

December 2023

# List of Publications

PD Dr. phil. nat. Andrea Allmendinger

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## Research Articles (peer-reviewed) \* *corresponding author*

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- 1 Antiprotozoal, antimycobacterial and cytotoxic potential of twenty-three British and Irish red algae.  
**Allmendinger A**, Spavieri J, Kaiser M, Casey R, Hingley-Wilson S, Lalvani A, Guiry M, Blunden G, Tasdemir D.  
Phytother Res. **2010** Jul;24(7):1099-103. doi: 10.1002/ptr.3094. [PMID:20077438](#)
- 2 Antimycobacterial, antiprotozoal and cytotoxic potential of twenty-one brown algae (Phaeophyceae) from British and Irish waters.  
Spavieri J, **Allmendinger A**, Kaiser M, Casey R, Hingley-Wilson S, Lalvani A, Guiry MD, Blunden G, Tasdemir D.  
Phytother Res. **2010** Nov;24(11):1724-9. doi: 10.1002/ptr.3208. [PMID:20564461](#)
- 3 Antiprotozoal, antitubercular and cytotoxic potential of cyanobacterial (blue-green algal) extracts from Ireland.  
Broniatowska B, **Allmendinger A**, Kaiser M, Montamat-Sicotte D, Hingley-Wilson S, Lalvani A, Guiry M, Blunden G, Tasdemir D.  
Nat Prod Commun. **2011** May;6(5):689-94. [PMID:21615033](#)
- 4 Assessment of dual life stage antiplasmodial activity of british seaweeds.  
Spavieri J, **Allmendinger A**, Kaiser M, Itoe MA, Blunden G, Mota MM, Tasdemir D.  
Mar Drugs. **2013** Oct;11(10):4019-34. doi: 10.3390/md11104019. [PMID:24152562](#)
- 5 Rheological characterization and injection forces of concentrated protein formulations: an alternative predictive model for non-Newtonian solutions.  
**Allmendinger A**, Fischer S, Huwyler J, Mahler HC, Schwarb E, Zarraga IE, Mueller R.  
Eur J Pharm Biopharm. **2014** Jul;87(2):318-28. doi: 10.1016/j.ejpb.2014.01.009. [PMID:24560966](#)
- 6 High-throughput viscosity measurement using capillary electrophoresis instrumentation and its application to protein formulation.  
**Allmendinger A**, Dieu LH, Fischer S, Mueller R, Mahler HC, Huwyler J.  
J Pharm Biomed Anal. **2014** Oct;99:51-8. doi: 10.1016/j.jpba.2014.07.005. [PMID:25077704](#)
- 7 Measuring tissue back-pressure – in vivo injection forces during subcutaneous injection.  
**Allmendinger A**, Mueller R, Schwarb E, Chipperfield M, Huwyler J, Mahler HC, Fischer S.  
Pharm Res. **2015** Jul;32(7):2229-40. doi: 10.1007/s11095-014-1611-0. [PMID:25537343](#)
- 8 Sterile Filtration of Highly Concentrated Protein Formulations: Impact of Protein Concentration, Formulation Composition, and Filter Material.  
**Allmendinger A**, Mueller R, Huwyler J, Mahler HC, Fischer S.  
J Pharm Sci. **2015** Oct;104(10):3319-29. doi: 10.1002/jps.24561. [PMID:26149748](#)

