Final

strategy&

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The British Pharmacological Society

Pharmacology education and employment pathways

pwc

Contents

1. Introduction

Introduction

The British Pharmacology Society (BPS) commissioned PwC to assess available data on the educational and career pathways of pharmacologists. Where possible, we have put ourselves in the position of a prospective student or graduate considering future education or careers in pharmacology, the work has therefore focussed on publically available data only.

The scope of the assessment focusses on four main stages:

- Undergraduate education;
- Postgraduate education;
- Internships, apprenticeships and work experience; and
- Employment.

The bulk of the analysis draws upon 2015 data, as the latest available when the research was undertaken. This means that subsequent developments are not reflected.

It should also be noted some of the data collected is based on sampling. For example, the pharmacologist employment outcome data was obtained from LinkedIn based on a sample of 3,032 profiles. Whilst this information allows us to access previously unknown insights about pharmacologists in the UK, it is important to note two key limitations:

1. Because the data is obtained through a sampling approach it does not capture all pharmacologists in the UK; and
2. As individuals self-select whether to register on LinkedIn, there may be some bias within the sample population (e.g. by age groups or industry sector). Without knowing the extent of this potential bias, there is no way to control for it in the analysis.

We have structured our study based on the following pharmacology career points

Decision points	Data analysed
Undergraduate academia 	• Details on applications and acceptances onto pharmacology and related university courses, by course name and university as well as more broadly by gender and domicile of students from UCAS • Number of graduates of pharmacology programmes from HESA
Postgraduate academia 	• List of currently offered masters courses publicly available on UCAS • HEFCE's data on the number of entrants on postgraduate programmes by subject groupings
Internships, apprenticeships and work experience 	• Current apprenticeships offered within pharmacology • Internship and placement offerings listed on company websites • Work experience completed and listed on LinkedIn by pharmacologists • Company websites listings of graduate programmes
Employment 	• First jobs listed by pharmacologists on LinkedIn • Subsequent jobs listed by pharmacologists on LinkedIn • Office for National Statistics data on earnings by different occupation

2. Summary of key findings

Summary of key findings

Undergraduate studies

Key finding 1: The number of students studying pharmacology is growing quickly and other STEM subjects have also experienced strong growth.

- The number of undergraduate acceptances for pharmacology has grown at 4.1% per year since 2007. This compares favourably to the 3.2% average growth rate across all courses. As a result, 40% more students began a course in pharmacology in 2015, than in 2007. Whilst positive, other STEM courses have also achieved strong annual growth over this period including: neuroscience (14.5%) and biomedical sciences (9.3%), biology (6.1%) and pharmacy (0.2%).
- Pharmacology graduates ("qualifiers") have been growing at 4.2% a year since 2005/6. Typically the number of pharmacology graduates is around 30% higher than the number of course acceptances 3-4 years previously. This is likely to imply that pharmacology is a net recipient of students transferring in. It will also be affected by courses which specialise part way through a university career (e.g. natural sciences).
- Pharmacology is in high demand from students, there are 6.4 applicants per acceptance. This is at the top end of the range of 3.7-7.0 across other comparable subjects (including chemistry, biology, biomedical sciences, pharmacy, neuroscience).
- Whilst four universities have discontinued their pharmacology courses since 2011, three have started new courses. The three to begin new courses are all from the Russell Group (Birmingham, Exeter, Queen Mary University of London).

Key Finding 2: Pharmacology is attracting academically strong students, but they increasingly come from privileged backgrounds

- The bulk of pharmacology courses require students to have achieved A-Level results of BBB and above.
- The share of pharmacology acceptances from students in the highest socio-economic bracket grew from 22% in 2007 to 27% in 2014. This increase has come at the expense of students from middle and lower middle socio-economic groups.
- Anecdotally we have heard that there are rising numbers of unpaid internships in the sector which may contribute to the trend by deterring students from poorer backgrounds from applying.

Summary of key findings

Undergraduate and postgraduate studies

Key Finding 3: There are stark regional differences in where pharmacology applicants originate from

- Since Ulster University closed its pharmacology course in 2009, there has been a collapse in the number of applications fromstudents based in Northern Ireland. In 2007, pharmacology attracted 7.6 applications per 1,000 total UCAS applications in the region,by 2015 this had declined to just 1.0 per 1,000.
- Scotland has the highest rate of pharmacology applicants This may be linked to the greater profile of pharmacologists in themedical profession and the availability of courses. Applications rates are 14.7 per 1,000, around three times the UK average level.
- Students from London have the second highest application rates at 7.7 per 1,000, although this has dropped from 10.0 in 2007.

Key Finding 4: There appears to be significant growth in postgraduates studying pharmacology

- There is less granular data available at postgraduate level but figures show the number of postgraduate students studying pharmacology, pharmacy and toxicology has grown by approximately 6% a year since 2003-04, much faster than the average across all postgraduate subjects (3.1%).
- There has been a notable shift in the composition of postgraduate study, from taught to integrated masters. This may be due to the greater availability of student loans for the latter.

Summary of key findings

Work experience and employment

Key Finding 5: A deep dive assessment into the career outcomes of pharmacology graduates from Portsmouth and UCL show that a majority move into life sciences careers.

- We've performed a deep dive into the career outcomes for pharmacologists graduating from Portsmouth University (selected as it had the highest number of pharmacology student entries in 2015).
- These data suggest the majority of Portsmouth pharmacology graduates are moving on to careers in life sciences. In our sample
    - A higher share are employed at pharmaceutical companies (33%) than the all university average (26%).
    - More are working in non-academic life sciences research activities (12%) than the average (7%).
    - Fewer Portsmouth pharmacology graduates are pursuing careers in academia (7%) compared to the average (15%).
    - Slightly more Portsmouth graduates are working outside of life sciences than the average (34% against 29%).
- We reviewed the comparative figures for UCL and found a higher share of graduates working in academia (21%), whilst fewer work in the pharmaceutical industry (17%).

Key Finding 6: Large pharmaceutical companies are important in providing internships and industrial placements for pharmacologists.

- Within our LinkedIn sample, 45% of people listing summer internships on their CVs had done them at large pharmaceutical companies - far higher than the proportion who currently work at them (26%). Over 80% of industrial placements listed were at large pharmaceutical firms. However, we note that the sample size for this assessment was low – with few people recording these data on their profile.
- These figures relate to outcomes. We found limited resources or data relating to applications for work experience and placements. Many internships and placements will be managed at the university or individual level – so there is a lack of public data about what applications are made and to whom. We also found on-line resources like "rate my placement" very limited for pharmacology, with only a handful of pharmacology and pharmaceutical placements listed.
- Anecdotally we understand that smaller biotech companies are increasingly important for work experience and placements whilst the role of large pharmaceutical companies is diminishing.

Summary of key findings

Work experience and employment

Key finding 7: The first career step of over two-thirds of pharmacology graduates in our sample from LinkedIn is in a life sciences-related industry

- Our sample of pharmacologists obtained from LinkedIn identified over 3,000 pharmacology graduates in the UK. The majority of these (69%) select careers which are linked to life sciences (which we define as working at pharmaceuticals, medicine, private sector research, academia and consulting). The most common route is into pharmaceuticals where 24% of pharmacologists start their careers and 26% currently work. A further 18% move to academia and 10% to medicine.
- We recognise that LinkedIn does not provide a perfectly unbiased sample (there may be a greater propensity for it to be used by younger people and those in the private sector), but it provides important insights about the career models that some pharmacologists follow.
- From the perspective of a pharmacology student we found few on-line resources that helped to set out the possible career paths open to them.

3. Results from detailed analysis

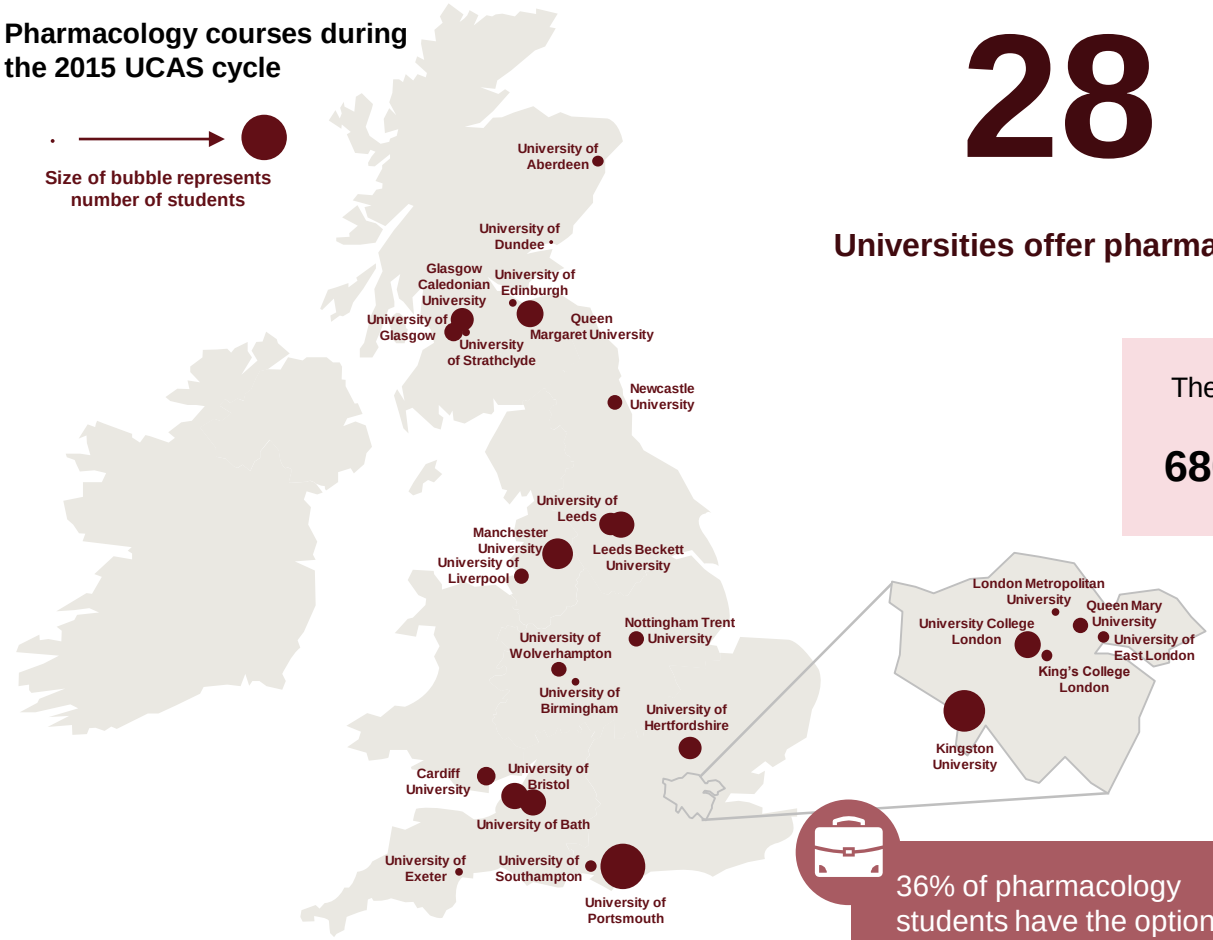
Undergraduate data – student numbers and characteristics

Using data collected primarily from UCAS and HESA, this section explores the state of undergraduate education for pharmacology in the UK. We examine data on pharmacology applicants, students and the universities that offer pharmacology courses. This section contains:

In 2015, there were 28 universities offering pharmacology undergraduate courses

Pharmacology courses during the 2015 UCAS cycle

Size of bubble represents number of students



28

Universities offer pharmacology

17

Different course titles

There were **532,265** total UCAS acceptances in the 2015 cycle, **680** of those were onto pharmacology courses

In the 2015 cycle of UCAS acceptances, the **University of Portsmouth and Kingston University** took the most students, 60 and 55 students respectively.

