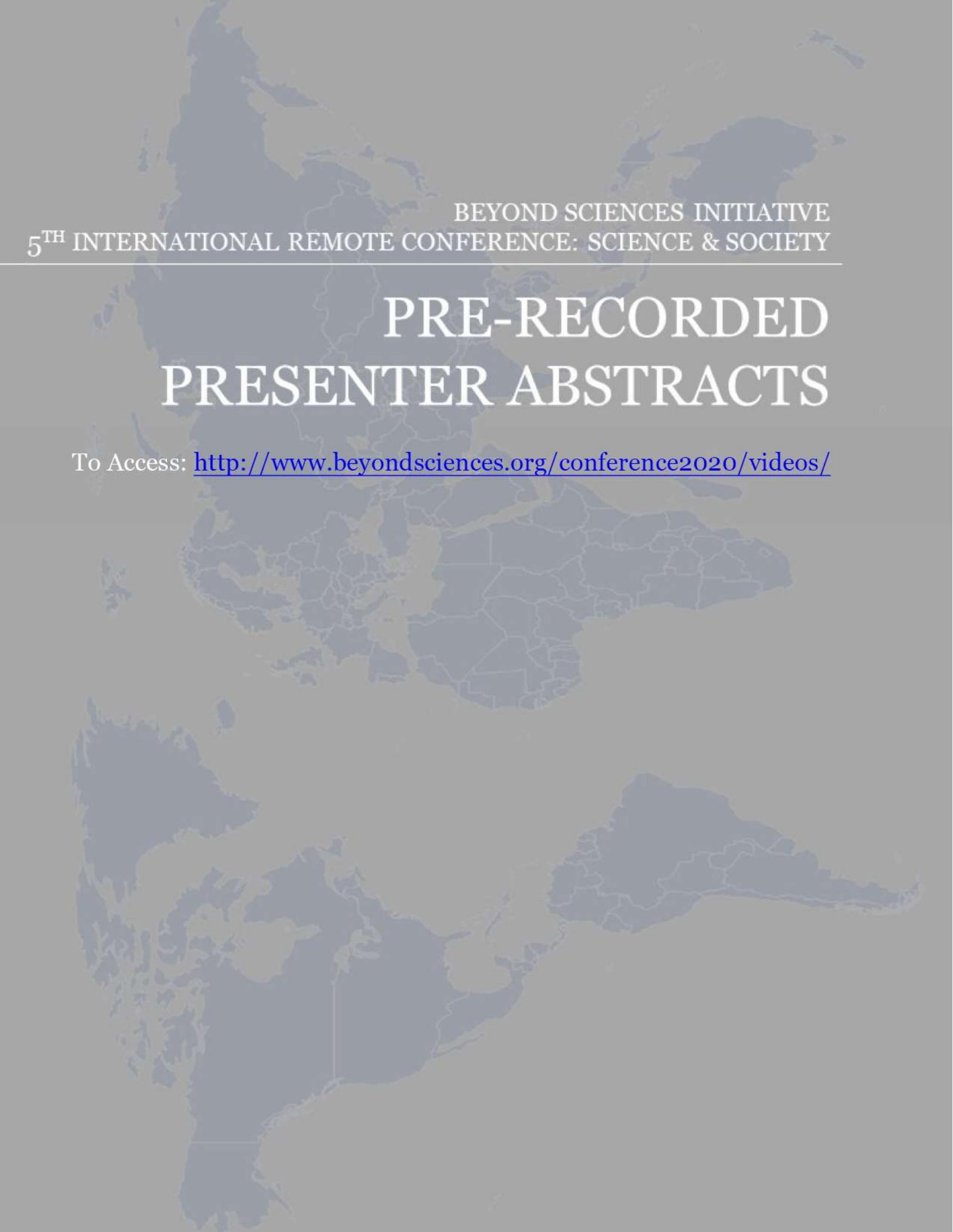
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PRE-RECORDED PRESENTER ABSTRACTS

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Session Topic: Biotechnology

Presenter: Idowu Jesulayomi Adeosun
Institution: Adeleke University, Ede, Osun State, Nigeria

Co-Authors: Idowu Jesulayomi Adeosun1, Oladipo Elijah Kolawole1,2 and Oyawoye Olubukola Monisola1.

1. Department of Microbiology, Laboratory of Molecular Biology, Bioinformatics and Immunology, Adeleke University, P.M.B 250, Ede, Osun State, Nigeria.

2. Department of Pure and Applied Biology (Microbiology/Virology Unit), Ladoke Akintola University, P.M.B 4000, Ogbomoso, Nigeria.

Resistance pattern of Pseudomonas aeruginosa isolated from Selected Tertiary Hospitals in Osun State, Nigeria.

Background: Pseudomonas aeruginosa is the most important and ubiquitous pathogen of the Pseudomonas species which has high intrinsic resistance to antibiotics resulting to wide spectrum of opportunistic infections. The aim of this study was to determine the resistance pattern of Pseudomonas aeruginosa isolated from selected tertiary hospitals in Osun state, Nigeria.

Methods: A total of 36 Pseudomonas aeruginosa isolates were obtained from 500 samples of blood, urine, wound, ear, eye swab and other collection sites that were routinely submitted to the diagnostic laboratories of the selected tertiary hospitals. Susceptibility to fifteen (15) antibiotics (Oxoid) was determined using the Kirby Bauer disk diffusion method.

Results: Rate of resistance to fluoroquinolones, monobactams, polymyxins, carbapenems, penicillins, phosphonic acid derivative and cephalosporins are 43.51%, 41.67%, 50.00%, 27.77%, 78.70%, 63.89% and 28.70% respectively. The isolates were mostly susceptible to carbapenems, especially, Imipenem with 72.22%. Highest resistance was to Penicillin (97.22%). The multiple antibiotic resistance (MAR) index revealed that 30 (83.33%) out of 36 isolates were multi-drug resistant. There were statistically significant differences between some group of antibiotics as a whole and the location sites with $P<0.05$.

Conclusions: Increase in antibiotic resistance continues to be a problem amidst patients infected with Pseudomonas aeruginosa which can be attributed to increase in antibiotic misapplication, misuse and abuse. It is important that a consistent monitoring of antibiotic resistance be done as it will assist in the appropriate selection of empiric antibiotic treatment in the proper setting.

Session Topic: Biotechnology

Presenter: Ricardo Sandoval
Institution: Central University of Ecuador, Ecuador

Cancer Immunotherapy: Role of the Immune System in Malignant Transformation.

Background: The immunoedition supports the idea that cancer cells are influenced by the immunological environment in which they develop as well as the impact of the immune system in its growth and further development. Based in this concept, the immunoedition consists of three phases: elimination, equilibrium and escape. On the other hand, chronic inflammation causes genetic mutations that give neoplastic cells the ability to proliferate without control, while allowing them to develop mechanisms to evade recognition by immune cells.

Methods: A bibliographic and systematic literature review was performed using the key words: immunosurveillance; cancer immunoediting; immunotherapy; tumor antigen; adoptive immunotherapy.

Results: In the elimination phase, cytokines like type I interferons; the molecular patterns associated with damage such as hyaluronan and high-mobility group box 1 protein (HMGB1); and ligands associated with stress expressed on the surface of the neoplastic cells (MIC-A/B) would be recognized by specific receptors on NK cells consequently, destroying cancer cells.
In the equilibrium phase, the immune system coexists with tumor cells; however, there is the possibility that neoplastic cells may reactivate their latent capacity for growth as recurrent tumors or distant metastases.
The escape phase represents a failure of the immune system in eliminating or controlling neoplastic tissue, there are two possibilities by which tumor cells can evade the immune system: intrinsic mechanisms associated with tumor antigens such as: decrease of MCH I molecules, insensitivity of IFN receptors, and alteration of antigen processing; and extrinsic mechanisms associated with the affected individual's immune system like: degradation of tryptophan (DIO), overproduction of nitric oxide, alteration of dendritic cells, inhibition of co-stimulatory signals and overproduction of VEGF and TGF-β.

Conclusions: Carcinogenesis is a complex process wherein the disruption of circuits that control the cell cycle due to gene mutations as well as inflammatory signals from the surrounding stroma and tumor microenvironment confers malignant cells the ability to grow uncontrollably.
Having established the underlying molecular mechanisms, immunotherapy has emerged as a therapeutic option for patients in whom traditional therapies have not proved effective in controlling and stopping tumor growth.

Session Topic: Biotechnology

Presenter: Mrs. Prity Yadav[1]

Institution: National Institute of Immunology, New Delhi, India

[1]National Institute of Immunology, New Delhi, India

A novel housekeeping sortase for expanded ligation applications

Background: Sortases are membrane-anchored conserved cysteine transpeptidases, found ubiquitously in Gram-positive bacteria, which catalyze the covalent anchoring of surface proteins to the peptidoglycan layer. Sortase recognizes a pentapeptide motif (for example; LPXTG) in surface proteins, cleaves the Thr-Gly linkage and forms a thio-acyl enzyme intermediate which is then resolved by nucleophilic attack of the free amine group of the peptidoglycan cross bridge. Sortase-mediated ligation (SML) reactions has been replicated efficiently in vitro using a class A housekeeping sortase from S. aureus (SaSrtA), using a pentapeptide consensus sequence (LPXTG) as donor substrate and an N-terminal oligoglycine amine group as acceptor nucleophile substrate. SML allows preparation of protein-protein or protein-peptide fusion under native conditions, with excellent specificity and quantitative yields. SaSrtA possess strict substrate specificity for LPXTG as first substrate and Gly based peptides as second substrate, this limits the substrate pool for SML. The present work describes a novel housekeeping sortase, which shows broader substrate specificity and thereby a better candidate for sortase-mediated ligations.
Methods: The gene coding for sortase was cloned expressed in E coli. The substrate specificity of the enzyme was studied using a peptide library (synthesized in house) using Fmoc chemistry. The transpeptidation reaction was analyzed using RP-HPLC. Mass spectrometry was employed to characterize the peptide products. Tandem mass spectrometry was utilized to delineate the site of peptide ligation by sortase. Size exclusion chromatography, Circular dichroism, UV spectrometry were deployed to study other biochemical characteristics of sortases involved in the study
Results: The new sortase was able to recognise LPXTG and LAXTG motives as first substrate. This property was not seen in any other characterised sortase till date. Also, with the help of tandem mass spectrometry, it was observed that this sortase shows broader substrate specificity with respect to second substrate, which increases the scope of potential candidates for substrates.
Conclusion: The finding of the work represents a new recombinant housekeeping sortase with relaxed specificity for both its substrates and thereby represent a good candidate for expanding the scope of sortase-mediated ligation (SML) applications.
Note: The work is not published yet; only limited info. is disclosed
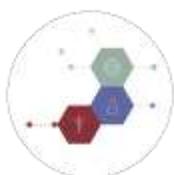
Session Topic: Biotechnology

Presenter: Mrs. Najlae Belkadi[1]
Institution: Faculty of Sciences and Techniques of Tangier, Tangier, Morocco

Co-Authors: Said Barrijal[1]

[1]Lab. Valorisation Biotechnologique des Microorganismes, Faculty of Sciences and Techniques, University Abdelmalek Essaadi, Tanger, Morocco.

Phenotypic and genetic characterization of rhizobia isolated from fenugeek (Trigonella foenum-graecum L. in Northwest region of Morocco)

Background: Legumes, such as Trigonella foenum-graecum L., form mutualistic symbiotic relationship with nitrogen-fixing rhizobial bacteria. This occurs within specialized root organs -nodules- that provide the conditions required for nitrogen fixation. The characterization of indigenous rhizobial strains well adapted to local environmental stresses and edaphic characteristics which could serve as inoculants of fenugreek on Moroccan soils could have a considerable economic and environmental impact. Therefore, our work entails the carrying out of an identification study of rhizobium like bacteria nodulating the fenugreek by the phenotypic and molecular characterization.

Methods: 48 bacterial strains were isolated from root nodules of the legume Trigonella foenum-graecum L.. Bacterial genomic DNA was extracted and Repetitive extragenic palindromic polymerase chain reactions (REP-PCR) were performed. PCR amplifications of 16S rRNA gene fragments were carried out, and the products were sequenced. For the phenotypic characteristics we were able to evaluate the tolerance of these isolates at different salt concentrations (71, 85.5, 171, 256.67, 342 and 513 mM); pH tolerance (3, 3.5, 4, 5, 6.8, 9 and 10) and temperature (4 °C, 28 °C, 37 °C and 40 °C), resistance to antibiotics and resistance to heavy metals.

Results: Repetitive extragenic palindromic (REP)-polymerase chain reaction (PCR) clustered the strains into 13 REP-PCR groups. The nearly complete sequence of the 16S rRNA gene from a representative strain of each REP-PCR pattern showed that all strains were closely related to members of the genus Sinorhizobuim. Pairwise alignments between globally aligned sequences of the 16S rRNA gene indicated that the strains from fenugreek had 99.75–100% identity with Ensifer medicae. For the phenotypic characteristics, the results obtained showed the existence of high phenotypic diversity within the studied isolates.

Conclusions: Our research provides new information on the diversity among root nodule bacteria infecting fenugreek, and the main symbiotic partner of this medicinal plant is E. medicae. These results show that analysis of the biodiversity is essential to improve our knowledge on plant endophytic bacterial populations as a previous step to study the activities and applications of endophytes in agriculture, environment protection, and biotechnology.
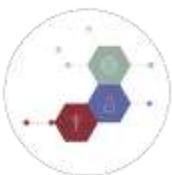
Session Topic: Biotechnology

Presenter: Ms. Mensah,Esther
Institution: Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Co-Authors: Obed Asare[1], Daniel Akwasi Anarfi[1], Emmanuel K. A. Amewu[1], Samuel T. Ahuno[1,2], Alexander Kwarteng[1,2]

1Department of Biochemistry and Biotechnology, KNUST, Kumasi, Ghana.
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Comparing the efficiency of selected exogenous microbes in microbial enhanced oil recovery based on oil yield

Background: Microbial Enhanced Oil Recovery (MEOR) is a tertiary method employed in oil recovery where microorganisms and their by-products produced are used to recover residual oil in reservoirs. The use of bacteria to recover oil was discovered in 1926 by Beckman. It was experimentally tried in 1944 by Zobell and coworkers. The first field test was carried out in the Lisbon field in Arkansas, USA in 1954. The oil crisis of 1970 triggered a great interest in active MEOR research in more than 15 countries. From 1970 to 2000, basic MEOR research focused on microbial ecology and characterization of oil reservoirs. MEOR achieved an interdisciplinary technology status in 1990.
Method: Research processes involved were isolation and culturing of microbes, saturation of core sample obtained from Ghana National Petroleum Corporation (GNPC) with crude oil, and incubation of the saturated core with nutrients and microbes. Microbes used for the experiment were B. subtilis and P. aeruginosa. These were introduced into separate glass containers in their individual and combined states. Estimations of recovered oil were done by finding the differences in the various weights of core before and after saturation with crude oil.
Findings: The results obtained depicted that the combination of selected microbes gave the highest yield of about 88.6% oil recovery as compared to individual microbes which gave 77.6% and 65.6%. The experimental study shows that selected microbes in their combined state is the best to recover more crude oil within a shorter time.
Conclusion: It can therefore be inferred that combined microbes recovered more oil relative to the other individually used microbes.
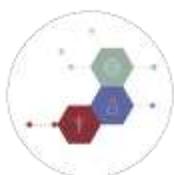
Session Topic: Bioinformatics

Presenter: Dr. Oladipo Elijah Kolawole
Institution: Adeleke University, Ede, Osun State, Nigeria.

Co-Authors: Oladipo E.K.[1,2], Awoyelu E.H.[3], Oyawoye O.M.[1] and Oloke J.K.[2,3]

[1]Department of Microbiology, Laboratory of Molecular Biology and Bioinformatics, Adeleke University, Ede, Osun State, Nigeria.
[2]Department of Pure and Applied Biology (Microbiology / Virology Unit), Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria.
[3]Department of Natural Sciences, Precious Cornerstone University, Ibadan, Oyo State, Nigeria.

Genetic Diversity of Human Respiratory Syncytial Virus Subgroups Circulating in Nigeria and Ghana

Background: One of the cause of acute lower respiratory tract infection is respiratory syncytial virus (RSV). The strains of RSV have been divided into two major antigenic groups A and B. Nevertheless, little is known about the genetic diversity of human respiratory syncytial virus circulating in some part of Africa. This study aimed to understand the genomic diversity and evolutionary dynamics of human respiratory syncytial virus (RSV) subgroups in Nigeria and Ghana in order to have better understanding of its transmission pattern
Methods: Genetic diversity and evolutionary rate analysis on RSV subgroups A and B selected fifty-six sequences from the GenBank for Nigerian and Ghanaian isolates was carried out using bioinformatics tools.
Results: The phylogenetic analysis showed two clusters of RSV, each subgroup A and B forming a single cluster with respect to the country. Out of all the isolates studied, RSV A isolates. KU736774.1NGR/OL102/15-RSVA from Nigeria is evolutionary related with KY910980.1A isolates GHA/RVk049/2014 from Ghana. The two isolates have N-glycosylation as observed in the same region. There are amino acids substitution at various positions of the two isolates compared to others from the genomic analysis. Conserved domains were present in the genome sequences analyzed.
Conclusion: Overall, the little genetic diversity was found among two RSV-A genomic sequences compared to RSV-B sequences. This result from this study would be important to ascertain viral transmission and pathogenicity. This study has contributed to the changes in virulence, antigenic epitopes and host tropism.

Session Topic: Chronic Diseases

Presenter: Prof. Silvio, Almeida Junior,
Institution: University of Franca, Franca, São Paulo, Brazil
Co-Authors: Silvio de Almeida Junior[1], Mayara Manochio[1], Poliana Marques Pereira[1], Vanessa de Souza Tótoli[1], Edna de Sousa Neves[1], Juliana Issa Hori[2], Lucas Alonso Rocha[1], Wilson Rodrigues Braz[1], José Eduardo Nassar[1], Ricardo Andrade Furtado[1].

[1]University of Franca, Franca, São Paulo, Brazil.
[2]Apis Flora, Ribeirão Preto, São Paulo, Brazil.

Biological effect of indomethacin incorporated on mesoporous silica nanoparticle

Background: Chronic inflammatory diseases are common, been performed prolonged and indiscriminate use of anti-inflammatories, bringing adverse events such as gastric and peptide ulcers among others. The present study aimed to evaluate the biological effect of indomethacin incorporated on mesoporous silica in an experimental model.

Methods: For toxicity evaluation we used open field and, liver and renal enzyme dosages. Analgesia was evaluated by formalin assay and inflammation through paw edema, peritonitis cell migration and immunomodulation of iNOS and interleukin.

Results: In the toxicity tests, the animals showed no behavioral and locomotion alterations in the open field at the 10mg/kg of indomethacin incorporated on nanoparticle. It also had a protective effect against the enzyme ALT when compared to indomethacin alone. In analgesia assays, indomethacin and indomethacin incorporated on nanoparticle did not showed results in the neurogenic phase and in the inflammatory phase achieved a lick reduction of 49 and 79%, respectively. In cell migration, there was a 64 and 94% of reduction in polymorphonuclear cells when treated with indomethacin and indomethacin incorporated on nanoparticle. Paw edema was 21% effective compared to 35% indomethacin alone, however, considerably reduced gastric lesions observed on macroscopy and fecal occult blood, demonstrating the effectiveness of the incorporation. Indomethacin was able to modulated NO and IL-10 when stimulated by LPS, but did not change the modulation of IL-6 and TNF-α. On other hand, indomethacin incorporated on nanoparticle did not modulated NO, IL-6, IL-10 and TNF-α.

Conclusion: The incorporation improve the efficience of indomethacin, as too inhibit the gastric and hepatic damage.
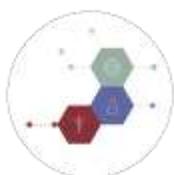
Session Topic: Chronic Diseases

Presenter: Ms. Assavarittirong, Chanika[1]

Institution: Poznan University of Medical Science, Poznan, Poland.

