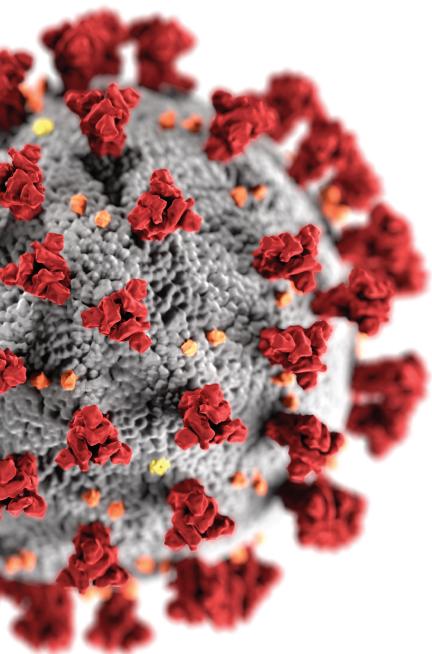


Interview with **DR. CHAMPAGNE**

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GN: how hospitals have been dealing with COVID-19?

AC: The sad thing about our situation right now as second year medical students at Queen's is that we don't know too much about the protocols for COVID-19. They've been keeping us outside of the hospitals because we're technically not essential and so we don't really have much say nor idea what is going on in the hospital sadly. At the moment the school's been having us focused on classroom learning and clinical skills which are really independent of the hospital.



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GN: At the moment, you've completed your PhD and pursuing a MD at Queen's which is a great feat that many high school students aspire towards. For highschool students like myself, what kind of opportunities are available for us to reach out into the medical field and what piece of advice would you give to your high school self?

AC: There's always opportunities; things are always available. The question that I think people make a mistake, or the fork that people make a mistake is "do I take on something because I think its interesting" or "do I take on something because its available". Being available as an opportunity isn't enough in my opinion. For me what I've always tried to stick to was what I like: in my life that would be football and whatever. From there, I followed those passions really really deep. What I've found with some students is that they get stuck at "oh this was available so I took it" and then they end up finding out they don't really like it right. So there's a balance between figuring out what you like first and then follow that down. In high school it doesn't matter as much because you're trying to find yourself a little bit in the academic world and that's where undergrads gonna give you the opportunity to take different classes and learn different topics. But for me I was always a football guy so I went to UNC where I did research in football, concussions and head injuries; there's a very distinct connection that's linking all these opportunities together. In terms of opportunities and how to get them, I don't really come from anything so you have to rely on yourself. Be consistent, be reliable, be on time, be intrigued, ask questions. During my first year as an undergraduate student at UNC, I was literally a nobody, I play football, that's pretty much all I had and I emailed this guy who was the biggest concussion researcher in the world. I said "hey I know you're doing work at UNC I think its really interesting, can I have a meeting?" First of all, him agreeing to the meeting was nice. Before the meeting, I looked up his name and read a few papers by him and I knew a little bit of what to talk about when I walked into the office with him. When he gives me plugs, I would be like "I read your paper on that" and so on. From there, he saw that I was interested and as a researcher all you want is something that's interesting. But your resume will speak for itself as well. If you have some awards, fortunately for me I had the Moorehead scholarship so he knew where I came from and he knew what I worked to get here. From that I would say stay true to what you enjoy. From a medical standpoint, if you want to go to medical school for example everybody knows its very competitive especially in Canada where there's only 17 schools, everybody wants to go to med school and I had to apply twice so my piece of advice would be find ways to be competitive in ways that are unique and that's the fun part. In my perspective at least the more competitive students for medical school are unique in some ways; whether its what they've done, what they think, how they think. There's really no mold. My biggest problem with people that get into medical school is that they think they're experts in medical school admissions. Its like no no no, you were lucky enough to get an interview and you were lucky enough to get accepted because there are a bunch of people who should be in your place right now; a lot of it is really just luck. So this would be my advice for admissions: don't listen to people that tell you there's a specific way to do things because there isn't. When you get to medical schools sitting around the 100 people in your class and people come from all over; military, pharmacist, undergrad, world travelers, researchers. There's also so many age groups; 18 year olds to 40 year olds, veterans to nurses. There's just so much diversity and that's the beauty of it; there's no specific applicant, you just have to have something that was worth talking about.

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GN: So I guess believing in yourself is the way to go in med school admissions.

