



Manchester Pharmacy School

*2013 Prospectus and
Five Year Strategic Plan*



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Dean's introduction



I am delighted to introduce the 2013 prospectus for Manchester Pharmacy School (MPS) in the Faculty of Medical and Human Sciences at The University of Manchester. Our Faculty has now implemented a new strategy and structure which is intended to transform our contribution to research and education in medicine and health. We aim to build on the reputation of Manchester as a world leading centre for biomedical sciences and their clinical application.

The Faculty and Manchester Pharmacy School are committed to achieving excellence through an ethos of collegiate and collaborative working involving all of our Faculty Schools and Institutes and the highest quality interactions with other University of Manchester Faculties, our NHS partners via MAHSC (Manchester Academic Health Science Centre) and our broader higher education and NHS partners in the new GM-AHSN (Greater Manchester Academic Health Science Network).

Importantly the Manchester Pharmacy School is part of a matrix structure (Figure 1) which is deliberately designed to break down barriers and encourage cross cutting interactions with staff in other Schools and Institutes. Staff are encouraged to affiliate to other Faculty structures and a high level of interaction is being achieved. This type of cross linking is crucial to achieving the full benefits for education and research of our unusual breadth of health disciplines.

Faculty of Medical and Human Sciences Structure

Matrix of six Faculty Institutes and five Faculty Schools intended to facilitate cross cutting interactions

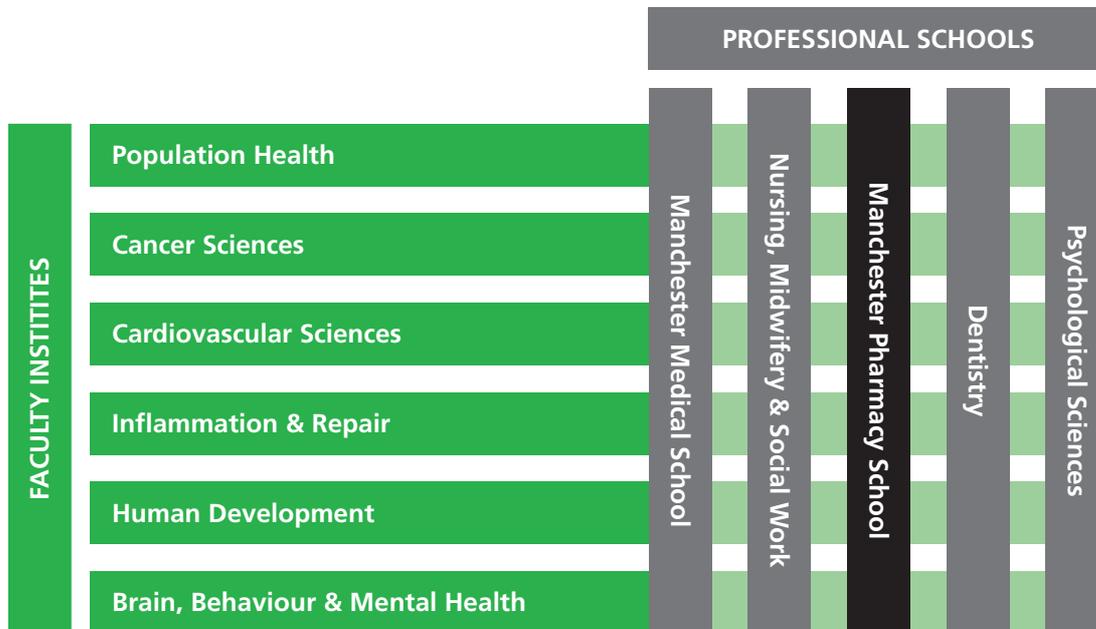


Figure 1
Faculty Structure – matrix of six Faculty Institutes and five Faculty Schools intended to facilitate cross-cutting interactions

This document provides an overview of the School in 2013 and is work in progress. In the near future the School will host a visit by an international external advisory panel to help guide further developments and provide. The School already has a set of truly outstanding achievements and excellent staff but we have a lot more to do to achieve our ambitious objectives. I am grateful to all of the academic and support staff in the School for their contribution to the success to date and further plans.

Ian Jacobs
Dean, Faculty of Medical and Human Sciences
Vice President, The University of Manchester
Director of Manchester Academic Health Science Centre
Professor of Cancer and Women's Health

The University and Faculty

Our Academic and Support staff in the Faculty of Medical and Human Sciences (FMHS) number over 2,000 and work to deliver three core priorities:

- Development and delivery of the highest quality education and training for health professionals and scientists
- Conducting outstanding, world leading research in the biomedical and health sciences
- Social Responsibility to make a contribution to the 'greater good'.

Our University has a tradition of world-leading innovation which has led to a stepwise improvement in the health, wealth and wellbeing of populations across the world since the industrial revolution. Sitting at the heart of the City of Manchester, which is a global hub, excelling in arts, music, sport and commerce, the University is a beacon for research and education with a deep commitment to the economic transformation of Manchester and the North West of England. Tracing its origins back to John Dalton's Mechanic's Institute and John Owen's philanthropic desire to educate the local population, The University of Manchester was England's first 'civic' and now its largest campus-based university. No fewer than 25 Nobel Laureates have worked at the University and since the merger of the Victoria University of Manchester with UMIST in 2004 we have delivered in excess of 1,600 invention disclosures and formed 17 new companies attracting £117m in third party benefit, demonstrating a formidable track record of commercialisation.

Each year we train over 400 doctors, 90 dentists, 150 pharmacists and 900 nurses, midwives and allied health professional staff. We are the largest supplier of healthcare graduates to the NHS within the North West of England but many of our graduates go on to deliver healthcare provision and scholarship in developed and developing health systems across the globe. Through the use of cutting edge technology, the highest quality workplace-learning environments and a highly trained educational faculty, we strive to deliver a personalised learning experience to each of our students so that they develop a real sense of identity and belonging to a world-class university. This in turn fully prepares them for life after graduation making the 'Manchester-made' graduate the first choice for healthcare employers. Our extensive postgraduate and continuing professional development programmes are hosted by our new Faculty Graduate School providing support and training to postgraduates undertaking a diverse range of study from short term professionally linked programmes through to research training in multidisciplinary areas. We believe that we are a complete resource for lifelong healthcare learning.

The scale, breadth and structure of our Faculty provide outstanding opportunities for basic biomedical research discoveries to be rapidly translated into effective new therapies with a strong emphasis on knowledge transfer and partnerships with industry. Our new matrix structure is designed to enhance opportunities for novel and multidisciplinary research (diagram). The matrix involves five schools (Medicine, Dentistry, Manchester Pharmacy School, Psychological Sciences and Nursing, Midwifery & Social Work) and six research institutes (Cancer Sciences, Cardiovascular Sciences, Population Health, Brain, Behaviour & Mental Health, Human Development, Inflammation & Repair) with an emphasis on affiliation across these structures. The leadership team for each of the Institutes involves clinicians, basic scientists and healthcare researchers from both our own Faculty and our sister Faculty of Life Sciences. Our academics have the benefit of access to the large, stable population in the North West providing unique opportunities to study and address most causes of disease and deprivation. The opportunities are further enhanced by strong links to our partner Faculties (Humanities, Engineering, Physical Sciences, and Life Sciences) and the NHS through the Manchester Academic Health Science Centre (MAHSC). These partnerships facilitate rapid translation into practice and targeted biomedical, technological and psychosocial research based on clinical need.

In addition to our research and education activity, the Faculty is committed to make a major contribution to the greater good for society by contributing to solutions of the major challenges of the 21st century and the social and economic success of our local, national and global communities. We will ensure that social responsibility is embedded within all of our education and research activities, ensuring the highest ethical standards of professional practice from our staff and students. We are committed to equality and diversity in all our activities and to building on successful programmes such as the Manchester Access Programme which targets talented students from underrepresented backgrounds and a wide ranging global health programme which will help deliver sustainable capacity building within the health systems of developing economies.

Whether you are a visitor or a prospective student, staff member or collaborator, we hope that you will be engaged by the enthusiasm and vibrancy of our students and staff, our commitment to improving health and quality of life and the diversity of opportunity in research, and education that our Faculty has to offer.

Introduction by the Head of School

Our vision is to become the leading School of Pharmacy in the UK. We will be the first choice Pharmacy School for all of our stakeholders, prospective and current students and staff, research collaborators and funders, and employers.

We want to be internationally recognised for undertaking research that drives the transition of new drugs in early development forward to their safe use by patients, helped by healthcare professionals whose knowledge and expertise about medicines is informed by the highest quality education and training possible.

In 2013 the 'QS World University Rankings' placed the Manchester Pharmacy School fifth in the world of departments of Pharmacy and Pharmacology. In the same year the University of Manchester staff survey data revealed that 92% of our staff viewed the University as a good place to work with 97% of staff agreeing with the University's core goals to deliver outstanding teaching, learning and student experience; support world-leading research; and make a positive contribution to society. In our school we strive to bring all three of these core goals together to ensure that our research informs and drives our teaching forward, to ensure that we can make our contribution to improving health for patients and the public.

In our undergraduate MPharm curriculum, not only is good science integrated with good practice, but we focus on the patient. Our undergraduates already spend a large amount of time working with clinical pharmacists at the cutting edge of practice. Working in major teaching hospitals across Manchester, they get real world experience of what pharmacists can do to make sure medicines are best used to achieve good patient care. Patient-centred care is vital if we're to deliver the quality healthcare we need in the 21st century.

The work our pharmacy practice group in the Pincer and EQUIP studies clearly demonstrates that pharmacists can contribute to making drug usage safer, and this research was instrumental in the formation of the new NIHR Patient Safety Centre at Manchester.



We know that potentially-damaging medication errors are more likely to occur when health care professionals in different disciplines fail to communicate effectively with each other. That is why, in our undergraduate MPharm curriculum, we are developing interprofessional education with the help of our colleagues in the faculty of Medicine and Human Sciences. We believe that if students start working with each other as undergraduates this will help them work more effectively together once they qualify and patients will benefit.

Our postgraduate courses reflect not only the strong science background of the academics in the school, for example, our Modelling and Simulation course utilises our strength in pharmacokinetics and pharmacodynamics, but also the important healthcare challenges that face us today. Improving public health is essential to us all and that is why we offer a postgraduate diploma in public health which exemplifies the importance of being able to communicate to patients about their medicines appropriately and to raise awareness of the benefits of taking responsibility for your own health.

We are fortunate here in that the Centre for Pharmacy Postgraduate Education actually sits within the School. The CPPE delivers high quality postgraduate education for all registered pharmacists and pharmacy technicians in England and over recent years it has developed innovative methods of delivering its learning packages, and this learning has informed how the School teaches its students to ensure that they get the most from their courses.

Research in the school is important, as not only does it ensure that our students receive the most up to date information possible, but it also contributes to improving patient care. In Manchester this is consolidated further by our interactions with the Manchester Academic Health Sciences Network or MAHSC.

Our researchers not only interact with our students but they also collaborate with multidisciplinary and multinational groups from across the globe, and the last research assessment classed much of our work as being world leading.

