
Scientific Tracks & Abstracts

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Novel therapeutic drug combinations with CDK4/6 inhibitors, beyond ER+ve breast cancer

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The CDK4/6 – RB1 axis controls transition through the restriction point in the G1 phase of the cell cycle, and cancers frequently subvert the regulation of this axis to promote proliferation. CDK4/6 inhibition is a proven therapeutic strategy for estrogen receptor positive (ER+ve) breast cancers, with selective CDK4/6 inhibitors (palbociclib and ribociclib) demonstrating substantial improvements in progression free survival in phase two and three clinical trials (PALOMA1, PALOMA2, PALOMA3 and MONALEESA-2). There is considerable interest in exploring the role CDK4/6 inhibitors in drug combinations for patients with HER2 amplified breast groups and the TNBC subtypes. Triple negative breast cancer (TNBC) is an aggressive subtype of breast cancer associated with poor prognosis. Although TNBC may be sensitive to chemotherapy there is a substantial need to identify novel targeted therapeutic strategies. TNBC are a heterogeneous group of tumours with gene expression profiling identifying

distinct subgroups, including luminal androgen receptor (LAR), mesenchymal stem like (MSL), mesenchymal (MES), and basal-like. *In vitro* data and *in vivo* data have shown that the LAR subtypes of breast cancer are highly sensitive to CDK4/6 inhibition and this is currently being tested in clinical trials. There is now growing amount of data suggesting that CDK4/6 inhibitor drug combinations, may have a role in breast cancer subtypes, beyond ER receptor positivity.

Speaker Biography

Uzma Saddia Asghar was awarded her MBBS (2004) and intercalated BSc in Neurosciences (2001) from University College London (UCL). She was awarded her MRCP in 2008 (London) and did her PhD at Breast Cancer now, Institute of Cancer, London as an Avon Clinical Research Fellow (2017). Her interests includes novel targeted therapeutic agents for breast cancer, inhibitors of cell cycle and PI3 kinase signaling pathway, immunotherapy and drug development and currently setting up these breast translational clinical trials at UCL.

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The role of radiologist in conservative management of breast cancer

Tarek Aref

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Breast conserving therapy (BCT) refers to breast conserving surgery (BCS), followed by moderate-dose radiation therapy to eradicate any microscopic residual breast disease. BCS can almost be considered the gold standard of early stage invasive breast cancer treatment, allowing achieving the adequate surgical margins with an acceptable cosmetic outcome. Role of radiologists in breast cancer management was limited for many years to suggesting an initial diagnosis and detecting loco-regional recurrence after treatment by mammogram and breast ultrasonography. The development of the Breast Imaging Reporting and Data System (BIRADS) of the American College of Radiology (ACR) helps to change Radiologist's role through many factors:; standardized the description and recommended management of breast lesions, . BIRADS has increased the radio pathological correlation of radiologists' reports, improving the reports' reliability, and has also established a common language for all of the physicians involved in multidisciplinary breast disease management team, favoring agreement on decisions, and Furthermore, advances in breast magnetic resonance imaging; functional MRI and image-guided interventional procedures have increased our responsibility in the therapeutic decision-making process. The role of

Radiologist in BCT: I is accurate and early diagnosis of breast cancer and staging II- interventional role of Radiologist in BCT including imaging-guided biopsy of breast masses, stereotactic biopsy of non-palpable lesions and or microcalcifications guided by mammography or MRI. Post-biopsy-clips insertion and pre-neo adjuvant chemotherapy localization of malignant lesion by US-guided insertion of hydromark (clips) preoperative localization of non-palpable breast mass or micro calcifications by US-guided insertion of wire and III evaluation of response to neoadjuvant therapy using RECIST (response evaluation criteria in solid tumors).

