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## Personal Statement

I am currently a Professor in Pharmaceutics within the Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, Scotland.

My broad research interests focus on the development of age-appropriate medicines for children. Specific research topics of interest include paediatric biopharmaceutics and development of appropriate in vitro testing strategies to predict in vivo performance; paediatric in silico modelling to optimise pharmacokinetic study design and the impact of drug-food interactions within paediatric populations. This links in silico software predictive models to better understand the mechanics of drug absorption. I am specifically interested in specialist populations (not only paediatrics) and how we can minimise the burden associated with clinical trials. This topic has generated extensive interest from large pharmaceutical companies as well as regulatory agencies and I have funding from the FDA, Janssen and Certara for ongoing projects in this space.

I am actively involved in involvement of children and young people in research, particularly clinical research that impacts upon the treatment of this population. This has led to engagement and outreach opportunities and cross-institute collaborations. I am an active member of the National Institute for Health Research (NIHR) clinical research network that involves children and young people and ensures that they are collaborators in research where possible.

I am an internationally recognised expert in the paediatric drug delivery research ranging from biopharmaceutics to acceptability assessment.

I am currently the Chair of the Academy of Pharmaceutical Sciences ([www.apsgb.co.uk](http://www.apsgb.co.uk))

## Qualifications

Doctor of Philosophy, University of London, The School of Pharmacy  
30 Sep 1997 → 30 Sep 2000  
Award Date: 1 Dec 2020

Master of Mathematics and Statistics, University of Sheffield  
1 Oct 2010 → 1 Sep 2011  
Award Date: 30 Sep 2011

Master of Education, Aston University  
30 Oct 2001 → 30 Apr 2004  
Award Date: 30 Jun 2004

Bachelor of Science, University of Sheffield  
30 Sep 1993 → 31 May 1996  
Award Date: 8 Jul 1996

## Research outputs

### **The pipeline for drugs for control and elimination of neglected tropical diseases: 1. Anti-infective drugs for regulatory registration**

Pfarr, K. M., Krome, A. K., Al-Obaidi, I., Batchelor, H., Vaillant, M., Hoerauf, A., Opoku, N. O. & Kuesel, A. C., 1 Mar 2023, In: Parasites and Vectors. 16, 1, 17 p., 82.

### **Solid lipid nanoparticles and nanostructured lipid carriers of dual functionality at emulsion interfaces. Part II: active carrying/delivery functionality**

Sakellari, G. I., Zafeiri, I., Batchelor, H. & Spyropoulos, F., 20 Feb 2023, In: Colloids and Surfaces A: Physicochemical and Engineering Aspects . 659, 14 p., 130787.

### **Drugs for neglected tropical diseases: availability of age-appropriate oral formulations for young children**

Al-Obaidi, I., Krome, A. K., Wagner, K. G., Pfarr, K., Kuesel, A. C. & Batchelor, H. K., 12 Dec 2022, In: Parasites and Vectors. 15, 1, 22 p., 462.

**Solid lipid nanoparticles and nanostructured lipid carriers of dual functionality at emulsion interfaces. Part I: Pickering stabilisation functionality**

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**Development of a digital twin of a tablet that mimics a real solid dosage form: differences in the dissolution profile in conventional mini-USP II and a biorelevant colon model**

Schütt, M., Stamatopoulos, K., Batchelor, H. K., Simmons, M. J. H. & Alexiadis, A., 1 Dec 2022, In: European Journal of Pharmaceutical Sciences. 179, 13 p., 106310.

**Solubility measurement of poorly soluble drugs in fasted state simulated intestinal fluid**

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**The effect of biorelevant hydrodynamic conditions on drug dissolution from extended-release tablets in the dynamic colon model**

O'Farrell, C., Simmons, M. J. H., Batchelor, H. K. & Stamatopoulos, K., 14 Oct 2022, In: Pharmaceutics. 14, 10, 2193.

**Correction: Schütt et al. Simulating the hydrodynamic conditions of the human ascending colon: a digital twin of the dynamic colon model. Pharmaceutics 2022, 14, 184**

Schütt, M., O'Farrell, C., Stamatopoulos, K., Hoad, C. L., Marciani, L., Sulaiman, S., Simmons, M. J. H., Batchelor, H. K. & Alexiadis, A., 4 Jul 2022, In: Pharmaceutics. 14, 7, 2 p., 1402.

