

# How and Why Cancer should be Better Handled in the 1Billion + India

Shaheen Najmudheen Shah and Safa Shaheen

**Abstract**—The Cancer phenomenon has plagued humanity for decades. While certain breakthroughs have been had in the recent past, the incidents have been on the rise. A better understanding of the human genome facilitated by the Human Genome Project (HGP) has helped in the cause, no doubt. The regional pattern followed by certain cancers is an indication to focus in-house regional research. These geographical regions have their own traditional forms of cure - Ayurveda in India being a good example. These “alternative” forms of treatment have had their fair share of success; however, there stands a need to fully standardize research and their methods. Collaboration with modern medicine – both in the respective regions and at the global cancer research levels – is set to open newer faster ways to handle cancer - to detect, to treat and as means of palliative care. More integration with Information technology (IT) will accelerate the overall process. Places like India can use their existing IT Infrastructure in this field. Funding can come from the fast growing Pharma Industry. An individual should be able to choose his/her preferred/suited method of treatment after expert consultation. Institutions like MIT can lead the way – like how it had led the HGP; they rightly say at the MIT- the only cure for cancer is continual research. The 2012 International Conference on Chemical Engineering and Applications can share views and set a platform for such diverse collaboration.

**Index Terms**—Cancer, information technology, alternative medicine, collaboration, human genome project

## I. INTRODUCTION

The phenomenon of cancer is global; interestingly it does follow a geographic pattern. The “war” against cancer has been long and complex. Allopathic medicine has had successes; more needs to be done still.

The geographic pattern of certain cancers calls for specific research regionally; and given this regional aspect, regional /alternative cures which, according to the common man, has had “successes”, need to be explored scientifically and methodized completely. This paper deals with the above variable in an attempt to find a faster more effective cure for cancers.

## II. FACTS, FIGURES AND REASONING:

The Human Genome contains the Blueprint of Individual Life. Each cell acts on this genetic code translated. Many ailments simply start to spread in the human body with little or no reason – at least to the science that we know of today. The external causative chemical agents may be held culprits –or they may in fact be catalysts (?). The HGP (Human

Genome Project) [1]has done a ton of favor. With genome sequencing being possible, the vulnerabilities of the individual could be predicted – at least as a start.

With the available computing power increasing, may it be in the realms of Super Computing and flexibility in terms of Cloud Computing and Virtualization, the probable ailments of an individual human can be predicted, thereby increasing the chances of early detection (provided the individual acts as per the probable/predicted output). The complexity of the Human body isn’t still unraveled; the way how certain forms of medicine/treatment, majorly in the realm of Alternative Medicine, act on the Human Body, is still to be fully explained. And the need to combine the forms of medicine to suit *the individual’s genetic* or physiological profile is an important area that needs to be co-operated upon by the practitioners of the various forms. Example that can be given is better responses for certain individuals to Ayurvedic treatment compared to standard Allopathic or alternative Homeopathic treatment

Modern medicine or “Allopathic medicine” or Allopathy has had its fair share of successes. The declaration of “War against Cancer” by the former US President Richard Nixon had accelerated the pace of Cancer Research –but it’s still just OK; tests and approvals from the FDA taking more time. The focus on the US on the breaking new ground in this field is surely enormous. It was the MIT’s Cancer Research Center that had done one-third of the work of the HGP.

Cancer types does follow a certain Geographical patterns to reasons quite not clearly understood [2].

Observer the above details in Figures 1 and 2.

While lifestyle – consuming more red meat, to cite just an example, may be marked differences- a local based research would be able to possibly throw more light. More research is still being conducted.

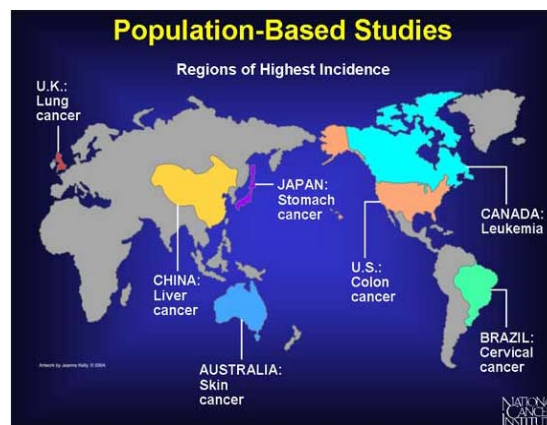


Fig. 1. Regional nature seen in cancer



Fig. 2. HGP collaborator countries

### III. INDIA, REGIONAL RESEARCH AND COLLABORATION

The map (fig 2) clearly shows the active absence of a Biotech major, India in the HGP. So is China. Increased focus on local incidence of the types of cancer inherent in countries like China and India – home to a large academia and with its own form of Alternate Medicines – Acupuncture and Ayurveda respectively. The survival rates of the common cancer-stricken citizen could be increased. Research done “locally” should, of course, be shared internationally.

