



Takeaway Science

It's Elementary: A Chemist's View

Mike Bullivant

Welcome to takeaway science, another in the series of short podcasts produced by Blast at The Open University. Now be warned, there is more than a hint of chemistry in the three sequences that make up this particular podcast. Later on we will catch up with Ian Baines, a student studying molecular sciences with the Open University, then OU Chemistry Professor, Peter Taylor gets to tell us about his involvement with OU science broadcasting on the BBC. But first off I am going to talk with another OU chemistry academic, Dr Sotiris Missailidis about his research into cancer, but I started off by asking Sotiris what his research involved.

Dr Sotiris Missailidis

My research is focused on developing target and therapeutics, we tried to develop new anti-cancer therapies, but tried to escape from the traditional chemotherapy and develop molecules that target specifically cancer cells without damaging healthy cells. So that we can either kill a cancer cell directly or deliver radiotherapy specifically to the cancer cells, or chemotherapy.

Mike Bullivant

So it gets around the often horrific side effects that are involved with chemotherapy?

Dr Sotiris Missailidis

Yes that's the idea that chemotherapy agents have severe side effects and people struggle with them, whereas with this more modern approaches, we can target cancer cells specifically and avoid damaging normal cells, so avoiding the side effects, organs that suffer from chemotherapy agents and so on. So hopefully if we are successful we will be able to treat cancer with minimal side effects.

Mike Bullivant

How successful have you been so far?

Dr Sotiris Missailidis

Well we have been successful enough in the laboratory stage and the research stage and we have funding from cancer charities and pharmaceutical industry to develop this kind of therapeutics and we are at the pre clinical stage where we still have very good results and hopefully if that continues we will be able to go to clinical studies.

Mike Bullivant

It's quite a lengthy process, what is involved in the process of taking a drug from you know the initial stages of research right through to the market?

Dr Sotiris Missailidis

The whole process takes anything between ten and twenty years. I mean we are working on this programme now for nearly ten years and we are finishing the laboratory and pre clinical stage and then you have five to ten years of clinical studies as well, because the drugs need to be tested first in the lab, then in cancer cells again in the lab, then in human models and then they can go to humans in clinical trials. So it is a very lengthy process and only one in a thousand or ten thousand molecules actually make it to the market. So the success rate is very low.

Mike Bullivant

Now you have been the lead academic on level one university course called "Understanding Cancer". Did you touch on your experience, your research experience when you came to write that course?

Dr Sotiris Missailidis

Yes indeed, I mean having worked on cancer for the past, nearly ten years at the OU and er before that in Nottingham and Cambridge, so all that came together and I edited a book earlier on this year then we produced er – I lead the production of a new course on cancer, but we tried to put all this knowledge and experience into er a course that would not only be for professionals, but would attract er people who suffer from cancer or families and friends or carers that would need to learn more about the disease, the processes involved in starting er or in getting cancer or the therapies available to treat cancer and so on.

Mike Bullivant

But it is a science course isn't it, I mean....?

Dr Sotiris Missailidis

It is a science course yes.

Mike Bullivant

So people taking this course are not expected to know chemistry?

Dr Sotiris Missailidis

No they are not, no, it is a level one course which means that these are available for anybody that they don't need to have specialized knowledge in chemistry, physics and so on, but we do try to teach science as well through the course, so there are chemical processes appearing or physical....

Mike Bullivant

Yeah but people shouldn't be put off by it?

Dr Sotiris Missailidis

Not at all, not at all.

Mike Bullivant

The fact that they don't have any chemistry knowledge.

Dr Sotiris Missailidis

No it's just sometimes that actually provides an explanation as to what happens in the various processes. For example, radiotherapy – there is a bit of physics behind it, but that its – that would help the students to understand what radiotherapy is and what are they getting treated with and the same thing with chemotherapy, there is a bit of chemistry behind, but – or there is a bit of biology and understanding why cancer develops. So there are the basic concepts and scientific ideas come through, but students should not be put off that they need to have specialist knowledge.

Mike Bullivant

What course materials go to make up the course, if you register for the course what do you get?

Dr Sotiris Missailidis

You get a book, there is a course book that we prepare – the course team prepared, er and there is um DVD that will go with it that has um activities, they have images and there is a course website of course where the students can interact.

Mike Bullivant

This is a brand new course isn't it?

Dr Sotiris Missailidis

It is, it hasn't come out yet, its – well its being launched this October.

Mike Bullivant

That's October 2008?

Dr Sotiris Missailidis

Yes. So students can already register for the course and we already have a good number that er started, that are starting in October.

Mike Bullivant

So in the hundreds have registered for it?

Dr Sotiris Missailidis

Yes, yes we have about 400+ students so far and hopefully a few more will join before the course starts.

Mike Bullivant

Sotiris, thanks for joining us today and I wish you well with the new course.

Dr Sotiris Missailidis

Thanks for getting me here, it's been a pleasure.

Mike Bullivant

Dr Sotiris Missailidis, Lecturer in the Open University's Department of Chemistry and Analytical Sciences and the Academic who led the production of the OU level one course, "Understanding Cancers". You can find out more about this course by logging onto www3.open.ac.uk/study, clicking on the link to science on the right hand side of the page and following the link to Health Sciences. Well next up its BLAST!'s David Smith who popped into one of this year's OU residential schools when he bumped into Ian Baines, an Open University student studying molecular science. David started by asking Ian why he chose to a degree with the OU.

Ian Baines

I never got the chance to go to university when I left school um due to parental divorce and repossession, I had to get a job to pay rent and I have always been interested in science and laboratories, so I have worked – I got jobs as a laboratory technicians etc., um and via a convoluted career path I am working in the science industry now and I have got to a stage where I can afford to do it and I want to do it, so to prove to myself that I could have done it if I had the chance you know.

