Podcast Transcript: Perry Marshall

Richard Jacobs: Hello everybody, This is Richard Jacobs with the Finding Genius podcast, part of the Finding genius Foundation. Just a quick note, before we begin. The Finding Genius Foundation is a 501C3 Non-Profit and we've started researching anxiety and depression. Our goal or our premise is that if you have anxiety or depression or if you know someone that has it whether it's a co-worker, fellow church worker or family member etc. Chances are, if they go to a professional or if you go to a professional, they'll know one or two percent of all the possible treatments out there. What if we could assemble 20% of all the possible treatments for anxiety and depression and the resulting conditions that people suffer from as a result. That's the goal of what we call the anxiety and depression codex. Our goal is, in the next year and a half, to research approximately 5000 sources and compile all the data and put it into a curated resource for people suffering, for people that know people that are suffering.

Now, we do need some help to do it. To donate or to find out more about the project, go to findinggeniusfoundation.org and you can find more info there. Today I don't have a guest, but what I do have is a really excellent PDF submitted to me by Perry Marshall. Perry, he has been a really successful marketer for, I've been following him for 12 years, he has been doing it for maybe, close to 20 years. He started off teaching Google AdWords, Google Pay Per-Click and moved on to Facebook advertising and eventually I started hearing from him that he was studying evolutionary biology and I read his book, Evolution 2.0. It brought out a lot of super interesting topics in biology that I just didn't know about and it was part of my inspiration to do the podcast as well and to this day, having done almost 3,000 interviews, I credit Perry and Evolution 2.0 for kind of getting me started on the path. So Perry now has been working on cancer, not directly but he is working on helping to promote a new and what I think is probably a better understanding of cancer and as you know, if you are a listener of this podcast, I am getting close to finishing my book on cancer.

Perry has some comments in the book. He is part of it, he is one of the co-authors, but I wanted to go over this short PDF with you. It will probably take about 5 minutes but I think it's really important because it provides the framework of what is the current thinking on cancer and what is a new form of thinking, that I think will be a lot more beneficial and will make cancer research actually work a lot better and faster and get us closer to a cure or get us to the point where we can manage cancer as a chronic disease but not a deadly one and keep it in check for decades within the people that have it. I've had thyroid cancer myself. Thankfully, it's one of the best cancers you can get. You can say such a strange thing as that. I say it because it's a 95% plus cure rate for the kind I had. Hopefully, it is past and doesn't come back.

But, I am somewhat intimately familiar with cancer. My mother passed away last year from endometrial cancer. So again, a lot of familiarity with it. So, getting into this PDF, I'm going to read to you the beginning and then I am going to summarize some of the

findings. So, Perry says that Stage 4 cancer patients are not much better off today than in 1930 despite the US government spending $250 billion on cancer research. We are also losing the antibiotics race against bacteria. Bacteria evolved into superbugs in minutes. We don't adequately understand why. These problems stem from an inadequate understanding of evolution itself. A prime reason cancer treatments fail is that the tumor cells evolve at tremendous speed by some kind of self-governing process. Chemotherapy radiation and surgery often trigger more aggressive cancers because the cells evolve actively in defense.

They are not just passive and they are not slowly or accidentally changing at that point, they appear to be deliberately adapting to get around the threat that they face which is again, the surgery or the chemo or the radiation. Today's 5 bestselling popular evolution books are categorized in this PDF and these books say little to nothing about these high-speed evolution systems that cancer cells have. They admit what Perry thinks and what I agree has been the most valuable discoveries in the last 100 years. Now, this is part of the infographic which will be part of the notes, but I wanted to tell you the top 5 books, several by Richard Dawkins: Extended Phenotypes, The Blind Watchmaker, The Selfish Gene. There is a book called Evolution by Futuyma and then Why Evolution Is True by Jerry Quinn. So, these are Top 5 books and what Perry lays out is all five together at most will maybe give a quick nod to one of these mechanisms of evolution. I can tell you the mechanisms, but you can know and listen to them that none of these books really talk about them barely at all.

Most dismiss them and these are critical and actual components of evolution, especially when it comes to cancer. Number one, is symbiogenesis; this is a formation of a new type of organism by fusing one cell into another and this has happened with our mitochondria. This has happened with viral DNA that has endogenized to become part of our own DNA. This has happened at least several times throughout evolutionary history and it creates a completely new type of creature. If you think of prokaryotic versus eukaryotic cells, prokaryotic cells not having a nucleus, eukaryotic having a nucleus, I'm not sure if exactly they came from an outside creature but it's a fundamental big change in a cell and from these two cell types, at least come tons of different forms of life.

So symbiogenesis is a very important component of high-speed evolution. Then we have what's called transposition. Cells can rearrange mobile DNA elements. Barbara McClintock contributed significantly to transposition. She termed, what was called the jumping genes, I believe in corn or maize that she researched. This is definitely a common way that bacteria can rearrange their genomes to avoid antibiotics and become resistant and to trade information with other bacteria and then we have epigenetics. So we have our DNA, we have our genes but our environmental conditions, what we eat, what we drink, what we breathe, if we smoke or not, for an athlete, etc. all these will up or downregulate our genes. It'll make some genes silent and not transcribe

anymore and not affect us. It'll make some genes extremely active where the proteins and other things they produce are extremely prevalent and active.

