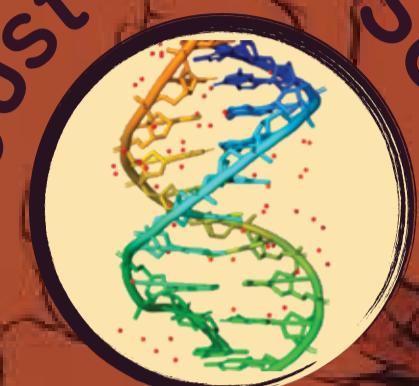


Just-DNA-Seq

My genes
and longevity

Just-DNA-Seq



Stories

Discover genetics of longevity
with Just-DNA-Seq Stories!

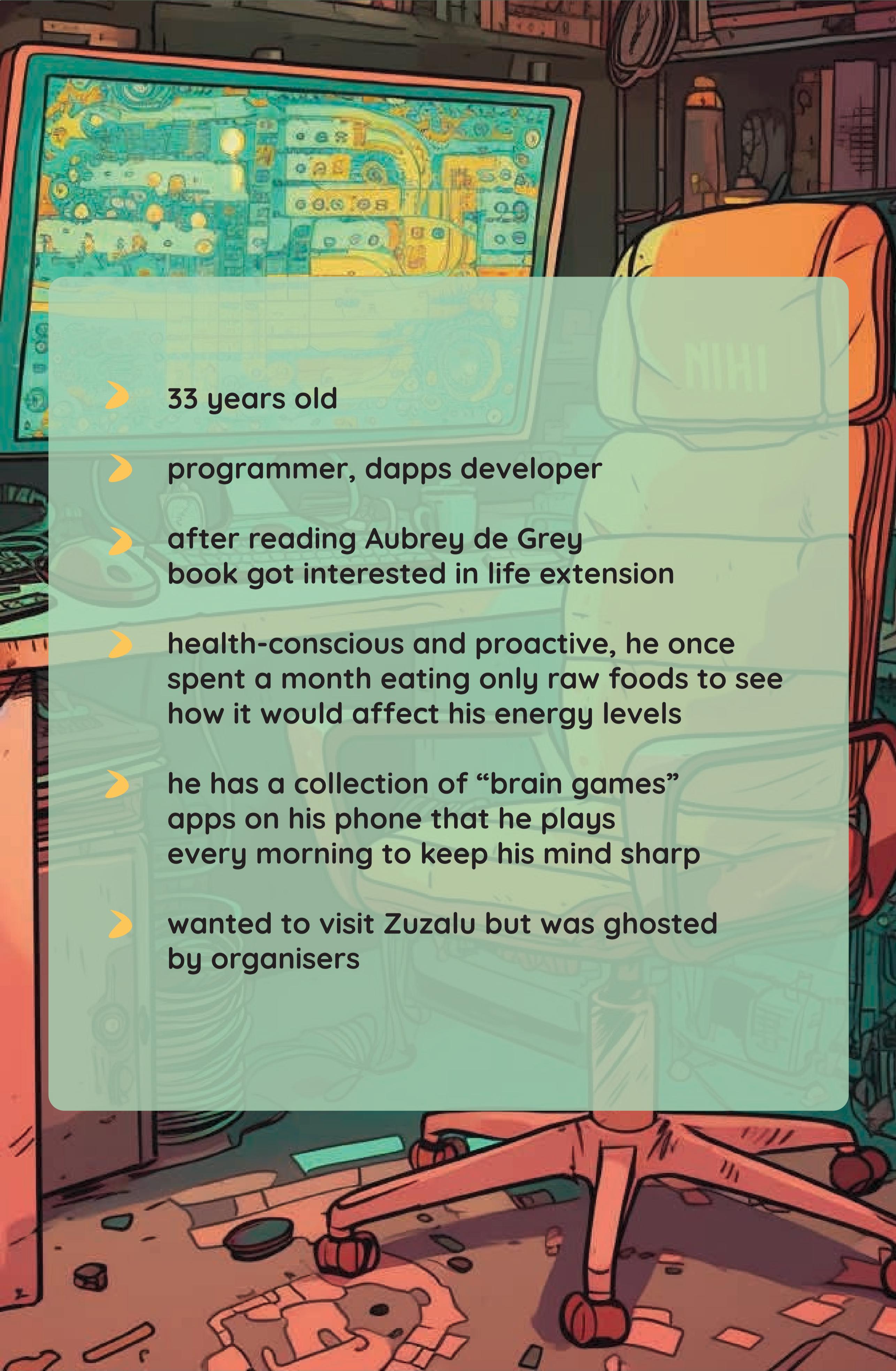


Just-DNA-Sequencing



Stories





33 years old

programmer, dapps developer

after reading Aubrey de Grey book got interested in life extension

health-conscious and proactive, he once spent a month eating only raw foods to see how it would affect his energy levels

he has a collection of “brain games” apps on his phone that he plays every morning to keep his mind sharp

wanted to visit Zuzalu but was ghosted by organisers

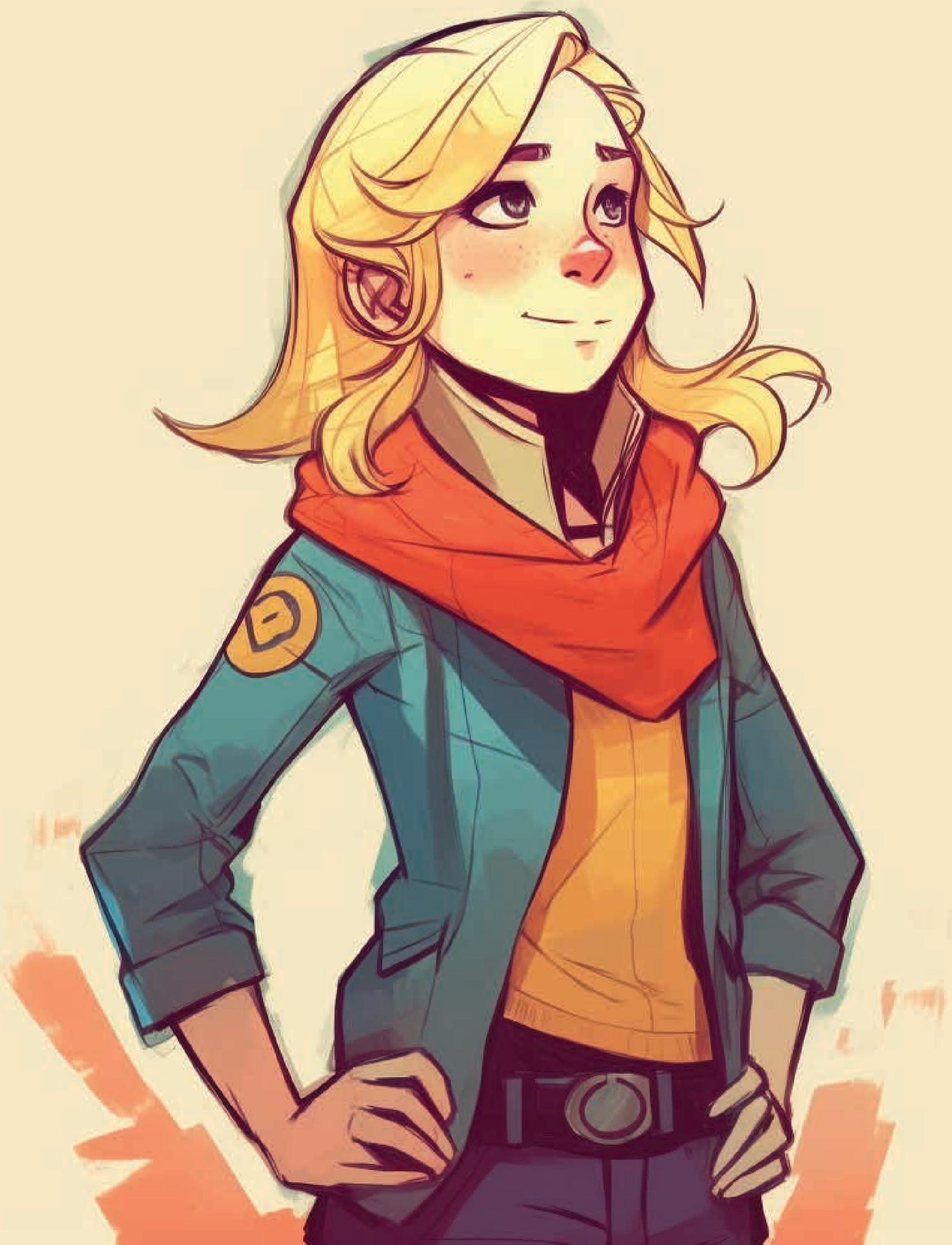
Meet our main characters!