Co-Authors: Tsz Yuen Au[1].

[1]Faculty of Medicine in English, Poznan University of Medical Sciences, Poznan, Poland

Vascular Ehlers Danlos Syndrome: Recent advancements of potential treatments Review

Background: Vascular Ehlers-Danlos Syndrome (EDS) is a rare genetic disease. It is the most fatal among all types of EDS. In addition to the characteristics of hyperextensible skin, easy-bruising, and hypermobile joints, Vascular EDS is also characterized by aged appearance, and most importantly the risk of life-threatening aspects of blood vessel rupture or gastrointestinal perforation. COL3A1 genetic mutation is often identified in Vascular EDS patients. A lack of normal COL3A1 expression will result in defect of type III collagen production which is the main component of the walls of blood vessels. Patients are more prone to have spontaneous vessel rupture. Emergency surgery is often needed in these conditions, but at the same time performing surgery in such patients are extremely dangerous. Diagnosis of Vascular EDS includes observations of the symptoms, genetic testing, and molecular diagnostic approach. The management for this disease is possible, however there is no cure as of present.
Method: Research literatures were reviewed and the recent advancements were compiled from the peer-reviewed journal databases.
Results: A group of researchers found that a specific transcription factor NANOG can increase normal COL3A1 expression in heterozygous mutations. This suggested that the transcription factor NANOG could possibly be the potential treatments for Vascular EDS. NANOG binds to the regulatory genes, SMAD2 and 3, of the beta-TGF pathway, which reactivates the pathway to restore production of normal type III collagen. A gene therapy-based strategy was found to be promising, such as the gene silencing effect of siRNA and RNA interference targeting the mutated COL3A1 gene, thereby reform the normal functioning and production of collagen type III. Moreover, an impactful management of Vascular EDS was established. Mice with Vascular EDS traits were treated with a beta-blocker medication Celiprolol and Doxycycline. These mice showed significant improvements in their thoracic aorta biomechanical strength and integrity. This could be a promising management method for patients with Vascular EDS in prevention of a life-threatening symptom such as arterial rupture.
Conclusion: Many high potential advancements are being studied, including gene-therapy, utilizing transcription factors, and more personalized medication. However, more studies are needed to be performed in order to incorporate these promising treatments into clinical settings.

Session Topic: Global Health

Presenter: Ms. Genevive Agyapong
Institution: Radford University College, Eastlegon, Ghana

The prevalence of anopheles gambiae compared to other species of anopheles in the spread of malaria: a case study of the Adentan municipality.

Background: Malaria is a life-threatening parasitic disease which affects the blood. It is commonly transmitted from person to person by female Anopheles mosquitoes. The Anopheles mosquito is the most widespread in Africa and difficult to control.
Aim: The main aim of this study was to determine the type of malaria parasite prevalent and the various species of Anopheles mosquitoes in the Adentan Municipality
Methodology: A total of 40 houses were selected for indoor residual spraying with at least 3 individuals (one male, one female and one child below 5 years) selected from each house for malaria parasite screening in the Adentan Municipal. Pyrethiod Spray Catches method was performed at 6am by spraying Deltamethrin (Yotox®) for 30-45 seconds in the room. After 20 minutes, dead and immobilized mosquitoes were collected. Captured mosquitoes were sorted, identified morphologically to species level and counted. All mosquitoes were stored in 1.5-ml Eppendorf snap vials with desiccants.
Results and Discussion: A total of 89% of mosquitoes collected were identified to be Culex while 11% were identified as Aides. The Culex were captured in 13% of the rooms sampled while a combination of both Culex and Aides were captured in 1% of rooms sampled. The prevalence of malaria in Adentan Municipality was found to be low during the period of the study.
Keywords: Malaria, Anopheles mosquitoes.

Session Topic: Global Health

Presenter: Mr. Acquah-Mensah, John
Institution: KNUST, Kumasi, Ghana

Co-Authors: Albert Doughan[1], Gifty Animwaa Frimpong[1], and Faustina Obu Mensah[1]

[1]Department of Biochemistry & Biotechnology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Knowledge, Attitude and Perception of Self-Medication Among Students in the College of Science, Kwame Nkrumah University of Science and Technology (KNUST), Ghana.

Background: Self-medication is the use of drugs for the treatment of diseases or conditions without consulting a medical practitioner. This practice is becoming very common in our daily lives which makes it unhealthy. This study aimed at assessing the knowledge, attitude and perception of self-medication among College of Science students of Kwame Nkrumah University of Science and Technology (KNUST), Ghana.
Methods: A cross-sectional study was conducted where questionnaires consisting of demographics and knowledge on self-medication were administered to 433 randomly selected students from the College of Science, KNUST. Data were analyzed using SPSS statistical package version 20.
Results: Out of this, 96% knew about self-medication while 90% have practiced it before. Most of the drugs used for self-medication were obtained from pharmacy shops with the most commonly used drugs being analgesics and antimalarials. The most commonly reported conditions that led to self-medication were headache (40.1%), malaria (7.2%) and body aches (5.4%). Previous prescription (29.9%) and friends/family (26.7%) were the most reported factors that led to self-medication. The "media" recorded the highest source of information for self-medication.
Conclusion: Knowledge about appropriate self-medication was good, attitude towards it was positive, and the practice of self-medication was common among the study participants.
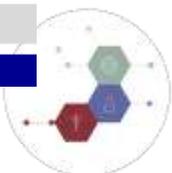
Session Topic: Global Health

Presenter: Mr. Ajibade, Oluwatosin[1]
Institution: Adeleke University, Ede, Nigeria
Co-Author: Oyawoye Olubukola[1]

[1]Department of Microbiology, Adeleke University, Ede, Osun State

The enhancement of Amaranthus hybridus growth parameters using indigenous PGPR in Ede, Nigeria

Background: Global agriculture largely depends on the use of agrochemicals like fertilizers and pesticides to meet the ever-growing world population in the production of food. These chemicals have been linked to diseases in man, depletion of certain nutrients in soil, production of greenhouse gases amongst other ills. The rhizosphere is an area abundant in beneficial microorganisms known as plant growth promoting rhizobacteria with capacity to improve plant growth through a number of mechanisms. The vegetable Amaranthus hybridus is a common vegetable consumed across sub Saharan Africa. It is usually cultivated using fertilizer. The study seeks to provide an eco-friendly, economical substitute to the use of fertilizer in cultivating the staple vegetable.

Methods: Indigenous bacteria were screened for their plant growth promoting qualities. Seeds of Amaranthus hybridus were treated with the various bacteria suspension (AU1, AU2, AU3, AU4, AU5, AU6) vis a vis seed treated with distilled water serving as control. A number of parameters were assessed from germination rate, vigor index, shoot height and Plant dry weight.

Results: Six bacterial isolates displayed plant growth promoting properties. A maximum increase of approximately 20 and 40 % was observed for shoot and rootlength, respectively in Amaranthus hybridus in axenic pot culture over control plants

Conclusions: The study has shown that plant growth promoting rhizobacteria are indeed a better substitute for fertilizer. The use of PGPR increase growth yield and also is eco-friendly thereby achieving sustainable development goals bordering on climate and food security.

Session Topic: Global Health

Presenter: Ms. Awoyelu Elukunbi[1]
Institution: Precious Cornerstone University, Ibadan, Nigeria.

Co-Authors: Oladipo Kola[2], Oloke Julius[1], Adetuyi Babatunde[1], Jimah Esther[3]

[1]Department of Natural Sciences, Precious Cornerstone University, Ibadan, Nigeria.
[2]Department of Microbiology, Adeleke University, Ede, Osun State, Nigeria.
[3]Department of Medical Microbiology and Parasitology, University of Ilorin, Ilorin, Kwara State, Nigeria.

Prevalence of Hepatitis C Virus among Pregnant Women And Apparently Healthy Individuals Attending Bowen University Teaching Hospital, Ogbomoso, Nigeria

Background: Routine screening of anti-HCV antibodies with the use of Enzyme Linked Immuno-Sorbent Assay (ELISA) rather than test strips is yet to be practiced in most tertiary hospitals in Ogbomoso. The likely consequences are high transmission rate of HCV infections through vertical transmission from mother-to-child and blood/blood product transfusion. Hence, this study focused on the prevalence of anti-HCV antibodies as well as molecular detection of HCV RNA among apparently healthy individuals and pregnant women attending Bowen University Teaching Hospital, Ogbomoso, Nigeria. The outcome of this study would provide background information on the burden of infection in this population.

Methods: A total of 279 subjects, including 138 pregnant women and 141 apparently healthy individuals, in the age range 18 to 56 years, attending Bowen University Teaching Hospital, Ogbomoso who consented voluntarily after thorough explanation of the purpose of the study were included in this study. The sera from all subjects were tested serologically for anti-HCV antibodies and further analyzed molecularly by Reverse transcription Polymerase Chain Reaction (RT-PCR) for HCV RNA. Data on socio-demographic characteristics and potential risk factors were collected using structured questionnaire. Chi-square test was utilized to assess the association between the socio-demographic variables and HCV status ($p < 0.05$). Logistic regression was done to determine the strength of association between risk factors and HCV infection ($p < 0.05$).

Results: A total seroprevalence of hepatitis C virus infection was found to be 1.8% while 2.5% were positive for HCV RNA. None of the socio-demographic characteristics and potential risk factors among the study groups were significantly ($p > 0.05$) associated with hepatitis C virus infection.

CONCLUSION: Although the prevalence rate of hepatitis C virus infection is low among the studied population, strict blood screening with highly sensitive RT-PCR must be maintained to prevent spread of infection and proper management of infected individuals.
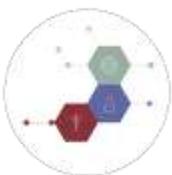
Session Topic: Global Health

Presenter: Mr. Adetuyi, Babatunde[1]
Institution: Precious Cornerstone Uniiversity, Ibadan, Nigeria
Co-Authors: Awoyelu Elukunbi[1], Oladipo Kola[2] and Dairo Joshua[3]

[1]Department of Natural sciences, Precious Cornerstone University, Ibadan, Nigeria.
[2]Department of Microbiology, Adeleke University, Ede, Nigeria.
[3]Department of Biochemistry, Joseph Ayo Babalola University, Ikeji-Arakeji, Osun State, Nigeria.

Phytochemical and neuropoprotective potential of ethanolic extract of heliotropium indicum on cadmium induced oxido-inflamation in male wistar rat

Background: Heliotropium Indicum has various traditional medicinal uses such as treatment of abdominal pains, dysmenorrhea, hypertension, convulsion, post-partum inflammatory disorders, wound and infections and skin rashes. The aim of this study therefore is to evaluate the phytochemical and neuroprotective potential of Ethanolic extract of Heliotropium indicum on cadmium induced brain oxidative damage in the brain of male albino rat.

Methodology: Rats were allocated into four groups as follows; Group I received normal saline only. Group II received 50 mg/kg (i.p) Cadmium alone. Group III received 500 mg/kg Ethanolic extract of Heliotropium indicum alone. Groups IV received 50 mg/kg (i.p) Cadmium + 500 mg/kg Ethanolic extract of Heliotropium indicum for 30 days. Phytochemical and proximate analysis, oxidative stress, antioxidant, inflammatory markers and Histological alterations were assessed.

Result: The result of the phytochemical analysis shows the presence of tannins, alkaloids, saponin and terpenoids in the leaf sample extract. This shows that these substances are part of the composition of Heliotropium Indicum. Also, the proximate analysis shows the high moisture content of the plant. It also shows that the plant has a very high carbohydrate level. The fat content is low as well as the protein content. The amount of fiber contained in the plant is less than average about 13%. Also, there was a significant decrease in the levels of Catalase, Superoxide Dismustase, reduced glutathione, Glutathione-S-Transfase and a increase in malondialdehyde level, myeloperoxidase activity and nitric oxide level in the whole brain of rat, when compared to the control, but rats treated with Heliotropium Indicum was able to reverse this oxidative damage induced by cadmium. Histological alteration caused by cadmium was significantly reversed in rats treated with Ethanolic extract of Heliotropium indicum.

Conclusion: Ethanolic extract of Heliotropium indicum prevents cadmium induced oxido-inflammatory damage, thus could be developed as a therapeutic agent.
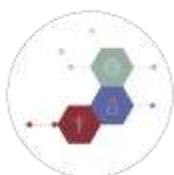
Session Topic: Global Health

Presenter: Mr. João Guilherme Martins[1],
Institution: University of Franca, Franca, São Paulo, Brazil
Co-Authors: Laís Prado Marques[1], Bruna Maniglia Kaluf[1], Laís Elena Pimenta[1], Kátia Roberta Prieto de Oliveira[1], Silvio de Almeida Junior[1], Lorrayne Milene Costa[1], Marcio Andrade e Silva[1], Sérgio Ricardo Ambrósio[1], Jairo Kenupp Batos[2], Ricardo Andrade Furtado[1].

[1]University of Franca (UNIFRAN)
[2]University of São Paulo (USP)

Biological potential of bacarina extracted from Brazilian Green Propolis on analgesia and inflammation

Background: Natural products have become economically interesting for the pharmaceutical industry based on folk medicine. The focus of our current research centers is the discovery and isolation of potentially active molecules, to replace drugs in order to mitigate adverse effects. In view of this, the analgesic and anti-inflammatory potential of bacarina isolated from brazilian green propolis was evaluated.

Methods: The analgesia evaluation was measured by mechanical (DPA) and thermal (Hargreaves) stimulation test. Treatments (bacarina 2.5, 5, 10 and 20 mg/kg) were administered and the animals were evaluated after 60 min., followed by injection of carrageenan and a new measured after 60 min. For anti-inflammatory activity, a paw edema test was performed, and the paw edema was measured for 4 hours after inflammatory induction. We also evaluated toxicity to kidneys and liver through of biomarkers.

Results: Regarding mechanical stimulation analgesia (DPA), the tested dosages do not show activity when compared to the negative control. In the thermal stimulation (Hargreaves) the dosage of 10 mg/kg of baccarin presented effectiveness compared to the negative control. In the anti-inflammatory activity by carrageenan induced paw oedema, the dosage of 5 mg/kg showed antiedematogenic activity. The baccarin had an edema of 0.43 mm^3 compared to 0.86 mm^3 of the negative control being more effective than the reference control indomethacin. Only 20 mg/kg of Baccarin showed hepatotoxicity.

Conclusion: Baccarin showed analgesic activity on thermal stimulation and anti-inflammatory potential on antiedematogenic activity.
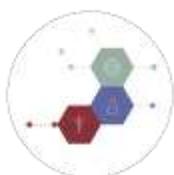
Session Topic: Global Health

Presenter: Thuany Martins Ferreira[1]
Institution: University of Franca, Franca, São Paulo, Brazil
Co-Authors: Danielle Vieira Pereira[1], Renato Alves de Freitas[1], Lorrayne Milene Costa[1], Silvio de Almeida Junior[1], Marcio Andrade e Silva[1], Sérgio Ricardo Ambrósio[1], Jairo Kenupp Batos[2], Ricardo Andrade Furtado[1].

[1]University of Franca (UNIFRAN)
[2]University of São Paulo (USP)

Anti-inflammatory and analgesic activity of kaempferide isolated from brazilian green propolis

Background: Green propolis effects include anti-inflammatory, antioxidant, gastroprotective, antibacterial, antifungal, antitumor, neuroprotective activity. Given its, the study of its isolated compounds is necessary. In this work, we evaluated the anti-inflammatory and analgesic activity of kaempferide isolated from brazilian green propolis.

Methods: The analgesia evaluation was measured by mechanical (DPA) and thermal (Hargreaves) stimulation test. Treatments (kaempferide 5, 10 and 20 mg/kg) were administered and the animals were evaluated after 60 min., followed by injection of carrageenan and a new measured after 60 min. For anti-inflammatory activity, a paw edema test was performed and the paw edema was measured for 4 hours after inflammatory induction. We also evaluated toxicity to kidneys and liver through of biomarkers.

Results: In carrageenan induced paw oedema kaempferide showed in the fourth hour an edema of 0.72 mm³ and negative control an edema of 0.86 mm³. However, reference control (indomethacin) showed an edema of 0.54 mm3. Regarding the effect of mechanical hyperalgesia (DPA), the doses of 5 and 10 mg/kg showed significant difference related to control in analgesic activity, however there was no change in anti-inflammatory analgesia. In the activity measured by temperature (Hargreaves), there were no statistical differences in the analgesic and anti-inflammatory phases. Renal and hepatic biomakers did not differed significantly from the negative control group.

Conclusion: The data presented lead to understand that kaempferide has analgesic activity and no toxicity under doses evaluated.
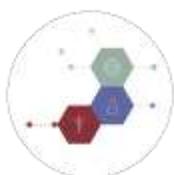
Session Topic: Global Health

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Yesterday, today and tomorrow: young people's perspectives on Brazilian society.

Background: Over the years the feeling of impunity, lack of rules and a national insecurity, originated by several factors, including those already mentioned, still accompanies the Brazilian society and, despite the song ""Que país é esse?"" 1970s, she still portrays the Brazilian reality. Given this, the work aims to compare different eras, past and present, explaining possible changes regarding the young within Brazilian society, their perspectives and yearnings for the future.
Methods: Relate the song "Que país é esse?" with the actual reality of Brazil and the perspective of youth as a promoter of health promotion through politics and social affairs.
Results: It was observed the criticisms present in the letter it can be said that it demonstrates the social contradictions of Brazil, such as: corruption, inequalities of social classes and problems in national identity. It is plausible to say that the insertion of the young person becomes more complex, since he has a more sensitive look at these issues, but they are not empowered to engage in these causes, a sense of helplessness arises and, in a way uselessness. Bringing the youth into social issues transforms a whole future, as the youth is a reflection of the future from which we are building.
Conclusion: The perspectives of young Brazilians become limited taking into account all sociocultural and historical aspects, that is, there is a lack of space for young people, although this viewpoint is evolving, and Brazilian adults are beginning to notice the importance of inserting and listening to them. young people, it is still too early to say how young people in this country will be treated, but it is well known that young people themselves are standing up and showing the mistakes of adults and proposing solutions to various issues, so we can say that there will be a rise of young people of course.

