Sept GoTc blog Issue #2

Is the Berlin patient actually Jon Snow?

In our September blog, we are confronting a popular fan theory. There are various versions of this theory but they all boil down to the idea that Timothy Ray Brown patient (aka Berlin Patient) is actually Ned Stark's supposed bastard, but true heir to the Iron Throne Jon Snow, Spoiler season 7, birth name, Aegon Targaryen, 8th of his name. A variant of this theory holds that Tim Brown is actually Jorah Mormont and was cured of greyscale, but we are ignoring such silly ideas.

For those of you borne after say 1995, Timothy Brown is an American citizen who was doing what most people living with HIV from the United States do. He was following medical advice, taking daily antiviral therapy and minding his own business. His virus was undetectable and he couldn't transmit it. Yet, his immune system wasn't quite normal, and while living in a citadel of learning, Berlin, he developed an unfortunately common complication of HIV, cancer. In Mr. Brown's case the cancer was leukemia, but lung cancer, lymphoma and other kinds of cancer develop in people with well controlled HIV at a slightly higher rate.

If Mr. Brown was living ~ 15 years earlier this actually would have been "a success story" as it least he wasn't dying of an opportunistic infection. Yet in 2007 this was "bad news" as leukemia can be difficult to treat and much like Jon Snow this was potentially a deadly stab in the chest (or 40 stabs). Anyway, fortunately his medical team was forward thinking and proposed a stem cell transplant. The idea was that the stem cell transplant could both attack the silent immune cells that HIV hides in, as well as the leukemia and if all goes well and Mr. Brown survived the chemotherapy, radiation and immune system replacement, he would be cured of both diseases.

Not just any transplant donor was proposed though. Mr. Brown's medical team actually screened over 60 donors until they found a donor who had NOT inherited a normal copy of the gene C-C chemokine Receptor 5 (CCR5) from either their mother or their father. While this is uncommon, such people exist in Europe and less commonly elsewhere, perhaps because various lethal infections decimated European cities in the Middle Ages. There remains some debate over which infections the loss of CCR5 protects against and why it is common in Europeans, but the current data suggests a lethal hemmorhagic fever may have selected for European descendants to have less CCR5. Since CCR5 is also a receptor for HIV, these people with abnormal CCR5 are also relatively resistant to HIV infections. Mr. Brown's medical team reasoned if they could replace his immune system with that of an immune system with no CCR5, while he was taking antiretroviral medication, the transplant might both cure his leukemia and his HIV.

Details of this story are available in the New England Journal of Medicine, 2009 as well as in more detail in a 2014 book “Cured: The People who Defeated HIV”, or more briefly in a great interview with Mr. Brown and his German oncologist who conceived this cure, Gero Hutter by Mary Engel (http://www.fredhutch.org/en/news/center-news/2015/02/aids-icon-timothy-ray-brown.html). It seems that both Jon Snow and Tim Brown (if they are not in fact the same person) are reluctant heroes. Jon Snow wasn’t expecting or looking to be King of the North. Tim Brown was hoping “conventional” chemotherapy would wipe out his leukemia. Unfortunately for both, but great for dramatic stories, Jon had to retake Winterfell, and Tim needed an arduous stem cell transplant just to survive. In fact, it ultimately took a second stem cell transplant to actually get rid of the leukemia. Even now there are “fragments” of the HIV in some of Mr. Brown’s cells much like the House of infected but not infectious in the Game of T cells.

Mr. Brown has endured multiple invasive biopsies of his body but no actually infected and infectious cells have been found. So House QVOA seems to have been finally defeated at least in Mr. Brown. Since this miracle HIV cure other people living with HIV have gotten stem cell transplants and either died or the HIV somehow also survived. So, this is not a reliable or risk free cure that can be easily duplicated. Certainly, it is not a scalable cure that can be applied to millions of people across the world. Despite all these drawbacks though, it is a message of hope and proof that just as white walkers have vulnerabilities, so does HIV.

In coming blogs, we will talk about other successes in the fight against HIV, focusing on more applicable “baby steps” on the way to a cure like normalizing the CD4/CD8 ratio. To be clear a normal CD4/CD8 ratio does NOT mean anyone is cured of HIV, but it is a sign that even people living with HIV can recover and develop a more “normal” immune system. Thanks for reading.