



# Chemistry Admissions

## February 2019 NEWSLETTER

### Outstanding League Table Results for 2019

The Department of Chemistry was placed **3rd** in both the latest *'Times and Sunday Times Good University Guide'* and *'The Guardian University Guide'*.



- The Times and Sunday Times league table is derived from official data from the Research Excellence Framework 2014, the Higher Education Statistics Agency and this year's National Student Survey, and also takes into account factors such as graduate prospects and social inclusion.



- Published annually, the Guardian's University Guide ranks 121 UK universities by undergraduate degree subjects according to satisfaction with course, teaching and feedback; student to staff ratio spend per student; entry tariff; career after six months of leaving the course; degree results compared to entry qualifications; and continuation of first year students.

These rankings round off a brilliant year for the department, making the top six in all three major UK league tables.



### Department receives 97% overall satisfaction in 2018 NSS

**Chemistry at York confirms its place at the top of the Russell Group in the 2018 National Student Survey (NSS) results.**

This year the Department received 97% in the 'Overall Satisfaction' category, an even higher result than 2017. The Department was placed first in eight out of the nine areas within the Russell Group, including 'Overall Satisfaction', 'Teaching on my course' and 'Learning Community'. We were delighted to achieve over 90% satisfaction in six of the areas:

- Teaching on my course (94%)
- Learning opportunities (94%)
- Organisation and Management (95%)
- Learning Resources (93%)
- Learning Community (90%)
- Overall Satisfaction (97%)

### The Gold Standard

The Department of Chemistry has been featured by The Royal Society of Chemistry in an article promoting initiatives to support diversity in the workplace. The **Athena SWAN gold award**, held by the Department since 2007, recognises our commitment to advancing the careers of women in higher education and research. The article discusses specific initiatives including family-friendly working, a flexible working guarantee, a part-time working assurance, pay gap analysis and unconscious bias awareness, and gives examples of how the environment within the Department has been transformed.



Importantly, the policies developed as part of the Athena SWAN initiative benefit all staff members. As Dr Caroline Dessent, Chair of the Departmental

Equality and Diversity Committee, points out in the article:



*This has been really important in keeping the support of all of the department's staff over the last decade and has led to inclusivity, which goes far beyond the original remit of Athena SWAN and aims to provide a welcoming environment, which actively supports all members of the department, irrespective of gender, sexuality, disability, ethnicity or background.*



# Drilling down into final year research opportunities

Our staff talk about our final year projects – how they are organised and what is involved

## BSc Chemical Communication Projects

Our BSc research projects give our students the opportunity to do an original piece of work, covering a wide spectrum of different types of research, from the synthesis of novel compounds, to designing new analytical methods, to completely non-lab-based projects.

One option for our final year BSc chemistry students who are considering a career such as teaching, is to undertake a **Chemical Communication** project in place of a more traditional lab-based research project. There are two styles of project to choose from. One is school-based, in which a student spends a minimum of ten days across two terms in a local secondary school, observing and helping with (mainly) chemistry and other science lessons. The second style of project involves designing and running an outreach event for visiting school groups. The activities that the participants take part in are based on areas of chemistry research at the University of York.

The chemical communication projects have been running for 13 years, and several of our former students are now teacher mentors for our current cohort. If a student is considering teaching, this is an excellent way for them to dip their toe in the water to see if this is the career for them.

**Dr Annie Hodgson**

## MChem Year Abroad

We support students in various ways both prior to, and during, placements at a university abroad. Students in years 1 and 2 are invited to attend information sessions at the start of each academic year. This gives an overview of the programme and what students need to do to prepare. Students interested in spending a year in a country where English is not the first language are encouraged to take part in language courses via the LFA (Languages for All) programme. The **Department covers the fees for these courses** for students enrolled on the MChem(Abroad) scheme.

At the end of year 2, students submit their preferences for the different destinations/ research topics. The MChem(Abroad) coordinator works with students during year 3 to organise nominations for placements. The focus is on finding placements and research projects that fit with students' interests. Although some destinations can be oversubscribed, the Department uses a transparent/fair system to make decisions on nominations. It is usually possible to secure placements for most students interested in the programme at one of the destinations they are keen to visit.

The coordinator offers support to students preparing to spend year 4 abroad, with assistance from our Centre for Global Programmes.

**Dr John Slattery**

## MChem Year in Industry

Our recruitment process for year 4 placements starts in the Summer Term of year 2. A handbook is issued containing details of at least thirty regular placement companies. Students research these companies to find out the sort of chemistry they do and their location (companies are based throughout the UK and some in western Europe). At the end of the Summer Term students select their 8 favourite companies and register their interest in the scheme.

