



Faculty of Science Day

July 2, 2025

Program

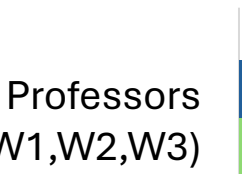
- Report by the Dean
- Introduction of New Faculty Members
 - newly appointed professors
 - researchers who recently completed their habilitations
- PI Innovation Award
- Poster Session and Catering

Faculty in Numbers:

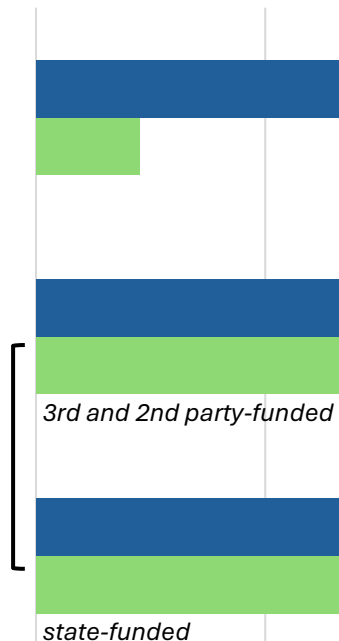
Staff

■ male
■ female

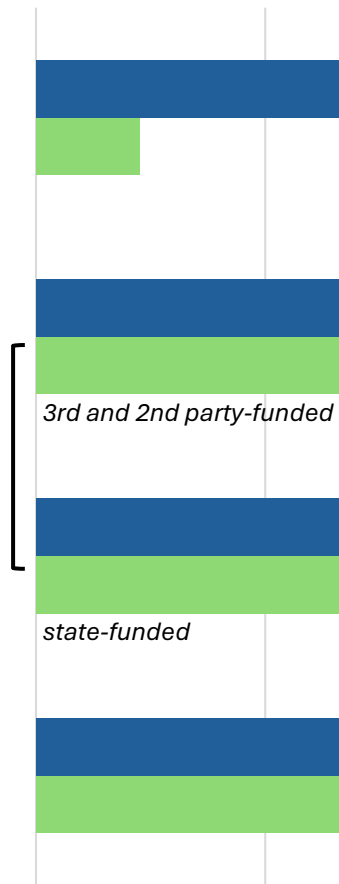
Professors
(W1,W2,W3)



Academic
Staff



Scientific
support
service



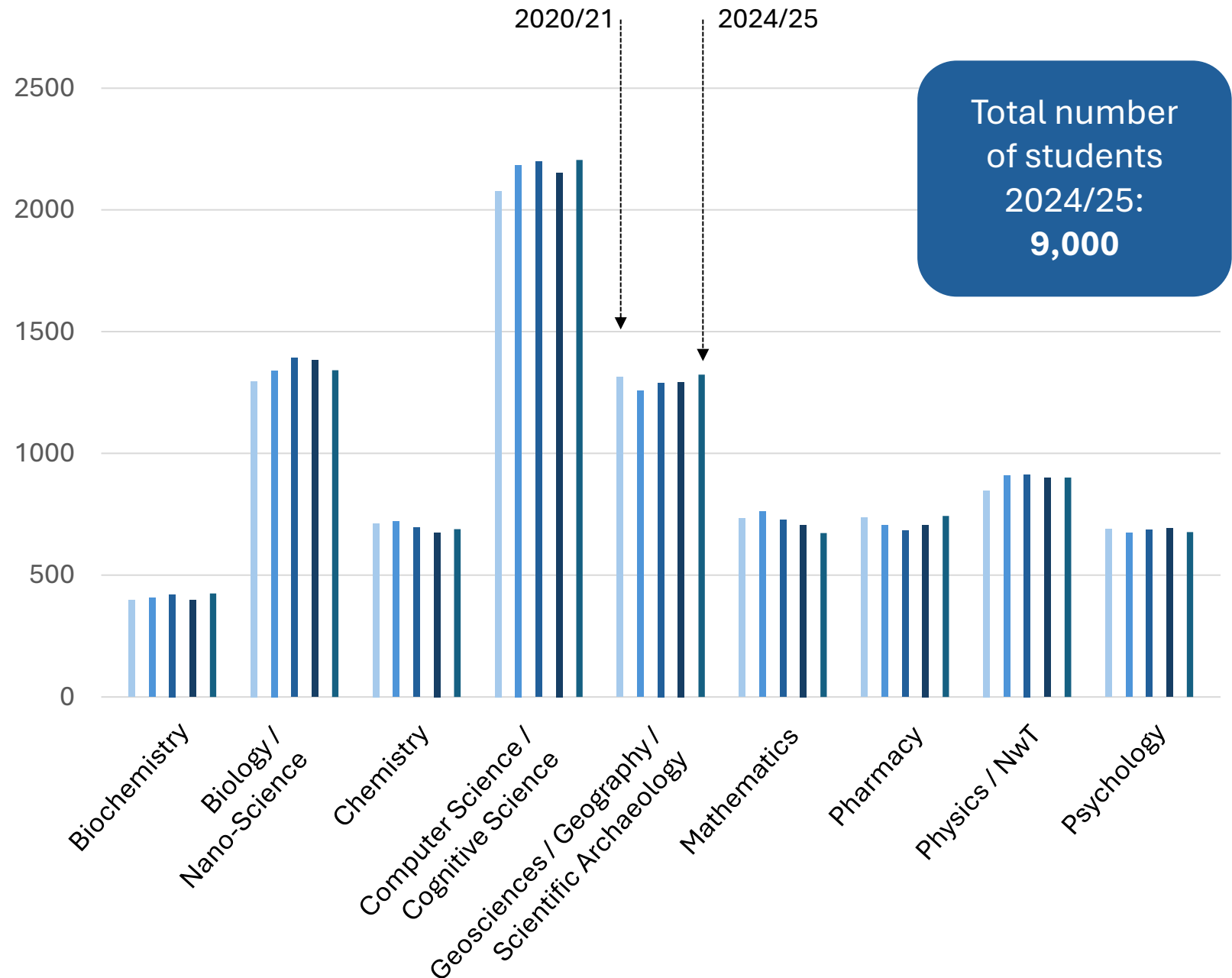
Total number of staff
(as of June 2025):
1,800

0 100 200 300 400 500

Faculty in Numbers:

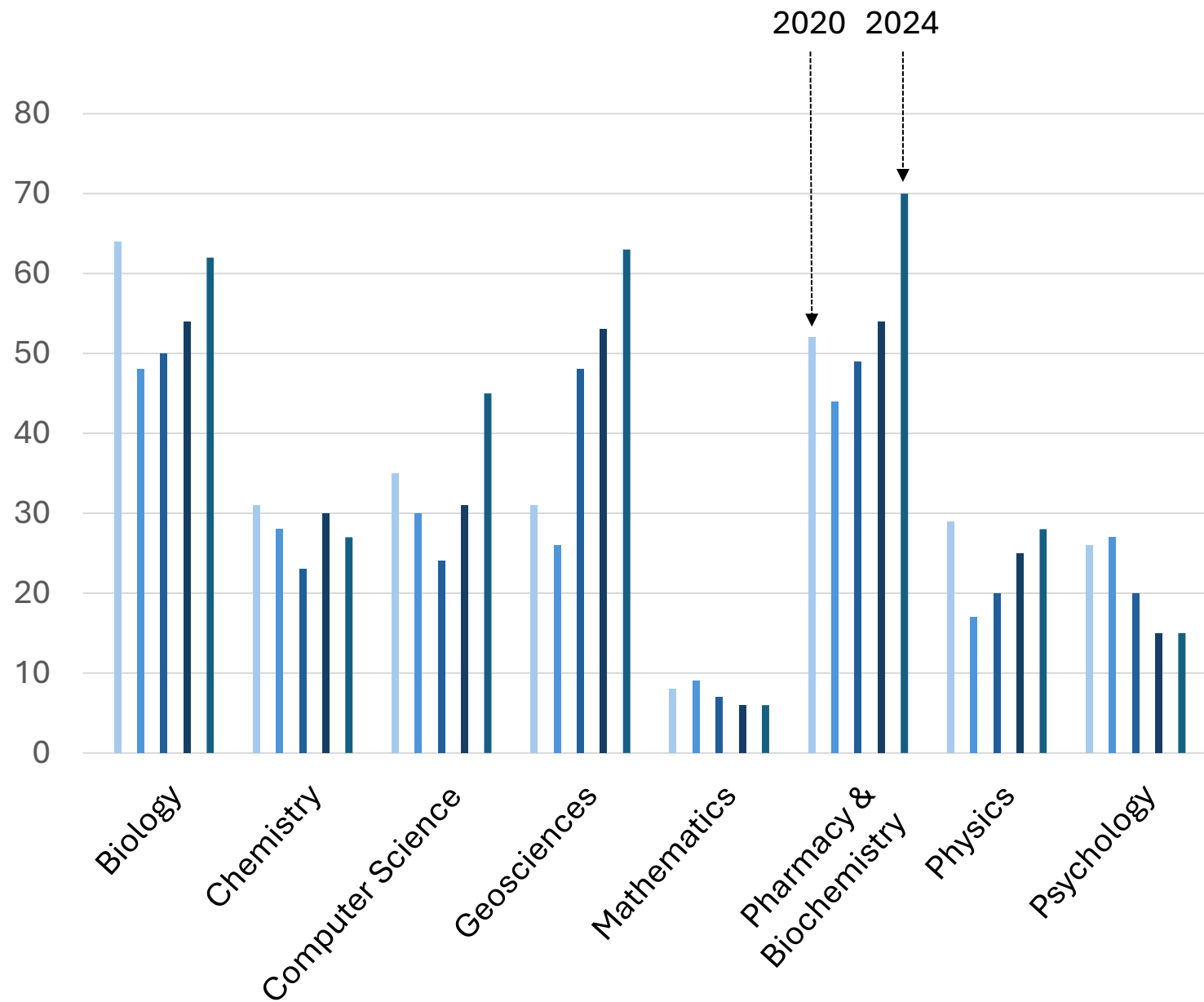
Students

Winter term 2020/21 –
2024/25
(case numbers)



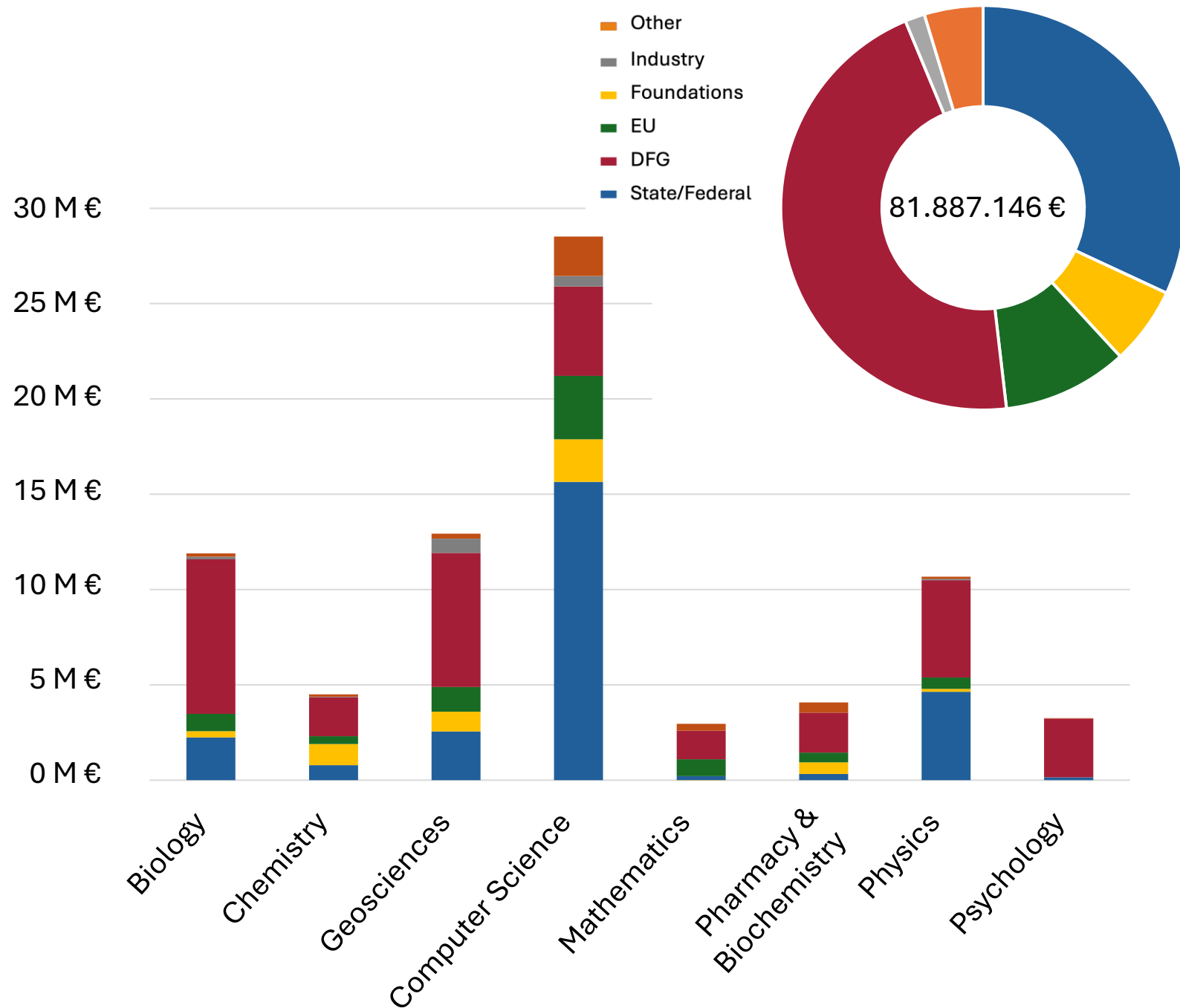
Faculty in Numbers:

Completed doctorates



Faculty in Numbers:

Third party funding 2024



Highlights of the Academic Year:

Research



Collaborative Research Center 1718

Spokesperson: Prof. Britta Stolterfoht, Humanities



Humboldt Professorship:

Prof. Sebastian Deindl



Momentum – Funding:

Prof. Rosa Lozano-Duran
Prof. Marcus Scheele
Prof. Nadine Ziemert (MFT)



ERC Synergy Grant:

Prof. Igor Lesanovsky

ERC Consolidator Grant:

Prof. Philipp Hennig

ERC Starting Grant:

Prof. Marius Lemm
Jun.-Prof. Isabel Monte
Jun.-Prof. Maria Spyrou
Dr. Claire Vernade
Dr. Florian Wimmers



Emmy-Noether Group:

Dr. Juan Carlos de la Concepcion
Prof. Stefan Eckstein
Dr. Margot Smit

Highlights of the Academic Year:

Research & Teaching

Transdisciplinary Studies of Climate, Environment and Energy M. Sc.



- New CIVIS study program
- Joint-Degree with partner universities Stockholm, Bukarest und Athens (depending on study track)

Event series MINT meets Industry

- Regional companies introduce themselves
- provide students with information about their respective business areas and career opportunities



Technical Equipment

- additional equipping of some lecture halls with hybrid systems
- additional equipping of seminar rooms with tablets

Highlights of the Academic Year:

Research

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN




Exzellenzcluster

Hervorragend in der Spitzenforschung

Tübingen, 22. Mai 2025

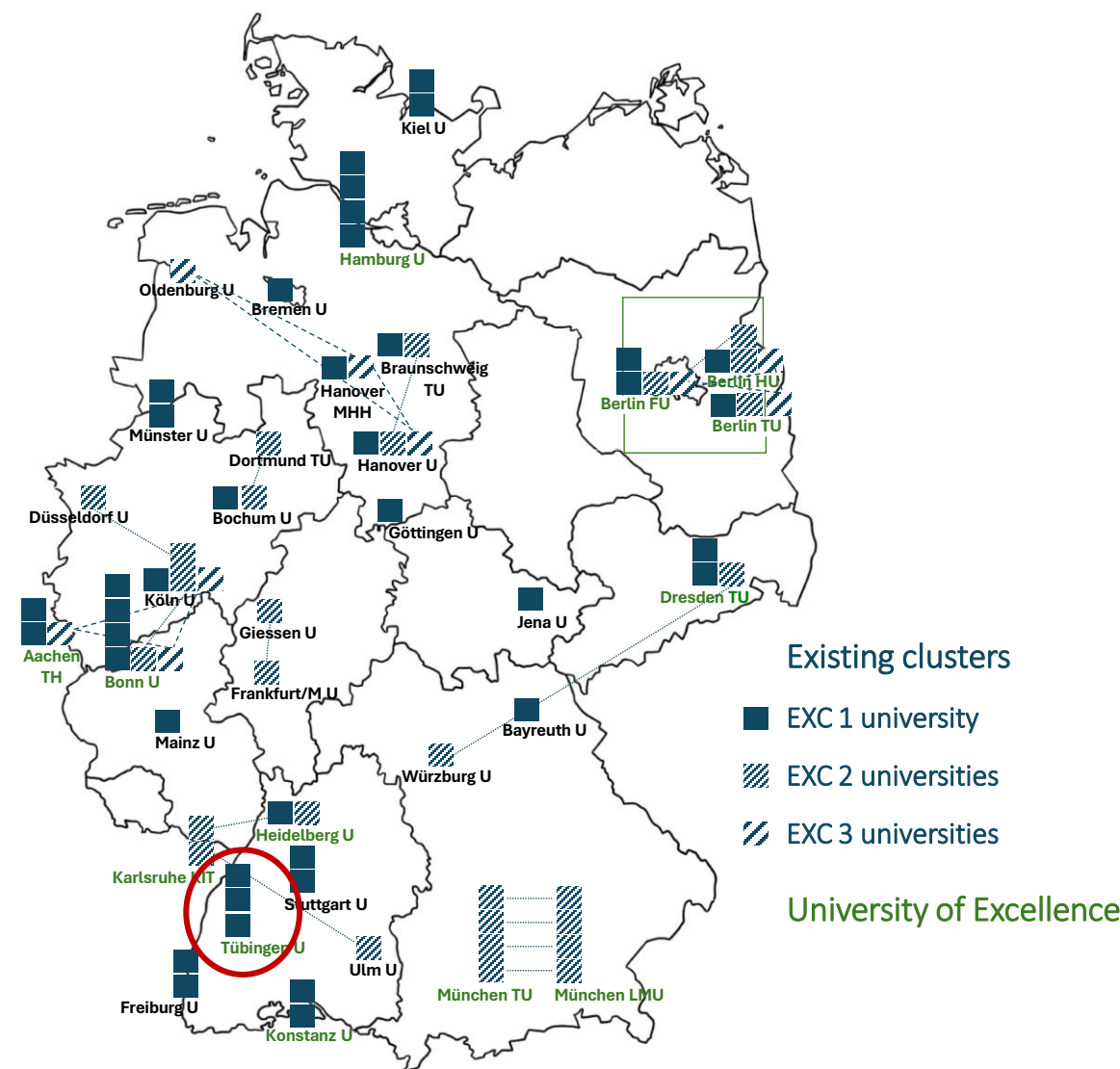
DFG Deutsche
Forschungsgemeinschaft

GEFÖRDERT VOM
 Bundesministerium
für Bildung
und Forschung

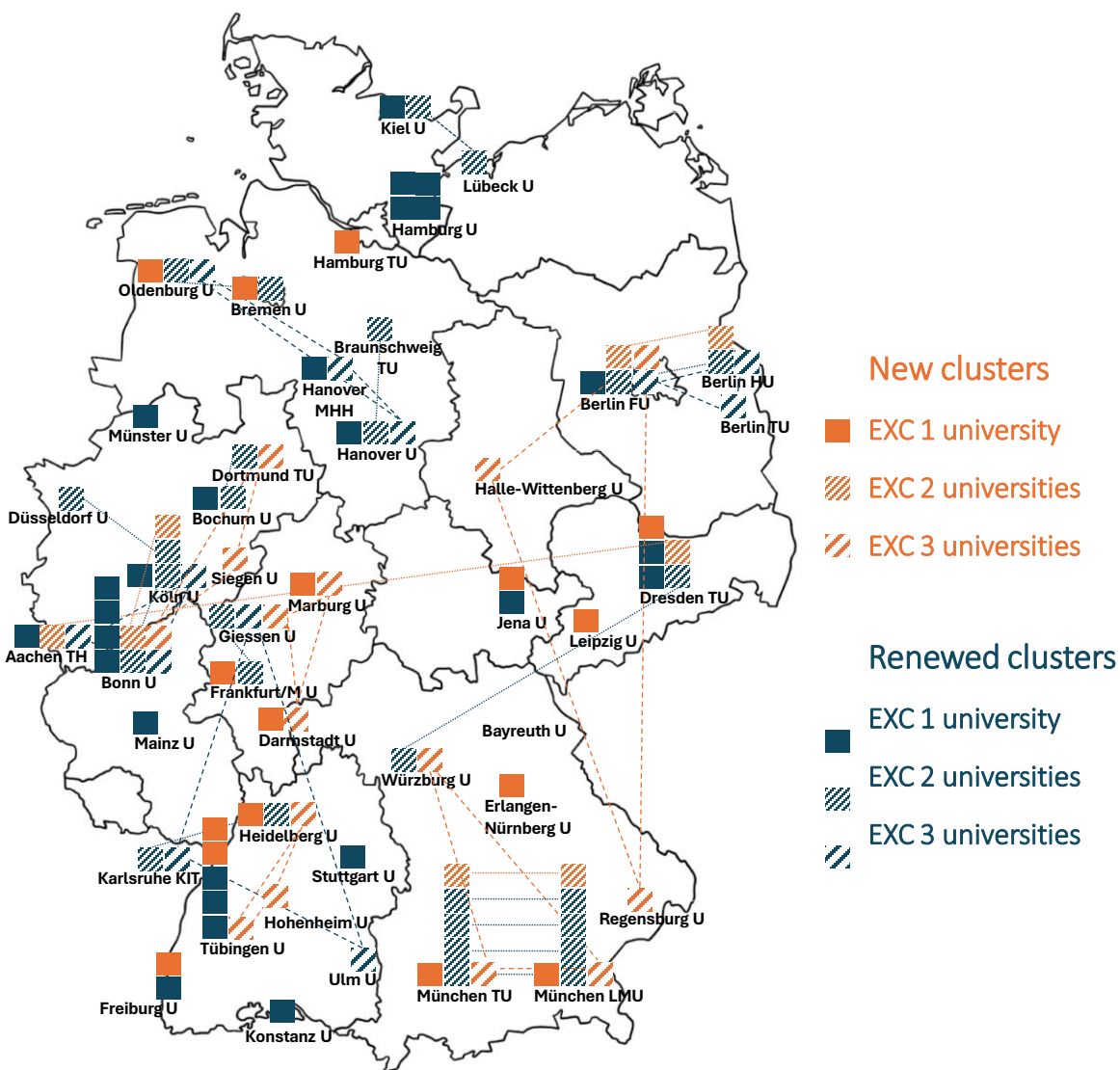
 Baden-Württemberg
Ministerium für Wissenschaft,
Forschung und Kunst

Clusters of Excellence

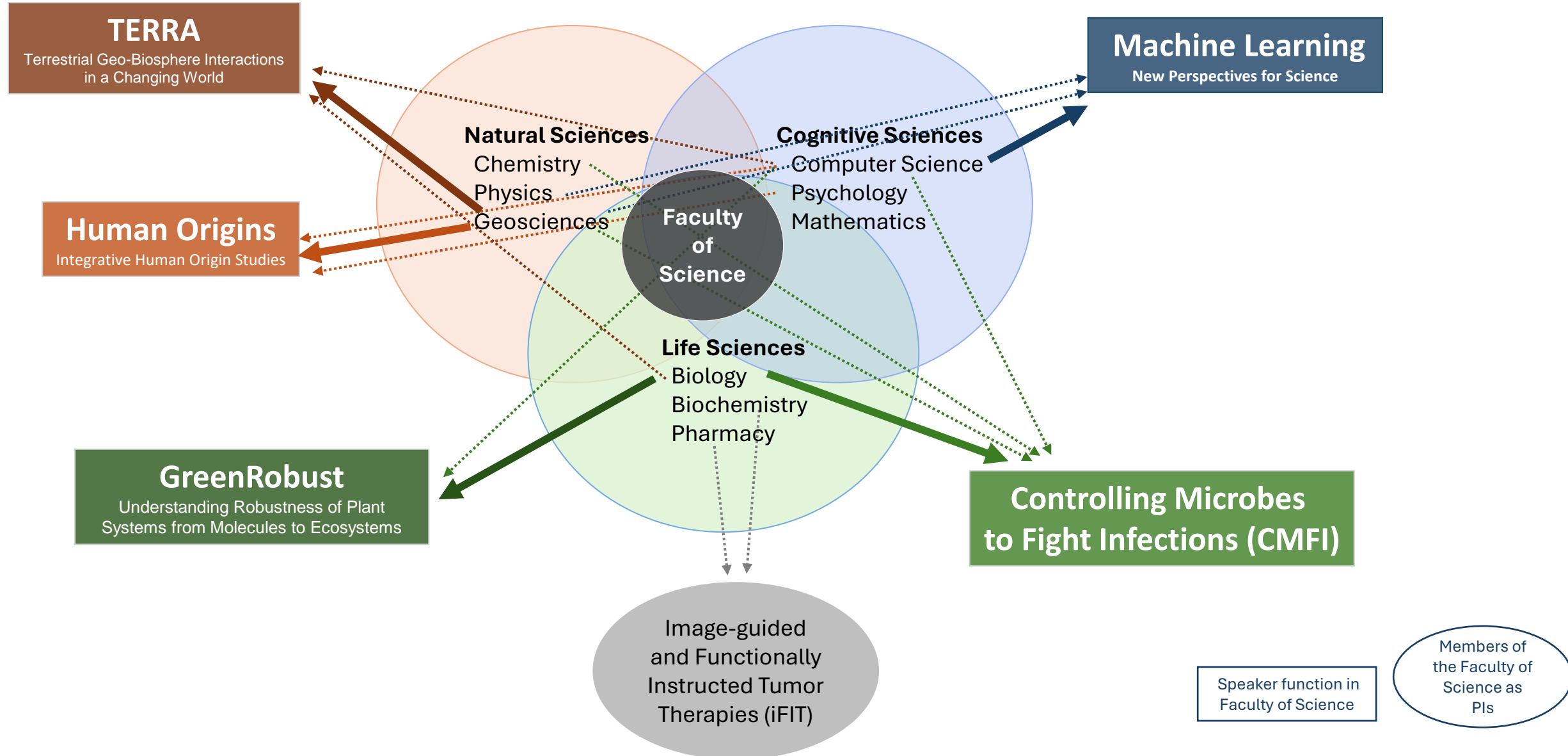
2019 - 2025



2026 - 2032



Participation of our Departments





Die erfolgreichste Uni im ganzen Land

13 Exzellenzcluster bekommen die baden-württembergischen Universitäten, sechs davon gehen nach Tübingen. Mit neun Anträgen hatte sich die

Eberhard Karls Universität beworben (im Bild Rektorin Karla Pollmann). Keine andere Uni Deutschlands hat so viele originäre Anträge durchgebracht. Bei der Ex-

zellenzstrategie geht es um Spitzenforschung – und um viel Geld: Jeder Cluster kann jährlich mit rund acht Millionen Euro rechnen.

Foto: Anne Faden

Key Challenges

- Maintaining Excellence Status
 - Submission of application Aug. 1, 2025
 - On-site evaluation Oct. 21/22, 2025
- Support for Clusters of Excellence
- Support for other research areas
- Maintaining spirit
- Harnessing full potential of faculty
- Resources
- Increasing speed and effectiveness in processes
- Competitiveness

Introduction of newly
appointed professors
and
researchers who
recently completed
their habilitations

(Winter term 2024-25 –
Summer term 2025)

Cognitive Sciences

Computer Science:

PD Dmitry Kobak
PD Lena Schlipf

Psychology:

PD Susanne Dietrich
Jun.-Prof. Anna Georg
Prof. Eva Specker (IWM)

Life Sciences

Biology:

PD Manfred Drack

Pharmacy:

Jun.-Prof. Silja Mordhorst

Natural Sciences

Chemistry:

Jun.-Prof. Jannika Lauth

Physics:

PD Anita Jannasch

Geosciences:

Prof. Kevin Norton

PD Benjamin Walter

Jun.-Prof. Maria Spyrou

Lena Schlipf

Teaching Specialist for Theoretical Computer Science
Tübingen AI Center

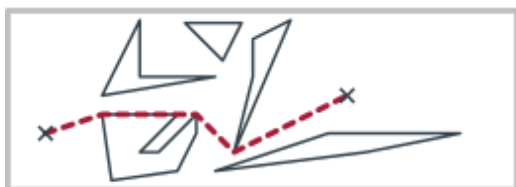
Habilitation (Universität Tübingen, June 2024):

Some Problems in Computational Geometry, Algorithmic Graph Theory, and Graph Drawing

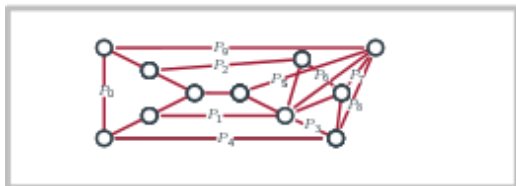


Research Interests: Efficient and approximation algorithms, complexity:

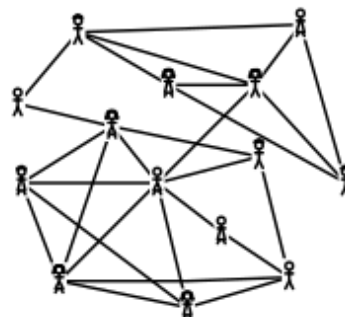
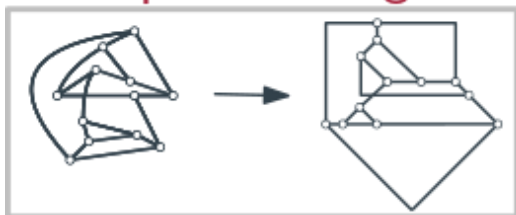
– Computational Geometry



– Algorithmic Graph Theory



– Graph Drawing



Evolutionary Cognition (Cognitive Science), Department of Psychology

PD Dr. Susanne Dietrich

Background / Fields:

Biology, Cognitive Neuroscience,
Neurolinguistics



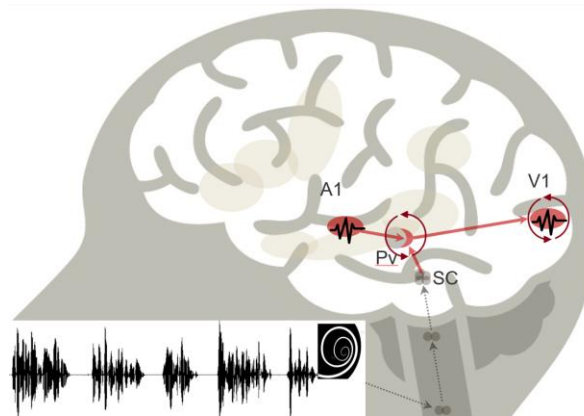
1995-2002
Biology, Tübingen
Bats

2003-2007
MPI, Leipzig
PhD

Habilitation Topic:

Perceptual and Cognitive Aspects of Language Processing

Comprehension of ultra-
fast speech



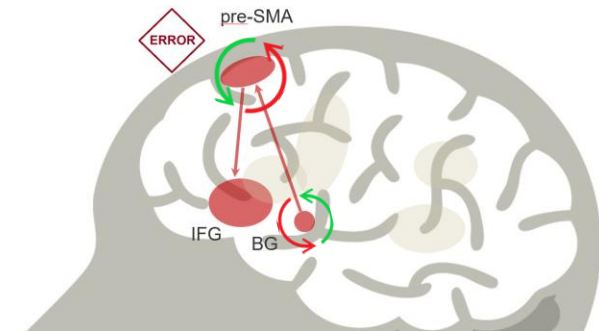
- visual recruiting
- via subcortical routing
- syllable onsets
- attentional cues

2007-2017
Neurology, Tübingen
Blind people

Research Focus:

Adaptive mechanisms in context-
dependent language processing

“Tina has a swimming batch.
When Tina earned *a swimming batch* ...”



“The bear annoyed the lion
because *it* was close.”



since 2017
Psychology (Cognitive Science), Tübingen
Adaptive comprehension



Parental Mentalizing

- Social cognition in the context of the parent-child relationship
- Attachment competence
- Predictor of child development and mental health
- Important in risk contexts



Central concept

Strengthening mental health from the very beginning
Thank you very much for your attention!
Research at the intersection of attachment, stress, and prevention



- Translational research with societal relevance
- Interdisciplinary connectivity (psychology, medicine, bioinformatics, cognitive sciences, e-health)
- Contribution to prevention across the lifespan

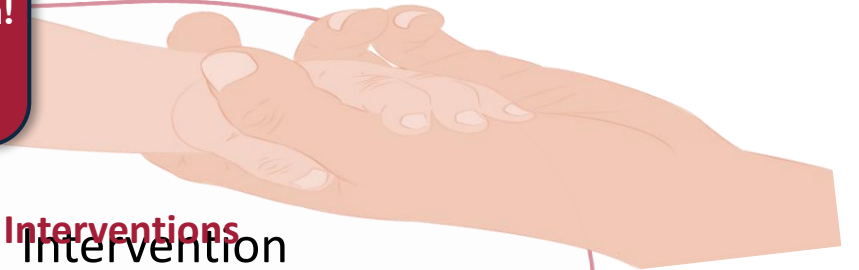
Added value



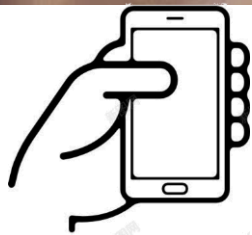
Evidence-based Interventions

- Brief therapy programs for parents with their child
- Mental health in the pediatric population
- Prevention of child abuse and the development of mental disorders
- Digital micro-interventions (everyday integration and scalability)

Intervention & Implementation



AESTHETICS & LEARNING



PROF. EVA SPECKER, E.SPECKER@IWM-TUEBINGEN.DE



Manfred Drack

Evolutionary Biology of Invertebrates, AG Oliver Betz
Institute of Evolution and Ecology

Education:

Mechanical engineering + Biology

Main interest:

The interplay between biology and engineering
– in both directions
– theoretical and practical aspects

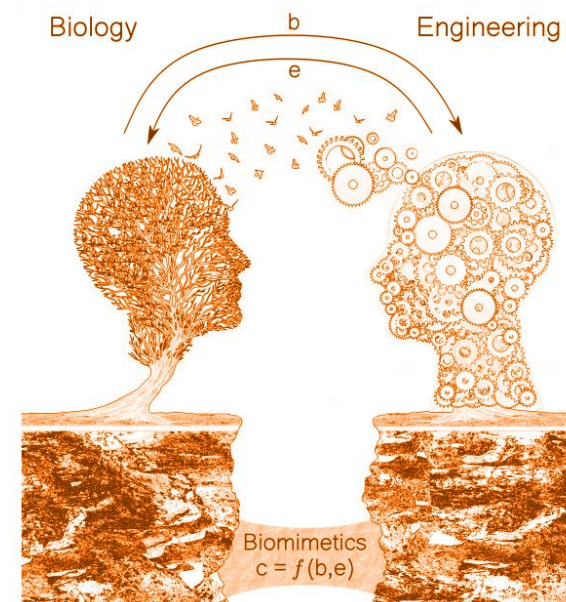
Current project (PI):

Learning from Nature:
Epistemological and Ontological
Foundations of Biomimetics

Funded by



Theoretical aspects



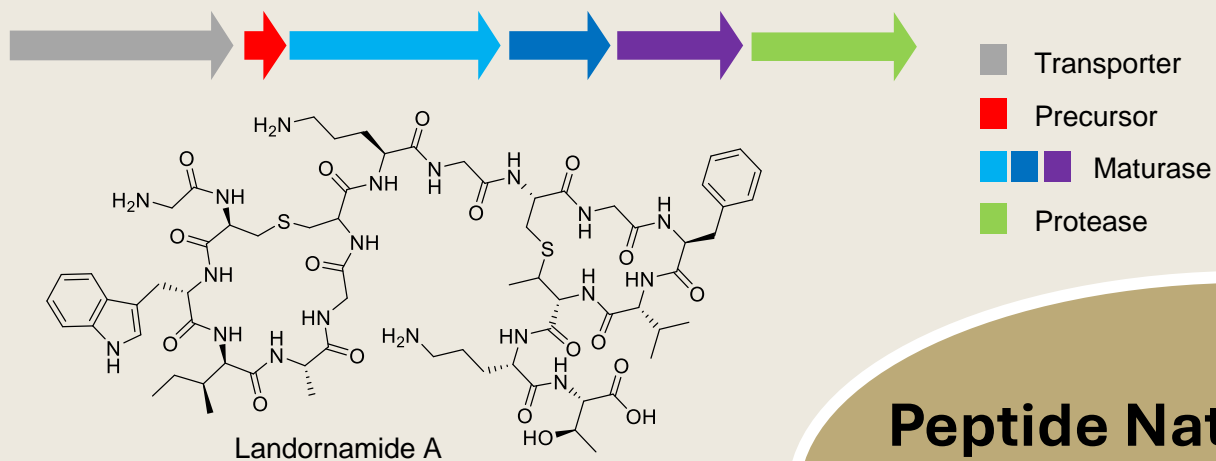
Practical research



Pharmaceutical Biology – Mordhorst Lab

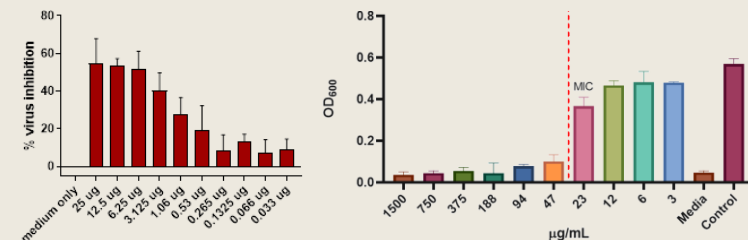


Natural Product Biosynthesis



Bioactivity Tests

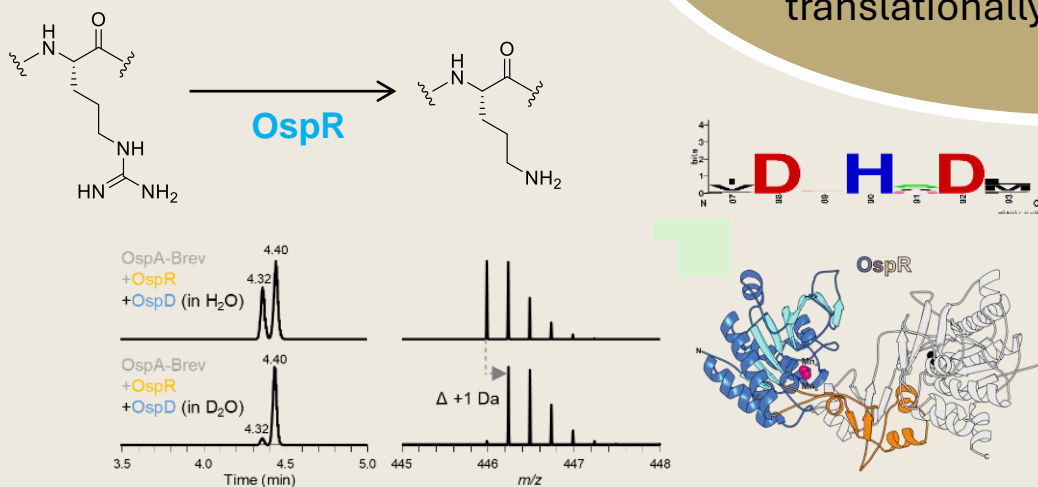
- antibiotic
- antiviral
- anti-oomycete
- MIC determinations
- IC₅₀ determinations



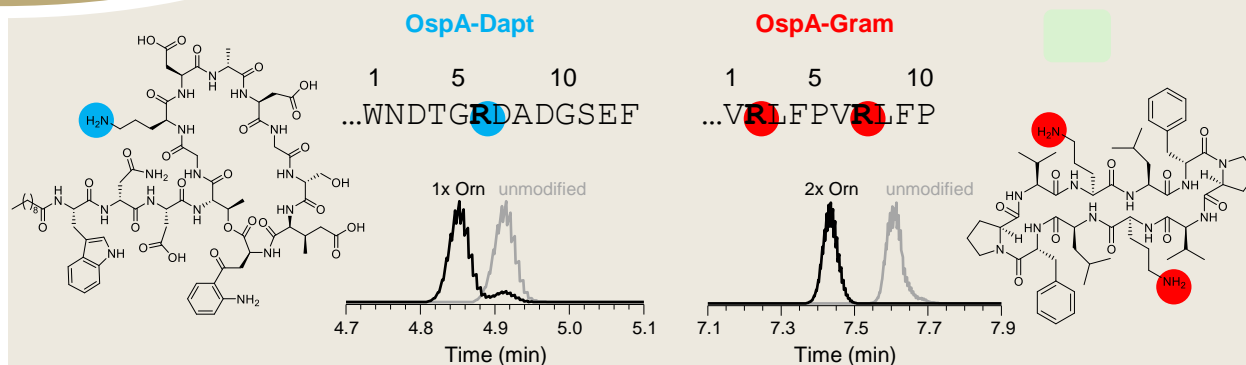
Peptide Natural Products

RiPPs: Ribosomally synthesised and Post-translationally modified Peptides

Enzyme Catalysis



Peptide Engineering / Designer Peptides



Ministerium für Wissenschaft, Forschung und Kunst Baden-Württemberg



Deutscher Akademischer Austauschdienst
German Academic Exchange Service





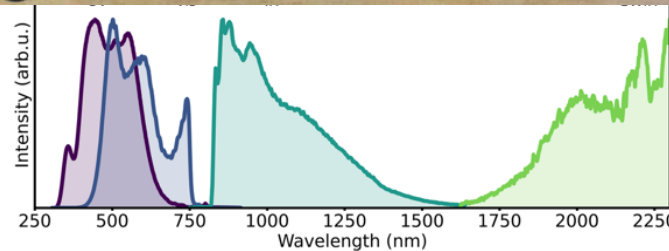
Probing Materials in the *Fast Lane*

Camera exposure time

1/60 s

1/1000 s

We use “the speed” of light
for probing light-matter
interactions and fast processes in
innovative materials



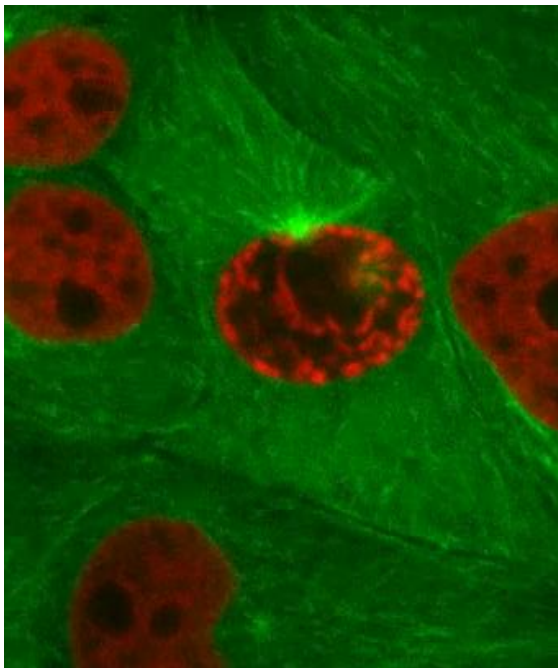
Modified Image: M. Vengris, *Intro to time-resolved spectroscopy*

jannika.lauth@uni-tuebingen.de

Single molecule biophysics: How do biological molecular machines work?

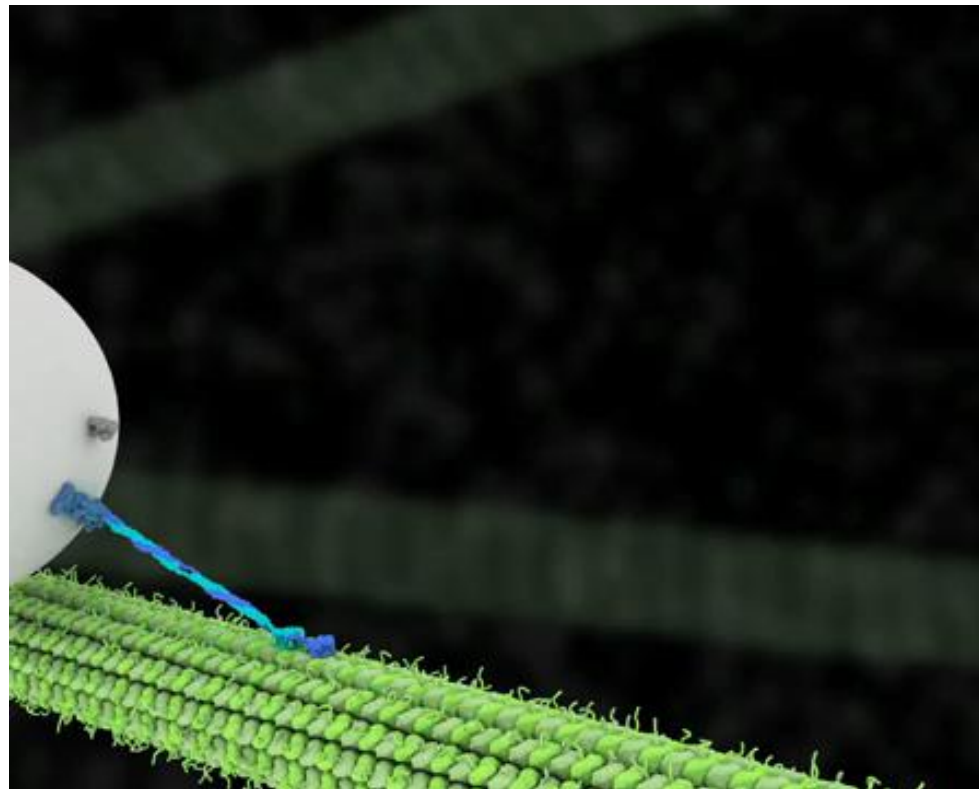
PD Dr. Anita Jannasch

Cells are highly dynamic
and complex systems



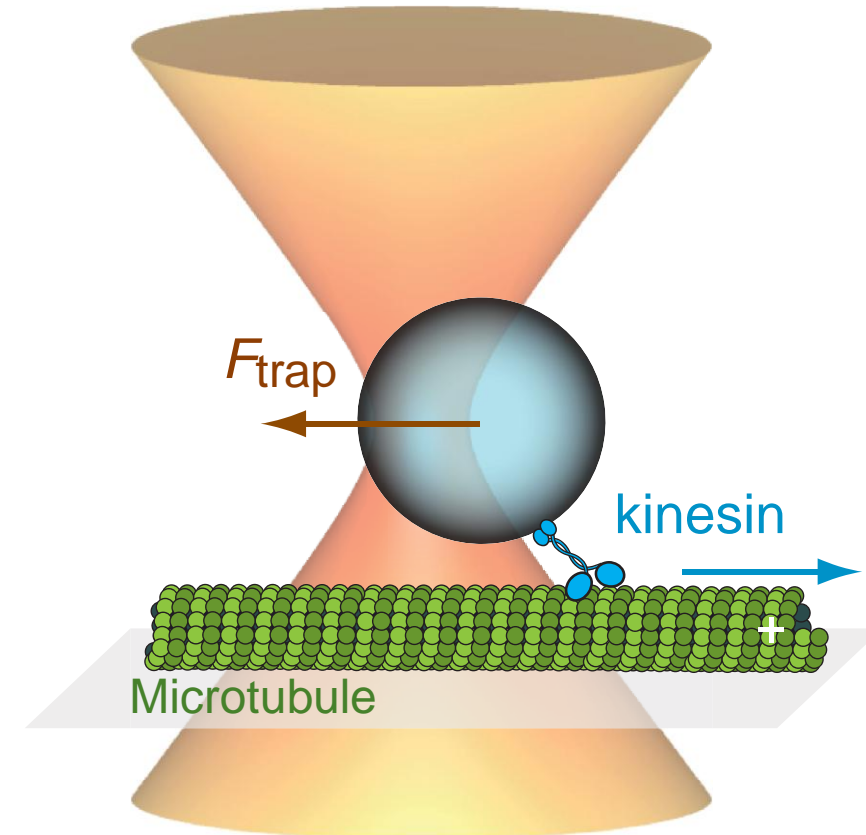
<https://www.microscopyu.com/gallery-images/mitosis-in-pig-kidney-epithelial-cells>

Molecular motors like kinesin drive
essential processes inside cells



Ramaiya... Schäffer PNAS **114** (2017); Sudhakar ... Jannasch & Schäffer
Science **371** (2021); Animation by Janet Iwasa

Optical tweezers enable precise force
measurements of single motor proteins



Antarctic Paleoclimate



Coastal Hazards



Landscape Erosion



Faulting and mountain uplift



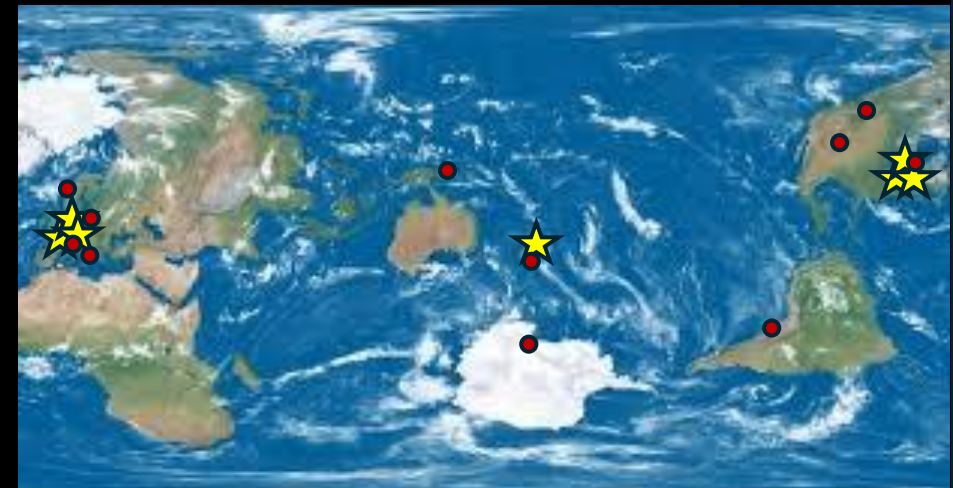
Soil formation and erosion



Kevin Norton - Geology

Studies: Ohio State University, University of Minnesota-Duluth, Universität Hannover
Teaching/Research: Penn State-Erie, GFZ Potsdam, University of Bern, Victoria University of Wellington

Research
Interests:
Cosmogenic
nuclides,
landscape
dynamics, soil
sustainability,
Alpine evolution



Research targets

Russia (Kola)

Greenland

Norway

Germany

Portugal

Pakistan

India

Congo (DCR)

Tansania

Bolivia

Namibia

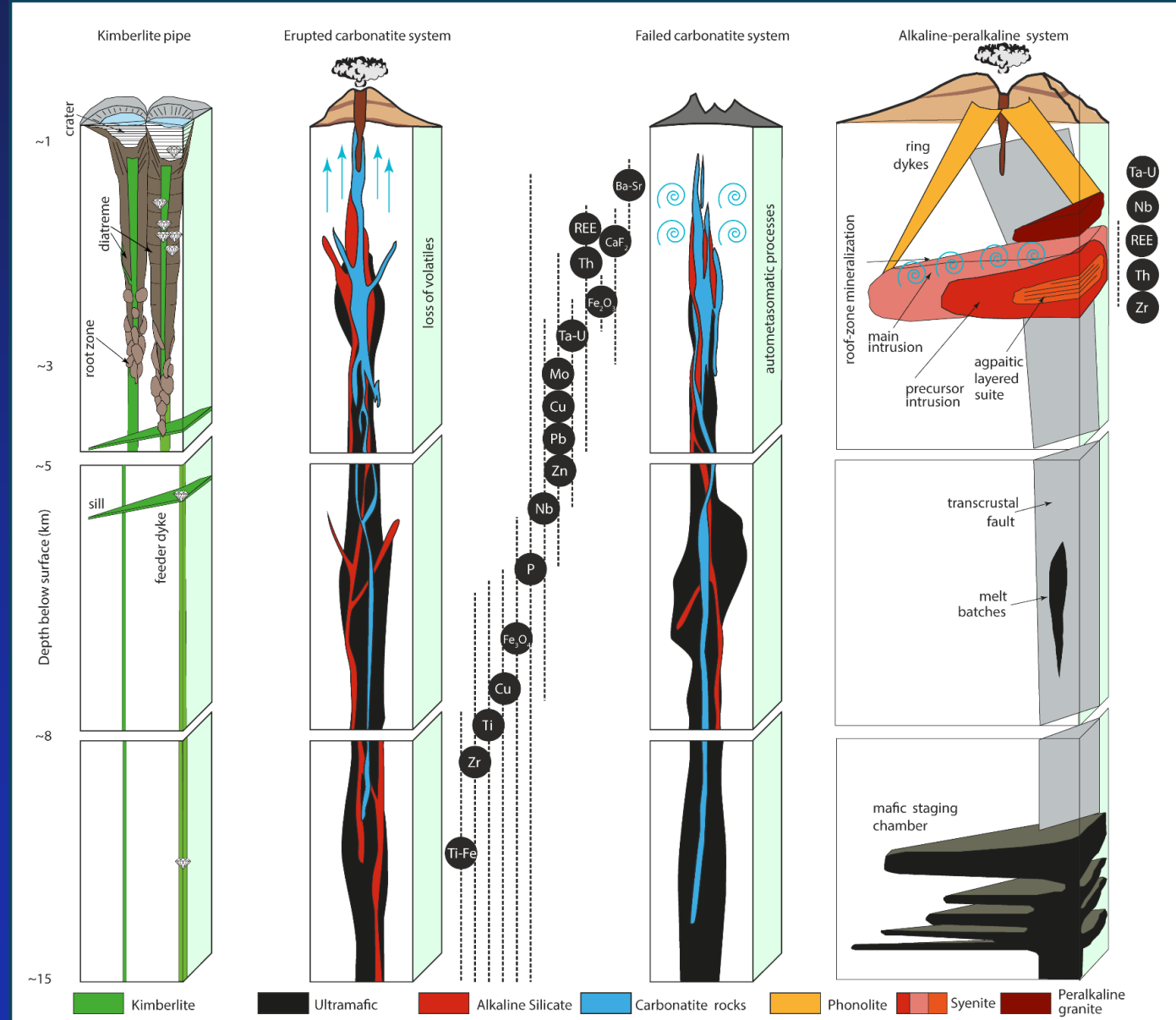
Malawi

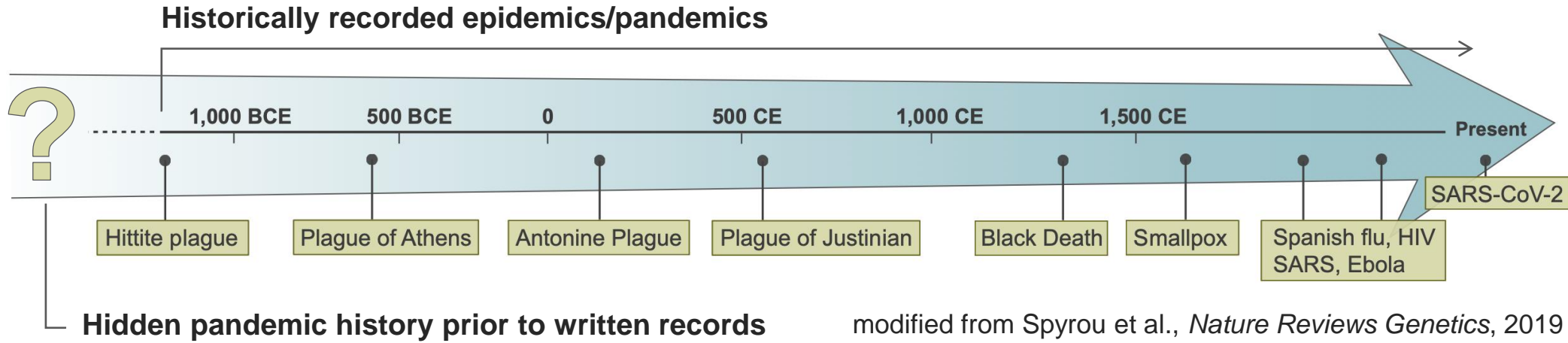
South Africa



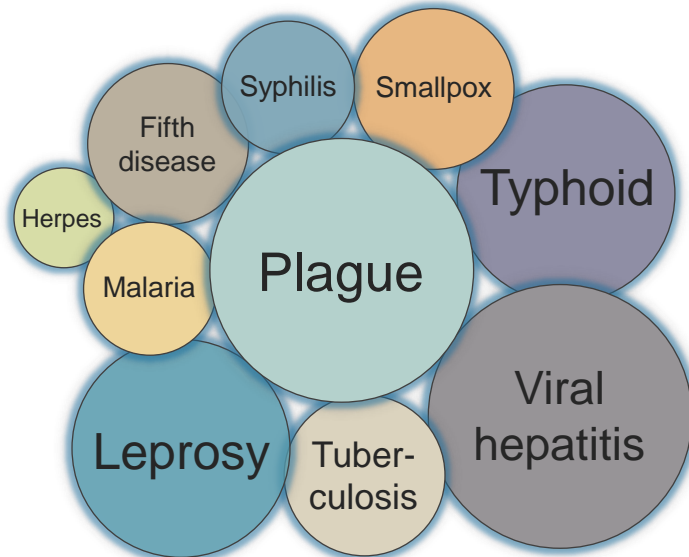
Research on:

Carbonatites and ALKaline Rock OCcurrences





Ancient pathogen genomics



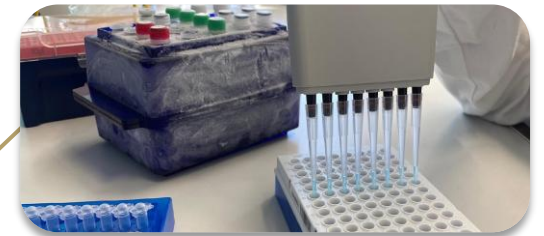
Archaeological contextualisation



Genomics and metagenomics

Workflow

Ancient DNA data generation



Interdisciplinary dataset integration

PHYSIK INSTRUMENTE

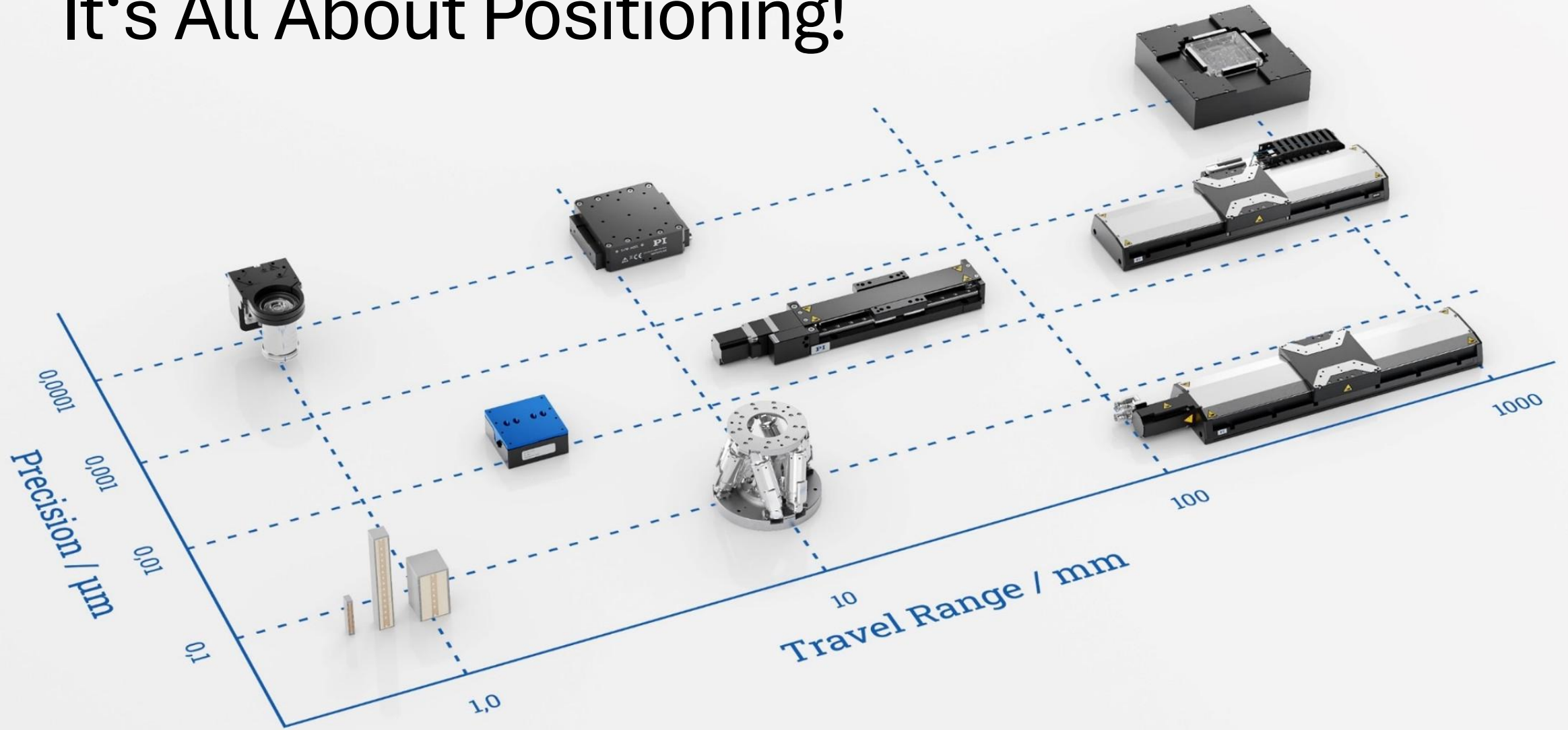
Innovation Award

Eberhard Karls
Universität
Tübingen

INNOVATION
DRIVES THE WORLD.

WE DRIVE
INNOVATION.

It's All About Positioning!



The PI Group



~2000 employees, ~300 M€ turnover



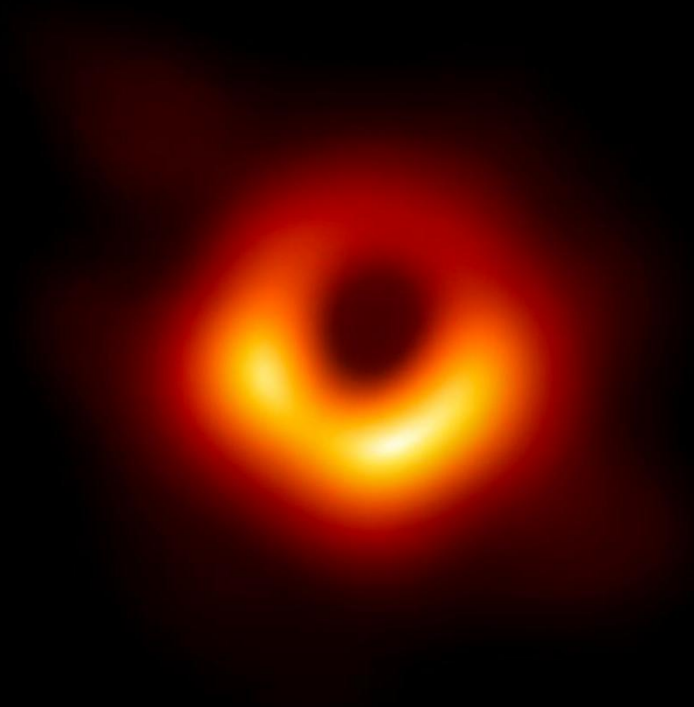
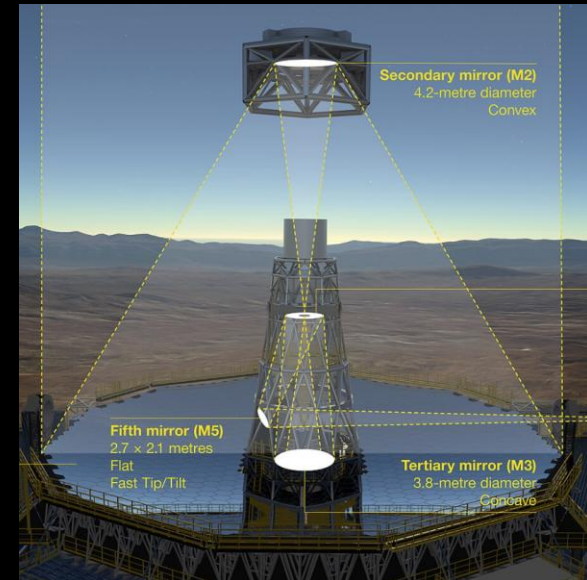
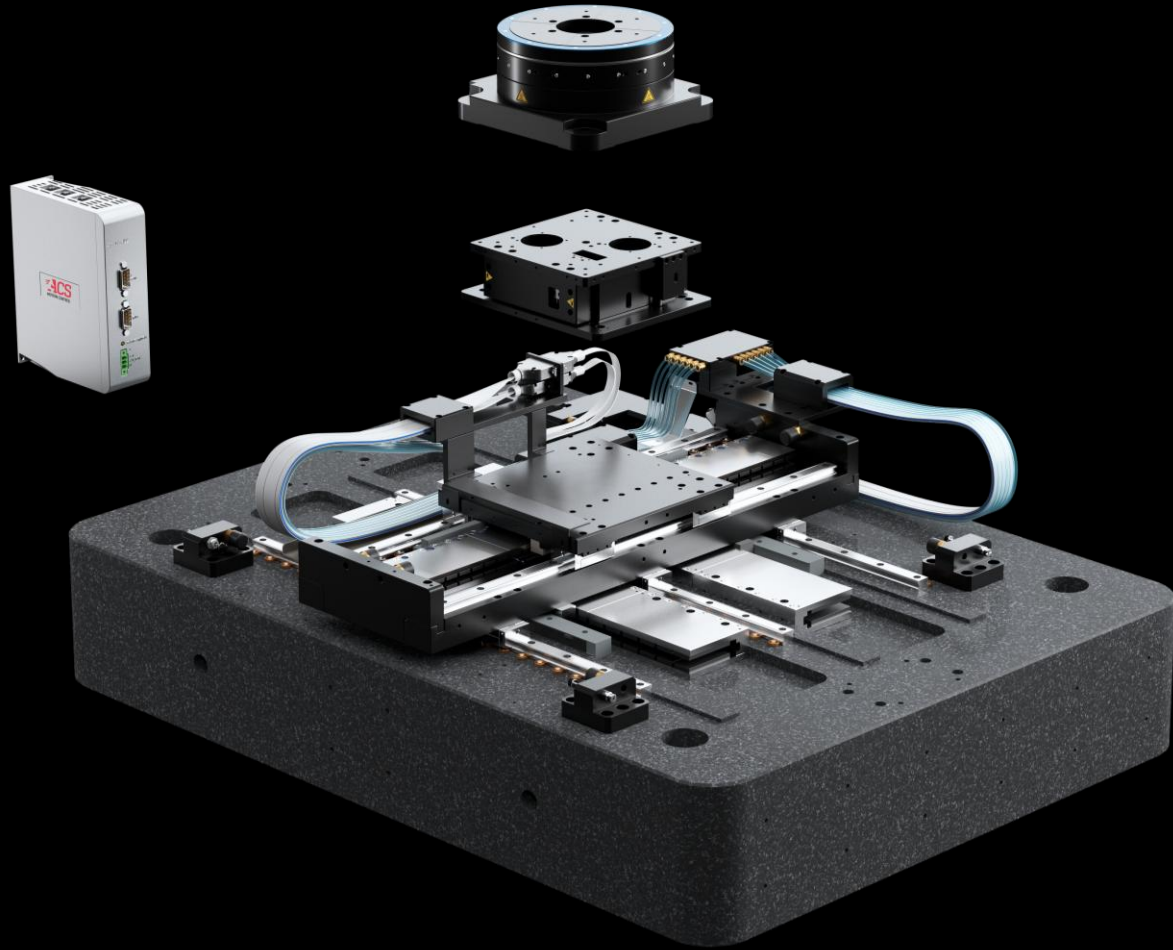


Image: ESO



The optical system of the ELT showing the location of the mirrors | ESO

PI // INNOVATION AWARD

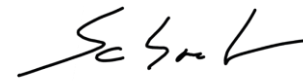
Der PI Innovation Award 2025
wird vergeben an

Dr. Benedikt Michael Wagner

für seine herausragende Dissertation
mit hohem Innovationspotential:

„Entwicklung neuartiger oral verfügbarer Liganden
des Aurora Kinase A-Netzwerkes mit subnanomolarer
zellulärer Aktivität und präklinischer
in vivo-Effizienz in SCLC- und HCC-Tumormodellen“

Karlsruhe, 02.07.2025



Dr. Steffen Schreiber,
Director Global Innovation
& Scouting Global, PI

Development of novel orally bioavailable ligands of the Aurora kinase A network with subnanomolar cellular activity and preclinical *in vivo* efficiency in SCLC and HCC tumor models

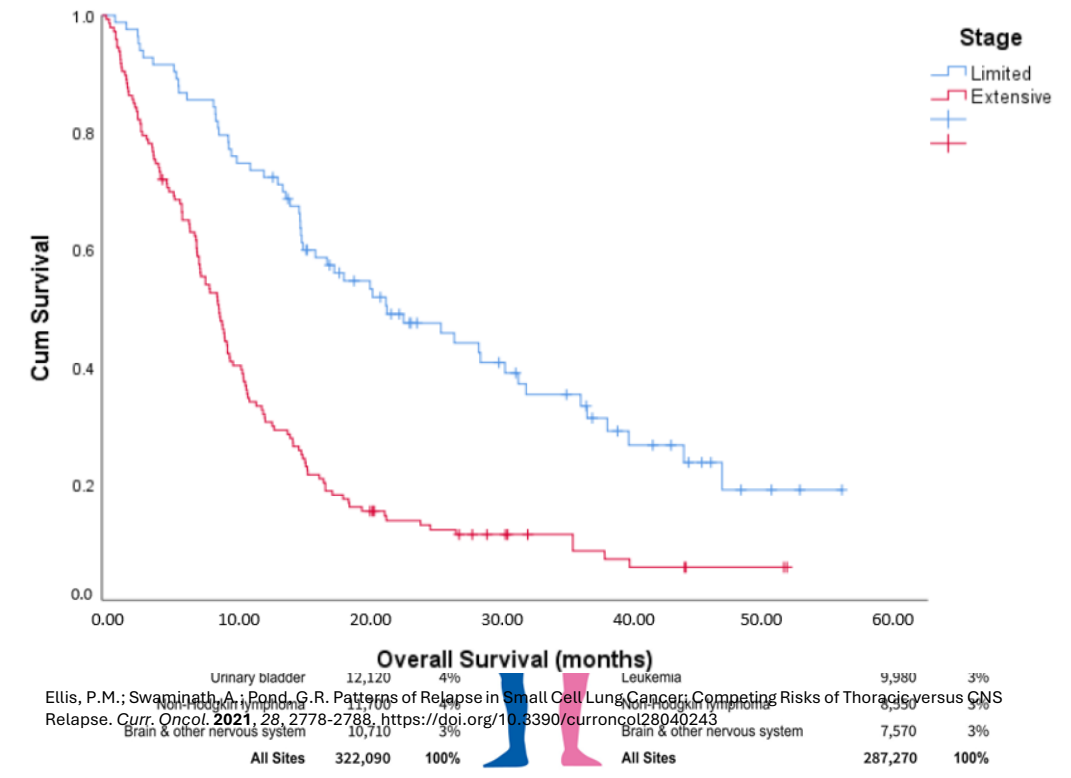
PI Innovation Award
FACULTY OF SCIENCE DAY 2025

Dr. Benedikt Wagner

02.06.2025

The Urgent Need for Innovation in Oncology

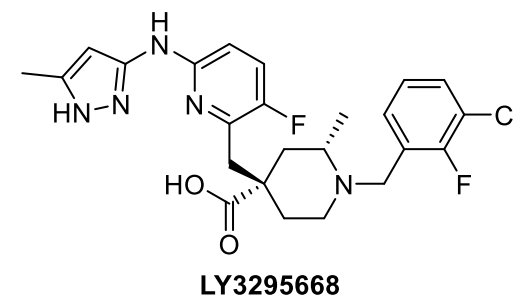
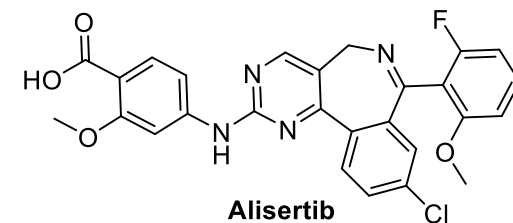
- Despite intensive research, global cancer incidence and mortality rates continue to rise.
- 25-50% of all solid cancers are still diagnosed at an advanced, often metastatic stage.
- These tumors are complex systemic diseases that remain incurable in most cases – despite a growing number of novel therapeutics.
- Drug related toxicities of current treatments limit dosing and often result in incomplete tumor remission and therapy resistance.



→ Therefore, there is an urgent need for the development of novel, innovative therapeutic approaches – especially for the treatment of highly aggressive and incurable cancers such as small cell lung cancer (SCLC).

Aurora Kinase A (AurkA) – a promising target?

- The mitotic serine/threonine kinase AurkA is overexpressed in many tumors and represents a promising therapeutic target, particularly due to its synthetic lethality with tumor suppressor gene loss.
- Despite intensive efforts, no AurkA inhibitors have been approved for cancer therapy to date.
- Clinical setbacks were largely due to significant dose-limiting toxicities.



Goal:

Development of kinase-sparing AurkA-Ligands with high therapeutic efficacy & improved therapeutic index

Kinase-Inhibition

Interactome-Modulation

AurkA-Inhibitors

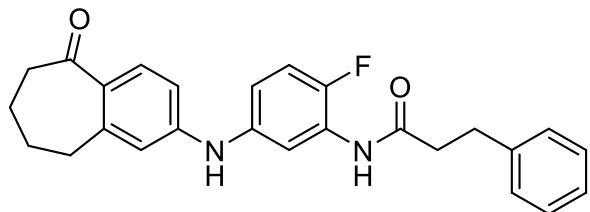
AurkA-Ligand

Therapeutic Index

Therapeutic Index

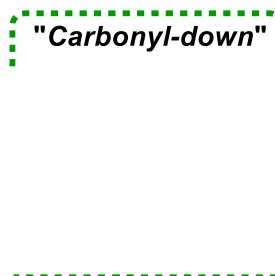
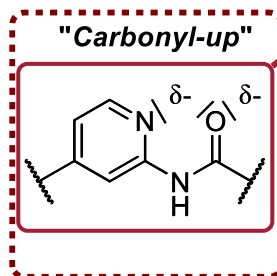
From Molecule to Medicine: It's not a sprint, it's a marathon

TüKIC-Screening Hit

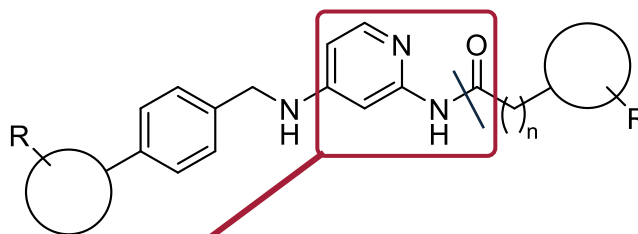


Typ I ½ p38α-MAPK-Inhibitor

Overcoming the metabolic instability of the amide via a cyclization concept



AurkA-Ligands

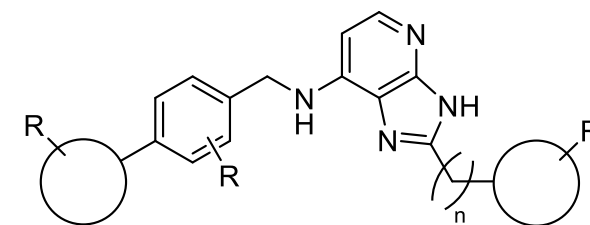


Proof-of-concept *in vitro* successfully

but...

→ Pharmacokinetic data insufficient

→ Cannot be used *in vivo*



Novel Generation of AurkA Ligands with high metabolic stability and excellent pharmacokinetics

Summary & Outlook – the marathon is not finished yet

Development of nearly 300 synthetic compounds

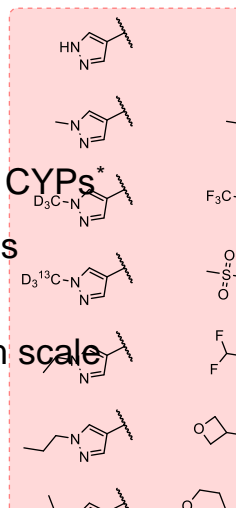
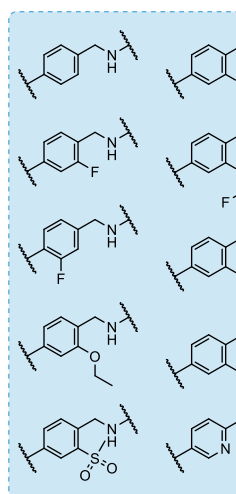
- several with cellular inhibition values against various tumor cell lines in the low nanomolar to subnanomolar range

Improvement of the metabolic stability

- Cyclisation-Approach successful
- Development of a novel Generation of Aurka-Ligands

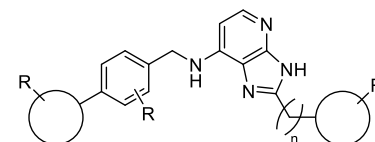
Preclinical candidate 67a

- Good Safety profile *in vitro* incl. Kinome, CEREP, hERG & CYPs*
- *in vivo*-Efficiency in various HCC & SCLC animal models as monotherapy**
- Optimization and upscaling of the synthesis on a multigram scale without purification via column chromatography
- Development of the first Prodrug of 67a



Aurka-Ligands might become a powerful option for cancer therapy

67a



345-wt-Kinasepanel: no inhibition (>25%) at 1 μ M

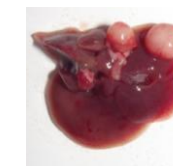
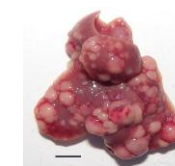
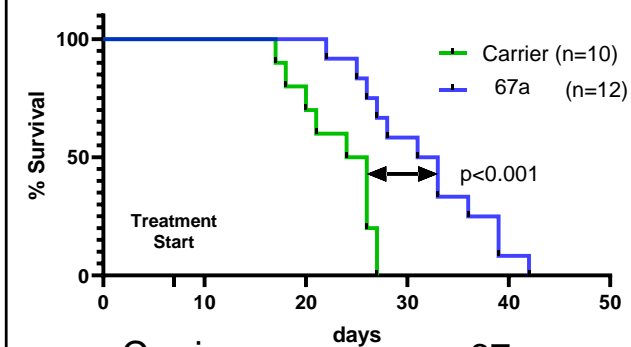
Safety-Panel (191 Substrates)

hERG: IC₅₀ >10 μ M

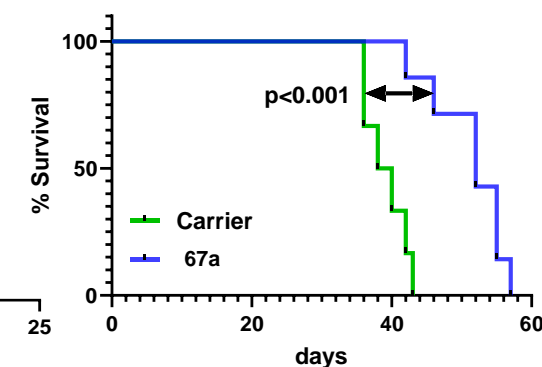
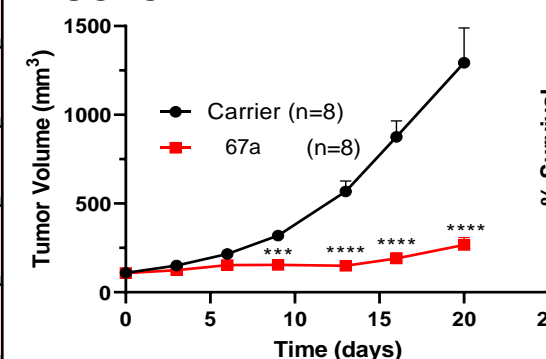
CYP-Inhibition: modest

AMES mutagenicity test: negative

HCC



SCLC



* = Kinome-Screening done by Reaction Biology, Malvern, PA, USA; Safety-Panel & CYPs done by Eurofins; hERG-Patch-Clamp-Assay done by B'SYS GmbH, Witterswil, CH

** = done by Athina Moschopoulou & CROWN BIOSCIENCE, San Diego, CA, USA

Acknowledgment



Aurora Projekt:

- Prof. Dr. Stefan Laufer
- Prof. Dr. Lars Zender
- Athina Moschopoulou
- Stefan Zwirner
- Dr. Melanie Henning
- Dr. Michael Forster
- Dr. Juliander Reiner
- Dr. Dirk Flötgen

Also i would like to thank:

- Prof. Dr. Matthias Gehringer
- Dr. Roland Selig
- Dr. Wolfgang Albrecht
- Dr. Kurt Ritter
- Dr. Raimund Nieß

... as well as the selection committee and PI



Get together with Poster Presentation

Clusters of Excellence: CMFI, GreenRobust, Human Origins, Machine Learning, TERRA
Platform Environmental Systems

Core Facility LISA+
Core Facility Tübingen Structural Microscopy

CRC 1233	Robust Vision
CRC 1718	Common Ground
CRC TRR 352	Mathematics of Many-Body Quantum Systems and their Collective Phenomena
DFG-RU 2718	Modal and Amodal Cognition
DFG-RU 5413	Long-range interacting quantum spin systems out of equilibrium
DFG-RU 5499	Molecular Solar Energy Management - Chemistry of MOST systems

TüCADD
ImmuneMPS Project (Carl-Zeiss)
Advanced X-ray Scattering Techniques in Soft Matter