



Learning From Medical and Cancer Research

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PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS



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ECONOMICS

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Moderators

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Guest Speaker

Dr. Azra Raza

LIVE WEBINAR

Dr. Azra Raza is the Chan Soon-Shiong Professor of Medicine and Director of the MDS Center at Columbia University in New York. Previously, she was the Chief of Hematology-Oncology and the Gladys Smith Martin Professor of Oncology at the University of Massachusetts. She is considered an international authority on pre-leukemia (MDS) and acute leukemia.

Dr. Raza has published her original clinical and basic research comprising over 300 peer-reviewed manuscripts in high profile journals like Nature, New England Journal of Medicine, Cell, Molecular Cell, Cancer Research, Blood, Leukemia. She has published >1000 abstracts, dozens of book chapters and edited a book devoted to MDS.

She is a sought after speaker in scientific circles and the recipient of numerous awards including The Hope Award in Cancer Research 2012 (shared with the Nobel Laureate Dr. Elizabeth Blackburn). She was named as one of the 100 Women Who Matter by Newsweek Pakistan. Dr. Raza is a member of the Founder Group designing Breakthrough Developments in Science and Technology with President Bill Clinton and met with Vice President Joe Biden to discuss the Cancer Moonshot initiative at his residence at the Naval Observatory in 2015.

She is the author of **The First Cell: And the human costs of pursuing cancer's last** published by Basic Books, October 2019.

In addition to her scientific accomplishments, Dr. Raza is a dedicated reader of Urdu literature, the co-author of **GHALIB: Epistemologies of Elegance**.



Dr. Azra Raza is the Chan Soon-Shiong Professor of Medicine and Director of the Myelodysplastic Syndrome Center at Columbia University in New York. She is the author of the book "The First Cell", in which she criticizes the "protocol of surgery, chemotherapy, and radiation—the slash-poison-burn approach to treating cancer that has remained unchanged for decades." She points out that despite enormous spending on research and advancement in technology, the basic treatment of cancer is limited and costly. In this book, she has narrated her personal experience of fighting cancer and deep interaction with patients in an empathetic manner.

"I couldn't have written this book thirty years ago because this book is the epic journey over a period of thirty years, this book is not only about what is accomplished but also about the experiences and learning about cancer, cancer research, and human anguish".

Q: Why do you think cancer research is not going anywhere albeit millions of funds spent on it?

Cancer is a fatal disease and for nearly half a century, cancer treatment has remained roughly the same. Moreover, it is heart-rending to see that only two-thirds of cancer can be diagnosed and cured at earlier stages and that the remaining one-third ends up with a terrible result.

Undoubtedly, some of the very expensive treatments like Chimeric antigen receptor (CAR) T-cell therapy cell treatment are developed but, unfortunately, are available to only 7000 people who are affluent, rich, and influential, but the remaining billions of cancer patients have no access to these rare treatments. The only good thing that happens recently is early diagnosis at stage one and gives hope to patients that they can be treated by chemotherapy.

We are concerned about why we are not being able to detect at a very early stage which means when perturbations caused by the first cancer cell appear. By the time cancer is detected through mammography and scans, patients have already developed the diseases therefore, we need to find a method that can help to detect when the first cell in the body changes. Over the thirty years, her quest has changed initially from searching for a cure for leukemia to preleukemia treatment and lately shifted from pre-leukemia cure to look for the underlying conditions that make an individual susceptible to this particular disease.

Q: Families have gone bankrupt by spending millions of dollars on treatments. Why pharmaceutical companies do not shift their paradigm to find a drug that can cure at earlier stages.

Cancer is the disease of genes therefore, we need to find that particular gene that went awry and started to malfunction because of mutation or any other reason. Once we can find an abnormal gene, we can further narrow down the target to find which abnormal protein it is making that can be treated with a magic bullet. It needs further research, ideas, experiments, and determined researchers.

But the issue currently we are facing is young people are scared to exercise original ideas because they could make mistakes and mistakes don't promote a career. We need to bring new people with new ideas and thinking to find solutions and cures for cancer, but new ideas meet with resistance everywhere until a groundbreaking idea or invention is made.

