**Beware of the personal narrative: *failure is inherent to success***



**Robert M. Plenge, MD, PhD**  
Vice President, Merck

Head, Translational Medicine

I recently listened to a TED Radio Hour podcast on failure (link [here](http://www.npr.org/programs/ted-radio-hour/487606750/failure-is-an-option)). Casey Gerald reminded listeners that while his biographical narrative is impressive ([here](http://www.npr.org/2016/07/29/487611743/when-beliefs-fail-us-how-do-we-move-forward)), there have been many failures along the way.

This got me thinking…why don’t more people write their personal biographies in such a way that highlights their successes *and* failures? I have not seen one, and LinkedIn certainly does not encourage us to log our failures publicly. (Maybe an entrepreneur should start a site called LinkedOut, where you endorse people for failures and bios must be written with failures included!)

So I thought I would give it a try.

I will start with my conventional “success” bio (which can also be found [here](http://www.plengegen.com/wp-content/uploads/Plenge_bio_April2015-links.docx)) to provide context. Then, I will provide my new “failure” bio (also here). At the end, I provide a brief “lessons learned” on how failures have shaped my professional life.

[*Disclaimer: I am a Merck/MSD employee. The opinions I am expressing are my own and do not necessarily represent the position of my employer.*]

**Here is my conventional “successful” professional biography.** As expected, I try to make myself look as accomplished as possible.

Robert is Vice President and head of Translational Medicine at MRL in Boston, MA. Prior to joining Merck in July 2013, Robert served as Director of Genetics & Genomics in the Division of Rheumatology, Immunology and Allergy at Brigham and Women’s Hospital; Assistant Professor of Medicine at Harvard Medical School; and Associate Member of the Broad Institute of MIT and Harvard. His academic research focused on genetic and genomic underpinnings of complex human disease, with attention to immune-mediated diseases such rheumatoid arthritis. He has published more than 100 original research articles in top-tiered medical journals such as Nature, New England Journal of Medicine, Science, and Nature Genetics.

Robert graduated cum laude with a Bachelor of Science from the University of California, San Diego in 1992; received his MD and PhD degrees from Case Western Reserve University in 2000 (thesis advisor Hunt Willard); completed his Internal Medicine residency as a Molecular Medicine Fellow at University of California, San Francisco in 2002; and served as rheumatology fellow at Brigham and Women’s Hospital from 2002-2006 and post-doctoral research fellow at the Broad Institute of MIT and Harvard from 2003-2007 (advisor David Altshuler). Between 2007-2013 he was on the faculty of Harvard Medical School and an Associate Member of the Broad Institute while practicing clinical rheumatology and running a research laboratory at Brigham & Women’s Hospital.

In recognition of his accomplishments, Robert has received numerous awards, including: Pre-doctoral Clinical Award from The American Society of Human Genetics (1995); The Young Investigator Award from the Department of Medicine at Brigham and Women’s Hospital (2008); Career Award for Medical Scientists from the Burroughs Wellcome Fund (2008); and election to The American Society for Clinical Investigation (2012).

**Now, here is my unconventional “failure” professional biography.** There is risk that the failure bio is presented with false humility. I hope it does not come across that way.

**High school and college years (1984-1992)**. I graduated high school from Brophy College Preparatory in Phoenix, Arizona. I was on the Varsity basketball team, but I sat the bench the entire year. Despite this, I wanted to play in the NBA (seriously) and plotted a path to do just that: walk-on at the team at a local Community College; transfer to a major university; get drafted and play in the NBA. My parents gently guided me away from this dream, and instead I matriculated to the University of California, San Diego (UCSD) as a pre-med major.

**Medical and graduate school years (1992-2000)**. I was accepted from the wait list into medical school at Case Western Reserve University (CWRU), despite having MCAT scores that were just above average and grades that were split between A’s and B’s. After my second year at CWRU, I took year off to do research in Dr. Hunt Willard’s lab as a Howard Hughes Medical Student Fellow. Serendipity struck. I found a rare mutation that led to a paper in *Nature Genetics*, a finding that, to my knowledge, has never been replicated (link [here](http://www.plengegen.com/wp-content/uploads/3_Plenge_NG_1997_XIST.pdf)). Unexpectedly, the science hooked me. While I had never considered myself a geneticist, I found myself skipping lunchtime basketball to do experiments, and coming in early, late and on weekends to test hypotheses in the lab.