Session Topic: Global Health

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Feminism and representativity - A feminine look at the song "Favela" by Alok feat Ina Wroldsen

Background: With the world increasingly globalized, undergoing significant changes in various aspects over the years, it is important to highlight one of these issues feminism as a way of empowering women and resolving various conflicts everywhere in the world. Faced with this, the work tries to evaluate the song "Favela" produced by DJ Alok and Ina Wroldsen, both recognized worldwide. She is light and contagious, to suit all tastes, emphasizing how understanding and awareness of the letter is important.
Methods: Analysis of the situation of the song "Favela", understanding the current world situation of women today facing society where women have no space.
Results: The synthesis made in relation to feminism is the caveat of representativeness and empowerment, that even she, the woman portrayed in the letter, born in the favela, with her difficulties in being and staying on the left side of this right-handed world, continues to work. Continue to take care of your child and have fun. She continues to live and fight for her private fight every day alone, being a resident of the favela. The importance of bringing this message of recognition and representation to these women living in the favela is beautiful and of enormous size. Feeling results in a struggle for what they believe and dream, and which has its important role in society recognized and valued in some way.
Conclusion: The simple letter gives us listeners a valuable interpretation of how important representativeness is, especially in today's world. If we look at the public health side, the music shows that women are no longer mere viewers of their lives and have started to be protagonists of great stories.
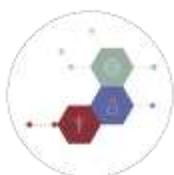
Session Topic: Global Health

Presenter: Ms. Amanda Marcinowska[1]
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Identifying primary health care research priorities in underserved regions of eastern são paulo, brazil: a delphi study among key stakeholders of the Santa Marcelina Primary Health Care Network

Background: Research in primary health care is essential in low- and middle-income countries to reduce health inequalities. Research priority setting is an effective strategy to direct health research and strengthen health care services. Identified priorities can provide direction and focus for future research and direct funding to the most urgent needs. This is especially important in resource limited areas. This study will be conducted in the underserved areas of Eastern São Paulo, Brazil. These regions have major disadvantages including poorer health indicators and socioeconomic indices, greater social inequalities, and a higher poverty index than the São Paulo city average. The objective of this study is to systematically identify top research priorities through the elicitation and prioritization of primary health care research questions in underserved areas of Eastern São Paulo based on expert's knowledge and experience within child and maternal health, communicable diseases, non-communicable diseases, mental health, urgent and emergency care, patient safety, care coordination, and primary health care management.
Methods: A multi-paneled, three-round Delphi approach will be used to gather expert opinions on important research questions. Each panel of experts will set priorities for a specific domain of primary health care. The questionnaires will be web-based surveys, distributed across health care professionals and administrators of the Santa Marcelina Network. The participants will be recruited through purposeful and snowball sampling. In round one, participants will list important primary health care research questions. In round two, participants will rate the level of importance of each research question on a 5-point Likert scale. In round three, participants will reflect on and revise or maintain their ratings in light of the statistical group response.
Anticipated results: A prioritized list of research questions within each of the primary health care domains will be obtained with an assessment of importance for each research question, reflecting the research needs of East São Paulo in rank-order.
Conclusion: The primary health care research needs identified by experts will help inform future research in Eastern São Paulo and direct resources to the most essential research needs. This is likely to stimulate high-quality research that can have an impact on practice, education, and policy.
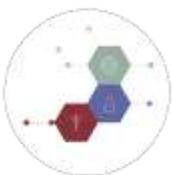
Session Topic: Global Health

Presenter: Mrs. Frances Nathan-Mensah
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Bacteriological Quality of Salad sold by local food vendors within selected open market in Accra, Ghana.

Background: Consumption of adequate amount of vegetables have been recommended by health officers to boost the immune system as they are rich in micronutrients important in biochemical reactions involved in antibody production. In spite of the importance of vegetables consumption, there are concerns with the handling, processing and the hygienic presentation of ready-to-eat vegetables, especially salad.

Methodology: This study was a cross section study based on the samples collected from Madina and Nima food vendors. The samples were collected midmorning in sterile bags and placed in ice chest for transportation to the laboratory. Laboratory procedures include standard plate count, enterobacteriaceae, coliform count, culture etc.

Conclusion: The study revealed an unacceptable total quantity of salads sold within the markets.

Session Topic: Global Health

Presenter: Ms. Fumadorh Dorcas M.A.[1]
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Malaria and Anaemia in pregnancy: A case control study on the effectiveness of intermittent preventive treatment with sulfadoxine pyrimethamine against malaria and anaemia in pregnancy.

Background: Malaria is a Plasmodium parasite infection caused by the bites of infected female anopheles mosquitoes. Anaemia is a major complication of malaria. Both conditions are of great concern during pregnancy as they are responsible for lots of maternal and foetal morbidity. Intermittent preventive treatment during pregnancy with sulfadoxine pyrimethamine (IPTp-SP) has long been the most effective method to prevent malaria and anaemia during pregnancy. However research tells that non adherence may lead to the resistance of SP by malaria parasites. This study aimed at investigating the comorbidity of malaria and anaemia among pregnant women reporting to antenatal clinics of two hospitals in Madina, Accra-Ghana.
Methods: Consent was obtained from participants and blood samples collected via capillary puncture and thick films made and examined for malaria parasites. Haemoglobin levels were measured using a haemocue metre and the knowledge, attitude and perception of participants were assessed with structured questionnaires.
Results: Out of a total of 174 participants, 108 were in their third trimester with 76 participants being multigravida. Majority of the SP users (79) had normal Hb levels as compared to the participants who were not on SP (43). Two of the samples collected from women on IPTp-SP were positive to malaria while no positive result was recorded from those not on SP. The general prevalence of malaria in this study was 1.2%. On the average, 78.8% of the pregnant women had sufficient knowledge and a good understanding of malaria and anaemia during pregnancy. There was no significant correlation between the measured variables except between SP use and the trimester ($p = 0.000$).
Conclusion: The case control study of a total of one hundred and seventy four participants revealed that IPTp-SP remains effective in the prevention of malaria and anaemia during pregnancy.

Session Topic: Global Health

Presenter: Mr. Lalit Pal[1]
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Co-Authors: Dr. Sangeeta Bhaskar[1],

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Study the macrophage function and underlying mechanisms in TB-IRIS development using in T cell-deficient mice as animal model

Background: Tuberculosis (TB) caused an estimated 1.3 million deaths among HIV-negative people and there were an additional 0.3 million deaths from TB among HIV-positive people. In case of HIV- M.tb co-infection the most challenging concern is the efforts to scale up anti-retroviral therapy (ART). Administration of ART significantly increases the chance of reactivation of latent TB infection and leads to a condition called tuberculosis-associated immune reconstitution inflammatory syndrome (TB-IRIS). TB-IRIS is an exaggerated immune response arises as M.tb specific CD4+ T cells re-emerge. Since macrophages are the major antigen presenting cells and are infected by M.tb at the high frequency, they are very much likely to play an important role in the activation of hyperactive CD4+ T cell response and the pathogenesis TB-IRIS.

Method: In our present study, we examined the macrophage response to M.tb in T cell-deficient TCRβ−/− mice. For in vivo study enriched CFSC labelled CD4 T cells (2 × 106) were adoptively transplanted into TCRβ−/− mice during chronic mycobacterial infection. Since M.tb and HIV co-infected people present a similar condition, this study is relevant to examine the role of macrophages in pathophysiology of TB-IRIS.

Result: Pro-inflammatory and anti- inflammatory cytokines level were analysed in culture supernatant from wild type C57Bl/6 and TCRβ−/− mice peritoneal macrophages. Increased level of IL-6, IL-12, TNF-alpha, IFN-gamma and nitric oxide were observed which further increased to a significant level upon addition of enriched CD4 T cells form naïve wild type C57Bl/6 mice. Up-regulated expression of CD80, CD86 and MHC II were also observed in TCRβ−/− macrophages.

Recipient mice underwent rapid wasting, losing their 20 -30 % initial body weight between days 7 and 14 after transfer. All the TCRβ−/− mice succumbed by day 30 after CD4 T cells transplantation. In contrast, infected C57Bl/6 wild-type (WT) recipient mice displayed no significant weight loss and mortality.

Conclusion: We have showed that pro-inflammatory cytokines level is significantly high in culture supernatant of TCRβ−/− mice macrophages. The study also describes a mice model for IRIS disease that recapitulates the fundamental immunological scenario of M.tb associated IRIS.

Session Topic: Global Health

Presenter: Mr. Pavanraj Chana[1].
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Medical Imaging Service Delivery and Quality at Iten County Referral Hospital, Elgeyo-Marakwet county.

Background: Medical imaging refers to a set of technologies, techniques and processes that non-invasively produce images of tissues and organs. They are used to diagnose, track course and monitor treatment for numerous conditions, and hence integral in management initiatives. Despite this, they are not evenly distributed and approximately two-thirds of the world's population still do not have access to them. This study aimed to identify medical imaging services available at Iten County Referral Hospital (ICRH) (county/level 5 hospital), the associated challenges and their impact on health delivery to catalyse evolved interventional efforts.

Methods: The study was conducted at ICRH. It receives patients widely from the host county and those neighbouring. The research was a cross-sectional descriptive study where both quantitative and qualitative data was collected: Quantitative data from an adapted checklist to numerate imaging and information systems equipment, supplies, staff and number of imaging investigations done and referred over the past year (July 2017- June 2018); and qualitative data from focus group sessions and interviews exploring equipment, drugs, infrastructure staff care, imaging techniques, patient care, audits, reports and records. The study population included those involved with imaging services using non-probabilistic purposive sampling technique. The sample size was 15. Ethical legibility approval from county and hospital administration was sought prior to study.

Results: ICRH had an x-ray machine, mammogram, OPG and 3 ultrasound machines with 1 being functional and 1 functionless echocardiography machine. A total of 11, 346 investigations were done in past year: 7,642 x-rays and 3,704 ultrasounds. About 235 in-patients were referred for imaging services not provided. Equipment was inadequate to population served. Most supplies were present. Selection process did not include vital assessments leading to inappropriate selection, referrals and poor upkeep. Staff to population ratio was fair. There were however no regular trainings, radiation monitoring and occupational health education. Patient care, records, reporting and storage were fair but need more attention.

Conclusions: The study demonstrated feasibility and utility to provide representative information of medical imaging services in a level 5 hospital. Principal challenges varied with literature reinforcing individuality assessment notion for congruent management.

Session Topic: Global Health

Presenter: Mrs. Benaicha Houda[1]
Institution: University Abdelmalek Esaadi, Tangier, Morocco

Co-Authors: Elmalki Fatimab[1,2], Barrijal Saida[1]

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[2]Laboratory of Microbiology, Research Department, Institute Pasteur du Maroc, Tangier, Morocco

Epidemiological and molecular study of antibiotic resistance in Enterobacteriaceae involved in community infections, and isolated from North-West of Morocco

Background: Our main target is to study the spread of Multidrug-resistant (MDR) enterobacteria isolated from community patients in North-Western of Morocco. This study was conducted from 2012 to 2015), would provide essential information in health sector.

Methodology: A total of 577 enterobacteriaceae out of 634 samples, from different origins, were subject to this study. The identification of collected species was performed by phenotypic and biochemical tests. In parallel, the evaluation of susceptibility of enterobacteria to 20 antibiotics was examined by antibiogram test. The search for broad-spectrum beta-lactamases (ESBL) and carbapenem-resistant enterobacteria (CPE) is implemented by various phenotypic tests. On the other hand, detection of beta-lactam, carbapenem and fluoroquinolone resistance plasmid genes was performed by PCR, sequencing and restriction fragment length polymorphism. Finally, the confirmation of the plasmid origin of these genes is carried out by PCR on plasmid DNA.

Results: Different species were detected with a predominance of Escherichia coli with 62.77%. The antibiogram test classified more than 50% of the MDR with very strong resistance profiles. However, only meropenem and amikacin were considered the most effective antibiotics against these enterobacteria with a sensitivity up to 98%. Moreover, 14.38% of the strains are ESBL positive. In addition, the detection of plasmid mediated quinolone resistance genes revealed 6.24% qnrB, 2.25% qnrS and 14.55% Aac (6 ').For beta-lactam resistant genes, the CTX-M-15 gene was the most dominating with 27.69%. For CRE, two blaVIM genes and one blaKPC were isolated for the first time in this region with a frequency of 3.33% and 1.66%, respectively.

Conclusion: This epidemiological study revealed very alarming points. Firstly, infections in the community in this region are due to different bacterial species, mostly from urinary tract infections. Secondly, more than 50% of strains were MDR with alarming resistance profiles, including some ATBs specifically dedicated to clinical use, such as imipenem, levofloxacin and colestin. Regarding fluoroquinolones, different variants of PMQR are selected with the predominance of Aac (6 ') Ib-cr variant. As for other-resistant plasmid genes, the CTX-15M gene is the most widespread in this community population.
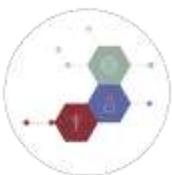
Session Topic: Global Health

Presenter: Ms. Maria Eduarda Souza Moreira[1]
Institution: University Abdelmalek Esaadi, Tangier, Morocco

Co-Authors: Maria Eduarda Nascimento Sales[1], Heloisa de Castro Freire[1], Rafaela Simei Popolim[1], Silvio de Almeida Junior[1,2]

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Depression: Prospects for the 21st Century

Background: Depression is characterized by a severe psychiatric illness in which it is persistent and shows a loss of interest in activities, significantly impairing daily life. In this sense, the objective of this paper is to establish perspectives according to the current scenario.

Methods: Literary review was used from database using descriptors such as depression, depressive syndrome and depressive disorders. The number of 12 articles representing the perspective was selected along with data presented by the government agencies web pages.

Results: The Pan-American Health Organization estimates that the disorder affects about 300 million people, being the leading cause of disability worldwide and will make a significant contribution to the global burden of disease. Thus, the fate of this disease compromises the future, o it grows epidemically in the 21st century. Therefore, there are perspectives that need to be addressed today so that in the future can contribute to the mental health of the population. The first step is to provide treatment for mentally ill patients, improve the training of health professionals, to improve treatment effectiveness. The use and preventive processes in primary care should be reinforced, as well as continuing education measures and campaigns to assist in improving mental health. In patients who already have the disease, the use of assertive drugs, molecular biology tests to direct treatment for a better prognosis.

Conclusion: Public education on mental health is crucial, especially in schools, as the embryo of a society to be transformed is in this environment, so the implementation of public education and awareness campaigns is crucial. But to ensure that these practices work, it is necessary to monitor the mental health of communities.

Session Topic: Global Health

Presenter: Mr. Dapilaa Mabel
Institution: Wa Polytechnic, Wa, Ghana

Co-Authors: Dapilaa Mabel, pharmacy technician Ghana Health service and UWUWMBORAMI N. ABIGAIL pharmacy technician Ghana Health services.

Antimicrobial susceptibility pattern of microbes isolated from vegetables served and eaten raw in the Wa municipality.

Vegetables may be defined as, any plants who's fruits, leaves, flower bulbs, stem and roots are used in the preparation of food especially in savory dishes that provide a resource of dietary fiber and minerals of low cholesterol fat and calories to consumers.

They are intended to provide the body with vital nutrients and minerals; however, it can turn to be a host of many pathogenic microorganisms which have deleterious effects on consumer's health. A study on antimicrobial susceptibility pattern of microbes was conducted on vegetables serve and eaten raw in the Wa municipality.

Eight different bacteria species were isolated, Salmonella species and Citrobacter freundiihad the highest prevalence with percentage prevalence of 37.9 and 31.9 respectively.

This indicates poor hygiene in vegetables cultivation methods and handling in the municipality. All the isolates are pathogenic therefore a proper treatment practice should be given to vegetables before consumption.

Methods
- Samples were collected from three different groups of people.
- Cabbage ,Carrot , Lettuce, cucumber ,Green pepper and tomatoes
    A. Traders (6)
    B. Ready-to-eat Food vendors (6)
    C. Farmers (6)
- Simple random sampling technique was used to collect portions of the vegetables from the participants.
- Samples were collected once daily (morning).
  ➢ Nutrient agar
  ➢ Blood agar
  ➢ Chocolate agar
  ➢ MacConkey
  ➢ Mueller-Hinton agar
  ➢ Antimicrobial susceptibility testing disk

From the results obtained in the study, eight bacteria species were isolated from the total 43 samples as shown in table 6 above. Enterobactersppand Bacillus spp were the least isolated while Salmonella sppand Citrobacterfreundiihad the highest percentageprevalence of 37.7 and 31.9 respectively. The rest wereEnterobacterspp, Yersinia spp, and Proteus vulgaris. The presence of Salmonella in the samples is of great public health concerns as Salmonella has been proven to cause epidemics (Larbiet.,al. 2014). From the susceptibility results, Salmonella sppwas sensitive to only five (5) of the antimicrobial agents used (ciprofloxacin, Norfloxacin, gentamycin, amikacin and ofloxacin) and were resistant to nine (9) antimicrobial agents.
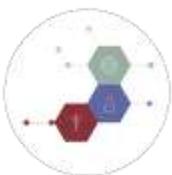
Session Topic: Global Health

Presenter: Ginikachukwu Onyinyechi Uzoekwe[1]
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Frequency and Activation Status of Markers of Immune Markers in Human Whole Blood

Background: T-lymphocyte subsets CD4 and CD8 are key components of the immune system. CD8+ T cells elicits cytotoxic function preventing intracellular and viral infection while, CD4+ T cells assist in antibody production, enhance macrophage activity, mediate production of cytokines and chemokines. Time-lapse and blood collection tubes have been proposed to affect the expression frequency and activation status of CD4+ and CD8+ T cells yet remain to be comprehensively characterized. We compared the impact of time (<1 and 4 hrs) and collection tubes (EDTA and heparin) on the expression frequency and activation status of CD4+ and CD8+ T cells.
Methods: 5 ml of venous blood was obtained from all the study participants (n=9). The study included healthy adult males and females of age range 18-34 yrs. Whole blood staining using anti-human CD3-APC, CD4-Alexa488, CD8-PerCP-Cy5.5 and CD69-PE specific antibodies was performed on the blood samples. Samples were analyzed using the fluorescent activated cell sorter (FACS), the cells were gated by forward and $90°C$ light scatter. Data obtained was analyzed using Graph-pad Prism (version 6.0) and independent T-test was used to compare the data groups.
Results: We document for the first that time lapse and the type of collection tube (whether EDTA and heparin) has no effect on the expression pattern of CD4+ and CD8+ T cells. However, the activation status of CD4+ and CD8+ T cells was affected significantly by time lapse and collection tubes.
Conclusions: In summary, our results demonstrate that time lapse and the type of blood collection tubes are key factors to consider in phenotypic characterization of activated immune markers.

Session Topic: Global Health

Presenter: Mr. Christos Tsagkaris[1]
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Astrobiotechnology: Molecular steps for Science, giant leaps for humanity

Introduction: Biotechnology has played an important role in Space Science resulting in the establishment of the field of astrobiotechnology. Currently at least 557 experiments with a focus on biotechnology and biology are conducted in 40 facilities according to NASA. The purpose of this study is to provide an overview of astrobiotechnology, the sector of biotechnology related to Space Science.

Methods: We reviewed the literature searching Pubmed and Intech databases with keywords (space, biotechnology, research) and we also retrieved information from the NASA and ESA websites. We included peer reviewed studies authored in English, Russian, Portuguese, Italian and Greek and we excluded studies that were outdated or subjected to bias.

Results: Modern biotechnology techniques play a key role in advancing:
a) biomedical studies to control and reduce space-related stressors on living systems in order to assist space exploration, such as experiments conducted in the "BIOPAN" facility, and the "EXPOSE" facility on the ISS.
b) biology for life support and in-situ resource utilization, such as the "MEliSSA" project.
c) planetary protection, such as PCR, gene expression or proteomics measurements that are able to identify and to monitor potential terrestrial contaminants for any mission aimed at search for life.
d) Basic astrobiology research, focusing on the existence of extraterrestrial life
High-throughput (-omics) biotechnology techniques allow researchers, technicians and aerospace operators to carry out measurements in-situ, overcoming multiple limitations of post-flight sample analysis. This provide several advantages such as the possibility of real-time monitoring of the biological environment and an increased accuracy of the sampled data.

Conclusions: To survive a long-term mission in space, a significant amount of food, water and oxygen is necessary. Transporting and storing them in the ISS is a huge burden. Biotechnology provides solutions supporting life in the ISS and outside earth. At the same time, biotechnology provides valuable research tools in space settings. Astrobiotech purpose is to increase the independence of space exploration missions. The development of this sector is crucial for space exploration whereas its findings can also be translated in terrestrial applications. Legal and ethical aspects of this sector's development ought also to be taken into consideration.
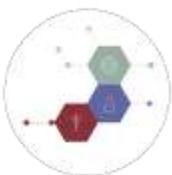
Session Topic: Global Health

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Co-Authors: Christos Tsagkaris1, Theodoros Angelopoulos1, Eleni Konstantara2 and Nikolaos Sevdalis2
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Setting up a safe workplace in Space: The impact of radiation, microgravity and debris on human health

Background: Space has been defined as an extreme environment. People working there have made significant contributions in terrestrial and extraterrestrial Research and Development (R&D). Health and Safety are a sine qua non condition for the continuation of this work. At the same time, Space is expected to become more and more crowded in the future on both scientific and commercial grounds. Humans in Space are exposed to several health hazards including radiation, microgravity and debris. It is crucial to identify the short- and long-term risks associated with the exposure to these factors in order to protect all those involved in space travel.

