

Julia Pletz, Ph.D., M.Sc. Tox., M.Sc.

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Professional Profile

Dr Pletz is an experienced toxicologist with in-depth knowledge of physiologically-based (pharmacokinetic (PB(P)K)) and mechanistic modelling, and experience in dose-response assessment as well as occupational toxicology. Throughout her education and career in chemical risk assessment, she has been focusing on quantitative approaches to assess hazard and risk of agrochemicals, pharmaceuticals, biologicals, metals and chemical mixtures. The use of in silico methods and toxicokinetic / toxicodynamic assessment and interpretation are areas of specialism and expertise. Dr Pletz also brings a broad knowledge of working with diverse toxicity data packages and regulatory frameworks.

As part of her PhD thesis, Dr. Pletz developed a PBPK coupled mechanistic model of the kidney to understand xenobiotic dose-response relationships in sensitive and non-sensitive individuals. Model development comprised definition of model structure and mathematical representation, model parameterisation including in vitro to in vivo extrapolation (IVIVE). The robustness of the model and used parameter values were tested by applying local and global sensitivity analyses besides verification of prediction results against clinical data. Most of her PBPK and mechanistic modelling work was performed using Matlab/SimBiology[®] software but she also has experience in using R and the SimCypTM PBPK Simulator.

With respect to her toxicological expertise, Dr Pletz's prior work focussed on renal toxicity, absorption via the dermal and inhalation routes, and the derivation of occupational exposure limits (OELs) and permitted daily exposure (PDE) levels.

Dr Pletz is an individual member of the Federation of European Toxicologists and European Societies of Toxicology (EUROTOX) and has been actively contributing to working groups such as the Leadscope/Instem In Silico Toxicology Consortium Biomolecule Reactivity Working Group.

Academic Credentials & Professional Honors

Ph.D., Computational Toxicology, Liverpool John Moores University, 2020

M.Sc. Tox., Toxicology, Medical University of Vienna, 2016

M.Sc., Risk Analysis, King's College, University of London, UK, 2011

B.A., Business Administration, Media and Communications, Ravensburg University of Cooperative Education, 2005

Prior Experience

Post-Doctoral Research Assistant – Computational toxicology, Liverpool John Moores University, Jan 2020 – Jul 2020

Trainee – PBPK modelling for mixture risk assessment, European Commission Joint Research Centre (JRC), Jul 2018 – Nov 2018

Occupational Toxicologist, Novartis Pharma, Jan 2016 – Nov 2016

Postgraduate – Human Health Assessment, Novartis Pharma, Sep 2014 – Dec 2015

Volunteer Toxicology Research Assistant, Experimental Toxicology Services (ETS) The Netherlands, Sep 2013 – Aug 2014

Conference Researcher/Manager – Chemical Risk Assessment and Regulation, Die Akademie Fresenius 2012-2013

Summer Intern, ChemRisk, Apr 2011-May 2011

Professional Affiliations

Federation of European Toxicologists and European Societies of Toxicology (EUROTOX)

Languages

German

Spanish

Publications

Pletz, J., Allen, T.J., Madden, J.C., Cronin M.T.D., Webb S.D. 2021. A mechanistic model to study the kinetics and toxicity of salicylic acid in the kidney of four virtual individuals. *Computational Toxicology* 19, 100172.

Pletz, J.*, Blakeman, S. *, Paini, A., Parissis, N., Worth, A., Andersson, A.-M., Frederiksen, H., Sakhi, A. K., Thomsen, C., Bopp, S.K. (* equal contribution). 2019. Physiologically based kinetic (PBK) modelling and human biomonitoring data for mixture risk assessment. *Environment International* 143, 105978.

Pletz, J., Enoch, S.J., Jais, D., Mellor, C.L., Pawar, G., Firman, J.W., Madden, J.C., Webb, S.D., Tagliati, C., Cronin, M.T.D. 2018. A critical review of adverse effects to the kidney: mechanisms, data sources, and in silico tools to assist prediction. *Expert Opinion on Drug Metabolism & Toxicology*, Vol. 14(12), pp.1125-1253. DOI: 10.1080/17425255.2018.1539076.

Tennekes, H.A., Pletz, J., Sánchez-Bayo, F. 2016. Development of a dose-response model for risk assessment of receptor-mediated effects. *Internal Medicine Review*, Vol.1 (2).