In the pharmacy practice group we have identified three priority areas for research that relate strongly to the real challenges experienced by patients and the health service in relation to medicines use. These are: Medicines use and drug safety; Pharmacy workforce behaviour and performance; Prescribing and patient safety.

Our research in the pharmaceutical sciences focuses upon: finding biological markers that can predict the likelihood of developing a disease; identification of targets suitable for therapeutic intervention and then de-risking the drug development process by predicting how a new drug will behave in the body using the most up to date computer modelling techniques. To accelerate the work that takes place in this research portfolio we are launching a new initiative that includes the Christie and Astra Zeneca.

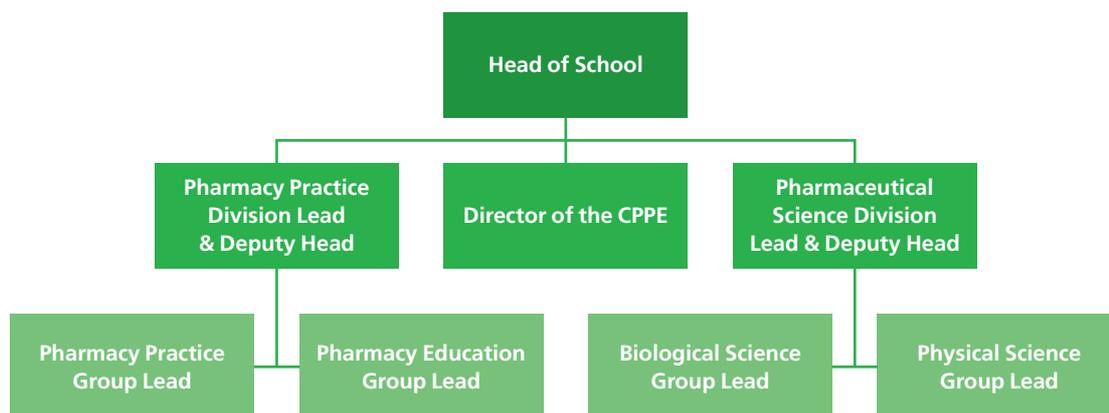
The drug design process then goes onto investigating how we can get the molecule in question to its site of action and this may involve the use of nanomaterials and new biopharmaceutical techniques. A good example of our molecules to man approach can be found in our oncology group where pre-clinical experiments with drugs targeted at the molecular level combined with radiotherapy resulted in the rapid translation of our experimental results into clinical trials at the local Christie hospital.

The strength of our basic and applied research in Pharmacy is distinctive in that it is truly multidisciplinary. It has a strong interface with both the Pharmaceutical industry and the NHS, and hence our work has major impact beyond our own academic environment. We strive to expose our students to this broad culture in order to prepare them for their future careers in pharmacy and the pharmaceutical sciences.



Professor Kay Marshall
Head of the Manchester Pharmacy School

Organisation of the School



Introduction

The Pharmacy School at Manchester was established in 1883, and was the first in the UK, in 1904, to offer degrees in Pharmacy. We currently provide undergraduate education to nearly 800 students. We also offer a range of postgraduate courses, including a clinical diploma aimed at hospital pharmacists, a Public Health certificate, Masters Degree training aimed at industrial scientists, and PhD programs in a variety of fields. The School also houses the Centre for Pharmacy Postgraduate Education (CPPE), which is a national provider of CPD programs for pharmacists and pharmacy technicians across England. In the provision of teaching and learning academic staff in the School are supported by clinical staff from the local Trusts via honorary positions and joint appointments.

The School undertakes world leading research from basic pharmaceutical science through to applied pharmacy practice. We undertake multi-disciplinary research with demonstrable impact for patients and the public, and we are known nationally and internationally for our particular strengths in the areas of **cancer biology and drug development, biofilms and infection, predictive and translational pharmacokinetics research on drug metabolism, prescribing and medicines safety, workforce planning, and evaluation of pharmacy services.**

Leadership and Management of the School

The School is managed by an Executive Committee which is chaired by the Head of School, with representation of all major areas of activity on the committee. The membership of the Executive Committee includes the Group Leaders, the Research Director, Director of Graduate Education, Director of Postgraduate Research, the Director of Undergraduate Teaching and Learning and the Head of School Administration.

School Executive Committee membership

Head of School	<i>Professor Kay Marshall</i>
Director of Research	<i>Professor Ian Stratford</i>
Director for Undergraduate Teaching and Learning	<i>Dr Jason Hall</i>
Director of Postgraduate Research	<i>Dr Jeff Penny</i>
Director of Graduate Education/CPPE	<i>Professor Chris Cutts</i>
Division Lead, Pharmacy Practice	<i>Professor Karen Hassell</i>
Division Lead, Pharmaceutical Science	<i>Professor Brian Houston</i>
Head of School Administration	<i>Mrs Andrea Hutcheson</i>

Academic staff are organised into four groups: Pharmacy Practice; Pharmacy Education; Biological Science and Chemical Science. The structure was determined after a series of formal and informal discussions with the new Head of School, Professor Kay Marshall, who took up her post in August 2012. Key drivers to support the structure were the preference to work in smaller teams; succession planning which is facilitated by each of the management roles having a deputy; a structure which enables staff who aspire to leadership to gain experience as they develop.

The academic staff of the School has a broad academic base, with expertise spanning all the main interdisciplinary subjects within pharmacy education, including pharmacology, medicinal chemistry, pharmaceuticals, microbiology, health sciences and pharmacy practice. All staff are experienced in both teaching and research, some have awards in recognition of their excellence. We have strong early career researchers with emerging international reputations, and we have more senior established staff who are internationally recognised as outstanding. We also have very strong links with clinical pharmacy staff in the Manchester Academic Health Science Centre (MAHSC) Trusts; they contribute to our research, have a significant involvement in our taught programmes, facilitate on-site clinical placements for our students, and act as role models for the large proportion of students who go on to qualify as pharmacists.

We are committed to developing staff who:

- strive for excellence in their teaching, learning, scholarship and research
- are open to new ideas and adaptive in a changing environment
- are collegiate and supportive of their peers and students.



Our recent (2012) Athena SWAN Bronze Award is testament to the collegial atmosphere present in the School and has empowered all staff to take forward development opportunities that will have a real impact on their future careers.



Professor Kaye Williams
Deputy Head Pharmaceutical Sciences Division
Group Leader Hypoxia and Therapeutics

Strategy, aims and objectives

Five priorities:

1. To provide excellent education and training for pharmacy undergraduates
2. To review and develop our postgraduate taught programmes, continuing professional development (CPD) and short course provision
3. To undertake world leading research in pharmaceutical sciences and pharmacy practice
4. To facilitate staff and student engagement in activities that demonstrate the School's commitment to social responsibility
5. To develop our organisational culture and become an effective learning organisation which people want to join

The Manchester Pharmacy School (MPS) Strategic Plan has been developed within the context of the University's 'Manchester 2020' and the Faculty of Medical and Human Sciences (FMHS) Strategic Plans. To support these plans our mission is to deliver high quality and distinctive research and teaching programmes in pharmacy and the associated pharmaceutical sciences that enhance the University's international reputation and make a real impact on students' learning, on the health of patients and the public, as well as on their experiences of using health care services.



Our priorities

In setting our strategic focus, the School has set itself five priorities designed to be consistent with the University 2020 vision and Faculty objectives, as follows:

Priority 1:

To provide excellent education and training for pharmacy undergraduates and pharmacists

The School already demonstrates commitment to innovation in teaching: our programme includes regular clinical tutorials; we have recruited a senior lecturer whose task is to establish a programme of placements in community pharmacy, primary care, prison pharmacy and the pharmaceutical industry; staff in the School have pioneered eLearning and methods of providing individualised feedback to students, including the Global Feedback Tool, a desk-based app now being rolled out to other schools. The key skills required by students to make a contribution to patient care are developed using simulated patients within the School and during placements using real patients. We have been working with staff in the Faculty to develop an electronic patient record with electronic prescribing to help prepare our students for future roles and to improve inter-professional learning. Fourth year projects in public health also equip graduates with prevention service skills to contribute to the Healthy Living Pharmacy agenda.

We use a blended approach to learning such that the teaching method is appropriate to the topic or area. We intend to introduce more Team Based Learning (TBL) into our programme to enhance student engagement, to improve integration of science and practice, and to improve team working and communication skills. We have a thriving Peer Assisted Study Scheme (PASS), an established peer mentoring scheme and peer assessment, often involving fourth year students interviewing first and second year students. Pharmacy students are among the leaders of HEAL (Healthcare Alliance), an inter-professional student society.

Our location in a Faculty with medicine, dentistry, nursing, midwifery, social work and psychology provides us with excellent opportunities for inter-professional working. The School has been working with medicine and nursing to deliver a patient safety unit based upon real life problems. This unit helps to identify how problems and errors can arise as well as developing team working skills.



Goal:

To make the 'Manchester' MPharm distinctive

Key performance indicator	Target
Increase number of students who put the Manchester MPharm as their first choice	<ul style="list-style-type: none"> • Maintain and enhance a research led teaching culture • Develop a marketing plan and further develop selection procedures to assess applicant suitability for a healthcare profession • Developing a pharmacy education research strategy to enable teaching focused staff to become pedagogical scholars and ensure that our courses are based upon a sound educational evidence base • Developing and implementing evidenced based assessment and interprofessional education strategies • Facilitate access and promote and develop the education of students from all socio-economic groups
Improve league table position	<ul style="list-style-type: none"> • Continue to improve on NSS metrics and achieve 95% overall satisfaction and be in the top 5 Schools of Pharmacy • Maintain excellent student employability
Support staff to innovate teaching and learning	<ul style="list-style-type: none"> • All staff to take up opportunity to discuss teaching performance (via Performance Awareness Scheme) and be peer reviewed on a biannual basis • All staff to attend at least one teaching focused development event annually • All core staff to be members of the Higher Education Academy or be working towards membership • To have one member of staff nominated for a national teaching fellowship

Priority 2:

To review and develop our graduate education programmes, continuing professional development (CPD) and short course provision

We want to work with the NHS, profession, employers and other stakeholders to review and develop our existing postgraduate taught programmes, continuing professional development (CPD), short course provision and exploit our expertise as pharmaceutical scientists and develop new programmes with a view to growing postgraduate taught student numbers.