Methods: This is a literature study. We searched Pubmed and Intech databases with keywords (space, occupational health, radiation, microgravity, debris, risk). Moreover we retrieved information from NASA and ESA websites. We included peer reviewed studies related to the topic and excluded studies subjected to bias.

Results: Radiation is related to dose-dependent morbidities in several systems (immune, cardiovascular, central nervous, reproductive) and pertaining to conditions such as acute radiation syndromes, cataracts and carcinogenesis. Microgravity modifies bone mineral density, muscle mass and function increasing the risk for fractures and formation of renal stones. Dizziness, syncope and blurred vision can occur from microgravity-associated cardiovascular deconditioning whereas spatial orientation, head-eye and hand-eye coordination, balance, locomotion are also affected leading to motion sickness, face swelling and vision problems. Debris can harm spacecrafts and other infrastructure posing a threat towards people in Space and on Earth. A wide range of conditions from trauma to health-related telecommunications crash down may occur due to debris.

Conclusions: In most cases, radiation-related damage is irreversible. There is a dire need to enhance radioprotection and early damage detection to make long term space exploration and/or colonisation plausible. On the other hand, even though the effect of microgravity is mostly reversible, minimizing this effect can improve their performance in short term missions and is necessary for long-duration space travel. Debris, although representing a significant hazard, has not been thoroughly investigated with regard to its effects on human health.

Session Topic: Global Health

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Co-Authors: Alyah Aliyan[1], Sarah Kemunto[1], Maryanne Akinyi[1], Paul Mahihu[1], Joyce Ballidawa[2], Edith Kwoba[3]

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Cross-Sectional Study on Rejection and Its Effects on Students Of Moi University College of Health Sciences.

Background: Rejection can be defined as the act of pushing someone and/or not accepting them the way they are. Rejection is one of the most unavoidable and negative emotional experiences many encounter and is a major risk factor of mental illness. Some psychological effects of rejection include: stress, anxiety, trauma, depression and substance abuse. According to WHO, aapproximately 2 of 10 people who experience rejection contemplate suicide. Despite this, attention towards it remains low. Rejection is therefore a high yield research area to prevent such and may help advocate for proper emotional-hygiene through psycho-education. The objective of the study was to describe the understanding, types and impact of social rejection amongst students in Moi University College of Health Sciences (MUCHS).
Methods: The study site was MUCHS and was carried out by 5 students. A descriptive cross-sectional study design was used to collect data on the term "rejection", types, impact, and coping mechanisms. Probabilistic random sampling, with a calculated sample size 60, was employed. Electronic interviewer-interviewee questionnaires were administered to collect both qualitative and quantitative data. Quantitative data was analysed, tabulated and diagrammatically represented using univariate and multivariate approach. Ethical approval was sought from the Institutional Research and Ethics Committee (IREC) prior to the study and respondent anonymity was maintained throughout the research duration.
Results: Rejection was mainly understood by MUCHS students as being "unaccepted". Out of the total, 85.5% of the students had experienced rejection: 51% experienced social rejection while 36.6% experienced relationship rejection. A majority (61.8%) felt it negatively affected their lives. Most claimed rejection was the outcome of not meeting certain expectations, others due to colour/racial complexities and some due to age/academic class discrepancies. More than half (59.6%) never approached anyone for help, 25% approached close friend(s), while only 6.7% approached a professional. A minority (2.9%) resorted to alcohol use.
Conclusions: The high burden of rejection shows that it is an overlooked aspect in our society, yet inflicts significant psychological alternance as social beings. The study showed feasibility and utility to understand the nature of rejection, temporal relations to negative coping mechanism amongst students and possible intervention points."
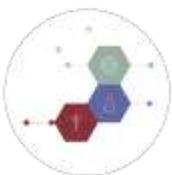
BEYOND SCIENCES INITIATIVE

5TH INTERNATIONAL REMOTE CONFERENCE: SCIENCE & SOCIETY

DIGITAL POSTER ABSTRACTS

To Access: http://www.beyondsciences.org/conference2020/posters/

Session Topic: Cancer/Biotechnology

Presenter: Mamta Singh[1]
Institution: National Institute Of Immunology, New Delhi, India
Co-Author: Ankit Saneja[1], Robin Kumar[1] , Amulya Kumar Panda[1], Aruna Asaf Ali Marg, New Delhi – 110067, India

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Hyaluronic acid-Dihydroartemisinin Conjugate: Synthesis, Characterization and in-vitro evaluation of its Anti-proliferative Potential

Background: Dihydroartemisinin is a derivative of artemisinin, has been recently demonstrated anti-proliferative effects on various tumor cell lines such as breast, prostate, colon, pancreatic, liver and lung. However, it is associated with some limitations, such as low bioavailability which is hampered by its poor aqueous solubility and its rapid metabolism in systemic circulation. Therefore, to overcome these limitations, in this study, we synthesized a novel hyaluronic acid-dihydroartemisinin (HA-DHA) conjugate.

Method: HA-DHA conjugate was synthesized by the coupling of HA with DHA by direct esterification reaction. The synthesis of conjugate was confirmed by 1H NMR and Gel permeation chromatography. Self assembled nanoparticles formed by the synthesized conjugate were characterized for size and shape using Differential light scattering and Transmission electron microscopy respectively. We investigated the anti proliferative effect of HA-DHA conjugate in Lung cancer (A549) cells. Cytotoxicity of HA-DHA conjugate NPs was checked using CCK-8 assay. The apoptotic effect of HA-DHA conjugate was also analyzed using Annexin V-FITC apoptosis staining. Along with, its ability to generate reactive oxygen species (ROS) was analyzed using DCFDA dye staining.

Results: The conjugate was successfully synthesized and characterized using 1H NMR, Gel permeation chromatography and UV spectroscopy. The synthesized conjugate self-assembled into nanoparticles in aqueous solution. The nanoparticles were cytotoxic to lung cancer (A549) cell line which was determined using CCK-8 cell viability assay. Annexin-V-FITC-Propidium iodide apoptosis assay demonstrated that HA-DHA conjugated NPs treated cells induced higher apoptosis compared to native DHA. This was further supported by reactive oxygen species (ROS) production and mitochondrial membrane potential (MMP) loss.

Conclusion: The findings demonstrated the potential of HA-DHA conjugate to improve clinical outcome of DHA for cancer chemotherapy.
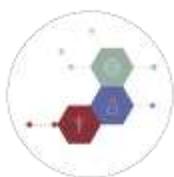
Session Topic: Global Health/Chronic Disease

Presenter: Zieneb Zian[1]
Institution: Abdelmalek Essaadi University, Tangier, Morocco
Co-Authors: Mouna Maamar[2], Amina Barakat[1], Naima Ghailani Nourouti[1], Rajae el Aouad[3], Naima Arji[3] and Mohcine Bennani Mechita[1]

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Anti-Scl-70 antibodies in Moroccan patients with Systemic Lupus Erythematosus

Background: Anti-Scl-70 antibodies are useful biomarkers in the diagnosis of Systemic Sclerosis (SSc). Although found in 10-40% of SSc sera, they also occur in up to 25% of systemic lupus erythematosus (SLE). Objective: The objective of this study was to investigate the presence of anti-Scl-70 antibodies in sera from 50 Moroccan SLE patients recruited between December 2011 and December 2013 from the University Hospital Center of Rabat-Morocco.

Methods: Sera collected from all SLE patients were tested for antinuclear antibodies (ANA) and anti-DNA antibodies by indirect immunofluorescence (IIF) on HEp-2 cells and Crithidia luciliae, respectively. Auto-antibodies to extractable nuclear antigens (ENA; Sm, SSA, SSB, Sm/RNP, and Scl70) were studied by ELISA.

Results: The female to male ratio was 6.1:1. Mean age was 31.72 years. Of 50 SLE patients, 8% were positive for anti-Scl-70 antibodies. They also were positive for anti-DNA and anti-Sm antibodies. No SLE patient could be classified as also having SSc. Patients with anti-Scl-70 antibodies had renal involvement. The levels of anti-Scl-70 and anti-DNA antibodies are significantly increased in one of these patients.

Conclusions: Although anti-Scl-70 antibodies are rarely associated with SLE, they are present in a significant group of SLE patients. Their presence in this group may be of a great value in studying the disease progression and activity, and suggesting increased risk for nephritis. These findings have raised questions about clinical value of anti-Scl-70 antibodies and the disease specificity. Cameroon is a high endemic country of hepatitis B. To ensure safe blood transfusion implies a meticulous screening of Hepatitis B surface antigen (HBsAg) among donors. In resource-limited countries especially in community area, rapids diagnostics test are commonly used for that purpose. The objective of this study was to evaluate performances of diaspot-HBsAg, a rapid diagnostic test usually used for hepatitis antigen detection.
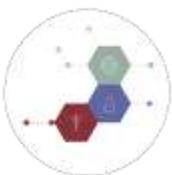
Session Topic: Cancer

Presenter: Neelakshi Mungra[1]
Institution: University of Cape Town, Cape Town, South Africa
Co-Authors: Fleury Nsole Biteghe[1] and Stefan Barth[1,2]

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[2]South African Research Chair in Cancer Biotechnology, Department of Integrative Biomedical Sciences, Faculty of Health Sciences, University of Cape Town, Cape Town 7700, South Africa

Development of novel auristatin F-containing immunoconjugates for the treatment of triple-negative breast cancer

Background: Targeted therapy for breast cancer represents the most promising state-of-the-art technology in the field of oncology. Such therapy directly addresses the lack of specificity encountered with conventional treatment regimes. This is achievable through receptor-specific monoclonal antibodies eventually conjugated to potent cytotoxic agents. However, despite showing great promise as anti-cancer compounds, these agents, also known as antibody-drug conjugates (ADCs) have several limitations: they feature stoichiometrically undefined chemical linkages, poor tumor penetration, unpredictable pharmacokinetic profiles and their generation results in a heterogeneous mixture of products. We generated a SNAP-tag based fusion protein targeting chondroitin-sulphate proteoglycan (CSPG4), a biomarker of aggressive and treatment-resistant cancers, for the treatment of triple-negative breast cancer (TNBC). By conjugating this fusion protein with monomethyl auristatin F (AURIF), a potent antimitotic agent, we propose to alleviate the challenges of early ADC development, while ensuing tumor cell death through the disruption of mitosis.

Methods: We designed a CSPG4-targeting SNAP-tag based fusion protein as a fluorescent mimic for binding. Protein expression was carried out using transient secretory mammalian expression system and purified from the cell culture supernatant by ion metal affinity chromatography. Binding of αCSPG4(scFv)-SNAP to CSPG4-positive and -negative TNBC cell lines was validated both quantitatively by flow cytometry and qualitatively by confocal microscopy. The AURIF-containing immunoconjugates were generated by reacting αCSPG4(scFv)-SNAP with benzylguanine (BG)-modified AURIF molecules in a defined 1:1 stoichiometry. Specific and dose-dependent biological activity of the resulting compound was then assessed on TNBC cells.

Results: Preliminary proof-of-concept data demonstrate that the CSPG4-targeting, fluorescently-labeled αCSPG4(scFv)-SNAP binds effectively to CSPG4-positive TNBC cells. Moreover, a dose-dependent reduction in cell viability was observed in all CSPG4-positive cell lines, highlighting the promising anti-cancer activity of the AURIF-containing drug.

Conclusions: The combination of such agents with a robust companion diagnostic tool such as SNAP-tag technology represents the first step towards the effective management of African TNBC.
 immunity against the diseases. Each year significant number of people are recorded dying of infectious diseases like measles in Africa.

Session Topic: Biotechnology

Presenter: Assia Bouhoudan[1,2]
Institution: Abdelmalek Essaadi University, Tetouan, Morocco
Co-Author: Mustapha Khaddor[1,3]

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P. aurantiogriseum: a great potential for biotechnology

P. aurantiogriseum is a fungal species that belongs to the genus of Penicillium, recognized as a post-harvest pathogen causing significant losses in agricultural production during storage. This species is ubiquitous, often isolated from food, vegetables, and fruits as it can also grow in the marine environment. This explains its resistance to several types of stress related to nutrients and growing conditions. P. aurantiogriseum is incriminated in animal and human pathology. Infections are caused either by inhaling the spores, or by consumption of contaminated food by its mycotoxins. These pathologies lead to cytotoxic and carcinogenic effects.

P. aurantiogriseum has great potential in biotechnology field. Numerous studies showing the importance and attractiveness of P. aurantiogriseum have been published. It is recognized as a prolific source of biologically active secondary metabolites. On the one hand, P. aurantiogriseum plays an important role in the maturation of certain fermented products through their extracellular proteases and their lipases. It has also played a very important role against the oxidation of lipids and form compounds that could contribute to the flavor and aroma characteristics of the final product.

On the other hand, several studies have proved the antibacterial and antifungal power of P. aurantiogriseum. Also mycotoxins of P. aurantiogriseum are very important given their widely varying effects between harmful and beneficial to human and animal health. P. aurantiogriseum is a good producer of safe bioactive compounds that can be used as an anticancer treatment. This multiplicity of contours of the pharmacological response of P. aurantiogriseum mycotoxins has attracted the attention of medicinal chemists to explore this species with multiple potentialities for many activities.

Session Topic: Chronic Disease

Presenter: Zilda Cristina dos Santos[1]
Institution: Sao Paulo State University, Sao Paulo, Brazil

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Social determinants of health and sickle cell disease: the contribution of social work to care of these people

Introduction: Sickle cell disease (SCD) is the most common hereditary hematologic disease in the world. In Brazil, each year, 3,500 children with DF and 200,000 with the sickle cell trait are born. The social characteristics of these people are: majority of blacks, income below one minimum wage, residence in the periphery and low education. Such social determinants influence or aggravate the complications of FD.

Method: This is a qualitative research at the master level that aimed to evaluate the socio-demographic characteristics of people with PD attended at the Hematology Clinic of the Clinical Hospital of the Federal University of Triângulo Mineiro; To assess the recognition and impact of social determinants on the lives of people with FD, to verify if the person with FD recognizes the role and contribution of the social worker in health. Thirty people with DF, living in Uberaba - MG, aged over 18 years participated in the research. As a research instrument, a semi-structured interview was used. For data analysis, content analysis was used.

Results: There was a predominance of females (18) and the average level of education (15), followed by elementary school (11). Regarding the employment situation, housing, displacement and income, only four were formal workers, 12 unemployed; 17 lived in their own homes, 22 relied on public transportation, and 11 had a family income of zero to one minimum wage. The most cited daily difficulties were: staying at work (16) and playing sports (12). Seventeen knew some law, predominantly the Maria da Penha Law and the Child and Adolescent Statute.

Conclusions: Social determinants: family income, employment status, housing and transportation were similar to those found in the literature. Schooling was higher than that pointed out by other Brazilian studies. All participants acknowledged the contribution of the social worker. The study showed the relevance of the work of the social worker for this public, evidenced the improvement in access to social rights and benefits from the insertion of the social worker. The present study brought to light the "look" of people with PD about their daily reality and Social Work as a profession committed to the dignity of human life.

Session Topic: Biotechnology

Presenter: Casey Thorburn[1]
Institution: Memorial University, St. John's, Canada
Co-Authors: O. Abdel-Razek[2], S. Fagan[3], N. Pearce[3], M. Furey[3], S. Harris[4], M. Bartellas[5], C. Adams[6]

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Three-dimensional Printing for Assessment of Paravalvular leak in Transcatheter Aortic Valve Implantation

Background: Three-dimensional (3D) models have the unique ability to replicate individualized cardiac anatomy and may therefore have potential clinical benefits. Transcatheter aortic valve implantation (TAVI) relies on accurate preoperative imaging for valve size, type, and avoidance of complications. Three-dimensional (3D) modelling may provide additional benefit for optimal TAVI outcomes.

Objective : The goal of this study is to assess the utility of 3D modelling in the prediction of paravalvular leak (PVL) post TAVI.

Methods: Retrospective analysis of five patients chosen at random who underwent TAVI with pre-operative cardiac gated CT images formatted and printed to anatomical scale using vendor neutral processing software from TeraRecon. Aortic root dimensions, coronary artery ostium location, and the left ventricular outflow tract were modelled in 3D and constructed to true scale. Deployment of the corresponding size TAVI valve into the 3D model at a similar depth of implantation via fluoroscopy was performed. Degree of PVL was assessed using a closed system with water infusion under pressure, measuring PVL over periods of five seconds in length. Correlation was made to the assessment of PVL on the transthoracic echocardiogram.

Results: Results showed average mean amount of paravalvular leak for 5 different patients. A multivariate linear regression showed that when adjusted for gender, PVL on 3D aortic models were significantly different than the degree if PVL reported on post operative transthoracic echocardiogram(difference:-3.9657, 95%CI: (-4.6761,-3.2554), $p < 0.001$).

Conclusions: Our experiments show that 3D models appear to have the ability to predict unique anatomical anomalies for assessment in PVL in the TAVI population. Future research into the role of 3D modelling in the field of TAVI has potential benefit and should continue to be explored.

Session Topic: Global Health

Presenter: Romaric Tochoedo[1]
Institution: University of Abomey Calavi, Abomey Calavi, Benin
Co-Authors: Gatien A. G. Lokossou[2], Marie-Charbelle Lihouenou[3], Fiacre Christian Bankole[2], Julien Azonnakpo[2], Evelyne Lozes[2]

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In utero anti-HBV antibodies from Mother to fetus

Background: Hepatitis B is an infection caused by a virus called hepatitis B virus (HBV). This targets liver cells inducing inflammation. When hepatitis B is not properly manager, it can progress to chronic hepatitis and lead to cirrhosis and hepatocellular carcinoma. Drugs are available to curé hepatitis and vaccine to prevent it. Unfortunately , HBV can be transmetted from mother to child during pregnancy and at delivery. In addition, when mothers are immunized , they can transfer their antibodies to their fetus during pregnancy, as a passive immunity. We hypothesize that mother protected against HBV will transfer this protection to their fetus at birth .

Methods: A cohort of 39 mothers and their children was constituted from May 16 to August 1, 2019 at Menontin's Hospital and Bethesda Hospital in Cotonou and at Déo gratias Clinic in Porto-Novo. After consent form signed by prégnant women, 7 ml of venous blood were collected in dry tube from newborns (39) and their mothers (39) regardless of age, medical history, region and ethnicity. We have also collected newborns before any vaccination and then we measured mothers and newborns antibodies against HBs by ELIZA method.

Results: Our work has shown that all mothers and their newborns were protected against hepatitis B virus. Mother's anti-HBs antibody concentration were correleted with those of their children at the birth (p=0,01). It confirms the in utero transfer of antibodies from mother to child during pregnancy. We also observed that 2 mothers were infected by hepatitis B virus at delivery . One of them had been vaccinated against the HBV . However , we do not know when thé vaccination has corrured. The presence of this antigen could be linked to vaccination. These mothers had transfered both antigens and antibodies to their children. Finally, a child born to an uninfected mother was tested positive for hepatitis B virus HBsAg. He had a concentration of anti-HBs antibodies 15 times above the protection threshold. The origin of his infection would be a sample labelling error or an unintentional exchange of sample.

Conclusions: An immune mother transfers antibodies to her newborn at birth. It's a passive immunity that protects the newborn until he is able to defend himself. Exclusive breasfeeding is the most natural way to strengthen the immune system of these children.It would be cost-effective to check the immunological status of newborns before vaccinating them and to encourage breasfeeding.

Session Topic: Global Health

Presenter: Jijoho Michel Agbla[1,2]
Institution: University of Abomey Calavi, Abomey Calavi, Benin
Co-Authors: Mathew D. Esona[5], Annick Capo-Chichi[4], Alidéhou Jerrold Agbankpé[2], Tamègnon Victorien Dougnon[2], Osseni Razack[3], Clément Glele-Kakai[4], Honoré Sourou Bankolé[1,2], Michael D. Bowen[5]

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Molecular characteristics of rotaviruses circulating in the south of Benin, 2016-2018

Background: Rotavirus remains the main causative agent of gastroenteritis in young children in countries that have not yet introduced the vaccine. In Benin, rotavirus vaccine introduction is planned for 2019. It is therefore necessary that epidemiological and genotyping data be available for rotavirus to help inform the authorities in making the decisions inherent in the appropriate choice of vaccine and for monitoring vaccine impact. This study aims to provide data for the pre-vaccine introduction period on genotypes circulating in Benin. These data can supplement data from the surveillance system of the Ministry of Health of Benin which is supported by the WHO.

