

## Dr Hannah Batchelor BSc, PhD

Paediatric Formulations Research Fellow

Pharmacy and Therapeutics

### Contact details

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### About

Hannah Batchelor is a Formulations Research Fellow funded by the **Medicines for Children Research Network (<http://www.mcrn.org.uk/>)** to support high quality clinical research into medicines for children and young people, ensuring that medicines are both safe and effective. Her previous experience within pharmaceutical industry and the NHS brings extensive knowledge of drug delivery and the design of clinical trials. Hannah is passionate about involving children and young people in research and undertakes a lot of public engagement activity.

Her research focuses on the design and manipulation of medicines to create age appropriate drug formulations to maximise clinical efficacy in paediatric patients.

She is an expert in optimisation of drug formulations to maximise their biopharmaceutical performance.

### Qualifications

- Professional Certificate in Learning and Teaching in Higher Education (2003)
- PhD in Drug Delivery, University of London (2000)
- BSc in Pharmacology and Chemistry, University of Sheffield (1996)

### Biography

Hannah Batchelor graduated from a combined honours degree in Pharmacology and Chemistry at the University of Sheffield in 1996. She went on to work as a formulation scientist at Reckitt and Colman (now Reckitt Benckiser) primarily working on over the counter (OTC) medicines (Gaviscon® and Gaviscon Advance®).

In 2000 she was awarded her PhD in Drug Delivery from the University of London for a research project that explored the use of alginates in coating and protecting the oesophagus from gastric reflux.

She took up a lectureship in Pharmaceutics at Aston University immediately following her PhD where her research efforts focussed on targeted drug delivery systems and gastro-retentive therapies.

In 2008 she joined AstraZeneca as a senior scientist in biopharmaceutics where she worked on several drugs in development and lead the paediatric biopharmaceutics research group.

In 2011 she joined the R&D team at Heart of England NHS Foundation Trust as a Research Portfolio Manager to facilitate NHS lead researchers as well as develop collaborations with regional Universities.

### Teaching

Hannah Batchelor holds a postgraduate Certificate in Learning and Teaching and has experience in lecturing to undergraduate and postgraduate students. She has also published educational research papers.

She currently teaches on the **MSc Pharmaceutical Enterprise (<http://www.birmingham.ac.uk/students/courses/postgraduate/taught/med/pharmaceutical-enterprise.aspx>)** programme at the University of Birmingham.

### Postgraduate supervision

Hannah Batchelor is interested in supervising research projects in the following areas:

- The use of scientific principles to design or manipulate medicines for paediatric use
- Generation of understanding of paediatric physiology and biopharmaceutics to ensure clinical efficacy is maximised
- Development of in silico tools to predict drug performance in paediatric populations

If you are interesting in studying any of these subject areas please contact Hannah on the contact details above, or for any general doctoral research enquiries, please email: **[dr@contacts.bham.ac.uk](mailto:dr@contacts.bham.ac.uk) (mailto:dr@contacts.bham.ac.uk)**, or call +44 (0)121 414 5005.

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## Research

The main research themes are:

- Scientific understanding of the impact of manipulation of existing medicines for use in children

Including understanding and implications of manipulations of medicines with food and/or drink

Data driven stability/shelf-life of manipulated medicines

- Generation of understanding of paediatric biopharmaceutics to best design medicines for children

Including in vivo relevant dissolution testing

In vivo relevant drug release/diffusion from formulations and manipulated medicines

- Demonstrate the value of *in silico* modelling to predict the performance of medicines in children to minimise testing in patients where possible

Including a review of PK and bridging studies in paediatric populations

- Evaluation of the barriers to administration of paediatric medicines

Ongoing research projects include FormPIC: formulation preferences in children and TabPIC: Tablet size, shape and colour preferences in children.

## Other activities

Hannah Batchelor is a member of **West Midlands Medicines for Children Research Network (<http://www.meds4kids.nhs.uk/>)** (WM-MCRN) is one of six local research networks which forms the **Medicines for Children Research Network (<http://www.mcrn.org.uk/>)**, who are part of the **National Institute for Health Research, (<http://www.crncc.nihr.ac.uk/>)** which is dedicated to supporting research into many different aspects of health care.

Hannah is also the paediatric biopharmaceutics workstream leader within the European Paediatric Formulation Initiative ([www.eupfi.org](http://www.eupfi.org) (<http://www.eupfi.org/>)).

