



TO MAGNIFICO RETTORE OF UNIVERSITA' DEGLI STUDI DI MILANO

ID CODE

6742

I the undersigned asks to participate in the public selection, for qualifications and examinations, for the awarding of a type B fellowship at **Dipartimento di Chimica**

Scientist- in - charge: **Prof.ssa Dr. Francesca Vasile**

[Name and surname]

## CURRICULUM VITAE

### PERSONAL INFORMATION

Surname	Zehe
Name	Markus

### PRESENT OCCUPATION

Appointment	Structure
Postdoctoral Researcher	University of Würzburg, Institute of Pharmacy, Chair of Medicinal Chemistry

### EDUCATION AND TRAINING

Degree	Course of studies	University	year of achievement of the degree
Degree	Pharmacy (State Examination)	Würzburg	2015
Specialization	-	-	-
PhD	Medicinal Chemistry	Würzburg	2023
Master			
Degree of medical specialization	-	-	-
Degree of European specialization	-	-	-
Other	License to Practice Pharmacy	-	2016

### REGISTRATION IN PROFESSIONAL ASSOCIATIONS

Date of registration	Association	City
2016	BLAK (Bavarian State Association of Pharmacists)	München
2011	DPhG (German Pharmaceutical Society)	Frankfurt am Main



## FOREIGN LANGUAGES

Languages	level of knowledge
German	mother tongue
English	business fluent
French	good

## AWARDS, ACKNOWLEDGEMENTS, SCHOLARSHIPS

Year	Description of award
2010	GDCh (German Chemical Society) award for best high school graduation result in Chemistry

## TRAINING OR RESEARCH ACTIVITY

description of activity
<ol style="list-style-type: none"><li>1) <u>Fragment Screening/Fragment-based Drug Design (PhD and PostDoc).</u> Set-up of fragment library. Set-up, preparation and execution of NMR interaction experiments (Ligand-based: STD-NMR, Water-LOGSY, CPMG. Protein-based: Chemical Shift Perturbation analysis using XL-ALSOFAST). Expression, purification and crystallization of target proteins and solving/refinement of X-Ray datasets for apo-proteins as well as protein-ligand complexes. ITC measurements and Fluorescence Polarization (FP) assay. Virtual Screening based on fragment hits (NMR/X-Ray). Molecular Dynamics Simulations (Conventional as well as Mixed Solvent MDs) including interaction analysis at atomic level. De-novo design and synthesis of small molecule ligands.</li><li>2) <u>Design of novel nucleic acid therapeutics (PostDoc).</u> Synthesis of novel lipids and nucleic acid interaction motifs for LNPs (Lipid Nanoparticles). Design of RNA-PROTACs. Investigation of RNA-ligand/RNA-protein interactions (by means of NMR). Development of targeted nucleic acid delivery systems for therapeutic use.</li></ol>

## PROJECT ACTIVITY

Year	Project
2023 - today	Postdoctoral Researcher
2017 - 2022	PhD project: Development of Ligands for the Chaperone Hsc70. Design, Synthesis and evaluation of dual Chaperone binding Ligands (addressing Hsc70 and Hsp90)
2022	Investigations on Ephedrin binding to human alpha-1-acid glycoprotein
2020	Investigations on Sesquiterpenes binding to GABA <sub>A</sub> receptor
2015	Development of controlled therapeutic gas delivery systems; especially: Oral Carbon Monoxide Releasing Systems (OCORS)

## PATENTS

Patent
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## CONGRESSES AND SEMINARS

Date	Title	Place
March 2022	8 <sup>th</sup> RCS-BMCS Fragmet-based Drug Discovery Meeting (Fragments 2022)	Cambridge
May 2019	12 <sup>th</sup> European Workshop in Drug Design (XII EWDD)	Siena
March 2019	Frontiers in Medicinal Chemistry	Würzburg