36% of pharmacology students have the option to do an industrial placement

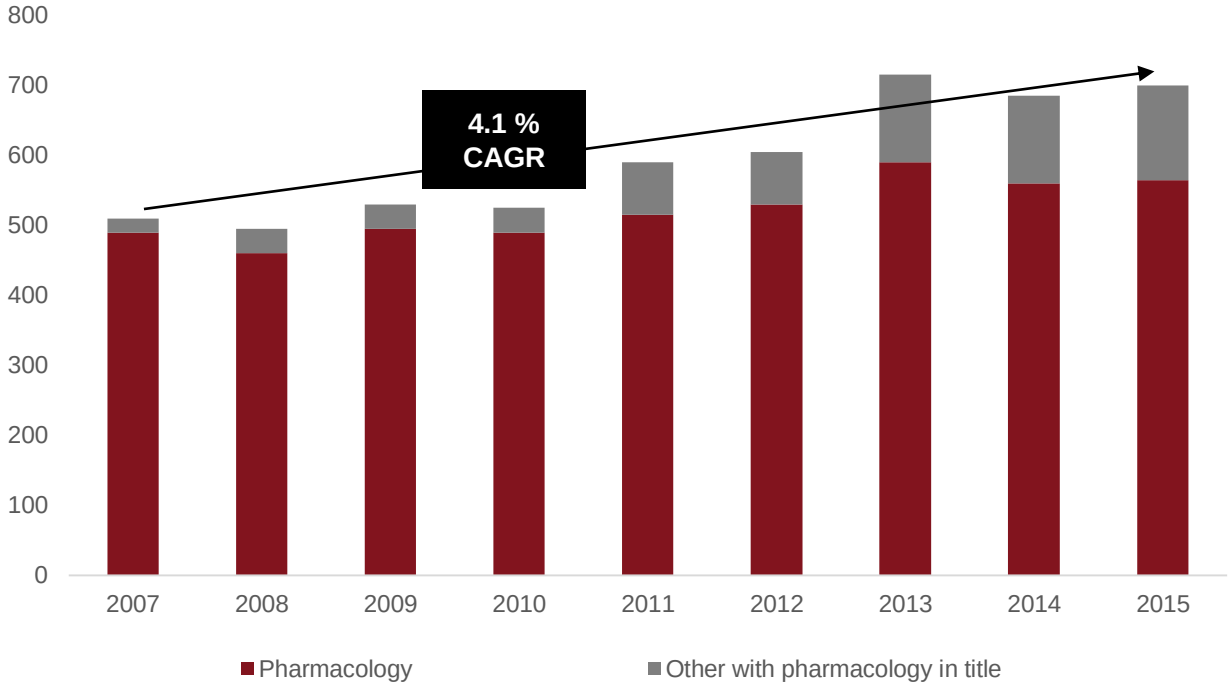
35% of pharmacology students have the option to study abroad

Source: UCAS, PwC analysis

The number of pharmacology students has grown by 4.1% annually since 2007, and the composition has shifted towards applied and medical courses, although these remain small

This chart shows the number of undergraduate acceptances on pharmacology courses over time. Total pharmacology acceptances has been growing steadily at 4.1% a year since 2007. The distribution of students across different course names has changed slightly over these years. Medical pharmacology, applied pharmacology and biomedical science (pharmacology) programmes represent more students in 2015 than in 2007. They now account for 20% of pharmacology courses, from 3% in 2007. However pure pharmacology remains by far the most popular option.

Number of university acceptances in pharmacology programmes over time



CAGR (2007-2015) of acceptances by course titles

Pharmacology **1.8%**

Other with pharmacology in the title **27.5%**

Pure pharmacology used to account for almost 97% of students on pharmacology courses at university. In 2015, they accounted for 80%

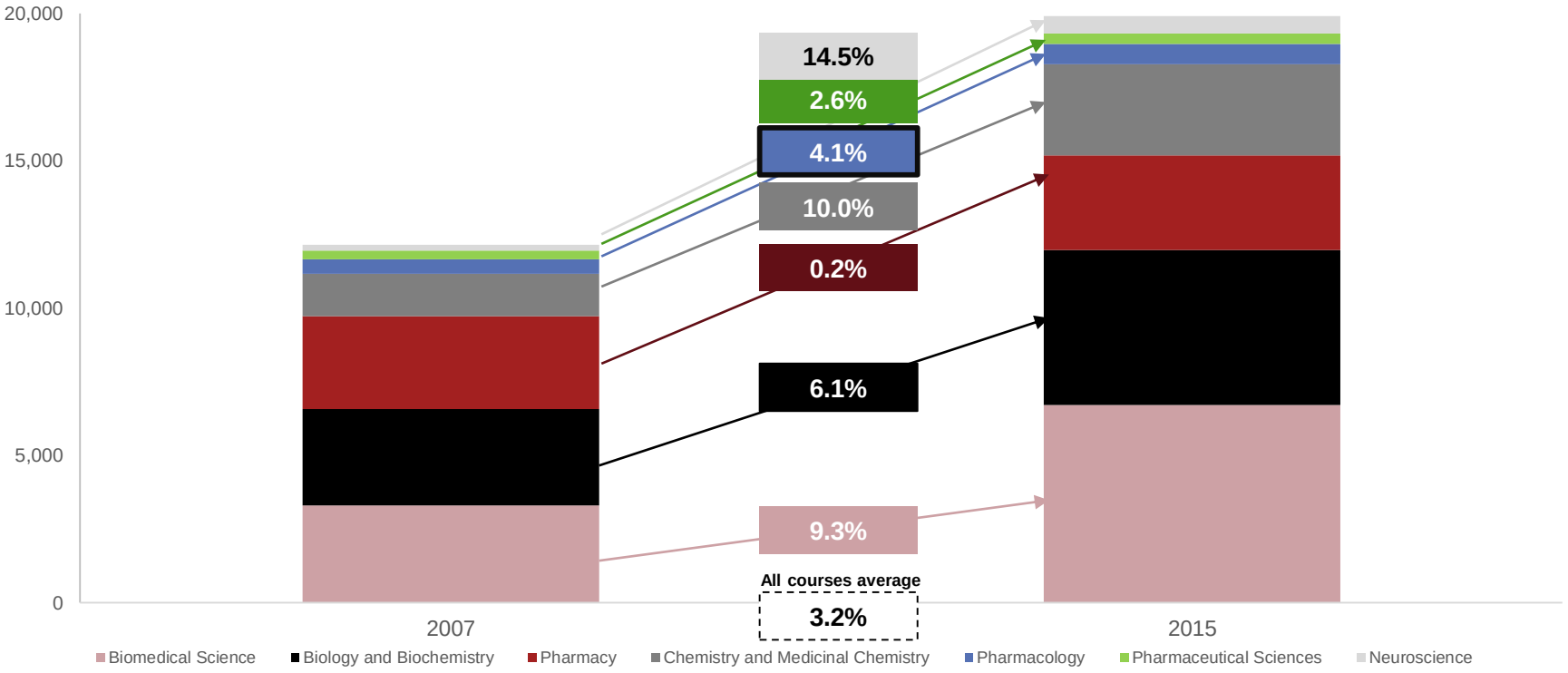
Other courses with pharmacology in the title include medical pharmacology, applied pharmacology and pharmacology in combination with other subjects.

Source: UCAS, PwC analysis

Pharmacology and other medicine-related courses have been growing quickly, particularly neuroscience and chemistry

The graph below indicates the number of UCAS acceptances onto pharmacology and other selected undergraduate programmes between 2007 and 2015. Acceptances on pharmacology undergraduate courses have been growing at 4.1% annually since 2007. Many other STEM and subjects aligned to medicine have also experienced growth. Neuroscience is growing the fastest, at 14.5% a year, though this is from a very low base. Biomedical science and chemistry courses are also growing rapidly while pharmacy programmes are facing stagnant growth and pharmaceutical science is also growing slowly.

Number of UCAS acceptances in pharmacology and selected subjects, 2007 and 2015, text box shows compound annual growth rate, UK



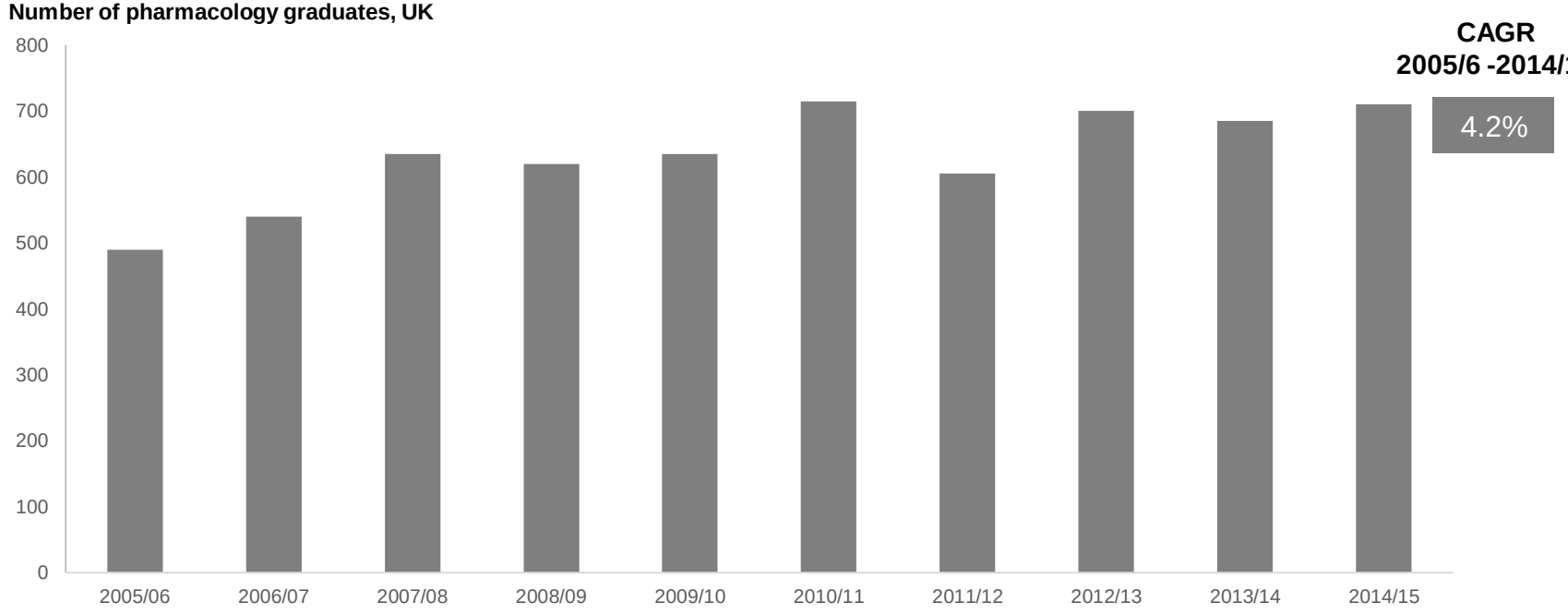
Source: UCAS, PwC analysis

The number of pharmacology graduates have increased at 4.2% per annum

This chart shows the number of pharmacology graduates over time. Pharmacology **graduates have been growing at 4.2% a year** since 2005/6, broadly in-line with growth in the number of students starting courses.