Methods: A total of 420 stool samples were collected all located in southern Benin from children under five years old who suffering from gastroenteritis: 330 samples were collected in Cotonou in the health centers of Mênontin, Anastasie, St. Vincent and 90 samples from the Central Polyclinic of Abomey-Calavi. Samples were actively collected between July 2016 - March 2017 and June 2017- November 2018. EIA testing was performed in the National Health Laboratory in Benin and all samples are been sent to CDC, Atlanta for PCR testing, genotyping and further characterization.

Results: Of the 420 samples, 415 (98.8%) contained rotavirus RNA detected by PCR methods. In Cotonou, the common genotype combinations were G1P[8] (22%) followed by G3P[6] (16%), G2P[4] (15%) and G12P[8] (13%). Forty-one (12%) stool samples showed mixed genotypes and 7 (2%) samples were non-typeable for G and P. Less common genotypes such as G9P[8] (4%), G9P[6] (2%), G3P[8] (2%), G3P[4] (2%) and G9P[4] (1%) were found. In Abomey-Calavi, the common genotype combinations were G1P[8] (26%) followed by G2P[4] (25%), G3P[6] (19%), G12P[8] (02%). Fifteen (17%) of the samples were mixed and only one (1%) sample was non-typeable. Less common genotype G9P[6] was detected in 3% of samples.

Conclusions: In all, G1P[8] represents the predominant genotype circulating in southern Benin, followed by the G2P[4] (17%) and G3P[6] (17%) genotypes. Many mixed and uncommon genotypes were detected. We are proceeding with whole genome sequencing of specimens from this study and think that this information will be very valuable for assessing the future impact of rotavirus vaccines in Benin.

Session Topic: Global Health

Presenter: Adwoa K.A. Afrane[1]
Institution: Korle-Bu Teaching Hospital, Accra, Ghana
Co-Authors:, Bamenla Q. Goka[1,2], Yao Ahonon[3], Felix K. Afutu[4], Yaw Adusi-Poku[4]

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[3]Public Health Unit, Korle Bu Teaching Hospital, Accra, Ghana
[4]National Tuberculosis Control Programme, Korle Bu, Accra

Clinical presentations and treatment outcomes of children with tuberculosis in Korle Bu Teaching Hospital

Background: Tuberculosis (TB) is the now the top infectious killer worldwide, killing more people than HIV/AIDS, as reported by the World Health Organization (WHO). Even though TB is an ancient disease, it still claims about 4400 lives a day worldwide, making it one of the most burden-inflicting diseases in the world. Childhood TB has many clinical presentations and continues to be a significant public health challenge despite the availability of effective treatment and preventive measures (vaccination).

Objective: The aim of this study was to describe the clinical presentations of paediatric TB patients related to demographic factors, HIV status and disease site and to assess treatment outcomes of children with TB at Korle Bu Teaching Hospital (KBTH).

Methods: We performed a retrospective data review of all children diagnosed with TB who were registered at the Department of Child Health, KBTH from January 1st 2015 to December 31st 2016. Treatment outcomes were recorded as treatment success (completed treatment) and poor outcome (died, default, lost to follow up and failed). Data was entered into excel and exported into SPSS v.23 for statistical analysis.

Results: A total of 172 children were diagnosed of TB during the period under review of which, 117(68%) cases were pulmonary and 55(32%) were extra pulmonary TB. The most frequent site of extra-pulmonary TB was lymph nodes, 55(62%). Children under 5 years of age formed the majority of patients 105(67%). Seventy-eight 78(45%) of the children were co-infected with HIV. A successful treatment outcome was reported for 116 of the 172 children registered, which gave an overall success rate of 67%. Death rate was two-fold higher among HIV positives (30% versus 15% among HIV negatives).

Conclusion: The treatment completion rate of 67% is well below the 87% target of the National TB Control Programme. Death was the major category of poor treatment outcome irrespective of HIV status. Further studies are needed to investigate the causes of mortalities and address the preventable causes of death in both HIV positive and HIV negative children.

Session Topic: Bioinformatics

Presenter: Tebyan Ameer Abdelhameed Abbas[1]
Institution: Africa City of Technology, Khartoum, Sudan
Co-Authors: Tamadur Babiker Abbas Mohammed[1], Asma Ali Hassan Ali[1,2], AreegElsirAbdelgadir Elemam[1,3], Wala Omer Mohammed Altayb[1], Mohamed Ahmed Salih Hassan[1]

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Computational Analysis Revealed Five Novel Mutations in Human IL2RG gene Related to X-SCID

Background: X linked severe combined immunodeficiency (X-SCID) is a lifethreatening disorder. It is due to mutation of the interleukin two receptor gamma-chain (IL2RG) gene. Nonsynonymous SNPs (nsSNPs) are the most common polymorphism, known to be deleterious or disease-causing variations because they alter protein sequence, structure, and function. Objective: is to reveal the effect of harmful SNPs in the function and structure of IL2RG protein.

Method: Data on IL2RG was investigated from dbSNP/NCBI database. Prediction of damaging effect was done using sift, polyphen, provean and SNAP2.more software were used for more analysis: phd-snp, and and go, Pmut, Imutant.modeling was done using chimera and project hope. Gene interaction was done by gene mania.3UTR prediction was done using polymiRTS software.

Result: The in-silico prediction identified 1479 SNPs within IL2RG gene out of which 253 were coding SNPs, 50 took place in the miRNA 3 UTR, 21 occurred in 5 UTR region and 921 occurred in intronic regions. a total of 12 missense nsSNPs were found to be damaging by both a sequence homology-based tool (SIFT) and a structural homology-based method (PolyPhen), Five of them were novel; rs1322436793(G305R), rs1064794027(C182Y), rs111033620(G114D), rs193922347 (Y105C) and rs1293196743(Y91C), Two SNPs(Rs144075871 and rs191726889) out of 50 in the 3UTR region were predicted to disrupt miRNAs binding sites and affect the gene expression.

Conclusions: Computational analysis of SNPs has become a very valuable tool in order to discriminate neutral SNPs from damaging SNPs. This study revealed 5 novel nsSNPs in the IL2RG gene by using different software and 21 SNPs in 3UTR. These SNPs could be considered as important candidates in causing diseases related to IL2RG mutation and could be used as diagnostic markers.

Session Topic: Cancer

Presenter: Joaira Bakkach[1]
Institution: AbdelMalek Essaadi University, Tangier, Morocco
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Breast cancer following treatment for Hodgkin Lymphoma: What we know so far

Background: The improvement in the management of Hodgkin Lymphoma (HL) represents one of the major achievements in modern clinical oncology. Nonetheless, several late serious complications including the occurrence of second cancers continue to impair the quality of life of long-term survivors. Breast cancer is the most common such solid cancers in HL female survivors. In this review, we provide an overview of the current knowledge about second breast cancers (SBCs) occurring after HL treatment.We review the related modifying risk factors, tumors characteristics, management specificities, prevention and surveillance modalities based on current evidence.

Methods: Literature from 1998 to April 2019 was searched from Medline using the key words: breast cancer, Hodgkin lymphoma , second cancer and radiation-induced cancer. Other sources include books, published abstracts and evidence-based cancer guidelines from cancer societies websites. Only English literature was assessed.

Results: The risk of developing SBC may be influenced essentially by the age at HL treatment, the follow-up latency,the dose of irradiation received and the extent of the irradiated field.SBCs generally develop at a younger age, they are often bilateral, and exhibit more aggressive biological features and worse prognosis. Management of SBCs is a challenging issue for clinicians since there is no dedicated consensus. Individualized treatment discussed by multidisciplinary teams remains the standard of care. No firm answer about the benefits of breast surveillance is provided by literature, but compelling evidence tends toward a clinical benefit in early detection. The implementation of screening measures and increasing awareness among current survivors seems to be crucial.

Conclusion: Great efforts are ongoing in individualizing treatment strategies for future HL patients and response-adapted approaches are holding promise in prevention of these second malignancies.
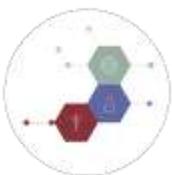
Session Topic: Global Health

Presenter: Niven M M Mohammed[1]
Institution: University of Khartoum, Khartoum, Sudan
Co-Authors: Muzamil M. Abdel Hamid[1]

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Molecular Docking and Mutation Analysis of Artemisinin Resistant k13 gene: An In silco approach

The malaria parasite, P.Falciparum, have developed drug resistance, which is a major challenge to control P. falciparum malaria. Concern has concentrated on artemisinin drugs that are rapid acting, effective against all strains of p.falciprum and p.vivax and was well tolerated. The mutation in kelch protein has been identified as the common target of artemisinin resistant. (TRAC) confirmed that artemisinin-resistant falciparum malaria is firmly established in Western Cambodia, Thailand, Eastern Myanmar, and Southern Vietnam, and is emerging in Northern Cambodia and Southern Laos. This work was initiated to find mutation in kelch protein in Sudan and to assess the antimalarial activity of four antimalarial drugs based on their binding affinities by the insilico docking outcome. Artimisinin, artemether, artesunate and curcumin were docked against mutated kelch (A621V) protein. Curcumin displayed better binding energy than standard artemisinin (-26.14 and -16.10 respectively) the insilico study thereby encouraging development of promising curcumin leads in the fight against malaria.

Session Topic: Chronic Disease

Presenter: Delphine Anye Tangoh[1]
Institution: University of Buea, Buea, Cameroon
Co-Authors: Robert Nyingchu Vuchuh[1], Beatrice Ameh Tangunyi[1], Eric Achidi Akum[2]

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Evaluation of the relationship between vitamin D status and some established risk factors of cardiovascular disease in the Southwest Region of Cameroon

Background: The prevalence of cardiovascular disease (CVD) is steadily on the rise, especially in low and medium income countries. There is accumulating evidence that a low vitamin D status may be an important and neglected factor in the pathogenesis of CVD. It is postulated that vitamin D may influence CVD through the modulation of its risk factors. Thus, the objective of this study was to assess the relationship between vitamin D status and some established risk factors of cardiovascular disease in the Southwest Region of Cameroon.

Methods: A total of 372 consenting participants aged 35 years and above were enrolled into the study from the Southwest Region of Cameroon. A structured questionnaire was used to record blood pressure, anthropometric measurements, socioeconomic status and some chronic diseases status. Serum was used to analyse for lipid profile (total cholesterol, triglycerides, high density lipoprotein cholesterol and low density lipoprotein cholesterol) using colorimetric method, while vitamin D level was measured by competitive ELISA technique.

Results: The prevalence of hypovitaminosis D was 25.8% (96/372), with 3.2% (12/372) of the study participants suffering from overt deficiency. Alcohol abstainers had significantly higher percentage of hypovitaminosis D ($p = 0.05$) than those who consumed some form of alcohol. Total cholesterol ($p = 0.024$) and triglycerides ($p = 0.020$) correlated negatively with vitamin D levels. All the other CVD risk factors did not demonstrate any statistically significant relationship with hypovitaminosis D.

Conclusion: Results of the study suggests that vitamin D may influence the risk of CVD through the modulatory effect of alcohol consumption, Total-cholesterol and triglycerides as risk factors of CVD.

Session Topic: Global Health

Presenter: Graziela Donizetti dos Reis[1]
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Health of homeless population of municipality of franca, state of são paulo, brazil: the consequences and the challenges caused by social exclusion

This study presents a discussion about the dynamics of productive restructuring and its impacts in the world of work and consequently, on the health of homeless population. It is important to emphasize that the extreme poverty compounds the universe of relative overpopulation, accurately in relation to lumpen proletariat, the segment of Society most affected by contagious diseases, since their immunological system is extremely vulnerable. The objective of the research is to emphasize the high investments on technology sectors, in order to substitute the human work for the machines, and potentialize the lack of the access to the minimum income by the homeless population. The methodology used was bibliographical and documental research, with the temporal cut between 2009 and 2019, in order to visualize the health situation of homeless people. As partial results, we could see that the naturalisation of exploitation and social inequalities result in a scenario of extreme poverty to favour commercial activity. It contributes for the uncontrolled pauperization, resulting in an exclusion of impoverished population of the health policies and services. As conclusion, this research expatiated on homeless and impoverished population to demonstrate that it is a phenomenon related to the capitalist Society that produces and reproduces the social inequalities prioritizing the wealth accumulation to the detriment of health and life of people excluded from the labor Market
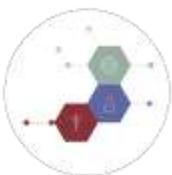
Session Topic: Global Health/Chronic Disease

Presenter: Yue Liang[1,2]
Institution: McGill University, Montreal, Quebec
Co-Authors:, Yun Hsiao Lin[1,2], Hanchen Wang[1,2], Jacky Tung[1,2], Amanda Fiore[1,2], Mansen Yu[2,3], Yurim Park[1], Connor Prosty[1], and Anastasia Nijnik[1,2]

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The Role of Nuclear Deubiquitinase BAP1 in B cell Development and Immune Response

Background: Differentiation of hematopoietic stem cells (HSCs) replenishes all the cells of our blood and immune system. This process, known as hematopoiesis, depends on coordinated programs of gene expression. BAP1 is an important regulator of gene expression. As a nuclear deubiquitinating enzyme (DUB), it can target the repressive histone mark H2AK119ub. In previous research, Bap1 mutations in mouse were associated with defects in hematopoiesis such as myelodysplastic syndrome. However, our knowledge of the mechanistic role of BAP1 in hematopoiesis, especially the lymphoid side, is still very limited.

Methods and Results: In the current study, we hypothesize that BAP1 plays an essential role in B cell development. Using an Mb1-Cre mouse model with a B cell specific Bap1-deletion, our lab demonstrated that BAP1 is required for early stages in B cell development. RNA-Seq analysis revealed that the genes down-regulated in BAP1-deficient primary B cells are enriched in regulators of cell cycle and DNA replication pathways. Consistently, BAP1-deficient B cell lines, established via CRISPR-Cas9 genome editing, exhibited compromised viability and proliferation. The cell lines will undergo further analyses to explore the molecular mechanisms through which BAP1 regulates B cell survival and proliferation. Finally, we establish the role of BAP1 in the regulation of B cell mediated immune response, as indicated by impaired antibody production in the mouse models, and the underlying molecular mechanisms will be explored in future work.

Conclusions: Our study revealed the indispensable role of BAP1 in B cell differentiation and B cell effector function. The research project provides novel insights into the molecular and epigenetic mechanisms regulating B cell development, antibody mediated immunity, and B cell lymphomagenesis.
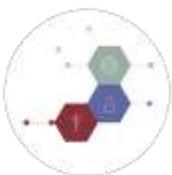
Session Topic: Global Health

Presenter: Eventhia Petridou[1]
Institution: University of Athens, Athens, Greece
Co-Authors: Maria Kanari[2], Zafeirios Potikas[3], Christos Tsagkaris[4]

[1]National and Kapodistrian University of Athens, Faculty of Medicine, Athens, Greece
[2]University of Crete, Faculty of Medicine, Heraklion, Greece

Muscle strength training after cardiac surgery: A systematic review

Introduction: Muscle strength training is considered an important element of rehabilitation. However, the best way to apply this intervention to patients who have undergone cardiac surgery is unknown. This systematic review summarizes the data on the impact of specific muscle enhancement protocols, either alone or in combination with other interventions, on the postoperative course of patients after coronary artery bypass surgery.

Purpose: The effect of muscle strength training on muscle strength, aerobic capacity, functional ability and quality of life, cardiovascular and hemodynamic parameters of patients after coronary artery bypass surgery were investigated.

Methodology: This systematic review was conducted in accordance with the PRISMA guidelines, and the final selection of the articles was done according to the PED ro scale. For the purpose of the research, a systematic search based on the databases (PUB-MED, SCOPUS) was conducted to find randomized controlled clinical trials evaluating the effects of postoperative strength trainingafter coronary artery bypass surgery.

Results: This systematic review recognized 8 randomized controlled clinical trials with a total of 537 participants in cardiac rehabilitation programs following coronary artery bypass graft. In 5 of these studies, strength training programs are compared with either aerobic exercise or no exercise, while the other 3 compares between combined programs (aerobic exercise and muscle strength training) and aerobic exercise programs only. The results show that there was an apparent increase in muscle strength of the main muscle groups, in VO2peak, as well as improvement in cardiovascular parameters, body mass index, quality of life, and maintenance of 6 min walking distance. Finally, superiority of combined programs was observed, compared with those of single aerobic exercise, with results, lasting up to 3 months follow-up.

Conclusions: By this review we have shown that exercising muscle strength in low to moderate intensities is safe and well tolerated when applied to selected low-risk patients following coronary artery bypass surgery with multiple positive benefits. We have also observed the beneficial superior effects of combined exercise programs, lasting up to the 3-month follow-up.

Key words: coronary artery bypass surgery; resistance training; systematic review; aerobic exercise capacity muscle strength.
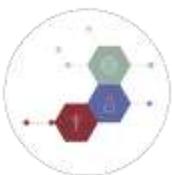
Session Topic: Global Health

Presenter: Potikas Zafeirios[1]
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Respiratory exercise after cardio surgery

Patients undergoing cardiac surgery experience complications from the respiratory system with serious consequences for their post-operative health. We hypothesized that breathing exercise in these patients would have a positive effect on their postoperative course.

The purpose of this systematic review is to investigate whether postoperative respiratory exercise improves lung function, patient strength, inspiratory muscle strength. It also intends to investigate whether the incidence of post-operative complications in the lungs during their stay in the hospital decreases as well as whether the quality of life of patients is improved after cardiac surgery.

The research was conducted in Pubmed database by 2 independent researchers and according to the customized reference system guidelines for systematic review (PRISMA). Of the total of studies (691) identified and detected 10 studies according to the criteria were analyzed.

The results have led to the conclusion that after respiratory exercise, patients have experienced improved respiratory function, reduced hospital stay, decreased respiratory postoperative complications, increased inspiratory muscle strength and quality of life (reduction of dyspnoea, pain, anxiety, increase in sleep).

This systematic review led to the conclusion that respiratory exercise after cardiac surgery improves lung function, reduces respiratory post-operative complications, reduces hospitalization time and increases quality of life.

Session Topic: Global Health

Presenter: Aires Muecália Julião Caneca[1,2]
Institution: São Paulo State University – UNESP, Franca, Brazil
Co-Authors: Fernanda de Oliveira Sarreta[1,3]

[1]São Paulo State University - UNESP, Faculty of Social and Human Sciences, Department of Social Services
[2]MSc student in Social Services, Social assistant
[3]Coordinator of the Postgraduate program in Social Services

Angolan health system and the satisfaction level of the users with the provision of health services in the war navy clinical

This research focus on the Angolan Political Health System, with cut on the satisfaction of the users with the health services in the Angolan War Navy Clinical in Luanda. The relevance of the theme expresses the necessity of giving scientific answers to the health problems in the country. This perspective aims to see the health area in Angola as a national priority, related to the problems observed in the internal armed conflict in the decades of 1975 to 2002. By these means, we consider that in the modern context, the health policy has being experiencing great changes related to the social, political, economic, cultural context, to the working world with the constant technological evolution and service management, to the illness of the population and the search for the answers to these problems. It is a context that challenges the thinking about the necessity of new configuration that favor the public policies valuation and the satisfaction of the users in the process of attention to health. It is a process that only will have success if the health policy is oriented to the compromise for the attendance of the real health needs of the population. In this perspective, the National Health System of Angola is based on the universal principle of health, presented in its article 23, with the following characteristics: universality, integrality, free of charge, equity, decentralised participatory management. Considering this scenario, Social Service becomes a priority profession on Angolan health system against the deterioration of health problems and scarce health services, and other situations related to poverty and health. The deepening of the demands and demonstrations of social issue, such as social and economic inequalities that compromises the lack of resources for a life with dignified and quality healthcare.

