

CURRICULUM VITAE

NAME Professor Marc B. Brown B.Sc.(Hons), Ph.D., CChem FRSC.

ADDRESS
1A Sonia Close
Watford
Herts
WD19 4PD, UK

E MAIL marc@mlbtinvestments.com

TEL. +44 7944897911

EDUCATION AND QUALIFICATIONS

1986 - 1990	Loughborough University of Technology B.Sc.(Hons) in Medicinal and Pharmaceutical Chemistry. Class 2.1 with a Diploma in Industrial Studies
1990 - 1993	Loughborough University of Technology Ph.D. entitled 'The use of long wavelength fluorescence in the study of ligand-protein interactions.'

PRESENT POSITIONS

2018 – present **Founder, owner and Managing Director MLBT Investments and Consultancy (www.mlbtinvestments.com)**

Founded in 2018 MLBT focuses on providing consultancy services and investments within the Pharmaceutical Development realm, catering to both start-ups and established pharmaceutical companies and investment institutions.

2024 – present **Founder and Director , Heparin Therapeutics Ltd**

Founded in 2024, Heparin Therapeutics Ltd is a UK based pre-seed funded company developing respiratory formulations for the treatment of airway disease

2011 - present **Visiting Professor of Pharmaceutics, School of Pharmacy, University of Reading**

2017 - present	Visiting Professor of Pharmaceutics, Institute of Pharmaceutical Sciences, KCL
2018 - present	Visiting Professor of Toxicology, University of Hertfordshire
2019 - present	Visiting Professor of Pharmaceutics, De Montfort University
2022 - present	Professor Emeritus, University of Hertfordshire

PREVIOUS POSITIONS

2022 – 2025	Mosanna Therapeutics AG, Chief Scientific Officer, Chair of Scientific Advisory Board
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Mosanna is a Swiss Biotech company based in Basel currently in clinical evaluation of MOS-118 in the form of a locally delivered nasal spray to treat Metabolic Obstructive Sleep Apnoea and an oral dosage form for local delivery to treat dysphagia. In 2024 I was part of the executive team who secured \$80 million of series A funding to advance the sleep apnoea project to Phase II clinical testing at which point the company moved to the USA and I stepped down.

1999 – 2023	MedPharm Limited, MedPharm Holding Co. Ltd Co-founder, Chief Scientific Officer (1999-2020), CEO (2015-2018) Board Director (1998-2023) Chair of the Scientific Advisory Committee (2018 -2023)
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My industrial experience and the subsequent success of my academic collaborations with industry led to me co-founding a spin-out company named MedPharm Ltd. The company is a contract research organisation which specialises in the formulation and development of topical and transdermal drug delivery systems and devices for application to the skin, nail, wounds, airways and other mucosal membranes. During my tenure MedPharm grew to 60,000 square feet of GLP, GMP and commercial accredited facilities in Guildford, UK and North Carolina, USA, employed 160 people and had collaborations with companies in the US, Australia, Japan, Asia and Europe. In addition, I was directly involved in the development of approximately 80 products and devices which gained regulatory approval in the US, Europe and RoW. Until I sold my final tranche of shares in 2023 my responsibilities included:

- Board Member
- Chair of the Scientific Advisory Committee
- Member of the remuneration committee
- Design and oversight of all pharmaceutical development programs
- Key member of the regulatory team for meetings with FDA, MHRA, EMA etc
- Attendance & contributions to FDA Pre-IND, pre-NDA meetings and scientific advice meetings at the MHRA and EMA
- Management of internal & external research programs in topical and transdermal drug delivery and devices

- Intellectual property development, sourcing and review
- Provision of technical support to commercial partnering activities
- External supervisor for PhD students
- Business Development

2006- 2018 F/T then P/T Chair in Pharmaceutics, School of Pharmacy, University of Hertfordshire.

From 2010-2018 , as Head of the Research Centre in Topical Drug Delivery and Toxicology I built this Centre of Excellence into a team of 12 academic staff generating more than £2 million of annual research revenue.

Research

My key research areas of interest could be defined as follows:

- Transdermal/dermal drug delivery and formulation development.
- Development of in silico and in vitro models for topical and transdermal drug delivery.
- Protection against the dermal exposure of certain chemicals.
- Drug delivery via the airway.
- Mucoadhesive drug delivery.
- Drug delivery to the eye.

Other responsibilities included:

- Chair of the School's Research Board, University of Hertfordshire.
- Chair of the School of Pharmacy Ethics Committee with Delegated Authority.
- Member of the University of Hertfordshire Ethics Committee.

Teaching

Teaching responsibilities included:

- Lectures, tutorials and laboratory classes on drug formulation and design, physical pharmacy, pharmaceutical analysis, mathematics, microbiology, mucoadhesion, polymers, modified release injections, solubilisation, gene delivery, skin physiology, transdermal and dermal drug delivery, carbobohydrates, biological membranes and drug absorption and drug delivery via the lymphatic system.
- The supervision of many undergraduate and MSc projects.
- Member of the School Management Executive.
- Member of the MSc internal validation Board.

2019 - 2022 Governor of St Helen's School

2019 - 2022 Director, St. Helen's Enterprises Ltd

2017 -2019 Member of the AAPS/FDA Q3 working group and Performance Testing Committee member

2016 - 2018	Founder and Director Topical Pharma Ltd
2008 - 2016	Founder and Director of TaliPharm Consultancy Ltd
2007 - 2017	Member of the Scientific Advisory Committee of Futura Medical PLC
2015 - 2016	Member of the Scientific Advisory Board for Novartis
2013 - 2016	Founder, Director and CEO of BethPharm Ltd
2011 - 2015	Honorary Professor of Pharmaceutics, Dermatology and Genetic Medicine Division of Molecular Medicine, University of Dundee
2012 - 2013	Member of the Scientific Advisory Board of NuFormix Ltd
2010 - 2013	Member of the Wellcome Trust Technology Transfer Challenge Committee
2002 - 2006	Senior Lecturer in Pharmaceutics, Department of Pharmacy, KCL (1995-2002, Lecturer in Pharmaceutics, Department of Pharmacy, KCL)

I was appointed to the academic staff as a Lecturer in the Pharmacy Department at King's College London in 1995 having spent approximately 18 months as a research fellow working under the guidance of Chris Marriott and Gary Martin. The Lectureship was industrially funded and consequently, I divided my time between the College and working as Director of Pharmaceutical Development for Hyal Pharmaceutical Corporation which was based in Toronto, Canada. In 1997, I took up a position as a full-time member of academic staff and developed other areas of interest in the field of drug delivery.