Speaker Biography

Tarek Aref is a Professor of Radio Diagnosis and Head of Radio Diagnosis Department, Medical Research Institute, qualified by Bachelor of Medicine and Surgery (MBChB), University of Alexandria, 1985. He did his Master Degree of Radio Diagnosis (MMRD), University of Alexandria 1990. He is a Doctorate in Radio Diagnosis (MDRD) University of Alexandria, 1998. He is a Fellowship of the University of Rome (Tor Vergata), Italy since 1995. He has special work experience: breast imaging and intervention breast procedures and neuroradiology imaging, training and research: In neuroradiology MRI at The University of Rome-Italy for 27 months between October 1992 and January 1995. In breast imaging (Digital mammography, MRI and breast intervention techniques) at the University of Toledo, Ohio, United States of America, November 2008. He has Membership of The Egyptian Society of Radiology and Nuclear Medicine, since 1990. He has Membership of The European Society of Radiology (ECR) since 2002.

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 Notes:

Effects of pre-treatment 1,25-dihydroxyvitamin D levels on breast cancer patients receiving neoadjuvant chemotherapy

Madeline Molot, Amy Tiersten, MD¹; Meng Ru, MA¹; Clare Whipple, MD¹; Ira Bleiweiss, MD²; Anupma Nayak, MBBS, MD²; Shabnam Jaffer, MD¹

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This study analyzed pre-treatment vitamin D levels of breast cancer patients who had received neoadjuvant chemotherapy (NACT). The primary outcome was pathological complete response (pCR). Vitamin D levels were dichotomized as being either adequate (≥ 20 ng/ml) or inadequate/deficient (<20 ng/ml). Univariable logistic regression models were used to assess the impact of Vitamin D levels and other prognostic factors on pCR. Stepwise selection was used to identify factors for a multivariable logistic regression, with interaction term between vitamin D levels and menopausal status included. Of the 88 patients reviewed, 51.2% (n=45) had inadequate/deficient vitamin D levels and 48.8% (n=43) had adequate vitamin D levels. It was found that menopausal status had a significant interaction with vitamin D levels and pCR: pre-menopausal women with adequate vitamin D levels were significantly more likely than post-menopausal women to achieve pCR (OR=17.697, 95% CI: (3.04, 102.89), $p=0.0014$). The interaction between recurrence, percent tumor shrinkage, and vitamin D levels was analyzed using a multivariable Cox regression

model. 17% (n=15) of the 88 patients recurred. Patients with adequate vitamin D levels whose tumor decreased in size after NACT were significantly less likely to recur than patients with inadequate/deficient vitamin D levels whose tumor decreased in the same amount (interaction $p=0.0045$). These data indicate that adequate vitamin D levels and neoadjuvant chemotherapy may produce an additive effect to yield a higher chance of pCR and a lower chance of recurrence, an effect that is enhanced for pre-menopausal women. Finally the data indicate that vitamin D may provide a protective effect against recurrence particularly when there is a large amount of tumor shrinkage after treatment.

Speaker Biography

Madeline Molot is a senior at Barnard College studying Neuroscience and Behavior. She has performed research at the Dubin Breast Center at Mount Sinai Hospital, as well as at the Barnard Cognitive Development Center and at the NY State Psychiatric Institute of the Columbia University Medical Center. She plans to attend medical school in the future.

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 Notes:

Knitted knockers an alternative to traditional breast prostheses

Barbara Demorest

Knitted Knockers Support Foundation, Canada


Knitted Knockers are breast prostheses made by volunteer knitters and crocheters and provided free to women who have had a mastectomy or lumpectomy. They are an alternative for women who may find traditional breast prostheses too hot, heavy, expensive or unavailable. They are available in all sizes and work in regular bras. Women can order them free at knittedknockers.org. Brochures, cards, patterns and sample knockers can be provided to medical clinics and other facilities that would like to provide them to their women by simply registering under the medical link at knittedknockers.org. Knitted Knockers Support Foundation aka known as knittedknockers.org is located in the US but has groups filling

orders in 16 countries. Knockers are provided all over the world. Currently over 450 medical clinics are registered with and be supported by knittedknockers.org

Speaker Biography

Barbara Demorest has founded Knitted Knockers Support Foundation after having a mastectomy in 2011. Her doctor indicated that she may not tolerate a traditional breast prosthetic and asked if she knit. Currently knittedknockers.org has over 400 registered groups providing over 1,000 knitted knockers per month all over the world. They support over 450 medical clinics with brochures and other materials for providing knitted knockers to their patients.