Typically the **number of pharmacology graduates in any graduation year exceeds the number of entrants** onto pharmacology programmes 3-4 years earlier by 100-200 students. This gap is likely to reflect students transferring onto pharmacology from other courses and students admitted on non-specialised courses like natural sciences and then focussing on pharmacology part way through the course.

Number of pharmacology graduates, UK



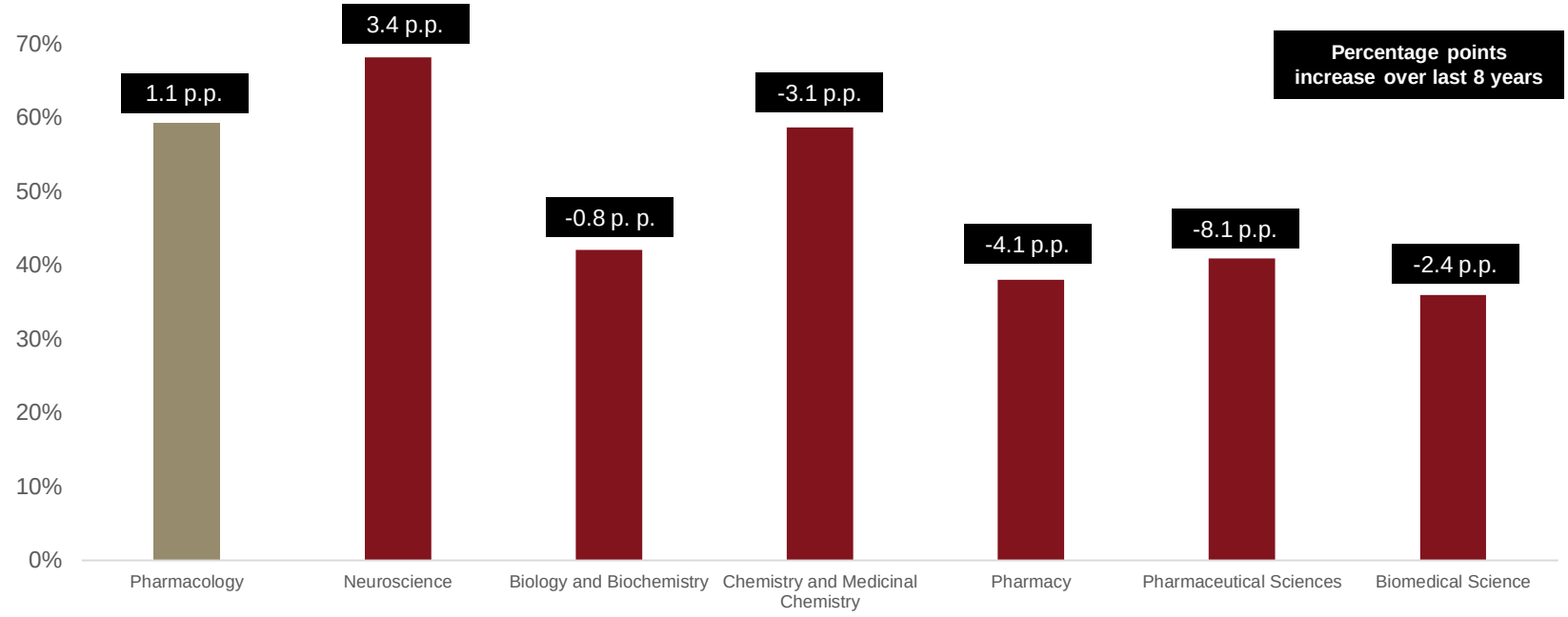
Source: HESA, PwC analysis

Approximately 58% of pharmacology applications come from female students

The graph below illustrates the share of applications from female candidates for pharmacology and other selected subjects.

- Approximately **58% of the students that apply to study pharmacology are female**. This sits in the middle of other subjects aligned to medicine. Neuroscience attracts the highest female share (65%) and biomedical science attracts the lowest (39%).
- Pharmacology's rate of female applicants have **remained relatively constant over the past 8 years** (growing only 1.1 percentage points as shown in the box above the bar). Other subjects have seen more significant change over this period. The largest change was experienced in pharmaceutical sciences where the share has fallen by 8.1 percentage points.

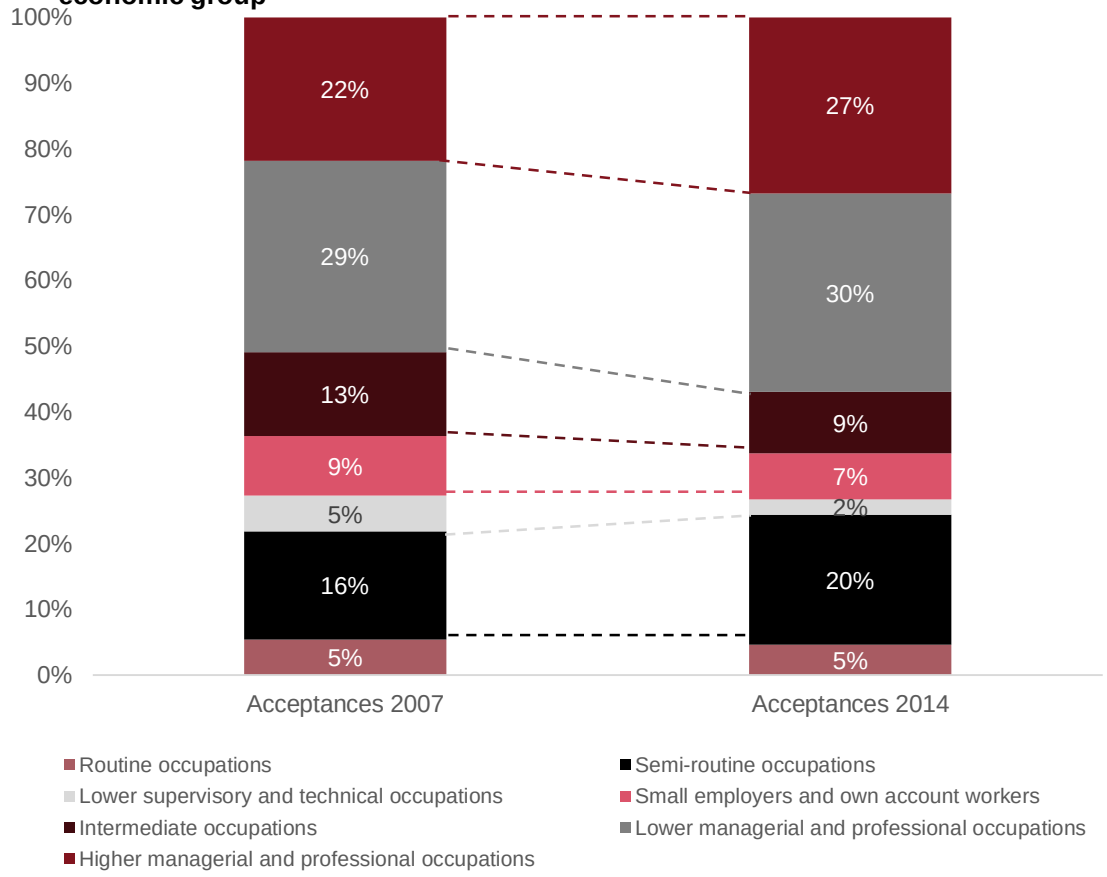
Share of female applicants (%) on pharmacology courses and selected subjects, UK



Source: UCAS, PwC analysis

The share of pharmacology students from the top and bottom socio-economic groups has risen at the expense of those in the middle

Number of acceptances in pharmacology in 2007 and 2014, by socio-economic group



UCAS classifies university applicants into socio-economic groups, as shown in the adjacent charts for acceptances onto pharmacology courses.

27% of students accepted onto pharmacology courses are from the highest socio-economic bracket. Up from 22% in 2007.

The share from the second highest socio-economic bracket has also risen.

Growth came at the expense of those in the middle and lower middle classes.

Only 5% of students accepted onto pharmacology courses are from the lowest socio-economic bracket.

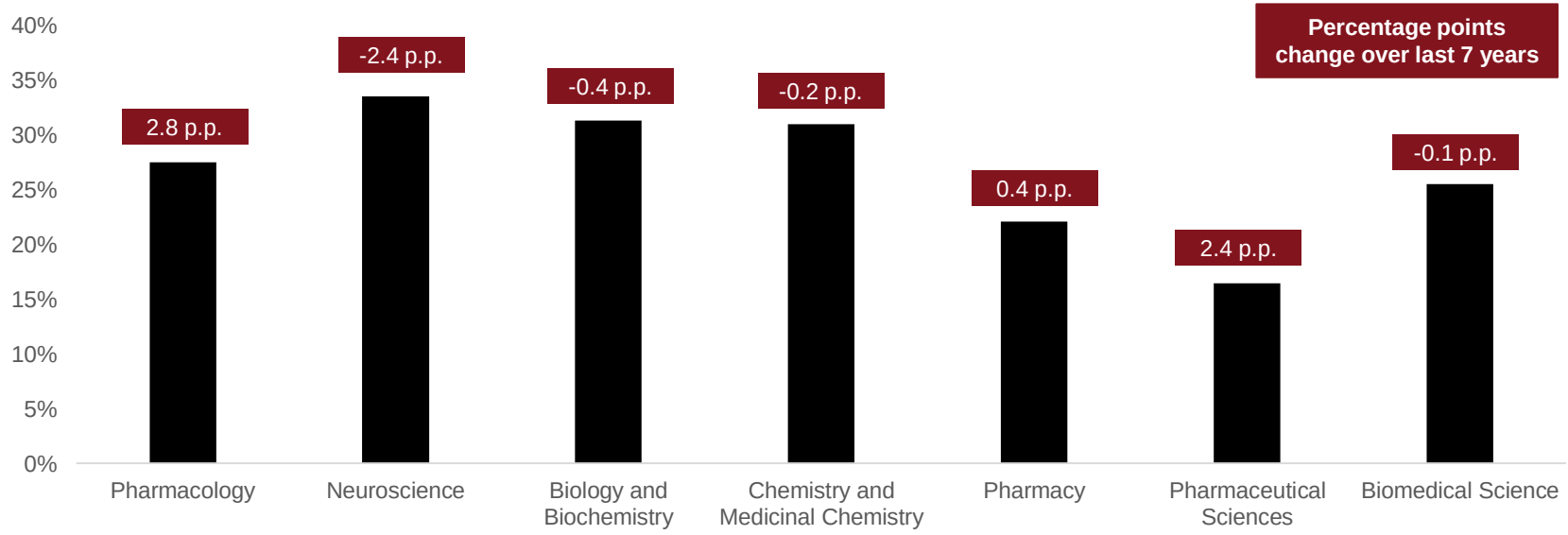
Source: UCAS, PwC analysis

The share of pharmacology applicants from the top socio-economic group has increased since 2007

Comparing the share of applicants from the top socio-economic group to other STEM and medicine based courses shows that pharmacology does not stand out from other subjects.

- Approximately **25% of the students that apply to study pharmacology are categorised in the top socio-economic bracket** "higher managerial and professional occupations." This sits in the middle of other subjects aligned to medicine. Neuroscience attracts the most applications from this group (32%) while pharmaceutical science attracts the least (13%).
- **Pharmacology's rate of top socio-economic bracket applicants has increased over the past 8 years,** growing by 2.8 percentage points, the biggest increase of the comparator subjects included.