Session Topic: Bioinformatics

Presenter: Daouda L. Massaoud[1]
Institution: University of Jos, Jos, Nigeria
Co-Authors: Olanike C. Poyi[1], Jacob Kolawole[1]

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Identification of potential inhibitors of Acetylcholinesterase enzyme in Alzheimer disease using virtual screening

Background: In several cases the words Alzheimer Disease and dementia are used to describe one same illness, mostly because AD is the most common type of dementia accounting for 60% to 80% of the cases, but there are numerous types of dementia. This work will focus exclusively on Alzheimer disease. A report by the world Health Organization in 2005 estimated that 0.379% of the world population had dementia. The incidence of Alzheimer disease in indigenous population of Africa particularly needs to be known. In Ibadan Nigeria, earlier studies have shown that the prevalence of dementia and Alzheimer disease was 2.29%.

Methods: We have used high resolution crystal structure of human acetylcholinesterase enzyme a PDB ID: 4PQE from data bank (www.pdb.org). A library of 404 was obtained from Zinc database using Swiss Similarity in its option Zinc Drug Like. A receptor grid was created around the protein binding residues. ADMET parameters were predicted using Swiss ADME and Protox webserver. For docking study of the ligands in acetylcholinesterase the PyRx software was used.

Result: The result demonstrate that the lead molecules Zinc90411664, Zinc90411665, and Zinc90411518 were found to have a good binding affinity with the active site of the Acetylcholinesterase enzyme in docking studies. The best binding compounds with Acetylcholinesterase enzyme compared to known drug (Rivastigmine) for Alzheimer's disease were reported in the study. Furthermore, these compounds along with standard compound Rivastigmine have shown the hydrogen bond interaction with key amino acid residues of acetylcholinesterase enzyme.

Conclusion: In view of the results obtained in the present study, it may be concluded that identification of potential inhibitors of acetylcholinesterase enzyme using virtual screening technique can be carried out.

Session Topic: Global Health

Presenter: Edilaine Dias Lima[1,2]
Institution: São Paulo State University - UNESP, Franca, Brazil
Co-Authors: Edilaine Dias Lima[1,2], Fernanda de Oliveira Sarreta[1,3]

[1]São Paulo State University - UNESP, Faculty of Social and Human Sciences, Department of Social Services
[2]MSc student in Social Services, Attorney
[3]Coordinator of the Postgraduate program in Social Services

The expansion of Permanent Education in Health policy as strategy for the universalization of health in Latin America: challenges for the contention of selectivity in health

Background: Brazil adopts the Unified Health System (SUS in Portuguese) for the attention to health of the population. Among the strategies for the efficacy of SUS, the Permanent Education in Health searches for the overcoming of the challenges left by the omissions in the formation of the health workers. The Permanent Education Health policy aims the transformation of the model of attention to health, with the assistance of the management, team work and public participation, in order to analyze the challenges and find collective solutions for the attendance of the health population needs.

Methods: Bibliographic and documental study with a qualitative approach and exploiting character. The interpretation of data is based on Historic materialism and dialectical, which provided a critical analysis in the totality perspective.

Partial Results: The research is being developed, and it could indicate that the professional category of Social Services does not discuss the Permanent Education in Health. We could observe that the professional work is far from the attributions oriented by parameters for the acting of the social assistant in health, adopting curative medical standards, aiming the illness and medical specialties. Considering the hypothesis that the challenges imposed by neoliberalism, we have: job instability, withdrawal of rights and, especially for the dismantle of the health policies by the world capital supported by the International Monetary Fund that defends the Universal Coverage of Health, restricting the access to population which lives in extreme poverty.

Conclusion: For this, it is necessary that the Social Services participates of the implementation of the Permanent Education in Health, instigating the elaboration of strategies for the improvement of acting between health workers, contributing for the strengthening of the public health system, aiming to expanding this experience for the Latin America.
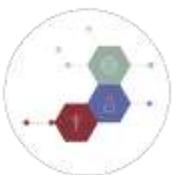
Session Topic: Global Health/Chronic Disease

Presenter: Gloria Asare
Institution: Noguchi Memorial Institute for Medical Research, Accra, Ghana
Co-Authors: Reginald Annan[1], Mary Adjepong[1]
1. Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Obesity and the Development of Insulin Resistance and Impaired Glucose Conrol in Healthy Adults in Kumasi

Background: Obesity has become a worrying concern in developed countries and urban centres of developing countries. In Ghana the prevalence of overweight and obesity is 43%. The factors that have been associated with the rising prevalence of overweight and obesity in Ghana are changes in dietary intake and lifestyle. This study sought to determine the association between obesity and development of insulin resistance and impaired glucose control in healthy adults in Kumasi.

Methods: The study recruited 302 participants from five communities in the Oforikrom Municipal Assembly. Body mass index (BMI) was calculated using weight and height. Waist circumference (WC) and Hip Circumference (HC) were determined using a non-extensible tape measure. The waist to hip ratio (WHR) was determined using WC and HC. Venous blood samples were collected to determine fasting blood sugar and insulin levels using one touch machine and immunological assay (ELISA) respectively. A structured questionnaire was used to collect socio-demographic data and 24-hour dietary recall. Statistical package for Social Science (SPPS) version 20 was used to analyse data.

Results: The mean BMI of participants was 26.63kg/m2 (males-23.6kg/m2 ±3.12, females-28.8kg/m2±5.0). The prevalence of overweight and obesity was 36% and 22% respectively. The prevalence of overweight and obesity were higher in females (42.61%, 36.36%) than in males (26.19%, 3.17%). The mean fasting blood sugar levels was 4.37 ±0.89mmol/L and the mean insulin levels was 12.76±15.07mIU/L. Prevalence of hypoglycaemia was 21%, normoglycaemia 75%, prediabetes 3% and diabetes was 1%. Most of the participants had normal insulin levels (91%) and 9.6% had higher than normal insulin levels. Correlation analysis showed that were positive correlations between BMI, WC and Fbs and between visceral fat and insulin levels.

Session Topic: Global Health/Chronic Disease

Presenter: Aimee Castro
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Co-Authors: Aimee R. Castro1, Lydia Ould Brahim1, Qirong Chen2, Amélie Quesnel-Vallée3, Antonia Arnaert1, Argerie Tsimicalis1

1. Ingram School of Nursing, McGill University, Montreal, Canada
2. School of Nursing, Central South University, Changsha, China
3. Department of Sociology, McGill University, Montreal, Canada

A Scoping Review of Information and Communication Technologies to Support the Provision of Respite Care Services to Family Caregivers: Preliminary Results

Background: Family caregivers in Canada provide over $26 billion worth of unpaid services to support the care of their friends and family in the community. Many caregivers and care recipients find joy and growth in these relationships, but without community health supports such as respite care, caregivers are at risk of burning out. Information and communication technologies (ICTs) may help to support the provision of respite care. However, an understanding of the extent and outcomes of the research in this area is currently lacking.

Purpose: The purpose was to provide an overview of the academic literature on the potential uses of ICTs for supporting the provision of respite care services to family caregivers.

Methods: A scoping review study was conducted. Six library databases were systematically searched for relevant literature between October 2nd and 3rd, 2019.

Results: 3191 sources were retrieved, and 14 papers met the inclusion criteria. These sources could be categorized based on which social level of end-user interaction with the ICT that they supported: the macro level (such as community health planners using ICTs in their work), the meso level (such as supporting inter-agency collaboration), and the micro level (such as helping an individual family caregiver to directly contact their respite care provider). Some of these sources focused on the design and evaluation of specific ICT platforms, while others offered a more general perspective on the uses of ICTs to support respite care services. Respite care stakeholders' general perceptions, concerns, and considerations for the development of ICTs to support the provision of in-person respite care services were also noted.

Conclusion: This mapping of the literature identifies common themes and gaps in the available research on ICTs for supporting respite care services. Further recommendations for future research and development of ICTs to support respite care services are discussed. These results are preliminary, as the reference lists of the included papers and additional searches for related studies (such as any studies which cited the included papers) have not yet been conducted.

Session Topic: Global Health/Chronic Disease

Presenter: James Deke
Institution: Kumasi Centre for Collaborative Research in Tropical Medicine, Kumasi, Ghana

Co-Authors: James Deke1,2, Florence Ogbunugafor1, Samuel T. Ahuno1,2, Alexander Kwarteng1,2
1. Department of Biochemistry and Biotechnology, KNUST, Kumasi, Ghana.
2. Kumasi Centre for Collaborative Research in Tropical Medicine, KNUST, Kumasi, Ghana.

Determination of groundwater quality in and around KNUST, KUMASI.

Background: In recent times, there has been a tremendous pressure on the provision of potable water to individuals due to a global increase in human population. The availability and accessibility of potable water has therefore become a critical and urgent problem worldwide, especially in developing countries. Groundwater is one of the major sources of potable water readily available and accessible to individuals, however, periodical monitoring is key to ensure groundwater is potable for consumption. To this end, this study was conducted at the Kwame Nkrumah University of Science and Technology (KNUST) and its environs between January and March, 2019 to determine the quality of groundwater accessed by students in various residences.

Methods: Groundwater was sampled from eight residences each from two different sites namely Zone A (on-campus) and Zone B (off-campus). Groundwater sampled from the selected residential sites were analyzed for total hardness, pH and concentrations of cadmium (Cd) and lead (Pb).

Results: The results indicated that the total hardness of water obtained from the various residential sites (28.13 mg/L, ± 9.21) were far below WHO's standard, 500 mg/L ($p < 0.05$). In addition, only five (all on-campus) residences had the pH of groundwater falling within the WHO standard for pH of water (6.5-8.5). There were considerably high concentration of lead (Pb) in all the water samples obtained (0.28 mg/L ± 0.16), way above WHO standard of 0.01mg/L ($p < 0.05$), which is of great health concern. The concentration of cadmium (Cd) was below detection level (BDL) for all the residential sites.

Conclusions: In conclusion, the pH, total hardness, lead concentration and cadmium concentration for all residential sites were determined but most did not match up with the WHO standard. There is therefore the need for regular monitoring of groundwater accessed by residents in the study area to ensure compliance with standards given the increase in population in the study area.

Session Topic: Global Health/Chronic Disease

Presenter: Eyad Abdelalim

Institution: Arab Academy for Science, Technology, and Maritime transport, Alexandria, Egypt

Co-Authors: Asser Abdelalilm, Mohamed Nabawi, Ahmed Eng. Towfeq

Modification of ECG electrodes to decrease their setup time and increase their efficacy

With the extreme rates of Hepatitis A, B, and C, Diabetes, cardiovascular diseases, and the abnormal maternal and under-five mortality rates, deterioration of public health can be easily considered one of the most daunting challenges jeopardizing the comprehensive Egyptian health and negatively affecting economy, employment, and the level of service provided to Egyptian citizens. Such deterioration is particularly clear in the countless deaths caused by the ineffectiveness of several medical equipment. Our project aims to improve the safety, flexibility, and applicability of the electrocardiograph by substituting its electrode with a silver chloride coated, 3D printed dry electrode, all while decreasing the cost and the number of materials needed for its application. To determine the metrics by which our project would be checked for success, the design requirements were assigned to being cheap and more effective than the conventional electrocardiograph along with decreasing the device's setup time, solving a major defect in conventional electrocardiographs.
Meeting such requirements will contribute to solving the unwholesome health challenge in Egypt and to solving many already quality-withdrawn Egyptian economy sectors. Our project has proved to meet all the design requirements after conducting tests and collecting and analyzing data that measured how well it improved compared to the currently used solution.
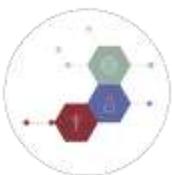
Session Topic: Global Health/Chronic Disease

Presenter: Bernardino Manuel de Almeida Cuteta
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2. MSc student in Social Services, Social assistant
3. PhD Professor in Social Services

Sexual Education and Early Pregnancy and Fatherhood in Luanda, Angola

This research has as its main theme, the work of the interdisciplinary team of sexual education with adolescents in order to prevent early pregnancy in the worker district in Luanda. The objective is to know the work of the interdisciplinary team about sexual education of adolescents, as a prevention of pregnancy and early fatherhood in the worker district, in Luanda. As methodology, the research will be performed in the county of Luanda (Angola), municipality of Luanda, in the urban district of Sambizanga. The participants of the research will be the adolescents that are mothers and fathers, families and educators, based on the acceptance criteria, adolescence story, age and educational process, making up at this way, 24 people, constituting a representative sample of its universe. It will be done a field research, based on the qualitative and quantitative approach. The study will dedicate a special attention to the critical reflections about the reality of the individuals in the current Angolan context, relating it to the phenomenon of modernity and globalization, in a social and political democratic context of the Angolan State, based on the historical and dialectical materialism. The collection and the processing of data will be oriented on the semi-structured interview, focus group and bibliographic search. This work proposes as results the realization of the mapping of the programs in subjects of sexual education for adolescents, aiming the prevention of early pregnancy in the worker district in Luanda and, the inclusion of other agents in the interdisciplinary work at the educational processes of their children considering the early pregnancy and fatherhood.

Keywords: Sexual education. Interdisciplinary work. Teenage pregnancy. Family

Session Topic: Global Health/Chronic Disease

Presenter: Marco Gimenes Santos[1]
Institution: Universidade Estadual Paulista "Júlio de Mesquita Filho" UNESP, Franca, Brazil
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The Right to Health of Colorrectal Cancer Patients in the Structural Crisis of Capitalism in Brazil

Background: In 2019 in Brazil colorectal cancer is one of the most incident and the 3rd with the highest mortality rate in men and women. 90% of patients require surgery (right hemicolectomy, transverse colectomy, left hemicolectomy, rectosigmoidectomy, total colectomy, low anterior resection, total mesorectal excision and abdominoperineal resection or Miles surgery), with physiological and psychosocial consequences for patients and families. After surgery, some patients need temporary or definitive intestinal stoma and registration in a Stoma Patient Program of the Unified Health System for the acquisition of collecting equipment and specialized follow-up. It is essential to follow and evaluate the patient for 5 years of cancer follow-up, because there is 50% chance of recurrence with local (colon, rectum) or distant (liver and lung) metastasis.

Methods: The lead author of the study is social worker and nurse. In 2015, in the master´s degree in Nursing was investigated how nurses and social workers can contribute to colorectal cancer patients through an integrative literature review in the electronic databases pubmed, Web of Sciences, Lilacs, Scopus, Cinahl and bdenf. In 2019, the first year of doctorate degree in Social Work, the structural crisis of capitalism was studied. The aim of the present study is to investigate through a theoretical essay how the structural crisis of capitalism can influence the access to the right to health for patients with colorectal cancer.

Results: Social workers work at perioperative period and forward the colorectal cancer patient to the Stoma Patient Program of the Unified Health System. Nurses work at perioperative period through the Nursing Process to elaborate the care plane for the patient and their families.

Conclusions: Know about pathophysiology, surgeries and their consequences and oncologic follow-up is important for quality care. However, it is necessary to understand clinical and surgical processes within a broader context that may even restrict the right to health of colorectal cancer patients and their families, because the structural crisis of capitalism limits financial resources for health. Thus, social workers and nurses should be organized to defend health as a right and not as a commodity.

Session Topic: Global Health/ Infectious Disease

Presenter: Phidelis M. Marabi[1]
Institution: Department of Health Sciences, Kisii University, Kenya
Co-Authors: Stanslaus Musyoki[2], Angela Amayo[3]
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2. Lecturer, School of Health Sciences, Kisii University, P.O Box 408 Kisii, Kenya
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Evaluation of Hepatitis B Knowledge and Practice Among Laboratory Staff in Bungoma County-Kenya

Introduction: Hepatitis B is a serious infection that affects liver and caused by hepatitis B virus (HBV). HBV is a serious public health problem and the health professionals are most at risk. Previous studies indicate that the risk of contracting Hepatitis B by health care workers (HCW) is four-times greater than that of general adult population. High risk groups such as HCWs should be monitored and receive a booster vaccination after 11 years and post exposure prophylaxis protocol should be adhered to as an infection prevention control measure for Hepatitis B. In view of the above this study was undertaken to assess knowledge and practices about transmissions and prevention of hepatitis B among laboratory in Bungoma County, Kenya.
Methods: A cross sectional study was conducted among 75 laboratory staff at nine facilities in Bungoma County from April to June, 2019. Self-administered structured questionnaire was used to collect information which included, as to whether the staff knew what is Hepatitis B disease; why be vaccinated against Hepatitis B; How Hepatitis B is spread; who should get Hepatitis B vaccine; whether staff has been vaccinated against Hepatitis B; whether staff are aware about the availability of post exposure prophylaxis for Hepatitis B; Whether a facility had included Hepatitis B in its training program and whether the facility has Hepatitis B Vaccination program for its staff.
Findings: Out of 75 distributed questionnaires, 75 were returned with a response rate of 100.0%. Only 24% laboratory staff had been vaccinated against Hepatitis B virus, 100% knew what is Hepatitis B disease, 93% knew who should get Hepatitis B vaccine and 97% knew how Hepatitis B is spread. However only 17% of the laboratory staff were aware of the availability of post exposure prophylaxis for Hepatitis B. 11% of the visited facilities had Hepatitis B vaccination program while none of the visited facilities had included Hepatitis B in the training program.
Conclusion: There was evidence of awareness and on Hepatitis B disease among laboratory staff in Bungoma County except availability of post exposure prophylaxis. There is need to establish systems for ensuring hepatitis B virus post-exposure prophylaxis awareness. There is need too to entrench hepatitis B vaccination of healthcare workers in Bungoma county through planning and budgeting. Emphasis on training on hepatitis B disease and post-exposure prophylaxis is essential.

Session Topic: Global Health/ Infectious Disease

Presenter: Farwa Sajadi[1]
Institution: York University, Toronto, Canada
Co-Author: Jean-Paul Paluzzi[1]
1. Department of Biology, York University, Toronto, Canada

Anti-Diuretic Hormone Signalling System of the CAPA Neuropeptide in the Adult Yellow Fever Mosquito, Aedes aegypti

Background: Blood-feeding insects, including female Aedes aegypti mosquitoes, face the challenge of excess water and ion intake after a blood meal. To cope with this, insects have a highly active excretory system that includes the Malpighian "renal" tubules (MTs), which are under rigorous control by several neuroendocrine factors. CAPA neuropeptides, produced in the CNS are evolutionarily related to the vertebrate neuromedinU peptides. While CAPA peptides elicit distinct responses in different insect species, their activity on stimulated MTs in the adult A. aegypti remained unknown. Given the CAPA receptor is highly enriched in insect MTs, the objective of this study was to examine the effects of a CAPA peptide on adult female MTs stimulated with diuretic factors.

Methods: The effect of endocrine factors and pharmacological blockers on fluid secretion rate was measured using an in vitro bioassay, while ion-selective microelectrodes were used to measure cation concentrations and pH levels. Additionally, RNAi injections were used to knockdown the CAPA receptor in adult females and verified using a RTq-PCR.

Results: CAPA was found to inhibit secretion of MTs stimulated by diuretic factors, 5-HT and DH31, while having no effect on other diuretic factors, including CRF peptides. Although CAPA elicits strong anti-diuretic activity, it does not influence the relative proportions of cations transported by adult MTs. Notably, the inhibitory effect of CAPA was abolished by knocking down the receptor, verifying its critical role in anti-diuresis. Pharmacological inhibition of PKG/NOS signalling abolishes the anti-diuretic activity of CAPA, confirming its role in the CAPA signalling pathway. Furthermore, MTs treated with bafilomycin, a proton pump inhibitor, was found to inhibit fluid secretion stimulated by 5-HT and DH31, while having no inhibitory action on CRF-stimulated MTs. Additionally, alkalization of the secreted fluid in response to CAPA suggests inhibition of the apical proton pump, which may lead to constrained entry of cations across the apical membrane of the MTs.

