

7.00x The Secret of Life: MOOC.

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I have no scientific background at all. How come I ended up following this course?

Becoming gene savvy in four months? How do you do that?

Until very recently, I was teaching English and German as foreign languages in middle and high school in public and private schools in Paris, France. In 1997 and in 2007, I did a post-graduate teacher training at La Sorbonne. Having surgeons in my family, I heard about that mini-invasive, computer-assisted device, rather expensive, the super duper Intuitive Surgical™ console, in 2002. Driven by my enthusiasm about mini-invasive in surgery and the idea of disruptive innovation much more than by my surgical knowledge in the field, I joined the company, where I developed and implemented sales and marketing strategies in European countries.

However, good and hard work was not enough to earn our keep in the company, since they had to drastically downsize the European activities. Ever since, I've been rather desperate for some training opportunity that would help me land my dream job in the amazing and demanding world of tomorrow's medicine. My dream is to work for some similar innovative companies or biotechs. I had learned about fascinating things regarding the idea of mini-invasive in cancer and was definitely hungry for more.

Reading the press, a bit like everybody does, I had gained some kind of understanding about a revolution that was happening right under our feet: I am talking about what some people might call *the P4 medicine: predictive, personalized, preventive, participatory*.

Reading our genes, targeting gene mutations instead of targeting organs to cure cancer? Gathering genomic data to gain a better understanding of how people can respond to drugs due to their genetic profile? Counseling couples who would like children but would also like to know more about the chances their unborn son or daughter would get some genetic disease from one or both of them? Sounds a lot like this mini-invasive stuff I used to be fascinated in, if you want my opinion.

Then I came up with some kind of a nutty idea: what if I wanted to become the risk manager of my own genes? Great, now I'm going to wreak havoc on my genes. Everybody stand back, I'm doing sciences and, hey, don't worry, as I'm a "Death in Venice" Specialist. Ok, I wanted to be part of this big change, of this revolution that *is* happening right under our feet. But seriously, how was that ever going to happen? How could a post-graduate in German and English civilization and literature start from scratch academic studies in genomics and earn herself a diploma or certificate from some worldwide top ranking universities, like the MIT in Cambridge, MA, USA? (If we are going to dream, let's dream big!) And please, make it quick, as I would like to start a new career before the next millennium of my next life...

That's when I read about MOOCs, online courses on the internet. So I checked it out and... yes! There was one in genomics for free, from... hey, check this out! The MIT! Open to all. Everything wrapped up in 4 months.

EdX: "Courses are designed to be interesting, fun and rigorous. They are the best courses, from the best professors and the best schools, spanning dozens of subjects. Some edX courses now offer ID verified Certificates of Achievement. A new way to demonstrate your achievement and showcase your knowledge."

Looking back at that 7.00x session "Intro to Biology: The Secret of Life" I had completed by end December 2013, I can tell you that that part: "Courses are designed to be interesting, fun and rigorous" is 100% accurate. What struck me most as a teacher is the coherent pedagogical progression. Without knowing my stuff in science, I was always able to understand where the whole thing was going. Incoherent pedagogical progression is responsible for lengthy and painful learning curves. Here, it's seamless learning as you just get sucked in. Honestly: the amazing pedagogy did the best part to win me a MIT certificate in genomics. Yes, I went through all this impressive, cutting-edge scientific stuff with no scientific background – having always steered clear of mathematics and sciences at school.

Given my enthusiasm for the science of the human genome, I felt I deserved a second chance to help me get my dream job. Thanks to EdX and serious work from my own end – my family, professional and private life got totally disrupted during this course -- I finally got this second chance I had been yearning for.

I am the proof this MITx MOOC course totally met the challenge: they claim they are open to all and that everybody gets a chance to learn in biology and earn a MIT certificate. I have achieved a total score of 76% with no prior knowledge in molecular biology, genetics, or biochemistry. For the first time ever I heard about "hydrogen bonds" or "aromatic rings"!

Second thing that struck me most is the creativity at work in the deep dives. While the lectures were more thinking along the lines of "I want you to engineer a molecule" capable of doing this and that, and were after the actual reasoning and events and people that lead to major scientific achievements in the field of biology and genomics, the deep dive videos were either showing some lab action like purifying proteins or sequencing genes, or retelling something from the lectures, but from a different angle. More chances to understand, meaning more chances to win.

How about the difficulties I've encountered?

To be honest, midterm exam 2 gave me a hard time because genomics was new to me. I hadn't figured out what it all meant: running gels, amplifying gene sequences, finding primers that bind to DNA sequences, so I found myself feeling confused about what was being asked for this exam. Did they want us to work on the problems in the perspective of this cool video about PCR sequencing and amplifying, or did they request we should just follow what had been done in the previous problem set? Does "number of the base" in the gene refer to the position in the codon (first, second or third letter of codon) or to the index position number? In the cumulative final exam, the last question referring to "*the* disease" meant we needed to answer the question in the case of the dominant disease we were dealing with in the previous problem. I was not sure which kind of disease they were referring to. Were they talking in general? But then that didn't make sense... So you see, I did not follow this training as an overachiever; more importantly, I wanted to acquire proficiency in the science of the human genome. This MOOC will provide you with the basics in biochemistry, molecular biology and genetics AND will give you an update on the super duper gene sequencing technology. What's not to like?

What's hot right now in genomics according to me?

Fair trade data sharing would be my own personal answer.

I see the upcoming revolution in bioinformatics as a chance to (finally?) put the patient at the center of our healthcare system. I'm willing to give the data from my gene sequencing. But hang on: what is the true value of your personal data? If you sell it to companies that will ultimately sell it to Big Pharma, not sure this will do a good job in helping your doctor(s) and you as a patient become better risk managers of your own genome.

Curing cancer and other diseases means we will need to target gene mutations, not organs. So yes, this is happening right under our feet. So YES, you need to discover "the secret of life"!

That's the story of how I became gene savvy in four months.

Big thanks to 7.00x pedagogical dream team!