

Tasty Opportunities: Working In The Food Industry

Tom Sanders, Tate & Lyle Sugars

I realise this is probably something that you haven't really thought about, Working with food probably isn't something you've really thought about at this stage, it certainly wasn't for me at this stage. I was at Leicester in 2006, doing Biological Sciences. I started out wanting to do Genetics but then I think my actual degree ended up being brackets Zoology at the end because that was most of the modules I took. I did a summer conservation project in Indonesia because I was thinking that was the kind of area I wanted to go in to, maybe conservation or animal behaviour. I finished uni and then started applying for PhDs on animal behaviour really, thinking vaguely I was going in to something like that. I didn't get any of the PhDs I applied for. And then I got a phone call from a recruiter saying, "Have you ever thought about a career in FMCG?" I was, "maybe". And they said "Have you heard of it?" I was like, "yeah, I think they're a great company" and just tried to blag it. Then I found out that FMCG actually stands for Fast Moving Consumer Goods so it's a whole sector and I was trying to make out I knew it was a company! Fortunately I got an interview and I got through, and then it just went on from there.

I've worked for four different companies since then and it's all been really fun, so I'm actually kind of glad I didn't get any of those PhDs. I want to talk a little bit about the science jobs generally in food that you can do because I don't think you'll be aware of most of these; I certainly wasn't when I left university. My current job is really product development. That's like thinking of new ideas for products and coming up with the ingredient lists. Mostly it involves tweaking existing products, but there's more to quite simple products than you might think. For example, let's go through the ingredient declaration for a loaf of bread. That's a pretty straightforward product, but see all the different kind of stuff that's in there. Wholemeal flour, water, granary blend, all these different types of flakes, that's all pretty easy and boring. Then we have, wheat proteins which is put in to boost up the flour so you can use cheaper flour when you're using wheat protein as well so you can make some bread. It's good for manufacturers. Caramelised sugar makes the crust nice and brown and look healthy, yeast to make the bread rise, obviously, and salt that firms up the bread. Vinegar is there for microbiological reasons, it makes the bread last longer. Again, that's good for manufacturers; you can have it on the shelf longer. Emulsifiers hold in water, so that's an anti-stalant - it makes the bread softer for longer. Maybe you've noticed when you buy a loaf of bread from an in store bakery your loaf gets sort of hard after a day or two. But if you buy it pre-packed from a supermarket it can last like six days. Barley flour is there for taste, Fat makes it nice, flour treatment agent makes the dough pliable through factories and then there's other stuff, e-numbers and so on. So that's a loaf of bread, a super simple product, but there's quite a lot of science in that. Other reagents that get burnt off during the production process don't have to be labelled. There's a lot of biotech involved, a lot of like GM work done on enzymes in food for orange juice, for bread, for cheese and for ice cream. Almost all of these have enzymes in them in a technical way.

You can go into a **technical or regulatory role**, that's about what should be allowed in a product or not based on clinical work or a review saying this is fine to go in, or fine not to go, how much you use, and so on.

Quality Assurance - every food manufacturer has a target for quality assurance and there's a Quality Assurance lab so that's looking at the ingredients you're using, how long they will last. Some testing will be seasonal – for some products there might be some more microbiological problems in the summer, less in the winter. So those guys do ongoing testing and that's a massive part of supermarket foods in the UK.

R&D that's the hard core research and development that happens mainly in very big companies. This is some more pure science, looking perhaps to discover a new enzyme that could help make bread last two weeks. I've seen a whole lab maybe a quarter of the size of this lecture theatre with centrifuges in there to try and find an enzyme that would make the pizza on cheese not go brown. There was maybe like four doctors working on this and you go through this lab and there are little bits of cheese everywhere. As you can imagine there are a lot of pizzas sold in the world so there's a massive market for it.

Packaging, that's what I did for a little bit as well. That's like deciding what polymer they use for packaging because on one hand you want if it keeps out oxygen or keeps in the gasses that you're pumping in so that food can last longer. But also you want to have it as cheap as possible cause packaging is a massive cost. In something like bread products it can be maybe 30% of the cost. So it's pretty important to try and optimise that.

Process Development, that's about optimising the process, like the temperature you use or the technology of how you are cooking something or freezing something or whatever. **Sales support**, again that's something I do a bit, that's like helping the people who are selling your product, business to business customer. So my employers Tate & Lyle are well-known for producing sugar for the home market, but we also sell a lot of sugar to manufacturers and we explain to them how it can be used, any problems they might have or whatever. **Lab and analytics** might involve the micro labs or chemistry labs testing for different things. For example there may be need to check for a toxin in some crops. Here's something I was involved in. On one level it looks banal, but it is actually quite important. This is a machine that's testing the rebound rate of a slice of bread to try and optimise that; you change the recipe and look at the impact on rebounding. Rebound is a measure of softness when you squeeze a loaf, which is what people do all the time in the supermarket when they are deciding which bread to buy. It's considered a good determiner of whether the bread will go stale or not. It also contributes to the strength of a slice, so that you don't get a hole in the bread when you are making a sandwich. This looks like torture equipment for a slice of bread and it sounds crazy but you have to do that kind of thing.