**Application of a physiologically based pharmacokinetic model to predict cefazolin and cefuroxime disposition in obese pregnant women undergoing caesarean section**

Alrammaal, H. H., Abduljalil, K., Hodgetts Morton, V., Morris, R. K., Marriott, J. F., Chong, H. P. & Batchelor, H. K., 30 May 2022, In: Pharmaceutics. 14, 6, 23 p., 1162.

**Practical and operational considerations related to paediatric oral drug formulation: an industry survey**

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**Simulating the hydrodynamic conditions of the human ascending colon: a digital twin of the dynamic colon model**

Schütt, M., O'Farrell, C., Stamatopoulos, K., Hoad, C. L., Marciani, L., Sulaiman, S., Simmons, M. J. H., Batchelor, H. K. & Alexiadis, A., 13 Jan 2022, In: Pharmaceutics. 14, 1, 23 p., 184.

**In vitro models to evaluate ingestible devices: present status and current trends**

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**In vivo models to evaluate ingestible devices: present status and current trends**

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**Quantification of fluid volume and distribution in the paediatric colon via Magnetic Resonance Imaging**

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**Luminal fluid motion inside an in vitro dissolution model of the human ascending colon assessed using magnetic resonance imaging**

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**Formulation design, production and characterisation of solid lipid nanoparticles (SLN) and nanostructured lipid carriers (NLC) for the encapsulation of a model hydrophobic active**

Sakellari, G. I., Zafeiri, I., Batchelor, H. & Spyropoulos, F., 6 Sep 2021, In: Food Hydrocolloids for Health. 1, 18 p., 100024.

**Path towards efficient paediatric formulation development based on partnering with clinical pharmacologists and clinicians, a conect4children expert group white paper**

Walsh, J., Schaufelberger, D., Iurian, S., Klein, S., Batchelor, H., Turner, R., Gizurarson, S., Boltri, L., Alessandrini, E. & Tuleu, C., 14 Aug 2021, (E-pub ahead of print) In: *British Journal of Clinical Pharmacology*. 88, 12, p. 5034-5051 18 p.

**Modelling and simulation of the drug release from a solid dosage form in the human ascending colon: the influence of different motility patterns and fluid viscosities**

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**Current challenges and future perspectives in oral absorption research: an opinion of the UNGAP network**

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**Development of a pediatric relative bioavailability/bioequivalence database and identification of putative risk factors associated with evaluation of pediatric oral products**

Pawar, G., Wu, F., Zhao, L., Fang, L., Burckhart, G. J., Feng, K., Mousa, Y. M., Neuman, F. & Batchelor, H. K., 21 Apr 2021, In: *AAPS Journal*. 23, 12 p., 57.

**The virtual physiological human gets nerves! How to account for the action of the nervous system in multiphysics simulations of human organs**

Alexiadis, A., Simmons, M. J. H., Stamatopoulos, K., Batchelor, H. K. & Moulitsas, I., 14 Apr 2021, In: *Journal of the Royal Society, Interface*. 18, 177, 9 p., 20201024.

**Tribology provides an in vitro tool that correlated to in vivo sensory data on the mouthfeel of coated tablets**

Hofmanová, J. K., Mason, J. & Batchelor, H. K., 15 Mar 2021, In: *International Journal of Pharmaceutics*. 597, 120323.

**Publisher correction: The duality between particle methods and artificial neural networks**

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**Prophylactic perioperative cefuroxime levels in plasma and adipose tissue at the time of caesarean section (C-LACE): a protocol for a pilot experimental, prospective study with non-probability sampling to determine interpatient variability**

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**Sporopollenin exine microcapsules as potential intestinal delivery system of probiotics**

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**Determination of healthcare resource and cost implications of using alternative sodium valproate formulations in the treatment of epilepsy in children in England: a retrospective database review**

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### **A novel oral syringe for dosing and administration of multiparticulate formulations: acceptability study in preschool and school children**

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### **Sensory aspects of acceptability of bitter-flavoured 7.5 mm film-coated tablets in adults, preschool and school children**

Hofmanová, J. K., Mason, J. & Batchelor, H. K., 30 Jul 2020, In: International Journal of Pharmaceutics. 585, 10 p., 119511.