AC: Yes, but not just believing in yourself but also believing in the process along the way. For example, in undergrad everyone hates organic chemistry. Why? Because it's difficult, at least that's my perspective. For me I didn't find it difficult, I thought it was interesting. I loved organic chemistry because everyone else hated it, I was like if this is the hardest thing, OK, challenge accepted. That mentality that really comes from sports was what I maintained throughout my studies; line me up against anyone and I'm going to beat them even if I'm less athletic, less pretty, less big, less strong, whatever. I can't walk into a room and think I'm going to lose. So through undergrad, my advice would be don't just do things for the sake of it, do things because they have a purpose. Join a club because you think it's interesting. Join a club because you have a weakness in that area and you want to learn more about it. Join a club because you believe in the cause. Take a class because you think its going to make you a better student or because you think its interesting. Its always easy to get caught into the busyness of life and the mindset of "oh I'm too busy". And its like you're not too busy, no one's too busy, we all choose to allocate time differently. Even at UCC, everybody thinks they're the busiest dude every because there is a lot of things IB's putting on us but technically we're not working 24/7. We make choices, we watch TV, we take naps, we go for a workout and whatever. But those choices are balance that's specific to you and your success, you know how you work best. For example, some of my colleagues need to sleep 10 hours a night and that's what they need but for me I don't need that much sleep. We all choose to allocate our time differently and I think that's the key recipe. Inorder figure out that recipe you have to know yourself, you have to know your goals, you have to know where you want to be, and what would make you happy in the end. The last thing that I would say is don't sleep on research. People always thinks medical school's the end goal and I was one of those guys back in the day but I would argue today that PhD/research life is the best life.

GN: So going on research, I know that a lot of your research circulates around sub-concussive hits to the head and I so I wanted to ask, does the brain heal itself from a concussion similar to how our muscles would heal from an injury?

AC: I don't really know that, we don't really understand the beauty of the brain and that's why I think Neuroscience is such a cool topic. In Neuroscience, there's a lot of opportunity to learn and we have ideas about axonal injuries, recoveries, how those different tissues in the brain react to forces. But truly, we don't have a perfect solution to contacts to the head because if we did, they would need me and researchers. Specific to head injuries in Neuroscience, we're still trying to figure out how the brain works, how the brain responds to an injury, how the brain recovers from an injury, what kind of injuries the brain is really sensitive to: is one single major hit that damages the head or is it a series of smaller hits over time? There's just so many questions that can be answered. Specifically for me, my interest was football and I don't care about concussions itself. For me, concussions are a mechanism that are threatening football and I really care about football. From my perspective, if I figure out concussions, then I have football and that was my motivation for research. But for somebody else they're motivation might be I care about concussions because I've had a concussion or my sister's had a concussion or I think the injuries are very interesting. Everybody has an underlying motivation factor for our work. Football was important to me so research became a part of football as it game me a tool to make the game better.

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GN: So going on football in college and professional football targeting rules have been implemented where contacts to the head automatically get ejected. Even with such rules, do you think the concussion protocol and rules in football at such high levels can be improved?

AC: If you compare it to when it was first implemented and where we are now, there's improvement and there's improvement because research has been made to back up some of the initiatives being made. For instance why are we backing off kickoff? There's evidence that shows that when you do one thing results are produced that you can build on. In the end, people argue that the game is changing and at least from my perspective the game is faster, stronger, better than it's ever been and those major blind side hits don't make the game entertaining. What makes the game entertaining are the athletic phenomenon doing things that are unimaginable like a 6'8" 360 pound lineman pulling and blocking a guard down on the screen play. That's insane that he can do that so the question is how do we ensure that these really athletic amazing athletes are staying healthy? Well, we fix up the technique, we fix up maybe the equipment which in my opinion doesn't really matter, you fix up the rules, so that some of the rules that weren't in place in the past are now in place to protect athletes. For example, is a receiver getting blindsided going to make a difference in the game? Not really. You can do the exact same thing by having the receiver go up and having the DB challenge the ball or make a great tackle that's safe, efficient, and doesn't need that blindside hit. The only difference between the safe and dangerous hit is that one of them gets hurt, so why would you want that? In any world, why would you want a fellow colleague or a player to get hurt? There's just no point because then what happens is that now the next person has to play and you have to compete against a lesser skilled player. If you're a true competitor, in a world where you can have the best of the best in front of you, you want to have the healthiest, simplest game that allows you to go real against real. People that say the game is changing and getting softer, they're opinions are understandable because there's a paradigm shift that needs to happen and that's challenging from people. But as culture and generations grow, changes are expected now; you see a guy get hit and now everyone's talking about where the targeting call? Now you see that there's an advantage to those penalties and now they're being worked in different ways. There's always going to be pros and cons but in general the pros are going to benefit the players because in the end they're sacrificing their life, their bodies and their health at the cost of the game. Now the players own that decision but from a medical standpoint we have to make sure that the environment in which they play is safe because that's all we can control.

