

# Anna Junker

## Personal Data

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Status/Function:		Professor
Scientific focus:		Radiochemistry and Imaging Probe Development
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## Education and qualifications

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- 05/2013 Ph.D. Defense
- 11/2009 – 05/2013 Ph. D. Studies at the Faculty of Pharmaceutical and Medicinal Chemistry Münster University, Germany, under the supervision of Professor Dr. B. Wünsch
- 01/2011 – 03/2011 Visiting Ph.D. student at Nagoya University, Japan in the  
and group of Prof. Dr. K. Itami
- 02/2012 -06/2012
- 05/2010 – 12/2012 Member of the International Research Training Group (IRTG) Münster-Nagoya MS-NG GRK 1143: "Complex Functional Systems in Chemistry: Design, Development, and Applications."
- 01/2010 License to practice pharmacy (Approbation)
- 11/2008 – 10/2009 Practical training at the pharmacy "Hirsch Apotheke" in Osnabrück, Germany and at the Westphalian Wilhelms-University, Germany
- 04/2004 – 09/2008 Study of Pharmacy at the Westphalian Wilhelms- University in Münster, Germany

## Work Experience

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- 05/2018 – 12/2023 Emmy-Noether Research Group Leader (DFG) at the European Institute for Molecular Imaging at Münster University, Germany
- 11/2015 – 04/2018 Cells in Motion (Cluster of Excellence) funded Postdoctoral Fellow in the group of Prof. Dr. B. Wünsch at Münster University, Germany
- 11/2014 – 10/2015 Deutsche Forschungsgemeinschaft (DFG) funded Postdoctoral Fellow in the group of Prof. Dr. Kenneth. A. Jacobson at the National Institutes of Health (NIH), Bethesda, USA.
- 09/2013 – 10/2014 Postdoctoral Fellow in the group of Prof. Dr. Christa E. Müller at the Rheinische Friedrich-Wilhelms-University in Bonn, Germany

## Teaching Experience

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### Lectures

- 04.2016- 03.2019 ‚Arzneistoffanalytik unter besonderer Berücksichtigung der Arzneibücher (Qualitätskontrolle und Qualitätssicherung)‘ Analytical chemistry for pharmacists
- 01.2015-02.2019 Drug design for M.Sc students, Fragment-Based Drug Design-Methodology and Applications
- 04.2020-07.2023 Organic chemistry for pharmacists
- Since 04.2024 Radiopharmacy and tracer development

### Seminars/tutorials

- 11.2015-03.2017 Organic chemistry seminar
- 04.2016-03.2019 Organic and analytical chemistry tutorial for M.Sc students, special extracurricular tutorial developed by me

### Practical courses

- 04.2016- 03.2019 Course leader for ‚Arzneistoffanalytik unter besonderer Berücksichtigung der Arzneibücher (Qualitätskontrolle und Qualitätssicherung)‘ Analytical chemistry for Pharmacists and MSc students
- From 07.2024 Radiopharmacy

## Additional Qualifications and Skills

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Project manager genetic engineering facility

## Publications

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- Steiner S. T., Maisuls I., **Junker A.**, Fritz G., Faust A., Strassert C.A. Concerning the photophysics of fluorophores towards tailored bioimaging compounds: A case study involving S100A9 inflammation markers. *Photochem Photobiol Sci*, **2023**, 22, 2093–2104.
- Suitkina A. I., Kalinina S., Liu R., Heitman L. H., **Junker A.**, Daniliuc C. G., Kalinin D. V. Microwave-Assisted Synthesis, Structure, and Preliminary Biological Evaluation of Novel 6-Methoxy-5,6-dihydro-5-azapurines. *ACS Omega* **2023**, 8, 15, 14097-14112
- Patberg M., Oniani T., Disse P., Peischard S., Vinnenberg L., Zobeiri M., Romanelli M.N., Epping L., Wiendl H., Meuth S. G., Hundehege P., Seebohm G., Budde T., **Junker. A.**, Optimized synthesis and pharmacological evaluation of HCN channel inhibitor EC18. *Arch. Pharm.* **2023**, e2200665. DOI: 10.1002/ardp.202200665
- Schmidt, S.; Isaak, A.; **Junker, A.** Spotlight on P2X7 Receptor PET Imaging: A Bright Target or a Failing Star? *Int. J. Mol. Sci.* **2023**, 24, 1374.
- Isaak, A.; Dobelmann, C.; Füsser, F. T.; Erlitz, K. S.; Koch, O.; **Junker, A.** Unveiling the Structure-Activity Relationships at the Orthosteric Binding Site of P2X Ion Channels: The Route to Selectivity. *J. Med. Chem.* **2022**, 65, 11291–11308.
- Oniani T., Vinnenberg L., Chaudhary R., Schreiber J. A., Riske K., Williams B., Pape H-C., White J. A., **Junker A.**, Seebohm G., Meuth S. G., Hundehege P., Zobeiri M., Budde T, Effects of Axonal Demyelination, Inflammatory Cytokines and Divalent Cation Chelators on Thalamic HCN Channels and Oscillatory Bursting. *Int. J. Mol. Sci.* **2022**, 23, 628.
- Turgutalp B., Bhattarai P., Ercetin T., Luise C., Reis R., Gurdal E. E., Isaak A., Biriken D., Dinter E.,