Goal:

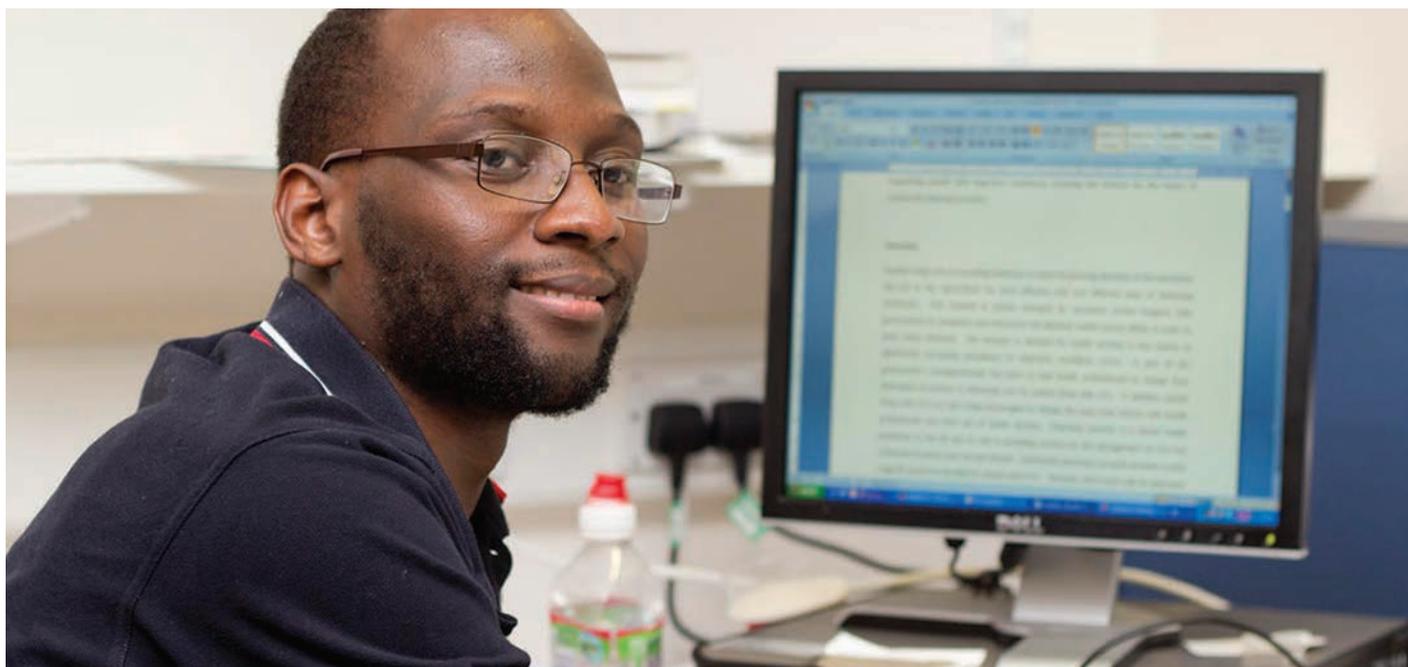
To increase numbers of taught postgraduates

Key performance indicator	Target
Evaluate all existing courses	<ul style="list-style-type: none"> Complete course review by end of 2013
Active marketing of all post review courses	<ul style="list-style-type: none"> Increase numbers on courses by 20% within the period
Scope and devise a new course in the period	<ul style="list-style-type: none"> Launch one new course by 2018
Develop short courses	<ul style="list-style-type: none"> Renewal of CPPE contract at Manchester in 2014 Offer stand alone modules from existing courses

Goal:

Ensure programmes that are adaptive and suit portfolio careers

Key performance indicator	Target
Improved student experience	<ul style="list-style-type: none"> Ensure all staff are appropriately trained and supported as supervisors Use supervisory teams that integrate staff to increase skills and experience mix Support the Royal Pharmaceutical Society in its development as a Royal College to support professional recognition and career development



Priority 3:

To undertake world leading research in pharmaceutical sciences and pharmacy practice

The research of staff in the Manchester Pharmacy School is driven by the need to improve patient outcomes by not only developing more effective medicines and improving their use, but also by ensuring the pharmacist advising patients and other members of the healthcare team is competent and professional. We also apply our research to inform our teaching and all academic staff in the School teach, even our most research active professors.

Goal:

To ensure our research has impact

Key performance indicator	Target
Outcome of the 2014 Research Excellence Framework	<ul style="list-style-type: none"> Maintain or improve our research position in REF2014
Increase engagement with MAHSC to promote translation and dissemination of clinically-focused research	<ul style="list-style-type: none"> Joint research appointments with MAHSC partners Joint funding applications with MAHSC partners
Dissemination and citation of our work	<ul style="list-style-type: none"> Produce an enabling publication strategy that engages end-users Ensure all staff participate in data management and open access publication policies being developed by the University Increase proportion of our staff whose research activity (measured by quality of publications, research income, contribution to post-graduate research and esteem indicators) is internationally recognised (at least 60% being judged A or B by the RPE in 2017)

Goal:

To ensure our research is sustainable

Key performance indicator	Target
Critical mass of research groups and centres	<ul style="list-style-type: none"> Develop new centres and cross cutting themes within the School that match and enhance Faculty and MAHSC priorities Make strategic appointments Increase active engagement with Schools, Institutes and Centres in FMHS and the wider University
Research income generation	<ul style="list-style-type: none"> Increase our overall research income by 20% and the proportion from research councils by 50% by 2018 (all applications being subject to peer review) To have at least 2 externally funded personal fellowships by 2015 Develop a pathway that facilitates flow of PhD students from taught courses (particularly the MPharm) and increase numbers of PhD students by 20%
Equipment and facilities	<ul style="list-style-type: none"> Review equipment, create register and develop strategy for renewal if appropriate Review technical support for research and take action if required

“The modules are taught by people who are expert in their fields and therefore teaching is very enthusiastic and at the cutting edge.”

Comment from a final year MPharm student in the National Student Survey 2012

Priority 4:

To facilitate staff and student engagement in activities that demonstrate the School's commitment to social responsibility

The School believes that it should act in a manner that meets or exceeds the ethical, legal, and public expectations of its stakeholders. Staff and students should voluntarily contribute to a better society. All registered pharmacists and pharmacy students are bound by a Standards of Conduct, Ethics and Performance Code as set out by the regulator that dictates that they should maintain the highest professional standards, showing respect for others and act in the best interests of individual patients and the public.

Goal:

To engage with the public health agenda

Key performance indicator	Target
Projects with colleagues and students that focus on key public health challenges in the North West	<ul style="list-style-type: none"> • Every MPharm student should participate in work designed to improve public health • Work with local pharmacy networks to disseminate our research that directly impacts on patients

Goal:

To promote professionalism and social responsibility in students and staff

Key performance indicator	Target
Maintain numbers of widening participation students	<ul style="list-style-type: none"> • Develop pre- and post-registration support networks for widening participation students
Improve stakeholder engagement	<ul style="list-style-type: none"> • Actively encourage students to take part in extracurricular activity • Encourage and recognise the activities of staff who engage in activities that promote social responsibility

Widening Participation activity



Year 11 pupils engage in a Chlamydia Awareness workshop

Priority 5:

To develop our organisational culture and become an effective learning organisation which people want to join

Our multi-disciplinary members of staff are our greatest asset and we invest in their development to become effective researchers and teachers who can inspire the next generation of Manchester pharmacists. Teaching staff are supported by appropriate teaching mentors and education training events (including the New Academic Programme and Manchester Gold), along with a strong UG administration team. Research-active staff are also supported by a research mentor and the School actively supports training and development opportunities to facilitate scholarly activity.



“ Since arriving in January 2013, I have recognised a real desire to promote and support cross faculty research within the university. I have found myself working with clinicians and preclinical researchers from a number of different research areas and this has led to the development of a number of new and exciting projects. The level of support available for me as a new starter has been fantastic and with the additional support of my teaching and research focused mentors I know I am in an environment that will support my future growth and success. ”

Comment from Dr Mike Harte who joined the School in January 2013

Goal:

To make MPS the ‘come to’ School of Pharmacy

Key performance indicator	Target
Recruitment and retention of high quality staff who share in and engage with our vision and strategic aims	<ul style="list-style-type: none"> • Develop and implement a staffing strategy • Develop and implement a management structure that can support staff as they work towards delivering our strategic plan. Team leaders will: actively manage and balance workload; ensure annual PDRs are performed setting clear objectives; encourage engagement with Manchester Gold • Have at least one member of School staff each year join the University’s ‘Headstart’ (or similar) leadership course • Review our plan on an annual basis and share information regularly • Hold a School Away Day at least once every year • Ensure students, researchers at all levels and patients are involved in our governance structures • Develop our estate to ensure it is fit for purpose for research and teaching, and is supportive of staff cohesiveness • Develop mutually beneficial formal and informal relationships with our alumni • Apply for an Athena Swan Silver Award by 2014.



Teaching, Learning and Research

We are committed to developing graduates who:

- are independent life-long learners capable of applying their knowledge and analytical skills to improve their practice and care of patients
- can work with others effectively to deliver high quality healthcare
- are committed to ethical action and social responsibility.

The MPharm

The Manchester Pharmacy School offers an undergraduate Master of Pharmacy (MPharm) programme. The Manchester MPharm is a modern programme taught by leading pharmacy professionals, clinical pharmacists and scientists. The programme has been developed with input from representatives from all the major employers, students and patients/public so that it meets the needs of key stakeholders both now and in the future for pharmacy graduates to deliver safe patient-centred professional care. We are also seeking to build upon a proud tradition of preparing the next generation of visionaries of the profession by developing leadership skills.

The professional parts of the programme are delivered by a combination of academic staff who have a practice base and those with an active research interest in professional matters. The clinical aspects of the programme are taught by specialist clinical pharmacists. We recognised the need and value of clinical teaching for undergraduates in 2000 and began building a network of clinical associates and tutors across Greater Manchester and today 36 clinical pharmacists are associated with our programme. We are now extending this network across primary care. There are many examples of excellent practice in Greater Manchester and we will capitalize on this by ensuring that our future pharmacists can learn from and ultimately build upon the experiential learning they gain from such clinical exposure. The educational value of such contextualized learning is beyond question but there are also intangible but equally important benefits such as those that are gained by the exemplars of in situ professionalism and facilitating the students to develop their own networks within the profession and with prospective employers.

The scientific parts of the programme are taught by academic research scientists in MPS who have an international or national reputation in their fields. We ensure that our science is integrated into our practice teaching so that our students can apply their knowledge to solve clinical problems. At a practical level we do this in many ways including having a scientist working with a pharmacy practitioner on a clinical case in class together. The MPharm course team has a series of tutors who ensure that our curriculum does spiral and is integrated both horizontally and vertically. We also recognise that pharmacists do not function in isolation when they provide healthcare and that care can be optimized when multidisciplinary teams work together for the benefit of patients. We have already developed some cross faculty teaching for our students and we have appointed a School lead to continue to develop this learning strand.



In 2013 the Faculty Teaching Award went to Dr Andrew McBain, one of our teaching and research staff working on biofilms.

Our multi-disciplinary staff is our greatest asset and we invest in their development to become effective teachers to inspire the next generation of Manchester pharmacists. Staff are supported by appropriate teaching mentors and education training events. The School also supports staff to attend educational conferences, for example the 'Team Based Learning Collaborative' annual conference in San Diego and 'OSCEology' at Nottingham.

The ongoing commitment of staff to the support and education of our students is unquestionable. Recognition of this commitment, both by MPharm undergraduates and the university, has resulted in staff in the School being awarded 'Faculty Teacher of the Year' for the past two consecutive years.



Graduate Education and Continuing Professional Development

The Manchester Pharmacy School has a strong and long track record in delivering pharmacy related graduate education to home and international students.