### **Dynamic colon model (DCM): a cine-mri informed biorelevant in vitro model of the human proximal large intestine characterized by positron imaging techniques**

Stamatopoulos, K., Karandikar, S., Goldstein, M., O'Farrell, C., Marciani, L., Sulaiman, S., Hoad, C. L., Simmons, M. J. H. & Batchelor, H. K., 13 Jul 2020, In: Pharmaceutics. 12, 7, 20 p., 659.

### **Modelling and simulation of the hydrodynamics and mixing profiles in the human proximal colon using Discrete Multiphysics**

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### **Impact of gastrointestinal physiology on drug absorption in special populations—An UNGAP review**

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### **Linking moisture induced variations in pharmaceutical primary powders to their tableting performance**

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### **Efficacy of perioperative cefuroxime as a prophylactic antibiotic in women requiring caesarean section: a systematic review**

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### **Magnetic resonance imaging quantification of gastrointestinal liquid volumes and distribution in the gastrointestinal tract of children**

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### **Investigation of the effect of the water to powder ratio on hydraulic cement properties**

Koutroulis, A., Batchelor, H., Kuehne, S. A., Cooper, P. R. & Camilleri, J., 31 Aug 2019, In: Dental Materials. 35, 8, p. 1146-1154 9 p.

### **Making medicines baby size: The challenges in bridging the formulation gap in neonatal medicine**

O'Brien, F., Clapham, D., Krysiak, K., Batchelor, H., Field, P., Caivano, G., Pertile, M., Nunn, A. & Tuleu, C., 31 May 2019, In: International Journal of Molecular Sciences. 20, 11, 32 p., 2688.

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**A review of GI conditions critical to oral drug absorption in malnourished children**

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**Minitablets may be an acceptable alternative to liquid in infants and young children**

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**Evaluation of patient-reported outcome measurements as a reliable tool to measure acceptability of the taste of paediatric medicines in an inpatient paediatric population**

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**How close is the dose? Manipulation of 10mg hydrocortisone tablets to provide appropriate doses to children**

Watson, C., Webb, E. A., Kerr, S., Davies, J. H., Stirling, H. & Batchelor, H., 10 Jul 2018, In: International Journal of Pharmaceutics. 545, 1-2, p. 57-63 7 p.

**Physico-chemical, antimicrobial and antioxidant properties of gelatin-chitosan based films loaded with nanoemulsions encapsulating active compounds**

Pérez-Córdoba, L. J., Norton, I. T., Batchelor, H. K., Gkatzionis, K., Spyropoulos, F. & Sobral, P. J. A., 30 Jun 2018, In: Food Hydrocolloids. 79, p. 544-559 16 p.

**Acceptability of placebo multiparticulate formulations in children and adults**

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**Food effects in paediatric medicines development for products co-administered with food**

Batchelor, H., Kaukonen, A. M., Klein, S., Davit, B., Ju, R., Ternik, R., Heimbach, T., Lin, W., Wang, J. & Storey, D., 5 Feb 2018, In: International Journal of Pharmaceutics. 536, 2, p. 530-535 6 p.

**A mixed methods study of the administration of flucloxacillin oral liquid; identifying strategies to overcome administration issues of medicines with poor palatability**

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**Methodology used to assess acceptability of oral pediatric medicines: a systematic literature search and narrative review**

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**European paediatric formulation initiative (EuPFI)—formulating ideas for better medicines for children**

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**Using discrete multi-physics for detailed exploration of hydrodynamics in an in vitro colon system**

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**A review of prednisolone prescribing for children with acute asthma in the UK**

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**Use of PLIF to assess the mixing performance of small volume USP 2 apparatus in shear thinning media**

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**Formulation factors affecting acceptability of oral medicines in children**

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#### **Paediatric pharmacokinetics: key considerations**

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#### **Paediatric oral biopharmaceutics: key considerations and current challenges**

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#### **Nasal, Ocular and Otic Drug Delivery**

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#### **Paediatric development: anatomy, age, weight, body surface and stature, organ development**

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#### **Rectal Drug Delivery**

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#### **The Dangerous Business of Predicting the Future**

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#### **Paediatric development: gastrointestinal**

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