Empowering a new wave of data scientists

At Novartis, we believe in a culture that stimulates curiosity and promotes opportunities to learn from and embrace all of our diverse perspectives, where every one of us can be our true selves allowing us to discover more, reach underserved communities, and reimagine medicine together. On this page, we will share some of the stories and perspectives of our people working in data science and artificial intelligence (AI) and how they are forging their own paths in this transformative field.

The journey of Amy, Argy and Vera

The Digital moment has arrived for healthcare and pharmaceuticals, and our industry is at an inflection point. Science, data and digital technologies are coming together like never before, offering an unprecedented catalyst to reimagine medicine. It has never been more important to embrace this powerful combination and approach complex biology as a computational challenge, upending traditional approaches to customer engagement and revolutionizing the way we work.

Attracting and nurturing highly sought-after technology talent, while continuing to create compelling development opportunities for our own bright minds, is key to making this happen. And, as 74% of data scientists and 79% of data engineers are male, it's undeniable that the world of data and digital has traditionally attracted more men than women – a trend we #ChooseToChallenge.

At Novartis, we are empowering more women than ever before to join this field, and supporting our people to flourish in the rapidly evolving world of data science.

This article is the first in a series in which we will explore how data and digital technologies could help solve some of the world's most challenging healthcare issues, and looking at how Novartis is supporting associates through a series of training programs to forge their own paths in this transformative field.

Iya Khalil, Global Head of the AI Innovation Center at Novartis, recently sat down with three female associates united in their passion for data science – Amy, Argy and Vera – to discuss their journeys and reflect on their aspirations as they progress in their careers.

"*Don't be afraid to declare your intentions. The only way to predict your future is to make it happen. Be bold and be heard, and let us inspire an army of female data scientists to do the same.*" Iya

Learn more about Iya Khalil, Global Head of the AI Innovation Center at Novartis

Dr. Iya Khalil is a technology entrepreneur and physicist with a vision of transforming medicine and healthcare into a discipline that is quantitative, predictive, and patient-centric via AI and big data.

Currently leading the charge in Artificial Intelligence innovation for Novartis, Iya has held the position of Global Head of the AI Innovation Center in Boston, USA, since 2019, creating new AI-based applications and infusing AI tools in the workflow to enhance our capabilities to tackle new challenges in medicine.

Iya received her PhD and MS in Physics from Cornell University.

United in their passion for Data Science

At Novartis, we believe that a fusion of skills and adaptive approaches to problem solving achieves better outcomes. That's why we're working towards removing the barriers to enter the field of data science, and dispelling the perception that only data scientists and data engineers can pursue a career in the AI domain.

Amy, Argy and Vera began their careers in very different places; Amy in biochemistry and clinical research, Argy in business and marketing, and Vera in economics and information security. Inspired, curious and unbossed they each joined development opportunities provided by Novartis. Amy is pursuing a Masters in Data Science with the University of Michigan. Vera and Argy have joined an internal program, the Women in Data Science Accelerator, aimed at women with two or more years' experience in a data-related field or qualifications in a numerical discipline.

We #ChooseToChallenge

The key to unlocking the potential of data science and digital technologies is our people. Our culture stimulates curiosity and promotes opportunities to learn from, and embrace, our diverse perspectives; because when everyone can be their true self and bring their unique life experience to work, we can discover more, reach underserved communities, and reimagine medicine together.

We are therefore committed to building an inclusive and equitable work environment that nurtures unique and curious minds, where everyone can bring their whole self to work and be inspired to innovate. These are ambitious goals, and the stakes are high, which is why it's exciting to see that, supported by Novartis, women like Amy, Argy and Vera are opening the door even wider for others to follow.

Novartis offers a variety of programs specifically targeted at women, designed not only to facilitate entrance to the field, but to support associates to excel in it. These programs have played a major role in shaping Amy, Argy and Vera's careers.

Inspired, Curious and Unbossed to Reimagine Medicine

But what about the participants? What inspired the decision to explore data science through the programs Novartis supports, and what have Amy, Argy and Vera taken from these experiences?

Argy wanted a better perspective of the Novartis Data & Digital vision, to learn about pilot projects powered by AI and explore the different statistical methodologies and state of the art technologies used to fire up the Novartis data engine. And she also gained the opportunity to work cross functionally and cross country on a mini data science project, meeting leaders and ultimately leaving the program with an ignited passion for data science, empowered to drive her future career forward in data and digital.

