



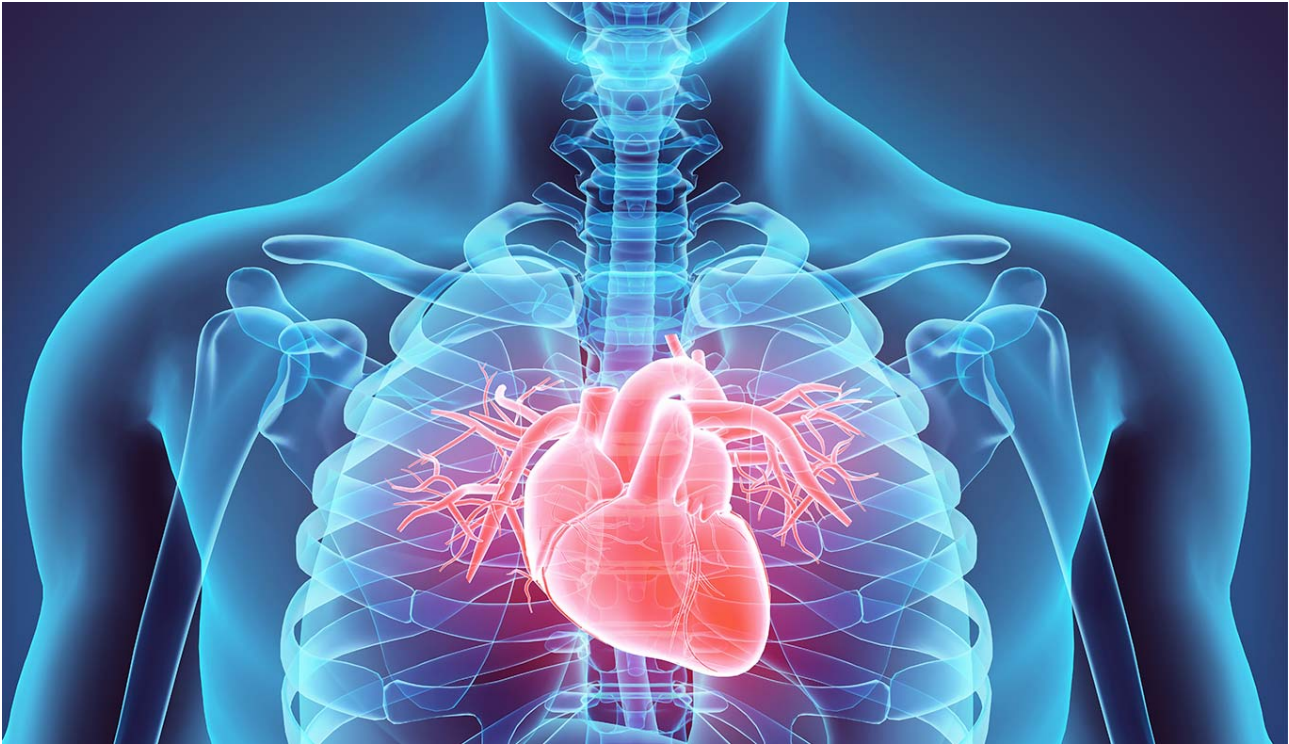
Mexican helps cure heart diseases with nanotechnology

[Tec de Monterrey](#) graduate **Guillermo Ruiz-Esparza** wants to help people suffering from **cardiac insufficiency** through **nanotech breakthroughs** in medicine.

Therecipient of more than **30 international honors and awards**, this man from the state of **Aguascalientes** heads a research group on **Molecular Nanosystems** run by [Harvard Medical School](#) and the [Massachusetts Institute of Technology \(MIT\)](#).

The **Nanotechnology-based Delivery System for the Transport of Therapeutic and Diagnostic Molecules to the Failing Heart** is part of one of the projects currently being researched by Guillermo, as he explains to CONECTA.

*“Through medical practice, **medicine** has allowed me to have an effect on people’s health thanks to my knowledge of how our bodies work,”* he said.



THE PROJECT

Alongside a **group of researchers**, this expert devised a **strategy based on nanovectors** in order to improve the **transportation of therapeutic molecules** in cases of heart failure.

This system is **based on nanovectors**. Once these have been **injected intravenously**, they are transported to the ailing heart, enter the **cardiac muscle cells**, and reach the **nucleus**, where they are deposited to release agents later on.

These **vectors have been developed based on nanostructures** that are capable of **releasing agents in a controlled manner**, which could be used for **transporting any type of molecule**.

Nanotechnology is an area employed for the creation of materials, **devices and innovative systems** with unique properties for **industrial or medical** purposes.

According to the [World Health Organization \(WHO\)](#), cardiovascular diseases are one of the main causes of disability and death worldwide.



WHAT INSPIRED HIS PASSION

A high school graduate of **PrepaTecAguascalientes**, he began his university education by studying a bachelor's degree in **Medicine and Surgery** and a bachelor's degree in **Bioscience** at the **Monterrey campus** of [Tec de Monterrey](#).

Guillermo's **curiosity about life sciences and discovering how things work** at a biological level led him to **search for ways to solve problems** related to incurable diseases **at the organic level**.

"Seeking not only to follow the existing clinical guidelines, but also to expand medical knowledge led me to develop new ways of treating people in the research area," explained this engineer.

Guillermo **heads a biotechnology research group in Boston** and is also actively **launching startups** focused on the **development of nanotechnologies and medical technologies**.



Recently, **one of his startups** for vascular applications was selected as one of the **five most innovative startups in health and technology** at [Harvard University](#), during the **Harvard University President's Innovation Challenge**.

"I believe that the qualities of perseverance, shrewdness, and determination have helped me get to where I am today," shared Guillermo.

Dr. Jorge Alberto Pérez Ladrón, director of the School of Engineering and Sciences at the Aguascalientes campus of Tec de Monterrey, **highlighted how the achievements of Tec graduates are having an impact on the world.**

"The feeling of relevance, persistence and the will to improve the environment in which we live are qualities that characterize a Tec graduate, and Guillermo Ulises' case is no exception," expressed the Director of the School of Engineering.

Dr. Ruiz-Esparza thanked the **Tec** not only for his academic education, **but also for inspiring him to excel at an international level.**

Finally, Guillermo **urges young people** who are currently studying degrees in the area of engineering and sciences **to dare to make their dreams come true.**

"Have the courage to follow your dreams. It won't be easy; the road to success never is. That's what helps you to become more successful," he said.

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