Education and training are the principal ways in which we mobilise knowledge from research to improve population health and wellbeing. We aim to give our students, both undergraduate and postgraduate, the best possible education by aligning teaching and training to our areas of research strength. The School provides four outstanding Masters programmes that use the latest methods in learning to meet the needs of pharmacy and pharmaceutical science professionals worldwide. It led the way in the early 1990s developing one of the first Masters in Clinical Pharmacy in association with local NHS Hospitals. It also created an internationally renowned suite of programmes in partnership with the Pharmaceutical Industry.

All programmes offer students a wide range of relevant awards, from a number of full Masters Programmes, postgraduate diplomas, certificates, single units and continuing professional development that reflect the varied needs of our target groups.

We engage in wide stakeholder and employer engagement to ensure our programmes are relevant and appropriate for the current employment market. This includes liaison with Chief Pharmacists from Greater Manchester hospitals, colleagues in the pharmaceutical industry and practising pharmacists.

The four core programmes are currently offered by the School are:

Clinical Pharmacy and Health Systems

The aim of the programme is to develop pharmacists who can act as role models in both the performance and future development of clinical services and health service management.

The programme serves to enhance students' clinical knowledge, teaching them to optimise drug therapy and develop their problem solving skills. A variety of health services issues are explored, including health economics, patient perspectives on health and organisational influences on health care.

Teaching methods include small group tutorials, workshops and experience-based learning at the University and in hospitals guided by experienced practitioners and work place tutors.

Community Pharmacy Public Health Services

This postgraduate qualification provides pharmacists with the knowledge and skills to direct and deliver efficient and effective community pharmacy public health services. It aims to instil professionals with the confidence to actively seek out opportunities to be the chosen first class provider of public health services in new world commissioning.

The programme consists of core and optional units. Students will be able to choose a number of optional units that meet their specific learning needs from a range of community pharmacy public health service areas.

This is a completely online programme which is accessible from home PCs. In most cases students have complete flexibility about when to undertake their learning; however there will be some activities which require being online at specific times.

The programme is run on a modular part-time basis. Students are expected to commit to approximately 10 hours learning per unit per week. And there are two units for each semester.

Pharmaceutical Industry Programmes (formerly known as PIAT)

Developed in partnership with the pharmaceutical industry, this programme is a postgraduate-level training programme designed for scientists and managers working in the pharmaceutical industry in the fields of Product Development, Manufacturing and Quality Assurance.

The programme is administered by the Manchester Pharmacy School, which obtained the highest ratings available in recent teaching and research assessments. Using distance learning, the programme is designed to improve students' work performance and allow them to achieve university qualifications without the need for prolonged absence from work. Students receive a work book containing teaching material and exercises for each module chosen. Specialist tutors are available to assist throughout the course. In the long term it improves graduates' career prospects by providing industry-recognised qualifications validated by a leading university. It also provides the training required for Qualified Person recognition.

Modelling and Simulation (PKPD)

The MSc Modelling and Simulation (M&S) in Pharmacokinetics and Pharmacodynamics (PKPD) programme has been developed with an emphasis on mechanistic approaches to assessing and predicting PKPD; such as Physiologically-Based Pharmacokinetics (PBPK).

We view this under the general umbrella of systems biology and hence enable students to apply their knowledge of modelling and simulation in various areas of research within the pharmaceutical industry.

The course focuses on the broad range of issues that make up M&S efforts during drug development and these are reinforced via hands-on application of the skills to real-world data.

This programme is designed for scientists already working within the pharmaceutical industry who wish to qualify as modellers with hands-on experience and obtain a university degree.

The flexible, distance learning nature of the course means that students can fit their study around their other commitments. The only required time on-site is during the three-week residential introductory package and for the examination.

Quality and governance systems

The School strives to continuously monitor and develop the postgraduate programmes, particularly with the recent development of some new programmes. This is monitored by our Graduate Education Committee. We aim to build further on the quality and experience offered by the taught programmes as assessed by positive external examiner reports and periodic review and student feedback. A review of programme structures to identify opportunities for pooled resources and shared learning will occur with programme amendments in place for 2014/15 and onwards.

Continuing Professional Development: The Centre for Pharmacy Postgraduate Education (CPPE)

The Manchester Pharmacy School is unique in England for hosting The Centre for Pharmacy Postgraduate Education on behalf of the NHS.

The Centre for Pharmacy Postgraduate Education (CPPE) is funded by NHS Health Education England. It offers learning opportunities for pharmacists and pharmacy technicians providing NHS services in England. CPPE is committed to providing high-quality and professional learning programmes, as well as excellent customer service. It is based in the Manchester Pharmacy School within the multidisciplinary teaching environment of the Faculty of Medical and Human Sciences.

Since 1991, CPPE has focused on designing and delivering programmes to meet both the national and local needs for pharmacists and more recently pharmacy technicians providing NHS services in all sectors (hospital, community, primary care, secure environment, etc.). CPPE delivers learning in a variety of formats to the 60,000 pharmacy professionals across England. It has a team of 70 part time tutors who deliver on average 500 local workshops per year. It delivers an extensive portfolio of distance and e-learning. It has a significant online assessment system and a variety of innovative platforms.

The contract for CPPE is held between the NHS Health Education North West (HE NW) and The University of Manchester. The current contract is due for renewal on 31st March 2014.



The contract is managed by a Contract Management Board, which brings together DH (pharmacy and workforce policy), pharmacy professionals, NHS providers, NHS HE NW, other NHS England and Health Education England representatives (education commissioning and pharmacy interests) and the Modernising Pharmacy Careers Programme Board, part of Health Education England. The contract is built around a Quality Framework which defines and scopes out CPPE's remit, outputs, provision, performance and governance. CPPE performance and management is governed by the Executive Operational Board. Quality standards are monitored by a group comprising of external academic reviewers.

Research

The Manchester Pharmacy School is one of the UK's leading centres for research in pharmacy and the pharmaceutical sciences, with 95% of its work classed as internationally significant in the 2008 Research Assessment Exercise (RAE). Furthermore, 70% of the School's overall research activity was rated 'world leading' or 'internationally excellent', placing the School second in the country for research quality. This demonstrates the School's consistent excellence in research following its 5 star rating in RAE 2001. Our purpose is to continue to deliver this world leading research from basic pharmaceutical science through to applied pharmacy practice that informs and advances the development and delivery of clinical and health care services.

Our work attracts significant funding from research councils, government sources such as the NHS, charities, and a variety of multinational industrial partners, and international funders. In the current year (from August 2012 until April 2013) staff, acting as principal investigators, in the School have secured over two million pounds of external research monies.

From August until April 2013 staff in MPS had been involved as co-investigators in successful funding applications that totalled £5.82 million and several other major applications, of a total value of £21.9million are still under consideration.

“ I became interested in the work of the Clinical Operations team and asked how I could become further involved and possibly join it. I did not have the appropriate qualifications at the time, so two years ago I started the Pharmaceutical Industry Advanced Training programme, hoping to achieve the Certificate in Industrial Pharmacy. I concentrated on the modules within the Clinical Trials section as these were most appropriate to the area I wanted to work in and were of most interest to me.

I did not do A-Levels or go to University, so going back to learning has been quite daunting at times and it's certainly been a challenge. One thing I will say is that you have to be dedicated to learning – trying to fit in the recommended 8 to 10 hours of studying a week on top of a full time job is difficult, but if you break it down into small sections and do a couple of hours a night it's achievable.

All my hard work has paid off, in November 2011, I became the Clinical Trial Administrator in the Clinical team. It has been great and I couldn't have done it without completing the modules I chose. ”

Emma Barry,
Graduate of Pharmacy Industry Programme



Outline of organisational structure

The School has two main research divisions; Pharmaceutical Sciences and Pharmacy Practice. Within the groupings of the two research arms we currently have three formalised Research Centres namely:

- The Centre for Applied Pharmacokinetic Research (CAPKR)
- The Centre for Pharmacy Workforce Studies (CPWS)
- The Centre for Pharmacoepidemiology and Drug Safety Research.

Staff in MPS are formally affiliated with the six research Institutes of the Faculty, which in turn map onto the MAHSC research themes as shown in the diagram below.

In addition to our Centres we have themes that are embedded across the School a good example of this would be our cancer research. In Pharmaceutical Sciences there is a major focus on cancer biology with the emphasis to improve diagnosis and treatment. This aligns with our expertise in Drug Discovery and Action, Drug Development and Translational Pharmacology. It also integrates into Pharmacy Practice, where there are research interests in cancer medication utilisation, pharmacoepidemiology and health economics. These themes map closely onto the research priorities of the Manchester Cancer Research Centre, the Manchester Academic Health Sciences Centre and the University as a whole.

Faculty Structure

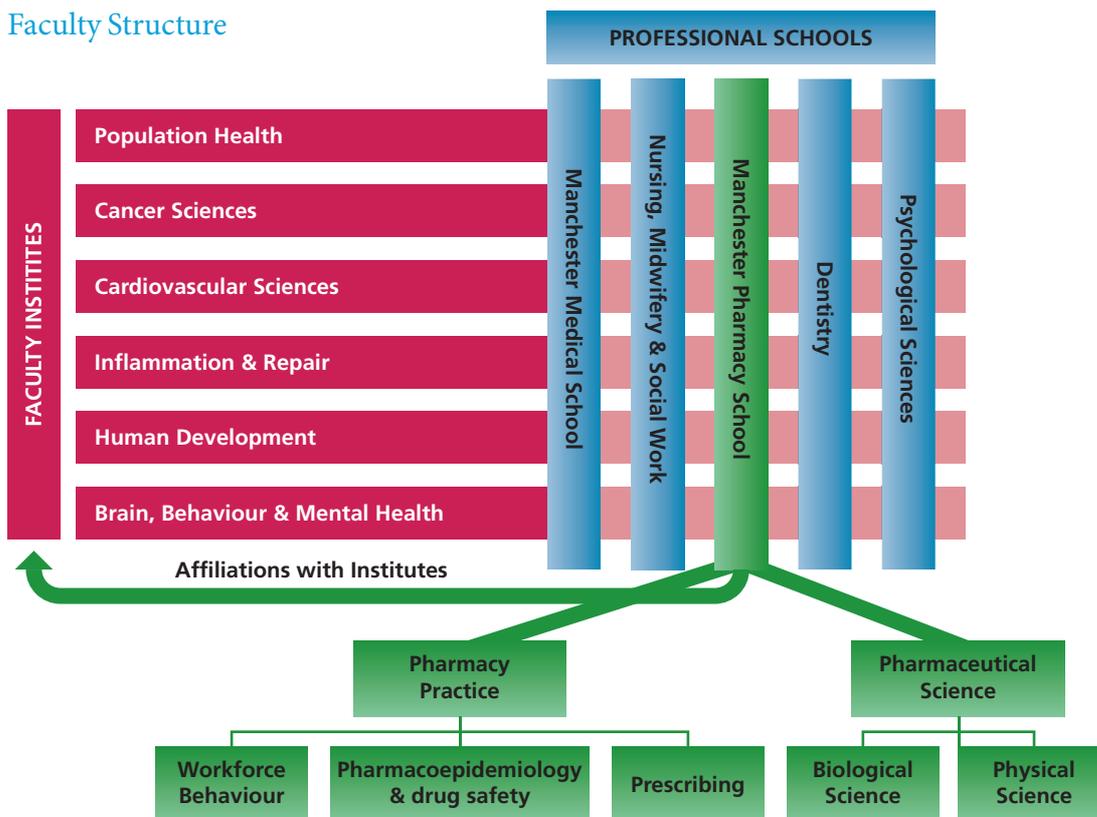


Figure 2
Organisational Structure for Research within the Manchester Pharmacy School in the context of FMHS