"*Don't be afraid to try things. The world is plenty of opportunities. You need to dream big and Data Science is always a nice area to work in as you have exposure to many aspects of an organization.*" Argy

Learn more about how Argy uses Data Science as Insights Excellence Manager

Argy Tzitzi is the Insights Excellence Manager for Novartis in Switzerland and has been with Novartis for nearly two years.

Before this, she has an extensive background in data analytics, both within the industry and in consultancy. She is a business partner for Insights & Analytics helping teams to understand customers, the market and competitive landscape to identify key business issues, barriers and drivers that impact short-term and long-range product performance. She is leveraging data science and analytics to support key business processes such as Business Reviews, Product Planning, forecasts, and the use of customer insights in strategic and tactical brand plans.

Behind her extensive work experience, Argy also has BSC in International and European Economics, a MSc in Marketing, a Graduate Certificate in Statistics and a Certificate of Advanced Studies (CAS) in Artificial Intelligence from Lucerne University of Applied Sciences and Arts.

For Vera, her curiosity propelled her to explore how she could develop in the field, learning and sharing best practices, connecting with peers and hearing about their journeys. She has benefitted from working with a new group of people, learning more skills and deepening her knowledge.

"*I would like to be a CFO in future and I believe that a diversified range of skills would help me think out of scope and out of the box.*" Vera

Learn more about how Vera uses Data Science as Treasury and Cash Management Specialist

Vera is a Treasury and Cash Management Specialist for Novartis in Prague, Czech Republic.

She holds a Bachelor's degree in Economics and has a fascinating background in information security, working for a bank for over a year as well as completing an exchange program in South Korea. Vera moved into Treasury at Novartis to put her data interpretation skills to broader use. She focuses her interest in data science on making sense of complex data,

searching for the specifics that bring value to her team. With a truly global perspective, she applies her data skills to forecasting critical financial information for Novartis over different forecasting levels.

Amy, having chosen to pursue a Masters in Data Science, believes that this program will play a key role in her personal and professional development as both a scientist and a data scientist. She plans to apply her newly acquired data science skills in data mining, data analysis, visualization, modeling and machine learning, to advancing current and future research programs, with the goal of bringing even better medicine to our patients.

"*My wish for the future is to learn more knowledge and skills about Data Science and apply these to current and future research projects to help tackle some of the greatest health challenges.*" Amy

Learn more about how Amy uses Data Science as Senior Scientist at NIBR

Amy Pei has been working for Novartis as a Senior Scientist at the Novartis Institutes for BioMedical Research (NIBR), in Emeryville, USA since 2017. She's a research scientist, with a wealth of experience in drug development targeting human diseases.

Before joining Novartis, Amy graduated with a BSc in Biochemistry and Molecular Biology from the University of British Columbia and applied her academic qualification in a number of roles for pharmaceutical organizations. In her current role at Novartis, Amy is working on drug discovery for tropical infectious diseases, such as malaria.

Currently, alongside her position at Novartis, she is studying for a Master of Applied Data Science at the University of Michigan, and applying her data science skills to develop scripts for complex data analysis, using AI to support her drug discovery work.

Women in Data Science Accelerator Program

The Novartis Women in Data Science Accelerator Program is a six-week training and

mentoring program, aimed at associates with a passion and curiosity for data science. Participants develop foundational skills with mentoring alongside participation in real-world projects. The program is open to anyone who identifies as a woman with two or more years' experience working in a data-related field or with qualifications in a numerical discipline.

AI for Life Residency Program

A first-of-its-kind for the healthcare industry, this 12-month program [1] provides an unprecedented opportunity to apply cutting-edge data science and AI expertise to real-world healthcare challenges. Through the program, participants work alongside leading scientists and business teams to gain a broad understanding of Novartis and the industry while getting hands on with some of our most innovative projects across the entire Drug Discovery Cycle.

Bring your skills and help transform the future of health

We will share more stories over the coming months of our people, so watch this space for further insights! In the meantime, if data science interests you, below there are plenty of resources available to help you find out more.

- Data and Digital at Novartis [2]
- Artificial Intelligence [3]
- Our commitment to ethical and responsible use of AI [4]
- Novartis Biome [5]
- Our People and Culture [6]

Explore our Careers in Digital

Through the use of analytics and advanced technologies we are fundamentally transforming how we deliver innovative science, operational excellence and more personalized customer experiences.

Learn More [7]

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