

The Science of Beauty – part two

Karen Coleman: "I'd like to welcome now to the stage Dr Raniero de Stasio. He's the scientific director with L'Oréal UK and Ireland. Dr de Stasio graduated in biology from the University of Rome in 1985 and then he went on to receive a doctorate in microbiology and virology from the Indiana University. He's worked in the cosmetics sector since 1989, with particular interest in the regulatory, safety and technical aspects of the industry. So if you could please welcome Dr Raniero de Stasio."

Raniero de Stasio: "Thank you very much. Thank you to the organisers for inviting me and thank you everyone for being here tonight. What I've selected is a few slides which, hopefully, will convince you that cosmetics are not just cosmetics."

"L'Oréal as a company completely revolves around research. I'll give you a few facts and figures later. It was founded by a scientist, a chemist in particular and until the 1980s was actually run by scientists, which is a very unusual thing for companies to be run by scientists, apart from the California Silicon Valley kind of companies. And even after the 1980s when the business people took over the world, as I always joke about, science is still extremely important at L'Oréal. When we, the scientists at L'Oréal, speak, the business people will listen to us."

"This is an early picture of Dr Eugène Schueller, who founded the company in 1909 and he had a discovery, the whole company is born, if you like, because of a discovery he made in 1907. He patented phenylenediamine colourants to colour hair dyes. Phenylenediamine was already known for about twenty or thirty years but it wasn't used in hair colourants. So Dr Schueller had this idea, he started making colorants in his kitchen, packaging them in his bedroom, and training the hairdressers in his living room in a one bedroom flat in the centre of Paris. And that's a true story, and not very different from what we do today except that we don't make them in the kitchen any more. But we still invite hairdressers to learn what to do in our lounges, in our academies as we call them."

"A long time has gone since then. As I said, the company was incorporated in 1909 so in 2009 we will celebrate our centenary, so I expect some big celebrations on 5 June 2009. We are now the number one cosmetic company in the world. From just a haircare company we moved into all areas of cosmetics from skincare, suncare, cosmetics, make-up and what we call cosmetics-acti, which is a little closer to medicines but not quite medicines. Some people in the room would know La Roche Posée for example, which is one of our brands, which sells very well in Ireland in the pharmacies."

"So let me give you some facts and figures from L'Oréal. I apologise in advance if they are a bit dry. We invest 3.4 per cent of our turnover every year. Our turnover, being the first cosmetic leader in the world, is fairly large, so the investment is five hundred and thirty-two million, which is very significant. These figures are for 2006, of course. We will have new figures, bigger figures, for 2007 fortunately. We have almost 3,000 people working in science. Three thousand scientists - 65 per cent women, you'll be pleased to know. In 2006 we had almost 600 patents. And we also believe not just in doing research at home but we have 100 active collaborations with outside institutions, academia etc. And apart from the patents, we've had 80 publications just last year in peer review journals.

"So we have this little anecdote. Every year we compete with Renault, which is one of the most innovative car companies, whether you like Renault or not. We compete with them on who files the most patents and one year L'Oréal is first, one year Renault is first. We don't mind because they're not competing with us anyway. At least, we don't make cosmetics for cars yet.

"This is, briefly, where our research centres are. We've got sixteen laboratories in the world, research centres, and then thirteen evaluation centres. We've got ten in France, of course, it's our home country, Paris and the area around Paris, but we've got other centres as well. And I'll show you one, actually in the south of France, later, when we talk about Episkin. And one thing that I wanted to say is that there are a couple of centres, for example the hair research centre in Chicago that does mainly research on African hair, perhaps unique in the world, doing research on a particular kind of hair. In 2005 we opened a new centre near Shanghai, in a town called Pudong, and that does, primarily, research on Asian skin. So we do very different kind of research from the classical.

"And that brings me to my next slide which is our mission in research. We want to - and seem like that it seems very simple but it's actually more complex - the most complex thing is that we want to increase knowledge in the area of hair and skin. If you think about it, there aren't many institutions that actually do research on healthy hair and skin. Yes, maybe from a cosmetic viewpoint, the hair is not necessarily always healthy, it is not necessarily always as healthy as we would like it to be, but most of the research that happens in universities and academics, in academic centres in hospitals, is actually done on pathological conditions. Virtually nobody as big as L'Oréal does research on healthy skin and hair. That's one very important point.

"The second objective that we have is evaluating product safety. Very simply, if a product isn't almost guaranteed to be safe, it won't go out the door. But the other thing we've actually done,

we've pioneered a concept called cosmeti-vigilance. Cosmeti-vigilance means monitoring what happens when the products are launched out the door, after they are in the market. And although cosmetics are very safe, because of the very large volumes that we have, we still see a little bit of consumers that don't necessarily like – they have unexpected, undesired effects. We can monitor those. We can change the products and make them even more compatible with skin and hair.

"And finally product efficacy. As Chris said brilliantly before, claims need to be supported. Very recently we reviewed our internal code of ethics and we have stated again that untruthful claims will simply not exist at L'Oréal. We have to be sincere. We have to be honest and truthful.

"Let me say a few words on where research happens, which fields. Actually this little target is slightly unbalanced because, if you wish, there are three cakes. There is one that is not on this picture which is the fundamental upstream research. So one third of the half a billion euro, over half a billion euro that we spend actually goes into fundamental research that has nothing to do with hair or skin. That's how convinced we are that science is important to L'Oréal. The second third goes into advanced research, which is primarily to improve the knowledge of hair and skin, as we said before. And the last part, it's only one third of our budget, goes to applied research which actually gets our products out the door. And it happens in those three main areas of makeup colour, skincare and haircare, including colorants of course.

