



**ST. MARY'S** *Catholic High School, Dubai*

We are so proud  
of our dear Francis  
and our Marian  
family shall pray  
that he makes  
great strides in this  
noble cause.



# EX-DUBAI STUDENT AT FOREFRONT OF DECODING COVID

FRANCIS DESOUSA HEADS ILLUMINA, A US-BASED COMPANY WHOSE GENOME SEQUENCERS HELP PRODUCE VACCINES

## DUBAI

BY ALEX ABRAHAM  
Senior Associate Editor

In May 1987, five students from Dubai were featured on the cover of *Gulf News* under the headline 'High Flyers'. The brilliant students planned to pursue higher studies in the US.

Francis deSouza, then assistant headboy at St Mary's Catholic High School, was one of them. He had just passed 10 'O' level subjects with 'A' grades, had a passion for science and wanted to use it to help humanity.

Today, deSouza is president and CEO of Illumina, a US-based company that makes sequencing machines that decode the Covid-19 genome.

"In late 2019, Zhang Yongzhen, a virologist at Fudan University in Shanghai, used an Illumina NovaSeq, a photocopier-size machine, to decode the Covid-19 genome. He published the sequence online on January 10, 2020," deSouza said in an exclusive interview with *Gulf News*.

## Higher education at MIT

After passing out of St Mary's Catholic High School, deSouza went to the Massachusetts Institute of Technology in 1987 at the age of 16. He studied electrical engineering and computer science for his undergraduate and graduate degrees, and then embarked on a career in its applications in technology.

After working in management consulting, deSouza launched a start-up instant messaging company in Boston that was acquired by Microsoft.

After working in Microsoft



Francis deSouza is determined to use technology to help combat diseases like cancer.

## EARLY YEARS IN DUBAI

Francis deSouza lived in Dubai from 1974 to 1987. His father worked in Addis Ababa for a Japanese company before he was reassigned to Dubai. "I have learnt from the values of the place — celebration of the diversity of the community and willingness to work hard," deSouza said. "I miss the shawarmas, thalis and shish kebabs, and picnics to Al Ain, Khor Fakkan and UAQ."

for a few years, he started another company called IM Logic, which was acquired by Symantec, where he worked for eight years and rose to be president.

DeSouza then came to Illumina and has been with the company for eight years.



"I am drawn to working on the hard problems — the big problems we face, I want to make a difference in those problems," deSouza said. "I am now passionate about the potential for genomics to transform health across so many



parts of our life — from helping us fight cancer, to helping agriculture, from diagnosing children with genetic diseases to helping us fight the pandemic. There is so much that genomics can do to improve our life."

## Access to genomics

"Our focus is on democratizing access to genomics — bring the price of genomic sequencing down. Since we started bringing out sequencers in 2006-07, we have brought the



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When we first brought out the machine, it cost \$150,000 to sequence a genome. Today it costs \$600. Our goal is to set the price for sequencing a genome at \$100.”

Francis deSouza | President and CEO of Illumina

price down by over 99 per cent. When we first brought out the machine, it cost \$150,000 to sequence a genome. Today it costs \$600. Our goal is to set the price for sequencing a genome to \$100," he said.

DeSouza says the power of genomics comes when everybody has access to it — whether it is to fight cancer, pandemic, genetic diseases, cardiovascular diseases or neurological conditions.

Illumina is now working with countries on genomic epidemiology — surveillance on how the virus is spreading and mutating. "We need the genomic epidemiology surveillance tools in every country, because if there is a country where the virus is rampant or mutating, ultimately it will affect all of us," deSouza said.

## HOW IT WORKS

### What is a genome?

The term 'genome' was coined in 1920 by Hans Winkler, a professor of botany at the University of Hamburg, Germany. A genome is an organism's complete set of genetic instructions. Our bodies are made up of millions of cells, each with their own complete set of instructions. Sequencing the first human genome took 15 years and cost about \$3 billion. Today it can be done in less than a day for about \$1,000.



A NovaSeq sequencer, a machine the size of a photocopier, used to decode the Covid-19 genome

## Genome sequencing

It is the process of figuring out the order of DNA nucleotides, or bases, in a genome — the order of As, Cs, Gs, and Ts that make up an organism's DNA. The human genome is made up of over three billion of these genetic letters. Biological samples are put into a sequencer, which outputs the DNA and RNA sequences.

## Plans in Dubai

By the end of 2021, Illumina plans to open a new office and 'Solution Centre' at the Dubai World Trade Centre.

<https://gulfnews.com/uae/former-dubai-based-indian-student-at-forefront-of-decoding-covid-19-genome-in-us-1.1621916446301>