

Webinar on “Humanistic Leadership to Redefine Human Progress”



Join us for a webinar on
'Humanistic Leadership to Redefine Human Progress'
 Under the 'Toolbox for Success' Series

Guest Speaker

Shaista E. Khilji (PhD- Cantab)
 Professor of Human and Organizational Learning & International Affairs
 Founding Director (Creative & Strategic)-Master's & Certificates in Organizational Leadership & Learning (OLL)
 The George Washington University (GW)

The event will be hosted by **Professor Eva Rahman Kabir, Ph.D.**, Chair, Department of Pharmacy, Brac University

A desirable candidate for a job is expected to possess a wide range of skills and qualities to cope with a challenging work environment. Some of these skills are best learnt from experts in the field outside the traditional classroom.

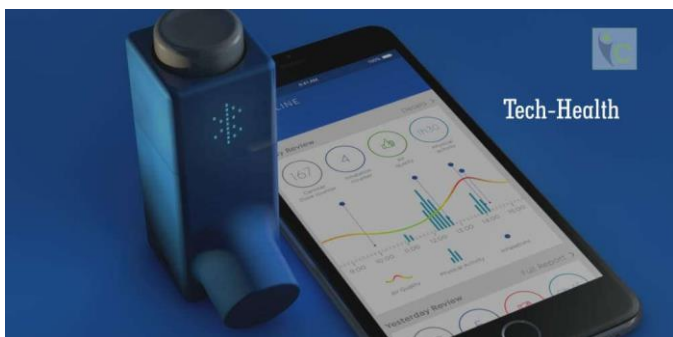
As part of our 'Toolbox for Success' series designed for the students of the Department of Pharmacy, Brac University, a webinar on 'Humanistic Leadership to Redefine Human Progress' was organized only for the students of the Brac University on August 25, 2020. Having the relevant

expertise and experience in this field, Shaista E. Khilji (PhD- Cantab), Professor, Human and Organizational Learning & International Affairs, of George Washington University, shared her views on how to reinforce a different approach that redefines human progress beyond profits, and to present a humanistic approach to leading and organizing that focuses on maximizing human wellbeing. Professor Khilji is also the Director of Master's program in Organizational Leadership and Learning, George Washington University and the Founder of Humanizing Initiative.

The webinar was moderated by Professor Dr. Eva Rahman Kabir, Chair, Department of Pharmacy, Brac University. Faculty members and students of the Department of Pharmacy attended the webinar. They enjoyed the interactive nature of the webinar, and the discussion on the emerging concept of humanistic leadership. The students asked insightful questions which Professor Khilji appreciated.

Written by: Department of Pharmacy

Smart Inhalers: A New Happiness for Asthma Sufferers



According to the International Agency for Research on Cancer (IARC) report (2019), 90% of breast cancer patients have the possibility to recover with proper and complete treatment, provided that the cancer is detected early. Bearing this in mind, a novel technique known as the Sentimag system has been developed which allows tumour localization and breast cancer staging to be done

in one platform. It encompasses the major disadvantages of the conventional technique of mastectomy in the sense that it is easy to use, wireless, and non-radioactive, along with having better precision, reusability, ultra-sensitivity and greater flexibility.

The Sentimag System utilizes magnetic sensing to detect the magnetic markers Magtrace and Magseed. The Magseed is a tiny radiation-free seed that is implanted in the breast tissue prior to surgery, with no general limit on the implantation time. When it is time for surgery, the patient simply goes into the operation room where the Magseed in the breast tissue is traced using an intuitive and ergonomic probe capable of 360o sensing. The Magseed is unique in its qualities of being tiny with a robust construction, easy to place, can be detected under ultrasound, X-ray and other imaging techniques, and most importantly, it can be placed for a long term which improves patient compliance.

The other equally vital component of the system is the Magtrace liquid marker which is a red-brown (in Latin, Sienna means 'reddish brown') suspension made of iron-oxide nanoparticles with a biocompatible coating. After being injected subcutaneously, these particles get absorbed into the lymphatic vessels through which they migrate along the normal lymph flow. This allows the sentinel lymph nodes near the cancer site to be precisely detected via audio or visual alert system, thus helping to determine the stage of the breast cancer. The liquid marker is an optimized solution in the sense that its particle size (ideal diameter: 40-80 nm) is small enough for rapid migration

(sentinel nodes can be localized within 20 minutes after injection) and large enough to be filtered and retained into the lymphatic vessels. Moreover, it is safe, has a long shelf-life, can be injected up to seven days before surgery and the dark colour allows easy visual confirmation to be done without having to use blue dyes as is done in conventional technique for sentinel node biopsy.

