B.S. Abdur Rahman ™
Crescent
Institute of Science & Technology
Deemed to be University u/s 3 of the UGC Act, 1956

School of Life Sciences
LEADING LIFE THROUGH SCIENCE

ASSOCIATION OF CANCER EDUCATION AND RESEARCH
ACER

ACER

ONKOS E-ZINE

2020

VOLUME 1

Editor-In-Chief:
Dr. S. Hemalatha,
Professor & Dean (SLS)

Co-Editors:
Dr. P. Ashok Kumar
Dr. Neesar Ahmed
Dr. Soumen Bera

MESSAGE

Dr. S. Hemalatha

President of ACER

Cancer is pretty common in both developing and developed countries. Cancer awareness is the key to early detection and lack of awareness may lead to delay in diagnosis. The awareness level at global level shows the need for health education and sensitization regarding cancer and alternative treatment methods.

Association of Cancer Education and Research (ACER) is started with a mission to create awareness among the students as well as common people and attitude towards screening. ACER also will be a platform for the physicians, researchers, aspiring students who are willing to work in the area of cancer that will help the society.

Common cancers including oral, cervical, breast and lung cancers are preventable to some extent with appropriate preventive measures. Awareness about the prevention of cancer will help the community. The incidence of cancer is increasing rapidly; hence it is important to spread cancer education and knowledge amongst the population.

We hope ACER will educate the importance of early detection which is important in the management and treatment of cancer and also prevention by making necessary changes in lifestyle and to remove the stigma and fear associated.

On behalf of my team, I would like to thank the students who are associated with ACER and for joining hands by contributing for this newsletter.

With my best and warm regards,
Prof. Dr. S. Hemalatha
President (ACER)

MEMBERS

President:

Dr. S. Hemalatha

Co-ordinators

Dr. P. Ashok Kumar

Dr. Neesar Ahmed

Dr. Soumen Bera

VISION

Cancer Control among community through education and research.

MISSION

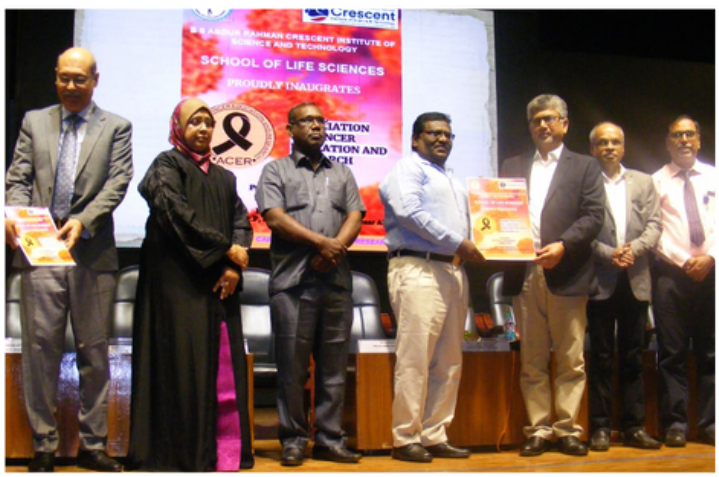
- **To disseminate cancer awareness through organised seminar, workshops and conferences.**
- **To encourage cancer based research among the students and research scholars.**

ASSOCIATION OF CANCER EDUCATION AND RESEARCH (ACER)

INAUGURATION REPORT

The faculty of the School of Life Sciences inaugurated a new non-profit society namely “Association of Cancer Education and Research (ACER)-India” on 18th February 2019. ACER was inaugurated jointly by the pro-Vice chancellor, Prof. Peer Mohamed, and Dr. A. Azad (Registrar, BSACIST).

Prof. Dr. S. Hemalatha (Dean, SLS) will be serving as president and Dr. Neesar Ahmed (Assistant Professor, SLS), Dr. Soumen Bera (Assistant Professor, SLS) and Dr. P. Ashok Kumar (Associate Professor, SLS) will be serving as co-ordinators of ACER.



ROLE OF MITOPHAGY IN CANCER

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School of Life Sciences,
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As we all can find basic cancer causes and its effects on all social media and the internet. Here, in this article, I would like to provide basic knowledge to all non-biologists to know what exactly cancer is all about and its biological mechanism.