Outreach activities to talk to children and young people about medicines and clinical research are an important aspect of Hannah's work. She has visited schools, hospitals and community events.

Hannah has been invited to present at the following recent meetings

SMi 7th annual conference on Paediatric Clinical Trials, London 20-21<sup>st</sup> March 2013

**EuPFI 5th conference (<http://eupfi.org/Conference%202013%20/default.htm>)** 'Formulating Better Medicines for Children' 2013 on 18th and 19th September 2013 in Barcelona, Spain

**Global Research in Paediatrics (GRiP) (<http://www.grip-network.org/index.php/cms/en/Webinars>)** series of "Meet the Expert in Paediatric Formulations". This session "In-vitro biopharmaceutic methods in the development of oral dosage forms for children" 3rd October 2013

Hannah has been invited to write two review papers:

**H K Batchelor** and J F Marriott. (2013). Age appropriate formulations for children: problems and solutions. Invited review for British Journal of Clinical Pharmacology

**H K Batchelor** and J F Marriott. (2013). Pharmacokinetics in children: key considerations. Invited review for British Journal of Clinical Pharmacology

## Publications

R Venables, **H K Batchelor**, H Stirling, J F Marriott. (2013) Making the decision- liquids or tablets for children? *International Journal of Pharmacy Practice*, 21 (Suppl. 2), 122-123

**H K Batchelor**, N Fotaki and S Klein. (2013) Paediatric Biopharmaceutics. *Advanced Drug Delivery Reviews*. Accepted May 2013

**H K Batchelor**, R Kendall, S Desset-Brethes, R Alex, T B Ernest. (2013) Application of in-vitro biopharmaceutic methods in development of immediate release oral dosage forms intended for paediatric patients. *European Journal of Pharmaceutics and Biopharmaceutics*. In press <http://dx.doi.org/10.1016/j.ejpb.2013.04.015>

S Khan, H K Batchelor, P Hanson, I Y Saleem, Y Perrie and A R Mohammed. (2013) Dissolution rate enhancement, in vitro evaluation and investigation of drug release kinetics of chloramphenicol and sulphamethoxazole solid dispersions. *Drug Development and Industrial Pharmacy* 39 (5):704-715

Khan S, **Batchelor H K**, Hanson P, Perrie Y, Mohammed A R (2011) Physicochemical characterisation, drug polymer dissolution and in vitro evaluation of Phenacetin and Phenylbutazone solid dispersions with polyethylene glycol 8000. *Journal of Pharmaceutical Sciences* 100(10):4281-4294.

Tytgat G N, McColl K, Tack J, Holtmann G, Hunt R, Malfertheiner P, Hungin A P S, **Batchelor H K** (2008) New algorithm for the treatment of gastro-oesophageal reflux disease. *Alimentary Pharmacology and Therapeutics* 27:249-256

Clark S, Cross L M, Smith A M, Court P, Vipond J, Nadian A, Hewinson R G, **Batchelor H K**, Perrie Y, Williams A, Aldwell F E, Chambers M A (2008) Assessment of different formulations of oral Mycobacterium bovis Bacille Calmette-Guerin (BCG) vaccine in rodent models for immunogenicity and protection against aerosol challenge with M Bovis. *Vaccine*. 26(46): 5791-7

Zhang L, Russell D G R, Conway B R, **Batchelor H K** (2008), Strategies and therapeutic opportunities for the delivery of drugs to the esophagus. *Critical Reviews in Therapeutic Drug Carrier Systems* 25(3):259-304

Oladiran G S, **Batchelor H K** (2007) Determination of ibuprofen solubility in wax: a comparison of microscopic, thermal and release rate techniques. *European Journal of Pharmaceutics and Biopharmaceutics* 67(1):106-111

Gramaglia D, Conway B R, Kett V L, Malcolm R K, Batchelor H K (2005) High speed DSC (hyper-DSC) as a tool to measure the solubility of a drug within a solid or semi-solid matrix. *International Journal of Pharmaceutics* 301(1-2):1-5

Esnaashari S, Javadzadeh Y, **Batchelor H K**, Conway B R (2005) The use of microviscometry to study polymer dissolution from solid dispersion drug delivery systems. *International Journal of Pharmaceutics* 292(1-2):227-230

**Batchelor H K** (2005) Bioadhesive dosage forms for esophageal drug delivery. *Pharmaceutical Research* 22(2):175-181

