



## **MAHARASHTRA ACADEMY OF SCIENCES (MASc)**

Regd. Soc. No. 1020, Pune, Public Trust No. F- 842 Pune.

Website: [www.mahascience.org](http://www.mahascience.org)

### **MASc Newsletter**

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#### ***From President's desk***

The MASc is the premier scientific body which works for the promotion of Science and Technology for the common people. I am happy to release this first online issue of MASc News Letter. It will be a quarterly publication. This will be basically an interactive forum for the fellows and young associates.

Though the MASc is in existence since 1976, it does not have permanent office. Usually it moves from one place to another institute where Secretary works. Last few years, I personally tried my level best to get a permanent place. I appeal in this first issue of MASc News Letter to the fellows for the suggestions and help to have a permanent office with small conference hall, and couple of guest rooms.

During pandemic we organized few webinars, including 2 on COVID-19 and vaccine development. But we need to do more activities for common people. And it is the responsibility of elected Fellows and Young Associates. The Newsletter is the first step to make our academy visible.

I am indeed thankful to Executive Council members Drs. MV Deshpande, Vandana Ghormade, Secretary Dr.BB Kale and others for this initiative.

#### ***From Secretary's office***

The MASc has been steered under the Presidentship of several renowned and esteemed scientists, academicians and technologists such as Padma Vibhushan Dr HN Sethna (the first President and Chairman of Atomic Energy Commission, Govt. of India), Padma Bhushan Prof BM Udgaonkar (TIFR, Mumbai), Padma Vibhushan Dr RA Mashelkar including the current President Padmashree Prof GD Yadav (Former Vice Chancellor, ICT, Mumbai). The MASc has over 1000 elected fellows and 100 plus young associates over all these years.

A few States of the country such as Kerala, Madhya Pradesh, Tamil Nadu and Karnataka organize State Science Congresses which are addressed by the Chief Ministers of

the respective States. Their State Academies help in the organization of their respective State level Science Congresses. Despite Maharashtra being a progressive state such a State level Science Congress has not been organized so far for the benefit of all stake holders in the State. This News Letter is the first step to make aware our policy makers and of course common people this anomaly and come together to organize State Science congress. MASc can be official academy to shoulder this responsibility.

### ***From the Editor's table***

Although the COVID19 pandemic curtailed our various activities, Academy Fellows adjusted to the "new normal" by going digital with numerous articles and video presentations addressing relevant scientific issues. The internet and the digital network came to our rescue in the pandemic struck world wherein several distinguished web-based lectures and webinars covering a wide range of topics were organized with participation of large audiences and without much organizational hassles. We may be more active to organize such webinars involving eminent scientists from all corners of the globe using our personal contacts.

In this stage of siege, a new contingent of brilliant minds are being inducted as Fellows and Young Associates of the academy. At present, there are more than 1000 Academy Fellows from various disciplines. There is also a provision for making honorary fellows, patrons, associate members, young associates, donor members, corporate members and industrial members. The academy is now planning in a major way to welcome in its fold Indian Scientists residing abroad who are specially interested in the welfare of Maharashtra.

One of the foremost interests of the MASc is to conduct the Science Congress in Maharashtra, an event that we in Maharashtra are deprived of. We plan to spread the awareness regarding this matter through this the First issue of Newsletter. The editorial team invite contributions from fellows and Young Associates for sections- News and Views, information about conferences/ workshops to be organized under different disciplines, brief highlights of their scientific contributions, published in high IF journals/ relevant to society/technologies, etc. Besides, this Newsletter can serve as a platform to share new scientific research with the fellow members, to make announcement, advertisements (e.g. call for proposals from funding agencies/ fellowships, etc), and high quality science images with caption clicked by you. This will be a quarterly online publication and will be uploaded on MASc website (Write to- Editor, MASc Newsletter, [mvdeshpande1952@gmail.com](mailto:mvdeshpande1952@gmail.com) / [vandanaghormade@gmail.com](mailto:vandanaghormade@gmail.com))

### ***News and Views***

#### **News**

#### **Top 2% Scientists from India**

Based on an independent study done by Stanford University (For methodology and data visit)- <http://journals.plos.org/plosbiology/article?id=101371/journal.pbio.3000918>

More than 25 MASc fellows and young associates appear in this list. The MASc President, Prof. GD Yadav and Treasurer Dr. CV Rode also appear in top 2% scientists under Physical Chemistry. Congratulations to all.

## **Views**

### **COVID 19 Detection** (Vandana Ghormade, ARI, Pune)

When India was reeling from the pandemic, the various government agencies capable of the RT-PCR detection were brought under the fold of ICMR to provide respite to our citizens. To help track the infections the sensitive real-time PCR tests with specific primers were used for detection of the virus. The favoured workhorse test is the real time quantitative polymerase chain reaction (RT-qPCR), which amplifies and measures viral genetic material. Although antibody tests exist for detection of the viral coat proteins, these tests give several false results due to the limitation of their detection sensitivity. Detection of viral genetic material RNA, is more reliable. Feluda the Indian counterpart. Maharashtra had only two COVID testing centres at the beginning of the pandemic. At that time, several government institutes like IISER, SPPU, Agharkar Research Institute joined ICMR-NIV and NARI to increase the detection substantially.