Conclusion: A. aegypti mosquitoes are vectors of a variety of pathogens leading to diseases such as the Zika virus. Given the central importance of the MTs in insect biology, these insights will be useful considering the need to develop novel strategies which more efficiently reduce the burden of insect disease vectors.

Session Topic: Global Health/Chronic Disease

Presenter: Prince Mensah Ansah[1]
Institution: Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), Kumasi, Ghana
Co-Authors: Dalton Nwoke Chikwado[1], Alexander Kwarteng[1]
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Assessment of Fluroide Concentrations of Drinking Water in Oforikrom Sub-Metropolis

Backround: Water is an essential component of life and a nominal supply of quality drinking water sustains life. Even though fluoride could come from other sources such as food, soil etc., fluoride from water has been proven to have the benefits in preventing dental caries. Current research suggest that, apart from the known dental fluorosis and skeletal fluorosis, long term exposure to high concentrations of fluoride could also lead to neurodegenerative diseases and low intelligent quotient. Research has proved the adverse effect of fluoride on the overall cognitive function. The benefit of fluoride and its adverse effect are the two extreme ends. Low levels of fluoride also leads to the development of dental caries and subsequent tooth ill health. The Kumasi metropolis and the Oforikrom sub metro largely depend on diverse source of water for drinking.

Methods: Ten samples were randomly collected from each town consisting of three sample from borehole sources, 2 from hand dug well, 2 from surface water source, and 3 from sachet water source. All samples were collected with every possible aseptic means. The samples were transported to the civil engineering water laboratory at KNUST for the analysis of fluoride using SPADNS reagent

Results: Out of the 82 samples from the three different water sources collected from 8 different communities, 44% (36 samples) had fluoride below optimum level (0.5mg F/L) needed to prevent dental caries. y. The mean (±standard deviations (SD)) of the measured fluoride concentrations from all the three water sources, Borehole/Tap water, Sachet water/Bottled water and Hand dug well were 0.34 ± 0.11, 0.34 ± 0.22, and 0.40 ± 0.17 respectively. The results may suggest no possible risk of dental fluorosis or long term skeletal defamation.

Conclusion: The risk of dental fluorosis, however, is very low since the fluoride contents were either lower than the standard or within the range. However, there were no statistical variations between the fluoride content at $p=0.05$ among the eight communities sampled, among water from same sources from different communities, among the water from same sources from different communities and among water from different and same sources within the same locality.
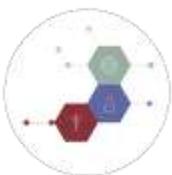
Session Topic: Global Health/Infectious Disease

Presenter: Aryan Lajevardi[1]
Institution: University, Toronto, ON, Canada
Co-Authors: Jean-Paul Paluzzi[1]
1. Department of Biology, York University, Toronto, ON, Canada

Receptor Characterization, Tissue-Specific Expression and Functional Activity of Pyrokinin Neuropeptides in the Human Disease Vector, Aedes aegypti

Background: Aedes aegypti mosquitoes are chief vectors responsible for transmitting pathogens causing dengue, Zika and chikungunya. With the rise of these illnesses, advancing our understanding of the neuroendocrine regulation of physiological processes within the mosquito is vital to develop new methods for vector control. Pyrokinin neuropeptides have been shown to exert myotropic, pheromonotropic and melanotropic effects in some insects, but their functions remain unclear in blood-feeding arthropods.

Methods: Receptor activation was measured using Chinese Hamster Ovary (CHO)-K1 cells expressing one of two receptors (PK1-R and PK2-R), which were exposed to pyrokinins and other structurally-related peptides. To identify prospective pyrokinin target sites, we then determined the receptor expression profiles along A. aegypti organs using quantitative PCR, and localized pyrokinin-like immunoreactive processes using a custom-synthesized antibody. To identify the function of these peptides, the effect of PK1 on myotropic activity was measured through an in vitro bioassay. Ion transport was further investigated using the Scanning Ion-selective Electrode Technique (SIET), positioning a Na+-selective microelectrode along the rectal pad epithelia to measure changes in sodium flux upon neuropeptide application.

Results: We validated that the PK1-R is highly activated by its native ligand and less so by other pyrokinins. It was also confirmed that PK1 is more selective for PK1-R than it is for PK2-R. PK1-R transcript was found to be highly enriched in the posterior hindgut (rectum), and PK2-R in the anterior hindgut (ileum) and reproductive organs. Pyrokinin-like immunoreactivity complemented these findings, revealing axonal projections over the ileum that terminate within rectal pads, structures proposed to play a role in ionoregulatory processes. However, despite receptor localization and peptide innervation along these regions, our first efforts found that PK1 did not influence myotropic or ionomodulatory (Na+) activity in isolated recta.

Conclusions: The distinct receptor and peptide localization offers the rectum as a new system to define how pyrokinin signaling may regulate diuresis and excretion in this important blood pathogen vector species. Examining the effects of neuropeptides involved in these processes has important implications as they may serve as suitable targets for the development of novel mimetic compounds in strategies for improved vector control.
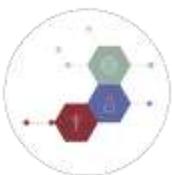
Session Topic: Cancer

Presenter: Hassan Filali
Institution: University Hassan II of Casablanca, Morocco.
Co-Authors: Ayoub Lahmadi[1], Asmaa Quessar[2], Souad Aboudkhil[1]
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2. Hematology and Pediatric Oncology Service-Hospital, University Hospital Center IBN ROCHD, Casablanca, Morocco.

Circulating Proteasome Levels Are an Independent Prognostic Factor for Survival in Hematologic Malignancies (Case of 145 Moroccan Patients)

Present both in the cytoplasm and nucleus of all eukaryotic cells, the 20S proteasome can be detected in peripheral blood (Stoebner and al, 2005).The proteasome is a proteolytic complex for intracellular degradation of ubiquitinated proteins which are involved in cell-cycle regulation, DNA repair, apoptosis (p53 and Caspase) angiogenesis (VEGF), inflammation (NF-kB, IL6 ....) immune response (antigen presentation) (Adams, 2002).

Methodology: Quantitative and functional analysis of the proteasome was conducted at the subcellular level and serum during a pathological phenomenon in 145 Moroccan patients (sex ratio: 1.10 / average age: 47.9 ± 15.3 years) with ELISA assay, and by following the fluorescence emitted after enzymatic digestion of specific peptides by the chymotrypsin-like activity.

Objective: This work focused on a study in a large cohort of patients with Moroccan Hematologic malignancies in order to follow the evolution of the 20S proteasome in serum and intracellular according to clinical status.

Result: A constitutively increased proteasome activity has been found in myeloma cells. Serum proteasome concentrations were significantly elevated in MM compared with controls (P < .001). In patients with active MM, there was a significant (P < .001) decrease from pretreatment to post-treatment proteasome concentrations in responders to chemotherapy. The entire population of 60 patients reported a significant drop in the rate and the activity of the proteasome in serum and intracellular level. The evolutionary trend of subcellular proteasome is significantly linked to the rate of chymotrypsin-like activity.

Conclusion: The use of proteasome circulating assay as a biomarker of tumor and a tool that could be very satisfying to follow patients after remission to prevent a possible fall. Intracellular dosage proteasome reveals important because it allows estimating the predictive score of the risk of toxicity.
Keywords: Proteasome, ELISA Assay, Fluorescence, chymotrypsin-like activity.

Session Topic: Cancer

Presenter: Rehab A. Rayan
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Knowledge of Preventable Risk Factors and Beliefs About Cancer: A Cross-Sectional Study Among Adult Attendees of a Primary Healthcare Center in a n Urban Area of Alexandria in Egypt

Background: A crucial element of cancer control programs for the expanding burden in Egypt is public awareness of preventable risk factors. The research on public knowledge concerning these factors is rising but little is known regarding cancer beliefs. The study explores the knowledge of some preventable risk factors and beliefs about cancer among adults attending a primary healthcare center in an urban area of Alexandria.

Methods: The researcher conducted a single point, descriptive cross-sectional study on 85 adults aged ≥18 years in February 2019 using a semi-structured questionnaire to gather data regarding the knowledge and beliefs about cancer through the face-to-face interviewing method. The data were analyzed by descriptive statistics to explore the respondents' level of knowledge concerning preventable risk factors and beliefs about cancer. Good level of both cancer knowledge and beliefs were assigned as ≥75% of the total score.

Results: Respondent's mean age was 43.6 years and around 64.7% were females. The mean score for knowledge on preventable cancer risk factors was 62.9% with about 22.3% standard deviation. Nearly 74.1% of respondents (80 % of males and 69.1 % of females) had a poor knowledge score of cancer preventable risk factors (scored below 75%). Knowledge was greatest for smoking (94.1%) and alcoholic spirits (84.7%) however lower knowledge for low vegetables and fruits consumption (55.3%) excessive exposure to sun radiations (52.9%), physical inactivity (44.7%), overweight and obesity (44.7%) and pollution (43.5%) respectively. The mean score for beliefs regarding cancer was 70% with about 24.9 % standard deviation. Almost 38.8% of respondents (53.3% of males and 30.9% of females) had some false beliefs on cancer (scored lower than 75%). A majority of respondents (85.9%) believed in the availability of healthcare for cancer patients. However, almost 44.7% of respondents disagreed with the presence of signs and symptoms to cancer while around 24.7% of them reported that cancer could not be prevented. Moreover, nearly 25.9% of them disapproved that cancer patients need psychological support.

Conclusion: The Study population had poor knowledge of lifestyle-related cancer preventable risk factors, especially low vegetables and fruits consumption and excessive exposure to sun radiations and some false beliefs, need correction.

Session Topic: Cancer

Presenter: Rayan A Abdalrahman[1]
Institution: Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Khartoum-Khartoum, Sudan
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1. Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Khartoum- Khartoum, Sudan
2. Department of Biotechnology, Africa City of Technology- Khartoum, Sudan
3. Department of Chemical Pathology, Faculty of Medical Laboratory Sciences, University of Khartoum-Khartoum, Sudan

Translationally Controlled Tumor Protein TCTP As Peptide Vaccine Against Schistosoma Japonicum: An Immunoinformatics Approach.

Background: Schistosoma japonicum is the most pathogenic causative form of schistosomiasis that causes a major health problem in its endemic countries. Until now, praziquantel is the only drug used to treat Schistosomiasis, but it does not prevent re-infection. So, repetition of the treatment is needed. Moreover, there is no effective vaccine against S. japonicum. Therefore, an urgent need for the development of vaccines is mandatory. This study aimed to analyze an immunogenic protein, Transitionally Controlled Tumor Protein (TCTP) using an immunoinformatics approach to design a universal peptide vaccine against Schistosoma japonicum.

Method: A set of 22 of TCTP sequences were retrieved from NCBI database. Conservancy of these sequences was tested and then conserved B cell and T cell epitopes were predicted using different tools available in Immune Epitope Database IEBD. Epitopes having high scores in both B and T cell predicting tools were proposed.

Result: An epitope 129YEHYI133 was predicted as a most promising epitope with good prediction scores in surface accessibility and antigenicity. Besides that, epitopes 129YEHYIGESM 137 and 92YLKAIKERL100 were predicted as the most promising epitopes concerning their binding to MHC I and MHC II allele respectively.

Conclusion: The study revealed that our predicted epitopes could be used to develop an efficacious vaccine against Schistosoma japonicum in the future especially epitope YEHYIGESM as it is shared between MHC I and II alleles and overlapped with the most promising B cell epitope. Both in vitro and in vivo studies is recommended to confirm the efficacy of YEHYIGESM as a peptide vaccine.
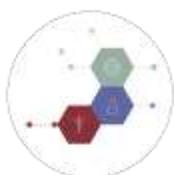
Session Topic: Global Health

Presenter: Phidelis M. Marabi
Institution: Department of Health Sciences, Kisii University, Kenya
Co-Authors: Stanslaus Musyoki[2], Angela Amayo[3]
1. Medical Laboratory Technologist, Department of Health-Bungoma County, Bungoma, Kenya
2. Lecturer, School of Health Sciences, Kisii University, Kisii, Kenya
3. Professor, Nairobi University, P.O Box 30197, GPO, Nairobi, Kenya

Biochemical Changes in Whole Blood Stored for Transfusion at Bungoma County Referral Hospital

Background: During storage of blood for blood transfusion, blood may undergo a series of biochemical changes that in speculation could be the reason behind the risk of using prolonged blood storage. Therefore, it's of important to monitor the biochemical changes that may reduce its survival and function. Objective: The objective of this study was to evaluate the biochemical changes in whole blood stored for transfusion at Bungoma county referral hospital.

Method: The study employed a prospective study design involving 20 randomly selected donor blood units in citrate phosphate dextrose adenine (CPDA-1) anticoagulant, biochemical changes were evaluated for 35 days. A pre-designed data collection form was the main data collection tool. Potassium and sodium levels were tested using Humastar 2000.The PH of blood was estimated using Hanna PH meter. Statistical Analysis of variance (ANOVA) was employed in the inferential statistics. All the analysis was executed using statistical package for social sciences (SPSS V.23). Results were considered significant at $P<0.05$. Results were presented in the form of tables and charts.

Results: At the end of the 35 days blood storage at blood bank conditions, significant increase was observed in Potassium level from 7.31mmol/L to 20.14. The levels were significantly increased even at week one. Significant decrease in Sodium level was also observed even at the first week and changed from 150.72 to 121.56 (P value<0.0001) at week 5. Significant decrease was observed in PH from 7.38 to 6.15 (<0.0001), however significant changes were observed at week two of storage.

Conclusion and Recommendation: Potassium (K+) and Sodium (Na+) concentration increases and decreases significantly as from week one of blood storage respectively. The PH decreases significantly as from the second week of storage and throughout to the fifth week of storage. Therefore, the study recommends the use of fresh blood to avoid the negative effect of biochemical changes of stored blood.

Keywords: Blood transfusion, biochemical changes, storage, Kenya.

Session Topic: Global Health

Presenter: Phidelis M. Marabi[1]

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Evaluation of Hepatitis B Knowledge and Practice Among Laboratory Staff in Bungoma County-Kenya

Introduction: Hepatitis B is a serious infection that affects liver and caused by hepatitis B virus (HBV). HBV is a serious public health problem and the health professionals are most at risk. Previous studies indicate that the risk of contracting Hepatitis B by health care workers (HCW) is four-times greater than that of general adult population. High risk groups such as HCWs should be monitored and receive a booster vaccination after 11 years and post exposure prophylaxis protocol should be adhered to as an infection prevention control measure for Hepatitis B. In view of the above this study was undertaken to assess knowledge and practices about transmissions and prevention of hepatitis B among laboratory in Bungoma County, Kenya.

Methods: A cross sectional study was conducted among 75 laboratory staff at nine facilities in Bungoma County from April to June, 2019. Self-administered structured questionnaire was used to collect information which included, as to whether the staff knew what is Hepatitis B disease; why be vaccinated against Hepatitis B; How Hepatitis B is spread; who should get Hepatitis B vaccine; whether staff has been vaccinated against Hepatitis B; whether staff are aware about the availability of post exposure prophylaxis for Hepatitis B; Whether a facility had included Hepatitis B in its training program and whether the facility has Hepatitis B Vaccination program for its staff.

Findings: Out of 75 distributed questionnaires, 75 were returned with a response rate of 100.0%. Only 24% laboratory staff had been vaccinated against Hepatitis B virus, 100% knew what is Hepatitis B disease, 93% knew who should get Hepatitis B vaccine and 97% knew how Hepatitis B is spread. However only 17% of the laboratory staff were aware of the availability of post exposure prophylaxis for Hepatitis B. 11% of the visited facilities had Hepatitis B vaccination program while none of the visited facilities had included Hepatitis B in the training program.

Conclusion: There was evidence of awareness and on Hepatitis B disease among laboratory staff in Bungoma County except availability of post exposure prophylaxis. There is need to establish systems for ensuring hepatitis B virus post-exposure prophylaxis awareness. There is need too to entrench hepatitis B vaccination of healthcare workers in Bungoma county through planning and budgeting. Emphasis on training on hepatitis B disease and post-exposure prophylaxis is essential.

Session Topic: Global Health

Presenter: Fernanda de Oliveira Sarreta[1]
Institution: São Paulo State University "Júlio Mesquita Filho" UNESP, Franca, Brazil
1. Department of Social Services, Faculty of Human and Social Sciences, São Paulo State University "Júlio Mesquita Filho" UNESP

Qualitative Researches Reveal Social Needs in Health: Studies in Social Services in Brazil

Background: This work analyzes the current context of the capital crisis and the dismantle of the Universal Health Systems, that aims to defend the public health, faced with this economic reality, social and political, defined by intense transformations and contradictions, that deepen the inequalities and social exclusion. Historically, Social Services participates of the struggles and collective claims related to the right to health and contributes to the access to the services and programs and the attendance of social needs.

Objective: Develop researches about health policies and the universal right to health and search for responses and alternatives for the problems of local and regional health, socializing the qualitative researches developed.

Methods: Qualitative research and dialectical method to reveals the current context of intense contradictions and that reproduces injustices and social inequalities, and the contribution for the construction of knowledge and scientific responses to health problems. This path extends the knowledge about what the individuals think, feel, and act, and the search for responses and needs of public health. The researches were developed in the graduation and postgraduation in Social Services, of São Paulo State University – UNESP, Brazil, and by the researchers of the Research Group QUAVISSS (studies about health policies and Social Services) of 2017 to 2019.
Through a bibliographic and documental research, and data collection in field with interviews and focus group, with workers, managers and users.

Results: The results show relevant themes about the strengthening of the Primary Health Care, and the importance of palliative care in Oncology, and social participation in mental health policy, the strategy of harm reduction, the protagonism of health conferences, humanization of pacient care, the permanent education in health for worker formation, AIDS and the current expressions, which evidence the search for scientific researches for the health problems. In this context, Social Services presents a professional project that defends the health reform in Brazil and the principles of universalization, democratization, participation, equity, freedom and diversity; which are hegemonic project against the capitalist logic and neoliberal focalization, fragmentation and privatization, in which health is considered a product and a global challenge.

Keywords: Qualitative research, health policy, Social Services
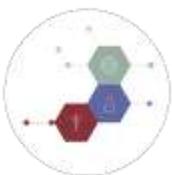
Session Topic: Global Health/ Cancer

Presenter: Jelimo Linet[1]
Institution: Moi University, Eldoret, Kenya
Co-Authors: Arori Cyrus,Kassachoon Hilda, Bosek Kevin, Oloibe Sandra , Lydia Mwanzia
1. Department of Nursing Sciences Moi University.

Cancer Social Support Programs in Chandaria Cancer and Chronic Disease Center, Moi Teaching and Referral Hospital

Introduction: Cancer is the second leading cause of mortality with 8.8 million deaths per year accounting for 7% of the overall deaths as per the World Health Organization (WHO) and Kenya Demographic Health Survey (KDHS). Social support is the physical, psychological and emotional comfort and security given to cancer patients by friends, relatives, coworkers, and others. . Most developed countries have well established and maintained social support programs. However, most African countries including Kenya are still beginning to establish such programs.. At Moi Teaching and Referral Hospital (MTRH), Chandaria Cancer and Chronic Disease Center was opened in 2015 and is now second largest cancer centre in Kenya.

Methodology: The study was done at MTRH. An illustrative case study design was used. The research targeted all patients affected by cancer enrolled in the social support programs. Convenience (Census) sampling technique was used and a total of 47 respondents participated in the research. Data was collected using structured questionnaires. The data obtained was analyzed using SPSS version 16.0.

Results: Most patients (>75%) had positive attitude towards social support. Most of the patients learnt about such programs through media, family and friends and a few through physician referrals. It was noted that most of the respondents preferred hospital-based support programs to online support groups or home visits. The benefits recorded include: helping in coping with disease and treatment side effects, health education, importance of drug adherence, emotional support and hope among others. The challenges noted were insufficient funds and resources to run the programs, lack of specialized facilitators, lack of proper awareness and distance to the hospital among others

Conclusion: Most of the patients affected by cancer had a positive attitude towards social support and thus highly appreciated the groups as having improved their quality of life. . The support programs were found to have a lot of benefits to the patients. However, the programs faced challenges such as limited resources and distance in the part of patients that hindered their regular attendance.