Teaching responsibilities included:

- Lectures, tutorials and laboratory classes on drug formulation and design, physical pharmacy, pharmaceutical analysis, mathematics, microbiology, mucoadhesion, polymers, modified release injections, solubilisation, gene delivery, skin physiology, transdermal and dermal drug delivery, biological membranes and drug absorption and drug delivery via the lymphatic system.
- The supervision of many undergraduate and MSc projects.
- Examiner on MPharm and MSc courses
- Course leader for MPharm IV electives Drug Delivery and Science of Dosage Form Design
- Member of Departmental Executive
- Member of the School Executive
- Former Postgraduate Tutor
- Intercollegiate MSc examiner

Other responsibilities included:

- Member of the Pharmaceutical Sciences Research Division Executive
- Member of the Centre for Ultrastructural Imaging Executive

2003 - 2006 Academic Business Fellow, KCL Enterprises

In May 2003 I was appointed to the position of Academic Business Fellow at KCL. My role was to use the experience I had gained in industry and my entrepreneurial skills to identify spin-out opportunities within KCL, prepare a business plan, secure funding and ensure that they had the best chance of success. To achieve these objectives I worked closely with IP2IPO and other venture capitalists, business angels and funding institutions.

2003 - 2004 London Technology Network Business Fellow

I was appointed as a London Technology Network (LTN) Business Fellow in January of 2003. The aim of the LTN is to help technology-intensive companies be more effective and efficient in their knowledge acquisition from London's universities. The network has the support of the Department of Trade and Industry (DTI); Invest UK; Business Link London; Government Office for London, and the London Development Agency. Specifically, LTN's four main objectives are to:

- work with its network of large and small companies to map their short-, medium- and long-term technology needs.
- help universities respond to industry's need for technology-related knowledge acquisition.
- match the technology needs of client companies to London's world-class researchers and teachers.
- support technology-focused special interest groups and encourage better and more frequent interaction between companies and universities.

1995 – 1996 Director of Pharmaceutical Development, Hyal Pharmaceutical Corporation, Toronto, Canada.

The position involved the management of all pharmaceutical and product development projects in the company. One such formulation has recently received a Product Licence from the FDA, MCA, HPB and various European regulatory authorities. I also ensured that the laboratory, comprising 15 people, was run according to GLP and GMP.

Work performed in the facility was divided into four main areas:

- In house pharmaceutical development and study of novel topical formulations for the targeting of xenobiotics to the pathological site.
- Development of validated and stability indicating assays for the testing and study of these formulations.
- Raw material analysis, product manufacture and QA/QC testing of finished product prior to release for use in Phase I, II & III clinical trials and as EDR.
- To ensure all data is acceptable for submission to the relevant Regulatory Authority for licensing approval.

1993 - 1995 Post-Doctoral Research Fellow, Pharmaceutics Section, Dept. of Pharmacy, King's College London**1988 - 1989 Chemist, Goodyear Tyre and Technical Centre, Luxembourg**

RESEARCH HISTORY AND EXPERTISE

Invited Lectures

- IL1. Third International Symposium on Pharmaceutical and Biomedical Analysis. Boston, Massachusetts, USA (April 1991). *Biomedical applications of very near infra-red fluorescence spectrometry*
- IL2. Royal Society of Chemistry Autumn Meeting and Pre-Doctoral Chemistry Symposium. Trinity College, Dublin, Ireland (September 1992). *Novel instrumentation and biomedical applications of very near infra-red fluorescence*
- IL3. 5th International Symposium on Quantitative Luminescence Spectrometry in Biomedical Sciences. University of Ghent, Belgium (May 1993). *Long wavelength fluorescence and its biomedical applications*
- IL4. Euroanalysis VII. University of Edinburgh, Scotland (September 1993). *Novel developments in instrumentation for long wavelength fluorescence*
- IL5. 2nd International Workshop on Hyaluronan in Drug Delivery. Toronto, Canada (May 1994). *A study of the mechanism of the drug delivery properties of hyaluronan*
- IL6. 6th Interscience World Conference on Inflammation, Antirheumatics, Analgesia and Immunomodulators 1995. Geneva, Switzerland (March 1995). *The effect of hyaluronan on the in vitro deposition of diclofenac within the skin*
- IL7. 3rd International Workshop on Hyaluronan in Drug Delivery. Nyon, Switzerland (April 1995). 1) *A study of the transdermal drug delivery properties of hyaluronan*; 2) *An in vitro investigation of the mode of action of hyaluronan as drug delivery vehicle using circular dichroism*; 3) *A preliminary study of the effect of hyaluronan on the deposition of diclofenac within human skin using autoradiography*
- IL8. Dermatology Update 1995. Montreal, Canada (October 1995). *Topical formulations of drugs - How to penetrate the skin barrier*
- IL9. 7th International Seminar on the Treatment of Rheumatic Diseases. Tel Aviv, Israel (December 1995). *Hyaluronan, A transdermal drug delivery system: An in vitro investigation*
- IL10. International Society for Rheumatic Therapy. 5th Biennial Congress, Paris, France (May 1996). *Referred analgesia: Topical Hyanalgesic-D. Delivery to the skin*
- IL11. 4th International Workshop on Hyaluronan in Drug Delivery. Paris, France (May 1996). 1) *The diffusion of diclofenac from hyaluronan and other polysaccharide formulations through human skin in vitro*; 2) *The determination of the viscosity-average molecular weight of hyaluronan by capillary viscometry*; 3) *An in vitro study of the effect of hyaluronan on diclofenac binding to human serum albumin*; 4) *Hyaluronan delivery of cyclosporin*
- IL12. Clinical Dermatology 2000 - Improving Drug Delivery Technology, University of British Columbia, Vancouver, Canada (June 1996). *Hyaluronan: A targeting agent for diclofenac*
- IL13. Cancer Drug Development. Hannover, Germany (March 1997). *The use of the glycosaminoglycan hyaluronan to target chemotherapeutic drugs to breast carcinoma*

