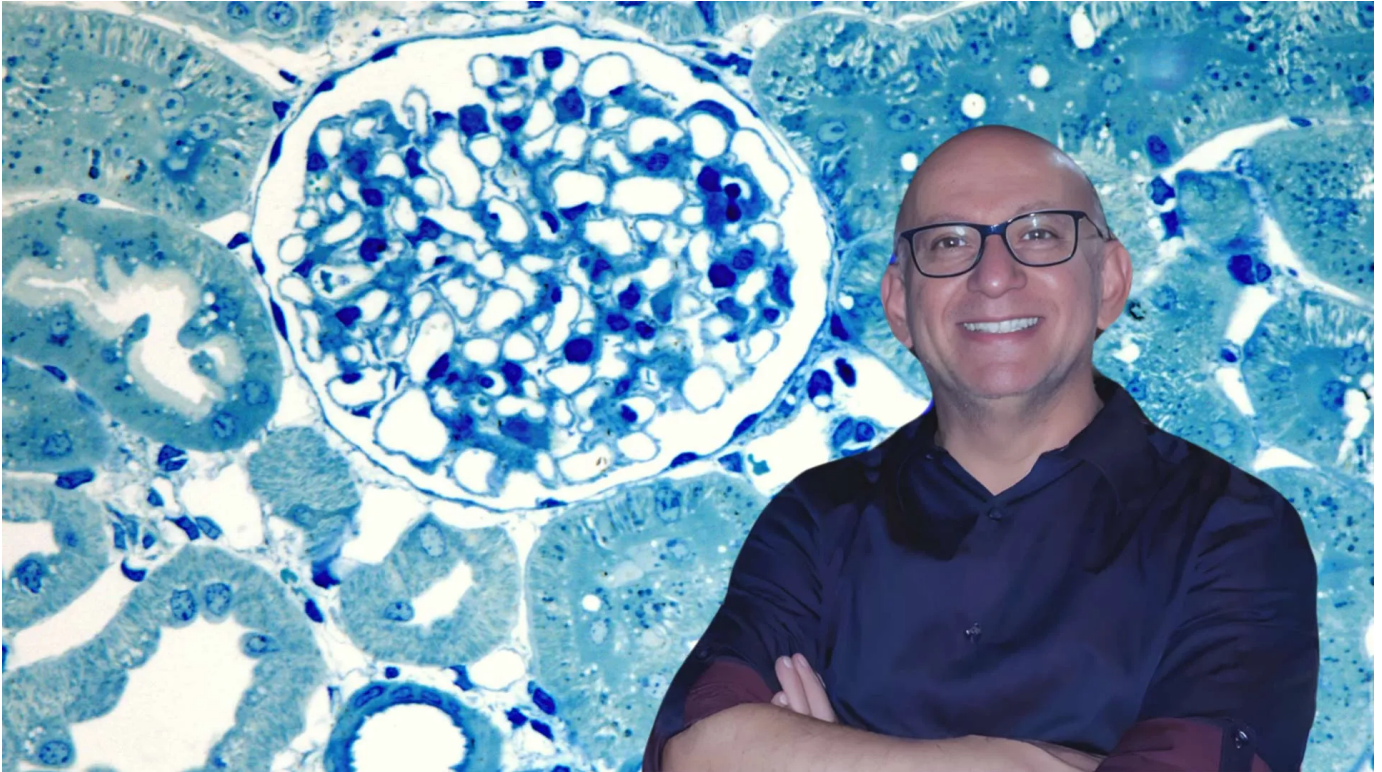


Tec graduate medic cracks kidney disease, discovers unique treatment



Research by Tec graduate physician Roberto Manllo-Karim is the basis of the only treatment available for polycystic kidney disease, which preserves the function of these organs.