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Gn: With many of these players playing football for over 20 years and taking hits to the head possibly everyday, is there anything the players can do to protect themselves if there are any possible exercises or treatments?

AC: Well that's the fundamental idea that we're all trying to solve. A lot of what our research and companies are doing now is called linear kinetics and the idea is to use movement as a tool to engrain safety in addition to minimal contact practice and what not. If you have the right movement and use the right impact biomechanics, you're putting yourself in an advantage in terms of minimizing how many hits you take. Whether that makes a difference, we have no idea. We don't know if one person taking a 100 hits is comparable to another person taking a 100 000 hits. Or if what's the difference between an individual taking 1000 major hits or a million minor hits. We really don't know. I've taken a lot of hits to the head myself and some of those were due to poor technique, some of those were due to the position I play and some of those are due to the position I play. The common denominator to all of those hits is that I am the player; the way I move, the technique I use, the systems that I play in all determine my exposure and the more we understand how these dynamics interact with each other, the better we'll make the game and the better we'll help players go from youth football to a higher level. In the process of going up these levels, football is giving the players a platform for whatever their goals may be; whether that's to get a scholarship to go to college, meet new people, learn lessons, get better physically, football provides all players an opportunity. Regardless of size or race, it doesn't matter where you come from, you just play the game and that's the beauty of football in my opinion. Football is the only sport that provides people of all sizes a role. With so much heterogeneity in the positions, everyone fits in some ways so it's very inclusive. There's so many lessons integrated into the game and obviously there's risks but everything has a risk right. For me, the game gave me more than I could ever give back to it; it took me out of the hood, gave me a scholarship to UCC and then UNC. I owe a lot to it and that's why I do all that research.

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GN: After choosing to do a MD after a PhD, what kind of advantage has that provided in your education?

AC: I argue now that there shouldn't be a medical program without a PhD. Obviously I'm biased but medical school is so much better once you've done a PhD. The opportunities, the networks, the collaborations. For instance, I saw a lecture on menopause the other day and I'm like oh that's very interesting physiology. I have a question and I email a number of people who are interested in that sort of thing and ask them why don't we start a study on that? You can only do that if you understand the process of research. You understand how work takes ethics into consideration, how to get the right grants, how to get the right papers, to collaborate, to have connections with people who have those skills. I have no skills in that domain but I have skills that could be implemented in there right. The translation of knowledge is the key. If you understand that, you understand the things that the physicians are reading, so when we are taught stuff in a classroom, that stuff comes from research. So the researchers are writing the literature that the clinicians are then using to apply to patients. From there, if you strengthen your research abilities, you strengthen your ability for patient care. Once you realize there's a weakness in patient care, you can improve it by doing research, create something that's going to fix it. On a daily basis, I think about how doing medical school after graduate school provided me a better experience, especially the additional stuff of medical school. Not so much the online learning; anyone can sit and memorize physiological pathways of menopause. But what you do with that information, how you integrate the information is something that I am only able to do due to my past in research. I think writing papers and doing research is so key to medicine I think you're missing out on that process. As well, once you get to medical school the academic load is so heavy you really don't have any time to learn about research which is sad but that's unfortunately how the school curriculum works. I tell every student that I talk to consider doing a PhD or a masters. Obviously you're going to be older but I think it's better to be an older medical student. From my perspective, I enjoy being older as when I talk to patients, I have more of my own experiences, I relate to others better and I think I can make decisions in my head that are more ethical. We all have our own threshold of ethical dilemmas, we all have to make a decision at some point: do I treat him or do I not? How do I process that decision, how do I process someone dying in my hands, how do I process being a part of a surgical procedure that's going to alter the patient's life? That internal processing is a heavy load and so being older with additional education definitely helps.

GN: Thank you for your time and good luck with your studies Dr. Champagne!