A scientist from the start – Q&A with NIBR President Fiona Marshall

By Veronica Meade-Kelly | Nov 01, 2022

Fiona Marshall believes she must have been born a scientist. She can't remember a time when she wasn't fascinated by learning something new about the natural world.

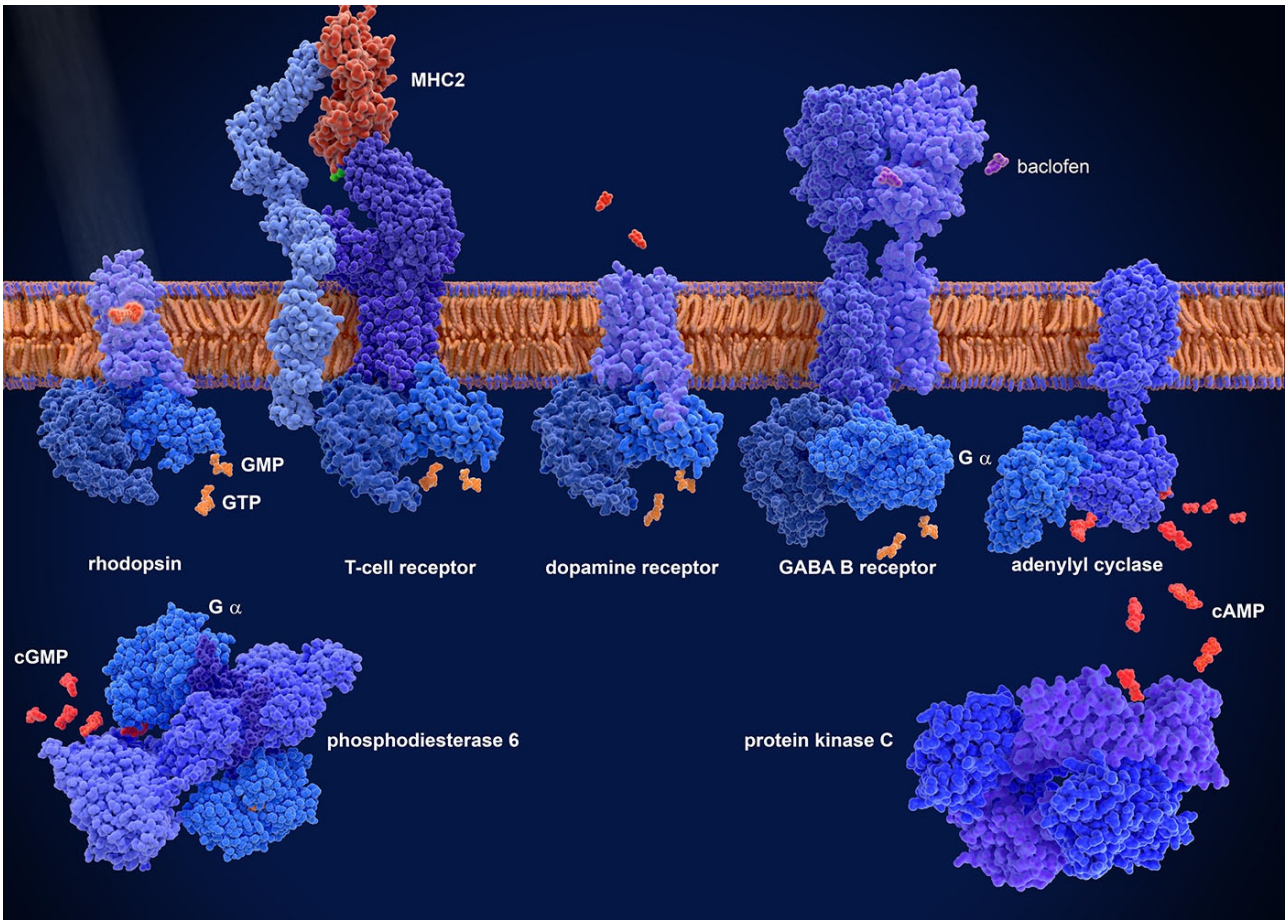
"I was always the kid who loved to explore nature," she says. "At the beach, I would spend my time looking for the little crabs running around and at home, I loved to take things apart to see how they worked and fix things that were broken."

When it came time to go to university, there was no question she'd study science — the challenge was picking which field. She had earned a national prize in physics during high school, but she was also passionate about biology and chemistry.

"What really interested me was fundamental biology. I wanted to understand how the body works at a biochemical level and figure out how to fix it by understanding what goes wrong when people get sick."

With that in mind, she enrolled in an undergraduate program in biochemistry at the University of Bath (UK) that allowed her to spend a year in industry — an experience that affirmed how exciting it would be to apply her talents to finding new medicines. When she went on to get her Ph.D. in neuroscience, she chose to do it in an industry-sponsored program at University of Cambridge (UK), where she continued working in pharmaceutical company labs.