30/08/2024

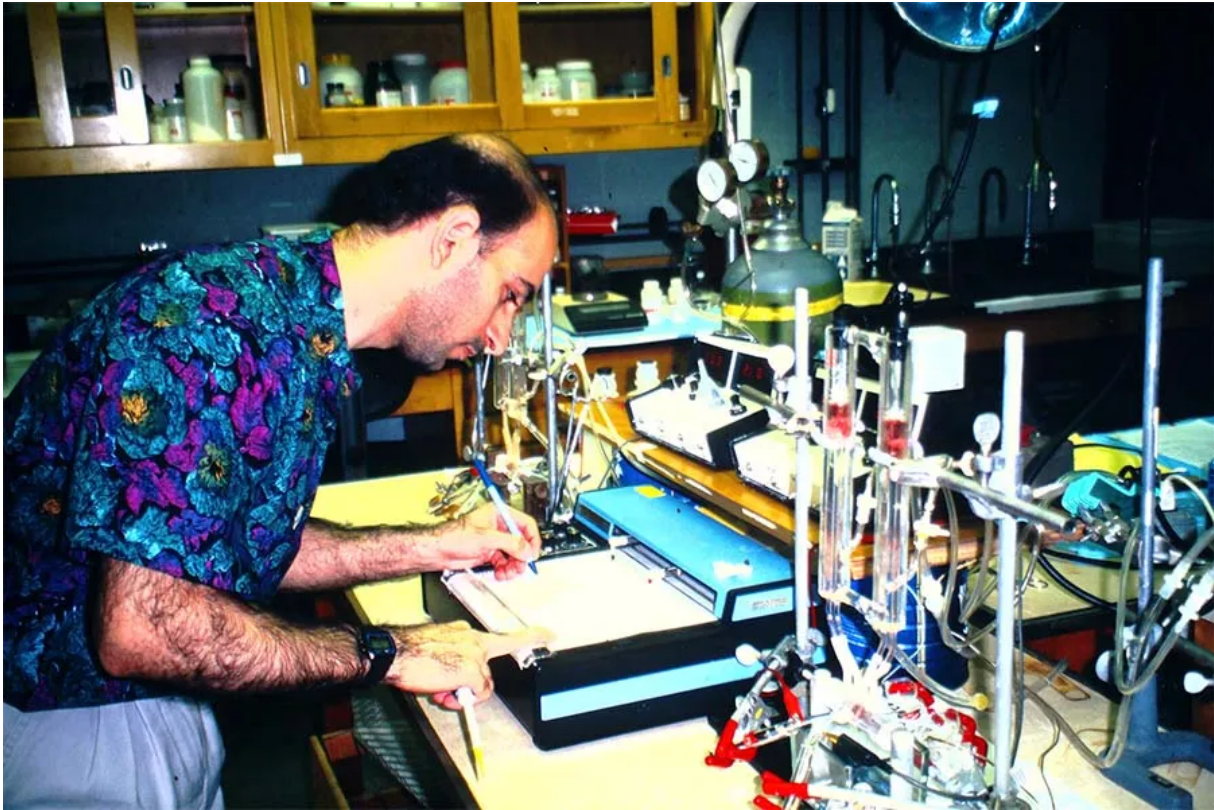
ROBERTO MANLLO

In just three months, a recently graduated medical student from [Tec de Monterrey](#) cracked what **scientists** had been pursuing for decades: **how cysts form in kidneys and other organs.**

Research by Mexican physician **Roberto Manllo-Karim** was the **basis for the development of the drug Tolvaptan, currently the only treatment available for polycystic kidney disease**, an inherited kidney disease that causes cysts.

Despite that great milestone, Manllo-Karim **expected to go unnoticed for the rest of his life**, succeeding at this for almost **40 years.**

However, the **Tec graduate** told the story of his research during a research medicine class at the **University of Texas** in **June 2024**, and his students immediately called the local newspaper to bring him out of anonymity.



Roberto Manllo-Karim at the University of Kansas laboratory where he made his discovery in 1987.

“Create a cyst!”: The challenge that led to his discovery

After graduating from the Tec, he went to the [University of Kansas](#).

There, he **demonstrated his passion** to his mentor, [Jared J. Grantham](#), an internationally recognized nephrologist who gave his name to the **Jared Grantham Kidney Institute** at the **University of Kansas Medical Center**.

*“He had me doing simple tasks until I convinced him that I was really passionate about his research topic, **polycystic fibrosis**.”*

More than half of the cases of this disease lead to **renal failure, dialysis, or transplants.**

*“**Create a cyst.** I need to know how it forms. If you do that, you graduate. If not, you won’t,”* was Grantham’s challenge to Manllo.

At that time, there were two theories about the formation of kidney cysts, and neither was good.

