

2025 Celebration of Science Poster of Distinction Winners: Meet Alex Dyson, PhD

By Brian Burns | Events, Neurology | 23 April, 2025 |



Alex Dyson, PhD
Research Fellow, Department of Neurology

In this Q&A, you'll meet Alex Dyson, PhD, a postdoctoral research fellow in the lab of [James Walker, PhD](#), at Massachusetts General Hospital.

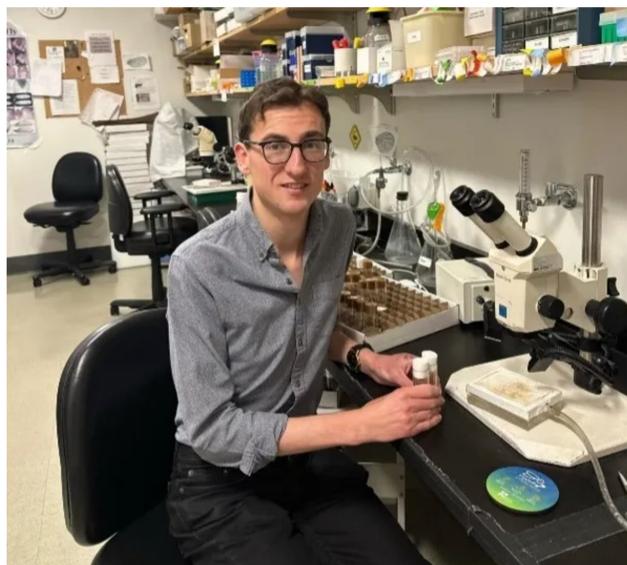
The Walker Lab is investigating the mechanisms underlying behavioral and cognitive changes in neurofibromatosis type 1 (NF1).

Outside of the lab, Alex can be found reading, playing his piano, or frequenting various Irish and wine bars.

Meet Mass General's POD People!

This year's Celebration of Science at Massachusetts General Hospital (MGH) started with a poster session that featured 250+ posters from research staff and trainees. From this impressive group, MGH judges selected 24 finalists to give a brief oral presentation on their paper. From those finalists, 12 Poster of Distinction winners were selected.

*Each of the winners received \$1,000 that they can use to support travel to a scientific conference or meeting. In this series, you'll meet the 2025 Poster of Distinction winners (who we have affectionately nicknamed **the POD People**) and learn more about them and their research.*



Can you give us a quick elevator pitch for your poster?

Mutations in the NF1 gene cause a neurodevelopmental condition called neurofibromatosis type 1 (NF1), which is associated with a range of cognitive and behavioral complications for which there are currently no effective treatments.

Drosophila (fruit flies) lacking a functional copy of their NF1 gene exhibit various phenotypes resembling

these neurological symptoms, allowing us to use this organism to investigate potential therapeutic strategies.

Here, we demonstrate that reducing the expression of the MAPK/ERK kinase (MEK) in our NF1 fly model rescues all behavioral impairments tested, suggesting that MEK inhibition may reduce the neurological symptoms of NF1 in the clinic.

What inspired this research?

NF1 is one of the most common monogenic (caused by a single gene) neurodevelopmental disorders, and the majority of those affected will experience some form of cognitive or behavioral complications.

Such symptoms may affect multiple aspects of an individual's well-being across their lifespan, yet effective therapeutic interventions are lacking.

To address this, we turn to the fruit fly, a model organism that has proved invaluable in contributing to our understanding of NF1 pathophysiology for almost three decades.

If someone's new to this topic, what's one key takeaway they should walk away with?

Despite the obvious differences between fruit flies and humans, the nervous systems of our two species still develop and function in a remarkably similar manner.

As a result, we anticipate that research using the former will shed light on neurological disease in the latter.

Here, we find that reducing the levels of a protein called MEK in a fly model of NF1 turns the behavioral changes associated with the disorder back to normal. Therefore, we think further study of MEK inhibitors as treatments for the behavioral symptoms of NF1 is warranted.

Was there a moment when things didn't go as planned? How did you navigate it?

Of course. To assess learning and memory in our flies, we essentially measure their ability to associate a particular odor with an electric stimulus, such that they should later avoid this odor even in the absence of that stimulus.

But, when designing this experiment, we found that our Nf1^{-/-} flies demonstrated a heightened innate aversion to one of the odors we initially planned to use, meaning we could not use it to reliably characterize cognitive impairments in this manner.

Fortunately, we were able identify an alternative, suitable odor, based on previous literature, and we think that we may have identified a novel sensory processing phenotype in our NF1 fly model, similar to how children with NF1 often respond differently than their peers to certain stimuli.

What's a fun or surprising fact about your research not included in your poster?

Single, disease-causing missense mutations found in neurofibromatosis patients are equally disruptive to cellular signaling, growth, and behavior when introduced into the fruit fly.

This truly demonstrates the remarkable conservation of NF1 across species and underscores the translational potential of fruit fly research to the clinic.

If you could invite one scientist—living or historical—to view your poster, who would it be and why?

Any clinical researcher currently working in the field of NF1. Their feedback will allow us to understand how best to adapt our work to address the most pressing needs of the patient.





Alex enjoying an Americano (black, no sugar) at Acadia National Park in Maine.

What's your go-to order at a coffee shop?

Americano – black, no sugar.

Be honest—how many computer tabs do you have open (on average) per day?

Dozens.

What's your go-to karaoke song?

I'm not a fan of karaoke – something everyone should be thankful for.

What's your most-used emoji?

I tend not to use them.

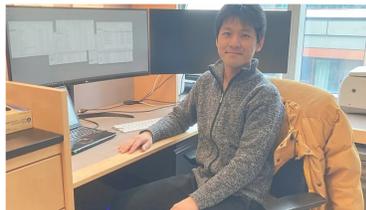
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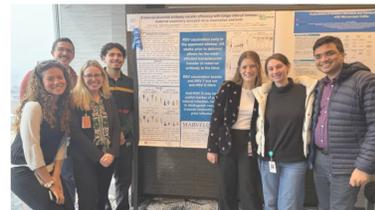
I'm ready for more science!
➔



2025 Celebration of Science Poster of Distinction Winners:
Meet Alexander Jucht
April 17, 2025
In "Events"



2025 Celebration of Science Poster of Distinction Winners:
Meet Shota Shibata, PhD
April 24, 2025
In "Events"



2025 Celebration of Science Poster of Distinction Winners:
Meet the Edlow Lab Team
May 27, 2025
In "Events"



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