After the summer exams **we organise CV writing and interview sessions** so that students can brush up on these skills. Over the vacation, students prepare CVs/supporting letters for their chosen companies and submit these at the start of year 3. The Department attaches a reference from the College tutor, then forwards this information to the companies, who hopefully offer our students interviews, starting in October. New companies usually become available throughout the year.

It is a competitive process and we cannot guarantee every student will secure a placement (students will always have the opportunity to complete their MChem degree at York if they change their mind or if they don't secure a placement) – on saying this, we typically place around 50 students per year.

**Dr Brian Grievson**

## MChem Year in York

Our research projects are 'real world', open-ended and as tailor-made and individualised as possible. By the end of year 3, many students will have clear, informed ideas about their research interests/future plans, and **we offer and support a wide range of projects** supervised by academic staff.

We start the process with an introduction session, early in Spring of year 3. Students then explore opportunities for projects by talking with academic staff. If students have suggestions of their own, we are usually able to accommodate these. At the end of the Spring Term, students submit four project choices, in order of preference. Typically, we assign at least 90% of projects according to first or second preferences. When oversubscription issues arise, the module coordinator brokers the best possible alternatives between students and academic staff, but we never assign projects that did not feature on the students' project choices.

Assignments are usually completed around the middle of the Summer Term, when the module coordinator shares all choices and final assignments to ensure maximum transparency. Students are asked to contact their project supervisor(s) to discuss the latest developments/plans, and collect reading for the summer, to prepare for a smooth start in the next academic year.

**Dr Angelika Sebald**



### New hope for cold cure

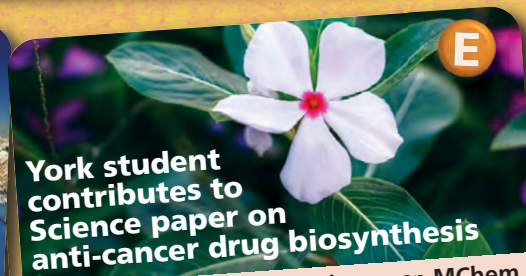
Researchers have lab-tested a molecule that can combat the common cold virus by preventing it from hijacking human cells. Early lab-based tests with human cells have shown the molecule's ability to completely block multiple strains of cold virus, and the team hope to move to animal and then human trials. The common cold is caused by a family of viruses with hundreds of variants, making it nearly impossible to become immune to or vaccinate against all of them. On top of that, the viruses evolve rapidly, meaning they can quickly gain resistance to drugs. For these reasons, most cold remedies rely on treating the symptoms of the infection – such as runny nose, sore throat and fever – rather than tackling the virus itself. However, a new molecule, developed by a research team including **Professor Tony Wilkinson** and **Dr Jim Brannigan** targets N-myristoyltransferase (NMT), a protein in human cells.



### Research Highlights

#### Alpine ice shows iodine increase

Analysis of Alpine ice by scientists at **York, Université Grenoble Alpes and the Desert Research Institute** shows that iodine concentration began to increase after the Second World War following the increase in motor vehicles and electricity generation. Nitrogen oxide emissions from vehicles and power plants since the 1950s increase surface ozone, and this reacts with chemicals in seawater to release more iodine into the atmosphere, which partially, but not completely, destroys some of these harmful gases.



### York student contributes to Science paper on anti-cancer drug biosynthesis

During his final year, **Khoa Chung**, an **MChem (Industry) undergraduate** student, was involved in a project at the John Innes Centre, which is published in Science magazine. The project aimed to understand the biosynthesis of vinblastine, a potent but rare anti-cancer drug. Found in the leaves of Madagascar periwinkle, it is a potent inhibitor of cell division and is used against various cancers. However, it takes approximately 500 kilograms of dried leaves to produce just 1 gram of the active drug. The team used modern genome sequencing techniques to identify the key missing enzymes that build vinblastine precursor molecules catharansine and tabersonine. These precursors can be modified further to ultimately give vinblastine itself.

### New method provides insight into disease

Researchers in **Chemistry and Biology at York** have developed a breakthrough new protein chemistry technique that will help further research into the deadly tropical disease Leishmaniasis, which claims up to 50,000 lives a year. The ultra-mild 'bioconjugation' method enables the attachment of small molecules to delicate biological machinery, including a protein from the surface of the Leishmania parasite, which is essential for infection. Taking inspiration from the well-known classical organic synthetic "cross aldol" reaction first studied in 1881, and its modern reinvention in the presence of small molecule organocatalysts, the team designed a potent 'protein cross-aldol' reaction capable of modifying proteins in minutes at neutral pH.