- Sipahi H., Schepmann D., **Junker A.**, Wünsch B., Sippl W., Gulcan H. O., Kizil C, Yarim M. Discovery of Potent Cholinesterase Inhibition-Based Multi-Target-Directed Lead Compounds for Synaptoprotection in Alzheimer's Disease. *J. Med. Chem.* **2022**, 65, 12292–12318.
8. Lemmerhirt, J. P.; Isaak, A.; Liu, R.; Kock, M.; Daniliuc, C. G.; Jacobson, K.A.; Laura H. Heitman, L.H.; **Junker, A.** Development of bicyclo[3.1.0]hexane-based A3 receptor ligands – closing the gaps in the structure-affinity relationships. *Molecules* **2022**, 27, 2283.
  9. Scortichini, M.; Idris, R.; Moschütz, S.; Keim, A.; Salmaso, V.; Dobelmann, C.; Oliva, P.; Losenkova, K.; Irjala, H.; Vaittinen, S.; Sandholm, J.; Yegutkin, G.; Sträter, N.; **Junker, A.**; Müller, C.; Jacobson, K. A., Structure-activity relationship of 3-methylcytidine-5'- $\alpha,\beta$ -methylenediphosphates as CD73 inhibitors. *J. Med. Chem.* **2022**, 65, 2409–2433.
  10. Oliva P.; Scortichini M.; Dobelmann C.; Jain S.; Gopinath V.; Toti K.S.; Phung N.B; **Junker A.**; Jacobson K.A., Structure-activity relationships of pyrimidine nucleotides containing a 5'- $\alpha,\beta$ -methylene diphosphonate at the P2Y6 receptor. *Bioorg Med Chem Lett* **2021**, 45, 128137.
  11. Patberg M.; Isaak, A.; Füsser, F.; Ortiz Zacarías, N. V.; Vinnenberg, L.; Schulte, J.; Michetti, L.; Grey, L.; van der Horst, C.; Hundehage, P.; Koch, O.; Heitman, L. H.; Budde, T.; **Junker A.**, Piperazine squaric acid diamides, a novel class of allosteric P2X7 receptor antagonists. *Eur. J. Med. Chem.* **2021**, 226, 113838.
  12. Silva D.G., Feijens P-B, Hendrickx R, Matheussen A, Grey L, Caljon G, Maes L, Emery FS, **Junker A.**, Development of Novel Isoindolone-Based Compounds against *Trypanosoma brucei* rhodesiense. *ChemistryOpen* **2021**, 10, 922-927.
  13. Silva D. G., **Junker A.**, de Melo S., Fumagalli F., Gillespie J. R., Molasky N., Buckner, F. S., Matheussen A., Caljon G., Maes L., Emery F. S. Synthesis and Structure-Activity Relationships of Imidazopyridine/Pyrimidine- and Furopyridine-Based Anti-infective Agents against Trypanosomiasis. *ChemMedChem*, **2021**, 16, 966–975.
  14. Wagner S, de Moura Gatti F, Silva DG, Ortiz Zacarias NV, Zweemer AJM, Hermann S, De Maria M, Koch M, Weiss C, Schepmann D, Heitman LH, Tschammer N, Kopka K, **Junker A.**, Development of the First Potential Nonpeptidic Positron Emission Tomography Tracer for the Imaging of CCR2 Receptors. *ChemMedChem* **2021**, 16, 640-645.
  15. **Junker A.**;\* Renn C, Dobelmann C.; Namasivayam V.; Jain S.; Losenkova K.; Irjala H.; Duca S.; Balasubramanian R.; Chakraborty S.; Börgel F.; Zimmermann H.; Yegutkin G G.; Müller C. E.; Jacobson K. A. Structure-Activity Relationship of Purine and Pyrimidine Nucleotides as Ecto-5'-Nucleotidase (CD73) Inhibitors. *J. Med. Chem.* **2019**, 11, 3677-3695.  
\* **first and co-corresponding author.**
  16. Liu Q.; **Junker A.**; Murakami K.; Hu P., Automated Counting of Cancer Cells by Ensembling Deep Features. *Cells* **2019**, 8, 1019.
  17. Thum, S.; Kokornaczyk, A. K.; Seki, T.; De Maria, M.; Ortiz Zacarias, N. V.; de Vries, H.; Weiss, C.; Koch, M.; Schepmann, D.; Kitamura, M.; Tschammer, N.; Heitmann, L. H.; **Junker, A.**; Wünsch, B.; Synthesis and biological evaluation of chemokine receptor ligands with 2-benzazepine scaffold. *Eur. J. Med. Chem.* **2017**, 135, 401-413.
  18. Kokornaczyk A.K; Thum S.; Daniliuc C.G.; **Junker A.**; Wünsch B., Molecular structure of a brominated 2-benzazepinone – a crucial intermediate in the synthesis of novel chemokine CCR2 receptor antagonists. *Z. Naturforsch. B* **2017**, 72, 421-424.
  19. **Junker, A.**; Balasubramanian, R.; Ciancetta, A.; Uliassi, E.; Kiselev, E.; Martiriggiano, C.; Trujillo, K.; Mchedlidze, G.; Birdwell, L.; Brown, K. A.; Harden, K.; Jacobson K. A.; Structure-Based Design of 3-(4-Aryl-1H-1,2,3-triazol-1-yl)-Biphenyl Derivatives as P2Y<sub>14</sub> Receptor Antagonists. *J. Med. Chem.* **2016**, 59, 6149-6168.
  20. **Junker, A.**; Kokornaczyk, A. K.; Zweemer, A. J. M.; Frehland, B.; Schepmann, D.; Yamaguchi, J.; Itami, K.; Faust, A.; Hermann, S.; Wagner, S.; Schafers, M.; Koch, M.; Weiss, C.; Heitman, L. H.; Kopka, K.; Wünsch, B., Synthesis, binding affinity and structure-activity relationships of novel, selective and dual targeting CCR2 and CCR5 receptor antagonists. *Org. Biomol. Chem.* **2015**, 13, 2407-2422.
  21. **Junker A.**; Kokornaczyk A.K.; Strunz A.K.; Wünsch B., Selective and Dual Targeting of CCR2 and CCR5 Receptors: A Current Overview. *Top Med Chem Chemokines* **2015**, 14, 187-241.
  22. Strunz A.K; Zweemer A.J.M; Weiss C.; Schepmann D.; **Junker A.**; Heitman L.H.; Koch M.; Wunsch B., Synthesis and biological evaluation of spirocyclic antagonists of CCR2 (chemokine CC receptor

