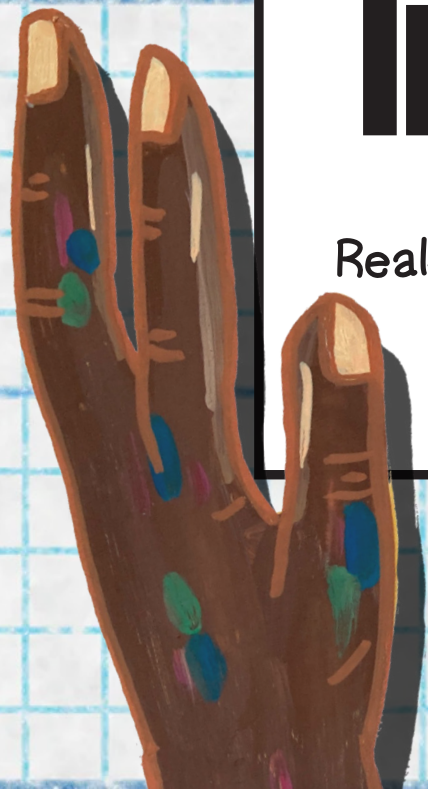


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Elements for Inclusion

Real-life stories of neurodiversity
in the world of chemistry





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Elements for Inclusion

Real-life stories of neurodiversity in the world of chemistry

It's possible to be both neurodivergent and become a successful chemist! These pages contain several real-life stories of people who have done just that. Most research on neurodivergent people views differences as deficits, aiming to support them to function in a typical world. But the stories in this book came out of a study that turns that reasoning on its head. They provide examples of how barriers have been overcome, show role models for aspiring neurodivergent chemists, and demonstrate how various contexts can and should be adapted so neurodivergent chemists will not just survive, but thrive.

The term “neurodiversity” refers to natural differences in how people learn or process information. A neurodivergent person processes information atypically and may experience discrimination or disability as a result. Several conditions are associated with neurodiversity, including autism, ADHD, and dyslexia. However, there's no exhaustive list and many neurodivergent people are undiagnosed because they don't fit criteria perfectly or cannot get assessed. Thankfully, more and more, such conditions are no longer seen as illnesses to be cured. That's because neurodivergent traits can be strengths as well as hindrances – as the stories in this book show.

This book was created by a neurodivergent team. We hope it will be easily understandable by all kinds of brains – and enjoyable too.

UNDERSTANDING NEURODIVERSITY AN ECOLOGICAL MODEL

Biodiversity refers to the variety of characteristics between different animals and plants in the same environment.

Similarly, neurodiversity refers to people having different skills and abilities. In our current societies, some neurominorities tend to be marginalised, with more barriers and fewer opportunities to grow than others.

Ecological concepts can help us to understand this dynamic:

o **Fitness** describes how easily an animal or plant can get the resources it needs, and how well it can avoid threats. Gibbons fit amazingly well in a forest, swinging quickly through trees to find food and escape predators. In a desert, they would misfit.

o **Ecological niche** describes how an organism interacts with its surroundings. The gibbon's niche is in the trees, while ants occupy a totally different niche on the ground.

o **Niche construction** is how animals and plants change their surroundings for better fit. Ants build nests in the ground - so they can be safe, and close to dead leaves for food.

o **Interdependence** is how different organisms depend on each other. Ants help break down leaves, which decompose and give nutrients to trees, which grow the fruit that gibbons eat. Gibbons then spread seeds so new trees can grow to make more leaves for the ants.

Healthy environments are biodiverse, with ecological niches for all different organisms. The same goes for neurodiversity. If we help build positive niches for neurominorities to fit at school and at work, they can thrive - and we can all benefit from a truly diverse environment.




1. ALEX

2. I always loved reading about black holes and time travel. And about the best physicist ever, Albert Einstein. He started speaking late like me.

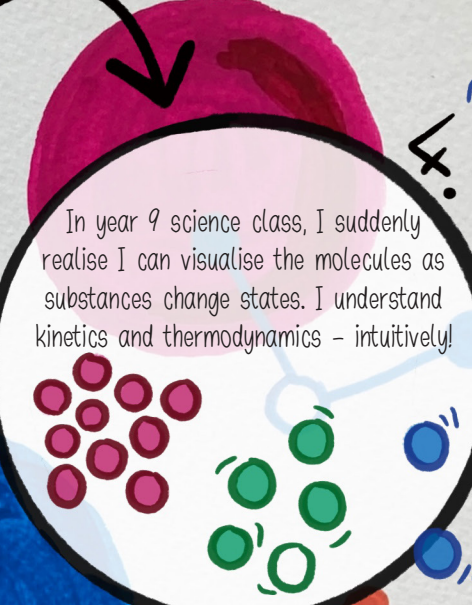


3. My parents don't tell me exactly what the doctors are saying. But I hear things like "severe developmental delay" which make me worried.


SEVERE?!




4. In year 9 science class, I suddenly realise I can visualise the molecules as substances change states. I understand kinetics and thermodynamics - intuitively!