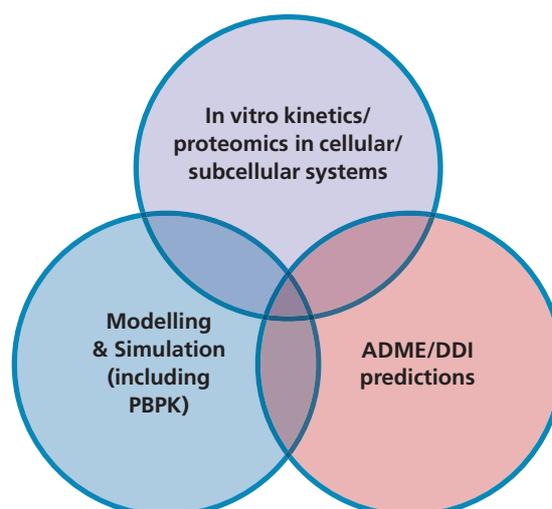
Focus of Cancer Research in the Manchester Pharmacy School

- Understanding how microenvironmental conditions such as hypoxia, inflammation and oxidative stress contribute to cell metabolism and signalling, drug transport and metabolism and response to therapy. Using these findings to develop novel optical and PET imaging strategies
- Identifying novel targets for intervention and strategies that would improve response to currently used radio and/or chemotherapy
- Improving response to drugs by modelling and predicting pharmacokinetics, drug-drug interactions, pharmacodynamics and applying novel methods to enhance drug delivery
- Investigating the interaction of other chronic diseases (hypertension, type 2 diabetes, respiratory disease) and their medications on the progression and survival of patients with cancer
- Generating evidence on medication use and outcomes in cancer patients outside of the clinical trial setting to inform healthcare economics and epidemiology using real world data

Professors Ian Stratford and Kaye Williams lead the cancer research in the School. Kaye Williams was recruited as a post-doc in 1996 and succeeded in being promoted to full Professor in 2012. Research funding during this time has exceeded £8m from the MRC, cancer charities and industry.

The Centre for Applied Pharmacokinetic Research (CAPKR)

The School has a world-leading centre of excellence (CAPKR) in research and training in **drug metabolism and pharmacokinetics** which engages in problems of generic interest to the Pharmaceutical Industry. As a consortium it operates in collaboration with, and is financially supported by, industry. CAPKR develops methodologies that help accelerate the discovery and development of better and safer drugs and are primarily concerned with mechanism-based prediction of human pharmacokinetics and pharmacodynamics. Research extends from basic mechanistic studies of metabolism/transporters to development of physiological-based pharmacokinetic models, and through to population pharmacokinetic/ pharmacodynamic studies in humans. The Centre leads are Professor Leon Aarons and Professor Brian Houston; Amin Rostami-Hodjegan was recruited as a Professor in 2009 to the CAPKR team, and Alex Galetin was promoted to Senior Lecturer in 2011. We are seeking to recruit to this Centre to ensure its continued success going forward.



The Centre for Pharmacy Workforce Studies (CPWS)

The Centre has secured an international reputation for its research on the performance and employment behaviour of **the pharmacy workforce** and for its research on the regulation of pharmacy professionals. The work of the CPWS team has involved a number of productive collaborations with academics and agencies outside and within pharmacy, resulting in grants from a wide range of funding bodies totalling over £2 million, and over 60 relevant academic peer-reviewed papers. Our collaborative three-year study with colleagues from the National Primary Care Research and Development Centre, funded by the SDO (Studying Health Care Organisation programme, £394,000), on the impact of incentives on the behaviour and performance of health professionals (including pharmacists) was completed in 2010, and a recent University of Manchester collaboration with the Centre for Workforce Intelligence (CfWI; £420,000) resulted in two reviews of pharmacists' workload and skill mix. The programme continues to evolve and now includes work which explores the organisational culture of community pharmacy and how workforce behaviour impacts on safety and service quality outcomes.

Workforce research will continue to be a focus of work for the School, and is likely to include further workforce planning research to update supply and demand models for the Department of Health in England and counterparts elsewhere. It will also include delivery of the NIHR study on clinical productivity in community pharmacy (see box). The team is keen to develop comparative work exploring clinical leadership with colleagues in Dentistry and the Manchester Business School; we have plans to develop collaborations with colleagues in Sweden where government monopoly on ownership of community pharmacies is changing practice and career paths for pharmacists, and exploratory methodological work aimed at valuing the benefits of community pharmacy services is planned through an NIHR fellowship submission.

Professor Karen Hassell leads the Centre for Pharmacy Workforce Studies (CPWS). Sarah Willis joined CPWS as a Lecturer in Social Pharmacy in 2011, Sally Jacobs and Liz Seston are Research Fellows contributing to programmes of work, and Ellen Schafheutle, promoted to Senior Lecturer in Professionalism and Law in 2013, also provides scholarly input into CPWS.

The Centre for Pharmacy Workforce Studies received a prestigious £400,000 grant from the NIHR HS&DR programme to investigate clinical productivity in community pharmacy. The study is lead by Dr Sally Jacobs and will run for 26 months from April 2013.



The Centre for Pharmacoepidemiology and Drug Safety Research

A recent development in the Practice group has been the establishment of the Centre for Pharmacoepidemiology and Drug Safety. The primary research interest for the Centre is in the use and effects of drug therapies when used in populations of patients in real-world settings. Research methods are applied from clinical epidemiology (e.g. cohort, case-control studies) to the content area of pharmacology (e.g., determinants of beneficial and adverse drug effects, effects of genetic variation on treatment response, dose-response relationships, duration-response relationships, and the effects of non-adherence). Interventions to improve **medication safety** on a population level are also developed and evaluated. The Centre lead is Darren Ashcroft, promoted to Professor in 2010. To build capability, Doug Steinke was recruited from the University of Kentucky as Senior Lecturer in 2011 and Penny Lewis was appointed Clinical Lecturer in 2011. Mary Tully, promoted to Reader in 2011, provides specialist input on prescribing. Ashcroft leads the medication safety theme in the NIHR-funded Patient Safety Research Centre, with Penny Lewis and Denham Phipps (appointed to Research Fellow in January 2013) as collaborators. Tully provides input into HeRC (Health e-Research Centre), the MRC-funded centre which will provide informatics tools and methods training across North England to harness UK data for patient and community health.

Darren Ashcroft, lead for the Centre for Pharmacoepidemiology and Drug Safety: "We hold an institutional license for full access to the Clinical Practice Research Datalink at Manchester. The CPRD is the world's largest computerised database of anonymised longitudinal medical records from primary care and is linked with other relevant healthcare databases, such as ONS mortality data, MINAP, National Cancer Registry. Currently data are being collected on over 5 million active patients from over 640 general practices throughout the UK. This has led to a number of NIHR-funded collaborative projects focussed on cardiovascular disease, dermatology, diabetes, and mental health.

Key Research Groups

Andrew McBain assumed leadership of the **biocides and biofilms group** in 2008, and has maintained its output, impact and international standing. He was promoted to Senior Lecturer in 2010. The group focuses on bacterial physiology and ecology as it relates to human health and disease, and to the clinical/environmental persistence of microorganisms. Major expertise is in bacterial identification, in vitro modelling, antimicrobial resistance and clinical microbiology applied to oral, intestinal and skin microbiology as well as infection (and strategies for infection prevention). Future developments include; a strategic research collaboration between Pharmacy and Dentistry in oral hygiene and making a joint appointment with the Medical Microbiology Group in the Faculty to strengthen links across teaching and research.

Recent paper: Oates A, Bowling FL, Boulton AJ, McBain AJ. A Molecular and Culture-Based Assessment of the Microbial Diversity of Diabetic Chronic Foot Wounds and Contralateral Skin Sites. Journal of Clinical Microbiology (2012) eScholarID:161360.

The School has recently recruited Dr Christy Hunter to develop the School's research on **nanomedicines**. Christy's primary research interest is to understand the mechanistic basis of toxicity associated with nanomedicines in order to design improved drug delivery and medical imaging vehicles. Key to achieving this is understanding a component of our innate immune system called complement. This system is the first line of defence against intruders recognizing danger signals primarily through pattern recognition. Compelling evidence suggests that inadvertent complement activation is an important contributing factor in eliciting acute reactions during and following nanomedicine infusion. The reactions vary from light to severe and can even be fatal. Recent advances in technology and implementation of our protocols allow the group to determine the precise pathways of activation. This has been applied across the board from macromolecules such as poly(ethylene glycol) to nanovehicles, including those used in the clinic, such as liposomes (Doxil™) and experimental nanomedicines (PEGylated carbon nanotubes). This work has also revealed significant opportunity for personalized nanomedicines where presence/absence of adverse reactions can be predicted on a patient-by-patient basis.

The School has also further strengthened its research portfolio by the appointments of Professor Joanna Neill and Dr Mike Harte. Their expertise is in psycho- and neuropharmacology, focusing on cognitive deficits in diseases such as schizophrenia Alzheimer's disease and ADHD. The key aim of this group is develop and apply rodent models of these disease states in order to improve the predictive power of therapeutic and diagnostic interventions.

This focus will evoke synergy by interactions within the school;

- Dr Jeff Penny who as an expert in transporter systems including CNS penetration, Professor Kay Marshall who as a reproductive endocrine pharmacologist brings the gender perspective to psychiatric diseases,
- Professor Ian Stratford who is identifying and validating new molecular targets in Alzheimer's disease and other age related cognitive disorders,
- Professor Kaye Williams who is applying novel PET and other non-invasive imaging techniques to complement the functional assays developed by the Neill/Harte group.

The world class imaging facilities at Manchester will add greatly to the potential of this group to further improve the clinical correlation of their models.

“*I relocated to UoM with my research team in January 2013, because it is a leading world class institution with a vision to be within the top 25 research institutions in the world by 2015. Most importantly, Manchester has a clear strategic plan that will ensure the achievement of this vision. Since my arrival, I have been delighted to meet colleagues at all levels who are friendly, professional, excited by research and who share the University vision. As a result I have formed several new research collaborations easily within this enabling environment, and I am thrilled to be a part of the Manchester team.*”

Comment from Professor Jo Neill, who joined the Manchester Pharmacy School in Jan 2013 as a Project Diamond recruit

Postgraduate Matters

The School has a healthy postgraduate population of researchers working at Masters; PhD and Postdoctoral level. Over the past four academic years (from September 2009), one hundred postgraduate research degrees (primarily PhD) have been awarded to students registered in the School. Also working in our labs and with Pharmacy supervisors are postgraduates registered in the FMHS research institutes or in other faculties.