Pletz, J., Sánchez-Bayo, F., Tennekes, H. A. 2016. Dose-response analysis indicating time-dependent neurotoxicity caused by organic and inorganic mercury - implications for toxic effects in the developing brain. *Toxicology*, 347: 1-5.

Presentations

Pletz, J. 2020. A mechanistic model of the kidney for salicylic acid: Development, findings and uncertainties. Webinar presentation at the continuous education webinar series organised by Dr. Selene Araya, Managing Toxicologist, Corporate EHS, Lonza AG, held on 14 January 2020.

Pletz, J., Allen T.J., Madden J.C., Cronin M.T.D., Webb S.D. 2019. A mechanistic model incorporating IVIVE to quantify a proposed AOP on the nephrotoxicity of NSAID. *Toxicology Letters*, 314: S265. Poster presentation at the 55th Congress of the European-Societies-of-Toxicology (EUROTOX), 8-11 September 2019, Helsinki, Finland.

Pletz, J., Ebbrell, D.J., Enoch, S.J., Firman, J.W., Madden, J.C., Webb, S.D., Cronin, M.T.D. 2018. Development of a robust in silico profiler to screen for nephrotoxicity endpoints. *Toxicology Letters*, 295: S97. Poster presentation at the 54th Congress of the European-Societies-of-Toxicology (EUROTOX), 2-5 September 2018, Brussels, Belgium.

Pletz, J. 2017. Integrating pharmacokinetics and pharmacodynamics: Basics in PKPD modelling. Webinar presentation at the continuous education webinar series organised by Dr. Ester Lovsin-Barle, Head of Corporate Toxicology, EHS, Lonza AG, held on 28-Nov-2017. Excerpt of the PKPD workshop held by the British Pharmacological Society on 11 and 12 September 2017 in London.

Pletz, J., Webb, S.D., Madden, J.C., Cronin, M.T.D. 2017. Supporting the identification of potential liver toxicants using data from ToxCast in vitro assays. Poster presentation at BTS – The British Toxicology Society Annual Congress, 3-5 April 2017, Liverpool, UK.

Mellor, C., Pletz, J., Enoch, S., Jais, D., Madden, J., Soares, S., Tagliati, C., Cronin, M.T.D. 2016. State of the art and prospects for in silico approaches to predict toxicity to the kidney and bladder. *Applied In Vitro Toxicology*. December 2016, 2(4): 235-246. Poster presentation at IVTS Annual Meeting, 14-15 November, Glasgow, UK.

Two oral presentations titled “Inhalation bioavailability of low MW protein drugs” and “Skin penetration: Use of QSAR tools” at ATOPIE, a meeting of European occupational toxicologists, being held on 27-28 May 2015 by the Novartis Pharma Occupational Health Committee (NPOHC)

Co-chair of the symposium “Challenging the Status Quo for Dose-Response Analysis of Chemicals” at SRA 2015 Annual Meeting, 6-10 December 2015, Arlington, Virginia, USA.

Pletz, J., Sánchez-Bayo, F., Tennekkes, H. A. 2015. Reviewing evidence of time-dependent toxicities of organic and inorganic mercury in the developing brain. Poster presentation at the SRA 2015 Annual Meeting, 6-10 December 2015, Arlington, Virginia, USA.

Pletz, J., Weers, J.G, Winkler, G.C., Lovsin-Barle, E. 2015. P03-138: Inhalation bioavailability of low molecular-weight peptide and protein drugs. *Toxicology Letters*, 238S, S56-S383, S134. Poster presentation at EUROTOX 2015 Congress, 13-16 September 2015, Porto, Portugal.

Project Experience

Prepared documents and section summaries, in particular assessing toxicokinetic data, for dossier submission and post-submission regulatory questions and support.

Preparing JMPR dossiers, including data review and toxicological reference derivation (e.g., ADI calculation).

Conducted QSAR assessments for assessing the genotoxic potential of chemicals (e.g., metabolites and impurities) which includes performing toxicological hazard predictions and identifying potential read-across molecules, data interpretation and report writing.

Performing data gap analysis to support agrochemical / biocide (re)approvals.

Research Grants

2016 Liverpool John Moores University PhD Scholarship Scheme