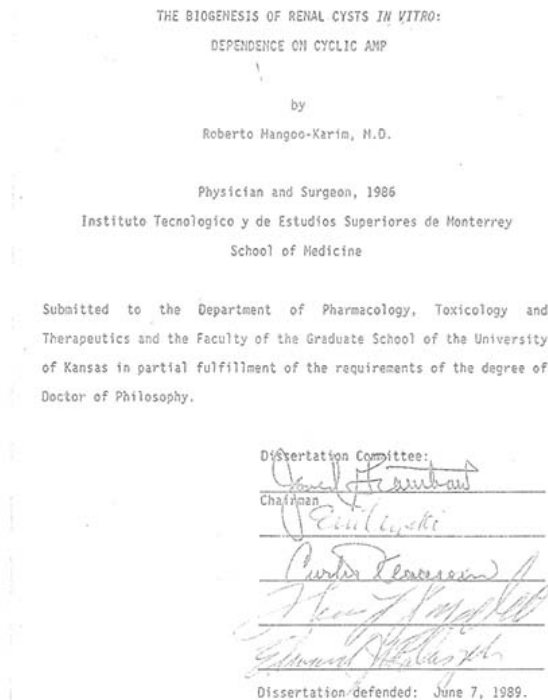
According to Roberto Manllo, there were **a thousand articles** on that subject; he read between 700 and 800 of those *papers*. *“None of them helped me.”*

That’s when he decided to research other examples of **cysts (follicles) in biology** and discovered **ovulation, thyroid, and fetal formation.**

All of these had **cyclic adenosine monophosphate (cAMP) in common.**

“I discovered that cAMP was the hormone that caused cysts and enlarged them. My theory applied, not only to the kidneys, but to other organs.”

Roberto Manllo-Karim completed his thesis in two years and ten months and earned his PhD.



A decades-old enigma solved in three months

He then tested his theory on **immortalized cells**; cells modified to divide and grow indefinitely under laboratory conditions.

It was 1:00 a.m. on a Saturday in **1987**.

"I had an idea that no one else had thought of; how can you go to sleep knowing that?"

The experiment was successful, cells with cAMP developed cysts in two weeks. Excited, he presented the results to his mentor.

*"Grantham said, '**I don't believe you.** Go back and do it three more times.'*

"I understood his distrust, (since) great scientists had been looking for the origin (of the disease) for decades and I was a recent graduate who'd cracked it in three months. It was suspicious."

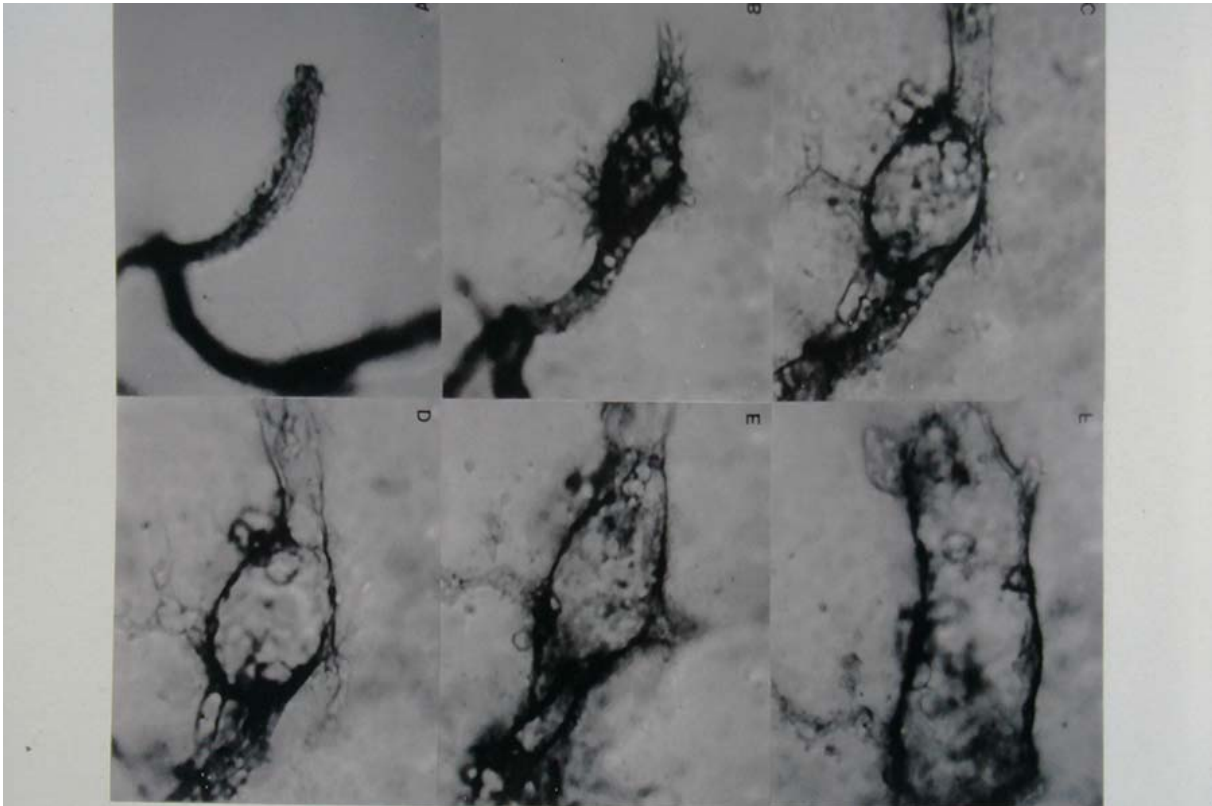
Manillo repeated the experiment as many times as necessary, but in every case, **he proved his theory was correct.**