Q: What are the incentives for young doctors and people who are in the process of making an established career path? and What are the hurdles in choosing to make a difference with an existing large system with inertia and inner momentum?

This book has discussed almost every issue: policy, big pharma, research, and clinical through the prism of human anguish. The responsibility of physicians is to reduce human suffering rather than hurting them. On top of that, our young population is trying to bring down every one or has begun to fight with the system. However, we need to focus on changing the audience, change the rhetoric by showing excellence and sincerity. Besides, only hard work and sincerity to work is the key to success. We need to work within the establishment but need to create our

audience by working hard and showing success. Finally, yet importantly we not only need advanced research and technology, but we also need to improve education.

Q: How important is to think differently at a very young age? Should you start making hypotheses and these at a very young age or should you do it at later stages?

At a young age, people have arrogance which is the spirit of young people. What is very important is reading and young people should read every day, not about their subject but also other fields, be it poetry, fiction or history. I am very optimistic about the youngsters of Pakistan because recently 4 out of 30 under 30 by Forbes are from Pakistan. I feel the younger generation is smarter.

Q: How do you describe reductionism, heterogeneity, and complexity of cancer and how it is given an emergent phenomenon?

Reductionism is cutting down something to the very basic essential form. Taj Mahal is magnificent and beautiful but if we want to find the secret of its beauty by making it apart into the brick to see the building block of magnificence, we will find rubble and trash. Therefore, the most important part is the whole which is the sum of its parts giving it beauty. And that emergent property which is the sum of its part is complexity.

Q: What is the role of funding? We have a very arcane system of research in Pakistan that includes peer reviews and funding processes. What is your critique and how should it be changed?

There are three types of grants, a formal grant that is offered by the government institution. The second is philanthropic funds which are offered by foundations or organizations to support ideas and the third is offered by inviting venture capitalists where researchers share their ideas with businesses to get financial support to materialize their ideas if the idea succeeds. In every kind of fund, the merit of ideas matters. Grants do not solely focus on the technical side of an aspect, but emotional or social components also matter how an idea is going to impact a community or society.

Q: The current COVID crisis has filtered out many problems in the existing health system and the new administration in the US has huge commitments to improve the system and move forward. Do you think the funding and focus of the new administration will shift towards this infectious disease and how does it impact your work?

COVID acted like an X-ray machine which has shown the real face of the health system and its weaknesses. I think cancer should be treated as an urgent matter considering it a social issue instead of considering it as an individual's issue. The future of all the diseases is going to be proactive, not reactive which refers to early detection of footsteps of the disease before it attacks the human body as is the case in tetanus and other infectious diseases. Diseases like those that diabetes and Alzheimer's are too advanced by the time they are detected therefore we need to find proactive cures to address at early stages.

Moreover, Artificial Intelligence can play a substantial role in detecting diseases in advance by trapping the first cell that is appearing way before cancer is detected. Furthermore, we have experimented and will soon show how AI has detected the first cell of cancer appearing four years earlier so the future will be more towards prevention than cure and monitoring wellness to detect illness way before it has become the disease and that is how the future is likely to be.

Q: Do you think that the kind of future you are explaining will be accepted by doctors because they have a vested interest in making patients come to them? Do you think this human element will be there to seek prevention?

Yes, technology has made it possible to reach everyone even sitting in remote parts of developing countries to connect and provide data. Science and technology have this beauty that it has the capacity and potential to show and convince people. If we are successful in showing that early detection of a cancer cell can help to trigger and monitor, then people will be convinced. This can be done by getting samples every six months and monitoring the metabolites. Different universities are collaborating to collect data on cancer patients and show the possibility of getting cancer a second time. This will automatically convince people to voluntarily offer to be monitored. The tests so far exist that are inefficient and detect the prevalence of cancer, not early detection. However, these campaigns have helped reduce the mortality rate from cancer.

Q: What is your comment on looking at life in a holistic way instead of being tunnel vision?

Open the lens of empathy and you will feel the exchange of place with the person who is dealing with the problem and then you can look at it holistically.



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