So epigenetics is like a regulation, it's as if we have a control panel on us, a million different switches and epigenetics can raise or lower the switches and change them and throw the switches and dramatically change what we are and how we are. If you consider dogs, look how different they are. They are all dogs, they pretty much all can interbreed, they are all the same species but phenotypically meaning how they look and act and how they exist in their environment is radically different. Just picture a Chihuahua versus a Mastiff or a Great Dane. They are very different. So then we've got horizontal gene transfer and this again goes back to bacteria or bacteria can create what's called a plasmid. This is a membrane-bound element that will contain some of the bacterial DNA and this can come out of the bacteria's membrane and go into bacteria that are near it, enter them and change their gene expressions and even integrate into their genes as well. A very common way that bacteria can defend against the threat.

If you didn't know, the literature says 80% of all bacteria at any one time are in biofilms. So, they really aren't, for the most part, single celled organisms here in these communities where each bacteria has different abilities, different epigenetics and as a whole, the community defends itself against threats.

(Before we continue, I've been personally funding the Finding Genius Podcast for 4 and a half years now which has led to 2700 plus interviews of clinicians, researchers, scientists, CEOs and other amazing people who are working to advance science and improve our lives and our world. Even though this podcast gets 100,000 plus downloads a month, we need your help to reach hundreds of thousands more worldwide. Please visit findinggeniuspocast.com and click on support us. We have three levels of membership from $10 to $49 a month, including perks such as the ability to see ahead in our interview calendar and ask questions about coming guests, transcripts of podcasts you are interested in, the ability to request specific topics or guests and more. Visit findinggeniuspodcast.com and click support us today. Now, back to the show)

Whether it's radiation or bad metabolites or viral pathogens or other bacteria or whatever it maybe. Then there is also reverse transcription which is the ability to copy RNA and make it part of DNA. So the reverse of the process whereby DNA will become transcribed and then translated into RNA and then proteins, they can go the other direction and RNA can be incorporated into DNA. Like I told you, there's retroviruses that can do this. HIV, other viruses are able to endogenize and become part of our DNA. I don't know if you know this, but literature says, 8% to 10% of all our human DNA is from previous past viral infections, which is amazing. So we are 8% to 10% virus and some of these abilities that we've gained by viruses becoming part of our DNA allow us to be who we are.

There appears to be no ability for animals to have a placenta and be placental mammals and have babies without a viral protein called Syncytin. So reverse transcription definitely drives evolution, very important and not well understood. Then there's endosymbiogenesis, a long-term but our bodies have cells and cells within cells that underscore the cooperative independent fabric of life. So endosymbiogenesis is this structure. For instance, let's look at chloroplast and they originated when photosynthetic bacteria merged with them just like I told you, in our own cells, our mitochondria in our cells were supposedly blue green algae that somehow became a part of our cells and became the mitochondria. So, two disparate organisms in some cases seem to combine and create a new organism, which is amazing.

As I mentioned before, there are mobile genetic elements that can move around and rearrange and become parts of genes and become part of the transcription process. So this is very common in many different creatures and again that changes what can be described as a gene. If a gene typically is a 100 base pairs long and a mobile genetic element appears at a time that the gene is being transcribed and adds, let's say 20 or 30 base pairs, now, it can code for different proteins and it can have a completely different function. So there are mobile genetic elements that can facilitate this and therefore drive evolutionary processes. There are many more elements here, I want to just bring forth maybe one or two.

There is the concept of a halobiont. So, you and I and everyone listening, dog, cat, fleas, mosquitos, I mean many creatures are halobionts. What it means is you are not just composed of human cells. You are also composed of billions of bacteria, trillions of viruses, fungi, yeast, I mean all kinds of different creatures that make up you. No one exactly knows the jobs and the dynamics of all these interactions but without the microbiome and without all these constituent hangers on that make you you, you wouldn't be you, you wouldn't function well, you wouldn't live long, you'd have a problem. It's funny, at home, when I look at my dog, I say to them all of you little halobionts because they are, they each have their own microbiome and have all these other creatures that they have no clue about and most people have no clue about that make them them.

This concept is amazing because again, we are not just human cells, but we are an amalgamation, we are a city or a colony of all these different creatures that work together to keep us going and to keep us living, it is completely amazing. So again, there are more elements here. I don't want to drag this on for too long but I encourage you to look at the attached downloadable PDF used by permission from Perry Marshall but I think it's a really excellent encapsulation that takes us way beyond Neo Darwinism and way beyond the modern synthesis and shows us that Neo-Darwinism plays a small role in evolution but I believe, by no means it is the driving factor. I believe it goes way beyond natural selection and random mutation and all of these mechanisms that I've described here appear to be very deliberate and they come based on the decision making process of the organism using them. If you consider that bacteria can use these

things, human cells can use them, possibly even viruses can use them, fungi, etc. it's an amazing thing to consider. So I welcome your comments about this.

I'm sure there will be a strong reaction because many people say that Neo-Darwinism is the way and everything else is just junk or bunk, but I believe there's ample scientific evidence to show that Darwinism is only a tiny fraction of the complete evolutionary picture. So, thank you very much. If you want to find out more about these concepts and Perry Marshall himself, go to Amazon and look up Evolution 2.0 or Google Perry Marshall Evolution and you'll be able to find a whole host of resources related to this.

Thank you very much.