To conclude, this innovative technology is a revolutionary method for detecting and gauging the degree of breast cancer and is the most trusted by the best cancer surgeons of today.

Written by: Ayonti Humayra (19146059)

Telemedicine: Broaden the Opportunity for Healthcare



If you have ever been exhausted waiting outside the doctor's chamber for an appointment, Telemedicine will let you breathe a sigh of relief. Telemedicine allows healthcare professionals to evaluate, diagnose, and treat patients in remote locations using telecommunications technology. As the world moves towards advancements in technology and makes lives easier for all. Despite the recent developments a lot of people with a physical disability or due to living in rural areas are deprived of such healthcare services. The use of AI in medicine and healthcare is gaining momentum. This serves a lot of benefits by not only saving times of the patients and doctors waiting in jams or for appointments but also reduces cost. As a result, the global telemedicine market has been growing rapidly for the past few years and promises future growth according to multiple industries. Highly personalized apps are developed that enable the patients to virtually get access to doctors or other healthcare professionals.

The most recent event, the global pandemic has changed the paradigm shift of how the world was previously viewed. Healthcare is now the utmost necessity to live for every human. The Covid-19 outbreak has also changed the attitude towards digitalization in the healthcare system. People need to decrease contact with each other to flatten the curve as well as need healthcare services. This is where the telemedicine is most preferred digital service. Previously, this advancement in telemedicine was useful in particular for patients managing chronic conditions or for people living in rural areas as it provides them with consistent, convenient, and cost-effective care. But now the role of telemedicine is pivotal.

At times like this when the video chats are dominating the internet, the patients could easily place a video call with the doctor and both verbally and visually show the symptoms to get ideal treatment advice. It is also extremely useful for the youth as they succumb to mental health-related problems, a quick video call session can be a source of ease. The vulnerable group of people can consult for other disease-related issues through telemedicine.

Written by: Nasrin Ahmed Tahrir (17146016)

Food for the Mood or Stomach?



Are you selfish? Your brain takes care of everything, from your breathing to your senses, your thoughts to your movements. Have you ever thought about all the hard work that your brain does except in Physiology class? I know, you are not selfish. Your brain works 24/7, even if you are in deep sleep. This means that your brain needs a constant supply of fuel. This fuel is the food you consume that directly affects the function and structure of your brain and ultimately your mood.

For instance, think about your expensive dream car. Your car will give the best outcome when it gets solely premium fuel. On the contrary, just like an expensive car, your brain may get damaged by ingesting food other than premium fuel. You are the one who will choose either

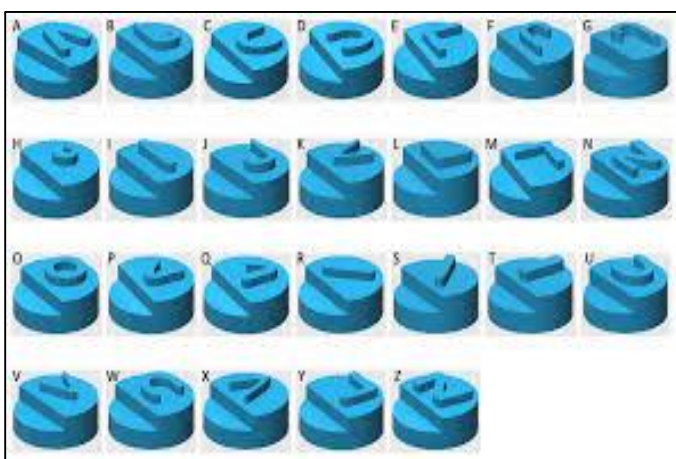
premium fuel for your brain or other fuel for a pleasant taste on your mouth. Eating quality foods that carry many minerals, antioxidants, and vitamins harbor your brain and cushion it from oxidative stress (It is the waste (free radicals) build when your body uses oxygen, finally, can injure vital cells).

Just like the expensive car if you consume 'low premium' fuel (Like, what you get from the processed or refined foods) you may be end up with a less functioning brain like the car engine. If your diets remains high in refined sugars this might be enough to worsen your body's regulation of insulin. As a bonus, this diet also can promote oxidative stress and inflammation. Many studies found an interrelation between high amounts of refined sugar diets and a weakened brain function and also with worse symptoms of mood disorders, namely depression. The most interesting point is that for many years, the connection between mood and food was not fully acknowledged by the medical field.