### New insights into insulin physiology and insect-transmitted diseases

An international research team, led by Professor Marek Brzozowski from our **York Structural Biology Laboratory (YSBL)**, has fully characterised the insulin binding protein from the fruit fly. This provides new insight into human physiology and potential new routes to interfere with insect-transmitted diseases such as malaria and yellow fever. The insulin binding protein helps to control animal physiology, including both insects and humans, and the pathways of insulin-based hormonal signalling are highly conserved between species. So fully understanding a key component in this pathway, the insulin binding protein, is of vital relevance in both insect and human physiology.



### Traces of opiates found in ancient vessel

Researchers at York and the British Museum have discovered traces of opiates preserved inside a distinctive vessel dating back to the Late Bronze Age. Using instruments in our **Centre of Excellence in Mass Spectrometry**, Dr Rachel Smith developed the new analytical method as part of her PhD degree. This is the first time that reliable chemical evidence has been produced to link the opium poppy with a base-ring juglet, despite many previous attempts.

### Green chemistry solvent selection guide success

A solvent selection guide developed in collaboration with York's **Green Chemistry Centre of Excellence (GCCE)** has been adopted by the American Chemical Society (ACS) Green Chemistry Institute. The ACS Green Chemistry Institute, a world-leader in green chemistry education, will use this freely available guide as their recommended method of selecting more environmentally friendly solvents. The guide ranks solvents according to safety, health and environmental criteria, to give a clear assessment of the environmental-friendliness of both traditional and more modern solvents. The guide was developed as part of the CHEM21 project by scientists from Sanofi, GlaxoSmithKline, Pfizer, the GCCE and Charnwood Technical Consulting Ltd.



## Inspirational New National Teaching Fellow

Professor Andrew Parsons has been awarded a prestigious National Teaching Fellowship by the Higher Education Academy in recognition of his inspirational and innovative approaches to teaching.



The National Teaching Fellowships are awarded on an annual basis by the Higher Education Academy. The **National Teaching Fellowship (NTF) scheme** celebrates and recognises individuals who have made an outstanding impact on student outcomes and the teaching profession in higher education. The awards have been running since 2000, with up to 55 individuals from across the whole Higher Education sector being recognised each year. On gaining the award, fellows play an ongoing role in enhancing teaching and learning within their institution, the HE sector and further afield.

## Dr Annie Hodgson Receives Vice-Chancellor's Teaching Award

The award, which recognises excellence in teaching and learning support, will be conferred at one of the summer degree ceremonies. Dr Annie Hodgson is the Schools Liaison and Outreach Officer in the Department of Chemistry, and the Coordinator of the year 1 Skills for Chemists core module. She is the departmental Study Skills Officer and Editor of *Chemistry Review*, a Hodder Education magazine for A-level Chemistry students. She hosts the *Salters' Festival of Chemistry* and visits schools country-wide to give workshops and her exciting 'Colourful Chemistry' lecture.



Chemistry Review is a full colour magazine for post-16 chemists.

## 2018 Research Award Winners

Professor Lucy Carpenter  
The Wolfson Foundation  
and the Royal Society  
Royal Society Wolfson  
Research Merit Award

Professor James Clark  
Royal Society of Chemistry  
Green Chemistry Award

Professor Gideon Davies  
Royal Society of Chemistry  
Haworth Memorial  
Lectureship

Professor Simon Duckett  
Royal Society of Chemistry  
Tilden Prize

Professor John Goodby  
The International  
Liquid Crystal Society  
Pierre Gilles de Gennes  
ILCS Prize

Dr Will Unsworth  
Royal Society of Chemistry  
Hickinbottom Award

## Revamping Year 1 Practical Chemistry

Our year 1 practical chemistry module aims to introduce and develop the essential practical laboratory skills that students need in order to be competent chemists and, in 2017-18, we made some major revisions. We know that many students have little laboratory experience upon arrival, so **the focus of the first few weeks is entirely on lab familiarisation and basic skills**, with extensive support from demonstrators. The students' learning is also supported with **lectures on the theory behind how the practical techniques work, and with online material** (notes, images, videos) providing detailed guidance on how to perform the techniques.