- 9 Solid-State Hydrogen-Deuterium Exchange Mass Spectrometry: Correlation of Deuterium Uptake and Long-Term Stability of Lyophilized Monoclonal Antibody Formulations. Moorthy BS, Zarraga IE, Kumar L, Walters BT, Goldbach P, Topp EM, **Allmendinger A\***. *Mol Pharm*. 2018 Jan;15(1):1-11. doi: 10.1021/acs.molpharmaceut.7b00504. [PMID:29182876](#)
- 10 Evaluation of Glass Delamination Risk in Pharmaceutical 10 mL/10R Vials. Ditter D, Nieto A, Mahler HC, Roehl H, Wahl M, Huwyler J, **Allmendinger A\***. *J Pharm Sci*. 2018 Feb;107(2):624-637. doi: 10.1016/j.xphs.2017.09.016. [PMID:28989023](#)
- 11 Characterization of surface properties of glass vials used as primary packaging material for parenterals. Ditter D, Mahler HC, Roehl H, Wahl M, Huwyler J, Nieto A, **Allmendinger A\***. *Eur J Pharm Biopharm*. 2018 Apr;125:58-67. doi: 10.1016/j.ejpb.2017.12.018. [PMID:29331438](#)
- 12 Impact of Vial Washing and Depyrogenation on Surface Properties and Delamination Risk of Glass Vials. Ditter D, Mahler HC, Gohlke L, Nieto A, Roehl H, Huwyler J, Wahl M, **Allmendinger A\***. *Pharm Res*. 2018 May;35(7):146. doi: 10.1007/s11095-018-2421-6. [PMID:29796727](#)
- 13 Imaging Techniques to Characterize Cake Appearance of Freeze-Dried Products. Haeuser C, Goldbach P, Huwyler J, Friess W, **Allmendinger A\***. *J Pharm Sci*. 2018 Nov;107(11):2810-2822. doi: 10.1016/j.xphs.2018.06.025. [PMID: 30005985](#)
- 14 Be Aggressive! Amorphous Excipients Enabling Single-Step Freeze-Drying of Monoclonal Antibody Formulations. Haeuser C, Goldbach P, Huwyler J, Friess W, **Allmendinger A\***. *Pharmaceutics*. 2019 Nov;11(11):616. doi: 10.3390/pharmaceutics11110616. [PMID: 31744221](#)
- 15 Optimizing the Formulation and Lyophilization Process for a Fragment Antigen Binding (Fab) Protein Using Solid-State Hydrogen-Deuterium Exchange Mass Spectrometry. Kumar L, Chandrababu KB, Balakrishnan SM, **Allmendinger A**, Walters B, Zarraga IE, Chang DP, Nayak P, Topp EM\*. *Mol Pharm*. 2019 Nov;16(11):4485-4495. doi: 10.1021/acs.molpharmaceut.9b00614. [PMID: 31568722](#)
- 16 Near-Infrared Spectroscopy to Determine Residual Moisture in Freeze-Dried Products: Model Generation by Statistical Design of Experiments. Clavaud M, Lema-Martinez C, Roggo Y, Bigalke M, Guillemain A, Hubert P, Ziemons E, **Allmendinger A\***. *J Pharm Sci*. 2020 Jan;109(1):719-729. doi: 10.1016/j.xphs.2019.08.028. [PMID: 31499067](#)
- 17 Excipients for Room Temperature Stable Freeze-Dried Monoclonal Antibody Formulations. Haeuser C, Goldbach P, Huwyler J, Friess W, **Allmendinger A\***. *J Pharm Sci*. 2020 Jan;109(1):807-817. doi: 10.1016/j.xphs.2019.10.016. [PMID: 31622600](#)
- 18 Impact of dextran on thermal properties, product quality attributes, and monoclonal antibody stability in freeze-dried formulations. Haeuser C, Goldbach P, Huwyler J, Friess W, **Allmendinger A\***. *Eur J Pharm Biopharm*. 2020 Feb;147:45-56. doi: 10.1016/j.ejpb.2019.12.010. [PMID: 31866444](#)
- 19 Tissue Resistance during Large-Volume Injections in Subcutaneous Tissue of Minipigs. **Allmendinger A\***, Fischer S. *Pharm Res*. 2020 Sept;37(10):184. doi: 10.1007/s11095-020-02906-9. [PMID: 32888065](#)