Share of applicants from the top socioeconomic groups (%), 2014



Source: UCAS, PwC analysis

Pharmacology courses are in high demand: 6.4 students apply for every place

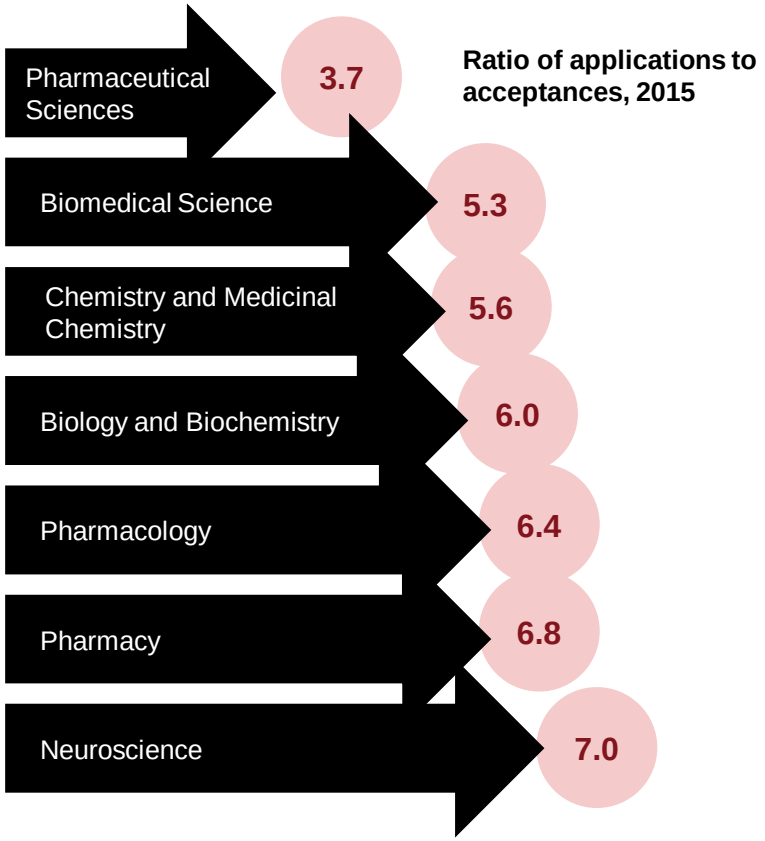
As a measure of the demand for pharmacology undergraduate programmes, we have considered the number of applications submitted to specific programmes per place awarded (measured as the number of acceptances onto that programme). Given that students will typically apply for five courses, the most meaningful way of judging whether this figure is high or not is through comparison with other subjects. Here pharmacology is towards the top of the range. Of the comparator courses, only neuroscience has a significantly higher application rate (7.0 per place against 6.4 in pharmacology).

Pharmacology applications per acceptance
(average 2007-2015)

6.4

Range of applications per acceptance for subjects aligned to medicine
(average 2007-2015)

3.7 – 7.0



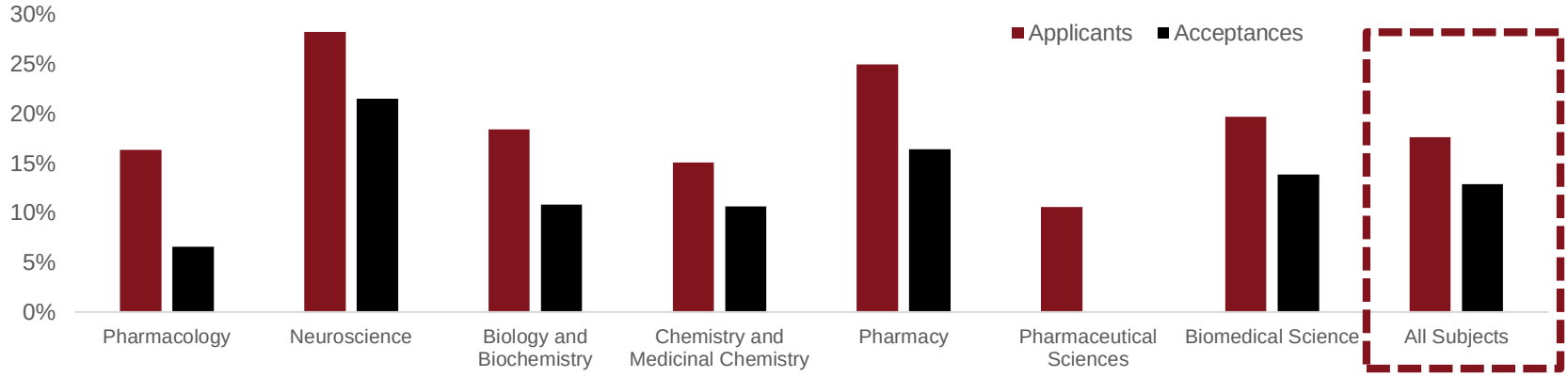
Source: UCAS, PwC analysis

The acceptance rate to pharmacology courses for non-UK domiciled students is almost half the all subject average

We compare non-UK domiciled student application and acceptance rates for Pharmacology against other subjects and the total below. It shows that:

- 16% of pharmacology applicants come from non-UK domiciled students, and these students make up only 7% of the acceptances onto pharmacology programmes.
- The acceptance rates to pharmacology for non-UK students is almost half the all subject average of 13%.
- Most of the comparator subjects we assess attract a greater share of applications and acceptances from non-UK domiciled students than pharmacology.

Percentage of UCAS applications and acceptances by non-UK domiciled students, 2015



Ratio of applications to acceptances	Pharmacology	Neuroscience	Biology and Biochemistry	Chemistry and Medicinal Chemistry	Pharmacy	Pharmaceutical Science	Biomedical Science	Total
UK students	5.8	6.4	5.6	5.4	6.4	3.7	5.0	5.5
Non-UK domiciled students	16.3	11.1	10.0	7.6	8.9	3.4	7.7	9.2

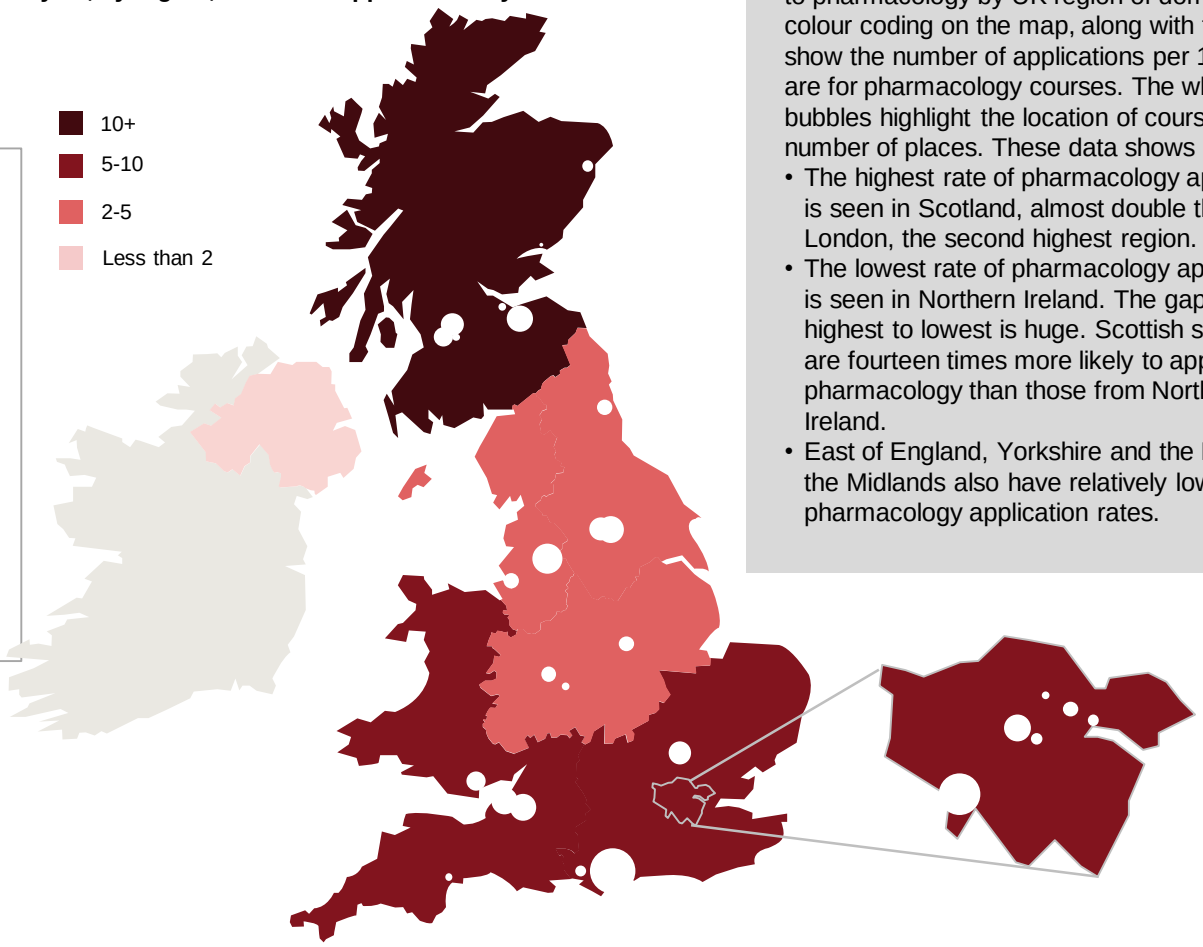
Source: UCAS, PwC analysis

Students from the Midlands, North of England and Northern Ireland have a much lower propensity to apply for pharmacology

Number of pharmacology applicants per 1,000 UCAS applicants and number of acceptances onto pharmacology programmes in 2015 cycle, by region, UK based applicants only

Number of Pharmacology applicants per 1000 UCAS applicants

Scotland	14.4
London	7.7
Wales	6.0
South West	5.6
South East	5.5
North West	4.6
West Midlands	4.2
East Midlands	4.2
North East	3.8
Yorkshire and The Humber	3.8
East of England	3.5
Northern Ireland	1.0



Number of acceptances

Size of bubble represents number of students

Source: UCAS, PwC analysis

These charts show the number of applications to pharmacology by UK region of domicile. The colour coding on the map, along with the table show the number of applications per 1,000 that are for pharmacology courses. The white bubbles highlight the location of courses and number of places. These data shows that:

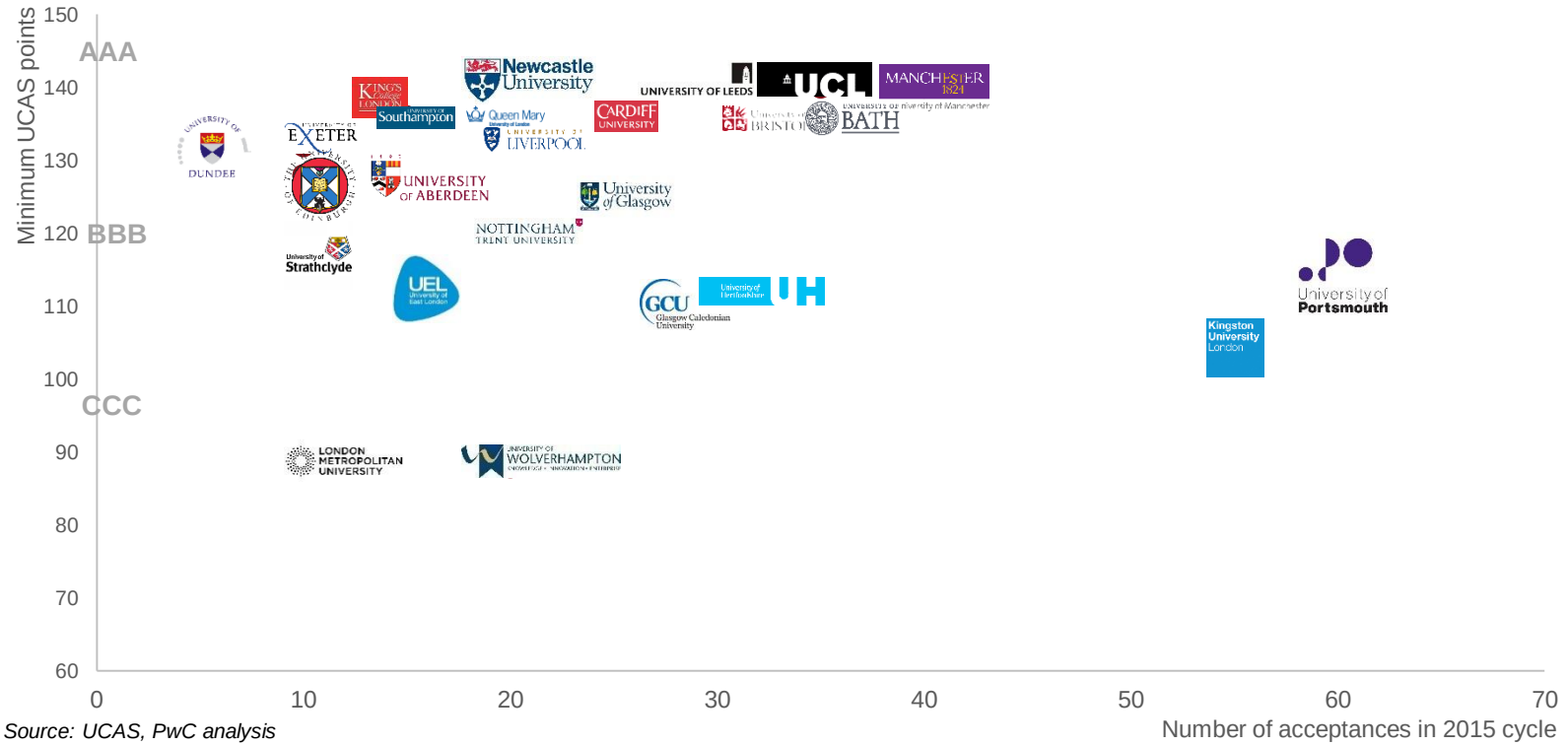
- The highest rate of pharmacology applicants is seen in Scotland, almost double that in London, the second highest region.
- The lowest rate of pharmacology applicants is seen in Northern Ireland. The gap from the highest to lowest is huge. Scottish students are fourteen times more likely to apply for pharmacology than those from Northern Ireland.
- East of England, Yorkshire and the North and the Midlands also have relatively low pharmacology application rates.

The bulk of pharmacology courses require entry grades of BBB or above

We explored the entry requirements for pharmacology undergraduate programs, shown in the chart below, mapped against student numbers. We found that:

- Minimum entry requirements for pharmacology undergraduate courses range from A level grades of CCD-BB at University of Wolverhampton and CCD at London Metropolitan to AAA-AAB at Leeds, Newcastle, Manchester and UCL.
- The majority of courses are smaller, clustered in the top left of the chart with high entry requirements and relatively low intake numbers.
- The largest courses (Kingston and Portsmouth) have entry requirements that are lower than most other courses at around BBC.

Pharmacology courses by minimum entry requirements and number of acceptances in 2015



Source: UCAS, PwC analysis

A deep dive on Portsmouth graduates shows high numbers going into the pharmaceutical industry…

As the largest pharmacology course in the UK, we performed a more detailed assessment of Portsmouth graduates, using our sample of pharmacologists from LinkedIn. We list the job titles of those graduates working in selected life sciences industries below and compare the share of workers by industry to the whole sample average and graduates from UCL. The analysis shows that:

- A higher share are employed at pharmaceutical companies (33%) than the average across all pharmacology graduates in our sample (26%).
- More are working in life sciences research activities (12%) than the average (7%).
- Fewer Portsmouth pharmacology graduates are pursuing careers in academia (7%) compared to the average (15%).
- Slightly more Portsmouth graduates are working outside of life sciences than the average (34% against 29%)

	Pharmaceuticals	Private sector research	Healthcare and Pharmacy	Academia	Other
Portsmouth	**33%**	**12%**	**15%**	**7%**	**34%**
UCL	**17%**	**6%**	**17%**	**21%**	**25%**

Current job titles of University of Portsmouth Pharmacology graduates, sample data

Academia	Private sector research	Pharmacies and Healthcare
Senior Lecturer in Forensic Toxicology	Lead CRA	Head of GDP Surgeries and Healthcare Services
Post-doctoral Research Fellow	Senior Medical Writer	Student Pharmacist
Postdoctoral Research Associate	Covance	Interim Theatre Manager
Associate Professor	Research Fellow	Pharmacy Manager
Postdoctoral Fellow	Laboratory Technician	Pre-registration pharmacist
Senior Project Manager	Field-based Senior Clinical	Clinical Director for Pharmacy
Regulatory Manager Pharmaceuticals	Research Associate (freelance)	Locum Pharmacist
Head of Pharmacology Division	Safety Data Coordinator	Locum Pharmacist
	Senior CRA	Radiopharmaceutical Production Technologist
	Postdoctoral Researcher	Cardiothoracic Critical Care Lead Pharmacist
	Clinical Research Associate	Senior Clinical Biochemist
	Senior Regulatory Affairs Officer	Pharmacist
	Principal Toxicologist	Respiratory Pharmacist
	Account Director	Clinical Trials Assistant
	Senior Global Regulatory Affairs Specialist	Major Trauma Auditor
		National Quality Pharmacist
		Healthcare Advisor

Pharmaceutical companies
Senior Regional Submission Specialist
NHS Value Solutions Manager
Cardiovascular and Metabolic Disease Analyst
Pharmacovigilance Scientist
Brand Manager Ophthalmology
Clinical Research Scientist
Research Fellow
VP Corporate Development
Project Manager – Global Drug Safety
Associate Director of Project Management
Clinical Programme Manager
Director of Export Markets
Clinical Research Associate
Key Account Manager
Clinical Data Scientist (Phase II-IV)
Director, R&D Strategy Portfolio
Marketing Manager
Non-executive Director
Economics and Reimbursement Scheme Lead
Director
National Value and Access Manager
Senior Recruitment Specialist
Senior Regulatory Affairs Associate
Senior Quality Assurance Officer
Associate Scientist
Global Asset Lead
Risk Management Product Lead
Research Scientist
Clinical Project Coordinator
Clinical Trials Assistant
Clinical Study Manager
Global Study Manager
Senior International Auditor
Area Business Manager
Regulatory Associate
Formulation Scientist
Senior Pharmacovigilance Regulations Specialist
Marketing Director

Source: LinkedIn, sample size =181

Postgraduates

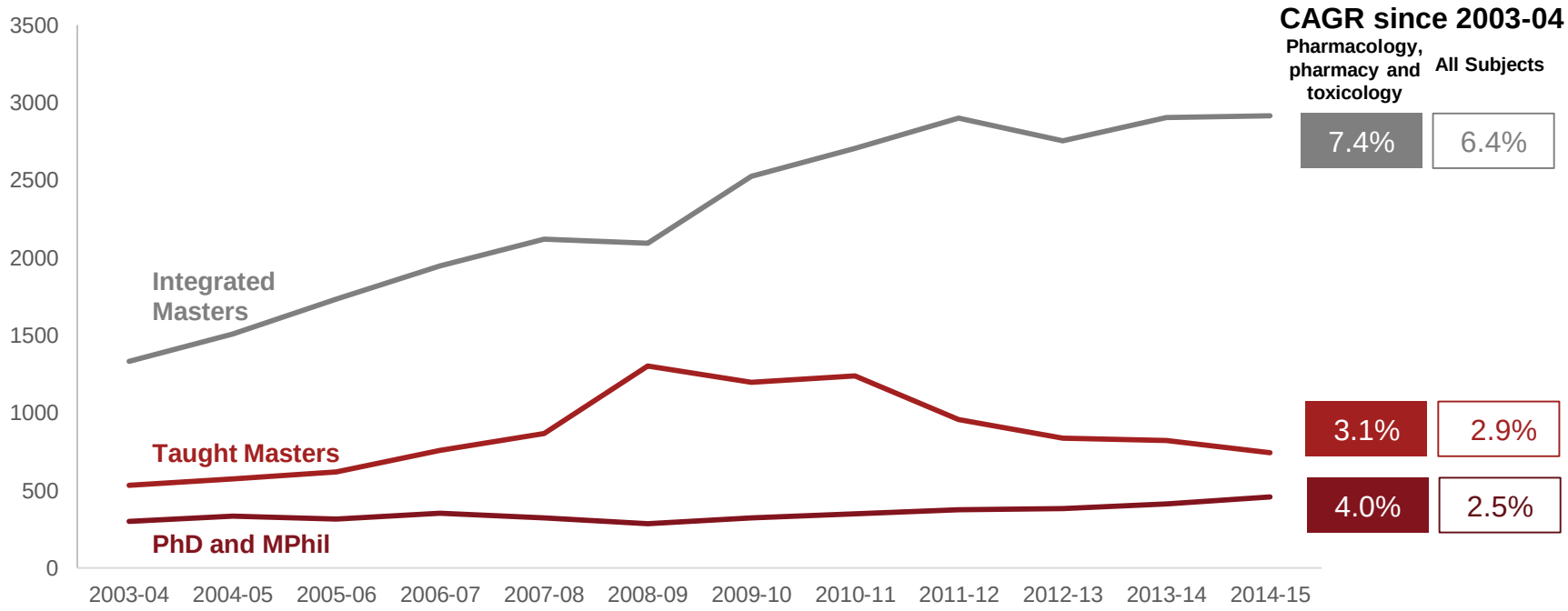
We identify the postgraduate pharmacology growth in this section.

Postgraduate numbers in pharmacology, toxicology and pharmacy are increasing

The graph below presents the number of entrants onto masters level and PhD level postgraduate courses. The data includes pharmacology, pharmacy and toxicology. It shows that:

- The number of postgraduate students in these courses has grown by 6% a year since 2003-04, much faster than the average across all subjects (3.1%) and faster than the growth in undergraduate pharmacology entrants.
- The composition of postgraduate students have changed significantly. Research based postgraduate courses such as PhD and MPhil programmes have been growing at 4% a year. Taught masters have grown modestly, but have been in decline since 2008.
- Integrated masters programmes have been growing very quickly, at 7.4% a year.

Number of entrants onto pharmacology, toxicology and pharmacy postgraduate courses, UK



Source: HESA

Further education (non-university)

In this section, we explore the data on pathways into pharmacology for students who are seeking an alternative to university.
We reviewed several sources but found very little information on non-university options for prospective pharmacologists. We include data on:

We also reviewed, but did not identify, available courses relating to pharmacology in the areas of NVQs, GNVQs and foundation degrees.

Few diploma courses were identified in medical and biomedical sciences outside of university

We explored the education opportunities available to those who do not pursue undergraduate education in pharmacology in the form of diploma courses and foundation courses. Our review of the Skills Funding Agency's course list identified only a small number of courses with specific references to pharmacology in the course description or title.

