

Q&A with Johanna A. Joyce

THE AMERICAN ASSOCIATION FOR CANCER RESEARCH ANNOUNCES THE ELECTION OF PROF. JOHANNA JOYCE INTO THE ESTEEMED 2024 CLASS OF FELLOWS.

Professor Joyce is a cancer biologist and geneticist with a focus on understanding the tumor microenvironment's role in cancer progression, metastasis, and therapy response.

Can you tell us about your journey in the field of cancer research and what inspired you to pursue this career path?

I have been fascinated by the complexity of cancer since I was an undergraduate at Trinity College Dublin, Ireland. As part of our honors thesis in Genetics, we were asked to write a literature review on any topic we found interesting and relevant. I decided to write about genomic imprinting, including how this exquisite mechanism of epigenetic regulation can go awry in certain childhood cancer syndromes. I became pretty obsessed about this field and decided to do my PhD on this exact topic at the University of Cambridge, UK. This set me on the path to where I am now more than 20 years later – where my lab investigates and aims to treat cancer by viewing it as



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a complex, interconnected system.

Your election as a Fellow of the AACR Academy is a significant achievement. What does this honor mean to you personally and professionally?

This is indeed a tremendous honor, and one for which I am profoundly grateful. On a professional level, to be recognized in this way by your peers is the highest honor we

can receive as scientists. On a personal level, it is also a recognition of all the incredible students, postdocs and scientists in my lab over the years that I have had the privilege to mentor and advance our research program with – I share this honor with each and every one of them!

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In your opinion, what are some of the most promising advancements in cancer research today, and how do you envision these advancements shaping the future of cancer treatment?

Perhaps not surprisingly, I see the tumor microenvironment at the core of many of the most promising advances in cancer research, with the clinical

successes of diverse immunotherapies being a very clear example of this. Advances in spatial analyses of the tumor micro-environment are now revealing critical interactions between the key cell types, which we have increasingly better and more focused strategies to now therapeutically target. Along with exciting developments including myeloid cell-targeted agents, personalized vaccines, and an ever-expanding range of different immunotherapies, the future of cancer treatment will inevitably advance for the benefit of more and more patients each year.

You've been actively involved in promoting gender equality in STEM fields. Could you share with us some of the challenges women face in academia, particularly in the field of cancer research, and how we can address them?

Yes, this is something that I am very passionate about, and dedicated to bringing awareness to – and critically to also offer actionable strategies to promote equality for all – because we still have a long way to go. Too many people dismiss this as a problem which has already been addressed – sadly, it has not.

A lot of attention and programs have rightly been devoted to an important transition – from a postdoc to the first position as an independent investigator/tenure-track assistant professor. We see that these various programs are having a very positive impact, but a challenge still remains at the senior levels of academia – specifically in the transition to tenured professor and even more so to leadership positions.

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There are remarkably few women in leadership as heads of departments or directors of cancer institutes – this is clearly where we need meaningful progress. Finally, having men join the cause and

help to address these challenges is key – I always stress this point, women (or any minority group) should not have to fight for equality alone.

Collaboration is essential in scientific research. Could you discuss some of the collaborative projects you've been involved in and the importance of interdisciplinary collaboration in advancing cancer research?

Collaboration in research is so important – and for us, it starts within my lab. We have an incredible and diverse team of talented researchers, each bringing different expertise, experience and perspectives to our research program. This ranges from physician scientists who share their critical knowledge from treating cancer patients in the hospital, to computationally-minded researchers who not only lead their own projects but also collaborate on additional projects with other lab members who are predominantly bench scientists. Many of our research papers include multiple authors from the lab, indicating how important it is for us to come together as a team.



Johanna Joyce and team members © H.Siegenthaler, UNIL 2022

Teamwork is critical for me, and this was always how I wanted my lab to be – as a place where different people work with a genuine, open spirit of sharing ideas, and helping each other with experiments and analyses – this is how our science is really able to advance. This positive ethos and culture then extends beyond my lab to our other collaborations, for example with our valued clinical colleagues at the CHUV Hospital Lausanne, with whom we have had a wonderful collaboration over the last several years. The generosity of patients in donating tissue samples for our cancer research is also critical – they are essential for all that we do, and this is how we as a community will make advances for patients – together.

What advice would you give to young researchers, especially women, who aspire to pursue a career in cancer research or STEM fields?

My advice will always be to go for it! If research is what you love and enjoy, don't let critical people or naysayers persuade you not to take this path. There are three key 'Ps' that I believe are critical for success in science: passion, persistence and people. You must have a genuine passion for research –

this is what is so great about being a curious scientist, and it is also what will sustain you during the challenging times. Persistence is also really important – to have your scientific (and career) goals in mind, and to always be working towards them – its really important to not give up when the inevitable obstacles and challenges come up. Finally, people are perhaps the most important part of this equation. The people you will work with – your mentors, your lab colleagues, and your broader research community – they are all critical for a happy, supportive and successful life in science.

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About Johanna:

Johanna A. Joyce is a Full Professor at the University of Lausanne, Switzerland, and Full Member of the international Ludwig Institute for Cancer Research. She was elected by her peers to EMBO (2017), and to the European Academy for Cancer Sciences (2017). She has also been recognised through a series of prestigious awards including the EACR-Pezcoller Women in Cancer Research Award, the Robert Bing Prize, the Cloetta Prize, among many others.

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