

Tunisian researchers unveil complete genome sequences of iconic durum wheat varieties Mahmoudi and Chili

Tunis, Tunisia – Tunisian scientists at the University of Sfax and the Institution of Agricultural Research and Higher Education (IRESA) have achieved a landmark milestone in the preservation and modernisation of the country's agricultural heritage. In collaboration with the **National Gene Bank of Tunisia** and with support from the UK-based non-profit organisation GetGenome, researchers have successfully sequenced and released the **complete genomes** of two iconic Tunisian durum wheat landraces: **Mahmoudi** and **Chili**.

These landraces are living archives of **Tunisia's agricultural history, culinary tradition, and genetic resilience**. For generations, Tunisian farmers have cultivated Mahmoudi and Chili, prizing them for their **exceptional grain quality, drought tolerance, and disease resistance**.

Through cutting-edge sequencing technologies, scientists have generated a **comprehensive, freely available resource** for both landraces, offering an unprecedented window into their genetic composition and untapped potential.

A new consortium for open science and local empowerment

Tunisian researchers have launched the **Open Durum Genome Project Tunisia (DurumGPT) consortium**, a collaborative initiative bringing together scientists, plant breeders, policymakers, agricultural cooperatives, and civil society organisations with the aim of:

- Accelerating the development of climate-resilient wheat varieties through open science
- Strengthening food security in Tunisia and across the Mediterranean region
- Preserving Tunisia's agrobiodiversity for future generations

By making the genomic resources for Mahmoudi and Chili freely accessible through the **OpenDurumGPT platform** on Zenodo (zenodo.org/communities/opendurumgpt/records), researchers worldwide can explore the genetic foundations of drought tolerance, climate resilience, disease resistance, and high nutritional value in durum wheat.

For breeders and scientists, this represents a **rich resource** to identify and deploy genes for **drought tolerance, disease resistance, and nutritional quality**. For policymakers, it underscores the importance of **supporting traditional farming systems and investing in agrobiodiversity**.

The DurumGPT initiative is a testament to the power of **local knowledge and global collaboration**. By sharing these genomic resources openly, Tunisia is taking a leading role in **transforming agriculture through science**.

"Sequencing the genomes of these two Tunisian durum wheat landraces is a groundbreaking step. Mahmoudi and Chili will be key to developing more climate-resilient wheat in our country, while honouring the wisdom of Tunisian farmers who have nurtured these varieties for centuries."

– **Moez Hanin**, Professor at the Higher Institute of Biotechnology (University of Sfax) and leader of the DurumGPT project

A call to action for global collaboration

The release of these genomic data marks a turning point for durum wheat research and recognises the **valuable contribution of Tunisian researchers to the global durum wheat community**.

OpenDurumGPT provides the platform for a **new kind of collaboration** – one that places the **efforts of local scientists at its core** and invites global researchers to use the data, acknowledge local contributions, and deposit findings under one umbrella.

“Sequencing the genomes of two ancestral Tunisian durum wheat landraces, Mahmoudi and Chili, represents a significant milestone in agricultural innovation – one that goes far beyond a mere scientific achievement. By identifying the unique genetic traits of Mahmoudi and Chili, this research provides a roadmap for developing wheat varieties specifically adapted to climate stressors such as drought, heat, and soil salinity. Ultimately, this work strengthens food security and promotes smart, sustainable agriculture in Tunisia by leveraging the natural resilience of local genetic resources. We are no longer victims of climate change; we are masters of our adaptation.”

– **Mohamed Ali Ben Temessek**, General Director of the National Gene Bank of Tunisia, Ministry of Environment

“Durum wheat has shaped Tunisia’s fields, kitchens, and culture for centuries. By sequencing Mahmoudi and Chili, we are preserving a living heritage and strengthening the resilience of a staple that underpins both food security and national identity.”

– **Brandt Wulff**, Associate Professor at King Abdullah University of Science and Technology

“Mahmoudi and Chili are living treasures of Tunisian civilisation, shaped over centuries by the hands of Tunisian farmers. Their genome sequences must be cherished—and put to work. They are the foundation of analyses that will drive the next generation of climate-resilient wheat and secure the food future of the country.”

– **Sophien Kamoun**, Professor and Group Leader at The Sainsbury Laboratory, Norwich, United Kingdom

About the National Gene Bank of Tunisia

The National Gene Bank of Tunisia (NGBT) is an administrative institution under the authority of the Ministry of Local Affairs and Environment of Tunisia. NGBT began its activities in November 2007, with a mandate to coordinate and promote the conservation and sustainable use of plants, animals, and micro-organisms. NGBT has a capacity for *ex situ*

conservation of 200,000 seed accessions and 300,000 samples in cryopreservation at its headquarters in Tunis, as well as a 20-hectare field gene bank in Takelsa (Governorate of Nabeul, north-eastern Tunisia).

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OpenDurumGPT platform: zenodo.org/communities/opendurumgpt/records

Citation: Ayed, S., Babay, E., Ben Amor, A., Ben M'Barek, S., Djemal, R., Ebel, C., Elleuch, A., Gargouri, S., Ghanmi, S., Ghazala, I., Hamza, S., Hanin, M., Medini, M., Robbana, C., Saidi, M. N., Slim, A., & Sayahi, N. (2026). *From Local Heritage to Genomic Innovation: Whole-Genome Sequencing of Tunisian Durum Wheat Landraces Chili and Mahmoudi*. Zenodo. <https://doi.org/10.5281/zenodo.19499032>