## PUBLICATIONS

Books
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Articles in reviews
<i>Combined in-solution fragment screening and crystallographic binding-mode analysis with a two-domain Hsp70 construct.</i> ACS Chemical Biology 19 (2), pp. 392 - 406. Zehe, Markus; Kehrein, Josef; Schollmayer, Curd; Plank, Christina; Kovacs, Helena; Merino Asumendi, Eduardo; Holzgrabe, Ulrike; Grimm, Clemens; Sotriffer, Christoph (2024). DOI: 10.1021/acschembio.3c00589.
<i>Structure-Based Design and Synthesis of Covalent Inhibitors for Deubiquitinase and Acetyltransferase ChlaDUB1 of Chlamydia trachomatis.</i> Journal of Medicinal Chemistry 67(13), pp. 10710 - 10742. Zimmermann, Thomas; Feng, Jiachen; De Campos, Luana; Schlötzer, Jan; Ramirez, Yesid; Schwickert, Kevin; Zehe, Markus; Schirmeister, Tanja; Kisker, Caroline; Sotriffer, Christoph; Conda-Sheridan, Martin; Decker, Michael (2024). DOI: 10.1021/acs.jmedchem.4c00230.
<i>Searching for new agents against Enterobacteriaceae from nature: Approaches, potential plant species, isolated compounds, and their respective properties.</i> Phytochemistry Reviews. Masota, Nelson E.; Zehe, Markus; Vogg, Gerd; Ohlsen, Knut; Meinel, Lorenz; Holzgrabe, Ulrike (2023). DOI: 10.1007/s11101-023-09902-y.
<i>Characterization of binding properties of ephedrine derivatives to human alpha-1-acid glycoprotein.</i> European Journal of Pharmaceutical Sciences 181, p. 106333. Schmidt, Sebastian; Zehe, Markus; Holzgrabe, Ulrike (2023). DOI: 10.1016/j.ejps.2022.106333.
<i>Fragment screening using biolayer interferometry reveals ligands targeting the SHP-motif binding site of the AAA+ ATPase p97.</i> Communications Chemistry 5 (1), p. 169. Bothe, Sebastian; Hänzelmann, Petra; Böhler, Stephan; Kehrein, Josef; Zehe, Markus; Wiedemann, Christoph; Hellmich, Ute A.; Brenk, Ruth; Schindelin, Hermann; Sotriffer, Christoph (2022). DOI: 10.1038/s42004-022-00782-5.
<i>Sesquiterpenes and sesquiterpenoids harbor modulatory allosteric potential and affect inhibitory GABA<sub>A</sub> receptor function in vitro.</i> Journal of Neurochemistry 159 (1), pp. 101-115. Janzen, Dieter; Slavik, Benedikt; Zehe, Markus; Sotriffer, Christoph; Loos, Helene M.; Buettner, Andrea; Villmann, Carmen (2021). DOI: 10.1111/jnc.15469.
<i>Investigation of orally delivered carbon monoxide for postoperative ileus.</i> European Journal of Pharmaceutics and Biopharmaceutics 130, pp. 306-313. Van Dingenen, Jonas; Steiger, Christoph; Zehe, Markus; Meinel, Lorenz; Lefebvre, Romain A. (2018). DOI: 10.1016/j.ejpb.2018.07.009.
<i>Controlled therapeutic gas delivery systems for quality-improved transplants.</i> European Journal of Pharmaceutics and Biopharmaceutics 97 (Pt A), pp. 96-106. Steiger, Christoph; Wollborn, Jakob; Gutmann, Marcus; Zehe, Markus; Wunder, Christian; Meinel, Lorenz (2015). DOI: 10.1016/j.ejpb.2015.10.009.



Congress proceedings
<i>Fragment Screening applied to a two-domain Hsc70. 8<sup>th</sup> RCS-BMCS Fragment-based Drug Discovery Meeting (Fragments 2022), Cambridge, 2022. <u>Zehe, Markus</u>; Schollmayer, Curd; Grimm, Clemens; Sottriffer, Christoph.</i>
<i>Development of small-molecule inhibitors of Hsc70 via fragment-based drug design. 12<sup>th</sup> European Workshop in Drug Design (XII EWDD), Siena, 2019. <u>Zehe, Markus</u>; Schollmayer, Curd.; Grimm, Clemens; Sottriffer, Christoph.</i>

## OTHER INFORMATION

X-Ray structures in Protein Data Bank (PDB)
<i>PDB 7PLK: Crystal structure bovine Hsc70(aa1-554)E213A/D214A in complex with nicotinic-acid-derivative. <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2022).</i>
<i>PDB 7O6R: Crystal structure of bovine Hsc70(aa1-554)E213A/D214A in complex with 1H-Indazole. <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2022).</i>
<i>PDB 7ODI: Crystal structure of bovine Hsc70(aa1-554)E213A/D214A in complex with methanesulfonamide. <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2022).</i>
<i>PDB 7ODB: Crystal structure of bovine Hsc70(aa1-554)E213A/D214A in complex with triazine-derivative. <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2022).</i>
<i>PDB 7ODD: Crystal structure of bovine Hsc70(aa1-554)E213A/D214A in complex with tricine. <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2022).</i>
<i>PDB 6H54: CRYSTAL STRUCTURE OF BOVINE HSC70(AA1-554)E213A/D214A IN COMPLEX WITH INHIBITOR VER155008. Plank, Christina.; <u>Zehe, Markus</u>; Grimm, Clemens; Sottriffer, Christoph (2019).</i>

Declarations given in the present curriculum must be considered released according to art. 46 and 47 of DPR n. 445/2000.

The present curriculum does not contain confidential and legal information according to art. 4, paragraph 1, points d) and e) of D.Lgs. 30.06.2003 n. 196.

Please note that CV WILL BE PUBLISHED on the University website and It is recommended that personal and sensitive data should not be included. This template is realized to satisfy the need of publication without personal and sensitive data.

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Place and date: Würzburg, 21.08.2024