James



Meet our main characters!

Alex



-
- 32 years old
 - biologist
 - her lab coat has a secret pocket where she keeps emergency snacks, just in case she forgets to eat while working
 - she once accidentally brought a live beetle home from the lab in her pocket and ended up keeping it as a pet
 - she's been known to accidentally use scientific terms in everyday conversation and confuse her non-biologist friends, but she just can't help it



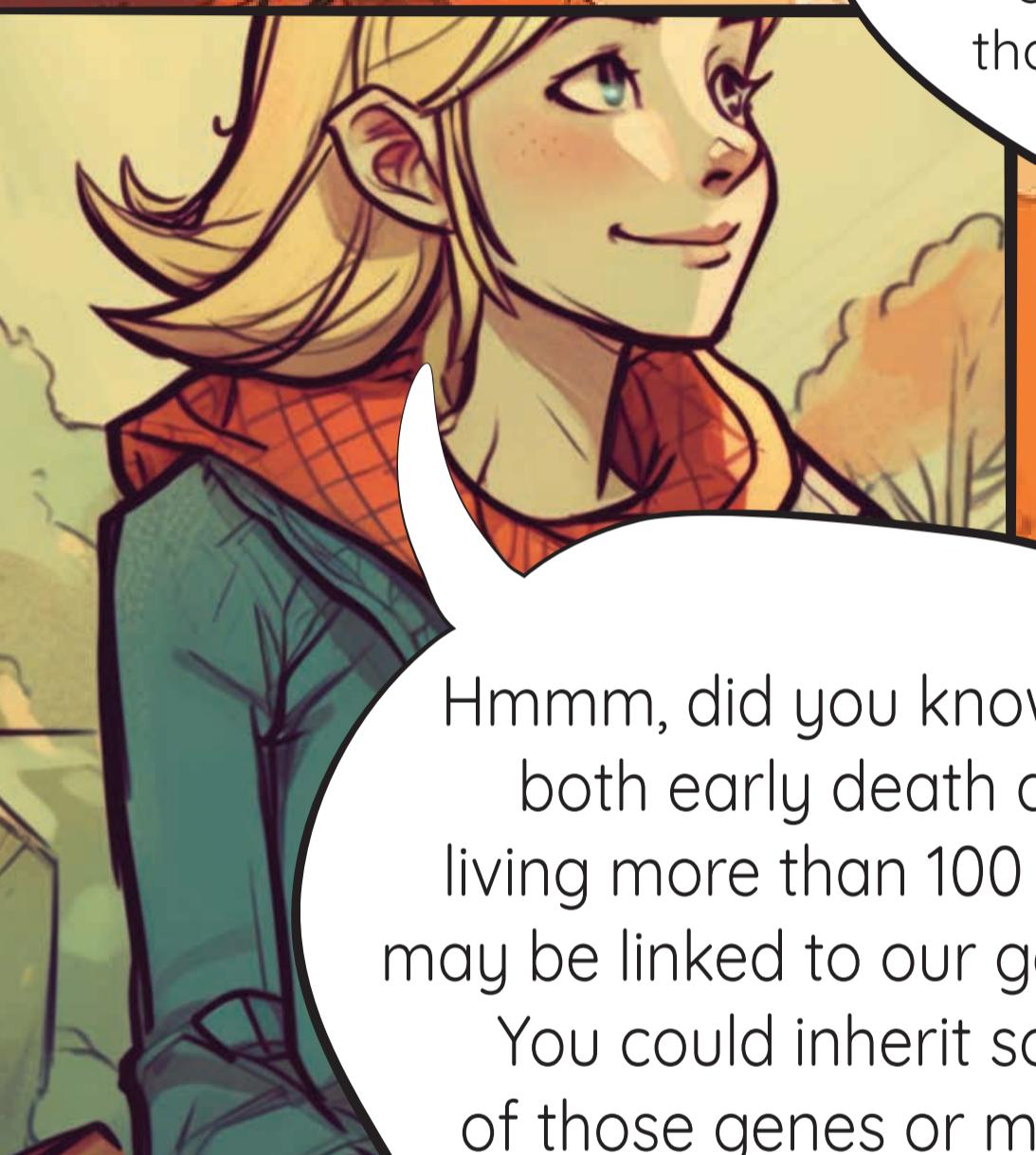
How's life, James?
I have heard your father
passed away recently...
I am sorry



Thank you. Yes.. It's so hard to process.
It is very frustrating that my father
passed away so young. No one
expected that.



From my mum's side of the family I have a grandmother who is 105 years old! She is always so energetic! I love visiting her. I hope she will live even longer, but it is so frustrating that some people live for so long and someone's life is so short...



Hmmm, did you know that both early death and living more than 100 years may be linked to our genetics? You could inherit some of those genes or maybe even both!

Huh, really?



Yep! You can sequence yourself and your grandmother's DNA to get a better understanding about it and overall risks that you have.



It is indeed really interesting!
I think I should try!
It might be very interesting for my whole family. I wonder what I inherited.



Good! Tell me later what you discover. As a biologist I am really curious and I will be glad to help!



Sure!
Let's do it!



Genetic Kit!!!

Hmm... Sequencing looks pretty simple, paying 200-300 dollars to a commercial sequencing companies like Dante or Nebula...



Testing tube!!!



Getting their testing tube, putting your saliva, sending back and getting your results!



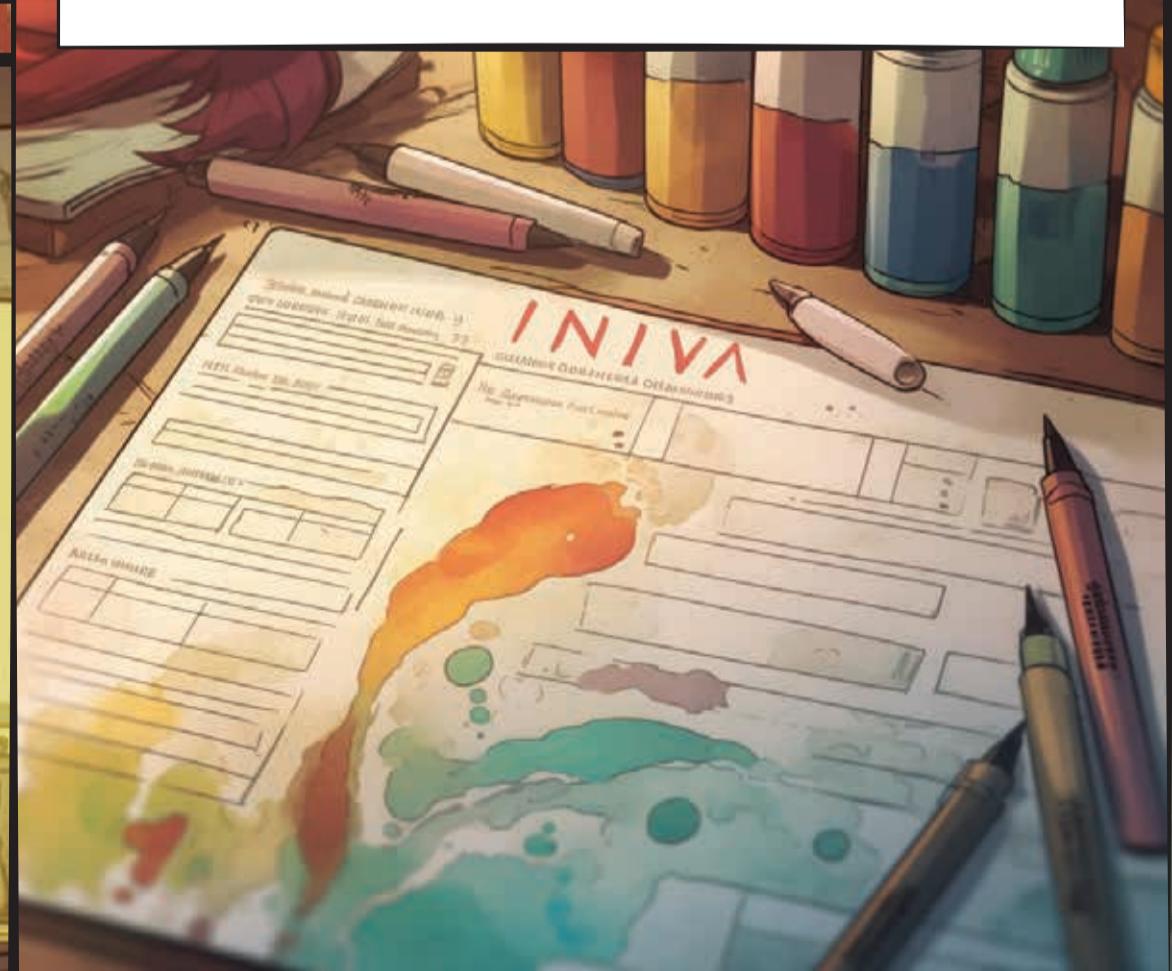
4 months later...

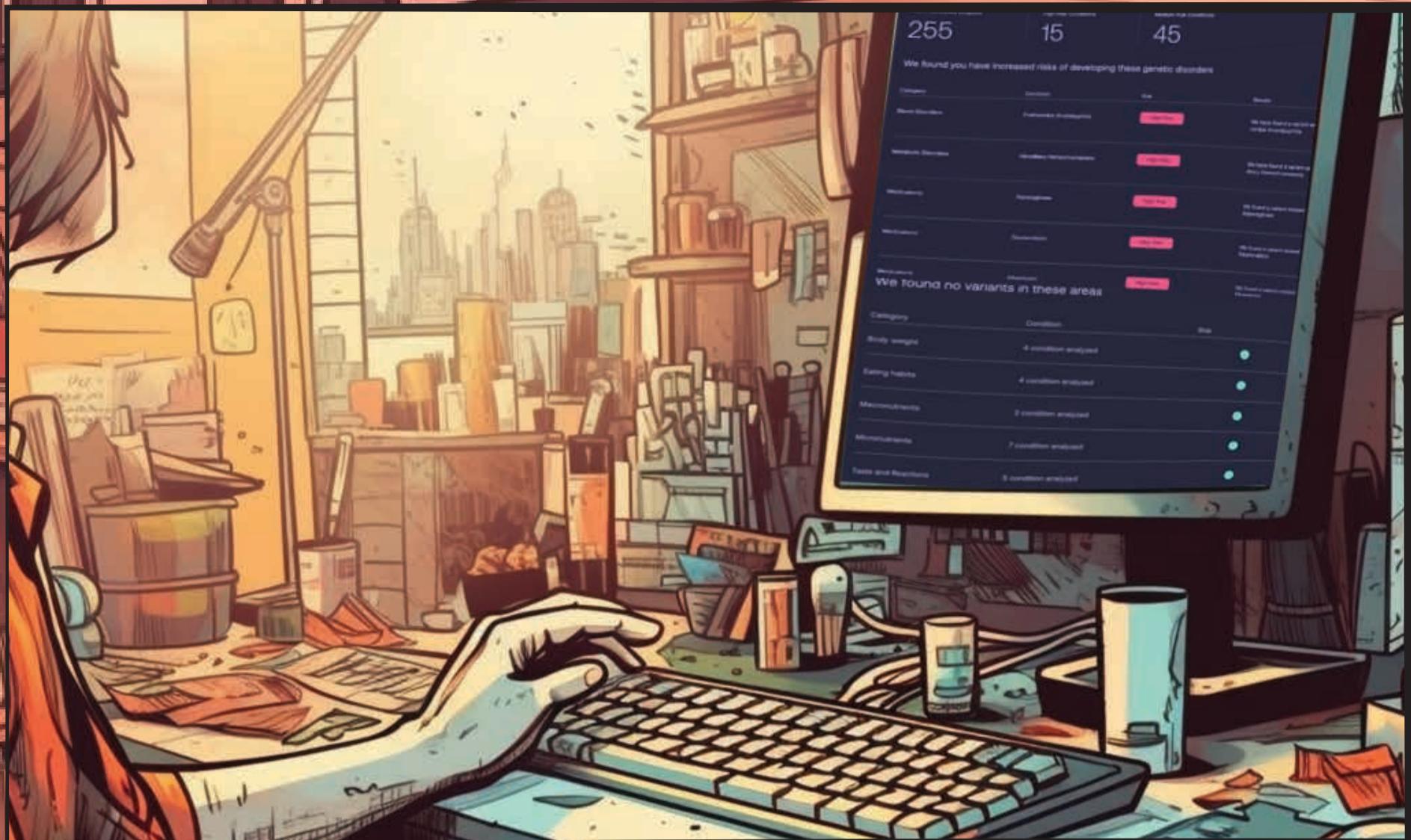


Finally, I received the results of the test... Let's see

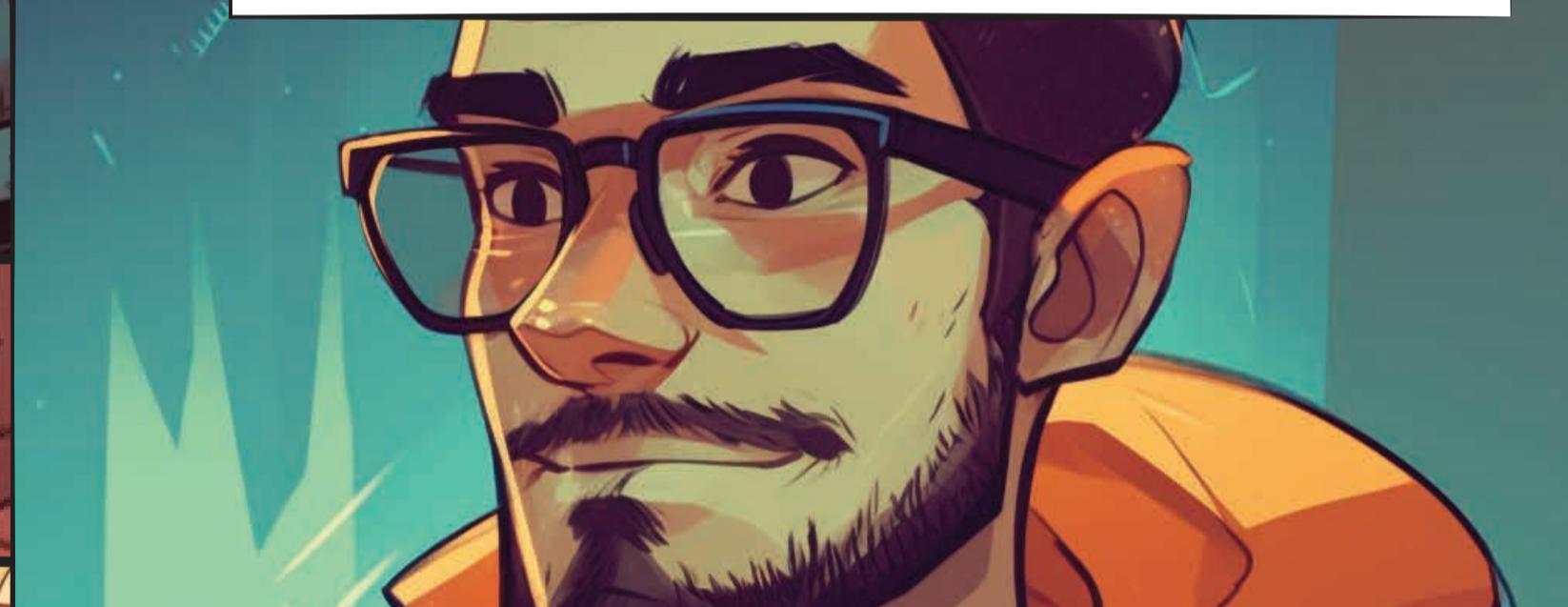


Ok, I see many commercial reports, but only several genes about longevity with not much information explaining those genetic polymorphisms.





It is definitely not enough. I see I can download my raw data, like a vcf file. Maybe I can read scientific articles and look at my raw data if I have those variants?



Wellness and Lifestyle Report

Your holistic report that lists potential health conditions you might develop.

Report Summary

Health conditions analyzed	High Risk Conditions	Medium Risk Conditions
255	15	45

We found you have increased risks of developing these genetic disorders

Category	Condition	Risk	Results
Blood Disorders	Prothrombin thrombophilia	High Risk	We have found a variant associated with Prothrombin thrombophilia.
Metabolic Disorders	Hereditary Hemochromatosis	High Risk	We have found a variant associated with Hereditary Hemochromatosis.

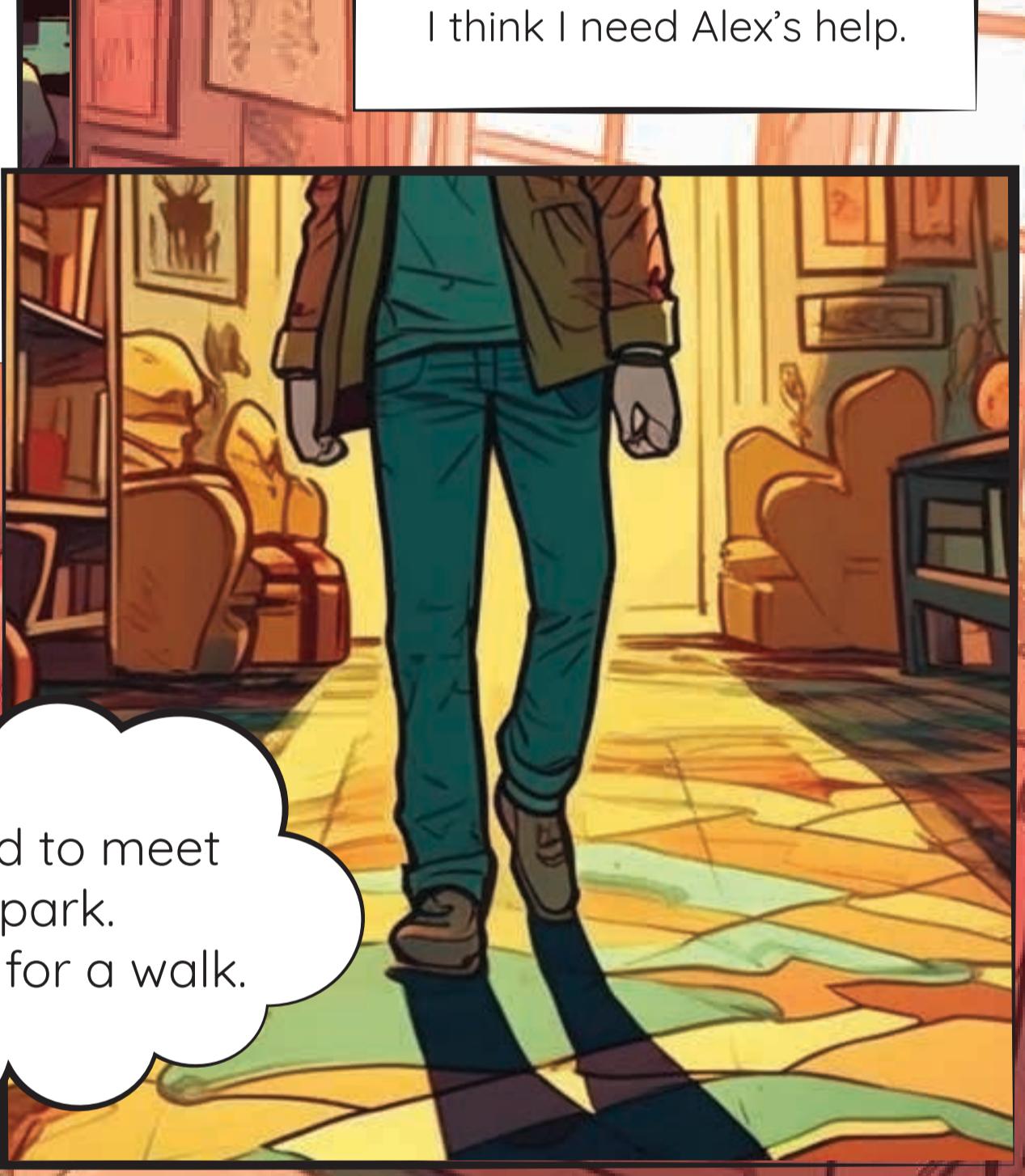


It seems it is harder than it looks... I found a bunch of articles and even some databases. But the data there is somewhat messy, extracting and cleaning it and then manually checking my genome's vcf file for those variations will take ages!

I think I need Alex's help.



She wanted to meet
in the park.
Time to go for a walk.



Hey! Thanks for coming.
I think I need your
help with my vcf file.

Hi! Sure,
I am glad to help.
What is your
problem exactly?

I want to find out
what genes related to
longevity I have, but it
seems it is pretty hard
to find it manually...

I may suggest using OakVar and
Just-DNA-Seq platforms - they are
what scientists usually use in their research.
And they have the whole module r
elated to longevity genes. I think
you will find there what
you are searching for.

I should give it a try,
thanks a lot!

Let's find out what
Just-DNA-Seq is...

Longevity Report

This report is based on your raw file genome's data cross-referencing against available genetic databases and constructing a report based on interpretations in these databases. Variant annotations were made with [OakVar](#). Annotation databases that was used for report generating: cadd_exome, gnomAD, pubmed, clinpred, clinvar, ncbigene, omim, prec, provean, revel, sift, LongevityMap.

Attention! The information provided is just for informational purposes. Its clinical implementation is possible just after consulting your healthcare practitioner. All drugs, vitamins and lifestyle changes may be prescribed just by your healthcare practitioner, based on clinical blood test results, family history etc. Genetical testing just provides additional information about possible health risk and risk management.

Ok, let's see what I am getting there...
Much more than in commercial reports!

This genetic report is like a massive treasure trove of information.

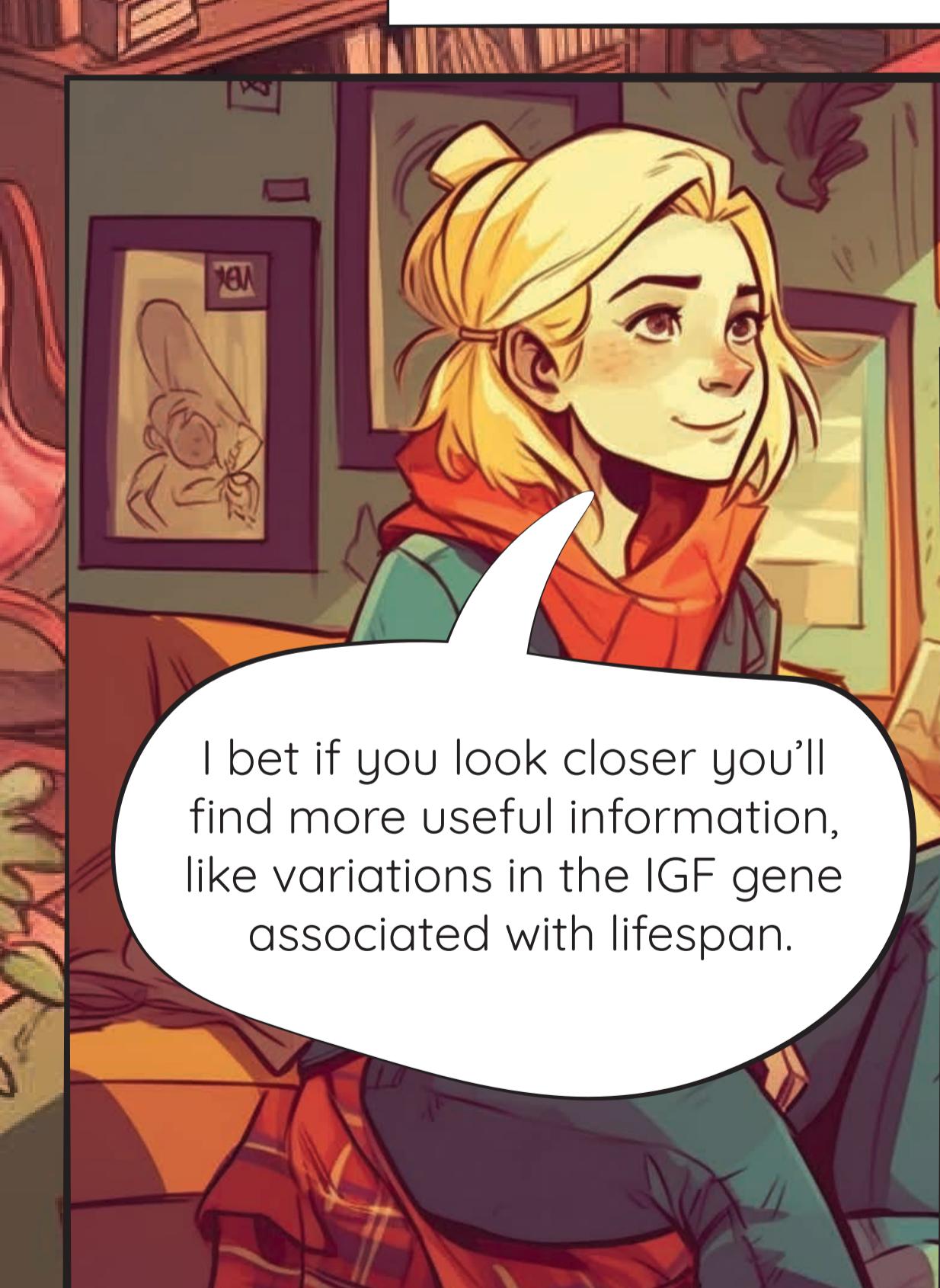
In this report you can find information about longevity genes. The report categorizes them into 11 distinct groups based on their role in longevity. Each group has a detailed description, which is super helpful. It even provides recommendations for each section.

Oh, and I came across some intriguing information about my enhanced response to metoprolol! If I ever need to take this medication, my doctor can adjust the dosage based on this knowledge. So convenient! You can find this info in the "Longevity drugs" module.

And hey, don't forget to explore the "Major risks" module! It reveals potential risks of developing certain diseases. Being aware of these risks allows you to pay extra attention and take preventive measures. Guess what? It turns out I have a risk of developing Blood clot and deep vein thrombosis. Time to prioritize a check-up and amp up my sports routine.



So, it looks like I have a specific genetic variation that increases my risk of developing a coronary artery disease.. but, I also have protective genetic variants as well!



I bet if you look closer you'll find more useful information, like variations in the IGF gene associated with lifespan.



That's true! I know that my father's side of the family has a history of shorter lifespans.. I guess that high risks I have are from that side of my family. But now since I know them I am going to pay attention to it and do regular check-ups!

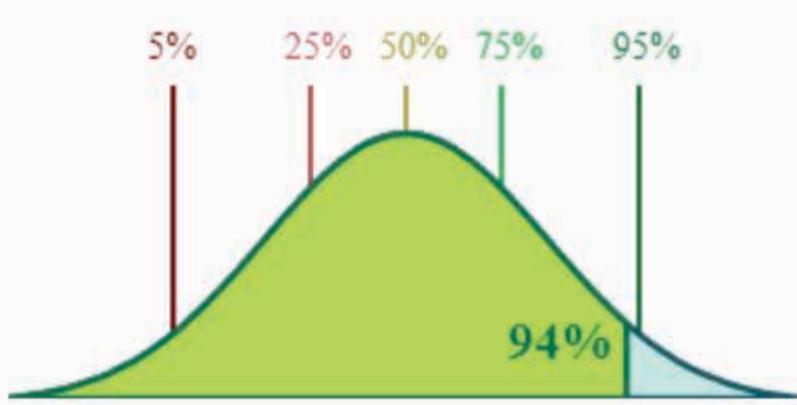


Thank you, Alex! With the help of OakVar, I was able to find important information about my own genetics. But is there any way how I can see the general picture if I am doing bad or well?



Yes! There is PRS. It is exactly what you are looking for. Let me tell you more about it...

Title	Longevity PRS (PRS5)
Sum	6.147905555255802
Count/total	114/332
Average	0.02696449804936755
Percentile	94%



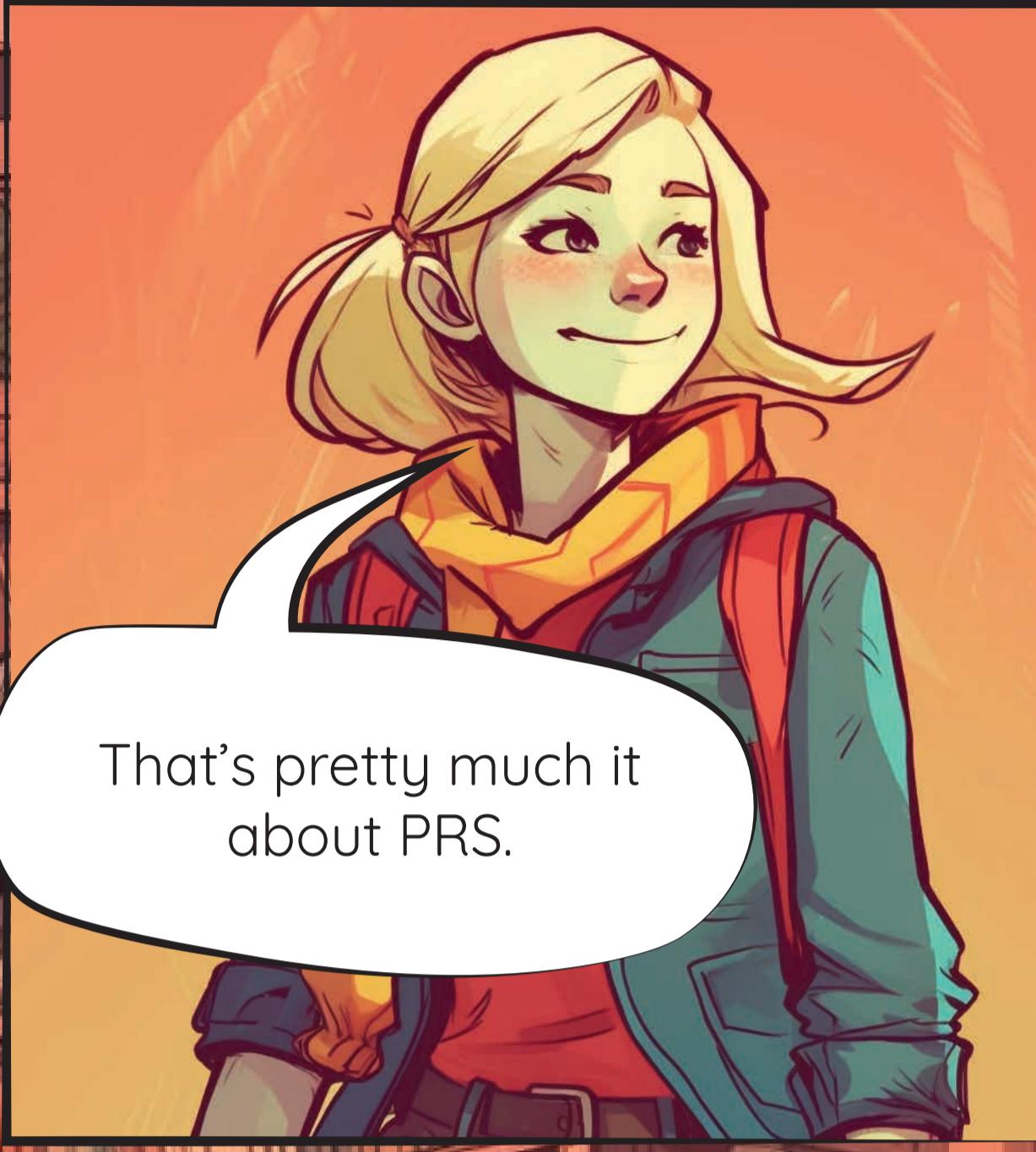
In general, PRS is something that shows the overall effect of some group of genes which are related to the same trait. Let's say longevity that we can consider as a "trait"! Lots of genes can affect longevity of a person in a very different way.

Depending on how many of those variants on which that PRS was built you have and in what kind of variants you have, the overall effect of them can be calculated!

In this case you have 94% PRS score, which means that you are very likely to live very long!

There are also PRS risks of some diseases in the report. Check them out too!





That's pretty much it about PRS.



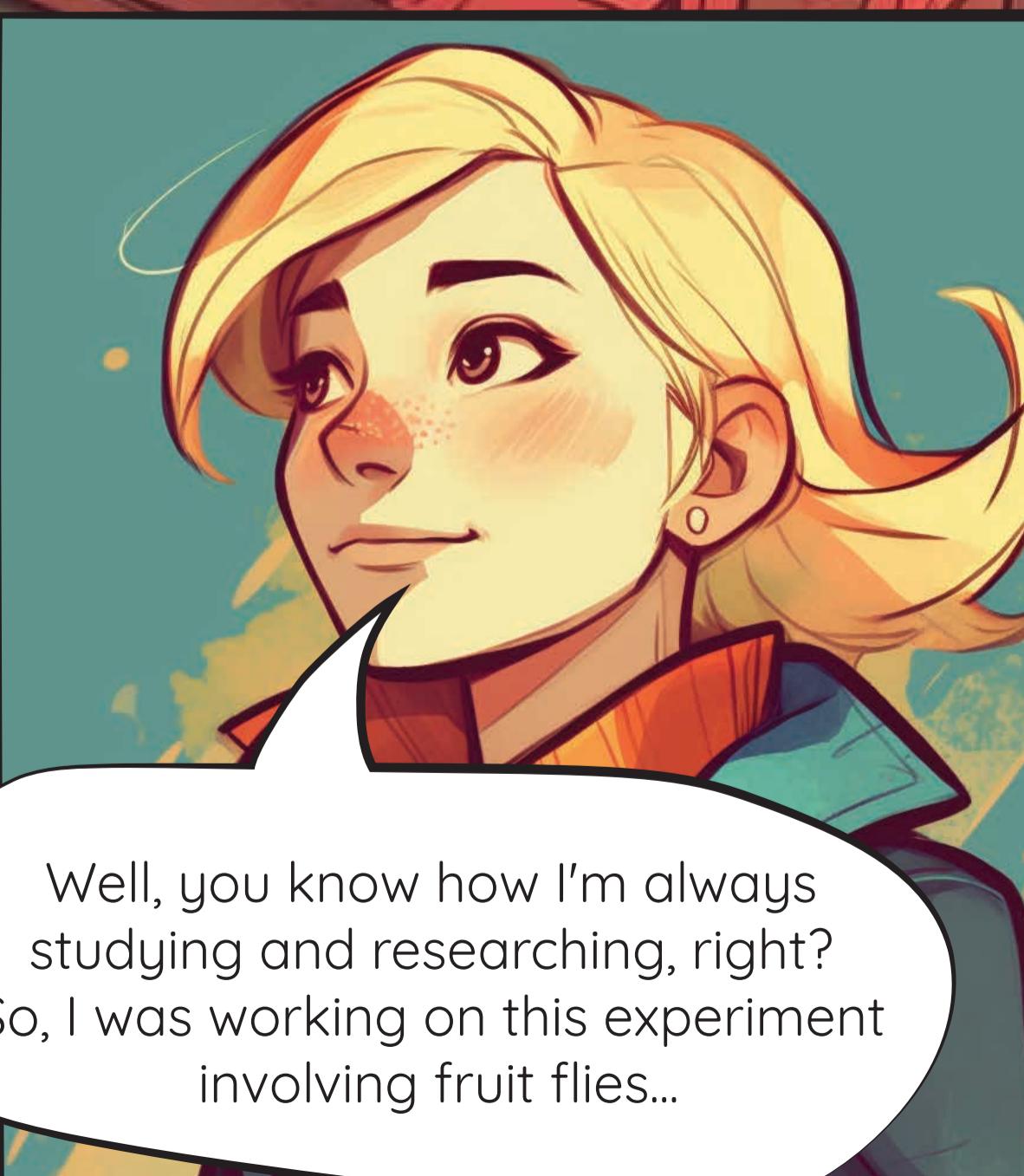
Wow, that's a lot of information..
But I think I can handle it! Thank you!



It's my pleasure, James. I'm just happy I could share my love for biology with you. Speaking of which, I have something hilarious to tell you about my latest experiment at the lab.



Oh, do tell! I'm all ears. What crazy scientific shenanigans have you been up to?

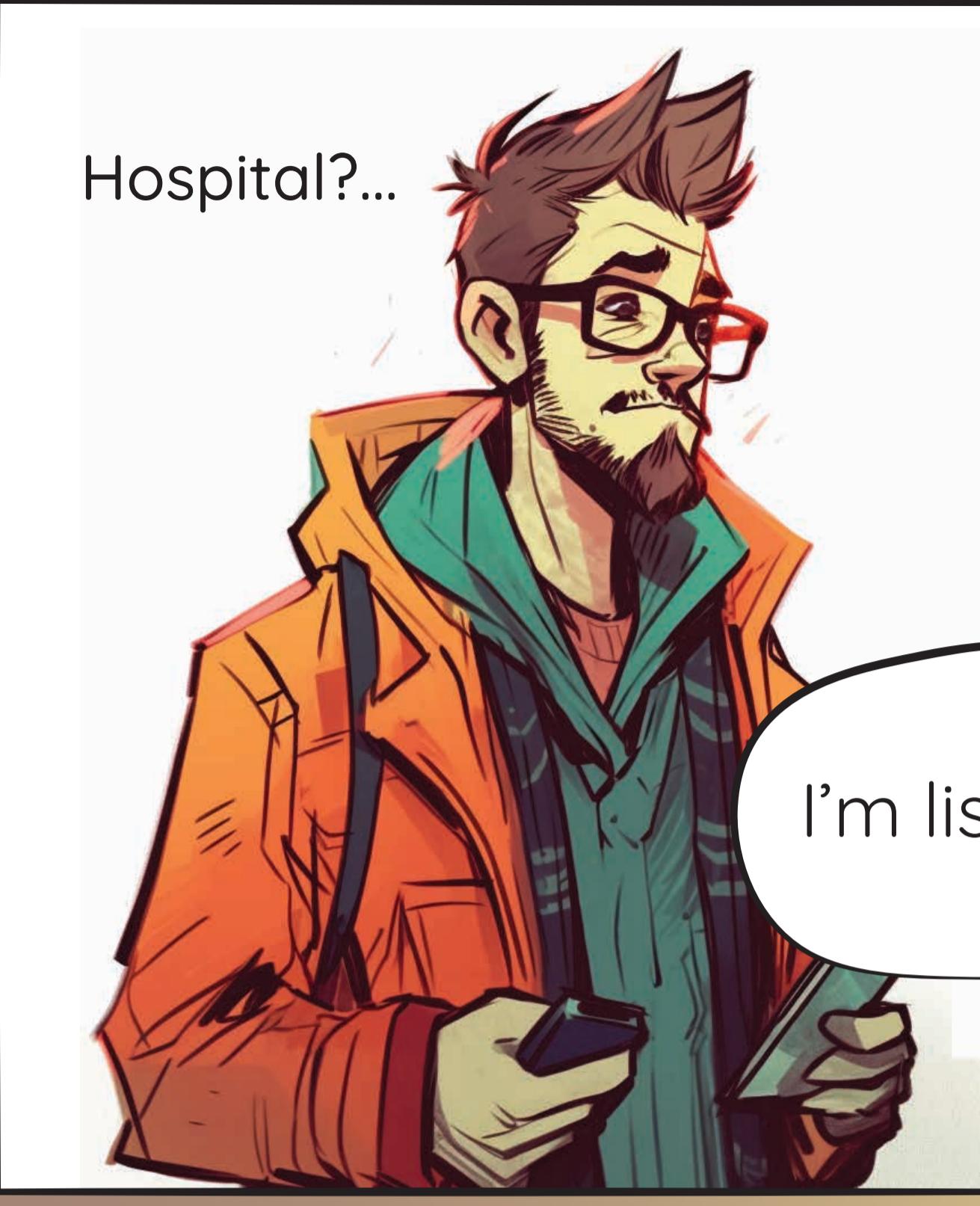


Well, you know how I'm always studying and researching, right? So, I was working on this experiment involving fruit flies...