This is an outline of my career progression so far. I did a graduate scheme after that phone call from the recruiter and my confusion. I started at the 2 Sisters food group; they're a pretty big food company doing stuff like Foxs biscuits; Goodfellas pizzas; Harry Ramsden's fish and chips. I was in the meat division. They do I think about 80% of all the chicken in the UK including the supermarket own label stuff. I was in technical operations so doing stuff around yeah food safety and running of the plant. For one of my projects, this is pretty grim, I had to stand on a production line in a slaughter house watching for maybe twelve hours one week, watching chickens get killed to try and work out the right voltage to be using. When a chicken is killed, you hang them up on a kind of washing line. The chickens pass through a water bath first that electrocutes them to stun them and then their heads get chopped off. It's all very quick and safe but if you have the voltage too high then you get what looks like a blood spot on a chicken breast. If it's too low then the chickens are alive which would be a complete disaster, a factory can get shut because of that. So having to try and find a correct voltage for that I must've seen tens of thousands of chickens killed, that's pretty horrible.

Then I moved to Mission Foods, an American Company. You might not have heard of them they do wraps, flat breads, Mexican meal kits, stuff like that. Again I went straight in to a technical place there. A guy I sat next to at 2 Sisters went over there and said "do you want to come and join me?" That work involved writing specifications for products and things like that, including microbiological issues. Chemical result and nutrition were also a massive part of it. Then I moved into packaging, which was actually pretty interesting. Part of this was deciding the actual structure of the packaging. We also had product scope and development. So, as I said, one of the things they did was make wraps. We did research we found that they were too easy to store so the customers. You have something called "two moments of truth" when buying

fast-moving products; you have the moment in the supermarket and the moment in the house that you have to kind of purchase it again. Sometimes people are buying the wraps but then they were staying in the cupboard because they were too easy to store. So if it's really hard to store you use it quickly because you want to get it out of the way. We were looking at how we could "sell it again" in the house, so I was going shopping with these families spending a day at the supermarket with them, talking with them, along with this creative person from a branding company. Then going back to their house and cooking with them, having flat breads or whatever and seeing how they used them, where they stored them. So it might sound boring, but there's some quite interesting stuff that happens. And then after that I was an innovation manager, so that's purely about long term development of projects, new recipes, that kind of stuff. I was there for quite a while.

Then I moved on to Greencore group, a UK company. You definitely won't have heard of these, but they are the world's largest sandwich and salad manufacturer and basically produce everything that you see in what's called "food to go", you know if you go to a supermarket and they have like the sandwiches and wraps and salads like the prepared foods that you just take in like the meal deals. They produce all of those. I was a Senior Concept Developer so I was putting the ranges in Asda, Boots and Morrisons. I'd say what should be in the range, so developing the sandwiches, salads, based on trends and stuff. Ironically I'm not a massive foodie, so there was a lot of reading around about what's the best pepper to use with, say, Yakatori chicken.

Last year I moved over to Tate & Lyle Sugars. The ASR group, that's the American Company who owns them, are the largest cane sugar refiners in the world. I'm the Applications manager in speciality sugars. A lot of the product goes into industrial sales, which is mostly white sugar that goes into maybe soft drinks or cakes or stuff. They use thousands and thousands of tons of white sugar, but not much science in that to be honest. There's Grocery which is the products you buy in the supermarket, then there's food services, which is mainly those food sachets. Speciality, which I work in, is kind of the more interesting stuff; this is where we sell stuff to other food manufacturers and in bespoke products. I'm working in product development, so I work with these manufacturers on new products for them and then occasionally new products for us ourselves, which in turn leads to new products for them. For example as a sugar refinery we make lots of white sugar and brown sugar, obviously. In the process of making white sugar you make all syrups and molasses, stuff like that. You also have sweeteners like sucralose or aspartame or stevia, I don't know if you've heard of that. Golden syrup is kind of a by-product of sugar refining as well. After that you can add all kinds to it so you can add Pectin to it to make it all gooey. This is kind of a neat one, a thermal reversal starch so in a factory they make this sponge pudding and put some syrup on top and it's got a starch. When it's going through the manufacturing process it's quite slippery but then when it has the second heating process it turns lumpy then it sits on the top of sponge rather than going through it. So you have to do like all starch selection. That involved a bit of science. Beer producers maybe have molasses in there, sugar and so on for fermenting. You might want to have a like second fermentation whilst the beer is in the bottles, so you might add in some sugar there or perhaps syrup to give it a beany taste or make it darker or just for the flavour. In fudge you have all kinds of sugars; in liquorice you have molasses to make it black and give it that liquoricey taste. Sauces have all sorts of stuff in them, including quite a lot of sugar actually. We don't make any of these products but we work with manufacturers who do make them so for flapjacks, biscuits, puddings, ice cream, cakes and so on. I'll work with those guys in their factory to try and optimise the product, tweaking it, or perhaps tweak our own ingredient if we need to. Making the launches happen because it looks good for everyone. I'm an Applications Manager but I'm split between the sales director in Europe and the Chief Technical Officer in America for the ASR Group. About half the time I'm working with the sales guys who are working with the customers, those manufacturers I spoke about on the previous slide, and half the time I do internal development projects. Maybe we are wanting to proactively move into a new area of, for example, ice cream sauces. Then I'll work on those projects. Or if a brewery asks what they should be using to make a beer that's like Carlsberg Export, is there a particular

