India eyes breakthrough against sickle cell

Researchers working to develop gene therapy using CRISPR-Cas9, a gene-editing tool, to fight the genetic blood disorder that has a high prevalence rate among the Scheduled Tribes; Tribal Affairs Ministry wants ground-level healthcare workers such as ASHAs trained to screen for the disease

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NEW DELHI

India is getting closer to developing a gene therapy for sickle cell disease, a genetic blood disorder with a high prevalence rate among the Scheduled Tribes, officials of the Union Tribal Affairs Ministry said on Wednesday.

Vibhu Nayyar, Secretary, Tribal Affairs Ministry, said the government was expecting to hear "good news" by January 2025 on the laboratory tests that are being run.

M. Srinivas, Director of the All India Institute of Medical Sciences (AIIMS), said researchers were working to develop a gene therapy using CRISPR-Cas9, a gene-editing tool.

"We want that in the next six months to one year, we will be able to go forward with using this method for treating sickle cell disease – making India one of the first countries to do so," Mr. Srinivas said.

He was speaking at the National Conclave on Generating Awareness on Sickle Cell Disease, organised by the Tribal Affairs Ministry in collaboration with the Birsa Munda Centre at the AIIMS.

Union Tribal Affairs Minister Jual Oram, addressing the opening of the conclave, lauded the efforts but said it was important to involve and coordinate with ground-level healthcare workers such as ASHAs and anganwadi workers for these plans to be implemented properly.

"They will be the ones doing the heavy lifting on the ground," Mr. Oram said.

Officials of the Tribal Affairs Ministry told *The Hindu* that the "good news" Mr. Nayyar was referring to was related to the tests that are currently being run by the Council of Scientific and Industrial Research-Institute of Genomics and Integrative Biology (CSIR-IGIB).

Tribal Affairs Ministry official says the government was expecting to hear "good news" by January 2025 on laboratory tests being run. AP

"Following this, the tests will proceed to the next phase and eventually move on to being tested on patients," a senior official said.

This comes months after the U.S. Food and Drug Administration approved the CRISPR-Cas9 technology for a cell-based gene therapy to treat sickle cell disease in December 2023.

Making it cost-effective

Ministry officials said one of the main challenges for India was to find a way to make this therapy cost-effective. Developing a gene therapy using CRISPR has been part of India's mission to eradicate sickle cell disease by 2047.

A government dossier on the mission, which was launched by Prime Minister Narendra Modi in July 2023, said the technology had "the potential to be a single dose cure for blood disorders like sickle cell anaemia".

Part of this mission is to also conduct over seven crore screenings among vulnerable tribal populations across 17 States and Union Territories, of which three crore screenings have been achieved so far, Ministry officials said.

The CRISPR-Cas9 system consists of an enzyme that behaves like molecular scissors, which can be directed to cut a piece of DNA at a precise location. This will then allow a guide RNA to insert a changed genetic code at the sites of the incision.

While there are a few ways to effect such changes, the CRISPR system is believed to be fast and the most versatile of all.

Addressing the gathering of doctors, experts, and healthcare professionals, Mr. Oram said the Union government was committed to working on the sickle cell disease eradication mission and called for officials from across Ministries and departments to ensure that grassroots workers were roped in for the implementation process and that they should themselves engage with them.

Following the addresses by senior officials and the Minister, a series of technical panel discussions were also held on recognising and screening for sickle cell disease, managing the disease, and other issues.