"Now, I don't have time to talk about all three but I've selected two examples in skin which is perhaps the most interesting, definitely from a biological viewpoint. The first example that I'd like to talk about is a new ingredient which we heard Penelope talking about, even though in her beautiful Spanish accent you may have missed the word but I'll tell you in a minute. The second example is episkin, which is in vitro reconstructed skin through tissue engineering.

"So the first discovery is pro-xylane. It's a new ingredient. It's an anti-ageing ingredient which is now in our products and it's positioned a little bit like a new motor of anti-ageing in a lot of our products. I'll show you in a minute also what products you can find it in. I've been asked to do a little bit of marketing, I'm sorry. The insight that we started from is the fact that the skin, as you see on this diagram, underneath the, I'm not sure if I have a pointer, let me just walk towards it. In this area of the skin, in that area of the skin you have a very complex extra-cellular matrix. So they aren't cells, they are actually fibres of collagen elasticine. And these fibres contain a gel that has a lot of water trapped into it. This water is trapped by a very complex sugar called hydroxyl acid. Galactosamine glycans is the class of sugars. Hydroxyl acid is the most important one. What happens is, the more water is trapped in this gel the bouncier and the more supple the skin is, the

skin appears. In younger skin there is more water trapped into the gel, in older skin there is more water free to actually [unclear]. So the water content doesn't necessarily change. It's how much is actually trapped into the gel.

"The second insight that we had is that the synthesis of hydroxyl acid happens primed by a natural sugar called xylos. What we've done is we've taken a naturally modified xylos which we discovered doing those experiments similar to what Chris Gummer was telling us before, that this modified sugar primed synthesis of hydroxyl acid even better and actually reconstitutes the gel that you need to have. So even in artificially aged skin in the lab, we could actually see the skin goes back to being young, at least from this gel viewpoint. And then in our clinicals we proved that it has an effect on anti-wrinkle, in elasticity, in hydration and all the other nice things.

"And the other nice thing about pro-xylane that we're proud of is the fact that it's a very green molecule. It comes in renewable Western European beech trees. Through one single step the wood pulp is reduced into xylos and then in the second step is complexed with an amino acid called serine, and that's the active ingredient. That's what pro-xylane is. As I said it's very green, biodegradable, non bioaccumulable and non ecotoxic, we've done all the environmental tests and we're very proud of its green properties.

"So these are the products you will find pro-xylane in. The first is a Lancôme product called Lancôme Absolue. The second is Biotherme. The third is Vichy and the most important one that you've seen the advert for is Derma Genesis from our flagship brand which is L'Oréal Paris Dermo Expertise. That's all for the marketing, I won't say any more.

"The second example I wanted to talk about, is Episkin, which is another area we're very proud of. This is about the reconstituting skin in vitro, in a Petri dish if you wish. It's a thirty-year-old idea which came from people who are severely burned, who have basically been in accidents, fire accidents or car accidents or whatever. The idea was that if we could rebuild the skin in vitro, these people could be helped. Two scientists working in L'Oréal sat in 1979 making an actual skin in vitro. I showed you the diagram before. They actually had the bottom layer, the dermis, and the epidermis actually growing in a Petri dish. As time went by they started putting back more and more elements, very importantly melanocytes which are the pigment cells of the skin, which are very important for testing. And that culminated in 1997 with actually making a kit in vitro. The picture you see here on the screen is the actual Petri dish of the kit you can buy. It's actually available commercially. It is a commercial operation besides being a very important intellectual exercise.

"The most important thing is that in 1998 it was first validated as an alternative to animal testing so for safety of cosmetic products, skin corrosion could be tested in vitro instead of on an animal. Then we kept doing a lot of research and more recently, in fact this year, in April 2007, a second skin evaluation permit, skin irritation, which is much more important than even corrosion because cosmetics are not corrosive, of course. Irritation though, it can happen. You need to check the products are non irritant and now we can do it in vitro, in fact we have to do it in vitro because the law says when there is an alternative, nobody is allowed to do any animal testing.

"Now that, so much for safety and for an alternative to animals, the very important this is that this is also good for efficacy testing. To give you an example, because of the melanocytes we can actually test the efficacy of sunscreens in vitro. So instead of running tests on hundreds of thousands of people, we can actually first screen whether our filters work in the lab and then move on to and test them on people for efficacy. I've got a slide here which I'm going to run just to show you how the kit actually looks and works but I'm going to skip very quickly on it because I want to go onto my last slide which is a different – it's For Women in Science.

"Our commitment to science is beyond research and development. It is also about promoting the role of women in science. In 1998, L'Oréal and Unesco came together and launched the initiative called For Women in Science under the motto that 'The world needs science... [Video].'

"By the end of next year, 700 female scientists worldwide will have received awards from For Women in Science. Awards are open to all women in all fields of life and material sciences, completely disconnected with beauty again. We don't need to have application just for hair, skin and other things. In fact most of the awards go for science that is completely unrelated to the fields.

"At the international level every year, five top scientists are awarded this title. They are leading, pre-eminent female scientists at the top of their career and they won the fight because it's one in each continent. Then at the national level, 60 countries worldwide will award awards. We are very proud to announce that for 2008, Ireland and the UK will have a For Women in Science awards. Four awards of £15,000 will be awarded for 2008. And applications are open from January. This is more than a cash award of course. It's very important that women who receive it can use it however they want, for childcare if they want. It's really designed to allow them to go into the next level of research to do whatever they want to do next or if they're coming back from maternity leave or whatever is important to them to allow them to do their research. And it's more than a cash

award because it actually puts them in a network of scientists. It gives them a prestigious award that will help them with their career. And with that I am finished so I want to say thank you very much."

Coleman: "Thank you very much."