The concept of sharing can get tricky with scientists and scholars, at times, unwilling to openly share the research data; the Wellcome Trust funded HGP may be a nice example of positive collaborative research. The concept of Open Source Science[3], following the GNU Linux Open Source example of the IT World, would be a right step forward to joint international or virtual internet collaboration; the unknown variables of cancer are still too many, 100years hence the discovery of chromosome.

With India both an IT and Biotech Hub, collaboration between the two should have had taken place years back. The need to speak out for destination India is a place for medical tourism. What it still lacks is a convergence of engineering and science in the “war” against cancer like that being carried out successfully at the Koch Cancer Institute at MIT where the engineers collaborate actively to provide solutions to an essentially scientific problem. In India, there is a 3<sup>rd</sup> perspective that can enter the picture – CAM - Complementary and alternative medicine. What we are talking about is not the alleviation or cure (some may argue against CAM curing cancer) – what is being underlined is that Alternative medicine, notably Ayurveda of India, have been able to “cure” cancer during early stage detections.

The other prevalent forms like Naturopathy (practiced widely in the US and Canada), Homeopathy and Unani, have help alleviate (unsure of the cure part) cancer patients. To completely disregard CAM would be a mistake.

Concrete research into CAM, esp. Ayurveda, in defeating Cancer mechanism -in proliferation or metastasis – hasn’t progressed too much. In patients, diagnosed with Stage 3 cancer there was marked improvement, mom being an example amongst others. To cite an “Ayurvedic” instance, the nuclear factor kB, which has been known to play a major role in tumorigenesis, is targeted by the components

of several herbal remedies described in Ayurveda. Similarly; several herbs have been described in Ayurveda that can suppress either expression of the cancer-promoting enzymes COX-2 or its activity [4]. So, have been the cases where alleviation for thousands across the region came through CAMs, though mostly at an earlier stage. As a matter of fact, the 4<sup>th</sup> Stage of cancer still doesn’t have a definitive cure in Allopathy.

Moreover, we all know, early detection is the best away to really cure cancer. The final Metastasis stage of cancer is an area left wide open to research – too many things unknown, too many variables. As all cancer scientists would agree – cancers treatment does vary between individual. And as commonly know in this part of the world, people react better to certain form of medicine – with most people here preferring the Natural or green cure. And towards the last, palliative care may be best using certain “alternate” ways. Most in India will want to avoid the “defects” or hardships of chemotherapy and/or surgery to be deprived of a basic standard of life (my mom being a example), and hence would be more receptive to CAMs. While Standardizing the CAMs is a need to prevent fake drugs, esp. in a country like, India; the contribution of aspects of Alternate forms of Medicine (and the bio-molecule involved) in the Scientific integrated local may help “Allopathic” medicine globally

With currently Nanoparticles are being used for Precision Cancer Drugs across the Atlantic, what needs to be done is to find the scientific Molecular understanding of how the age-old CAM drugs helps in “fighting” tumors. Once / if this is done; real Integrated research – Collaboration of Biology, Chemistry Physics, Mathematic, IT andEngineering can be done a local level; keep in mind local isn’t a small number – it is a potential 333+ million cancer-prone people (using the US stats of 1 in 3 people would be diagnosed with cancer [6] ) . India has one of the highest incidents of oral and oesophageal cancers [7]. Simple PAP smear test for the latter can be recommended by practitioners of both Medicine forms – it’s early detection. In global comparisons, the incidents of cancer are however proportionally less, the changing lifestyles are believed to be increasing the numbers.

The country holds a lot of potential is being a regional hub for pioneering cancer research. China too holds promise.

The Pharma Industry is the 3<sup>rd</sup> largest in volume worldwide with the potential to topple the IT Industry in pay [5]. Additionally, local research may be able to facilitate citizens from neighboring Pakistan [8], Bangladesh and Sri Lanka providing a cheaper yet efficient alternative; medical tourism [9] has already picking up – funding from this field can be siphoned. It’s already a Cancer surgery destination [10]. Alternative forms must be standardized and thus instilling more confidence in both the local and foreigners patients alike

It would be unfair not to touch upon what India boasts the most – it’s Software Superpower status- here its IT expertise and resources would come in handy. Each Human being is equal to 3Billion nucleotide base with 25-30,000 protein-coding genes. A Cubic centimeter of a tumor mass has 10 trillion cells.

