



20 Questions with... James Till

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

I was born in Lloydminster, Saskatchewan.

The town is a bit unusual because it is located right on the border between Alberta and Saskatchewan. So, I was born in Saskatchewan because the hospital was in Saskatchewan, but I was raised in Alberta because the family farm was in Alberta. The eastern edge of the farm was actually on the border, so to go to school I would cross the border onto the north-south highway and back across the border to go to the public school which was in Alberta, but used the Saskatchewan curriculum.

2. Tell us a little bit about your education.

I went to public school (on the Alberta side) and then high school (on the Saskatchewan side) in Lloydminster.

I went on to attend the University of Saskatchewan. I had a choice between the University of Alberta and the University of Saskatchewan as they were about equal distance from Lloydminster, but I chose the University of Saskatchewan primarily because they offered me an entrance scholarship. So, I chose to go there and do my undergraduate work and then a couple of years of graduate work there.



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

When I was little, I did not have any idea. When I thought about it at all, I assumed that I would be a farmer like my dad. My family had a mixed farm, mainly growing wheat, but also oats and raising short-horn cattle.

4. What led you to the stem cell discovery?

First, I must begin with a bit of an aside. The word discovery implies that nobody knew about stem cells before then. That wasn't the case. For many decades there had been a strong belief that stem cells existed, but some difficulties actually identifying them.

It's a bit like dark matter and dark energy in astrophysics. They are very strongly believed to exist, but nobody has devised an experiment to demonstrate their existence directly.

So, Ernest McCulloch and I started to work together, and we found we worked together very well. We were doing some experiments that involved bone marrow transplantation – transplanting different numbers of marrow cells into mice that had been subjected to total body radiation. The experimental plan involved looking at the spleens of those animals (in mice, part of their blood-forming systems) at various times. It turned out that at day 10, the spleens showed something unusual. They showed lumps, what looked like little bumps on them. Ernest McCulloch noticed that if you counted the bumps, the number of them depended on how many marrow cells had been transplanted.



Ernest McCulloch and James Till
bronze statue unveiled Toronto 2017

So, we spent the next couple of years, between 1961 and 1963 showing that these bumps were colonies of cells, derived from individual starting cells, and that these cells had the properties expected of stem cells.

5. Following your 1961 work to prove the existence of stem cells, what in your opinion are two of the most significant Canadian stem cell discoveries which have advanced regenerative medicine?

I'm not sure how to answer that because I'm not sure what criteria to use to judge their worth. I mean, just basing one's choice on citations has flaws. So does every other measure that I can think of. For example, citations may not show how much practical application has come out of the work.

What I can do is identify some Canadian people who made really, I think, very substantial contributions to the field. I think of Connie Eaves, Janet Rossant, John Dick, Gordon Keller. And I shouldn't neglect those who made contributions from a legal or ethical perspective like Bartha Knoppers or Tim Caulfield.

It is a pretty incredible group of people working here in Canada – I am very proud of them.

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

Well, it almost did not happen.

When I was an undergraduate at the University of Saskatchewan, I had just finished a bachelor's degree. If my memory serves me correctly, my older brother had already begun to work for the Saskatchewan government in the Department of Agriculture.

I felt that I was going to be needed on the family farm, so I was considering not continuing at university. Then I was told I had received a scholarship and I thought, 'well, I will keep on going for a little while longer and see what happens.' And to my surprise, I just kept getting scholarships, so I kept moving.

I ended up at Yale. I was initially in the physics department, but in the biophysics program. That program became a separate department, so I graduated with a PhD in biophysics. So, yes, I got another scholarship and ended up at Yale!

7. What are you reading right now? What is the best book you ever read?

I have become a fan of audiobooks, so I am actually listening to Surely You're Joking, Mr. Feynman. It's a series of autobiographical anecdotes by Richard Feynman, who was a theoretical physicist, a Nobel Prize winner and a rather remarkable person.

The different chapters show different facets of his life. He was really very interested in a lot of things and quite talented in a number of things, especially theoretical physics.

For the best book, I would say that again I have trouble with what criteria to apply. What I can more easily identify is the most difficult book I ever read, which was War and Peace. It was long and cumbersome. It had many characters, and not that I have anything against Russian names, but there were so many of them that I couldn't remember them all and it took me forever to finish it.

8. Who is your all-time favourite scientist?

Again, it is a question of criteria. If one uses Nobel prizes as the criterion, it is the Curie family, particularly [Marie Curie](#) who won two Nobel prizes in two different disciplines. She was truly a remarkable woman.

Of course, there a number of others who are right up there, including Charles Darwin and Albert Einstein.