- subtype 2). *Bioorg Med Chem* **2015**, 23, 4034-4049.
23. **Junker, A.**; Schepmann, D.; Yamaguchi, J.; Itami, K.; Faust, A.; Kopka, K.; Wagner, S.; Wünsch, B., Diverse Modification of the 4-Methylphenyl Moiety of TAK-779 by Late-Stage Suzuki-Miyaura Cross-Coupling. *Org. Biomol. Chem.* **2014**, 12, 177-186.
24. **Junker, A.**; Yamaguchi, J.; Itami, K.; Wünsch, B., Synthesis of Thiophene-Based TAK-779 Analogues by C–H Arylation. *J. Org. Chem.* **2013**, 78, 5579-5586.

### Invited Talks

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- 2023 14<sup>th</sup> International Congress of Pharmaceutical Sciences (CIFARP) – invited talk
- 2023 7<sup>th</sup> RSC-BMCS / SCI Symposium on Ion Channels as Therapeutic Targets – invited talk
- 2022 IRTG 2678 meeting in Nagoya – invited talk
- 2022 Annual Meeting of the German Pharmaceutical Society (DPhG) – selected talk
- 2022 EFMC International Symposium on Medicinal Chemistry (EFMC-ISMC 2022) – selected talk
- 2021 Frontiers in Medicinal Chemistry (online) – invited talk
- 2021 PiDD – Perspectives on interdisciplinary Drug Development | Promote Synergies! in the research landscape Leipzig/Dresden – invited talk
- 2018 Cancer Research Institute, Kanazawa University, Japan – invited talk
- 2018 Organic Chemistry Department, Waseda University, Japan – invited talk

### Conferences and Courses attended

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### Professional Memberships

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- Since 01/2024 Vice president (Research and Universities) of the German Pharmaceutical Society (DPhG)
- 06/2018 – 12/2023 Member of the New York Academy of Science (NYAS)
- 01/2018 – 10/2023 Chairwoman of the group Westfalen-Lippe of the German Pharmaceutical Society (DPhG)
- 11/2015 – 10/2018 Member of the Young Academy of the Cells in Motion (Cluster of Excellence)
- 10/2014 – current Member of the German Purine Club
- 01/2013 – current Member of the German Chemical Society (GDCh)
- 01/2010 – current Member of the German Pharmaceutical Society (DPhG)

## Research Grants and Fellowships

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- 01/2019- ongoing      German Research Council (DFG) funded graduate school 'Chembion –Chemical biology of ion channels' Project number 393110012; GRK 2515/1
- 01/2021-ongoing      German Research Council (DFG) funded international research training group (IRTG) Functional  $\pi$ -Systems: Activation, Interaction and Application (pi-Sys). Project number 437785492; IRTG 2678/1
- 05/2018 – 7/2024      Emmy-Noether Research Group (DFG)
- 11/2015 – 04/2018      Cells in Motion (Cluster of Excellence) funded Postdoctoral Fellow
- 11/2014 – 10/2015      Deutsche Forschungsgemeinschaft (DFG) funded Postdoctoral Fellow

## Awards and Honours

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- 09/2022                  DPhG Horst Böhme award