The School has strong links with Industry, and approximately half of our Home/EU research students are funded partly or entirely by industry. The lively community of postgraduate researchers is an essential part of the School and for its sustainability in world leading research. Students are active in organising research seminars, training and networking events. The Pharmacy postgraduate student committee is a student-driven group that engages with issues of concern, and has recently worked on projects such as an online induction manual for new students, a directory of graduate teaching opportunities, and consulting on plans to cope with potentially disruptive estate works. Pharmacy postgraduates have also been active in the founding of a new FMHS Graduate Society.

PGR students also contribute to the research-intensive learning environment we provide to our undergraduate students. Postgraduates have the opportunity to assist with delivery of the undergraduate curriculum as demonstrators, markers, and in delivering one-to-one co-supervision of undergraduate research projects. Motivated undergraduate students value the quality of their research experience and have even achieved co-authorship on publications.



“I think that choosing Manchester as my university was the best decision I could make, as I'm having an amazing time here (without taking into account the weather)”

Andres Olivares Morales,
PhD Student

Partnerships and Social Responsibility

Strong partnerships with the NHS

The Faculty of Medical and Human Sciences at The University of Manchester can be characterised not only by the quality and breadth of its research, but also by its close relationships with the NHS. Collaborations are fostered and achieved through the many informal networks and by the more formal shared structures that have been established through the Manchester Academic Health Science Centre (MAHSC). The scale of the population served by collaborating members of the MAHSC and the very diverse (but stable) local population, with many different ethnic groups and widely ranging socioeconomic circumstances, provides exceptional opportunities for research. The exceptional opportunities offered by Manchester's healthcare environment, very strong, well established NHS partnerships and MAHSC mean that we have outstanding opportunities for undertaking translational research and for clinical experiential and interprofessional learning.

Current and future collaborative MAHSC Projects

- Innovative diagnostic, detection and imaging probes monitoring genetic variation, chemical and biological changes associated with disease, surface pathogen burden.
- Novel formulation strategies to generate sustained and/or targeted delivery of conventional drugs and biopharmaceuticals for use in chronic wounds, stroke, cardiovascular disease and infectious states.
- Analysis of microbial colonisation and residence state in chronic wounds and novel intervention strategies to counter drug resistance.
- Preclinical expertise in driving novel cancer therapeutics to clinical trial particularly in the area of combination strategies with radiotherapy.
- Extrapolation of cognitive tests and enhancement tools into patients in particular first episode patients with schizophrenia and adults with ADHD.
- Integrated practice-based work to evaluate disease progression in co-morbidity states and generate real world evidence of medicines use and outcomes in disease states.
- *In silico* modelling and simulation to:
 - predict efficacy, drug-drug interaction risk and toxicity in different diseases/co-morbidities and/or in target populations with limited availability of clinical data (paediatrics)
 - inform optimal clinical trial design, sampling times and determination of the minimum number of subjects required to achieve the required study power within a clinical study.

The School is looking to increase the number of joint appointments it has with NHS Trusts to enable us to build pharmacy research capability and increase pharmacy input into clinical trials. The School also has excellent links with primary care in the shape of community pharmacy and these pharmacists are an underused resource that are easily accessible and we will be developing this linkage to enhance our contribution to improving public health.

Social Responsibility

The School is very active and innovative in a range of initiatives to bring pharmacy to public knowledge, to widen understanding and be informative of our subject areas and to generate a spark of interest amongst people from all backgrounds and ages. Our mission is aligned to Goal 3 of the University's 2020 Vision, and the Faculty's Priority 3.

Widening Participation

The School's contribution to Widening Participation (WP) is outstanding. We are proud that we succeed in recruiting the brightest and best students, irrespective of background. Our HESA data continues to exceed University benchmark targets and we are the only School in the University (and indeed other Schools of Pharmacy) that use contextual data to prioritise applications to our Year 0 programme from socio-economically disadvantaged areas of society. Academic staff and undergraduate ambassadors contribute to a variety of WP activities, most notably the Pharmacy in Primary Schools (PIPS) programme, Manchester Access Programme and pan-university activities such as Primary HEAD Days, MHS Healthcare Awareness Days and Discover Days. Future developments include the imminent launch of the Fastbleep Pharmacy Programme aimed at High Schools and community based pharmacy drop-in clinics.

Public Engagement

Academic staff and final year students, either independently or collectively are involved with a variety of projects that interact with the wider public. These include:

- HIV and Chlamydia Awareness Public Health Workshops
- Presentations to science societies such as SciBar, Café Scientifique, 6th Form lecture Series.
- Sharing learning experiences with The University of the Third Age (U3A), an organisation for retired people
- Engagement with school children of all ages, for example at Science Festivals, Careers Events
- Celebrating Women in Science events at the University and local High Schools
- Collaborating with Nowgen and the Faculty Postgraduate Society.

Our general aim over the next few years is to develop and deliver new public engagement activities that involve young people and the general public that will be of a benefit to society as well as generating an interest in Pharmacy per se. We would also seek to increase the number of staff and students (undergraduate and postgraduate) involved in key public engagement events.

School Resources

Space

The School is located over four floors in the Stopford Building overlooking the front quad. It was moved from Coupland III in early 2007, following major refurbishment of a section of the Stopford Building. However, some of the teaching areas in the School are now outdated and in need of remodeling to meet the demands of the modern pharmacy curriculum, the application of new technology and accommodate the numbers of students we teach, these are being considered as a rolling project over the coming years.

We are currently working on the development of a clinical skills teaching suite reutilizing the current administration area which is now too large as some support staff have now moved into Faculty managed offices rather than being based in the School. This space is some of the best that the School has. The dedicated School administrative support staff will be re-housed within the School with minimum disturbance of others. The School Executive are working with the Faculty estates team to achieve this and keep the costs to a minimum.

In response to the need to increase patient contact in the MPharm curriculum the School is developing a blended approach and in addition to working with NHS partners we will also use simulation. The results of a scoping analysis suggest that the most innovative and cost effective way of achieving our aims is to develop a virtual suite in the current Electronic Prescribing Suite. As with the clinical skills suite this would require little structural work, the more substantive investment would be in technology. Both of these facilities would also facilitate the provision of interprofessional education.

Staff

The Pharmacy School currently has 10 full-time and 5 part-time Professors; 5 Readers, 9 Senior Lecturers, 19 Lecturers, 3 Clinical Lecturers, 34 clinical associates, 21 Student Demonstrators, 28 Postdoctoral Assistants, 13 technical support staff and 20 Professional Support Staff.

Over the past year there has been investment from Faculty, and replacement of retiring staff, in a number of academic posts with some still in the process of being appointed:

Recent and prospective appointments

Professor Joanna Neill –

Chair in Psychopharmacology January 2013

Dr Michael Harte –

Lecturer in Drug Action January 2013

Professor Anna Nicolaou –

Chair in Biological Chemistry August 2013

Dr Victoria Silkstone –

SL in Community Based Practice Learning September 2013

Vacant – Chair in Pharmaceutics (interviews 2 Sept 2013);
2 lectureships in pharmaceutics; Chair in Molecular Therapeutics.



Finance

The School is supported by a management accountancy team and a research support manager. The School's main income stream comes from its undergraduate MPharm Programme. Going forward the School will develop its postgraduate taught provision and all new Chair appointments have associated research income targets. In addition, the School delivers one of the highest percentage of income cost recovery on research and other grant income in the Faculty.



The well supported student and academic...

In order to achieve the high standards we expect of ourselves and our students we need to have a high level of professional support for both our practical teaching and research as well as for administrative tasks. Our administrative support comes from Professional Support Services (PSS) and this team is managed by the Head of School Administration, Mrs Andrea Hutcheson.

The core senior PSS team comprises:

Undergraduate Education Manager: Suzanne Davies
 Teaching & Learning Manager: Sandra Humphries
 Academic Group Administration Manager: Paula Rosson
 Research Support Manager: Rhona Stephen
 PGR Administrator: Emma Braithwaite
 Graduate Education Manager: David Parry

Most of the School PSS team is co-located in a central office and prides itself on working collaboratively across functional areas and also working closely with colleagues across the University. Some of the staff work across both the Manchester Pharmacy School and the School of Psychological Sciences, where processes naturally mirror themselves between the Schools. The staff work as a co-ordinated team, calling upon services such Finance, Research support and Technical Support as needed. Our student-facing staff are often commended by the students. Our Graduate Education Manager, David Parry has been shortlisted for two consecutive years for the Best Support Staff Member Award from the Student Union, winning it outright in 2012 and our undergraduate team received a special commendation in the Faculty Small Team Awards in 2012.



The Technical Support in MPS is intrinsic to the School's success and its developmental needs for the future. Technical support is fundamental in supporting both Academics and Students across many platforms, such as: class preparations, research projects, equipment maintenance, health and safety and laboratory management.

The Technicians in the School already have a vast wealth of specialist experience which is continuously applied to assisting Academics to develop new teaching curricula, new class practicals and new techniques. Technicians often contribute to assisting students during classes and demonstrating techniques in both Teaching and Research areas, something that is often cited as significantly enhancing the learning experience of students.

The Technicians in the School have demonstrated their adaptability to change and are always receptive to training and development. Supported by the Faculty's strategic aims for Technical Support and the strategic aims of the School, Technical Support will continue to develop in a way that is closely aligned to the needs of the Academics and Students of the future.

“The support staff are the glue that holds it all together and, because they do it with a smile, it makes them that much more special and appreciated.”

Quote from a student

Areas of Excellence

Research

There are many examples of excellent research in Pharmacy but in this instance we would like to focus on cancer as it is a theme which pulls in staff from the different disciplines across our school and pharmacy researchers all like to think they can take a 'molecule to man' and in this case we have! Manchester is a world renowned centre for cancer research and treatment and the Manchester Pharmacy School is proud of the contribution made by the pharmacy team. Research in MPS has resulted in the identification, validation and exemplification of predictive/prognostic biomarkers of response to therapy, and further demonstrated the therapeutic efficacy of combining molecularly targeted agents with radiotherapy.

The primary aim of the cancer research carried out in MPS over the last 15 years, has been to enhance the understanding of the biological role of hypoxia (low oxygen) in tumours, develop methods to define the depth and severity of hypoxia, and potentially exploit this physiological abnormality by the rational application of bio-reductive drugs or molecularly targeted drugs when combined with radiotherapy.

MPS scientists were the first to combine the use of oxygen electrodes and molecular markers to define the presence of hypoxia in human tumours; and further were the first to combine the use of bio-reductive drug markers, such as pimonidazole, together with molecular markers of hypoxia and relate these to tumour response to therapy (1).