That immersive education in drug hunting jump-started a career that has spanned three decades and taken her to seemingly every corner of the R&D ecosystem. Marshall worked as a researcher in her first role out of university at Glaxo (later GSK). There, she studied cellular receptors, trying to decipher their molecular nature and functional roles in disease — including essential work on a receptor in the brain that led to much-needed drugs for migraines.



Marshall is well known for her work in the field of G protein-coupled receptors, a large class of proteins that are targeted by roughly a third of approved drugs. Her research included foundational work cloning and characterizing the structure of GABAB receptors (pictured in the image above).

Marshall was recruited to Millennium Pharmaceuticals (now part of Takeda) to work with emerging technologies for studying gene expression and build out a new site in the UK. Later, she briefly paused her career in industry to work as an academic and consultant while having the flexibility needed to raise a young family. As a consultant, she served on boards and in an advisory capacity for over two dozen companies — roles that kept her connected to the industry and, importantly, gave her a broad view of the evolving technological and scientific landscape.

She found one of those technologies so captivating that she helped found a successful biotech startup, Heptares, that used it to develop numerous potential medicines. Since then, she has taken on several leadership roles for other large pharmaceutical companies — most recently Merck, where she built a new site focused on diseases of aging before overseeing global neuroscience and, ultimately, all of early-stage research.

Marshall now joins Novartis as President of the Novartis Institutes of BioMedical Research (NIBR), leading the company's innovation engine. We spoke with her about her passion for science, and what drew her to her new role:

What is it that you love so much about science?

I am inspired by the world around us, really. I'm fascinated by breakthroughs across all sciences. It could be the discovery of a skeleton from a previously unknown species, or news from a successful space mission. I love to learn new things that change our outlook on life. I find that very inspiring — there's always something more to learn.

Since leadership roles can take you out of the lab, how do you still find an outlet for that curiosity?

First, I've chosen roles throughout my career where I've been able to stay close to the science. I've always chosen to work with the most advanced technologies available, whether it was moving from neuropharmacology to molecular pharmacology, as I did during my early years at Glaxo; moving away from studying tissue and animal models to molecular systems; or making a big bet that we could use a promising but brand-new technology to design drugs, as I did when I helped found Heptares. It's always exciting to see what these cutting-edge technologies can do.

And then equally, I find the research that the people are doing in the labs around me inspiring. I love when there's a really breaking experiment — hot off the press — and a scientist comes up and tells me about it while I'm walking around the corridor. It's exciting to hear people share their discoveries.

> I've always liked to be working with the most advanced technologies out there, and I've very much seen Novartis as the company that's bold enough to go where other companies have not yet gone.

Is there a technology or an advance that you're particularly excited about right now?

I'm excited about the many ways we can now modulate protein function either through chemistry and chemical biology to produce oral small molecule drugs or through protein engineering to produce next-generation biotherapeutics. These approaches generate an incredible richness of possibilities for example through allosteric regulation or recruiting one protein or cell to another. I'm also excited about the wide range of other innovative approaches at the heart of NIBR's research, such as cell and gene therapies, RNA therapies, and radioligand therapies – each of which has the potential to treat, prevent or even cure diseases.

What drew you to Novartis?

I've always liked to be working with the most advanced technologies out there, and I've very much seen Novartis as the company that's bold enough to go where other companies haven't yet gone. NIBR has historically been an early adopter of technological platforms and therapeutic approaches with massive potential.

How would you describe your leadership style or philosophy?

For me a good leader is somebody who empowers and gets the best from their team by making sure that people are motivated and excited by their work, have the resources they need, get to share that enthusiasm and receive recognition for their contributions.

What has been your proudest scientific accomplishment thus far?

It would have to be the science that we did at Heptares. We were able to implement this promising technology from an academic lab at the University of Cambridge – a method for solving 3D structures of membrane proteins – to design new medicines. We ultimately solved hundreds of different structures, many of which were published in journals, as it was the first time anybody had seen a 3D structure of that protein. More importantly, we were then able to use those structures to discover drugs. Despite being a small company, we put a number of drugs into the clinic. I am quite proud of that. I hope, if you ask me this question in 10 years, I'll have additional successes to share from Merck and Novartis. But the drug development process is long, and it's too early to see how the research we've been doing these past few years will take shape.

Meet Fiona Marshall, NIBR’s third president. She shares her thoughts on leadership, science, and bold innovation in this Q&A.

Source URL: *https://prod1.novartis.com/stories/scientist-from-start-qa-nibr-president-fiona-marshall*

List of links present in page

1. https://prod1.novartis.com/stories/scientist-from-start-qa-nibr-president-fiona-marshall
2. https://prod1.novartis.com/tags/category/people-and-culture
3. https://prod1.novartis.com/tags/authors/veronica-meade-kelly