Recommendations: The government should fund and open more of such programs in various facilities so that the services are more accessible to patients. Also, more awareness should be done to reach patients who are not aware of such programs.

Session Topic: Biotechnology

Presenter: Sonal Gadhiya[1]
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Seaweed as Nutraceutical for Human Health and Disease Prevention

In recent year, Marine organisms including seaweeds are one of the important marine living resources in the world. Seaweed act as primary producer in food chain and used traditionally and consumed as part of daily diet. Seaweed contains bio-molecules such as protein, carbohydrates, minerals and vitamins. Presently fresh, dried and processed seaweeds are utilized for human consumption, and because of that it is called as medicinal food in 21st century. Several studies have demonstrated the seaweeds contain a various property like a antibacterial properties, antiviral, antistress, anti-inflammatory, anti-carcinogenic, anti-tumor and antithrombotic. These include fiber, anti- oxidant, mineral and omega-3 fatty acids. In some epidemiological studies, the lower incidence of chronic disease, such as cancer, cardiovascular disease, and their risk factors in this part of the world has been related to healthier diet profile associated with seaweed consumption. Recent studies have explored the role of sea-vegetables in estrogen related and colon cancers, osteoarthritis and other conditions. Researchers found that kelp can slow the spread of colon and breast cancers. A compound found in kelp called fucoidan may also prevent the spread of lung cancer and prostate cancer.

Key words: - Seaweed, Nutraceutical properties, Medicinal food, Human health

Session Topic: Global Health/ Cancer

Presenter: Sofia de Almeida Losant Macedo[1]
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3. Institute of Health Sciences, Paulista University – UNIP, Bauru, SP, Brazil.

Morphologic Characterization and Evaluation of Prognostic Factors in Female Canine Mammary Ductal Carcinoma

Background: In Brazil the mammary carcinoma in dogs is the most common cancer, with an annual incidence of 182 for each 100000 female dogs. Tumors of the canine mammary gland are complex and comprise a diverse group of neoplasms. Multiple primary tumors are frequently observed and often are of different histologic types. Therefore, the present research aimed to study the morphologic pattern of the mammary tumors in female dogs and associate them with clinical-pathologic characteristics.

Methods: The samples from canine mammary carcinoma were obtained from the achieves of veterinary pathology service of the School of Veterinary Medicine and Animal Science – UNESP from 2008 until 2018. The HE slides from each case were reviewed and classified and graded according to Goldsmith et al. (2011).

As prognostic factors prognostic factors clinical data was accessed and information's such as evolution time, age, breed, tumor size, ulceration, lymph node involvement, metastasis and overall survival information were extracted.

Results: 288 cases of mammary carcinoma in female dogs that had overall survival information were used. Mixed breed female dogs were the most affected (30.5%) followed by Poodle (19.38%). In 38% of the cases, lymph node involvement was evaluated, mostly because they were not sent for histopathologic evaluation after the surgeries. In 91% of the cases surgery was the only form of treatment and in 0.35% was associated with chemotherapy. 25% of the cases showed distant metastasis. Regarding the histological subtypes, inflammatory carcinoma had the worst prognosis and tubulopapillary had the highest survival time. Carcinoma mixed type and complex carcinoma showed similar overall survival.

Conclusion: In female dogs mammary gland tumors, carcinoma mixed type was the most common histological subtype. From the clinical parameters evaluated of prognostic value the metastasis was frequent and is of crucial importance to determine the course of treatment.

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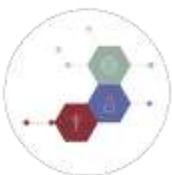
Session Topic: Global Health/ Chronic Diseases

Presenter: Oberhiri Lawrence Ewhre[1]
Institution: Delta State University, Abraka, Nigeria
Co-Authors: Emeka Anthony Ojieh[2] and Akhator Amenotie Joy[3]

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Modulatory Effect of Methanol Extract of Dryopteris Dilatata on the Liver enzymes antioxidant Activities on CCL4 Induced- Hepatotoxicity in Male Wistar Rats.

Background: Liver disorder caused by ROS is characterized by a progression from steatosis to chronic hepatitis, cirrhosis, and hepatocellular carcinoma. A large number of toxic compounds, such as carbon tetrachloride (CC14), aromatic hydrocarbons, bromobenzene, and ethanol, are involved in the development of liver damage. CCl4 is a common hepatotoxin used for the induction of liver disorder in the experimental model. This study investigates the hepato-protective potential of methanol leaf extract of Dryopteris dilatata (DDE) in CCL4 Induced- Hepatotoxicity in experimental male Wistar rats.

Methods: Twenty-five (25) adult male Wistar rats (130-150 g/b.w) were procured and randomly divided into 5 groups for the study. Group A: control (Given feed and water); Group B: negative (given CCL4 + feed + water); Group C : standard (CCL4 + silymarin drug + feed + water); Group D: experimental (administered 250mg/kg of the DDE); Group E: experimental (administered 500mg/kg of the DDE) each for 14 days and on the 15th day the animals were sacrificed. Blood and liver tissue samples were prepared for biochemical assay of ALT and ALT, ALP, SOD, CAT and MDA using standard procedures.

Results: DDE significantly reduce ($p<0.01$) serum AST and ALT activities administered at 250mg/kg (22.60 ± 1.47 U/L and 35.85 ± 1.52 U/L) and ($p<0.05$) 500mg/kg (19.80 ± 2.42 U/L and 34.71 ± 0.64 U/L) when compared with the control (15.80±2.78 U/L - AST and 29.33±2.54 U/L - ALT) and standard group (22.00±1.34 U/L -AST and 26.80±4.02 UL - ALT). Also the extract significantly reduce MDA and elevated SOD, CAT in the treatment group as compared to silymarin and CCl4 alone groups.

Conclusion: In conclusion, methanolic leaf extract of DDE display hepatoprotective effects on liver and these hepato-protective effects provide the premise for further evaluation of the promising therapeutic potential of DDE to counter liver damage or disease that is mediated by free radicals.
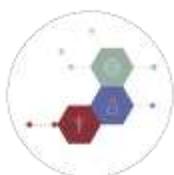
Session Topic: Global Health

Presenter: Yevhenia Sharhorodska[1]
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Medical-
Genetic Consultation of Women with Congenital Heart Diseases of Fetus

The incidence of congenital heart defect (CHD) in the world ranges from 10 to 13 cases per 1,000 children born alive.

Methods: The analysis of the results of medical genetic counseling of 67 pregnant women with fetal heart diseases was carried out. The data of somatic, genealogical and reproductive anamnesis, biochemical markers of chromosomal pathology of the 1st and 2nd trimester of pregnancy, and the spectrum of the detected fetal heart disease were studied.

Results: It was found that 46 (68.7%) women had somatic diseases: pathology of the cardiovascular system (11.9%); endocrine system - at 8 (11,9%); respiratory disease - 3 (4.5%) and urinary system - 2 (3.0%). 13 (19.4%) out of 67 women had acute respiratory viral infections in the first trimester of pregnancy. In 4 (6%) cases - bad habits. The first time pregnant were 31 (46.3%) women, 21 (31.3%) - the second time, 10 (14.9%) in the third, and 5 (7.5%) in the fourth or more times. In history, 58 (86.6%) women did not have reproductive function disorders, 8 (11.9%) had unauthorized miscarriages and frozen pregnancy. The burden of gynecological anamnesis was observed in 12 (17.9%) women, and hereditary - in 6 (9.0%) women. In the structure of congenital defects of the heart, false anatomical anomalies were found more often: hypoplasia of the left heart organs - 14 (20.9%), tetralogy of Fallot - 9 (13.3%). Biochemical markers of chromosomal pathology in the first trimester in 11 (16.4%) women recorded indicators that are characteristic of the risk of chromosomal pathology, and in the second trimester - in 9 (13.4%). Two pregnant women used a NIPT test that did not detect aneuploidy in the fetus. In 8 cases, invasive prenatal diagnosis of the fetus was recommended, which was carried out by three women, and five refused.

Conclusions: The peculiarities of somatic (in 46-68.7% of women), reproductive (in 8-11.9% of women) gynecological anamnesis (in 12-17.9% of women), which can be the risk factors of congenital fetal heart disease, are revealed. In the structure of congenital defects of the heart of the fetus more often revealed hypoplasia of the left heart organs - 14 (20.9%), tetralogy of Fallot - 9 (13.3%). In 11 (16.4%) women recorded indicators of biochemical markers, characteristic for the risk of chromosomal pathology, in the first trimester, and - in 9 (13.4%) pregnant women - in the second trimester.
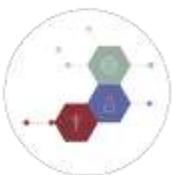
Session Topic: Global Health

Presenter: Marlene Koskei[1]
Institution: Moi University, Eldoret, Kenya
Co-Authors: Aliyah Aliyan[1], Glory Mutheu[1], Tina Okoto[1], Vanessa Keter[1], Sharon Wavinya[1], Jael Chemtai[1], Linet Okach[1], Hilda Chepleting[1],Daniel Muli[1], John Okumu[1], David Muigai[1], Nabila Jidale[1], Collins Masinde[1], Brian Kigen[1], Fanwel Zaki[1], Imellah Bridgit[1], Jineyd Bawazir[1], Abdullahi Adany[1]
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Factors affecting the Health Seeking Behavior of the Residents in Sirisia Sub-County, Kenya

Background: Primary Health Care (PHC) is essential healthcare socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford. PHC must be available when needed, accessible, appropriate, acceptable and affordable. Absence of these factors greatly influences the Health Seeking Behavior (HSB) of residents in the community. HSB refers to any action or inaction undertaken by individuals who perceive themselves to have a health problem for the purpose of finding an appropriate remedy. General factors that influence HSB include socio-economic status, sex, age, social status, type of illness, access to services and perceived quality of services.

Methodology: This was a descriptive cross sectional study. Methods used to collect qualitative data include Focus Group Discussion (FGDs), key informant interviews and making observations. This data was recorded in form of notes and pictures. Content analysis of the qualitative data was done manually through group discussion, description and categorizing of notes and pictures into clustered themes. Quantitative data was collected using 190 structured questionnaires randomly administered to Kulisiru B village households. Analysis was done using Microsoft Excel software and presented in form of tables, diagrams, pictures and prose text.

Results: 60% of the respondents (N=190) resorted to self-medication as a first action in illness. About 35% of the residents interviewed live more than 3 kilometers from the nearest health center. Of those who paid off-pocket (90%), 50% find the health center services affordable. Majority (70%) of the respondents rarely got the drugs prescribed at the hospital and often had to buy the drugs from outside chemists or leave without the drugs. Observations made at Sirisia hospital showed patients sharing beds, unequipped theatre and ambulance.

Conclusion: Self-medication is a majority mode of treatment at first encounter of disease. Factors leading to this kind of health seeking behavior are distance from health facility, cost of healthcare, inadequate drugs and resources at Sirisia Sub county Hospital. The government should work towards making health services affordable to the common citizen as well as ensuring that a majority of, if not all, essential drugs are available in the local hospitals in quantities that suffice the community needs.
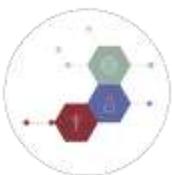
Session Topic: Global Health

Presenter: Fernanda de Castro Nakamura [1]
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Co-Authors: Zilda Cristina dos Santos[1]
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Social Determinants of Health and Quality of Life of the Population

The World Health Organization defines health as a state of complete physical, mental and social wellbeing, established as a fundamental right correlated to a life with dignity. For this purpose, we have to consider that there are economical and social conditions that affect population´s health.

Through a bibliographic review and data collection, we could observe that in developed countries, like England, Netherlands among others in Europe, we observed that there is a concern with children´s health, besides the intersectoriality.

In England, the Comission on Social Determinants of health aims to research, identify and work with the social iniquities that involves the health, disease and care process. There, the emphasis is the children´s health with the perspective of protection and development of the capacities to work and independent living. As other European countries, England aims at life expectancy and child mortality. In Netherlands, the actions involve the collaboration with many sectors of society, like health, education, public security, and other to maintain the balance in health policy. The actions have programmatic approach, and the interaction and cooperation between its municipalities are discrepant.

In underdeveloped countries, like Brazil, the Comission on Social Determinants of Health aims to realize the precepts of the Constitution of 1988, and has the challenge to reduce the social inequalities and promote health policies that could increase the quality of life of the population in the country.

Conclusions: The Social Determinants of Health are essential to understand the context of the health of a population in a country. The public policies, life style and quality of life can determine how these people live and contribute for the social and economic dimensions of each country and region.

If there is a social and economic deprivation, besides other policies how: education, health facilities, sanitation, clean water and safe housing, the population will suffer with a poor quality of life that will lead to higher government expenditures with health.

In addition, we could observe that the solution could be an efficient planning by the governments in order to make policies to increase quality of life of the population, investing in social and economic sphere of each region of the countries.

Session Topic: Global Health

Presenter: Brian Bushuru [1]
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Challenges facing blood transfusion services at Eldoret regional blood bank

Blood transfusion is a lifesaving therapeutic approach that has been included in the WHO list of essential medications. Transfusions are used for various medical conditions to replace lost components of the blood or restore blood volume. However, it has always been a challenge to recruit regular blood donors into the national system. The provision of safe and adequate supplies of blood for healthcare is squarely dependent upon the organization of the blood transfusion services. Thus, a well-organized system with sufficient equipment and trained labour and resources is central to the maintenance of the transfusion service.

STUDY BACKGROUND
Access to safe and adequate blood for transfusion is a major public health challenge in Sub Saharan Africa. The most common factors influencing this include Lack of funds, demand versus supply, low supply of some blood groups. wastage of blood and discards and irrational use of blood and blood products.

METHODOLOGY
The research will be done as a cross-sectional descriptive study in which the blood bank staff will be administered with questionnaires to gather qualitative information on the main challenges they face. In addition, donor records at the blood bank will be collected by data abstraction firms and analyzed to gather information on the prevalence of blood wastages and discards and the reasons behind these discards and wastages. The data will be entered into SPSS and data analysis done by descriptive statistics. The data will be presented in form of graphs and charts.

RESULTS (EXPECTED)
We anticipate similar challenges as those seen in other developing world setups to emerge in the availability and provision of blood transfusion services. However, we perceive key administrative/process challenges that are also likely to emerge, which are more likely to be addressed with ease through changes in the organization of the blood transfusion services and their interactions with other health stakeholders.

CONCLUSION
Transfusion services in Kenya continue to be crippled due to challenges of financial, human resource, equipment, reagents and demand vis-à-vis supply mismatches. Findings from such studies are therefore instrumental in helping address such challenges through specifically addressing components of policy and administrative work practices

Session Topic: Global Health

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Co-Authors: Sania Subhan Qureshi, Sibghat Ullah, Baitullah, Hanif ur Rehman, Umer Sadique, Sher Bahadar Khan, M Subhan Qureshi
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Comparative effects of fetal bovine serum and horse serum on revival and proliferation of baby hamster kidney -21 cell line

BACKGROUND: Serum is essential for growth of Baby Hamster kidney-21 cells. These cells can be propagated without serum in a media provided with amino acids such as transferrin, insulin, fibroblast growth factors and epidermal growth factors on cell culture dishes coated with fibronectin. Each factor's effect was very low when checked individually. Although their effect was synergistic when observed combine. Serum concentration has effect on growth of BHK- 21 cells. Average diameter of BHK- 21 cell is 5 μm. Normal morphology of BHK-21 cells is polygonal and shiny. Low concentration of serum will result in changing BHK- 21 cells morphology from polygonal to elongated and sometimes fusion of cells may be occurred. Fetal bovine serum (FBS) is routinely use in culturing of BHK- 21 cells for vaccine production and research purpose. As FBS is costly, so alternate serum may be tested to be used in place of FBS.

MATERIAL AND METHODS: Growth media for BHK- 21 cells were prepared as per manufacturer's instructions.
Revival of cells: BHK-21 cells kept in liquid nitrogen was revived.
Growth media containing different concentrations of Fetal bovine serum and Horse serum including 5%, 10%, 15% and 20% was prepared. Growth media was added in T- 25 cell culture tubes. Three T- 25 cell culture plates were cultured for each concentration of Fetal bovine serum and Horse serum. Cell culture plates were kept in incubator for 24 hours at 36 ℃.
Cell counting: Cell counting was performed with Millipore Scepter Handheld Automated Cell Counter and Hemocytometer (EMD Millipore, 2013).

RESULT: Maximum growth of cells overall was observed in 10% Fetal bovine serum i.e. 3.35×10^4 /ml followed by 5% FBS i.e. 2.89×10^4/ ml. In 15% Fetal bovine serum cells growth was 1.200×10^4/ ml. In 20% Fetal bovine serum cell count was 1.048×10^4/ ml.
Maximum growth of cells in Horse serum was observed in 15% i.e. 1.501×10^4/ ml. In 10% Horse serum cell growth was 1.396×10^4/ ml. In 5% Horse serum cells growth were 1.105×10^4/ ml. In 20% Horse serum cells growth was least i.e. 4.004×10^3/ ml.

CONCLUSION:
• Efficient growth of BHK- 21 cells can be achieved with 10% Fetal bovine serum.
• Serum is considered as growth promoter for BHK- 21 cells but increasing Fetal bovine serum beyond 10% will decrease growth of cells.
• Further trials may be made to adopt BHK- 21 cells in serum- free media.
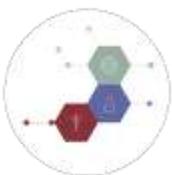
Session Topic: Chronic Diseases

Presenter: Ms. Ivanna Haiboniuk
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The molecular-genetic diagnostic of Wilson`s disease among patients from Ukraine.

Backgraund: Wilson disease (WD) is an autosomal recessive disorder caused by dysfunction of copper metabolism and accumulation Cu 2+ ions in cells. The body receives copper with food. Under normal conditions, the excess copper is excreted through the hepatobiliary system using the ATP7B protein. Mutations of the ATP7B gene interrupt the disruption of extraction of copper from the cell and the development of the disease. In spite of the multisystem of manifestations prescription specific treatment timely allows to remove all symptoms and return to a normal life. But very often due to non-specific manifestation timely diagnostic is not possible Therefore, the purpose of our work Is to improve the diagnostic of WD in Ukraine, by identifying the most common mutations among person with this diagnosis, and introducing into practice their genetic testing.

Methods: Analysis of H1069Q mutation performed by PCR BI-PASA was carried out among 90 patients with signs of WD. Exons 1-21 of the ATP7B gene were directly sequenced among 23 WD suspected on 3100 Genetic Analyzer (Applied Biosystems). Restriction fragment length polymorphism (RFLP) analysis of exon 8 allelic variants (c.2304dupC, c.2128G>A) was developed.

Results: In this study we performed DNA extraction from blood leucocytes in 90 patients with symptoms of WD. 23 of them we selected for next stage. All patients with clinically confirmed WD were screened for the most common mutation p.H1069Q by PCR Bi-PASA method. Direct DNA sequencing of gene ATP7B (all 21 exons) was performed for the patients with WD symptoms, being either heterozygous for H1069Q or without it on any allele. In the study we detected 7 patients with H1069Q mutation in heterozygous state. And 14 patients with H1069Q mutation in homozygous state. In 7 cases H1069Q was in compound with other ATP7B allelic variant: 4 – c.2304dupC (ex 8), 1 - c.2128G> A (ex 8), 1 - c.3011A>C (ex 13), 1 - c.3402delC (ex 15).

Conclusions: The results indicate a wide range of mutations in the ATP7B gene among patients with WD among Ukrainians. The most frequent of them was introduction in practice which improve diagnostic of this disease. In 23% cases diagnosis was confirmed by genetic testing.

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