He thus gained the **confidence of his mentor, and the entire laboratory focused on his thesis project.**

Currently, two buildings are dedicated to polycystic kidney disease and the **University of Kansas** is the leading research institute in the field.

“Great scientists had been looking for the origin (of the disease) for decades and I was a recent graduate who’d cracked it in three months. It was suspicious.”

Roberto Manillo discovered that cAMP was the hormone that caused cysts in the kidneys and made them bigger. The photo shows a renal tubule turning into a cyst, the experiment that proved his theory.



Seeing theory in action

Research by Mexican physician **Roberto Manillo-Karim** was the **basis for the development of the drug Tolvaptan, currently the only treatment available for polycystic kidney disease**, an inherited kidney disease that causes **cysts**.

The drug was approved by the U.S. Food and Drug Administration (**FDA**) in 2018. Although it was intended to treat other diseases, it has been found to **decrease cAMP by preventing new cysts and the growth of existing cysts**.

“It doesn’t cure the disease, but it preserves kidney function in people who end up on dialysis or require a transplant.”

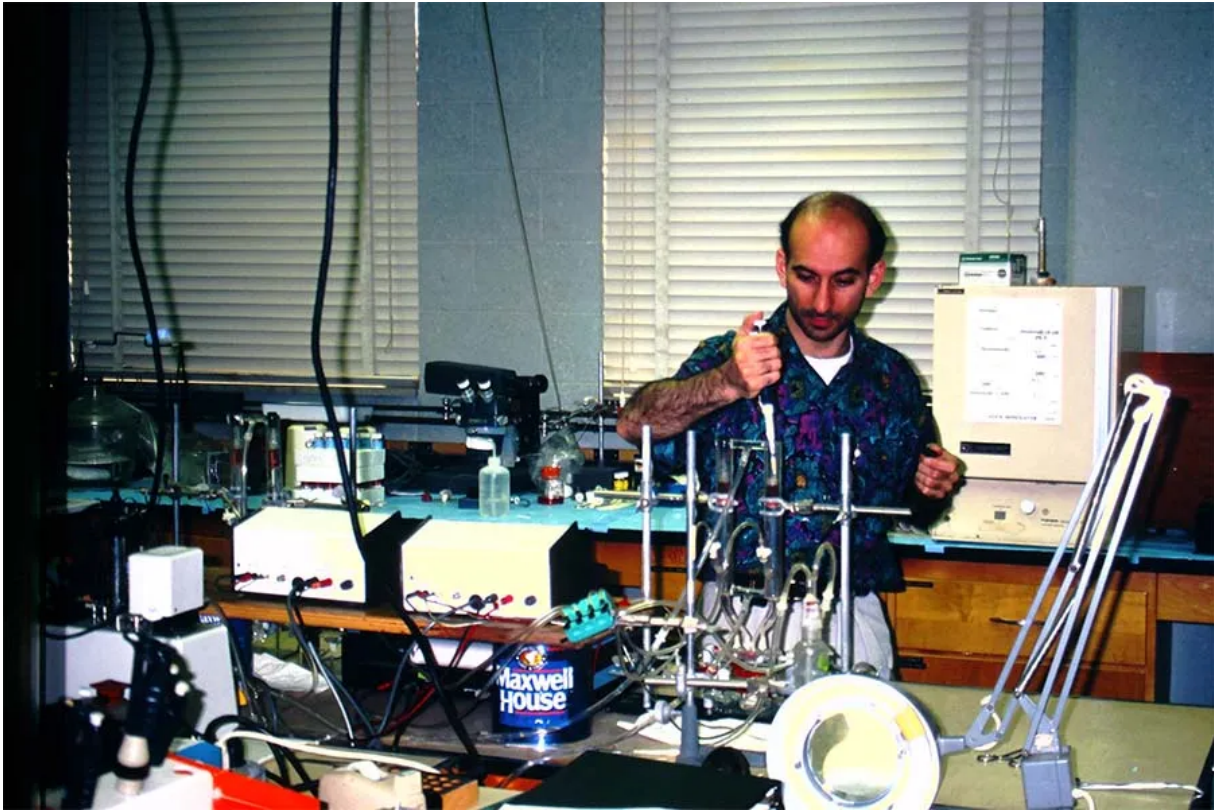
As a student, Roberto Manillo **does not own the rights to the drug**; they belong to the University of Kansas.

