



20 Questions with... Josh Dierolf

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20 Questions with 20 Stem Cell Scientists from Across Canada

1. Where were you born? Where did you grow up?

I was born in Wingham, Ontario and grew up in Lucknow, Ontario, a small town north of Goderich. My family later moved to London, Ontario where I attended most of middle school, high school and university.

2. Where did you go to school?

All of my post-secondary education has been at Western University. I did my B.Sc. in biology and then went on to do my Masters in physiology and pharmacology, specializing in developmental biology. I then transitioned into a PhD program in physiology and pharmacology, with a specialization in developmental biology.



3. What did you want to be when you grew up?

I wanted to be a naval architect. I really like boats and I love drawing.

4. What are you researching right now?

I am studying the influence of metabolism on stem cell pluripotency and early development. In the simplest of terms, I am figuring out what role the gene called PKM1/2 does during early stem cells of the developing embryo and how that influences their development.

5. What attracted you to stem cells?

In my opinion, there is nothing else cooler to research. The study of stem cells is the perfect combination of something that a curious person would want to look at because stem cells are the tool that can solve any problem you can think of. It is the ultimate thing for a creative person who can think outside the box because if there is a problem or a disease or a question you have, you can think of a way to use stem cells to answer that problem in some way. Stem cells are versatile. We know so little about them, yet what we do know has such incredible potential. If you want to be that famous trendsetter, I think stem cells is the way to go.

6. Who in your opinion, are the top three Canadian stem cell researchers in history?

Till & McCulloch – together they made one of the most important discoveries.

Janet Rossant – she is the world's best developmental biologist.

Molly Shoichet – she recently got the Gerhard Herzberg Canada Gold Medal - Canada's highest honour for science and engineering research. She just keeps going - you can't stop her.

7. What is the most significant stem cell discovery or advancement over the last 20 years? The last 60?

If we are going worldwide, I would say the last 20 years would be the Shinya Yamanaka's 2006 discovery of induced Pluripotent Stem (iPS) cells and the ability to reprogram cells into pluripotent stem cells.

For the last 60 years, I would say Sir John Gurdon and his discovery that the specialization of cells is reversible in 1962.

What is really cool is that the two of them shared the [Nobel Prize](#) in 2012!

8. What are your predictions for stem cell advances in the next 5, 10, 20 years?

5 – I think and hope it will be a huge expansion for biobanking of iPSC-derived cells.

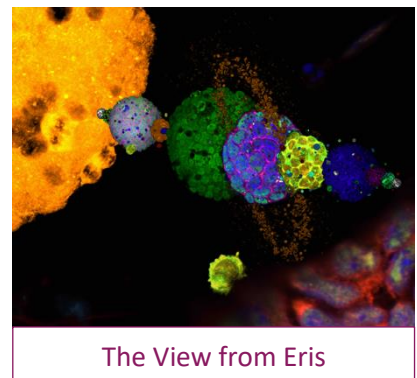
10 – I think we're going to see an advent in the ability for in vivo and ex vivo gene editing and advances in the ethics of such.

20 – I would love to see 3D printing taking off wildly for whole organ development, transplants and so forth.

9. What would you describe as the most significant moment in your own research career?

The most euphoric moment for me so far was winning the Cells I See competition last year [[The View from Eris](#)].

One of my best research moments would be finding PKM1 in a nucleus of embryonic stem cells. It was one of my first in the world kind of breakthroughs for me personally and was the first big discovery that people got excited about.



10. It is your night to cook – what is your go-to meal?

I am a big cooking guy. If I had time to prep, I would make a nice thick tuna steak, and a mushroom risotto. I would pair that with a nice glass of red wine.

