

# dbGENVOC- World's First Database of Genomic Variants of Oral Cancer

July 8, 2021

**In news-** National Institute of Biomedical Genomics (NIBMG), Kalyani has created a database of genomic variations in oral cancer; the first of its kind in the world.

## **Key updates-**

- dbGENVOC is a **browsable online database of GENomic Variants of Oral Cancer.**
- NIBMG has made this database **publicly-accessible.**
- First release of dbGENVOC contains-

(i) ~24 million somatic and germline variants derived from whole exome sequences of 100 Indian oral cancer patients and whole genome sequences of 5 oral cancer patients from India,

(ii) somatic variation data from 220 patient samples drawn from the USA and analyzed by TCGA-HNSCC project and

(iii) manually curated variation data of 118 patients from recently published peer-reviewed publications.

- dbGENVOC is not just a catalogue of genomic variants, it **has a built-in powerful search engine.**
- It also allows a reasonable extent of **statistical and bioinformatic analysis to be carried out online,** including identifying variants in associated altered pathways in oral cancer.
- The repository, which will be updated annually with variation data from **new oral cancer patients from different regions of India and southeast Asia,** has the potential to support advances in oral cancer research.

## **National Institute of Biomedical Genomics (NIBMG)-**

- It is a national level research institute for genomic medicine in India.
- It is located at Kalyani West Bengal, 50 km from Kolkata.
- It has been established as an autonomous institution under the **Department of Biotechnology**, Government of India.
- This is the first institution in India explicitly devoted to research, training, translation and service and capacity-building in biomedical genomics.

## **About Oral cancer-**

- **India is the second country having the highest number of oral cancer cases.**
- It is the most prevalent form of cancer among men in India.
- **Oral squamous cell carcinoma (OSCC)** dominates all the oral cancer cases with potentially malignant disorders, which is also recognized as a detectable pre-clinical phase of oral cancer.
- It is fuelled by **tobacco-chewing** that causes changes in the genetic material of cells in the oral cavity.
- Oral cancers preventions, screened for and/or detected early and treated at an early stage.
- When diagnosed early, the **5-year survival rate** is above 80%, whereas it is less than 20-30% in the advanced stage of the disease.
- Awareness initiatives and programs include comprehensive tobacco control legislation (**COTPA, 2003**) and ratification of WHO Framework Convention on Tobacco Control (**WHO FCTC**) in 2004 by the Government of India.
- The Union Health Ministry has prepared a universal and objective operational **Framework for Cancer Screening and management** that aims to promote, coordinate, and conduct research to better understand, detect, diagnose, and

treat cancer.

- The **National Cancer Control Programme (NCCP)** has established regional cancer centres (RCCs) and the National Cancer Registry Programme (NCRP) that provides nationwide cancer statistics of India.
- The **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS)** focuses on screening, diagnosis, identification and addressing modifiable risk factors, referral of precancerous conditions, and community level follow up.
- **National Oral Cancer Registry (NOCR)**, an initiative of the India Dental Association collects and compiles data that can be used to develop strategies and policies for cancer prevention, treatment, and control.
- A national cancer institute, modelled after the U.S. National Cancer Institute (NCI) has been proposed by an Indo US government collaboration to expand cancer research infrastructure in India.