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Breast cancer in young women – retrospective study

Jana Slobodnikova

Alexander Dubcek University, Trencin


Breast cancer is the most common malignancy of the female population the incidence is increasing mainly statistically between 50s and 60s, 60s and 70s. Recently, however, we meet more often with the occurrence of breast cancer in women in 30s and significantly between 20 and 40 year. For women this age range is not exist preventive or screening mammography, in Slovakia only sonography and only clinical self- examination by touch. In period from 1-5- 2005 and 30-6-2016 we performed more than 70 000 mammography examinations and more than 185 000 ultrasound examinations. The youngest patient was 6mons, the oldest 94 years. Patients were sent for examination by attending gynecologist, general practitioner. Preventive examinations completed asymptomatic women without clinical symptoms. Young women and girls were examined by ultrasound with 18 MHz linear probe, with CFM and elastography. Next if necessary, we performed mammography, MR-mammography a CCB too. During the monitored period we diagnosed 398 new cases of the breast cancer, all cases are verified by histopathology. The age distribution of patients with newly diagnosed cancer we transparently stored in tables and graphs. We focused on women in the age group to 39 and 49 year old. In category women between 18s and 39s we diagnosed 32 new cases of breast cancer, between 40s

and 49s 64 cases. Summary are 86 of new cases of the breast cancer in women between 18 and 49 years. We analyzed the different findings, especially with respect to possibility of diagnostic self-examination, combined with ultrasound, MR mammography, mammography and core cut biopsy under ultrasound control. The number of the young women with new diagnosed breast cancer slowly increased. Our aim is the early diagnostics, without vascular cancer vascular invasivity, without the lymphadenopathy. We retrospectively focused on genetic anamnesis factor, short time of the diagnosis and therapy.

Speaker Biography

Jana Slobodnikova end study on Charles University in Prague., graduated -CSc/PhD/ completed at the age 38 years from Institute of Experimental Oncology Slovak Scientific Academy. She is an Ass. Prof. in Trnaviensis University, Prof. Emeritus in St. Elizabeth High School. She has lectured at several universities - Prague, Trenčín, Trnava and Bratislava. She is the author of teaching script, university textbooks; she has lead workshops, organize international congresses and workshops. She has published more than 90 scientific papers, from then 25 papers in renowned journals and has been serving as a 5 Editorial Board Member of repute. She has published three monography, founded the section of breast imaging in 1996, from 1996 she is President of The Section of Breast Imaging of Slovak Radiologic Society and Vice President of the Slovak Society of Ultrasound in Medicine. Membership in organizations: ECR, EUSOBI, EFSUMB, SSUM (Slovak Society of Ultrasound in Medicine) and SRS (Slovak Radiology Society).

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A feasible novel technique for breast cancer imaging using UWB-microwave antennas

Maryam Liaqat, Lucas Gallindo Costa, Thiago Campos Vasconcelos, Frederico dias Nunes and Emery C. Lins
Federal University of Pernambuco, Brazil


Microwave Imaging (MI) is an emerging non-invasive and non-ionizing technique for breast cancer diagnosis based on microwave backscattered by breast tissues. Dielectric properties of cancerous tissues are considerably high compare to the normal tissues therefore the backscattered rays of tissues analyzed and locate using inverse image reconstruction algorithm. The motivation of this work is early detection of breast cancer and for more precise results with low expenses. Due to low contrast of image by x-ray mammography, age group restriction and false result ratio, it's hard to say that Mammography is beneficial or harmful. Another fact about mammography is a painful process of analysis, therefore, we must develop some method which is user friendly i.e., for patients. This work presents initial results of simulation and design of a hard and flexible antennas ranging between 0.001 GHz to 3 GHz for *in vitro* experimentation. Basically the Microstrip Patch antennas of two different shapes were simulated and

fabricated in this first step with different materials like FR4, Cotton cloth, Polyester and Kapton Polyimide (for Flexible antennas). The size of antenna depends on permittivity of substrate material and resonance frequency. To analyze the design and scattering parameters of antennas High Frequency Simulation Software (HFSS) used for different materials of substrate. Antennas are tested using mimic-phantoms of breast. The simulation results of rectangular patch and circular slot antennas show a peak of microwave emission / detection at 2 GHz and 300 MHz band width