sugar they should be using for this? Maybe I could recommend that. I recommend products from our portfolio, doing trials to see if they work in other customer's products. Maybe someone will come up with something really different. A biscuit producer might suggest something and I'll just try it out in our labs to see if it works, developing new products to service their needs. I help build business cases for the proactive development of new products or platforms so. That might involve spotting a gap in the market, recommending new markets to the sales team, reporting to our sales director, pointing out new things customers are doing or new trends in the market. So perhaps I might say that there's a rise in Greek-style yoghurt which needs a special type of sweetener, but we as a company are not currently servicing them, so perhaps we should do so.

Then there's NPDs, that's New Product Development. I didn't speak about that before but that's kind of the area I'm in. A little bit of science definitely goes a long way. I wasn't a brilliant science brain, I got a 2:1 in largely Zoology, which isn't necessarily the most stretching on the sciences really. However as we saw with the ingredients list earlier, a lot of food production is based on science. Then if you think about the small portion of students here that do science and then imagine, in a world sense, there's such a tiny amount of people who actually did science. In a Company sense, there's maybe 2000 employees in our Company, of which perhaps 15 did a science degree. Given that science is foundational to our business, which makes the science people massively vital cogs really.

I guess the number one skill required is communication. You've got to try and translate things that are sciencey to non-scientists so much of the time. That's almost constantly the job. Someone might not understand why we can't do something, or why something can only last five days rather than seven days. You have to explain the product to non-scientist so you have to be fairly good at communication. There are a lot of presentations, and Excel work, that's part of the job. You need confidence to advise senior colleagues on projects. If you're in product development or if you're in a science role whether it be technical or quality assurance or whatever, you're making big calls because you're the scientific expert straight away. I was a bit scared by that at the start. So in that chicken example, that was about the way they killed chickens in like the world's biggest slaughter house. I was the graduate, straight out of uni, and within three months of training I was influencing their process for killing chickens in the world's biggest slaughter house.

It's not an incredible effect, but its effect at the early stage and that's kind of how it works really. You need to have a proactive attitude. That's something that everyone says about graduates, that they are not usually proactive enough; everyone wants to just do what they're told rather than going out there and thinking for themselves or having their own projects or finding stuff out. So that's something I'd recommend you to go for actively when you start a job wherever, not to be afraid to get your hands dirty. So like the chicken example or I had a friend who worked in the same job on a graduate scheme and one of his projects was to work with all the offal that went into pet foods. Man that was grim. He was going round seeing lorry loads of maybe 20 tonnes of chicken and pig brains come out of a truck. Horrible but still there was a need for optimising that, improving the costs and that. It's not nice but it is interesting seeing the bigger picture.

Why choose food? I guess not many of you will be thinking about going into food right now. What are some of the reasons why you might? I guess, firstly, its recession proof; everyone eats. When the recession happened, people ate less in restaurants, but more at home. There was evidence of up-scaling so people bought more M&S food or supermarket premium lines. Our supermarkets are the best in the world, so our food manufacturers have to be the best in the world. Someone working in UK foods is pretty valued on a world sense. It's a real fast paced field and I guess if you like that there's options in many areas of the business. As I said, I've moved from technical to packaging to product development and now working a little bit with sales, so you can just move around all the time. You're valued pretty highly from the outset if

you've got a science background. Although food science degrees exist, and quite a lot of people do them, I don't believe they are massively high calibre really. If you've got a basis in biology or science generally you can understand all the principles that are involved in food science and manufacture. Being a foodie would probably be a benefit, but I'm not really and it hasn't held me up too much. The food industry provides an option for use your degree in a commercial environment. Some of my friends did go on and do PhDs, but many of my friends went into something that's not related to their degree at all. Mine definitely is; every day you're talking science really. It may not be ground-breaking, but at least you have a use for it; it feels like it's pretty good.