11. What are you reading right now?

*I am a multireader so I have a few things on the go: Right now I am reading, *Lost Causes of Bleak Creek*, by Rhett McLaughlin and Link Neal.*

*I am also reading the second book in *Witcher Series*, *Sword of Destiny*, by Andrzej Sapkowski.*

*I was just given some books by Dr. Allan Eaves [President and CEO, StemCell Technologies] which I am also reading, *The One Minute Manager*, by Ken Blanchard and *The Innovator's Dilemma*, by Clayton M. Christensen.*

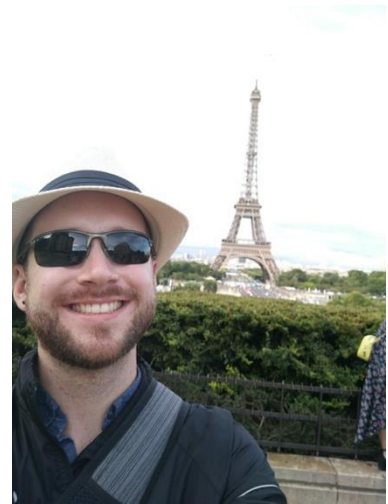
I also try to read at least one scientific paper per day but sometimes you don't just want to read one page so I start a few papers at once. Sometimes there are just so many stem cell papers out at once. So I have just got into the habit of reading a few different things at a time. It's like you don't watch one TV show only, so for me it's the same thing with reading.

12. What country or city would most like to visit?

I haven't done a ton of travelling yet but I loved going to Italy, the food was amazing.

I would love to visit Reykjavik, Iceland or Oslo, Norway.

Once I am all done with my education and post-doctoral work, my wife and I would like to actually move to a new country and live there for a few years. I would love to live in Leiden in the Netherlands.



13. What are the top three songs in your playlist right now?

Hurt, Johnny Cash

Oh! You Pretty Things, David Bowie

High Hopes, Panic! At the Disco

14. What is the best piece of advice you have ever been given? What advice would you give to a trainee just starting out?

The best advice I received was from Dr. Andrew Watson, a professor here at Western University. He suggested that failure in research is just inevitable, and if you are not failing you are doing something wrong. We learn from failure and we get better from it. You have to fail to succeed.

15. What website do you visit most often?

Reddit.

16. What is your favourite word? What word do you use too much?

My favourite word is 'delineate'.

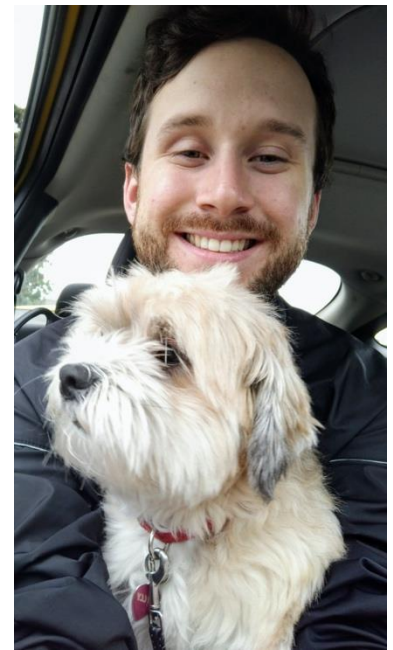
Pluripotency. If you were to control F on my computer, you would see that is the word I use the most of any word!

17. What takes up too much of your time?

Needlessly worrying about lab results. Considering the dreaded 'should haves'.

18. What job would you be terrible at?

Veterinarian. It would be a rewarding career but also devastating. I would be crying every single day.



19. What mystery do you wish you knew the answer to?

OK, so it's kind of antithetical to my whole research career, but actually don't wish I knew the answer to anything because my biggest drive in being a scientist is to try and find the answer. So I don't want to know, my biggest drive is to find the answers. The bigger challenge for me is that I wish I knew which question to answer.

20. Your work is all about discovery and innovation. What is one thing (personally or professionally) that you still like to do the old-fashioned way?

I'm actually super old fashioned for a few things in the lab. For example, I don't use a repeater pipette. That's something that a lot of people find weird is I only use a regular pipette, not a repeater. I use Microsoft Excel and I like to do all my calculations by hand. People think I am a freak for that but I like to submit all the raw data with the publication, so that anybody can go in and see every single calculation I did for the whole paper and all the raw data all in one file. I do it so people can see all the numbers and know that I did not take shortcuts and that the results are real.

