

Guest Editorial

Dr Samantha Hider

Research Institute for Primary Care and Health Sciences Keele University Haywood Academic Rheumatology Centre Midlands Partnership Foundation Trust

Beth Seale School of Medicine, Keele University

Dr Arani Vivekanatham School of Medicine, Keele University

Will Woods School of Medicine, Keele University

Professor Divya Chari School of Medicine, Keele University

Address for Correspondence:

Dr Samantha Hider Primary Care Centre Versus Arthritis Primary Care Sciences Keele University Staffordshire, ST5 5BG

Email: s.hider@keele.ac.uk

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Awareness and understanding of research are both increasingly important for medical undergraduates, with the General Medical Council's Outcomes for Graduates stating that medical students in the UK must be able to "*apply scientific method and approaches to medical research*". (1) Critical analysis and interpretation of research is key to applying the evidence-based medicine required for clinical practice. The impact of research on clinical practice is highlighted by NHS England: "*Research is vital in providing the evidence we need to transform services and improve outcomes*". (2) Studies highlight that undergraduate engagement in research helps develop transferable skills such as critical appraisal, (3) together with developing presentations and publications. (4) Furthermore, undertaking a research-oriented programme influences later academic career choice. (5)

However, engagement with research as an undergraduate is not without challenges. A recent systematic review examining global perspectives of medical students towards research showed that students expressed positive attitudes towards research, but identified barriers such as time, lack of mentorship and financial considerations. (6) Whilst intercalation remains a popular choice for many undergraduates, financial considerations and rising graduate entry schemes mean that there is increasing interest in shorter research placements. The reasons for this include to gain a "*taster*" of research and engage with CV enhancing activities such as research presentations and opportunities for publication.

With this in mind, in 2013 we established a summer research internship scheme to provide Keele medical undergraduates much needed opportunities to engage in research. Whilst organisations (e.g. Wellcome Trust and NIHR School for Primary Care) offer short research internships, the lack of funding support for short student projects presented a critical challenge, particularly for a young medical school such as Keele. We gained initial funding in 2013 from INSPIRE- a national scheme funded by the Academy of Medical Sciences and Wellcome Trust, which aims to engage medical undergraduates with research. (7) This enabled us to establish a summer research internship scheme (4-8 weeks) where students identify projects via a specially designed database and undertake their first piece of medical research. The projects are wide ranging-from laboratory, medical humanities and medical education to clinical research (both primary care and hospital based) and can be qualitative or quantitative. Other activities have included the development of the student medical research society, student-researcher networking events, and award of conference bursaries. Successful students present at an Annual Medical School Research Showcase featuring talks from eminent invited speakers, gaining experience of both poster and oral presentations. Critically, gaining external grant support enabled leverage of additional funding from the University, local medical charities such as the North Staffordshire Medical Institute, enabling the scheme to expand whilst ensuring financial sustainability; this is a key consideration in challenging financial times for universities. In 2014, we received funding support from the EPSRC Doctoral Training Centre for Regenerative Medicine, allowing students to undertake projects in collaboration with industrial partners. In 2018, we successfully bid for our third national INSPIRE award.

The scheme overall has been popular and highly successful, with 79 projects

funded to date, including in world leading Brasilian Dengue/Zika research groups. The experience is highly rated by students (Table 1) who emphasised the value of the opportunity to collaborate with academics, gain academic mentoring, learn new techniques and contemplate career opportunities not previously considered.



Figure 1: Student volunteers at the aspire research showcase

•	The studentship experience has been extremely
valu	able, as well as challenging at times. I have not only
lear	nt a lot about qualitative research but also a lot
abo	ut myself as a future medical professional.
•	the studentship provided me with an
opp	ortunity to use lab techniques and equipment that I
have	en't been able to use up until now.
•	the placement provided a valuable insight into
a re	search-based career

Table 1: Feedback from students undertaking summer studentships

There have been additional benefits for early career staff researchers in gaining supervision experience working within teams. Key outputs for students have included presentations, regionally and nationally, with several students winning conference prizes and more than ten students publishing their work.

Importantly it has been the start of a research career trajectory for students, with some students going on to intercalate (Case Study 1 & 2) and influencing career choices such as academic foundation posts (Case Study 2) and academic careers long term (Case Study 3).

Case Study 1: Will Woods (Studentship 2018)

I gained valuable insight into carrying out research and learnt advanced laboratory skills such as cryosectioning and immunostaining. I presented my data at the Keele ASPIRE conference and was awarded 1st poster prize. The time spent during this project was enjoyable and rewarding as well as providing multiple further research opportunities including a Neuroscience intercalated

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MPhil position in 2019. The ASPIRE scheme has given me invaluable experience, enabling me to explore and affirm my passion for neurology and skills to further a career in academia and strengthen my portfolio for future job applications.

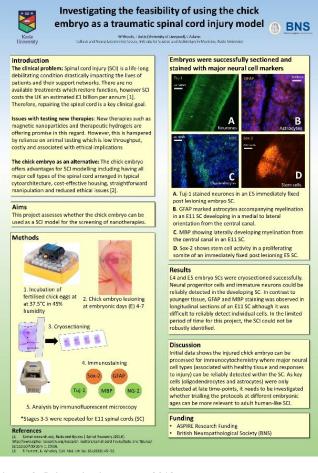


Figure 2: Prize winning poster 2018

Case Study 2: Beth Seale (Studentship 2015 and 2017)

The ASPIRE scheme provided excellent research experience and ultimately inspired me to undertake an intercalated MPhil (due to complete 2019). The rigorous research training undertaken has helped me decide on my future career path, and I am applying to the Academic Foundation Programme and hope to eventually combine clinical work and academia. I do not think I would have taken this path without the opportunities provide to me through the Studentship scheme.

Case Study 3: Arani Vivekanatham (Studentship 2013)

Undertaking a Keele ASPIRE studentship scheme in my 3rd year of medical school not only allowed me to develop invaluable research skills in a supportive environment, but also gave me an insight into life as a clinical academic early on in my career and led to opportunities (e.g. a poster tour presentation at the British Society of Rheumatology conference, an Arthritis Research UK essay prize and first author publication in a peer review journal), which has been instrumental in helping me to develop a clinical academic career in Rheumatology. I am now an NIHR Academic Clinical Fellow in Rheumatology and believe my successes to date have stemmed from the fantastic opportunities and supervision from the studentship scheme.

The development of the Keele Summer Internship Scheme, which funds medical undergraduates to undertake a short period of research has been highly successful. In addition, summer Internship Scheme, which funds medical undergraduates to undertake a short period of research. In addition to developing individual research skills via presentations and publications the scheme has had a clear impact on career aspirations and successes in building academic career trajectories, with students going on to do further research via intercalation and academic foundation posts. The long-term impacts of the scheme require further study.

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