- IL14. 6th International Symposium on Hyaluronan. Toronto, Canada (June 1997). *Hyaluronan Improved Liposome Technology*
- IL15. Aerosol Society: Drug Delivery to the Lungs IX, London, UK (December 1998). *The effect of chirality on the fine particle fractions of DPI formulations of mandelic acid and lactose monohydrate mixtures*
- IL16. Hyaluronan 2000, Wrexham, UK (September 2000). *The use of hyaluronan in topical drug delivery*
- IL17. 50th Anniversary Conference of the American Society of Tropical Medicine and Hygiene, Atlanta, USA (November 2001). *A topical prophylaxis for the Schistosomiasis (Nominated for entry into Young Investigator Award Competition)*
- IL18. British Society for Parasitology, Spring Meeting, Salford, UK (April 2002). *A topical prophylaxis for the Schistosomiasis in travellers*
- IL19. Aerosol Society: Drug Delivery to the Lungs XIII, London, UK (December 2002). *An in vitro investigation of the aerodynamic performance of spray-dried stabilized protein particles*
- IL20. London Technology Network launch meeting, London, UK (December 2002). *Technology vs biology – what does the industry need?*
- IL21. London, School of Pharmacy, London, UK (January 2003). *Academic parasites II*
- IL22. Pfizer, Ann Arbor, USA (February 2003). *Formulation optimisation for percutaneous and perungual delivery*
- IL23. St. Thomas' Hospital, Dept of Dermatology, London, UK (February 2003). *Skin delivery systems: Getting under your skin*
- IL24. BBSRC sponsored 'Intellectual Property Masterclass', London, UK (April 2003). *MedPharm, a daydream, a dalliance or a dilemma*
- IL25. SYMPHONEC sponsored 'Entrepreneurship and Innovation', London, UK (May 2003). *Winning with the entrepreneurial venture*
- IL26. British Pharmaceutical Conference 2003. Harrogate, UK (September 2003). *Spinning-out in academia: MedPharm*
- IL27. Thermal analysis and skin, TMG, London, UK (November 2003). *Skin deep*
- IL28. BBSRC sponsored 'Practical Issues for Commercialising Research Masterclass', London, UK (April 2004). *Mind to market: Commercialisation from a researchers perspective*
- IL29. RSC Analytical Sciences meeting 'Advances in Bioanalysis', (May 2004). *The Application of Analytical Methods in Drug Delivery and Deposition*
- IL30. 5th Annual Meeting of Skin Forum, Portsmouth, UK (July 2004) *Academic parasites: topical inhibition or enhancement*
- IL31. American Chemical Society 228th National Meeting, Philadelphia, USA (August 2004). *Investigations into the mode of action of hyaluronan as a topical drug delivery system*
- IL32. UK Podiatric Dermatology Conference, Coventry, UK (September 2005). *Topical pharmacology: localised drug delivery*

- IL33. British Pharmaceutical Conference 2005. Manchester, UK (September 2005). *Does involvement in start-up companies dilute academic research?*
- IL34. 2nd EUFEPS Conference on Optimising Drug Delivery and Formulation. Palais de Congres, Versailles, France (November 2005). *Evaluation models for dermal and ungual drug delivery*
- IL35. 3rd Annual Drug Delivery Systems Conference, London, UK (November 2006). *Ungual and dermal drug delivery: In vitro models in formulation development*
- IL36. Inaugural Nail Forum, London, UK (April 2007). *In vitro modelling of ungual drug delivery: As hard as nails*
- IL37. Diabetes UK Satellite Symposium, St. Albans, UK (October 2007). *From pig to powder: Developments in the delivery of insulin*
- IL38. DTI/EEDA/EEI Life Sciences in the East of England Conference, Cambridge, UK (October 2007). *A new presentation for topical drug delivery*
- IL39. 14th UKICRS Conference on Predicting Drug Delivery: Opportunities and Challenges, London, UK (January 2008). *In vitro models for optimising ungual drug delivery*
- IL40. 11th International Perspectives in Percutaneous Penetration, La Grande Mott, France (March 2008). *Thermoenhancement of dermal drug delivery*
- IL41. 9th Annual Meeting of Skin Forum, London UK (June 2008). *Ungual formulation development: Can it be nailed*
- IL42. Drug Delivery to the Lung XIX, Edinburgh, UK (December 2008). *Contract research and academia: Symbiotic or parasitic*
- IL43. British Society for Investigative Dermatology Annual Meeting, Cirencester, UK (March 2009). *Skin drug delivery: the naked truth*
- IL44. International Pachyonychia Congenita Cosortia Meeting, Montreal, Canada (May 2009) *(Trans)dermal Gene Delivery: To Be or Not To Be?*
- IL45. BPC2009, Manchester, UK (September 2009). *VC or SC: How to mitigate the risk of failure in start-ups*
- IL46. 5th Annual Drug Delivery systems Conference, London, UK (2010). *Innovations in trans(dermal) drug delivery*
- IL47. Wellcome Trust Division of Molecular Medicines, Dundee, Scotland (2010). *The (trans)dermal delivery of biologics: Will you be getting needed?*
- IL48. APS UK Pharm Sci 2012 - The Science of Medicines, Nottingham, UK (2012). *The Topical Treatment of Onychomycosis: As Hard as Nails*
- IL49. AGAH 5th Dermatological Product Development Conference, Munich, Germany (2013). *In vitro Performance Testing in Topical formulation Development: Fact or Fiction*
- IL50. GSK/Stiefel RTP, North Carolina, USA (2013). *The Lost Art of Topical Formulation Science*
- IL51. APS UKPharmSci 2014 Conference, Hatfield, UK (2014). *The Role of Universities in Open Innovation Research: Academic Entrepreneurship or Industrial Exploitation*