5. A teacher suggests I do a BTEC course instead of A-Level chemistry. But isn't BTEC for losers?



6. I was wrong - the BTEC let me learn at my own pace and do more of what I enjoy.

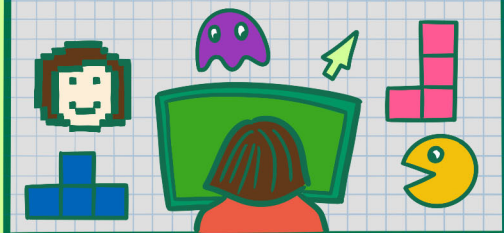


7. I got a first in my chemistry degree, and I'm starting my master's. Next stop: a PhD in crystallisation. I'm grateful for how I see the world.

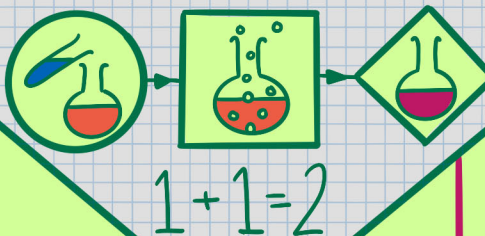


ALLEGRA

When I was a kid I only really felt comfortable when gaming.



At uni I loved physical chemistry because of its clear rules.



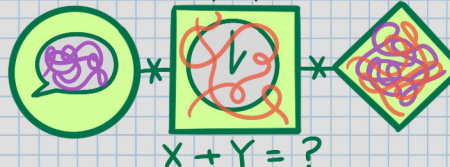
During my Master's though I could stay in the same place, work with the same people. That was so much better.



When I was 15, I found out I was autistic. But for me, this wasn't bad news at all.



But I had trouble with verbal instructions, new people, and deadlines.



After acing my MA I'm starting my PhD...
I can't wait to dive further into the complex world of chemistry



Casey 😊

It was when I saw videos about ADHD that I realised I had it.
#ADHD

When I was growing up I realised I thought differently to those around me.

School was tough. Couldn't stay still or concentrate.

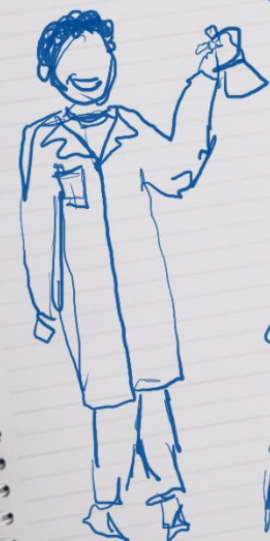
But some classes were different.

I can't go back and do it all again, but I can make the most of it now.

Then I realised about my ADHD. I started medication, but more importantly, I learned how to work the way I work.

At uni, I switched to chemistry to do more lab work.

NANOTECHNOLOGY



Henry



1

It was only at the end of my career that I realised I had dyslexia. Suddenly a lot made sense.

DYSLEXIA

3

I found optical chemistry easier ~ it deals with the structures of things. I could visualise them in my head.



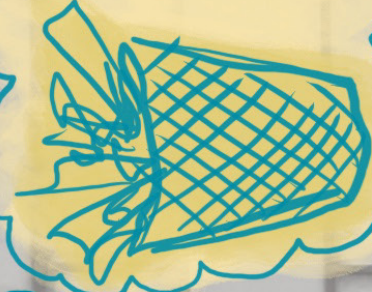
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I went from strength to strength when developing new products. My best ideas came to me in the shower. These were my 'shower moments'.



6

But as my career developed I had to write and read lots of reports. I couldn't stand it and had a breakdown.



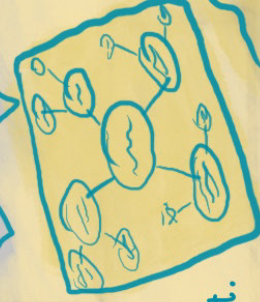
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I realised I had to work in practical, process-driven jobs. I got a job at Rolls Royce in their test lab.



7

My company paid for me to get dyslexia support. Strategies like mind-mapping and using text-to-speech helped a lot. I finally understood why I've always seemed different.



2

Back in my postgraduate with the Royal Society of Chemistry I found reading and writing reports really challenging.



Making chemistry more neurodiverse... Recommendations!

School

- ✓ Different learning pathways
- ✓ Training for teachers
- ✓ Predictable lab environment
- ✓ Written, clear instructions

Uni

- ✓ Different learning pathways
- ✓ Peer support
- ✓ Predictable lab environment
- ✓ Written, clear instructions

Industry

- ✓ More flexible working approaches
- ✓ Allowing for more specialisation based on skills
- ✓ Rethinking productivity measures

Policy

- ✓ More flexible working approaches
- ✓ Supporting alternative funding streams
- ✓ Transparency of available resources
- ✓ Openness to social research exploring neurodiversity

Research Institutions

- ✓ More inclusive conference and event practices
- ✓ Support for neurodivergent researchers to apply for funding and conferences, etc.
- ✓ Promoting social research that explores neurodiversity

Everyone

- ★ Flexible working approaches
- ★ Easily accessible systematic support for neurodivergent people
- ★ Raising awareness at all levels about neurodiversity
- ★ Alternate ways of measuring productivity
- ★ Celebrating successful inclusion and diversity work
- ★ Making sure people's self-diagnoses are recognised
- ★ Culture change – talking more about neurodivergence and disability

What helped me...

Finding the right route for me. Good higher education guidance.

Alex

A predictable lab environment. No expectations about things like eye contact.

Allegra

Not having classroom expectations, like having to sit still. More flexible working.

Casey

Finding an alternative route. Good career guidance. Assistive technologies.

Henry