

# The Future of Medicine

Simon J Ladds

All of us have been ill at some point, but why does Ed down the road manage to get out and play his football match, whilst Jack is laid up in bed for the weekend thinking that the end of the world has arrived? The answer may yet be one of the most important questions asked of scientists. We learn names and achievements throughout history of great leaps in medicine, helping to prolong life and ensure an ever healthier population, but the more we discover the harder it becomes to find newer and better drugs. We want to be fit, we want our family to be free from illness - but it is getting harder to find these “wonder” drugs.

Think of the way we find our pop stars now, we sieve a mass of people, hoping to shake out a huge star to bring us a Christmas number one. It is a crude method but highly effective. It is also time consuming, expensive and the end product is usually massively over-hyped and not that great. Likewise drugs are screened in their thousands, the best are then tested further, until the most effective is found. This is when the real tests begin - before it can be used by doctors on patients. The drug's negative effects and positive effects are tested. Does it work? How well? Is it safe? Is it Jedward or Leona Lewis? We need a better way. Identifying potential drugs is not the biggest issue - the world's scientists churn out thousands of targets every year- where the real problem lies is in the way we test these targets.

Scientists spend millions of pounds on huge expensive machines, testing molecules, measuring at miniscule levels. But maybe the answers we need have already been found, we just need to look at them in different ways. As with most things, computers may be the answer. There is so much data collected now, from so many different sources from Doctors to scientists, simplifying the data, making sense of it all will be the biggest step we can make. This is personalised medicine. The reason that Ed can get up and not be effected by the same illness that makes Jack feel so bad, may be down to genes, habits or even what he eats.

So maybe after all we don't need to find a new “One Direction” – the music we like may already be here – it's just we all like different music. Personally I prefer Olly Murs, but you may like Matt Cardle. The way to find the best treatments for disease is to look at all the data and find patterns amongst this information.

One day it might be possible to walk into a supermarket, put in some personal information and give a blood or saliva sample. At the back of the machine it will whirr, the computer will beep and you will get your very personal diagnosis or even drugs. The possibilities are endless and exciting.

## About Simon Ladds

Following my undergraduate studies in Biochemistry, at the University of Liverpool, I pursued a PhD in protein chemistry, related to Rheumatoid Arthritis and granulocytes, working with numerous analytical techniques. Moving from academia into industry in 1999, I moved down to Kent to work at Pfizer, the research I performed here focussed on wound healing and enzyme activity in non healing wounds.

I then had an opportunity to be part of a new start up company in Manchester, Renovo. There we set up a proteomics facility dealing with protein expression levels in wound healing, looking to find markers of scarring in non-healing and surgical wounds. I took over the team leader role of the group, utilising a number of techniques, but primarily based on mass spectrometry and chromatography – Electrospray and MALDI instruments. The work performed here had its emphasis in primary research, developing markers of scarring in the skin and drug candidates. As well as developing clinical tests for proteins in wound fluids from in-house clinical trials. Within this team I set up a new proteomics laboratory for analytical testing and developing new methods for pre-clinical testing. Within the 9 years of working at Renovo I gained experience across a breadth of roles, from research right through to end point clinical trial readout, from bench-based analysis to reporting and presentations. This gave me a broad set of skills and knowledge to draw on and this is what I believe would be hugely significant when relating to potential science enthusiasts of all ages.

Recently I have moved into a consultancy role working for IDBS working with scientists to develop methods and introduce Electronic notebooks into research facilities, CROs and large Pharma companies. Within this role I have worked within a new function of IDBS working with healthcare to develop a fully integrated software system to deal with clinical records and research results (primarily genomics and proteomics data) to ultimately lead to faster treatment and personalised medicines.