Hypoxia inducible factor-1 (HIF-1) is the main transcription factor activated by hypoxia and it drives tumour growth and influences response to radio- and chemotherapy (2). As a consequence, there has been a major emphasis on analysing, in pre-clinical experiments, the impact of new, so called, molecularly targeted drugs on tumour hypoxia, HIF-1 mediated processes and response to radiotherapy. The ultimate goal was to expedite appropriately designed clinical studies to maximise the likelihood of improving patient response. Among the drugs that have been examined are the pan-vascular endothelial growth factor receptor antagonist cediranib (AZD2171), the oncogenic (MEK1/2)-signalling inhibitor selumetinib (AZD6244) and a variety of inhibitors of the DNA-repair protein poly-ADP-ribose polymerase (PARP). Cediranib and selumetinib enhance the effectiveness of fractionated radiation in experimental tumours and the optimal scheduling to achieve the maximum positive therapeutic benefit was determined. Importantly, mechanistic data was generated to indicate the basis for the positive interactions. For cediranib, pre-irradiated endothelial cells in tumours are sensitised to the drug and post-radiotherapy maintenance of cediranib prevents the contribution of hypoxic cells to tumour regrowth. Selumetinib acted as a direct inhibitor of HIF-1 in vivo, which reduced the resistance of the hypoxic cells to radiation. These observations (3) have led to two phase III trials being carried out in Manchester where cediranib and selumetinib are being combined with radiotherapy (the DREAM therapy and MEK-RT trials at the Christie NHS Trust).

These trials are already demonstrating clinical benefit. For the PARP inhibitors, a unique discovery made in Manchester, was that these agents could impact on tumour vascular dynamics such that tumour hypoxia is reduced, resulting in enhanced radio-responsiveness. These observations (4) have also helped drive the clinical trial of these agents combined with radiotherapy.

More recently, we have demonstrated the potential impact of harnessing the body's immune system to enhance the effect of radiotherapy. By using a treatment that by itself only causes a modest delay in tumour growth, we are now able to elicit tumour cures. Clinical trial of this approach is expected to commence in the near future (5).

Other basic research has revealed molecular mechanisms governing tumour cell response to chronic inflammation and how resistance can be acquired to anti-inflammatory agents such as dexamethasone. We have further elucidated the role of cytochrome P450 mediated oxidative stress in the development of resistance to anticancer therapy (6).

Targets have been identified for both cancer prevention and therapy, initiating basic and translational research programmes that have engaged computationally-based drug-design, synthetic and biophysical chemistry through to cell and in vivo tumour studies (7). Diagnostics for the detection of nucleotide polymorphisms have been developed that exploit exciplex-based fluorescent approaches (8). Further fluorescent probes have been designed that are responsive to specific tumour micro-environmental conditions (9).

We have modelled pharmacokinetics and pharmacodynamics of anti-cancer agents in patient populations (10) and developed robust preclinical co-culture systems that mimic, for example, the blood brain barrier to facilitate in vitro modelling of drug delivery to CNS tumours (11). This links directly by the successful acquisition (via MCRC) of a CT-guided micro-irradiator to give precise spacial delivery of radiotherapy to orthotopic tumours.

An important contribution by MPS scientists to cancer sciences in the Faculty has been the successful assuming of responsibility for delivering on the development of pre-clinical PET imaging. Up until the involvement of Stratford/Williams, this area of activity in the University was moribund, despite multi-£m investment. Evidence of success comes from the recent CR-UK Imaging Centre award, with £500k coming directly to Pharmacy (Williams).

Our Practice team is evaluating the impact of co-morbidities, for example, chronic diseases such as hypertension, type 2 diabetes and respiratory disease) and their medications on the progression and survival of patients with cancer (12, Steinke). Further, they have generated evidence on medication use and outcomes in cancer patients outside of the clinical trial setting to inform healthcare economics and epidemiology using real world data (13, Ashcroft).

Key individuals

New drugs (Stratford, Freeman, Bryce, Bichenkova, Aojula)
Biomarker and therapeutics development (Stratford, Williams, Marshall, Demonacos, Penny)
Radiation/Drug combinations (Stratford, Williams)
Imaging (Williams, Pluen)
Pharmacometrics (Aarons, Houston, Galetin)
Pharmacy practice and epidemiology (Ashcroft, Steinke)

References (with lead MPS scientists)

1. MAXWELL PH et al (1997) Hypoxia Inducible Factor-1 modulates gene expression in solid tumours and influences both angiogenesis and tumour growth. *Proc. Natl. Acad. Sci (US)* 94 8104-8109. Similar papers published by the group on HIF-1 include *Oncogene* (2002) 21 282-90; *Cancer Res.* (2002) 62 688-95. *Cancer Res.* (2002) 62 2962-70; *Clin. Cancer Res.* (2004) 10, 8405-8412. *Radiother. Oncol.* 75, 89-98; *Mol Cell Biol.* (2004) 24 2875-89; *Oncogene* (2007) 26 7333-45. (Stratford and Williams)
2. LONCASTER JA, et al (2001) CA-IX expression, a potential new intrinsic marker of hypoxia: correlations with tumor oxygen measurements and prognosis in locally advanced carcinoma of the cervix *Cancer Res* 61, 6394-6399 Similar papers describe work on GLUT-1 *Clin. Cancer Res.* (2001) 7, 928-34; CA-IX, GLUT-1 and Pimonidazole (*Int. J Cancer* (2003) 104, 85-91. (Stratford and Williams)
3. WILLIAMS KJ, et al (2007) Combining radiotherapy with AZD2171, a potent inhibitor of vascular endothelial growth factor signalling pathophysiologic effects and therapeutic benefit. *Mol Cancer Ther.* 6, 599-606. This paper is typical of 3 others published by this group on drug/radiation combinations (*Br J Cancer* (2002), 86; 1157-1161. *Clin. Cancer Res.* (2004), 10, 8587-8593 begin_of_the_skype_highlighting. *Clin. Cancer Res.* (2009), 15, 6619-6629. (Stratford and Williams)
4. CALABRESE CR, et al (2004) Anticancer chemo- and radio-sensitization in vitro and in vivo by a potent novel poly(ADP-ribose) polymerase-1 (PARP-1) inhibitor, AG14361. *J. Natl. Cancer Inst.* 96, 56-67. This is the first of a series of papers used to drive clinical trials of PARP inhibitors with radiotherapy (*Clin. Cancer Res.* (2009) 15, 6106-12; *Mol Cancer Ther.* (2011) 10, 2320-9; *Mol Cancer Ther.* (2011) 10, 1949-58). (Stratford and Williams)
5. DOVEDI SJ, et al (2013) Systemic delivery of a TLR7 agonist in combination with radiation primes durable antitumor immune responses in mouse models of lymphoma. *Blood* 121 251-9 (Stratford)
6. DAVIES L et al (2011) Regulation of glucocorticoid receptor activity by a stress responsive transcriptional cofactor. *Mol Endocrinol* 25, 58-71 (Demonacos)
7. NOLAN K. et al (2007) Coumarin-based inhibitors of human NAD(P)H: quinone oxidoreductase-1. identification, structure-activity, off-target effects and in vitro human pancreatic cancer toxicity. *J Med Chem* 50, 6316-25. This was the first of a series of papers driving the application of computational chemistry in drug development (*J Med Chem* (2009) 52, 7142-7156; *Bioorg Med Chem* (2010) 18, 696-706; *J Med Chem* (2011) 54, 6597-6611). (Bryce and Stratford)
8. WALSH L. et al (2008) SNP Detection for Cytochrome P450 Alleles by Target-assembled Tandem Oligonucleotide Systems Based on Exciplexes. *J. Biomol. Struct. Dyn.* 25, 629-640 (Bichenkova)
9. RATTRAY NJ et al (2012) Fluorescent probe for detection of bacteria: conformational trigger upon bacterial reduction of an azo bridge. *Chem Comm* [Epub ahead of print] (Freeman)
10. DEAN E. et al (2009) Phase I trial of AEG35156 administered as a 7-day and 3-day continuous intravenous infusion in patients with advanced refractory cancer. *J Clin Oncol* 27, 1-9 (Aarons)
11. CANTRILL CA. et al (2012). An immortalised astrocyte cell line maintains the in vivo phenotype of a primary porcine in vitro blood-brain barrier model. *Brain Res* 1479, 17-30 (Penny)
12. HITRON, A. et al (2012) The influence of antidiabetic medications on the development and progression of prostate cancer, *Cancer Epidemiology*, 36, e243-e250 (Steinke)
13. MOLASSIOTIS, A. et al (2012) Applying Best-Worst scaling methodology to establish delivery preferences of a symptom supportive care intervention in patients with lung cancer. *Lung Cancer*, 77, 199-204 (Ashcroft)

Examples of recent significant current funding

MPS staff have led on individual awards valued in excess of £100,000 from the following organisations and bodies: Cancer Research UK; National Institute of Health Research; European Commission; Allergan Inc. Astrazeneca; Colgate Palmolive; GE Healthcare; Medimmune and Unilever.

Undergraduate Highlights & Areas of excellence

Pharmacy have won the 'Faculty Teacher of the Year' award for the last two years

The NSS shows that for all Schools of Pharmacy 'feedback' is generally poorly rated by MPharm students. In our School we pride ourselves on responding to feedback from our students and so this issue was discussed and tackled in the School. Giving good quality feedback to large numbers of students whilst continuing to teach new material is difficult to do in a timely manner. To solve this problem, and help our students learn, Dr Jill Barber working with Steve Ellis, invented the Global Feedback Tool that automates and personalises feedback to individual students. It analyses many different aspects of a student's performance and synthesises accurate, confidential advice. The GFT is now being widely used across the School and is being tested in the Faculty.

The School has also pioneered 'Turning Point Technology' which has enabled staff to make their teaching sessions more interactive. The so-called pharmacy 'Clickers' have been a big hit with the students as they enjoy the 'quizzes' which we use in a formative manner and the students get instant feedback on their answers. We also use the clickers to evaluate everything from individual session through to modules and even the whole course.

Dr Jill Barber & Steve Ellis were awarded the Faculty Innovation Prize for the 'Global Feedback Tool'

Postgraduate Highlights & Areas of excellence

Postgraduate research students regularly publish and present their research at national and international conferences, often receiving recognition for quality of work. Some recent examples from the past year include:

Adam Darwish, a 3rd year postgraduate working with Professor Amin Rostami, published three full papers and contributed to two book chapters, and his fourth paper is under review in the highest impact journal in the field of Clinical Pharmacology. He received the annual award of DMDG (Drug Metabolism Discussion Group of UK Pharmaceutical Companies) in September 2012) for the best student poster, and he presented his work at the FMHS Faculty Grand Round Series in June 2012.

Other students, including Natalie Burrows, Richard Keers and Joana Senra, have received special recognition in the past year.

Natalie Burrows, a recent PhD and current postdoctoral researcher in Kaye Williams lab, won a young investigators prize at the 36th annual meeting of the European Thyroid Association (ETA) in Pisa, Italy. As a PhD student Natalie had 14 poster presentations and ten oral presentations at national and international conferences, along with two research articles and a review article published at the time of her PhD examination. She also co-supervised 13 undergraduates, some of whom have been included as co-authors on conference abstracts and a peer-reviewed publication.

Joana Senra, a final year PhD student in Ian Stratford's group, won the Jack Fowler award for her work on targeting DNA damage response pathways to improve the outcome of radiotherapy. The award, given annually by the Radiation Research Society of America, recognises an outstanding junior investigator for exceptional work in radiation oncology, medical physics or radiobiology.

Richard Keers (MPharm 2007 and currently a PhD student in the School) received the Hugh McGavock bursary award for "best abstract" at the 2012 annual scientific meeting of the 'Prescribing and Research in Medicines Management' (PRIMM) Society of UK and Ireland.