Speaker Biography

Maryam Liaqat did her Master's in Physics in 2013 from University of Agriculture, Pakistan. Currently, she is perusing PhD in Electrical Engineering from Federal University of Pernambuco, Brazil. She is working on project of microwave antenna modifications for the detection of breast cancer. Designing flexible antennas for microwave imaging system, which will be user friendly, cost effective and more precise in results as compared to x-ray mammography.

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Breast MRI; Updated indications

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Clinical breast clinical examination, mammography and ultrasonography are still in certain situations have some limitations; due to factors in the modality or breast parenchyma. MR imaging has an important role in clinical practice in the following situations; determination of the stage and extent of the disease in a patient with newly diagnosed breast cancer. Evaluation of a patient with an unknown primary tumor. Evaluation of a patient with positive surgical margins after breast conservation surgery. Monitoring of a patient undergoing neoadjuvant chemotherapy. Evaluations of breast implant integrity. Screening for breast cancer in a woman at very high risk for the disease. Breast MRI is used as a problem-solving tool for a woman with equivocal mammographic findings.. Despite all advances in functional imaging, the issue of evaluation of the degree of response

of cancer to neoadjuvant therapy will remain as a major challenge for radiologist.

Speaker Biography

Tarek Aref is a Professor of Radio Diagnosis and Head of Radio Diagnosis Department, Medical Research Institute, qualified by Bachelor of Medicine and Surgery (MBChB), University of Alexandria, 1985. He did his Master Degree of Radio Diagnosis (MMRD), University of Alexandria 1990. He is a Doctorate in Radio Diagnosis (MDRD) University of Alexandria, 1998. He is a Fellowship of the University of Rome (Tor Vergata), Italy since 1995. He has special work experience: breast imaging and intervention breast procedures and neuroradiology imaging, training and research: In neuroradiology MRI at The University of Rome-Italy for 27 months between October 1992 and January 1995. In breast imaging (Digital mammography, MRI and breast intervention techniques) at the University of Toledo, Ohio, United States of America, November 2008. He has Membership of The Egyptian Society of Radiology and Nuclear Medicine, since 1990. He has Membership of The European Society of Radiology (ECR) since 2002.

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Nanoelectromechanical chip (NELMEC), an electromicrofluidic chip to diagnose epithelial and mesenchymal breast circulating tumor cells from leukocytes based on Silicon nanograss electrodes

Mohammad Abdolahad
University of Tehran, Iran


An integrated nano-electromechanical chip (NELMEC) has been developed for label free diagnosis of both epithelial and mesenchymal circulating tumor cells (ECTCs and MCTCs respectively) from white blood cells. This nanoelectrically activated microfluidic chip fabricated by silicon micromachining can trap large single cells (>12µm) at the opening of analysis microchannel arrays. The nature of captured cells would be detected by assistance of silicon nano grass (SiNG) electrodes patterned at the entrance of the channels. Observable difference between the membrane capacitance of ECTCs and MCTCs from WBCs (measured by SiNG electrodes) is the key indication in our diagnosis approach. NELMEC Chip not only solves the problem of size overlapping between CTCs and WBCs but also detects MCTCs without any markers and tagging processes as an important problem in previously reported CTC detection systems. Great

conductivity of gold coated SiNG nanocontacts as well as their safe penetration into the membrane of captured cells facilitates precise and direct signal extraction to distinguish the type of captured cells. The results achieved from epithelial (MCF-7) and mesenchymal (MDA-MB231) breast cancer cells circulated in unprocessed blood suggested the significant diagnostic ability of NELEMC.

Speaker Biography

Mohammad Abdolahad has received his PhD in Nanoelectronic Engineering from University of Tehran in 2013 and immediately joined to the university as Faculty Member in school of electrical and computer engineering. During recent four years, he published more than 25 papers and nine USA patents in the field of cancer detection by nanoelectronic devices. He introduced CNT-ECIS, SiNW-ECIS and NELMEC as new miniaturized systems for cancer diagnosis. He is now the Coordinator of nanobioelectronic devices lab in UT and Adjoint Professor of Theran University of Medical Sciences.