After some serious soul searching, I followed my heart and decided to do more research before returning to my clinical training. I applied for and was accepted into the Medical Scientist Training Program (MSTP), although the director was concerned that my low MCAT scores would depress the class average. My primary PhD research project, which focused on molecular genetics, was to create a knock-in mouse for the non-coding *Xist* gene (one of the first of what is now know as “long non-coding RNA”, or lncRNA); the mutation never went germline and the research was never published. Other projects were successful, and I was first-author on 4 peer-reviewed papers (and co-author on 5 others) during my time as a graduate student.

I returned to the third-year of medical school, but my mind frequently drifted back to the lab. I only “Honored” in about half of my clinical rotations. These clinical grades often don’t result in acceptance into a competitive residency program. Fortunately, my personal narrative of basic genetic research applied to clinical care, together with adequate clinical scores, landed me a position as a Molecular Medicine Fellow in the Internal Medicine residency program at University of California, San Francisco (UCSF).

**Residency and fellowship years (2000-2006)**. After my first month on clinical service at UCSF, I began applying for post-doc positions, as I was I really wanted to get back to basic research. My clinical evaluations were basically average, albeit at a very good residency program with a lot of smart people. At this point, my passion for, and success in, basic genetic research, coupled with the excitement around the Human Genome Project and its application to patient care, began to differentiate me from my peers. I applied for a post-doctoral research position at the Whitehead Center for Genome Research (which became the Broad Institute of MIT and Harvard), and was able to land a position with an up-and-coming young scientist, Dr. David Altshuler. Only after I secured my post-doc did I apply for and get accepted into a clinical fellowship in Rheumatology at Brigham & Women’s Hospital (BWH).

Initially, my research struggled in David’s lab, as I was a rheumatologist with a background in molecular genetics doing a post-doc in a diabetes lab focused on population genetics. An early GWAS with an outdated 100K Affymetrix array funded by a private philanthropist using shared controls from the Framingham Heart Study did not reveal much initially. At the time, nobody was using shared controls, and the study design was one of convenience. To extend the analysis, I “borrowed” funding from my K08 to run a few additional Sequenom pools of replication SNPs…and one hit. This finding led to a publication in *Nature Genetics* (which was replicated!). The skills developed during this time were applied to collaborations with other wonderful investigators (e.g., Peter Gregersen, Lars Klareskog), which led to several other publications in high-profile journals such as the *New England Journal of Medicine* and *Nature Genetics*.

**Junior faculty years (2007-2013)**. With my luck trending up, I set out on my own, starting an independent research lab at BWH and Harvard Medical School (HMS). I applied to become an Associate Member of the Broad Institute, where I had trained as a post-doc, but was declined! I was able to recruit a few good technicians and post-docs into my lab, but it was very difficult to recruit as many as I wanted. I applied for grants, but most were not funded. I submitted papers for publication, but most were rejected.

Through persistence and a strong belief in my research, I was eventually awarded a start-up grant from the American College of Rheumatology and an R01 from the NIH, and I was promoted to an Assistant Professor at HMS. Over the next several years, my success continued and I became Principal Investigator (PI) on additional grants: a large U01 grant from the Pharmacogenomics Research Network (PGRN), 2 additional R01’s from the NIH, a career award from Burroughs Wellcome Fund, a catalyst grant from Harvard Medical School, and a pilot grant from the Broad Institute (where I was appointed as an Associate Member on the second try) and the Arthritis Foundation. I was also a co-Investigator on several other large grants, including one from the National Center for Biomedical Computing focused on creating an informatics infrastructure to mine electronic medical records for discovery research.