Institution	Course	Description	Length	Location
North West Community Services Training Ltd	Medication Awareness	Providing ability to apply in practice: Standard health and safety precautions, care and support of the individual, basic Pharmacology, storage, understanding adverse reactions, side effects etc.	No data	Various Cities, North West, UK
City of Westminster College	Access to Higher Education Diploma in Pharmaceutical and Biomedical Science	An IT, Mathematics and Science course most suitable for students who wish to progress to degree level study in Pharmacy and Biomedical Sciences, Pharmaceutical Sciences, Pharmacology, Nutrition & Biochemistry.	36 weeks	London, UK
WJEC CBAC course offered at a number of HE institutions	Level 3 Diploma in Medical Science	The main purpose of this qualification is to provide learners with scientific knowledge and understanding, as well as practical skills that would support progression to a range of jobs within healthcare. We will cover the main areas of health, physiology and disease, as well as providing opportunities to study Pharmacology, physiological testing, clinical testing and medical research.	No data	Various Locations
South Essex College	Applied Science Level 3 Extended Diploma	Ideal for those interested in following a career in science, this course includes the fundamentals of science, working in the science industry, scientific investigations, scientific practical techniques, perceptions of science and using mathematical tools in science.	2 years	Basildon / Southend, UK
City and Islington College	Access to Higher Education Diploma in Medicine and Medical Biosciences	A course consisting of modules in anatomy, physiology, chemistry, physics etc. The course is aimed at mature students who lack to necessary qualifications to progress into medical bioscience degree subjects.	35 weeks	London

Source: Skills Funding Agency, data collected December 2016

And few pharmaceutical apprenticeships were listed on the official government webpage

We conducted a similar exercise to examine the apprenticeship offerings from pharmaceutical companies. Only a small number of openings were listed on the official government portal, as shown below. Taken together with the lack of further education training opportunities these imply that there are limited non-university pathways open to prospective Pharmacologists.

Company	Position	Location	Length
Sterling Pharmaceuticals Ltd	Business Administration Apprentice	Birmingham	18 months
Active Pharma Supplies Limited	Customer Service Apprenticeship	Leyland	1 year
Quantum Pharmaceuticals Ltd	Administration Assistant Apprentice	Newcastle	1 year
GlaxoSmithKline	Manufacturing Apprenticeship	Lancashire	3 years
GlaxoSmithKline	Pharmaceutical Technical Apprenticeship	Worthing	3 years
GlaxoSmithKline	Laboratory Science Apprenticeship	Various	NA
Morph Consultancy Ltd	Business Administration Apprentice	Worcester	1 year
Weston College	Apprentice Laboratory Science Technician	Weston-Super-Mare / Maidenhead	1 year

Source: https://www.findapprenticeship.service.gov.uk/apprenticeshipsearch data collected December 16 based on keyword search for "pharmaceutical"

Work experience, internships and graduate schemes

In this section, we review into the work experience and internships that pharmacologists undertake during their studies and the graduate opportunities that are available. The majority of this was informed by a sample of pharmacologists career data extracted from LinkedIn as well as employer websites. We include:

Some pharmaceutical companies offer summer placements as well as pre-university work experience

We sought to understand publically listed placements and internship opportunities for pharmacologists by reviewing the websites of the UK's largest pharmaceutical firms, which we have seen are the largest employers of pharmacologists.

The results, listed in the table below show that several placements are offered. Many were in technical or operations roles. We also reviewed on-line sources used by students such as "Rate My Placement" but searches for "pharmacology" yielded no results. Searches for "pharmaceutical" yielded just four results, including the GSK position noted below.

	Programme	Requirements	Location	Summer Placements	Pre-university work experience
GSK	Paid 12-month placements across different areas of business including R&D placements with lab-based and non-lab roles.	On track for a 2:1. Science degrees for R&D roles, Biomedical Science mentioned.	Various, UK		✓
AstraZeneca	Medimmune Placement – 11 different programmes with specific research areas such as Biopharmaceutical Development, Antibody Discovery and Bioinformatics	Specific to programme	Various, UK		
	Innovative Medicine and Early Development Programme – 12 month placement either in Bioscience stream or Synthetic Organic Chemistry Scheme	Undergraduate in Chemistry / Bioscience	UK and Sweden	✓	✓
Pfizer	Paid placements in Pharmaceutical Business, Diversified Business and Research & Development.	Currently studying science or business degree, including Pharmacology.	Kent / Sandwich / Surrey	✓	
Eli Lilly	Paid placements with day-to-day role in one the business functions: Marketing, Public Affairs and IT	No degree type specified, only soft skills.	Basingstoke / Liverpool		
Actavis	Year-long placements assisting and working alongside trained scientists either in Development or Quality Control	Life sciences degrees, relevant courses include Biomedical Sciences	Liverpool		

Source: Company websites, www.ratemyplacement.com data accessed December 2016

Large pharmaceutical company graduate schemes offer pharmacologists an entry point into a life sciences career

We also researched the details and requirements of graduate programmes offered by pharmaceutical companies based on their websites and listed the results in the table below. Most of the large companies offer either technical or operations based graduate roles.

	Programme	Length	Requirements	Location
GSK	Future Leaders Programme – Drug Design and Selection. Rotation scheme including roles such as "Drug Discovery Scientist"	3 years	2:1 or above, or masters degree in biological science, biology, biochemistry or chemistry	Stevenage, UK
	Future Leaders Programme – Product Development and Supply. Rotation through 3 areas: product development process, supply chain management and allied business areas.	3 years	PhD in pharmaceutical, bio or chemical science, biochemistry or drug discovery	Hertfordshire, UK / US
	Future Leaders Programme – R&D (Vaccines)	No data	PhD or post-doc in scientific field or masters in science and a business degree	Belgium / Italy / US
AstraZeneca	Graduate programme in Innovative Medicines and Early Development (IMED). A rotation programme with exposure to basic and applied scientific research.	3 years	Science Masters or undergraduate degree (2:1 or above)	USA / Sweden UK (Cambridge)
Novartis	Placements for graduates, part of Novartis' Future Talent Programme. Paid work experience within a technical, business or scientific role with potential for a permanent position.	1 year	Recent or upcoming graduate with keen focus in healthcare, business, marketing, sales, strategy or HR	Various, UK
Merck	Global Graduate Program. A rotation programme that combines experience of strategic management consulting projects with operational experience in pharmaceutical and life science industries.	2 years	Masters degree in science or engineering and interest/knowledge of business	USA and Germany
Pfizer	Graduate Future Leadership Programme, rotating through commercial activities (marketing, sales etc.)	2 years	Business or science degree, 2:1 or above. Interest in/passion for listed is "desired" but not "essential"	Surrey, UK

Source: Company websites, data accessed December 2016

Work experience information for pharmacologists is generally comprised of summer internships and industrial placement years

We also reviewed pharmacologists LinkedIn profiles to discern further trends in work experience and internships.

Whilst the data was very limited (most profiles did not appear to record work experience obtained prior to the first graduate role), there were two types of common work experience completed by pharmacologists during or just after university. The first are shorter roles completed during the summer and the second are year long internships, including industrial placements, often built into university courses.

Summer Internships

- Typically 2-4 months in length
- The most common roles are at large pharmaceutical companies or research placements at universities
- Only 29 short term placements were identified, of these 50% were at pharmaceutical companies and 24% in academia.
- The remaining roles included people working in pharmacy, private sector research and non life-sciences industries

Industrial Placements

- Typically 1 year in length
- The most common roles are at pharmaceutical companies, very occasionally longer internships in research firms and academia
- Only 16 identified in our sample
- 90% of roles identified were at pharmaceutical companies

Source: LinkedIn, PwC analysis

Employment pathways

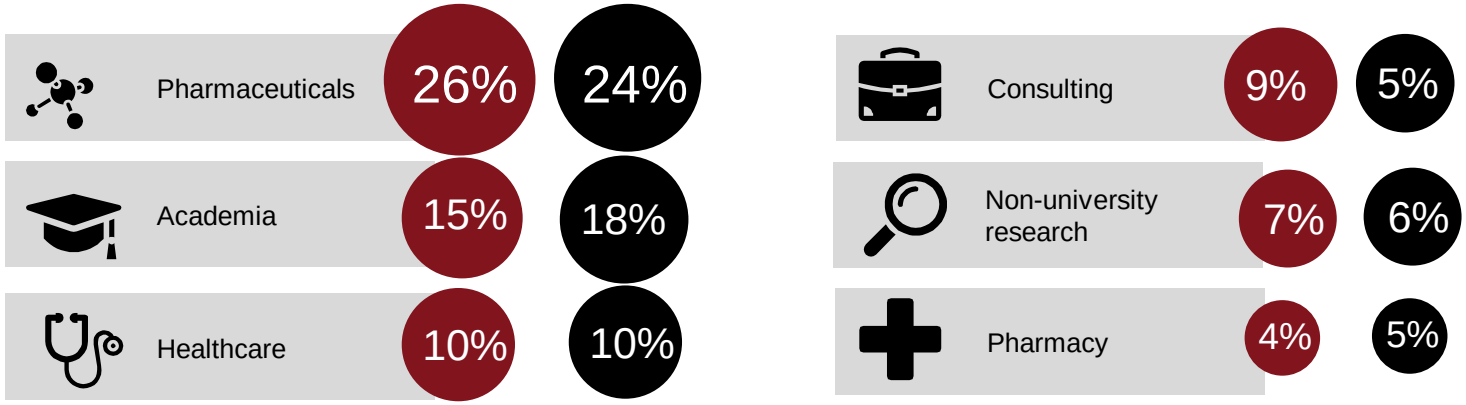
We use LinkedIn data to explore the career trajectories of a sample of pharmacologists (defined as those with an undergraduate or postgraduate degree in pharmacology. The LinkedIn sample consists of over 3,000 pharmacologists and was extracted using a pharmacology search term. This section includes:

Pharmacologists most often work in pharmaceutical companies and academia

We identified and grouped pharmacologists in our LinkedIn sample into industry groups to analyse the most common career pathways of pharmacologists. This showed that:

- Pharmacologists are frequently employed in pharmaceutical companies or academia. Other common career choices were to work in healthcare consulting and other general consulting as well as in the medical profession, pharmacies or non-university research firms.
- A similar pattern is seen for the first role taken by pharmacologists following graduation, and their current industry.
- For those not employed in a specific life sciences related role, common industries are law, recruitment and communications

Industry distribution of Pharmacologist's current job (red circle) and first job (black circle), sample data



Other: 29% of pharmacologists are currently working outside of the industries listed above and 31% began their career outside of these industries.

Source: LinkedIn, PwC analysis, sample size = 3032

[1] Percentages are calculated as a proportion of pharmacologists working in the specific industries of focus

Our industry definitions include the following large employers

Largest pharmaceutical companies
1. GSK
2. AstraZeneca
3. Roche
4. Richmond Pharmacology
5. Eli Lilly and Company

Largest employers in academia (excludes PhD students)
1. UCL
2. King's College London
3. University of Leeds
4. University of Liverpool
7. Kingston University

Largest employers in non-university research
1. Quintiles IMS
2. Covance
3. PPD (Pharmaceutical Product Development
4. ApconiX
5. Cancer Research UK

Largest employers in consulting
1. PwC
2. EY
3. IMS Health
4. KPMG
5. Deloitte

Largest employers in healthcare
1. Guys and St Thomas NHS Foundation Trust
2. St George's Healthcare Trust
3. Bart's Health NHS Trust
4. UCLH NHS Foundation Trust
5. King's college Hospital NHS Foundation Trust

Largest employers in pharmacy
1. Boots
2. Day Lewis Plc
3. Well Pharmacy
4. Kamsons Pharmacy
5. Speeds Hospital Pharmacy

Largest companies in "other" category
1. Barclays
2. Johnson & Johnson
3. Unilever
4. Sainsbury's
5. Wellcome Trust

The distribution of pharmacologists across companies is quite highly dispersed

We analysed a level deeper than the industry to understand how pharmacologists working in specific industries were dispersed across various companies.