Zahra Hamrang, who has just submitted her PhD thesis, has one publication in print, another submitted and a few more in preparation. Nevertheless, she also found time to be a major force in the University's widening participation programme. As a WP Award Holder in 2011, she dedicated far more than the 120 hours of commitment requested of her. The range of outreach activities she designed and delivered was truly impressive. For example, she developed and ran a carefully designed Drug Discovery & Development Workshop that held the attention of young students and piqued their interest in university study and in health care professions.

“Skills gained from the degree programme and pre-registration year have enabled me to efficiently perform research during my PhD, whilst wearing “the pharmacist” hat during weekends, an aspect I rather enjoy!”

Zahra Hamrang final year PhD student

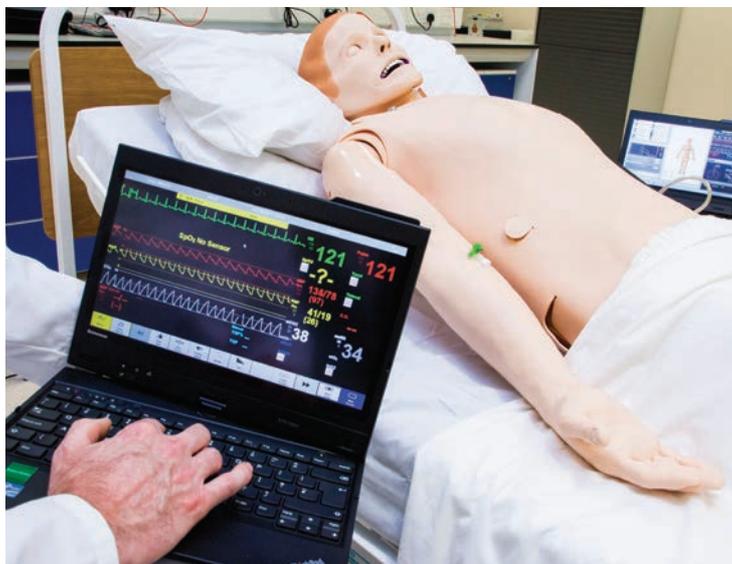
Challenges

The financial landscape

The financial landscape could be described as 'labile' for all Schools of Pharmacy at the moment as both the Higher Education landscape and the NHS are in states of change and this makes forward planning more difficult. At the undergraduate level the change required to modernize pharmacy careers will impact upon our MPharm as we move from a four plus one model to a five year integrated clinical programme. This change will be good for pharmacy and the return on investment for providing Band A funding for the MPharm will be safer and more cost effective medicines usage.

Space and estates

We are planning a series of updating works to improve our teaching estate and we are working with our Faculty estates and IT teams on projects.



Research

In terms of research the REF is still in its infancy and again this makes predicting future income difficult. To negate risk in this area we have invested in staff recruitment, we have sought out and made appointments that will be of value in this research audit exercise. However, we are also looking beyond 2014 as we plan for succession and the development of new research centres that extend beyond the School and allow us to capitalize on the skills and expertise of colleagues across our multidisciplinary faculty. We recognise the need to create multidisciplinary teams so that we can bid for large research council grants; the Faculty Research Deanery will be essential in our planning going forward. The age profile, particularly of senior staff, highlights our need to continue to succession plan.

Teaching

Undergraduate Education

The main challenge for the MPharm course is the move to a fully integrated five year degree programme with two six month pre-registration placements. We have a good network of Clinical Tutors in secondary care but we need to develop a parallel system in primary care and other sectors such as industry. To assist us in this we have recently appointed a Lead, Dr Vicky Silkstone, who was previously a placement tutor and an MPharm course leader for the only five year sandwich pharmacy course in the UK. The number of Schools of Pharmacy in the UK has doubled over recent years and so we operate in a very competitive environment. We will meet this challenge by ensuring that our MPharm is of the highest quality, delivered by the best pharmacy teachers in an environment that is fit for purpose.

Graduate Education

PGT recruitment in the School has fallen as it has in other parts of the University and so the School commenced a full strategic review of its graduate education provision in 2012; an early action was to appoint a Director of Graduate Education. Other actions are being taken to address the changing postgraduate environment including: multiple intake points; developing new award titles; detailed liaison with employers and other stakeholders; exploiting existing overseas connections.

We will develop, redevelop and rationalise existing modules to allow graduate students to design bespoke programmes meeting their professional need i.e. a pick and mix approach. This will allow a pharmacy practice and pharmaceutical sciences crossover of learning. This is on going work and will generate some new graduate awards. We are in the process of appointing a postgraduate e-learning officer to facilitate more e-delivery of modules – this is favoured by students and employers as it means the student is away from the workplace for less time.

To assist us in meeting our challenges we will fund the creation of an integrated marketing strategy to promote all of our graduate education provision.

Impact and Importance

The Manchester Pharmacy School produces high quality research that impacts upon drug development and usage; patient safety and policy. Our research is applied to advance knowledge in our research field, but it is also applied when we teach our students whom we aim to inspire using not only our knowledge but our enthusiasm and professionalism; we believe in leadership through example. We produce high quality graduates that go onto influence the pharmacy profession and the pharmaceutical sciences. The Chief Pharmacist, Dr Keith Ridge, is a Manchester graduate and he and his team in the Department of Health and via Health Education England are driving change through the pharmacy profession.

“*Experiencing first hand the increasing importance of pharmacy in healthcare has inspired me. I value the variety of the profession, the endless opportunities and the positive impact it has on so many patients’ lives. My ambition is to become the best possible pharmacist that I can be.*”

Zoe Phillips 3rd year MPharm student

Pharmacists are often described as the ‘gatekeepers’ that protect patients from the misuse of medicines or as the ‘glue’ that holds care together when many professions are focusing on their ‘bit’ of a patient; the pharmacist knows that, in the centre of all the specialties, medicines need to be used properly so it is not surprising that patient safety is a theme that runs through many of our research programmes.

Improving prescribing in primary and secondary care – benefits to patient safety; medical training & pharmacist led medicines reconciliation

Research carried out at the Manchester Pharmacy School (MPS) has had a direct impact on patient safety by addressing the causes of prescription errors in both primary and secondary care. The EQUIP study has led to changes in the recommended design of in-patient prescription charts, a new national assessment of prescribing competence for all medical students in the UK and the employment of extra pharmacists at hospitals to carry out more training. Manchester’s involvement in a collaborative study into primary care found that pharmacists working in general practices can reduce the number of prescribing errors and improve patient safety. The findings have had a substantial influence on policy with changes in medical training being brought in based on the recommendations of the study.

Influences on Regulatory Policies and Industrial Practices

The Centre for Applied Pharmacokinetic Research (CAPKR), an independent, academic-led centre of excellence in research and training of pharmacokinetics has been highly influential by informing drug regulatory practice in Europe and the USA and by establishing and optimising industrial practices related to drug development, particularly those related to drug-drug interactions which are a frequent cause of morbidity and mortality. CAPKR’s work has also led to the commercial development and extensive use of simulation software tools for quantitative prediction of pharmacokinetics in order to improve patients’ safety.

Novel Biofilm Models for Biocide Safety and Preclinical Testing

In March 2013, the Chief Medical Officer Dame Sally Davies rated antibiotic resistance as a health ‘catastrophe’ that ranked alongside terrorism and climate change’. The work of our microbiology group is at the leading edge of developing new methods for assessing the risk of resistance selection by biocides. These methods have been used for risk-assessment by the ‘European Commission’s Scientific Committee on Consumer Safety’/ ‘Scientific Committee on Emerging and Newly Identified Health Risks and industry.

Community pharmacy: improving access to medicines and NHS service development

Research in the School has had, and continues to have, a direct impact on pharmacy policy and practice nationally. For a number of years the research team in the Manchester Pharmacy School has led the way in informing government and pharmacy organisations on the development and evaluation of NHS pharmaceutical services in England and Scotland. These initiatives include, pioneering work on the impact of prescription charges, and innovative national schemes for the provision of medicines for minor ailments and medicines use reviews. A good example which demonstrates the impact of our work is our innovative ‘Care@TheChemist’ scheme, the first of its kind anywhere, and now being delivered to several million patients in about 5000 community pharmacies in England and Scotland. We are keen to raise public awareness of key health issues and the role that the pharmacist can play in achieving and maintain good health.

In addition to all of this our staff also realize the importance of externality: our hard work and knowledge can also be used to promote change for the better by being in the right place at the right time. Some good examples of this would be: Professor Peter Noyce CBE who is the co-chair of the Modernising Pharmacy Careers Professional Board and Professor Kay Marshall is Deputy Chair of the Pharmacy Schools Council.

MPS staff serve on: editorial boards of approximately forty prestigious journals; national and international committees for example the Food Standards Agency, NICE, UK research funding councils; councils for learned societies such as the British Association for Psychopharmacology and the International Association for Radiation Research; educational advisors for example the NHS North West, Royal Pharmaceutical Society and Commonwealth Scholarship Commission.

Future Developments



Primary school children receiving their certificates at the end of their visit to Manchester Pharmacy School

Experts on change say that change takes place when one system is subject to 'unfreezing' before being 'frozen' again and in this state of flux between states there will be winners and losers. The Manchester Pharmacy School intends to be in the former category and seeks new opportunities before systems become set again. We recognise that good communication with all of our stakeholders will be essential for any of our initiatives to be successful. Our new management structure will facilitate communication internally to both staff and students so that we can keep people 'in the loop' and ensure their connectivity to the School. We will strengthen our links and build new ones with external stakeholders by ensuring that we have a voice on the new and emerging healthcare networks.

We are confident in what the future can offer, this confidence can be measured by the scale of the appointments we have made and will continue to make over the next twelve months. Our estates investment plan will ensure that the environment in which we work is fit for the future.

We recognise our responsibility to our community and we will strive to increase our engagement so that we can make a difference and use our energy and expertise to improve the life chances of the public we serve.

Alignment with Faculty and University Priorities

Faculty Priority	MPS Priority	University Enabling Strategy (ES)
Excellence in Education and training for health professionals	<p>To provide excellent education and training for pharmacy undergraduates</p> <p>To review and develop our postgraduate taught programmes, continuing professional development (CPD), short course provision</p> <p>To develop our organisational culture and become an effective learning organisation which people want to join</p>	<p>ES 1 Quality people</p> <p>ES 2 World-class estate</p> <p>ES 5 A reputation for excellence</p> <p>ES 6 An international institution</p> <p>ES 7 Quality Processes</p>
World-leading research in medical and health sciences	<p>To undertake world leading research in pharmaceutical sciences and pharmacy practice</p> <p>To develop our organisational culture and become an effective learning organisation which people want to join</p>	<p>ES 1 Quality people</p> <p>ES 2 World-class estate</p> <p>ES 3 Managing information</p> <p>ES 4 Internationally competitive funding</p> <p>ES 5 A reputation for excellence</p> <p>ES 6 An international institution</p> <p>ES 7 Quality Processes</p> <p>ES 8 Environmental sustainability</p>
Social responsibility	To facilitate staff and student engagement in activities that demonstrate the School's commitment to social responsibility	<p>ES 2 World-class estate</p> <p>ES 8 Environmental sustainability</p>

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