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Microwave imaging of breast cancer: Electric field analysis of flexible antennas with breast phantom

Maryam Liaqat, Thiago Campos Vasconcelos, Lucas Gallindo Costa, Emery C Lins, Patricia Silva Lessa and Frederico Dias Nunes
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X-rays Mammography is a gold-standard for breast cancer detection. Mammography has many shortcomings like painful screening, false results, need biopsy for results verification etc. Microwave Imaging (MWI) emerges as a painless alternative technique for breast screening. MWI works on the principle of reconstruction of image using inverse scattering radiation from spatial distribution of dielectric properties of breast tissues. In the present work, flexible rectangular split antenna, with pyralux polyimide substrate and 41x23 mm² in size, were simulated and characterized the presence of a breast phantom. The phantom has the dielectric properties of normal breast tissues and malignant tumors. The resonance frequency of antenna is 2.2 GHz, which is in compliance with the suitable frequency range for breast cancer imaging from the literature.

Results shows that the electric field distribution is maximum at around the tumor tissue which is about 350V/m, whereas in healthy tissue the maximum electric field is 139V/m and for skin tissues is 103V/m. The electric field is directly related to the specific absorption rate (SAR) of radiations which is also higher for tumor tissue with respect to normal.

Speaker Biography

Maryam Liaqat did her Master's in Physics in 2013 from University of Agriculture, Pakistan. Currently, she is perusing PhD in Electrical Engineering from Federal University of Pernambuco, Brazil. She is working on project of microwave antenna modifications for the detection of breast cancer. Designing flexible antennas for microwave imaging system, which will be user friendly, cost effective and more precise in results as compared to x-ray mammography.

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Medicinal plants in breast cancer therapy

Tagne Simo Richard¹, Armel Herve Nwabo Kamdje¹, Mbo Amvene Jeremie¹, Takam Kanga Paul² and Farah Mukhtar³

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³University of Verona, Italy

Various active compounds (or their semi-synthetic derivatives) derived from medicinal plants have been assessed for their efficacy and tolerability in the treatment of breast cancer. Some of these plant species, including *Taxus baccata* (paclitaxel, docetaxel), *Podophyllum peltatum* (etoposide), *Camptotheca acuminata* (camptothecin) and *Vinca rosea* (vinblastine, vinorelbine) have well recognized antitumor activity in breast cancer, and have been evaluated in clinical trials. For example, results from recent phase II/III trials have established docetaxel as the most active single agent in the treatment (first or second-line) of advanced metastatic breast cancer. The treatment of breast cancer, the most common malignancy among women worldwide, remains puzzling partly due to the resistance to therapeutics, which associates with the heterogeneity of case clinical presentations, and limits in the current understanding of the pathogenesis of solid cancers. Oxidative stress is closely related to various diseases, including cancer. The human

body is exposed to free radicals, which cause oxidative stress. Oxidative stress may lead to gene mutations leading to carcinogenesis. Antioxidants are protector of the body, preventing oxidative stress, by stabilizing free radicals. Plants are good and cheap sources for the prevention and treatment of oxidative stress and cancer. Major drawbacks to antioxidant from plants based therapy and use in breast cancer will be shown during presentation.

Speaker Biography

Armel Herve NWABO KAMDJE is currently a Senior Lecturer/Assistant Professor at the Department of Biomedical Sciences of the University of Ngaoundere-Cameroon and the editor in chief of the Journal of Diseases and Medicinal Plants. He has a MSc in Biochemistry (University of Yaounde I-Cameroun) and a Ph.D in Human Oncological Pathology and Stem Cell Biology and Clinical Application (University of Verona, Italy). He currently works on the following topics: Cancer, Leukemia, Stem Cells, HIV, Signaling pathways, Epigenetics, Breast Cancer, Macrophages, Neural Stem Cells, Autism, FASD and Medicinal Plants.

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