- 20 Comparison of Techniques to Control Ice Nucleation during Lyophilization.  
Luoma J, Ingham E, Lema Martinez C, **Allmendinger A\***.  
*Processes*. 2020 Nov; 8(11), 1439; doi:[10.3390/pr8111439](https://doi.org/10.3390/pr8111439).
- 21 Glass leachables as a nucleation factor for free fatty acid particle formation in biopharmaceutical formulations.  
**Allmendinger A\***, Lebouc V, Bonati L, Woehr A, Kishore RSK, Abstiens K.  
*J Pharm Sci*. 2021 Oct;110(2):785-795. doi: 10.1016/j.xphs.2020.09.050. [PMID: 33035535](https://pubmed.ncbi.nlm.nih.gov/33035535/)
- 22 Filling of highly concentrated protein therapeutics: Impact of droplet drying and nozzle clogging on product quality.  
**Allmendinger A\***, Ni Y, Bernhard A, Nalenz H.  
*PDA Journal of Pharmaceutical Science and Technology*. 2021, 76(1):52-64. doi: 10.5731/pdajpst.2020.012492. [PMID: 34282036](https://pubmed.ncbi.nlm.nih.gov/34282036/)
- 23 Intraocular Pressure and Injection Forces during intravitreal injection into enucleated porcine eyes.  
**Allmendinger A\***, Butt YL, Mueller C.  
*Eur J Pharm Biopharm*. 2021, 166:87-93. doi: 10.1016/j.ejpb.2021.06.001. [PMID: 34102300](https://pubmed.ncbi.nlm.nih.gov/34102300/)
- 24 Liquid crystal phase formation and non-Newtonian behavior of oligonucleotide formulations.  
Farzan M, Ross A, Müller C, **Allmendinger A\***.  
*Eur J Pharm Biopharm*. 2022, 181:270-281. doi: 10.1016/j.ejpb.2022.11.021. [PMID: 36435312](https://pubmed.ncbi.nlm.nih.gov/36435312/)
- 25 Metal-Induced Fatty Acid Particle Formation Resulting from Hydrolytic Polysorbate Degradation.  
Gregoritza K, Cai SK, Siketanc M, Woehr A, Lebouc V, Kishore RS, Nicoulin V, Bleher S, **Allmendinger A**.  
*J Pharm Sci* . 2022, 111(3):743-751. doi: 10.1016/j.xphs.2021.09.044. [PMID: 34600939](https://pubmed.ncbi.nlm.nih.gov/34600939/)

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#### **Application Notes (peer-reviewed)**

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- 26 Shake it! Mechanical stress testing of mRNA-lipid nanoparticles.  
Ruppl A, Kiesewetter D, Struett F, Koell-Weber R, Suess R, **Allmendinger A\***.  
*Eur J Pharm Biopharm*. 2023. In review.

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#### **Reviews (peer-reviewed)**

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- 27 Filling unit operation for biological drug products: Challenges and considerations.  
Adler A, **Allmendinger A\***.  
*Journal of Pharmaceutical Sciences*, 2023, In press. doi: [10.1016/j.xphs.2023.11.017](https://doi.org/10.1016/j.xphs.2023.11.017).

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#### **Communications (peer-reviewed)**

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- 28 Controlling Ice Nucleation during Lyophilization: Process Optimization of Vacuum-Induced Surface Freezing.  
**Allmendinger A\***, Butt YL, Mitzner R, Schmidt F, Luemkemann J, Lema Martinez C.  
*Processes* 2020, 8(10), 1263. doi: [10.3390/pr8101263](https://doi.org/10.3390/pr8101263).

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**Perspectives (peer-reviewed)**


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- 29 **Pharmaceutical Development of Biopharmaceutical Drug Products: A changing landscape. Allmendinger A\***.  
Pharmaceutical Research. **2021**; In Press. doi: 10.1007/s11095-021-03037-5. [PMID: 33903976](#)

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**Book Chapter**


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- 29 Hanns-Christian Mahler and **Andrea Allmendinger**.  
Stability, Formulation, and Delivery of Biopharmaceuticals. In: Tristan Vaughan, Jane Osbourn, Bahija Jallal (Eds.), Protein Therapeutics. Methods and Principles in Medicinal Chemistry, Wiley-VCH Verlag GmbH & Co. KGaA, **2017**. 469-49. Print ISBN:9783527340866. Online ISBN:9783527699124. doi: [10.1002/9783527699124](#)
- 30 **Andrea Allmendinger**, Stefan Fischer, Robert Mueller.  
Analytical characterization and predictive tools for highly concentrated protein formulations. In: Nicholas W. Warne, Hanns-Christian Mahler (Eds.), AAPS Advances in Pharmaceutical Sciences Series 38. Challenges in Protein Product Development. Springer International Publishing AG, **2017**. [ISBN10: 3319906011](#). [ISBN13: 9783319906010](#).
- 31 **Andrea Allmendinger**, Christina Häuser, Lokesh Kumar, Ilona Vollrath.  
Formulation Design for Freeze-Drying: Case Studies of Stabilization of Proteins. In: Jameel, F. (eds) Principles and Practices of Lyophilization in Product Development and Manufacturing. AAPS Advances in the Pharmaceutical Sciences Series, vol 59. **2023**. Springer, Cham. doi: [10.1007/978-3-031-12634-5\\_5](#)

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**Editorial**


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- 32 Dawn of a new beginning. **Allmendinger, A**. AAPS Open 7, 1 (2021).  
doi: [10.1186/s41120-021-00035-0](#)

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**Research Disclosures**


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- 33 **Andrea Allmendinger**, Gerhard Schilder, Raphael Mietzner, Yuen Li Butt, Joerg Lümekemann, Carmen Lema Martínez.  
Controlled nucleation during freeze drying using vacuum-induced surface freezing. Defensive publication in **Research Disclosure** journal. Nov **2016**.  
<https://rd.orbit.com/OrderForm/PublicationPreview.aspx?disNum=633018>

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**Expert opinion**


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- 34 **Andrea Allmendinger**, Hanns-Christian Mahler, Helge Leibfritz.  
Addressing the Challenges of Developing Large Volume Drug/Device Combination Products for Parenteral SC Delivery. ContractPharma. [online](#) 04. April **2022**.
- 35 **Andrea Allmendinger** and Hanns-Christian Mahler.  
How ten23 health is meeting development challenges for intravitreal products. [ONdrugDelivery](#), Issue 130, March **2022**, pp. 43-49. Frederick Furness Publishing Ltd.
- 36 **Andrea Allmendinger** and Hanns-Christian Mahler.  
Anticipating and Mitigating Challenges in the Commercialisation of Prefilled Syringes & Injection Devices – a Technical Drug Product Perspective. [ONdrugDelivery](#), Issue 142, Feb **2023**, pp. 24–26. Frederick Furness Publishing Ltd.

- 37 **Andrea Allmendinger** and Hanns-Christian Mahler.  
Vakzine aus pharmazeutisch-technologischer Sicht. *Pharmakon*. Vol 11(2), March 2023, pp. 105-115. Avoxa - Mediengruppe Deutscher Apotheker GmbH. doi:[10.1691/pn.20230009](https://doi.org/10.1691/pn.20230009)
- 38 **Andrea Allmendinger** and Hanns-Christian Mahler.  
Intravitreal injections – more than meets the eye: a technical view of product use. [ONdrugDelivery](#), Issue 143, March 2023, pp 38–42. Frederick Furness Publishing Ltd.
- 39 **Andrea Allmendinger**, Michael Adler, Hanns-Christian Mahler.  
Integrated drug product development. [ONdrugDelivery](#), Issue 147, May 2023, pp. 44-51. Frederick Furness Publishing Ltd.

### **Supervision of Thesis**

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- 40 YuenLi Butt (**Msc, 2017**) Controlled Nucleation during Lyophilisation of Protein Formulations
- 41 Dominique Ditter (**PhD, 2018**) Interaction of Parenteral Drug Products with Surfaces of Glass Vials – Studies of Glass Delamination
- 42 Christina Häuser (**PhD, 2020**) Investigation of lyophilized antibody formulations to enable short freeze-drying cycles and storage at room temperature
- 43 Beatrice Drayer (**Bsc, 2023**) Gefriertrocknung von Poly-A Lipid Nanopartikeln: Einfluss verschiedener Lyoprotektoren & Evaluierung der Robustheit des Herstellungsprozesses
- 44 Dilara Ali (**Msc, 2023**) Impact of tubing material and properties used during the aseptic fill-finish process of biopharmaceutical drug products on VHP uptake
- 45 Franziska Stütt (**Msc, 2023**) Stress testing of Poly(A)-Lipid nanoparticles
- 46 Sarah Pelaez (**PhD, ongoing**) Evaluation of freeze/thaw equipment in biopharmaceutical drug product manufacturing
- 47 Anna Ruppl (**PhD, ongoing**) Formulation and process development of freeze-dried mRNA-lipid nanoparticles
- 48 Dilara Ali (**PhD, ongoing**) Characterization of disposable consumables in biopharmaceutical drug product manufacturing
- 49 Denis Kiesewetter (**Msc, ongoing**) Shaking and freeze/thaw stress studies of mRNA-lipid nanoparticles
- 50 Corinna Perez (**Msc, ongoing**) Establishment of methodologies to study ready-to-use primary packaging material
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