However, he did have the opportunity to administer it to a friend whom he included in the treatment research protocol, managing to **preserve his renal function to this day (for more than a decade)**.

He now sees the benefits of his discovery firsthand with his patients.

“I’m proud of what I’ve accomplished, and I want to keep giving more.”

“I had the double blessing of discovering something and seeing the medicine in circulation (25 years later).”



Following Roberto Manllo-Karim's thesis, the University of Kansas became the leading research institution in polycystic kidney disease.

It all started with an empty line

Roberto Manllo-Karim **was going to study engineering** just like his father and brother, but the line was very long on enrollment day at **Tec de Monterrey** in **1978**.

*"I turned around and saw that the Medicine line was empty. I went over and talked to **Dr. Miguel Bedolla**, the director of the Tec's medical program, who convinced me with these words: lifelong learner."*

*"He assured me that **if I went to medical school, I would become a lifelong learner.**"*

Thereafter, Manllo-Karim **wore a tie**, a requirement for the Tec's medical students at the time.

However, unlike the rest of his classmates, Roberto added a **computer programming class** to his medical subjects because **he liked to learn about everything**.

The professor of that subject did not overlook Manllo-Karim's rare combination of medicine and computer science.

He invited him to take a **Pharmacology** class, which at the time was innovating with the **study of drugs** through computers, at the University of Kansas.

That summer, Roberto Manllo learned to write **computer programs** to **teach pharmacology**.

"I fell in love with pharmacology when my mentor revealed that it was all about creating knowledge. He told me my idea would become a product that would not only help one patient, but many."

Keeping that in mind, he returned to the Tec, did his community service as a professor, **graduated in 1985** and applied to graduate school at the **University of Kansas**.

"I never thought an empty line would lead me to what I really love and know how to do well."

"I discovered that cAMP was the hormone that caused cysts and made them bigger. My theory applied, not only to the kidneys, but to other organs."



Roberto Manllo is a nephrologist currently practicing in Texas.

Present and future

Roberto Manllo currently practices in **McAllen, Texas**, at the following hospitals:

- *South Texas Health System*
- *Río Grande Regional Hospital*
- *Doctors Hospital at Renaissance*
- *Mission Regional Medical Center*

His primary expertise is in End Stage Renal Disease (ESRD), chronic kidney disease, acute renal failure, and acute tubular necrosis. He has also taught at the University of Texas.

His clinical research includes **co-authorship of two peer-reviewed articles** and participation in **two clinical trials** in the last 15 years.

Now, Roberto Manllo has a **dream of diagnosing patients** with this disease **before they develop cysts**, through a saliva sample.

He is also looking forward to returning to **Tec de Monterrey** to share his knowledge with medical students.

"I thought I would go through my life unnoticed, only aiming to make my family and mentor proud, but now I want my story to inspire others to conduct more and better research."

*"I had the **double blessing** of discovering something and seeing the **drug in circulation (25 years later).**"*

[Puedes consultar la tesis del EXATEC Roberto Manllo-Karim dando clic aquí.](#)

LEE ADEMÁS:

