Wake Forest University
School of Medicine

Cancer Biology

with

Dr. Kelsey Fisher-Wellman

GET STARTED

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Meet Kelsey

Dr. Kelsey Fisher-Wellman

Dr. Kelsey Fisher-Wellman is a **cancer biologist** at Wake Forest University School of Medicine in the US.

He is studying **acute myeloid leukemia** (AML), a type of **blood cancer** caused when stem cells fail to specialize into blood cells.

Kelsey is investigating how **mitochondria** in cancerous AML cells differ from those in healthy cells, as these differences could be exploited to develop new cancer treatments.

Learn about Kelsey’s Research and Career Journey

The animation on the following slide will introduce you to Kelsey’s research and career journey.

You can also find it on Kelsey’s Futurum page: futurumcareers.com/cancer-biology-with-dr-kelsey-fisher-wellman

Or watch it on YouTube: www.youtube.com/watch?v=kuiXesbXdwg

Animation Summary

As a teenager, Kelsey loved bodybuilding and playing baseball. At university, he studied **exercise science** and worked as a personal trainer.

He didn’t enjoy his internship with the university football team, so he did an internship in a research lab. There, he discovered a love for **lab science** and was inspired to become a **biomedical scientist**.

With his background in exercise science, Kelsey struggled to get into a biomedical PhD program. Then, when he did, he had to **work hard** to catch up with his peers.

Animation Summary

Today, Kelsey studies **mitochondria** in AML cells. Mitochondria provide cells with **energy** by converting energy from food into a form that our cells can use – a molecule called **ATP**.

Kelsey has discovered mitochondria in AML cells run this process in reverse and **consume ATP** instead.

He hopes scientists will be able to use this discovery to develop new **treatments** for AML that destroy the mitochondria in AML cells, while leaving healthy cells unharmed.

Talking Points

1. What causes acute myeloid leukemia (AML)?
2. What are mitochondria?
3. How did Kelsey’s teenage hobbies influence his educational journey?
4. How did Kelsey overcome the challenges he faced during his educational and career journey?
5. What has Kelsey discovered about mitochondria in AML cells?

About Cancer Biology

Cancer biology is the study of the **biological mechanisms** underlying cancer development and how to address them through treatment.

"Cancer remains one of the most complex and pressing challenges facing society. Dedicating your life to understanding and treating this disease is a valuable pursuit." – Kelsey

According to the US National Cancer Institute, **two in five people** in the US will develop cancer in their lifetime, so developing new and improved ways to detect and treat the disease is essential for a healthy society.

Kelsey discusses research data with staff scientist Dr. Raphael Aruleba

Pathway from School to Cancer Biology

Members of the Fisher-Wellman Lab at the 2025 Metabolic Physiology Meeting

At high school, it would be useful to study **biology**, **chemistry**, **mathematics**, **physics**, and **computer science**.

At college, a degree in **biology**, **biomedical science**, or **biochemistry** would provide a direct path to a career in cancer biology.

To become an academic researcher, you will need to complete a **PhD** – a funded form of advanced education where you get paid to learn and contribute to science.

Pathway from School to Cancer Biology

Members of the Fisher-Wellman Lab

Kelsey emphasizes that many innovations in cancer biology come from people who take **unconventional educational and career paths**.

“Instead of sticking to one field during your training, I’d encourage you to explore more broadly. Don’t limit yourself. The more diverse your knowledge base, the more creative and impactful your contributions can be.”
– Kelsey

Explore Careers in Cancer Biology

Careers in cancer biology often involve lab-based research. This might be at a **university**, for a **biotechnology** or **pharmaceutical company**, or for a **cancer research organization**.

“It’s important to remember that scientific breakthroughs can take years, even decades, to materialize. Even though the impact of your work may not be immediately visible, that doesn’t make it any less worthwhile. There’s something deeply fulfilling about contributing to this ongoing legacy and shared endeavor.” – Kelsey

Kelsey works in the lab with postdoctoral researcher Dr. Edziu Franczak

Student Opportunities

Kelsey recommends reaching out to biomedical scientists to seek **advice** and ask about **opportunities** to work in their lab.

"Hands-on experience, especially in a biomedical research lab, is truly invaluable. Many of the opportunities that shaped my career began with me sending a simple email asking to get involved." – Kelsey

Many labs in the Department of Cancer Biology at Wake Forest University School of Medicine offer summer internship programs for high school and undergraduate students.

The NIH Summer Internship Program offers paid biomedical research experiences for high school students.

Kelsey works in the lab with staff scientist Dr. Polina Krassovskaia

Talking Points

1. What proportion of people in the US will develop cancer?
2. Why do you think many innovations in cancer biology come from those who have taken unconventional paths?
3. What do you think you would find most rewarding about a career in cancer biology, and why?
4. How could you find opportunities to gain hands-on experience in a biomedical research lab?

Meet Kelsey

Kelsey transfers growth media to acute myeloid leukemia cells

As a teenager, I was interested in baseball. Team sports taught me valuable life lessons about how to recover from failure and grow from these experiences.

I went to college to study exercise science, with the goal of becoming a strength and conditioning coach. But that changed when an internship in a research lab gave me a glimpse into the life of an academic scientist.

The experience was transformative – watching my mentor work, I saw someone deeply engaged in solving complex problems that matter to the world. That internship shifted my career goals and set me on a path that I've been passionate about ever since.

Meet Kelsey

Getting into a PhD program wasn't easy because exercise science isn't a typical background for biomedical research. I started behind my peers, having never studied physics or biochemistry, so I taught myself from textbooks to catch up.

After my PhD, I spent several years studying metabolic diseases in muscles. I have no formal training in cancer biology, so moving into the field was another challenge.

Each transition in my career has come with a steep learning curve. But I've always been drawn to non-traditional paths and willing to outwork others to succeed. This hasn't been without challenges – I've had plenty of failures along the way.

Kelsey works in the lab

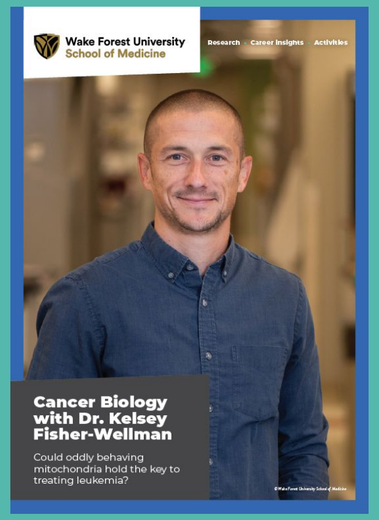
Kelsey’s Top Tip

We can’t control our starting point *– namely the resources we have available to us growing up – but we can control how we respond to it. In my view, academic science remains a place where doors can still open for those with talent and determination, regardless of their background. With persistence and hard work, the opportunities are real and within reach.*

Talking Points

1. What life lessons are you learning from your hobbies and interests?
2. How do you cope with challenges in your life?
3. To what extent are you inspired by Kelsey’s advice that, although we can’t control our starting point, we can control how we respond to it?

More Resources



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To provide input, simply scan the QR code or access the link below:

redcap.link/dh5j1nes

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