

5 research projects conducted jointly by UNAM and Tec



A system for **diagnosing sleep apnea** and a **reconfigurable micro-machine tool** are being developed jointly by researchers from [Tec de Monterrey](#) and the **National Autonomous University of Mexico** (UNAM for its initials in Spanish).

These are just two of the **five projects selected** in the first call for the **Program for Scientific Entrepreneurship and Technology and Knowledge Transfer**.

This initiative is part of the [UNAM-TEC Consortium for Research, Technology Transfer, and Entrepreneurship](#) created [by both institutions to promote research](#) in 2021.

“Aiming to help the common good and find solutions to big problems, the Tec and UNAM have a responsibility to conduct cost-effective research through technology transfer and the encouragement of entrepreneurship” said **Guillermo Torre**, Vice President of Research at the Tec.

Research teams receive **funding of up to 500,000 pesos** and are **mentored by companies and experts** on the processes of developing and validating the technology.

David Garza, rector y presidente ejecutivo del Tec de Monterrey. width="900" loading="lazy">

The 5 UNAM-Tec research projects

This program, now at **Phase 1: Prototype Development**, launched a permanent call with four periods for receiving proposals. The **first 5 projects** were part of the initial period that ended on January 28.

Benito Sotelo, Tlalpan Innovation District manager and project leader, said that the projects were chosen because they have the potential to impact sectors such as **health, agribusiness, manufacturing, and water treatment**.

*"We're taking the **first steps in developing new technologies** that will strengthen all the sectors they serve and are focused on today,"* he said.

The projects selected to be developed by the **UNAM-Tec Teams** were:

1. A sleep apnea diagnosis system

The **ZLUP System for diagnosing sleep apnea** project consists of developing a prototype that can help specialists to detect this condition that **affects sleep quality**.

These researchers aim to develop a **modular device with a friendly and intuitive interface** to conduct studies such as polygraphs or other respiratory function tests to diagnose **Obstructive Sleep Apnea (OSA) syndrome**.

Researchers from the UNAM Faculties of Engineering and Architecture and the Tec's Mexico City campus have been partnered with the National Institute of Respiratory Diseases (INER for its initials in Spanish).

Apnea del sueño. width="900" loading="lazy">
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2. Fertilizing the soil with waste from nixtamalization

Researchers on the **Nejayote-derived agricultural supplies** project want to **use wastewater** from the process of manufacturing nixtamalized corn flour to produce **biofertilizers** and **herbicides**.

This project aims to offer solutions for **nourishing soil damaged by agricultural use**, promoting more sustainable production systems, and reducing the water footprint of the nixtamalization process.

The team leading the project includes researchers from UNAM FES Cuautitlán and the **Tec's Puebla campus**, alongside industrial partner **MAIXICO S.A.de C.V.**

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3. A low-cost micro-tool for manufacturing processes

The **Reconfigurable micro-machine tool** project consists of developing a customizable and low-cost prototype that can be used in manufacturing processes, through the use of modules similar to Lego bricks.

This micro-machine **can be converted into different types of tools**, such as a lathe or milling machine, for different types of manufacturing in educational settings, as well as for micro, small, and medium enterprises.

In this project, researchers from the UNAM Faculties of Engineering and Architecture and the Tec's **School of Engineering and Sciences** at its Mexico City campus are working with industrial partner Reconocimientos Creativos S.A de C.V.

“Aiming to help the common good and find solutions to big problems, the Tec and UNAM have a responsibility to conduct cost-effective research.”

4. A low-cost source of purified water

This is the **STEAM water people** project, which incorporates **water purification technologies**.

The idea behind this project is the **construction of a recreational water fountain** as a prototype to demonstrate emerging, low-cost, and sustainable technological developments in water management.

This proposal is being developed by researchers from the UNAM Institute of Physical Sciences and the Tec's Schools of **Architecture, Art, and Design** and **Humanities and Education**, with the FEMSA Foundation as a partner.

5. Producing prebiotics to improve soil

The project **Instrumentation and automatic control system to optimize the production of digestate used as an agricultural prebiotic** aims to boost **soil enrichment**.

These researchers want to improve production times and methods for **obtaining biogas and digestate**, in the process also generating by-products that help **improve the condition of the soil**.

This project is being carried out by researchers from the UNAM Institute of Engineering at its Juriquilla Campus and the Tec's School of Engineering and Sciences at its Puebla campus, with Grupo Solena as an industrial partner.

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The idea behind the project is for the teams to develop a functional prototype, for which they are given **a period of six months to present progress**, a technological package proposal, and their manufacturing strategy and testimonials.

*“We’re aiming for this research to make a **global impact**, to promote **progress, advancement, and the use of scientific knowledge** in society,”* said Sotelo.

*“The fact that researchers from the UNAM and the Tec are developing these projects says a lot about the **high standard of professionalism** and **collaborative work** on show,”* he added.

Second period for receiving proposals now open

This second period for receiving proposals will be open **until May 2**, said the program leader.

*“The type of projects that can participate will be from the industrial or humanities sectors, aimed at national or state development, or those that follow the **Sustainable Development Goals (SDGs)** from the 2030 Agenda,”* explained Sotelo.

*“We’re inviting researchers from the UNAM and the Tec to participate, register, and prepare **projects that can be promoted through this platform** in the short, medium, and long term,”* he concluded.

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