

## Slaying dragons- a Tale of Personalized Medicine and Drug Repurposing

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April 22, 2015

### Trish and Johns Story

My wife has suffered from a slow growing type of colorectal cancer for the past five years. After the shattering initial shock, then there were three surgeries. In the first one, two feet of her colon was removed; in the second, cancerous tumours located in the psoas muscle were taken from her back; then in the third (in 2014), the doctors removed part of the L3 vertebrae where another growth was pressing on her nerves. After each operation there were long arduous and painful months of recovery and rehabilitation. Over this time as well, she has endured chemotherapy, radiation, stereo static radiation, all guided by the intricacies of CT scans, MRI's and PET scans. During various meetings, some scary words like metastasis, palliative care and terminal had been mentioned.

All of her treatments were expertly supervised by her oncologist, the very understanding and knowledgeable Dr. Howie Lim of the BC Cancer Agency.

Chasing the cancer dragon, has been an arduous process for Trish, family and friends that has involved a great deal of support, inner strength, and of course hope with a capital H. Concomitantly everyone and their uncle offers up alternate cures they have heard about, ranging from Turkish doctors in Germany, to shamans in Mexico.

Trish has been proactive and has chosen to independently supplement her health with care from a variety of naturopathic sources and all of these treatments have helped her in varying quotients. She has always eaten healthily and exercised regularly.

Her last operation of September 2014, involved removal of a tumour that was pressing on a nerve. This difficult surgery was successfully performed by Dr. Charles Fisher of the Spine Research Centre. At that time, he and Dr. Howie Lim arranged to have Trish enrol in a Personalized Oncogenomics Program (POG), the POG Program, which incorporates the utilization of genomic analysis.

This last November, more cancer was found in her lymph nodes in multiple sites. We had a meeting with Dr. Howie Lim, and our friend and cancer researcher, **Dr. Sandi Dunn**. She came with us to help us understand and assist in clarifying the options. The results from the POG Program found that because Trish had a mutated gene, there was a drug, not a chemotherapy drug, but a heart drug that could be beneficial. It is Irbesartan, normally prescribed to people with high blood pressure. There was a choice to be made, between taking the standard chemotherapy cocktail of drugs or the experimental heart drug. Each has its own side effects. Combining all of our opinions, Trish chose to do the experimental trial of Irbesartan. When drugs formulated for one ailment and then are prescribed for another, it is called repurposing.

The POG program describes their study in this way "Cancer treatments are usually chosen based on what has been previously given to other people with the same type of

cancer. Although this worked for some people's cancer it doesn't work for everyone. This study is about trying to customize a treatment for each individual person's cancer, that is what is known as 'personalized medicine'. We know that not all cancers have the same kind of mutations and some cancers have lots of mutations. We hope that if we can find some mutations in your cancer then we might understand which cancer drugs might work best to treat your cancer."

After only a five week trial with the Irbesartan drug, Trish had a follow up PET/CT scan that revealed success in remarkably reducing her tumours and resolving many of the cancerous sites in all of her lymph nodes. Both Dr. Howie Lim and **Dr. Sandi Dunn** were surprised and very pleased with the findings.

It is still unknown what the future will bring for certain, but for now, Trish is looking forward to her life again and above all feeling healthy and hopeful.

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#### Sandi's story

Trish and John were my neighbors for many years. She is truly like a sister to me. We have traveled together in her fight against cancer. Last November after getting the POG results back which profiled a tumor that had spread to her spine, Trish asked me whether she should take an experimental drug called Irbesartan that matched a pathway that was elevated in her tumor. Irbesartan is a drug that has been used for lowering blood pressure. We talked about it at length and weighted the pros and cons. The alternative was chemotherapy that had a long list of side-effects. Considering that the safety profile of blood pressure lowering drugs is well known and they are not like what patients experience when taking other types of chemotherapy the choice to take Irbesartan was attractive. For example, Irbesartan does not cause hair loss, nausea or fatigue as far as I knew. Moreover, the genetic composition of her tumor guided this drug match, which was extraordinary. We went to see Dr. Lim together so that we could understand the risks of her taking this experimental drug.

I encouraged her to try it because the drug had a good safety profile and her tumor was a match to the drug. Further, as someone who has invested their life into finding new therapies for cancer, I knew first hand how research could change the course of medicine. It was worth a shot and we were running out of options.

So Trish took Irbesartan, and we waited for the results. Holding our breath, hoping for the best. The instant they got their follow up PET scan, John sent me a txt to say that the tumors had shrunk! I cried and have celebrated that moment over and over again in my head ever since.

Soon after the big news, John and I sat down over a cup of tea to contemplate what this all meant. As I recall it was on Tuesday January 13, 2015, only two months after the POG data was back from the lab. The facts are amazing. Trish had energy again and was back

to her old self for the most part. She felt so good she missed our tea because she was at her exercise class. He and I could only smile and rejoice in having our Queen back.

We also looked at how much the drug cost and how Trish and John got it. John walked five blocks to the little Point Grey Pharmacy on W. 10<sup>th</sup> in our neighborhood and asked Dr. Safouh El Rayes to fill the prescription, which he did with his usual smile and chat. The drug cost 57 cents a day to take. After months of taking the drug, I spoke with Dr. El Rayes who said, “Your health matters to us and Trish’s story is simply amazing. I have known them [Trish and John] for over 20 years. I’ve watched her through the ups and downs. It has always affected me. When I found out that she responded so well it was a breath of fresh air”.

This amazing medical breakthrough is the first in man (woman). It speaks of how important research is to improving the lives of those fighting cancer. Once cancer has spread it is usually the end, but for my friend Trish, the fight is not over. I am grateful for her bravery and for Johns. We are also grateful for the opportunities that we had before us, and the community that helped us.

This breakthrough came too late for my very good friend, mentor and business partner Dr. Jasbinder Sanghera. Jas also fought metastatic colon cancer and sadly he did not survive it. He sadly passed away on January 9, 2015. I mourn the loss of my friend and feel more motivated than ever to make a difference. Jas spent his professional life fighting cancer and succeeded in making the world a better place through medical research. He was also my inspiration to launch Phoenix Molecular Diagnostics Ltd in 2012, the same year that he started Signal Chem LifeSciences. He and Trish inspire me to push new frontiers at Phoenix<sup>MD</sup> through Personalized Medicine and the development of intelligent therapeutics.