So, when you read any facts (do's and don'ts) about cancer next time, you can relate it and also you can understand its importance. The cell is the smallest fundamental unit of our body. Like we all have heart, lungs, kidney, etc.., the cells have cell organelles like Nucleus, Mitochondria, Ribosome, Endoplasmic reticulum, etc. which plays a major role in body's cellular mechanism and energy generation.

Understanding about all cell organelles and their relation to cancer is difficult. So, in this article, I would like to explain mitochondria and especially on mitophagy and its role in cancer.

Cancer is abnormal and uncontrolled growth of cells, if left untreated it spreads all over the body and causes severe effects and mostly leads to death. Uncontrolled growth can be defined as the cell's abnormal division activity (i.e.) the cells start dividing rapidly by utilizing all resources of our body and it also changes most of our body's mechanism to its favour called metabolic reprogramming and would make our own body cells to starve for resources.

There are three basic needs for cancer cells to divide, and they are ATP generation to maintain energy status, as well as it needs a large number of macromolecules to achieve rapid division, and hence the huge supply of macromolecules is essential for cancer cells and maintenance of appropriate cellular redox status. To cope up with all these needs, metabolic reprogramming is done by cancer cells as mentioned above.

Mitochondria are one of the cell's organelles, which are also called as the powerhouse of the cell because it produces ATP as an energy molecule for the body. Hence cancer is very dependent on the body's energy to divide rapidly, it's important to know about their relationship with cancer. Autophagy is the body's way of cleaning out damaged cells, to regenerate newer, healthier cells and Mitophagy is selective degradation of damaged or malfunctioning mitochondria by the cell's own mechanisms. Researchers are curious to study mitophagy because mitochondria are key organelles in the initiation and execution of various forms of cell death.

The main aim of cancer researchers is to kill rapidly dividing cancer cells to reduce its population. Malfunctioning mitochondria represent a danger for cells since there is an inadequate supply of ATP or extensive production of reactive oxygen can cause abnormalities like cancer. The survival and death of the normal cells are regulated by some activators and inhibitors, which are always balanced in the normal cell but not in cancer cells.

Mitochondria play an important role in this. Moderate stress can be applied to mitochondria for the initiation of mitophagy but in most cancer cells mitochondria are already damaged, so using that damaged piece as the target for drugs to treat cancer is a very crucial way to fight against this dreadful disease. Hence nowadays researchers started focusing on mitophagy regulation to combat cancer. Targeting and stimulating the mitochondrial pathway and degradation (apoptosis) are regarded as a promising strategy in anti-cancer therapy. Presently the attempts are being made to develop mitophagy inducers or inhibitors and drugs that selectively target mitochondria or mitophagy to eliminate those cancer cells.

The mitochondria and mitophagy are not only important in cancer but also significant in diseases caused by mutations, cell abnormalities, neurodegenerative diseases, and autoimmune diseases. So studying mitochondria, mitophagy and mitochondrial DNA mutation is very important to combat all these diseases, therefore these days mitophagy studies are booming between scientific communities. Hence I wanted to give you an insight on the basics of trending researches on mitophagy. So the next time when you read any facts about cancer this might help you to understand the mechanism behind it.

> ***NOTHING IS TO BE FEARED, EVEN CANCER,***
>
> ***IT IS ONLY TO BE UNDERSTOOD***

Author Bio:

I am Pooja Chinnikrishnan pursuing B.Tech Biotechnology in B. S. Abdur Rahman Crescent Institute of Science and Technology at Chennai. My thirst for acquiring knowledge in Biology and its incredible discoveries was immense which always lead me to explore more. Being a budding biotechnologist, I would always look forward to learning advancements in the field. As a part of it, I have shared some of my views regarding the role of mitophagy in cancer that would give you a new insight into cancer treatment.

Articles published by Faculty Members of SLS in the field of Cancer -2019

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3. Adil A, Bommanabonia A, Anandraj V, Kumar S, Waseem M, Jamal S, Ahmed N.Differential expression of Helios, Neuropilin-1 and FoxP3 in head and neck squamous cell carcinoma (HNSCC) patients. 3 Biotech, 2019, 9.