Overall the deployment of UK pharmacologists was quite dispersed. Within the pharmaceuticals sector, only 27% of pharmacologists are employed in the 10 largest employers, with the distribution closely following the size of companies UK operations. There was a greater degree of dispersion in the other industry segments we considered.

Top ten companies within an industry by percentage of pharmacologists[1] employed, sample data

Largest pharmaceutical companies	Largest employers in academia, healthcare, consulting, research and pharmacy	Largest companies in "other" category
1. GSK	1. UCL	1. Barclays
2. AstraZeneca	2. King's College London	2. Johnson & Johnson
3. Roche	3. University of Leeds	3. Unilever
4. Richmond Pharmacology	4. University of Liverpool	4. Sainsbury's
5. Eli Lilly and Company	5. Quintiles IMS	5. Wellcome Trust
6. Pfizer	6. Covance	6. Syngenta
7. UCB Pharma	7. Kingston University	7. BBC
8. Novartis	8. University of Edinburgh	8. DiscoverRB
9. Amgen	9. Boots	9. Royal Bank of Scotland
10. Astellas Pharma	10. Imperial College London	10. Amazon
Share working in top ten 27%	**Share working in top ten 15%**	**Share working in top ten 3%**

Source: LinkedIn, PwC analysis, sample size = 3032

The data shows that many career progression paths for pharmacologists include a move into pharmaceuticals

As well as looking at the key employment destinations for pharmacologists we also used the data to get a sense of permeability across industries. The data below shows the likelihood of pharmacologists from our sample switching industries for their second role, The key themes are that:

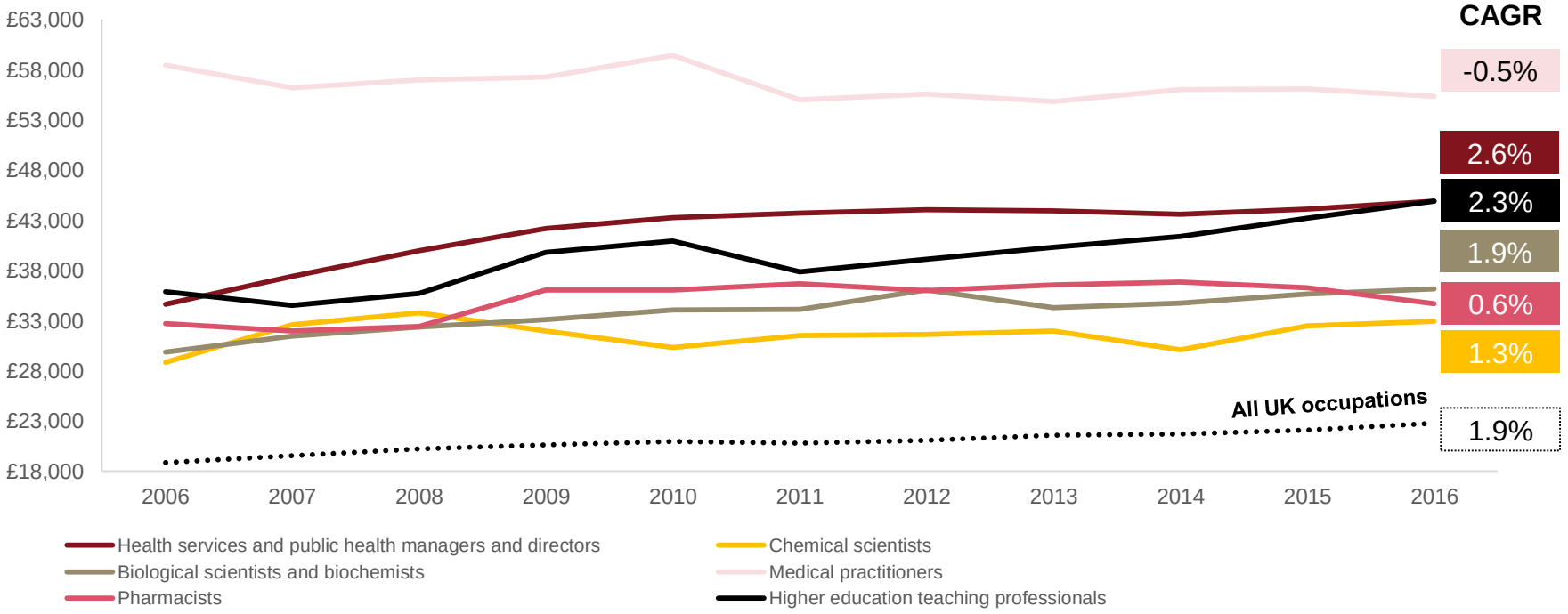
- There is a common second job movement from scientific research, pharmacy and to a lesser extent academia and consulting, intothe pharmaceutical industry.
- When pharmacologists start work in pharmaceuticals, relatively few move to a different life science related sector in their second job.
- The only area with little permeability into pharmaceuticals is found amongst healthcare professionals.

1st Job	2nd Job		1st Job	2nd Job	
 Pharmaceuticals	Pharmaceuticals	64%	 Consulting	Consulting	41%
	Research	7%		Pharmaceuticals	15%
	Consulting	5%		Research	15%
	Other	24%		Other	33%
 Academia	Academia	40%	 Scientific research (non-university)	Research	30%
	Pharmaceuticals	16%		Pharmaceuticals	30%
	Research	6%		Academia	13%
	Other	37%		Other	28%
 Healthcare	Healthcare	47%	 Pharmacy	Pharmacy	30%
	Academia	15%		Pharmaceuticals	30%
	Research	6%		Healthcare	13%
	Other	32%		Other	28%

Pharmacology-related occupations can offer relatively high salaries

Whilst pharmacology careers do not map perfectly to pay data collected by the Office for National Statistics, the data below shows that many pharmacologist jobs attract relatively high salaries. Medical practitioners, health managers and higher education professionals are paid significantly above the UK median wage.

Median annual earnings (£) by pharmacology-related occupation, 2006-2016, all employment types



Source: Annual Survey of Hours and Earnings, ONS

Appendix A: Selected anonymised career case studies

Selected case studies (1/5)

Case studies of early careers in pharmaceuticals

Profile	Education	Work Experience	First Job	Current Job
Male, Surrey, Age 20-25	BSc Biomedical Science, UK university, 2016	Industrial Placement Year, Large pharma company (2014-15) Summer Intern, Clinical supplies company (13', 14')	Clinical Pharmacology Technical Associate, Large pharma company (Jun 2016 – Present)	As before
Female, Liverpool, Age 25-30	BSc Medicinal Chemistry and Pharmacology, Russell Group university, 2011	Retail and management experience, Household name retail companies (2011)	Quality Control Scientist, Small pharma company (Nov 2011 – Aug 2012)	Biotech Development Scientist, Large pharma company (Feb 2015 – Present)
Female, Surrey, Age 30-35	MSc Pharmaceutical Medicine, Russell Group university BSc Pharmacology, Russell Group university	None listed	Outcomes Support Manager, Large pharma company(Aug 2008 – Jul 2011)	Healthcare Brand Lead, Large pharma company (March 2016 – Present)
Female, Croydon, Age 20-25	BSc Pharmacology, Top 60 UK university, 2014	None listed	Interim Associate Business Analyst, Apex Healthcare Consulting (Nov 2014 – Mar 2015)	Clinical Trials Assistant, Richmond Pharmacology (Jul 2015 – Present)
Male, London, Age 30-35	PhD Physiological Modelling Russell group university, 2011 BEng Engineering, Russell Group university, 2007	None listed	Postdoctoral Fellow, Large pharma company (Jan 2010 – Oct 2011)	Manager, Clinical Pharmacology, Large pharma company (Oct 2011 – Present)

Source: LinkedIn, PwC analysis

Selected case studies (2/5)

Case studies of mature careers in pharmaceuticals

Profile	Education	Work Experience	First Job	Current Job
Female, London, Age 30-35	PhD Bio-pharmaceutics and formulation science, London-based Russell Group university, 2014 BSc Pharmacy, non-UK university, 2008	Pre formulation Research Intern, Medium-sized pharma company, Israel	Post Doc Clinical Pharmacology Scientist, London-based Russell Group university (March 2015 – Present)	Associate Clinical Pharmacology Scientist, Large pharma company (Nov 2015 – Present)
Male, Stevenage, Age 40-45	BSc Biology, Top 20 UK university, 1996	None listed	Clinical Data Manager, Large pharma company (Aug 1997 – Aug 1999)	Head of Clinical Data Management, Large pharma company (July 2016 – Present)
Male, Sussex, Age	PhD Clinical Sciences, Top 30 UK university, 1985 MBA, UK university, 1998	None listed	Senior Pharmacokinetic Pharmacologist, Large pharma company (Mar 1986 – Apr 1989)	Clinical Platforms Transformation Director, Large pharma company (Apr 2013 – Present)
Female, Cambridge, Age 35-40	MRes Neuroscience, Russell Group university, 2001. Bachelors unknown	None listed	Internal Medicine, Allergy and Respiratory, Large pharma company (Sep 2001 – Sep 2011)	Associate Principal, Large pharma company (2016 – Present)
Female, London, Age 55-60	PhD Pharmaceutical Sciences, non-UK university, 1984	None listed	Clinical Research Assistant in Endocrinology and Oncology, R&D	VP – Gastroenterology, Medium-sized pharma company (Jun 2014 – Present)

Source: LinkedIn, PwC analysis

Selected case studies (3/5)

Case studies of pharmacology careers in academia

Profile	Education	Work Experience	First Job	Current Job
Male, Nottingham, Age 40-45	PhD Molecular Pharmacology, Top 30 UK university, 1997 BSc Medical Biochemistry, Top 15 UK university, 1994	Industrial Trainee, Agrochemicals business (1992-93)	Senior Scientist, Vascular Biology, Large pharma company(1997-1999)	Professor of Molecular Pharmacology and Drug Discovery, Russel Group university (2014 –
Male, London, Age 45-50	PhD Cell Physiology, Russell group university, 1995 BSc Biochemistry with Physiology, London-based Russell Group university, 1991	None listed	Post-doc, Department of Pharmacology, Russell Group university (1995-1997)	Associate Professor in Physiology and Pharmacology, UK university (Feb 2016 –
Female, Oxford Age 45-50	PhD Enzymology – Biochemical Engineering, non-UK university MSc Modelling and Simulation in PKPD, Russell Group university	None listed	Post Doctoral Research Fellow, non-UK university research centre	Network Pharmacology Drug Discovery Project Leader, small pharma company (July 2012-
Female, London, Age 30-35	PhD Genetics, Russell Group university, 2010 BSc Pharmacology, Top 50 UK university, 2003	Research Assistant, Small research institute (2004-2006)	Research Associate, London-based Russell Group university (Apr 2010 – Jul 2011)	Senior Research Associate (Department of Practice and Policy), London-based Russel group university (Feb 2014 –
Female, Preston, Age 30-35	PhD Immunopharmacology, Irish university, 2009	Intern, Russell group university School of Pharmacy (Jun – Sep 2003)	Pharmacist Locum, (2008-2009) – also later a Pharmacist	Lecturer in Pharmacology, UK university (Sep 2012 –