- IL52. GSK Stevenage, UK (2015). *The Lost Art of Topical Formulation Science: The Tortoise and the Hare*
- IL53. AGAH 6th Dermatological Product Development Conference, London, UK (2015). *Reducing the risk of topical formulation development: the optimal route from drug candidate selection to proof of concept studies*
- IL54. 5th Anniversary, Centre for Dermal Research, Rutgers University- Innovations in Dermatological Sciences, Delivery of Actives to the Skin, Iselin NJ, USA (, 2016). *Dermal formulation development: Pitfalls, impedements and Opportunities*
- IL55. Pfizer, Boston USA (2016). *Strategies for de-risking dermal product development*
- IL56. AGAH 7th Dermatological Product Development Workshop Washington, USA (2017) . *Strategies for derisking dermal formulation development*
- IL57. Pfizer Cambridge, USA (2017). *Developing NCE based medicines for the treatment of skin disease*
- IL58. FDA, Washington D.C. USA (2017). *Transungual in vitro and ex vivo Performance Testing Models*
- IL59. Dermatology Drug Development Summit, Boston, USA (2017). *Dermal formulation development workshop*
- IL60. MRC Showcase inTherapeutic Innovation, Bath, UK (2018). *Maximising the chances of success in topical dermatological product development*
- IL61. Pachyonychia congenital Patient Support Meeting, London, UK (2018). *The role of the disease, the medicine and the patient in the lost art of formulation science*
- IL62. Innovations in Dermatological Sciences Conference - Future of Dermatologicals & Cosmeceuticals, New Jersey, USA (2018). *Future innovations in Dermal Product Development: Its more than just delivery*
- IL63. EUEPS Annual Meeting 2019 - Personalized Medcines, Targeted Therapies, Precision Drug Delivery, Frankfurt, Germany (2019). *In vitro Performance Testing in De-risking Topical Formulation Development*
- IL64. EUEPS Open Discussion Forum 2019 – Revised European Guideline on quality and equivalence of topical products, Bonn, Germany (2019). *In-vitro skin permeation studies testing (IVPT): The current guideline requirements translated into practice*
- IL65. Controlled Release Society Annual Meeting and Exposition 2019 - Controlled and Enhanced Drug Delivery Into and Through the Skin, Valencia, Spain (2019). *New Therapies and Tools in Topical Drug Product Development*
- IL66. CannMed 2019, Pasadena, USA (2019). *The Evolution of New Cannabis Based Topical Therapies*
- IL67. CRS Italy Steering Clinical Translation of Delivery Systems for Drugs and Health Products, Catania, Italy (2019). *The Challenges and Opportunities of Drug Delivery to the Eye*
- IL68. FDD UK Congress, London, UK (2021). *Topical Medicines Development for the Treatment of Inflammatory Skin Disease: Complexities, Risks & Opportunities*
- IL69. Plenary Lecture APGI 6th Symposium, Current Challenges in Skin Formulation, Nantes, France (2023). *Risk mitigation in Topical Product Development: Orthodoxy, Automation and Innovation*

- IL70. Topical Product development, Department of Pharmacy, University of Lisbon, Portugal, 2024
- IL71. Orthodoxy, Automation and Risk Mitigation in Topical Product Development, Faculty of Pharmacy University of Coimbra, Portugal 2024

Books

The Art and Science of Dermal Formulation Development. M.B. Brown and A.C. Williams, 2019, CRC Press, New York

Contributions to book chapters/edited works

- C1. M.B. Brown, J.N. Miller and S. Summerfield. Chapter 14 in "*Fluorescence spectroscopy: new applications and methods*" O. Wolfbeis (Ed) (1992), Springer-Verlag, pp189-196.
- C2. M.B. Brown, C. Marriott and G.P. Martin, '*A study of the mechanism of the drug delivery properties of hyaluronan*'. Hyaluronan in drug delivery. Vol. II, D.A. Willoughby (Ed) (1994), Royal Society of Medicine Press, Series 36, pp29-44.
- C3. M.B. Brown, C. Marriott and G.P. Martin, '*A study of the transdermal drug delivery properties of hyaluronan*'. Hyaluronan in drug delivery. Vol. III, D.A. Willoughby (Ed), (1995), Royal Society of Medicine Press, Series 40, pp53-71.
- C4. M.B. Brown, G.Siligardi, C. Marriott, A. Drake and G.P. Martin, '*An in vitro investigation of the mode of action of hyaluronan as a drug delivery vehicle using circular dichroism*'. Hyaluronan in drug delivery Vol. III, D.A. Willoughby (Ed) (1995), Royal Society of Medicine Press, Series 40, pp41-47.
- C5. M.B. Brown, S. Ingham, A. Moore, C. Marriott and G.P. Martin, '*A preliminary study of the effect of hyaluronan on the deposition of diclofenac within human skin using auto-radiography*'. Hyaluronan in drug delivery. Vol. III, D.A. Willoughby (Ed), (1995), Royal Society of Medicine Press, Series 40, pp48-52.
- C6. C. Marriott G.P. Martin and M.B. Brown, '*The use of hyaluronan in transdermal drug delivery: physiological barriers and regulatory issues*'. Hyaluronan in drug delivery. Vol. III, D.A. Willoughby (Ed), (1995), Royal Society of Medicine Press, Series 40, pp37-40.
- C7. F.C. Bennett, M.B. Brown, C. Marriott and G.P. Martin. '*The diffusion of diclofenac from hyaluronan and other polysaccharide formulations through human skin in vitro*'. Hyaluronan in drug delivery. Vol. IV, D.A. Willoughby (Ed), (1996), Royal Society of Medicine Press, Series 45, pp91-101.
- C8. S. Karim, M.B. Brown, S. Ingham, C. Marriott and G.P. Martin. '*The determination of the viscosity-average molecular weight of hyaluronan by capillary viscometry*'. Hyaluronan in drug delivery. Vol. IV, D.A. Willoughby (Ed), (1996), Royal Society of Medicine Press, Series 45, pp102-112.
- C9. M.B. Brown, G. Siligardi, S. Karim, S. Bennett, G.P. Martin, A. Drake and C. Marriott. '*An in vitro study of the effect of hyaluronan on diclofenac binding to human serum albumin*'. Hyaluronan in drug delivery. Vol. IV, D.A. Willoughby (Ed), (1996), Royal Society of Medicine Press, Series 45, pp84-90.
- C10. M.B. Brown and A. Moore. '*The effects of a novel formulation of cyclosporin on antibody and cell-mediated immune reactions in the pleural cavity of rats*'. Hyaluronan in drug delivery. Vol IV, D.A. Willoughby (Ed), (1996), Royal Society of Medicine Press, Series 45, pp121-131.