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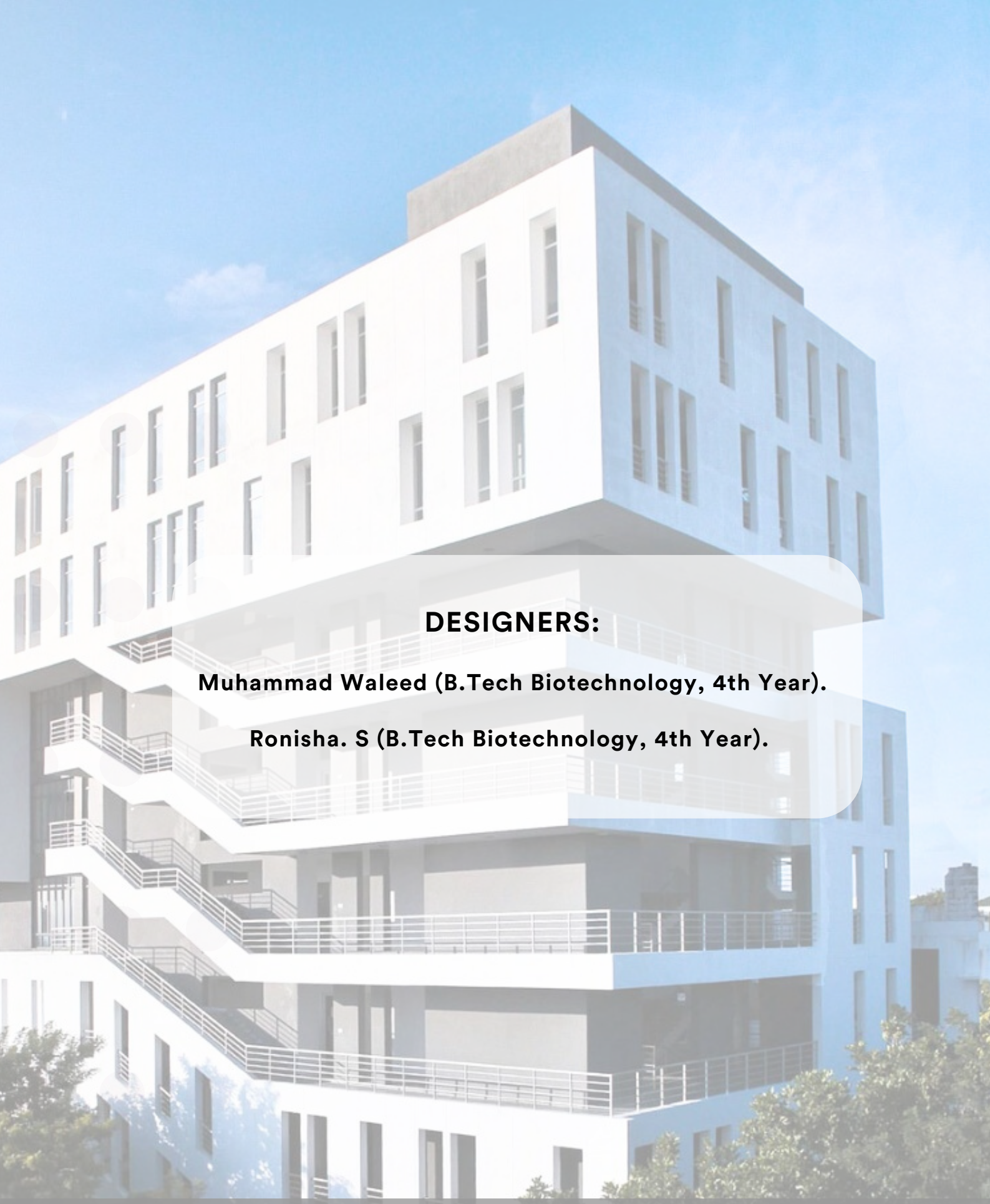
5. Kandasamy Saravanakumar, Xiaowen Hu, Davoodbasha MubarakAli, Myeong-Hyeon Wang. Emerging Strategies in Stimuli-Responsive Nanocarriers as the Drug Delivery System for Enhanced Cancer Therapy. Current Pharmaceutical Design, 2019, 25(24), 2609 - 2625.