Fortunately, nowadays, there is another amazing field called nutritional psychiatry which is helping to discover the many correlations and consequences between not only what you eat, how you feel and how you ultimately behave, but also the kinds of bacteria that live in your gut.

Written by: Bagdad Ahmed (17346015)

Blind Technology 3D Printed Tablets



3D Printing is one of the most fascinating fourth industrial revolution technology playing a very vital role in producing personalized dosage forms specifically for visually impaired and blind patients. '3D PRINTED

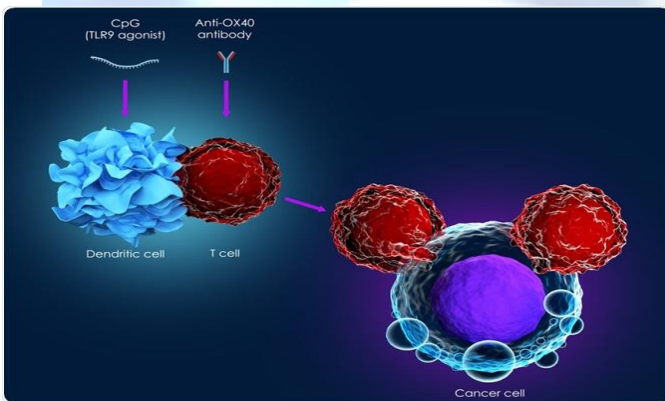
TABLETS'. 2010 Global research data study revealed that 285million patients have visual impairment were 39 million are blind and around 82% are elderly at the age of 50years and above who are always dependant on a different medication. Therefore, they face a great challenge to keep up with medication management especially patients with chronic diseases thus posing a challenge in patient compliance leading to poor medication adherence thus reduced therapeutic efficacy and poor treatment to the patient. Researcher's study has shown that the major cause of medication non-adherence is impaired vision, especially whereby around 24% have a challenge in distinguishing the medication and 97% of patients with impaired vision have difficulties in reading labels on different medications even with the presence of optical aids. FabRx in 2020 launched the first 3D printer to design personalized medicines for small batch production .of highly flexible drug products for patients. Scientists from Spain and UK published printlets with

moon patterns and Braille which is a new idea that has attracted the attention of many manufacturers, Braille is the tactile writing system used by the blind it was invented by Louis Braille in 1825 consists of up to six raised dots in specific arrangements that represent different letters of the alphabet and moon system where letter produced using raised shapes similar to the standard alphabet. The 3D printer uses a Selective Laser Sintering 3D printing technology to design and manufacture printless with Braille or Moon patterns on the surfaces of the tablets that can easily be identified and read by the visually impaired patients and the blind. These are designed as oral dosage forms using computer-aided design software for printing a 3D shape on the tablet.

Therefore using Braille on the packaging of medicinal products has helped visually impaired patients to make a clear identification of medicines, scientists are employing this new technology as it properly spells out the idea of patient-specific treatment for visually impaired patients and eradicating dosage errors. 3D printed tablets have caused great development in the field of medicine. In summary, 3D printed tablet innovation has tremendously revolutionized the treatment in visually impaired and blind patients by greatly reducing medical errors and promoting medication adherence, easing delivery, thus causing a great change in the way medicines are manufactured and designed in the pharmaceuticals.

Written by: Namanda Fred (ID: 17146061)

Immunotherapy in Melanoma



Immunotherapy, a type of biological therapy, works to stimulate a person's immune system to distinguish and terminate cancer cells more effectually. This biological therapy is the treatment of disease by activating or suppressing the immune system. William B. Coley, MD, the Father of Immunotherapy, first attempted to harness the immune system for treating cancer in the late 19th century. Like certain types of cancers immunotherapy surely gives hope in skin cancer too (melanoma).

Melanoma or malignant melanoma generally develops from the pigment-producing cells known as melanocytes and generally occurs in the skin, rarely in the mouth, intestines, or eye (uveal melanoma). Mainly melanoma treatment depends on the diagnosis at the time of disease detection. Several types of immunotherapy are being used in today's world to treat melanoma over many other treatments. Although melanoma comprises less than 5% of all skin cancers, it accounts for the vast majority of deaths.