Despite all of this funding and nearly 100 publications, my promotion to an Associate Professor at HMS was stalled for nearly two years. I decide to leave before the promotion was finally assessed. I gave up the equivalent of 6 R01 NIH grants and a successful academic lab to venture into a new career in industry.

This change was driven by the deep belief that I had had since graduate school: human genetics can translate into better patient care. With this career change, I was betting that clinical translation would be through drug discovery and development (my perspective on this topic can be found in a *Nature Reviews Drug Discovery* article [here](http://www.plengegen.com/wp-content/uploads/Plenge_NRDD_2013_geneticsTV.pdf)).

**Industry years (2013-current).**  I was recruited to start a new department of Genetics & Pharmacogenomics as a Vice President at Merck. Initially, others were recruited for the position, and it took time before Merck came back to me. When they did, a new President of Merck Research Laboratories (MRL) was in place, and the environment was rapidly changing. On my first day at work, it was announced that there would be 20% layoffs, including several of the people that helped to recruit me. During this time of change, I shaped a new department focused on Genetics & Pharmacogenomics to support Merck’s therapeutic pipeline.

One year later, I was asked to take on new responsibilities as head of Translational Medicine. Today, I lead a team of approximately 300 scientists, many of whom know more about the details of drug discovery and development than do I.

I continue to believe deeply that a better understanding of human biology, coupled with the right therapeutic molecules, biomarkers and the ability to test therapeutic hypotheses in the clinic, will change the productivity of drug R&D (see *Science Translational Medicine* perspective [here](http://www.plengegen.com/wp-content/uploads/Plenge_STM_2016_disciplined-DPED.pdf)).

**While I write this bio partially in jest, there is an fundamental underlying truth: *failure is inherent to our success*.** Sure, we all like to focus on our successes, and I am very proud of my accomplishments. However, we should celebrate our failures, too, as both are intricately linked. Moreover, acceptance of failure creates the right culture of psychological safety for any innovative business (see Amy Edmondson’s TED talk [here](https://www.youtube.com/watch?v=LhoLuui9gX8), Harvard Business Review [here](https://hbr.org/2011/04/strategies-for-learning-from-failure)).

After I wrote my unconventional biography, I re-listened to the [TED Radio Hour podcast](http://www.npr.org/programs/ted-radio-hour/487606750/failure-is-an-option) and reflected on my own lessons learned. This was a valuable exercise, and one that I would recommend for others.

One theme that emerged for me is that I tried to iterate throughout my career, with the appropriate amount of *principled persistence* in the face of failure. That is, I set goals and worked hard to achieve them, but altered course in different ways when confronted with failure:

* In high school, I chased a dream of becoming a professional basketball player, despite a very (very!) low probability of success. At the urging of my parents, I changed course and pursued more realistic goals where my skills were matched with reality.
* In medical school, I realized an unexpected passion for genetics research. But after initial success, much of my graduate work was spent on an unsuccessful knock-in mouse model of X chromosome inactivation. I believed in what I was doing, however, so I persisted. This experience also taught me how hard and unpredictable basic research can be.

* I struggled early in my post-doc and junior faculty positions, which forced me to think deeply about what I truly wanted to do with my career. Because I believed strongly in my research, I continued with my career trajectory, while making smaller course corrections along the way.

* Because I experienced and survived past failures, I was more confident in making a big leap from academics into industry. My industry experiment has not yet run its course, so I am constantly evaluating interim metrics to make sure I am on the right trajectory.

**I keep these failures close to me, as a reminder of the challenges en route to my current destination and motivation for future opportunities.** I am fortunate to have learned all along the way. I am also lucky to have supportive family members and mentors (Hunt Willard, David Altshuler, and many others) who have provide guidance tailored to my interests.

**This week, I am visiting the Galapagos Islands with my family.** Here, I will observe first-hand how nature’s failures, including famine and death, lead to the wonderful world in which we live. [Charles Darwin's](https://en.wikipedia.org/wiki/Charles_Darwin) concluding paragraph in his book, [On the Origin of Species](https://en.wikipedia.org/wiki/On_the_Origin_of_Species) (1859), says it all:

*Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of higher animals, directly follows. There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.*