For example, changes in the Autumn Term mean that the first few weeks have a **very high demonstrator:student ratio** and focus on laboratory familiarisation and safe working. Students' work is continually evaluated by demonstrators, with lots of support and verbal feedback on how best to improve their techniques; **no formal assessment is attempted**, to minimise stress and allow students to focus on learning. In later weeks, the experiments build in complexity by combining the operations from earlier experiments, encouraging growing confidence. Exercises are allocated a **generous amount of time in the lab, to allow for repetition, practice and improvement**. There is no formal assessment – students are encouraged to develop their understanding of techniques by reading and discussing with demonstrators. In the last week of term, **students are assessed on their skills** with regard to setting up experimental apparatus. Anyone who is not at the required standard is **allocated extra support and intensively-demonstrated extra practice sessions**, before being reassessed in the Spring Term – multiple times, if required, until they pass.

Our professional standard teaching laboratories (opened 2014)



## Shortlisted for Most Innovative Teacher of the Year

Dr Glenn Hurst was shortlisted for the Times Higher Education (THE) 'Most Innovative Teacher of the Year' award based on his work using social media in new ways to enhance student engagement, understanding and communication. The Times Higher Education Awards are **widely recognised as the Oscars of the higher education sector**, attracting hundreds of entries that exemplify the talent, dedication and innovation of individuals and teams across all aspects of university life.

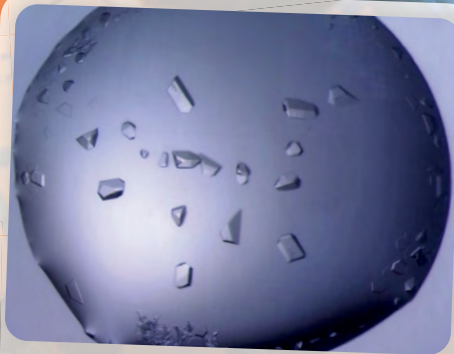
**In Pictures**



The **winning molecular model** from a UCAS pre-offer visit day – some lovely visitor feedback including “The afternoon was very well organised, and both staff and current students were enthusiastic and friendly.”



Feeling the chill! **One of our second-year undergraduate reactions**, the frosting is from a dry ice/acetone bath, which maintains a temperature of  $-78^{\circ}\text{C}$ .



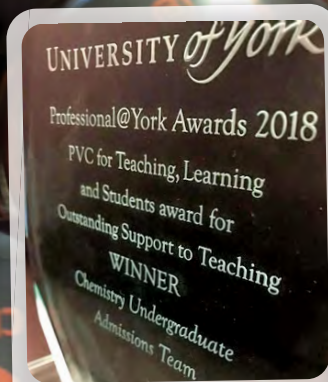
Nicholas McGregor, a Postdoctoral Research Associate supervised by Professor Gideon Davies, has **crystallised these two different enzymes** involved in the breakdown of plant biomass. They are stable at up to  $90^{\circ}\text{C}$ !



A stunning medicinal display from one of our learners on our **free online FutureLearn course**.



Our **2018 chemi-tree** displayed in our teaching laboratories (this year the indigo dye decoration was made in-house by third-year student Alex Bytheway).



Many congratulations to our undergraduate admissions colleagues on their richly deserved award for **‘outstanding support to teaching’**. Recognition to a small team for all their hard work and dedication to excellence over a number of years.



Our MChem student Alice McEllin won a **prestigious Salters’ Institute Graduate Award**. One way Alice demonstrated industrial awareness for the award was by participating in a major project as part of the Boeing/Royal Aeronautical Society “Build a Plane” challenge.



Our 6 new spectrophotometers and PCs arrived in time for the start of term: £21k worth of new Instruments from a **total £40k investment in new equipment** for our undergraduate teaching labs this year.



Our **national molecular modelling chemistry competition** for school and 6th form students. First prize includes bespoke glass-blown art and an expenses-paid visit to Chemistry at York.



Congratulations to fourth-year MChem student Andrew Stratton, awarded our inaugural **MChem Communicator of the Year** (McCOY) Prize by Dr Julia Sarju.

## York Student brings Chemistry Outreach to Twitter



Third-year student, Alex Bytheway, suggested the idea for running a Chemistry Outreach competition to #RealTimeChem curator/organiser Jason Woolford, in response to a call for ideas. Jason, a Royal Society of Chemistry Senior Editor, who tweets as @Doctor\_Galactic, accepted the idea and asked Alex to be one of the judges during the week. #RealTimeChem week was a seven-day event where chemists worldwide tweet about their chemistry as they are doing it, connecting with other chemists around the world. The best tweets in categories, including #ChemSelfie, were published in *C&EN Magazine* and received an award.



