# Harnessing a unique moment in neuroscience [1]

Discovery [2]
**Author:** PJ Kaszas
Alyssa Kneller

Determined to understand — and perhaps even treat — the disease, Dolmetsch redirected his entire lab, pivoting from esoteric biophysics experiments to research with clear, immediate connections to neurodevelopmental disorders. Having a mission changed everything.

“I basically gave up all my grants and applied for new ones in 2007,” says Dolmetsch, who recently became global head of Neuroscience at the Novartis Institutes for BioMedical Research [3]. “The transition that year was very traumatic and painful from a professional perspective, but it was great from a personal perspective.”

Dolmetsch is now positioned to try to make a difference in many lives. His unconventional professional journey continues at Novartis, where he’s building a new Neuroscience group [4] that will pursue potential therapies for autism, schizophrenia and other diseases. It’s a wonderful — and surprising — place to be, he says. A career in science seemed beyond the realm of possibility when he was growing up in Cali, Colombia. Here is an excerpt from a conversation with Dolmetsch about his path to the Novartis Institutes for BioMedical Research and vision for neuroscience.

## Did you know from a young age that you wanted to be a scientist?

Dolmetsch: I come from a family of artists. My mother is an eccentric human rights lawyer; my dad is a musician. They wanted me to be bohemian and play the guitar, and, in fact, they were heartbroken when I told them I was going to become a scientist. But research wasn’t something I thought about as a young kid.

## When did that change?

DolmetschI was an undisciplined kid, and I went to this nice but slightly rigid school where I was a good student with lots of attitude problems. I was suspended for two weeks when a nun caught me typing dirty limericks, so I had to find something to do at home. I discovered that my sister had all of these bread-making books and decided to test them out. It turns out I’m really good at following directions. I also tried altering the recipes, systematically changing the quantities and ingredients, which was really fun. It occurred to me that scientists do these types of experiments all the time.

Video of A unique moment in neuroscience

## What did your lab study at Stanford?

Dolmetsch: Before 2007, we studied something really basic: ion channel signaling, which is ultimately important for understanding how experience changes the development and function of the brain. The lab was actually quite successful, but then the focus changed when my son was diagnosed with autism.

> This is a very special time for neuroscience. The field is finally ripe for rational drug discovery.
>
> **Ricardo Dolmetsch**, Global Head of Neuroscience at Novartis Institutes for BioMedical Research

## How did your perspective shift after the diagnosis?

Dolmetsch: I was very worried, so I spent a lot of my time poring over the scientific literature to learn as much as possible about autism. I eventually thought — if I'm going to spend all this time figuring out what is known about this disease, then I might as well work on it in the lab. There's nothing like having a mission to focus your resources.

## Which questions did you tackle first?

Dolmetsch: Idiopathic autism is a really tough thing to work on because it's not a single disease; it's a whole bunch of different diseases. I realized that it was going to be difficult to get any traction on something that was so diverse, so I decided to focus on a few orphan diseases related to autism, including Timothy syndrome. Orphan diseases are often easier to characterize on a mechanistic level, and they can provide clues about the molecular underpinnings of more common diseases.

## Why did you leave Stanford for industry?

Dolmetsch: Over the past few years, I've gotten to know a lot of kids with autism and other neurodevelopmental diseases, and I've become really committed to their welfare. I think that we now have an opportunity to begin to develop therapies for some of them, which is exciting. This is a very special time for neuroscience. The field is finally ripe for rational drug discovery.

## What's happened to enable rational drug discovery?

Dolmetsch: We've recently obtained genetic clues about the underlying pathophysiology of

many neuropsychiatric and neurodegenerative diseases. And we have some new tools that make the preclinical work more feasible. For example, induced pluripotent stem (iPS) cells allow us to grow neurons derived from patients' skin or blood cells. In oncology, scientists have long been able to take biopsies from patients' tumors, culture those cancer cells and build models, which can be used to develop treatments. Neuroscientists can't take biopsies from patients' brains, but iPS cells offer a way around this hurdle.

## Why the Novartis Institutes for BioMedical Research?

Dolmetsch: I was attracted to the academic culture of Novartis. If you're trained as a biologist, you care about two things: conceptual advances and making people's lives better. Here, we can do both.

## Who's your favorite scientist and why?

Dolmetsch: Max Perutz. He was the leader of the Laboratory of Molecular Biology (LMB) at Cambridge at the time that Watson and Crick and Sanger were there. Over the course of about 10 years, the LMB group won something like five Nobel Prizes. I think Perutz was a great leader. Based on everything I've read, he believed in soft power. His goal was to create an environment for really smart people to do really well, and he pruned things so that they grew into the right shape without imposing too many constraints from the top.



**Tags:**
Cell and Gene Therapy [5]
Future of Healthcare [6]
Innovation [7]
Neurodegenerative Disease [8]



**Links**
[1] https://www.novartis.com/stories/discovery/harnessing-unique-moment-neuroscience
[2] https://www.novartis.com/stories/discovery
[3] http://www.nibr.com/research/disease/neuroscience.shtml
[4] http://novartis.avature.net/neuroscience/SearchJobs
[5] https://www.novartis.com/tags/cell-and-gene-therapy
[6] https://www.novartis.com/tags/future-healthcare
[7] https://www.novartis.com/tags/innovation
[8] https://www.novartis.com/tags/neurodegenerative-disease