Source: LinkedIn, PwC analysis

Selected case studies (4/5)

Case studies of pharmacology careers in healthcare

Profile	Education	Work Experience	First Job	Current Job
Female, London, Age unknown	BSN Nursing Science, non-UK university	None Listed	Staff Nurse, an NHS Trust (2007-2009)	Clinical Operations and Training Manager, Medium-sized pharma company (Sep 2014 –
Male, London, Age 30-35	MSc Medical Education, London-based Russell group university, 2015 MBBS Surgery, as above, 2009 BSc Medical Science with Pharmacology, as above, 2006	None Listed	Academic Clinical Fellow in Clinical Pharmacology, an NHS Trust (Aug 2011 – Oct 2014)	Clinical Pharmacologist, an NHS trust (Oct 2015 –

Case studies of pharmacology careers in pharmacy

Profile	Education	Work Experience	First Job	Current Job
Male, Liverpool, Age 35-40	PhD Cardiovascular Pharmacology, Russel group university, 2009 MPharm, Russell group university, 2004	Pharmacy Assistant, Large pharmacy (1997 – 2004)	Preregistration Pharmacist, Large pharmacy (Jul 2004 – Jul 2005)	Senior Lecturer, UK university (Feb 2009 –
Male, Glasgow, Age 25-30	MSc Pharmacology, UK university, 2014 PharmD Pharmacy, non-UK university, 2011	None Listed	Pharmacist, Medium-sized pharmacy(May 2012 – Aug 2013)	Principal, non-UK university (Sep 2015 -

Source: LinkedIn, PwC analysis

Selected case studies (5/5)

Case studies of pharmacology careers in consulting

Profile	Education	Work Experience	First Job	Current Job
Male, London, Age 20-25	MSc Experimental Therapeutics (Part time), Russel Group university, 2018 BSc Chemistry, Russell group university, 2014	Account Manager, software company (Apr 2014 – Jul 2015)	Business Development Manager, Data-driven consultancy (July 2015 – Nov 2015)	Head of Business Development and Marketing, Medium-sized pharma company(Oct 2016 -
Female, London, Age 25-30	BSc Pharmacology, Russell Group university, 2010	None listed	Analyst – Forensic and Dispute Services, Big four accountancy firm (Feb 2011 – Sep 2013)	Global Sanctions Regulatory Liaison Manager, Large UK bank (July 2015 –

Case studies of pharmacology careers in research

Profile	Education	Work Experience	First Job	Current Job
Female, Oldham, Age 35-40	MSc Clinical Research, Russel Group university, 2006 BA Natural Sciences, Russell Group university, 1998	None listed	Quality Control Manager and Site Supervisor, Small clinical trials organisation (Oct 1998 – Dec 2000)	Head of Early Phase Unit, Research institute (May 2015 –
Male, London, Age 25-30	MSc Biochemical Pharmacology, London-based Russel Group university, 2014 BSc Pharmacology, Biomedical Science, as above, 2010	Research Assistant, German pharma company (2008-2009)	PhD Research Scientist – Biochemical Pharmacology, Large pharma company and research institute (2010-2013)	Global Client Services Manager, Life sciences recruitment agency (Dec 2015 –

Source: LinkedIn, PwC analysis

Appendix B: Undergraduate course list

Full undergraduate pharmacology course list (1/2)

Course details and composition for all undergraduate pharmacology programmes (entry requirements, offerings, length, etc.)

		Course name	Entry Requirements	Industrial Placement[1]	Study Abroad[1]	Integrated Masters[1]	Length
The University of Aberdeen	BSc	Pharmacology	ABB				4 Years
The University of Aberdeen	MSci	Pharmacology with Industrial Placement	ABB	✓		✓	5 Years
The University of Aberdeen	BSc	Biomedical Science (Pharmacology)	ABB				4 Years
The University of Aberdeen	MSci	Biomedical Science (Pharmacology) with Industrial Placement	ABB	✓		✓	5 Years
University of Bath	BSc	Pharmacology	AAB				3 Years
University of Bath	MPharmacol	Pharmacology	AAB	✓		✓	4 Years
University of Birmingham	BSc	Chemistry with Pharmacology	ABB				3 Years
University of Birmingham	MSci	Chemistry with Pharmacology	AAB			✓	4 Years
University of Bristol	BSc	Pharmacology	AAB				3 Years
University of Bristol	MSci	Pharmacology with Study in Industry	AAB	✓		✓	4 Years
Cardiff University	BSc	Medical Pharmacology	AAB				3 Years
Cardiff University	BSc	Medical Pharmacology (Science Route)	AAB				3 Years
Cardiff University	BSc	Medical Pharmacology (Medical Route)	AAB				3 Years
University of Dundee	BSc	Pharmacology (4 year Hons)	ABB-AAB	✓	✓		4 Years
University of East London	BSc	Pharmacology	112 points	✓			3 Years/4 Years with placement
The University of Edinburgh	BSc	Pharmacology	ABB		✓		4 Years
The University of Edinburgh	BSc	Biological Sciences (Pharmacology)	ABB		✓		4 Years
University of Exeter	BSc	Medical Sciences (Pharmacology)	AAB-ABB				3 Years
University of Exeter	BSc	Medical Sciences (Pharmacology) w Professional Training Year (4yrs)	AAB-ABB	✓			4 Years
University of Glasgow	BSc	Pharmacology	BBB-AAB				4 Years
Glasgow Caledonian University	BSc	Pharmacology	BCC	✓		✓	4 Years
University of Hertfordshire	BSc	Pharmacology	112 points	✓	✓		3 Years/4 Years with placement
University of Hertfordshire	BSc	Pharmacology with a year in Europe	112 points	✓	✓		4 Years
University of Hertfordshire	BSc	Pharmacology with a year in North America	112 points	✓	✓		4 Years
University of Hertfordshire	BSc	Pharmacology (with a Year Abroad)	112 points	✓	✓		4 Years
King's College London	BSc/MSci	Pharmacology (3 years or 4-year sandwich)	AAB	✓	✓	✓	3 Years/4 Years with placement
King's College London	BSc/MSci	Pharmacology	AAB	✓	✓	✓	3 Years/4 Years with placement

Source: UCAS, university websites

[1] Courses that include these as part of the curriculum or provide the option for students to extend their course to include this element

Full undergraduate pharmacology course list (2/2)

Course details and composition for all undergraduate pharmacology programmes (entry requirements, offerings, length, etc.)

		Course name	Entry Requirements	Industrial Placement[1]	Study Abroad[1]	Integrated Masters[1]	Length
Kingston University	BSc	Pharmacology	104 points				4 Years
Kingston University	BSc	Pharmacology	104 points				4 Years
Kingston University	BSc	Pharmacology with Business	104 points				3 Years
Kingston University	BSc	Biochemistry and Pharmacology	104 points				
University of Leeds	BSc	Pharmacology	AAA-AAB	✓	✓		3 Years/4 Years
University of Leeds	MBiol	Pharmacology	AAA	✓	✓	✓	4 Years
The University of Liverpool	BSc	Pharmacology	ABB		✓		3 Years
London Metropolitan University	BSc	Pharmacology	CCD				3 Years
The University of Manchester	BSc	Pharmacology	AAA-AAB		✓		3 Years
The University of Manchester	BSc	Pharmacology with Industrial/Professional Experience (4 years)	AAA-AAB	✓	✓		4 Years
The University of Manchester	BSc	Pharmacology with a Modern Language (4 years)	AAA-AAB		✓		4 Years
Newcastle University	BSc	Pharmacology	AAA-AAB	✓	✓		3 Years/4 Years with placement
Nottingham Trent University	BSc	Pharmacology	BBB				3 Years
Nottingham Trent University	BSc	Pharmacology	BBB	✓			4 Years
University of Portsmouth	BSc	Pharmacology	BBC				3 Years
Queen Margaret University	BSc	Applied Pharmacology	BB				3 Years/4 Years with Hons
Queen Margaret University		Associate - Applied Pharmacology (WLC)					
Queen Margaret University	BSc	Pharmacology and Innovative Therapeutics	AAB				3 Years
University of Southampton	BSc	Pharmacology (3 years or 4-year SW)	AAB	✓			3 Years/4 Years with placement
University of Southampton	BSc	Pharmacology	AAB	✓			3 Years/4 Years with placement
The University of Strathclyde	MSci	Pharmacology	BBB				5 Years
UCL (University College London)	BSc	Pharmacology	AAA-AAB				3 Years
UCL (University College London)	MSci	Pharmacology	AAA-AAB			✓	4 Years
University of Wolverhampton	BSc	Pharmacology	BB - CDD				3 Years

Source: UCAS, university websites

[1] Courses that include these as part of the curriculum or provide the option for students to extend their course to include this element

Appendix C: Postgraduate course list

There are 30 different pharmacology masters course titles currently advertised on UCAS

At postgraduate level, there are a wide variety of pharmacology programme titles listed by UCAS, specifically 30 different titles for masters programmes, listed below.

Course title	University
MSc Pharmacology (Taught)	Aston University
	University of Bedfordshire
	University of Brighton
	Glasgow Caledonian University
	University of Hertfordshire
	King's College London
	Nottingham Trent University
	University of Oxford
MSc Pharmacology (Research)	University of Birmingham
	University of Hertfordshire
	University of Oxford
MPhil Pharmacology (Research)	University of Cambridge
	University of Hertfordshire
	University of Liverpool
	University of Manchester
	University College London
MRes Pharmacology	King's College London
	Nottingham Trent University
MD Pharmacology (Research)	University of Liverpool
MSc Cancer Pharmacology	University of Bradford
	London Metropolitan University
MSc Clinical Pharmacology	University of Aberdeen
	University of Glasgow
	King's College London
MSc Pharmacology and Biotechnology	Sheffield Hallam University
MPhil Pharmacology and Physiology	Cardiff University

Course title	University
MSc Pharmacology and Therapeutics	National University of Ireland, Galway
MPhil Physiology and Pharmacology	University of Strathclyde
MRes Cell Physiology and Pharmacology	University of Leicester
MSc Drug Toxicology and Safety Pharmacology	University of Bradford
MSc Experimental Pharmacology and Therapeutics	UCL
MPhil Neuroscience, Physiology and Pharmacology	UCL
MSc Pharmaceutical Sciences (Pharmacological Sciences)	University of Wolverhampton
MSc Pharmacology and Drug Discovery	Coventry University
MPhil Pharmacology, Toxicology and Pharmacy	University of Westminster
MSc Physiology, Pharmacology and Neuroscience	University of Bristol
MSc Stratified Medicine and Pharmacological Innovation	University of Glasgow
MRes Integrative Cardiovascular and Metabolic Physiology and Pharmacology	University of Nottingham
MSc Applied Drug Discovery	University of Greenwich Medway School of Pharmacy
MPhil Biological Sciences	University of Cambridge
MPhil Biostatistics	University of Liverpool
MPhil Drug Design	UCL
MRes Drug Discovery	University of Aberdeen
MSc Drug Discovery Skills	King's College London
MSc NeuroPharmacology	National University of Ireland, Galway
	Nottingham Trent University
MSc Neuroscience	University of Edinburgh
MSc Pharmacogenetics and Stratified Medicine	UCL

Source: UCAS, PwC analysis