Yet, qPCR requires expensive lab equipment and trained operators. A cheaper easier test would open the door to far more frequent testing. The Council of Scientific and Industrial Research's constituent lab, the Institute of Genomics and Integrative Biology (CSIR-IGIB), New Delhi have developed accurate paper strip-based test using CRISPR/Cas technology as the next generation in nucleic acid detection that could replace PCR. The diagnostic kit has a visual read-out that could provide mass testing of COVID-19 possible.

Such rapid diagnostic testing techniques could take the pressure off the RT-qPCR testing in India. A step wise approach can be utilized with initial rapid testing than can be followed by the confirmatory test to address the challenges of diagnostic testing for large populations.

### **Breaking the cancer grip** (Madhura Deshpande, Weill Cornell Medicine Gerhardt Lab, USA)

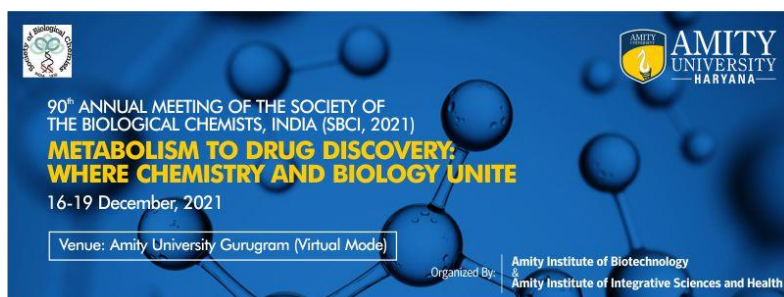
Breast cancer, the most common cancers affecting >1.6 million women worldwide, is also reported among men. It is the prevalent cause of cancer death among women and the risk of developing breast cancer depends on both genetic and non-genetic factors. Although, the potential risk factors and the outcome are known, there are very few effective and safe treatments to prevent breast cancer. A key aspect in precision prevention is the accurate estimation of the breast cancer risk, which was overlooked in past.

It was not thus not surprising that Angelina Jolie became the poster girl of breast cancer when she opted for bilateral risk reducing mastectomies. Jolie had a family history of breast cancer and inherited the BRCA1 gene mutation. An increase in BRCA testing and awareness was reported after her story became public. But not every breast cancer is due to faulty genes. Although highly effective, mastectomy is not a viable preventive treatment. It can affect the quality of life and create body image issues along with causing premature menopause. Also, most women would prefer to have a drug to prevent cancer rather than undergo mastectomy.

There are few chemoprevention treatments available such as use of estrogen modulators like Tamoxifen, aromatase inhibitors like Exemestane. However, there are certain risks and health implications associated with these treatments. And not all cancers are estrogen receptor positive and the majority of tumors are estrogen receptor-negative. These chemopreventive measure are not effective against the most aggressive and life-threatening ER-negative breast cancer. Thus, every type of cancer needs to be evaluated carefully to develop a preventive strategy.

One thing that Covid pandemic has taught us is the importance of vaccines. The positive impact of vaccination is undeniable. Scientists worldwide are conducting research to explore vaccine potential in diseases especially non-communicable diseases. Last year in December a groundbreaking triple-negative breast cancer vaccine developed by Cleveland Clinic and Anixa Biosciences received Food and Drug Administration (FDA) approval to begin clinical trial testing in humans. This vaccine is developed against a protein called alpha-lactalbumin that is expressed in the mammary glands of women. This protein naturally occurs only during the latter part of gestation, during lactation or when the woman develops cancer. The vaccine is targeted to destroy potential cancer cells that produce the alpha-lactalbumin protein and thus prevent tumor formation. The trial is in its initial phase and like all good things it will take time before it is widely available. Still such research studies give us hope that if proven to be safe and effective, it will have a huge impact on breast cancer research. The findings might also enable scientists to derive new preventive strategies to impede mutagenesis and prevent ER positive breast cancer and maybe other cancers as well.

### *Conferences/ Workshops*

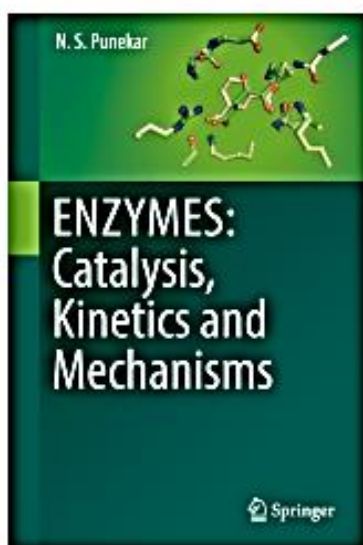


### *Books by Academy Fellows*

Professor NS Puneekar



springer.com



N.S. Puneekar

## ENZYMES: Catalysis, Kinetics and Mechanisms

1st ed. 2018, XXIII, 562 p. 263 illus, 76 illus. in color.

### Printed book

#### Hardcover

119,99 € | £109.99 | \$149.99  
[1]128,39 € (D) | 131,99 € (A) | CHF  
141,50

#### eBook

101,14 € | £87.50 | \$109.00  
[2]101,14 € (D) | 101,14 € (A) | CHF  
113,00