A few days later...

Hospital?...



I'm listening.



This is the Central Hospital, we are calling to inform you that something has happened to your uncle...

To be continued...

Meet our team!



Anton Kulaga

Bioinformatician,
team leader

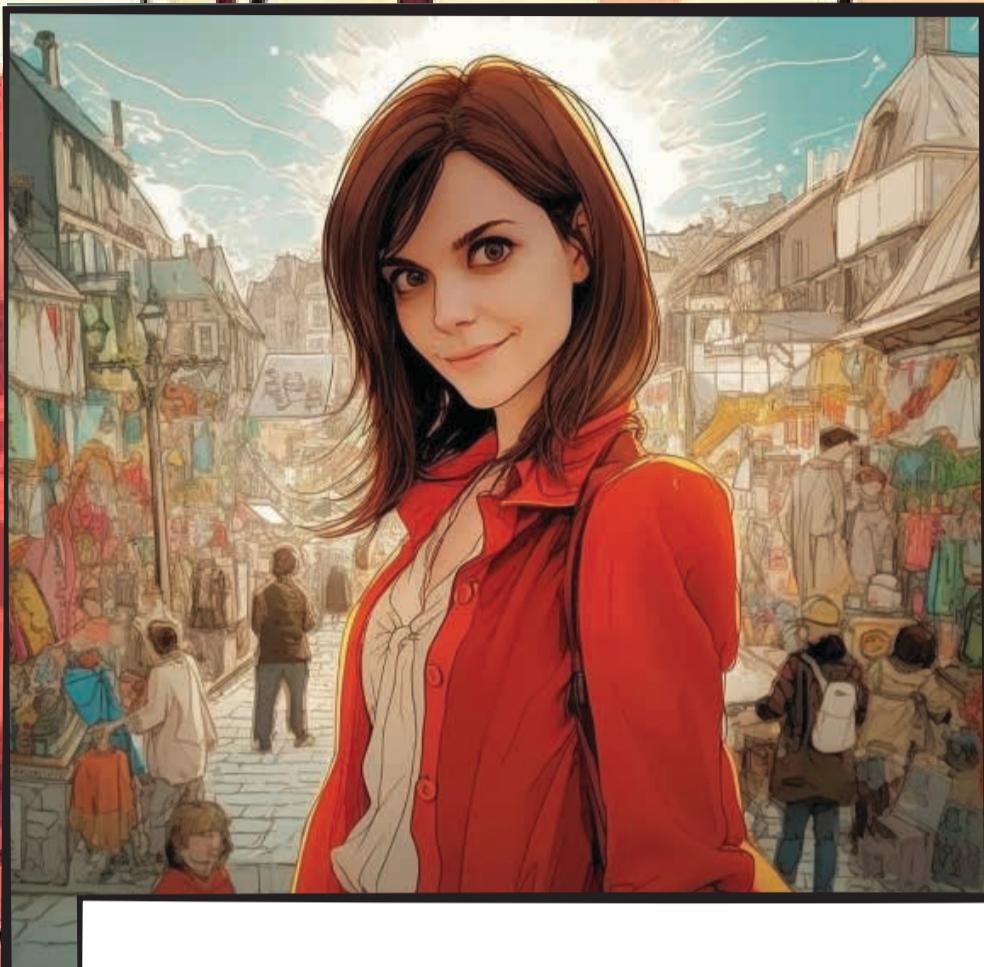
Alex Karmazin

Software developer,
ML and data engineer



Alina Fedorova

Bioinformatician



Olga Borisova

geneticist



RyangGuk Kim

Scientific adviser



Maria Koval

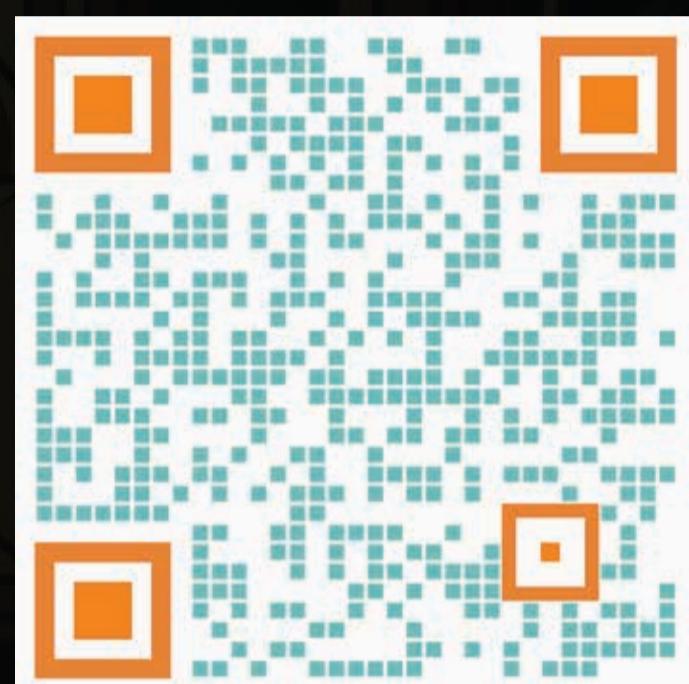
Junior software
developer, Art Director



Newton Winter

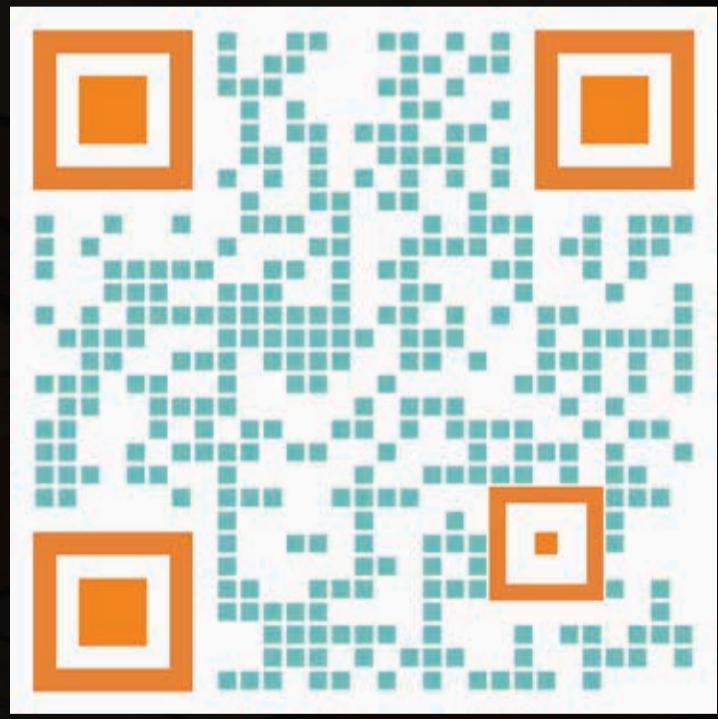
Chemist,
software developer

Useful links



Example of
James' report

https://dna-seq.github.io/report_example/



About
Just-DNA-Seq

<https://dna-seq.github.io/>