David Smith

How have you found the OU experience?

Ian Baines

Um very good, you have to be quite um regimented, you know because you have to self motivate which I wasn't always the best at, so that has developed, I have been doing it for four years now so I was quite slap dash to start with and I learned that you can't cut corners, so I found it very – very accessible, the interface – the internet very useful – the tutorials that you can get and I recommend them definitely and I have made some good friends, definitely. A very positive experience yeah.

David Smith

What has been the most positive experience?

Ian Baines

Getting a distinction, results for some of my courses, it boosts your self confidence definitely. You begin to – self belief I think when you begin to prove to yourself that you are capable you know. Er I am quite self effacing, I think that is the British way you know so to actually get a good result in something, for someone else to mark it and appreciate what you do is quite rewarding I think, yeah.

David Smith

What made you choose chemistry itself?

Ian Baines

Why did you choose it? I have always been interested in um chemistry, I can't say why, I just find it fascinating, well I like to know how things work – so be it mechanical or chemical.

Mike Bullivant

OU Chemistry student Ian Baines talking with BLAST!'s David Smith. Well if after listening to that you have a burning desire to get your hands dirty doing some practical chemistry of your own, check out the OU course "Exploring the Molecular World" which has as its core a one week residential school. This is a level two course designed to introduce the nature of chemical practical work in the laboratory and to develop the skills involved with the recording and reporting of scientific data. "Exploring the Molecular World" will also help build your confidence in working with a variety of laboratory equipment and techniques as well as planning and carrying out experiments including risk assessments. Throughout the school students work in fully equipped university chemistry laboratories and they get a chance to learn the practical techniques associated with inorganic, organic and physical chemistry. There is also a programme of evening workshops which students are expected to attend. To find out more about this hands on chemistry course, log onto ww3.open.ac.uk/study, click on the link to science on the right hand side of the page and then the link to chemistry. And so to the final sequence in this podcast in which BLAST!'s Project Manager, Emily Unell talks with OU Professor of Organic Chemistry Peter Taylor about his role as academic advisor to some of the Open University science broadcasts on the BBC. Over to Emily.

Emily Unell

Peter I wonder if you could just give me a run through of the programmes that you have been involved with?

Peter Taylor

I made my first television programme in about 1978/79 at Alexandra Palace and that was in the days when we made television programmes which were specific for courses, so – but I suppose it wasn't until the kind of mid-90s that we actually started producing programmes which were much more of general interest and one of the – the first series er I got involved in was around chemistry, the chemistry of almost everything and I also was involved in a radio series called 'The New Curiosity Shop'. Subsequently to that I was involved in the development of a series called 'Rough Science' which went onto – to kind of produce a rather large number of series in the end and more recently I have been involved in a series called 'Alternative' er 'Therapies'.

Emily Unell

I would imagine that there is often a difference between producing a programme that's purely for entertainment and one that's for learning, whereas the Open University tries to do both doesn't it, it tries to produce general interest programmes, but ones which are academically sound. So I was wondering about how you sort of bridge that gap between the entertainment side and the learning side.

Peter Taylor

I don't believe you can actually bridge the gap, I mean its a continuing tension between entertainment and providing knowledge and I believe that one of the um – the keys of Open University programmes is that they should be scholarly, they should actually challenge people to think a little bit about the world around them but at the same time I don't want to revert to the – um the rather didactic programmes that we made in as I said the 70s and the 80s, so there needs to be some kind of hook, some kind of entertainment value for people to want to watch it and so there is always a certain tension between wanting to have something which is entertaining which is going to keep the viewer interested, but at the same time is not going down to the lowest denominator and is just entertainment, is actually getting people to think and a little more than perhaps conventional programmes at getting people to actually follow an argument through and hopefully realise the importance of – of science in the world and er the implications of science.

Emily Unell

Um – as you alluded to before, you have been involved with programmes that promote science in lots of different ways from the – you know the chemistry of almost everything to the very hands on sort of side of ‘Rough Science’, what do you think are the best kinds of programmes for encouraging or interest in science?

Peter Taylor

That's quite an interesting one because again it depends on the fashion of the day, I hate to say this, the fashion of the day, but also about the content that you are trying to get across. So if its a particular programme on a particular issue like climate change, then a documentary style is much more suitable for that, that kind of a series. I think um the reason why ‘Rough Science’ worked so well was because of the people involved, the fact that you could see scientists who weren't in white coats who were really enjoying what they were doing and I think struck a chord with a number of viewers.

Mike Bullivant

BLAST!'s Project Manager Emily Unell talking there with Open University chemistry professor, Peter Taylor about some of the difficulties involved with balancing science content and entertainment in Open University science broadcasts. Well anyone with an interest in how and why we communicate science will benefit from the OU's postgraduate science course called “Communicating Science in the Information Age”. A component course for the Open University's taught Masters MSc in Science, using a mixture of case studies and articles the course considers how science is communicated in different settings through a range of traditional and new media and what frameworks and methods have been proposed for researching these communications. “Communicating Science in the Information Age” explores how scientists communicate with each other and it looks at the role of public engagement activities, science centres and museums, print media and digital television and radio in presenting science to a wider public. To learn more about this course log onto ww3.open.ac.uk/study, click on the link to science on the right hand side of the page and then the link to postgraduate courses and qualifications in science at the foot of the page, you will then find the course details you want and a taught Masters MSc in Science.

Well that's the end of another take away science podcast brought to you by BLAST! at the Open University. For other podcasts in this series, revisit the Open University Science Faculty website at open.ac.uk/science and if you want to find out more about some of the science outreach work carried out by the OU, then visit the BLAST! web pages at blast.open.ac.uk. But that's all for now, so from me Mike Bullivant, as ever, adios amigos.