

## How I got from there to here. I think.



At some level I was always going to be a doctor. I was the guy my school friends asked to wipe the blood off their grazed knees (my dad being a doctor, I was the obvious choice, while my sister declared early as a veterinarian so she got the dead birds). But I liked this role. I was also pretty much always a geek. Not sure if I inherited that from my mother or father but I do remember my mother had the first microwave any of my friends had ever seen. And my dad told me he was off to buy a music center one day and returned, not with the keys to an expansive recording studio, but with a turntable/cassette tape player/radio. How disappointing. Talking of disappointing, I remember winning 100GBP when I was about 10 and being dismayed at being forced to 'invest' the money in a savings account rather than buy a pair of spectacles with built in windscreen wipers. Despite such early childhood traumas, my dad and I bonded over the Rubik's cube when I was about 12.



I think my record was 30 seconds but the rose tint is obscuring the details now. I do clearly remember one summer when I was supposed to be outside enjoying the Scottish, er, sunshine when I was more focused on writing a computer program to calculate the taxes for my dad's medical practice. Of course, they changed the tax code the next year, teaching me an important lesson about, well, governments and taxes. I didn't become an accountant (my brother is the one to trust with your money) but I did imagine great wealth for myself from the profits of a horse-racing game I wrote for the Sinclair ZX Spectrum home computer. You made your horse go faster by alternately pressing the rubber keys as fast as you could. It turned out I



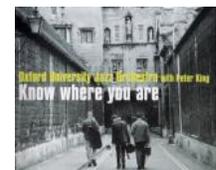
didn't become a millionaire, but my friends thought I was cool. Or so they said. At medical school, I remember first isolated heart and watching transfixed at this beating wonder of physiology. I was hooked. A Bachelor's degree in exercise physiology was where I learned about the limits of cardiovascular performance as well as the surprising news that science was actually a creative art. Jazz being my other creative outlet, I spent my spare minutes with our saxophone quartet touring around and releasing a couple of albums of original music. A summer internship in California led directly from my connecting with only the 2<sup>nd</sup> person I knew in the entire world with an email address: Vic Froelicher (he still has the same email - long live AOL!). And that summer Netscape had its IPO, Silicon Valley was heating up, and Vic's wife was kind enough to let me join her band. Blues by night. SQL by day. Oh, and a borderline crazy attempt to pull some old code for a custom regression from GW Basic several generations forward into something we could actually run it on (finally rewrote it in Java/R). I returned, graduated medical school, and left Scotland for Oxford ("*we have hospitals here you know, sonny*" one of the Glaswegian nurses pointed out to me the week before I left). I managed to drag my girlfriend Fiona with me and after residency I even persuaded her to marry



me, something almost as amazing as the fact that the ceremony also involved a Jacob's Ram. Baaack in Oxford, I learned cellular biology with Barbara Casadei and molecular genetics with Hugh Watkins in the course of a PhD at Christ Church College (I also learned how much fun mixed modeling was from my stats tutor who was enviably trilingual in R/SPSS/SAS). Being a 'student' again, I had auditioned for a spot in the University Jazz Orchestra but the undergrads, deeming me obviously too old (at 28) and clearly too responsible (being an actual doctor) to be *in* the band, decided instead I should be its director.



And it turns out having your own big band is pretty fun – our high point was an album with the jazz legend Peter King. My first startup was in Oxford, co-founded with my wife: *Funky Metals* sold my father in law's artisan metalwork through a website we coded in a text editor (ah, those were the days). And then when a chance came to come back to Stanford, I jumped. Initially, over a large mountain of paperwork. My wife was generous enough to trust me, not for the first time. So was Tom Quertermous who took me on and was kind enough to lend me his philosophy of leveraging high throughput genetics to generate "smarter" biological hypotheses. I'm not sure I ever gave it back. In clinical cardiology I was lucky enough to meet Randy Vagelos, who taught me everything important about cardiology and a whole lot more (I still use some of his jokes, though he tells them better). For music, I turned to Craigslist and found myself in an Afro-Peruvian jazz band (obviously). Being neither Spanish-speaking nor Peruvian, I was arguably at a marginal disadvantage there, but as I was happy to find out, the language of music is universal. And now somehow we have three American children. I remind them frequently that their father had to pass not one but two English exams in order to move to their homeland. From England. But they just roll their eyes the same way they do



when I tell them 'football' implies a game played with your 'foot'. Since joining the faculty at Stanford, my work 'family' has grown even faster than that and I am lucky to be surrounded by the smartest, most amazing, most passionate people I know. We probably have one of the most diverse groups on campus – from mathematicians to genetic counselors, nurses to grad students, from high schoolers to junior faculty. We have a wet lab, a dry lab, a big computer, and run a clinical genomics service and one of the largest Inherited Cardiovascular Disease Centers in the world. With Stanford colleagues, I started a company in



2011: *Personalis* aims to transform the practice of medicine through genomics. And now I get to fidget with cool toys while my team does all the hard work of analyzing genomes, exploring biological networks and sticking catheters in tiny beating hearts. When they're not watching, I sneak off to the hospital to see my patients.