What about the bad bits? Well it can be pretty dirty and smelly sometimes, depending on what you are doing. There are long days if it requires travel but none of these things are really 9 to 5 roles, you just work late sometimes. One of my bosses is in America then I have to work American time sometimes with meetings scheduled for like 7 or 8 o'clock at night. But then you get that back really, it's just completely flexible.

Job security is based on how good the company is. If the company is crap then maybe it will close and you lose your job. There is quite a lot of competition for places now. When I started it was just before the recession so people were chucking jobs everywhere, I didn't even apply for mine. In fact I haven't applied for any of the jobs that I've done; my second one was with a guy who I sat next to at my first one and my third one was my graduate manager from my first job and then my one now is someone who sat with me on my third job. So there's competition at the start for you guys but everyone I know whose maybe 21 or 22 in my company had like an internship or work experience beforehand. I guess from what I've seen if you did work your way onto an internship you probably got like a fifty-fifty chance of getting a job there at some point.

Talking science with non-science people can be pretty annoying. When you telling someone for the fiftieth time that natural sugars are the same as any other sugar. And when your big idea doesn't work that's the most annoying. I worked on a project with this bakery company for six months. I was going to be saving millions of pounds, improving the product, and making it last an extra day. It was going to be incredible. I was going to make my name, I thought. It was completely self-led just a side project, it wasn't something that anyone asked me to do. And then maybe a month after I'd finalised it all and I was doing my final presentations to the Board and everything suddenly the key ingredient wasn't legal any more for use in my application. That was pretty annoying. That was nine months of it and then it just had to be scrapped. That's really annoying. And also when you're presenting to supermarkets you might have a brilliant idea for a sandwich or a wrap or salad or something you think this is the best tasting thing ever and then they get it and they say no, its two pence too expensive, can you make it a bit cheaper? Well, I can do but it won't be very good. And you lose it. That's all.

Questions

Q: You said to start off with that you actually you didn't go and try and get this job, they came to you, how did a recruiter know you existed?

A: I stuck my CV on a jobs website, [Monster](#) or [Fish4jobs](#), and then I just got a call from a recruiter. I'm not sure if it's just a Biology thing but as soon as I put my CV on the site, I maybe had five calls that day. This was a while ago but it was almost instant.

Q: It was the Biology they were interested in though?

A: Definitely for my first job although it was a food job there was a graduate scheme. I think they had five people on a yearly intake. They didn't want anybody who did Food Science despite being a food job they wanted people who did Chemistry, Physics or Biology. Just because they wanted people with that

foundation and that flexibility of thinking really. Food science isn't that, I don't know if you do it here now but I don't think it's that incredible a degree. It's not valued as highly as Biology even in a food sense weirdly.

Chris Willmott: So that's interesting because perhaps people assume a food named course would be more relevant. So you stumbled into the food industry. If somebody after today thought "actually that sounds interesting, I would actively like to pursue that", what are the best ways to kind of approach that?

A: When I went into it I quite clearly didn't understand about what options there were, what people did in the food industry. If it does interest you, a good option is to find out what jobs are out there. Look on the industry website, www.foodmanufacture.co.uk. You could also talk to recruiters to establish what degree would be relevant. Maybe see a manufacturer that's nearby to you and then contact them and ask them if they've got any internal work experience available.

Q: You mentioned the key role of internships these days. Do you think if someone was to cold contact the food manufacturer about a summer experience, might there be kind of thing?

A: Yep, I've heard that happen before for sure. I mean I can leave my email address and then if people want to contact me then they can go for it. I mean I can't promise anything it's not something I sort out. But that is how these things happens. I mean you have to advertise internships but in my last job there was a girl who worked there over the summer who literally just cold called and said she was interested in these types of food, could she come in and see what those are. She worked there and was offered a job. That was in the year between her 2nd and 3rd year. She came and worked for the summer. Even after the summer, while she was still doing her 3rd year, she was offered a job for when she left. So she had her 3rd year of uni kind of not quite sitting back. Her classmates scratching for a job, she'd got a job lined up for her at a pretty good company on a decent starting wage. With the economy as it is, internships give the employer a chance to conduct a kind of summer pre-test to see if they're decent. It keeps the recruitment costs down as well.

Q: So in terms of the companies you've worked for, have any got formal sandwich placement (no pun intended).

A: Well 2 Sisters definitely has, that's a very good company. They have a graduate scheme as I was on it and they might have shorter term ones. Mission Foods definitely, we used to have a lot of interns there on year internships and summer placements. Greencore yeah, they did because that was the example of the girl who was there the summer and went on to get a job.

Where I work now, it's quite engineering-led, it's a refinery, so a lot of the business is engineering-led. If you looked at sugar refinery it's a bit like an oil refinery really so, there are internships and graduate placements but more for engineering graduates. The product development side is quite a small area.