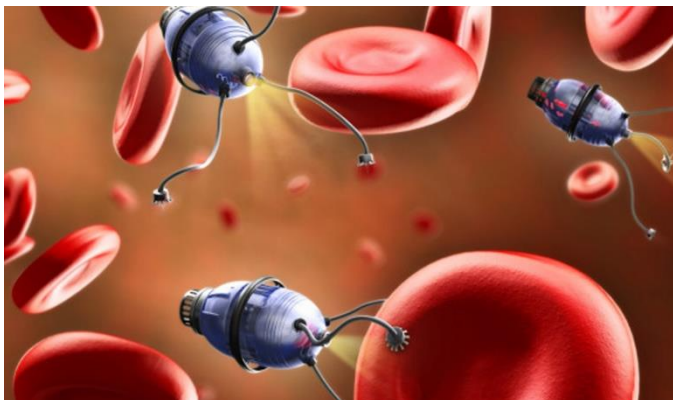
The success rate of Immunotherapy in Melanoma Skin Cancer:

- The importance of immunotherapy has been acknowledged by the Nobel prize for physiology or medicine 2018 awarded for the discovery of cytotoxic T-lymphocyte-associated protein (CTLA-4) to James P. Allison and programmed cell death protein 1 / programmed cell death protein ligand 1 (PD-1 / PD-L1) to Tasuku Honjo.
- Immunotherapy has reformed the way of melanoma treatment. Specifically, checkpoint inhibitors are responsible for shifting up the survival rate for patients. In USA, there were an estimated 96,000 new cases in 2019, in addition to roughly 7,000 deaths. The five-year survival rate for localized (stage 1 and 2) melanoma is 98%.

In the last few decades immunotherapy has become an integral part of some cancer treatments even over chemotherapy. Because immunotherapy can provide long-term protection than chemotherapy against cancer, due to the immune system's recognizable and recalling ability what cancer cells look like. New immunotherapy treatments are being tested and permitted, and new ways of working with the immune system are being revealed at a very fast pace.

Written by: Nusrat Jahan (19146057)

Evolution of Nanotechnology in Pharmaceutical Field



We live in an era where the concept of ‘The smallest the better’ is followed. To cope with this notion, there is currently an increased focus on nanotechnology and medicine due to their nanometer size and higher surface area-volume ratio. This makes it more feasible to enter into cellular or sub-cellular level for superior types of cell therapy and effective drug delivery to the target cell, disease detection. Nanoparticles (NP) can also prevent drug degradation because of its shield properties. Nanomedicine was introduced to the pharmaceutical field to treat life threatening health issues such as cancer, asthma, stroke, diabetes as well as infectious, neurological, and cardiovascular diseases. The rapid progression of nanoscience in the last several years has given sufficient amount of information about the biological performance and physicochemical properties which are considered as an evidence of its efficiency for medicinal applications. To treat cancer, liposomes, lipid nanocapsules, polymer-drug conjugates, polymeric micelles, albumin nanoparticles are used in the formulation of chemotherapy.

Some common liposomal drugs are now marketed such as AmBisome (amphotericinB), Doxil (doxorubicin hydrochloride) and Visudyne (verteporfin); few albumin NP s like Abraxane (paclitaxel) and Genexol-PM are also available in the market as a form of polymeric micelles. These NPs help to improve pharmacokinetic and pharmacodynamic characteristics of the applied drugs, to increase the chemotherapy cytotoxicity in resistant cells and to avoid injurious adjuvant. In addition, they can deliver maximum concentration of drugs to the plasma with higher bioavailability. However nanomedicine is also prescribed to cure cardiovascular diseases by improving bioavailability, stability, permeation rate and safety of existing developed drugs. For instance, lipid based NPs enhance the bioavailability of carvediol (clinically available) and liprostin (phase III clinical trial) which are prescribed to treat peripheral artery disease. NPs are also used to gain better solubility. Candesartan (an approved angiotensin receptor blocker) is formulated as a complex with dendrimeric formulation. Additionally, magnetic NP based imaging of beta cell mass offer a new approach to early detection of diabetes as well as multiwalled-carbon nanotubes , graphene nanoparticles manage different sensitivity which enable efficient glucose and insulin monitoring. Glucose responsive nanogels or nanovesicles also exist as novel avenues to maintain insulin release. In conclusion, it can be suggested that nanomedicine has potential to have an exceptional impact on living cells due to its beneficial effects which contributes to the invention of various novel approaches in the pharmaceutical field to cure several life threatening diseases.

Written by: Swastika Karmaker (18346089)

Sienna Endo-magnetics



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Written by: Humayra Islam (17346046)