# visit us

## 2019 University Open Days



The University will be holding Open Days on **Fri 28 June, Sun 30 June, Sat 14 September, and Sun 15 September.**

For further details including booking: [www.york.ac.uk/study/undergraduate/visits/open-days/](http://www.york.ac.uk/study/undergraduate/visits/open-days/)

We have organised a number of talks in the Chemistry Department during the day and you will also have the opportunity to tour our **teaching laboratory**. Members of the Chemistry admissions team and current undergraduate Chemistry students will also be on hand.

Our Open Days in 2018 were extremely well attended and we received some **excellent feedback** from visiting students and their parents.



*I thought the chemistry department was amazing. They sent me information prior to the open day explaining all the events that would happen on the day. There was a really good variety of activities that let you get a great feel for the department.*

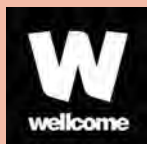
*Excellent mini lecture in organic chemistry by enthusiastic lecturer – if every lecturer is like that, it will be fantastic.*



*Best chemistry lab tour I have been on from Open Days visited so far. An engaging 1st year student told us all about how she had found the first year.*

*Chemistry department was impressive and engaging, I can see why they are ranked so highly every year.*

## Nova Prize nominee



Final year MChem student Melissa Davie has been nominated for the inaugural **Nova Prize in Chemistry**. This nomination recognises Melissa as a female student who has made outstanding early-career contributions to STEM. Reflecting her talent, Melissa was awarded funding from The Wellcome Trust to support a summer project in the research lab of Dr Martin Fascione, in which she focussed on modifying biomolecules. Her final year MChem project is an industrial placement at the John Innes Centre in Norwich, where she is working on natural product biosynthesis. During her degree, Melissa has been involved in science outreach/communication. She helped present the 'Antibiotic Hunters' stand at the Norwich Science Festival, talking to members of the public about the vital need for new antibiotics. She is also running a 'Women in STEM' stand in Norwich for Year 11 pupils, to help inspire the next generation of great female scientists.

## Snapshots



Prizewinning kitchen experiments from learners on our free online Chemistry course, Exploring Everyday Chemistry, hosted on the FutureLearn platform. The next course, which is designed to aid the transition from school/college to university, starts on 1 July (to sign up see: [www.futurelearn.com/courses/everyday-chemistry](http://www.futurelearn.com/courses/everyday-chemistry))



Our Chemistry Graduation celebrations last July – an amazing 94% of our MChem students achieved a first (1st) or upper second (2:1) class degree.



## Useful Links:

### Student Finance

[www.york.ac.uk/students/finance/](http://www.york.ac.uk/students/finance/)  
[www.gov.uk/browse/education/student-finance/](http://www.gov.uk/browse/education/student-finance/)

The University's Student Financial Support Unit will be able to help with any student financial queries that you may have.

### Student Societies

[www.yusu.org/opportunities/societies/societies-a-z](http://www.yusu.org/opportunities/societies/societies-a-z)

York University Students' Union (YUSU) offers an array of societies covering a huge range of activities ranging from the Juggling Society to award-winning media societies.

### Student Sports Clubs

[www.yusu.org/opportunities/sport/clubs-a-z](http://www.yusu.org/opportunities/sport/clubs-a-z)

Enjoy more than 60 different sports clubs.

### University Library

[www.york.ac.uk/library/](http://www.york.ac.uk/library/)

The Library has recently been transformed with a £20 million investment and is open 24 hours a day, 7 days a week, 362 days a year.

### Chemistry Review

[www.york.ac.uk/chemistry/schools/chemrev/](http://www.york.ac.uk/chemistry/schools/chemrev/)

*Chemistry Review*, a magazine for post-16 chemists, is commissioned and edited at York.

### Departmental video links

<https://www.youtube.com/watch?v=iOuk9wlnfJI>

... to show how our Reach Out Chemistry York (ROCy) project aims to engage with prospective Chemistry undergraduates.



<https://www.youtube.com/watch?v=WBM2fxSVpXc>

... for a short clip about our new teaching laboratory, with its 80 two-person fume hoods, dedicated instrument rooms, and an adjacent social area with a computer suite.



Find out about the latest news in the department using twitter:

<http://twitter.com/chemistryatyork>

### Admissions Enquiries please contact:

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