9. What in your opinion is the single most important health science or biomedical breakthrough?

I am going to go beyond biomedicine and mention the work of (Richard) Doll and (Bradford) Hill on the link between cancer and cigarette smoking. This link had been suspected for some time, but using appropriate, rigorous methods, Doll and Hill showed that indeed there was a link, so it was a huge public health problem. The solutions to it have been to reduce the amount of smoking. That's been quite successful around the world, but not yet finished.

Epidemiology tends to get less attention even though it is hugely important, particularly in our present situation, with COVID-19.

10. What are your hobbies?

I have been a curler for many years. I started when I was 14 years old in western Canada. I curled last year and did alright but this year the season hasn't happened because of the virus.

I was the Skip last year, but I had played Vice Skip for quite a while because it was more fun. As Skip you feel so responsible for every mistake that lets the team down.

11. What was your biggest mistake that ultimately turned into a positive?

That's a challenging question. I think it was when I was early in the undergraduate program at University of Saskatchewan. I was going into my second year and I had to make a choice of my specialization. In the spring, I got interviewed by the Dean of Arts and Science. The U of S was a small university at that time, and you got a lot of personal attention. He asked me what I was going to specialize in, and I thought, 'Oh, I don't know, maybe political economy', because I had enjoyed that class when I took it in first year. But then by the fall, when I had to start, I decided to switch to physics. Primarily because, as I said before, it's a nice combination of mathematics and practical applications, and also because I was believed that it was very challenging. If I could succeed at that, I could probably do anything else that I wanted to do. That turned out to be right.



University of Saskatchewan

12. What is your favourite place to travel to?

I did get the opportunity to travel quite a bit in my career, particularly in my younger days as a scientist. My experience was that whenever you went to a noteworthy place, it looked exactly like the pictures, but in three dimensions.

So, my wife Joyce and I ended up preferring to travel within Canada, particularly within Ontario. I was from the west, and she was from Thunder Bay and we found that southern Ontario really appeals to us.

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

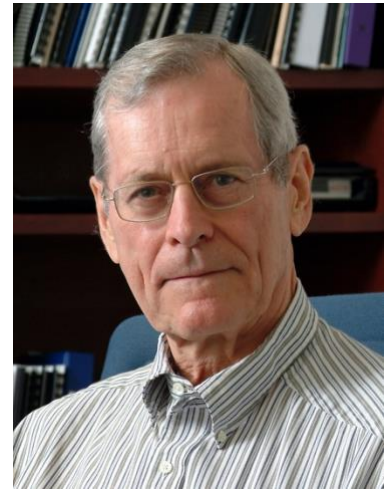
I am such a lousy cook and Joyce is excellent cook and says she enjoys cooking. I believe she really does, so I cook very seldom. When our children were young, I used to cook breakfast every Sunday. It was usually pancakes, but then I won a waffle iron in a curling bonspiel, so I started making waffles. The trouble with that was the waffle iron wasn't a very good one and the waffles often stuck to the iron and had to be pried loose, often in pieces. We eventually got a better quality one – I didn't win it – and things became much improved.

14. If not a scientist, what would be your dream job?

I think I would have liked to have been a mathematician if one could live out fantasies. I considered it at one point but decided I was not smart enough. I settled on physics which has strong mathematical components but lots of meaningful practical applications. Not that mathematics doesn't have practical applications, it's just that it usually takes quite a while.

15. What is the best piece of advice you have ever been given?

When I first had responsibility for a research group I asked a scientific leader, who had a fair amount of experience, for advice. He told me the key thing is who you choose to hire, and the rest is housekeeping. I still think that was the best advice I have ever had.



16. What is something you think everyone should do at least once in their lives?

I think everyone should, at least once, see Niagara Falls. It is the most spectacular sight I've ever seen. And for Canadians who have already seen it, they should go to the west and see the Rockies in Banff or Jasper.

17. What skill would you like to master?

I would like to master curling. Even though I have been at it since I was 14, I have never gotten as good at it as I would have liked. I've been playing with a stick, because sliding out is a problem of balance for me. With what they call an extender stick, you can just throw the rock standing up. I got reasonably good at doing take outs with the stick but I was not so good at draws. Recently, it's been the other way around and I am better at draws and now I am starting to miss take outs. Now I need to get both together.

18. What is your favourite movie?

This will take me back. It was the first movie I ever saw, which was Snow White and the Seven Dwarfs by Walt Disney Studios. It's pretty saccharine but it was just right for me at that time.

19. What is favourite word? What word do you use too much?

*It's a very long one, *antidisestablishmentarianism*. It's supposed to be the longest non-scientific word in the dictionary, but some think it shouldn't qualify because it is so seldom used.*

Like many people, I think I use the first-person pronoun 'I' too much. Not deliberately, it just comes out. One should be listening for it.

20. What do you wish you knew more about?

I wish I knew more about cancer. I spent my whole research career working on some aspect of the cancer problem and though some advances have been made, it is not enough. So, I'd like to know more. I won't, but I'd like to.