- C11. M.B. Brown, B. Forbes, M. Hanpanitcharoen and G.P. Martin. 'The use of hyaluronan in topical drug delivery'. In Hyaluronan: biomedical, medical and clinical aspects. Vol II, J. F. Kennedy, G.O. Phillips, P.A. Williams and V. Hascall (Eds), (2002), Woodhead Publishers, Cambridge, pp249-256.
- C12. M.B. Brown, S.A. Jones, W. He and G.P. Martin. 'Investigations into the mode of action of hyaluronan in topical drug delivery'. In Polysaccharides in Drug Delivery and Pharmaceutical Applications. R. H. Marchessault (Ed), (2005) ACS Press., New York, pp141-154
- C13. S.T. Lim, B. Forbes, M.B. Brown and G.P. Martin 'Physiological factors affecting nasal drug delivery' in Enhancement in Drug Delivery Touitou E. and Barry B.W. (Eds), (2005), CRC Press Boca Raton, pp353-372.
- C14. M.B. Brown, F.K. Akomeah and M.J. Traynor. 'Transdermal drug delivery devices: Skin perturbation systems' in Drug delivery Systems, K.K. Jain (Ed), (2007) Human Press, New York, pp119-140
- C15. Y. Sun, G.P. Moss, M. Prapopoulou, R. Adams, M.B. Brown, and N. Davey. Predictions of Skin Penetration Using Machine Learning Methods', Proceedings of 8th IEEE International Conference on Data Mining, (2008), Pisa, Italy. Edited by F. Giannotti, D. Gunopulos, F. Turini, C. Zaniolo, N. Ramakrishnan, X.D. Wu. ISBN 978-0-7695-3502-9.
- C16. Y. Sun, L.T. Lam, G.P. Moss, M. Prapopoulou, R. Adams, M.B. Brown, and N. Davey. Predicting drug absorption rates through human skin, Proceedings of 10th IEEE International Conference on Data Mining, (2010), Pisa, Italy. Edited by F. Giannotti, D. Gunopulos, F. Turini, C. Zaniolo, N. Ramakrishnan, X.D. Wu. ISBN 978-0-7695-3502-9.
- C17. Y. Sun, G.P. Moss, M. Prapopoulou, R. Adams, M.B. Brown and N. Davey. The Application of Gaussian Processes in the Prediction of Percutaneous Absorption for Mammalian and synthetic Membranes. Proceedings of ESANN, European Symposium on Artificial Neural Networks, 2010
- C18. M.B. Brown and S.T. Lim. 'Topical product development' in Transdermal and Topical Drug Delivery: Principles and Practice. H. Benson and A.C. Watkinson (Eds.). (2012) Wiley, New Jersey, pp255-286, ISBN 978-0-470-45029-1.
- C19. S.S. Shetage, M.B. Brown, R.P. Chilcott, M.J. Traynor. Collection and Characterisation of Residual Skin Surface Components Obtained from Sebum, Sweat and Epidermal Lipids. Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p26-36, ISBN:978-1-84973-398-4
- C20. A. Baraldi, R. Khengar, S. Murdan, S.A. Jones, M.J. Traynor, M.B. Brown. The effect of Disulfide Bond Disruption on the Barrier Integrity of the Human Nail. Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p101-112, ISBN:978-1-84973-398-4
- C21. C.A. Stewart, R.B. Turner, M.B. Brown, M.J. Traynor Classification of irritant/ non-irritant and corrosive chemicals using excised human skin in vitro. Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p308-320, ISBN:978-1-84973-398-4
- C22. M.J. Traynor, S.S. Shetage, D. Wood, M.B. Brown. Is IVRT Alone Sufficient to demonstrate sameness of Generic Products? Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p321-334, ISBN:978-1-84973-398-4
- C23. M.B. Brown, Dermal Formulation Development. Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p77-87, ISBN:978-1-84973-398-4.
- C24. A. Edwards, F. Liu, M.B. Brown and W.J. McAuley Evaluation of Methylphenidate Permeation from DaytranaTM patches. Advances in Dermatological Sciences. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p370-375, ISBN:978-1-84973-398-4

- C25. F. Caserta, D.G. Wood, M.B. Brown and W.J. McAuley. The Effect of Heat on Diclofenac Permeation through Human Skin. *Advances in Dermatological Sciences*. R. Chilcott and K. Brain (Eds). (2013), RSC Publishing, Cambridge, p157-168, ISBN:978-1-84973-398-4
- C26. W.J. McAuley, M.J. Traynor, M.B. Brown. Formulating for Children III, Non-Oral Routes – Topical and transdermal in *Paediatric Formulations: A Roadmap*. Daniel Bar-Shalom & Klaus Rose (Eds) 2014 AAPS/ Springer pp219-238
- C27. Formulating for Children I, Oral Routes – Buccal and Sublingual drug delivery for the paediatric population in *Paediatric Formulations: A Roadmap*. Daniel Bar-Shalom & Klaus Rose (Eds) 2014 AAPS/ Springer, pp205-218 also in 2nd addition, 2024
- C28. D. Murnane, M.B. Brown Formulating for Children III, Non-Oral Routes – The challenges of paediatric pulmonary drug delivery. *Paediatric Formulations: A Roadmap*. Daniel Bar-Shalom & Klaus Rose (Eds) 2014 AAPS/ Springer, pp 253-272 also in 2nd addition, 2024
- C29. M.B. Brown, J. Lenn, C.G.R. Evans and S.T. Lim, Commercial and Regulatory Considerations in Dermal and Transdermal Medicines Development in *Novel Delivery Systems for Transdermal and Intradermal Drug Delivery*. R. Donnerly and S. Thakur (Eds) 2015, Wiley, pp243-254
- C30. M.B. Brown and V. Patel, Buccal and Sublingual Drug Delivery in *Drug Delivery and Targeting* 2nd Edition. A. Hillery, A. Lloyd and J. Swarbrick (Eds), 2016, CRC/Taylor and Francis, Boca Raton., USA, pp201-214, also in 2nd addition, 2024
- C31. L. Raghavan, M. Brown, B. Michniak, S. Ng and S. Sammeta. In Vitro Release & Permeation Tests as Critical Quality Attributes in Topical Product Development in *The Role of Microstructure in Topical Product Development*. N. Langley, B. Michniak and D. Osborne (Eds). 2020, AAPS Series 36/Springer, pp47-88
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Patents