So all the (bio) Linux systems with Oracle/MySQL

Databases in Exabytes (and more) and smart (bio)perl/python scripting program(mers) - would not be wasted a least “bit”. Powerful computing would still need to do the Individual Specific Codes and match them against the common drug and cancer sequence databases.

The Ideal Cancer Cure Facility would thus be fashioned as a Cancer Center where in a Cancer Specialty Hospital at the Foreground would serve the common man – irrespectively of nationality –whichever form of treatment – may it be Modern or Alternative; and the Background being a giant standardized facility housing Engineers, Chemists, Biologists, Mathematicians and Physicians – both of Modern and CAM genre; a Center for Complete Cancer Cure.

Medicine is by definition is “a field of applied science and art of healing”. In this Genomic Era, post the HGP, Human Medicine needs to align better; coordinate at different levels, crisscross various fields and collaborate – all to further the “war” against Cancer. While all nations need to contribute to this common war, certain countries like India (and China for that matter) can modulate itself for the defeating cancer. As they say at MIT, the only cure for cancer is RESEARCH.

#### ACKNOWLEDGEMENTS

This paper would never have been possible with the grace of God, the Almighty:

My late mother, who has been my inspiration and role model till January 27<sup>th</sup> of this and even now, had laid the foundation of biological and scientific thinking in me. It was the cause of her death – cancer- that had made me think in this line. Additionally, my wife, Mrs. Safa Shaheen, has, with her biotechnology background helped me prepare this article – an article which I hope would other patients and families throughout the globe, in future – near and far.

#### REFERENCES

- [1] Ornl [Online]. Available: [http://www.ornl.gov/sci/techresources/Human\\_Genome/project/about.shtml](http://www.ornl.gov/sci/techresources/Human_Genome/project/about.shtml)

- [2] Cancer [Online]. Available: <http://www.cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-027766.pdf>
- [3] Opensciencesummit [Online]. Available: <http://opensciencesummit.com/>
- [4] Ncbi.nlm.nih [Online]. Available: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2876924/>
- [5] Wikipedia [Online]. Available: [http://en.wikipedia.org/wiki/Pharmaceutical\\_industry\\_in\\_India#cite\\_note-et-0](http://en.wikipedia.org/wiki/Pharmaceutical_industry_in_India#cite_note-et-0)
- [6] Cancer [Online]. Available: <http://www.cancer.org/Research/CancerFactsFigures/CancerFactsFigures/cancer-facts-figures-2011>
- [7] Jpgmonline [Online]. Available: <http://www.jpgmonline.com/article.asp?issn=0022-3859;year=2003;volume=49;issue=3;spage=222;epage=228;aulast=Shah>
- [8] Pafmj [Online]. Available: <http://www.pafmj.org/showdetails.php?id=42andt=e>
- [9] [Online]. Available: <http://yaleglobal.yale.edu/content/indias-medical-tourism-industry>
- [10] Scribd [Online]. Available: <http://www.scribd.com/doc/2293261/India-is-one-of-the-best-destinations-for-Cancer-surgery>



**Shaheen Najumudheen Shah**, was born in Sharjah, United Arab Emirates, on the 6th of April 1981. After finishing his schooling in Sharjah Indian School, Mr. Shah completed a Bachelor Degree in Electronic and Communication Engineering from the MES College of Engineering, affiliated to the University of Calicut, Calicut, Kerala - in the year 2003. After initially working for Sony and Microsoft outsourced Technical Support, Shaheen joined Hewlett Packard’s Mission Critical Unix Support after changing his core technology to Linux prior. Currently he works as a Senior (Integration and) Support Engineer for ICT, Qatar. He is a member of the APCBEES and also a member of the Qatar Research and Development Community.



**Safa Shaheen** was born on the 26th of September 1990 in Kerala. She was born and brought up in Bahrain where she had done most of her schooling. In 2009, she had joined the St. Joseph’s College, Irinjalakuda in Kerala. Also, affiliated to the University of Calicut, she completed her Bachelors in Biotechnology in the June of 2012. Her areas interests include Genetics and Literature. She has joined the Cochin University of Science and Technology, Kochi (Kerala, India) for her Master Degree in Biotechnology.