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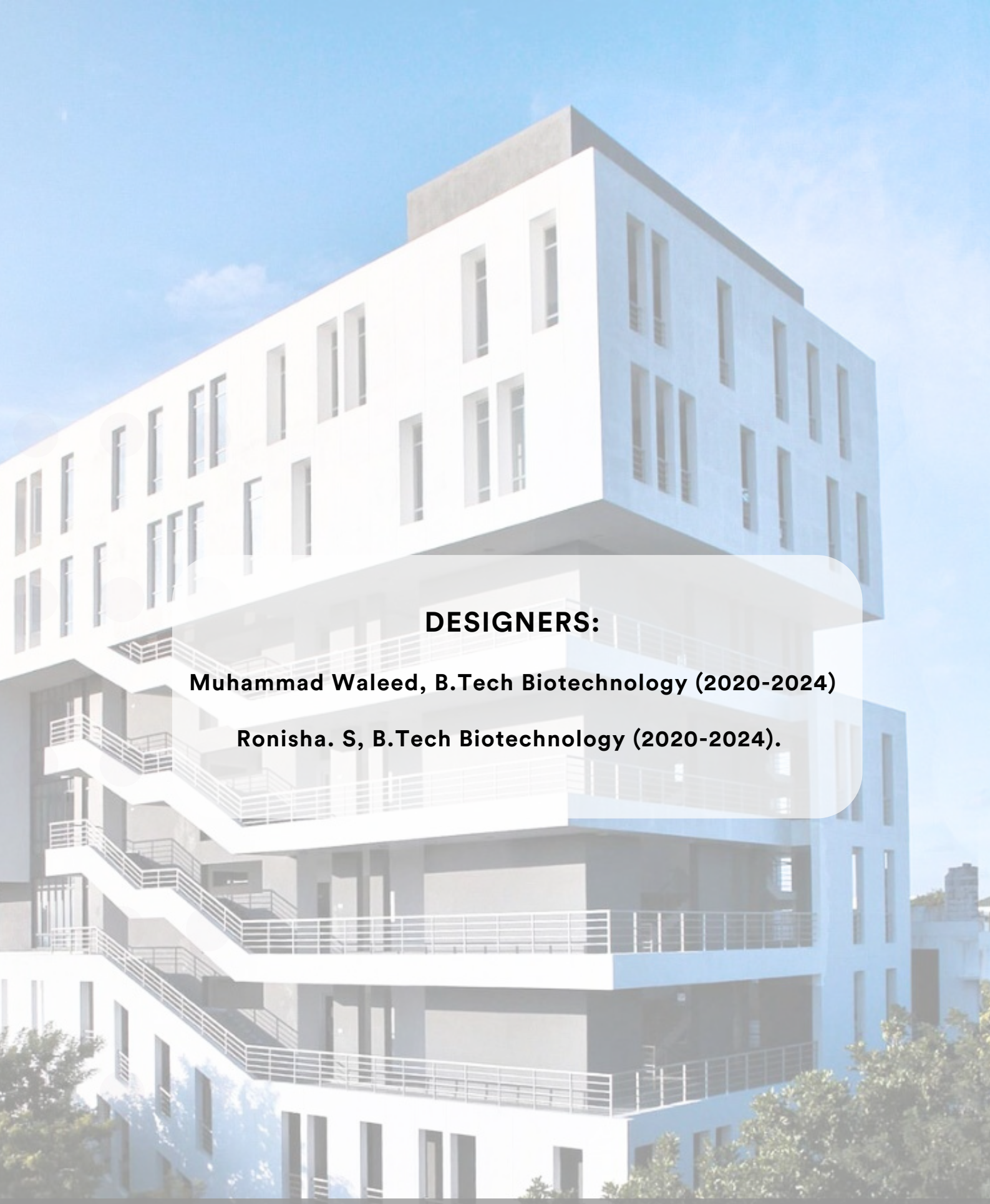
Association of Cancer Education and Research — ACER



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