Inventions

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- D2. Stable aerosol formulations of peptides and protein with non-cfc propellants by Y-H. Liao, M.B. Brown and G.P. Martin. (0226274.9). PCT GB2003/004836, WO2004043442
- D3. Topically Administrable Pharmaceutical Compositions Y-H. Liao, M.B. Brown, T. Nazir and G.P. Martin. (0327744.9)
- D4. Metered dose inhalation preparations of drugs by S. Jones, M.B. Brown and G.P. Martin. (0328630.9). PCT GB2004/005172, WO2005055985
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- D25. PEROXIDE FORMULATIONS AND METHODS AND APPLICATORS FOR USING THE SAME. Stuart D . Shanler ; Christopher Powala; Christopher Phillips; Brian Beger; Charles Rodney Greenaway Evans; Sian Tiong Lim; Marc Barry Brown;. Thomas Nagler 2018; US 2018/ 9, 980,983 B2
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- D30. Topical formulations for delivery of hedgehog inhibitor compounds and use thereof. Marc Barry Brown; Cameron Robert Stevenson; Charles Rodney Greenaway Evans. US2020/ 0383975 A1
- D31. Isotretinoin formulations and uses and methods thereof. Zachary Rome; Charles Rodney Greenaway Evans; Marc Barry Brown; Francesco Caserta. US2022/ 0362148 A1
- D32. Intranasal Formulations for treating Obstructive Sleep Apnoea. Application number 63/586254 Filing date 28th September 2023
- D33. Compositions and dosage forms for oral delivery. Ping Chang; Marc Brown; Charles Evans. US 2024/0358674 A1

Expert/Factual Witness roles

2011 United States district court, New Jersey in the case of Graceway Pharmaceuticals and 3M Innovative Properties Co. v Nycomed US, Inc; Civil Action No. 10-937. I acted as an expert witness for Graceway and 3M in a case involving a challenge to the validity of U.S. Pat. No. 7,655,672.

2014 English Patent Court in the case of Leo v Teva [2014] EWHC 3096 (Pat). I acted as an expert witness for Leo Pharma A/S and Leo Laboratories Limited in a case involving the treatment of psoriasis using an ointment comprising a combination of a corticoid and a vitamin D analogue.

2015 English Patent Court in the case of Novartis v various; HP-2013-000011 (Focus Pharmaceuticals UK Limited, Actavis Group PTC EHF and Actavis UK Limited) and HP-2013-000012 (Teva Limited). I acted as an expert witness for Novartis AG, Novartis Pharmaceuticals UK Limited and LTS Lohmann Therapie-Systeme AG in a case involving a challenge to the validity of European Patent (UK) 2 292 219.

2016 United States district court, Delaware in the cases of Purdue Pharma L.P. v. Watson Labs., Inc., Civil Action No. 14-1227; Purdue Pharma L.P. v Watson Labs., Inc., Civil Action No. 14-1410; Purdue Pharma L.P. v. Actavis Labs. UT, Inc., Civil Action No. 15-192. I acted as an expert witness for Purdue in a case involving a challenge to the validity of U.S. Pat. Nos. RE41,408, RE41,489, and RE41,571.

2016 United States district court, Delaware in the cases of Purdue Pharma L.P. v Alvogen Pine Brook LLC, Civil Action No. 15-1077. I acted as an expert witness for Purdue in a case involving a challenge to the validity of U.S. Pat. Nos. RE41,408, RE41,489, and RE41,571

2017 English Patent court in the case of Leo Pharma v Sandoz, EP 2, 450,043. I acted as an expert witness for Leo Pharma A/S and Leo Laboratories Limited in a case involving non-aqueous pharmaceutical compositions for dermal use to treat psoriasis wherein the relevant composition is applied once daily.

2017 United States district court, Delaware in the cases of Leo Pharma. v Perrigo, Civil Action No. 16-00430. I acted as a fact witness for a patent family of which I am a co-inventor.

2021 I acted as an expert witness on behalf of Dermavant in the USPTO patent prosecution of Application No. 16/229,080 'Topical Pharmaceutical Compositions' pursuant to 37 C.F.R. § 1.132

2023 United States district court, Delaware I acted as an expert witness for UCB/LTS in the case UCB, Inc. et al v. Mylan Technologies Inc., 2:22-cv-00216-cr, Docket Number 45

2024 I acted as an expert witness on behalf of Madera Pharmaceuticals in the USPTO patent prosecution of Application No. 17508951 'Transdermal Treatment for Erectile Dysfunction' pursuant to 37 C.F.R. § 1.132

Present Currently, I am involved in EU (Topical dermatology) and US (Nasal) patent cases as an expert witness.

Editorials and Articles

- E1. *New developments in transdermal drug delivery systems.* M.B. Brown and F.K. Akomeah. Pharmaceutical Managing and Packing Sourcer, (2004), Spring, 55-58
- E2. *New developments in transdermal drug delivery systems II.* M.B. Brown and F.K. Akomeah. Pharmaceutical Managing and Packing Sourcer, (2004), Summer, 59-63
- E3. *The evolution of transdermal drug delivery systems.* S.A. Jones and M.B. Brown. Pharmaceutical Formulation & Quality, (2005), August/September, 36-41
- E4. *It is not a molecule you give to a patient but a medicine, the lost of science of formulation development.* M.B. Brown. Editorial in Drug Discovery Today, (2005), **10**:1405-1407
- E5. *Not to be sniffed at.* M.B. Brown. Pharmaceutical Technology Today, (2005), December, 82.
- E6. *Treatment of nail fungal infections.* M.B. Brown and M.J. Traynor. Drug Delivery Report, (2007) Spring/September, 50-52
- E7. *MedSpray: The next generation in topical drug delivery.* M.B. Brown, Drug Delivery Report, (2008) Winter, 24-26
- E8. *Ungual drug delivery.* M.B. Brown, UKICRS Newsletter (2008), 3:10-12
- E9. *Topical and transdermal drug delivery-have we only just scratched the surface.* ONdrugDelivery M.B. Brown (2013)
- E10. *Artificial neural networks & tissue models for inhaled formulation screening, selection & bioequivalence testing.* M.B. Brown. Muddle and C. Page. ONdrugDelivery, (2014)
- E11. *Aquarmed™: transdermal delivery using novel components derived from natural moisturising factor (nmf).* M.B. Brown and A.C. Williams. ONdrugDelivery, (2015)
- E12. *New research tools for topical and transdermal development.* M.B. Brown and R.B. Turner ONdrugDelivery, (2016)
- E13. *Cost-effective approaches for successful generic dermal drug product authorisations.* M.B. Brown, J. Lenn and J. Drummond. ONdrugDelivery, (2018)
- E14. *MedPharm's Perspective on the Topical Delivery of Macromolecules.* M.B. Brown and J. Lenn, Pharmaceutical Technology (2018)
- E15. *Process Development Best Practices for Topical Drug Products.* M.B. Brown, C. Harrison, S. Pratt, Pharmaceutical Technology (2019)
- E16. *Topical Development: Fast Tracking Your Way to Success.* M.B. Brown. J. Lenn and J. Drummond, Drug Development and Delivery. (2018)
- E17. *The Challenges and Opportunities of Drug Delivery Through a Complex Barrier.* M.B. Brown, J. Volmer, J. Drummond. ONdrugDelivery (2019)
- E18. *Innovation and Automation in Topical Formulation Development.* M.B. Brown, J. Lenn, C. Evans. ONdrugDelivery (2020) August (110) 44-48
- E19. *Derisking topical formulation development with multifactorial disease models.* M.B. Brown, J. Lenn. Manufacturing Chemist (2021) April, Volume 92 Number 4, 32-34

- E20. *Assessing the Nasal Drug Delivery Landscape*. M.B. Brown, J. Lenn, J. Volmer. *ONdrugDelivery* (2021) May (11) 37-40
- E21. *The Fourth Industrial Revolution – Robotics and the Laboratory*. M.B. Brown, J. Lenn. *ONdrugDelivery* (2021) August (123) 40-42
- E22. *Multifactorial Disease Models: Their Role in De-risking Topical Formulation Development*. M.B. Brown, J. Lenn. *IPI Media World* (2021) Volume 13 (2)
- E23. *Bioequivalence in Topical Generics*. M.B. Brown, J. Lenn, C. Evans. *Contract Pharma*, 11.09.21
- E24. *The Enigma of Topical Biologics Development*. M.B. Brown, J. Lenn. *International Pharmaceutical Industry* (2022) Spring, Volume 14 Issue 1
- E25. *Inhalation Formulation Development – Predicting API Behavior*. M.B. Brown, C. Evans. *Pharmaceutical Technology* May 2022, Volume 46, Issue 5 – pages 22-25
- E26. *Topical Formulation in Pharma—Balancing Form and Function*. L Allen. *Pharmaceutical Technology*, May 2022, Volume 46, Issue 5 – Pages 28-31
- E27. *Regulatory and Developmental Complexities Around Demonstrating Bioequivalence for a Topical Generic Product*. M.B. Brown, J. Lenn. *International Pharmaceutical Industry* (2022) Winter, Volume 14 Issue 4

PhD Student Supervision

- PD1. Zhoujing Zhou (completed August. 2000; Chinese Government funded). *Spray-dried peptide formulations for transdermal powdered delivery*
- PD2. Manita Hanpanitcharoen (completed September 2000; Thailand Government funded). *Hyaluronan induced targeting of drugs to the epidermis*
- PD3. Tahir Nazir (P/T, Completed August 2004; Industrially funded). *The dermal delivery and localisation of drugs*
- PD4. Shahira Amr (completed May 2002; Self funded). *An investigation of novel vesicle type formulations for intradermal drug delivery*
- PD5. Sian Lim (completed February 2001; Self funded). Winner of the EMI Graduate Student Outstanding Manuscript Award at AAPS 2001. *An investigation of novel microparticulate mucoadhesive formulations for nasal drug delivery*
- PD6. Francesca Rytlewski (completed September 2002, EPSRC funded). *Pharmaceutically engineered systems for transdermal absorption*
- PD7. Yong-Hong Liao (completed November 2002; Industrially and ORS funded). *Pharmaceutical development of protein/peptide powder formulations*
- PD8. Rebecca Ingram (completed March 2003; KCLA studentship). *A novel topical approach for the treatment of schistosomiasis*
- PD9. Abdul Quadir (completed October 2004; EPSRC studentship). *Spray dried formulations for the pulmonary delivery of peptides and proteins*

- PD10. Tracey Garnier (completed September 2004; Sir Halley Stewart Trust funded). *Novel approaches to the topical treatment of cutaneous leishmoniasis*
- PD11. Stuart Jones (completed April 2005; MedPharm and KCL funded). *Protein/peptide formulations for pulmonary delivery*
- PD12. Weijiang He (completed October 2005; KCL funded). *An investigation into the mode of action of hyaluronan in topical formulations*
- PD13. Franklyn Akomeah (completed October 2005; Industrially funded). *Development of novel transdermal drug delivery devices*
- PD14. Barbara Jff (completed September 2005; EPSRC funded). *Investigating the dissolution of amorphous and semi-amorphous particles in simulated lung fluid*
- PD15. Fergus Manford (completed February 2006; Industrially funded). *Drug targeting to the lung*
- PD16. Emily Cooper (completed November 2005; Sir Halley Stewart funded). *The use of imaging technology to investigate the inhibition of schistosome cercarial penetration of human skin*
- PD17. Gihan Nananyakkara (completed March 2006; MedPharm and KCL funded). *Development of novel topical penetration enhancers*
- PD18. Marlise Santos (completed February 2006; Brazilian Space Agency funded). *Nasal drug delivery in zero gravity*
- PD19. See Wah Tang (completed July 2008; EPSRC/RSC funded). *The use of dynamic mechanical analysis for the detection and quantification of amorphous content in pharmaceutical powders*
- PD20. Maria Prapadopolou (P/T completed May 2012; self funded). *Mathematical modelling of drug absorption across the skin*
- PD21. David Potter (P/T completed July 2009; industrially funded). *The development of cannabis based medicinal products*
- PD22. Mark Lakeram (completed March 2007; EPSRC funded). *Novel topical formulations for drug delivery to the skin*
- PD23. Rajeshree Khengar (completed November 2009; industrially funded). *Novel topical formulations for unguinal drug delivery*
- PD24. Mojgan Moddaresi (completed July 2010; Institute of Cosmetic Science funded). *The assessment of some cosmetic formulations*
- PD25. Monica Reid (completed July 2009; industrially funded). *The development of novel MDA systems for topical drug delivery*
- PD26. Yanjun Zhao (completed November 2009, Dorothy Hodgkin funded). *Novel nanoformulations*
- PD27. Hadjer Nacer (completed October 2009; Algerian Government funded). *Nanoparticulate nasal formulations*
- PD28. Kirsten Staff (completed June 2010; Industrially funded). *The development of novel topical formulations for wound healing*

- PD29. Sarah Fila (completed March 2010; Algerian Government funded). *Eutectic topical formulation development*
- PD30. Daniel Wood (completed September 2010; EPSRC funded). *Development of thermoregulating topical drug delivery systems*
- PD31. Iris Palmer (completed December 2011; SoP funded). *Novel particulate formulations for the treatment of skin infection*
- PD32. Faiza Benouda (completed September 2010; Algerian Government funded). *Dermal formulations and supersaturated residual drug activity*
- PD33. Charles Evans (completed January 2018; Industrially funded). *A novel dynamic spray formulation for the treatment of Athlete's foot*
- PD34. Yousef Al-Ebini (completed February 2014; EPSRC funded). *Nanoparticle drug delivery to the eye*
- PD35. Vanessa Viegas (F/T completed September 2015; HPA funded). *The use of sebum in hot zone assessment*
- PD36. Satyajit Shetage (P/T completed September 2015; Industrially funded). *The role of sebum in disease diagnosis and treatment*
- PD37. Aateka Patel (EPSRC Case funded, completed September 2012). *Ion-pairs in pulmonary drug delivery*
- PD38. Andrew Edwards (Industrially funded, completed September 2014). *Novel film forming transdermal devices to prevent illicit drug use*
- PD39. Francesca Caserta (Industrially funded, completed October 2015). *Development of thermoregulating topical drug delivery systems*
- PD40. Irene Parsini (Industrially funded, completed January 2018). *Improving inhalation flow rate dependence for device performance in chronic lung conditions*
- PD41. Natasha Ball (MRC Case funded, completed November 2015). *Un-natural amino acids as novel skin moisturisers*
- PD42. Hassan Farah (Industrially funded, completed June 2018). *Thermophoretic drug delivery*
- PD43. Jo Muddle (EPSRC Case funded, completed March 2017). *In vitro modelling of pulmonary drug delivery*
- PD44. Jon Lenn (Industrially funded, completed January 2016). *Biologic delivery to the skin*
- PD45. Mubinah Beebeejaun (Industrially funded, completed October 2020). *Investigations into the oapplication of topical steroids and emollients*
- PD46. Cidalia Pereira (EPSRC Case funded, completed October 2018). *Dermal drug delivery systems*
- PD47. Jessica Neil (Industrially funded, P/T completed September 2022). *Novel ex vivo human skin inflammatory pathway models for use in the development of topical medicines for the treatment of autoimmune dermatological disease*
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- R111. *Identifying Patient Specific Preferences for Drug Delivery Systems in Parkinson's Disease.* K. Lefteri, F. Liu, M.B. Brown., Available at: <https://www.ukpharmsci.org/2014ResourcePack/Default.asp>

Grants Awarded - Available upon request

MEMBERSHIP OF PROFESSIONAL BODIES AND SOCIETIES

CChem FRSC Membership of the Royal Society of Chemistry (1993)

Member of the Academy of Pharmaceutical Scientists

Member of the Controlled Release Society

Member of EUFEPS

Member of the Royal Pharmaceutical Society of Great Britain Academic Pharmacy Group

ADDITIONAL INFORMATION

- Named on the Medicine Maker Power list of 2023 and 2024 for my work on the development and commercialisation of over 50 small molecular weight drug products.
- Member of the EPSRC Peer Review College 2006-
- Founding member and committee member of the EPSRC Drug Delivery Research Network.
- Member of the FDA sponsored Q3 working group and committee on Performance Testing.
- Member of the executive organising committee of the international meeting Perspectives in Percutaneous Permeation that occurs biennially in France.
- Member of the organising committee and session chair for the AGAH international workshops in topical product development.
- Grant referee for the Research and Development Office of Northern Ireland, Austrian Science Fund, the Scottish Research and Development Office and STW, the Dutch Technology Foundation; The Wellcome Trust, the US National Institute of Occupational Safety and Health and the National Institute of Health Research.
- Intercollegiate examiner for the London School of Pharmacy.
- One of my former students (Sian Lim) was awarded the EMI Graduate Student Outstanding Manuscript Award in Pharmaceutical Technology at AAPS 2001.
- Awarded the EMI faculty supervisor of the year in Pharmaceutical Technology at AAPS 2001 for supervision of Sian Lim.
- Invitations to visit and work at the Hospital for Sick children, Toronto Canada and the Lyons Eye Institute, Perth, Australia.