TUM. The Entrepreneurial University

Technical University of Munich

Pursuing an MA or PhD @ TUM

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Why TUM?

A University with a Global DNA

Because of its academic excellence, presence in the European Union, entrepreneurial achievements, and location in Munich's thriving economy, TUM has become a prime global partner for leading universities, research institutions, and industry partnerships.

TUM and Munich Want You!

Currently, over 40% of students enrolled at TUM are international students. Munich also has an international resident population of over 40%. TUM values who you are and what you bring to our community.

World-Wide Recognition

QS and Times Higher Education Rankings

- #25 Globally, #1 European Union, #1 Germany

Top 25 Subject Rankings

- Engineering, Natural Sciences, Computer Science, Data Science and AI, Chemistry

Other Metrics

- #1 Startup Hub in Europe
- #13 Globally for Interdisciplinary Research
- #13 Globally for Employability

TUM students and researchers are internationally recognized
To be as good as those from any university.

TUM Excellence

German Universities of Excellence Initiative

The German Research Foundation has awarded funding for universities and clusters of excellence since 2006.

TUM is the only technical university in Germany to be continuously recognized as **University of Excellence** since the program's inception.

https://en.wikipedia.org/wiki/German_Universities_Excellence_Initiative

TUM's Clusters of Excellence

TUM has been awarded **7 clusters of excellence**, indicating that TUM already produces notable research in these fields and that it is worthy of further producing innovative, ground-breaking research.

TUM's current clusters focus on **quantum science**, **neurology**, **energy**, and the **origins of the universe**.

TUM has been awarded three additional clusters – **BioSysteM**, **NUCLEATE**, and **TransForm**.

The sustainability-related clusters are described later in this deck.

https://www.tum.de/en/research/clusters-of-excellence

Research + Talent + Economy + State Support = Cluster of Excellence

Why Munich?

4th Highest Quality of Life

- **Outdoor Living** – Biergärten, English Gardens, hiking, cycling, mountains, and lakes
- **Culture** – Popular music concerts, symphonies, ballet, opera, museums
- **Cuisine** – Abundant and affordable restaurants
- **Transportation –** Affordable, accessible, & reliable public transportation
- **Safety** – Ranked in top 10 safest cities globally
- **Location** – Proximity to rest of Germany and Europe

Thriving Economy

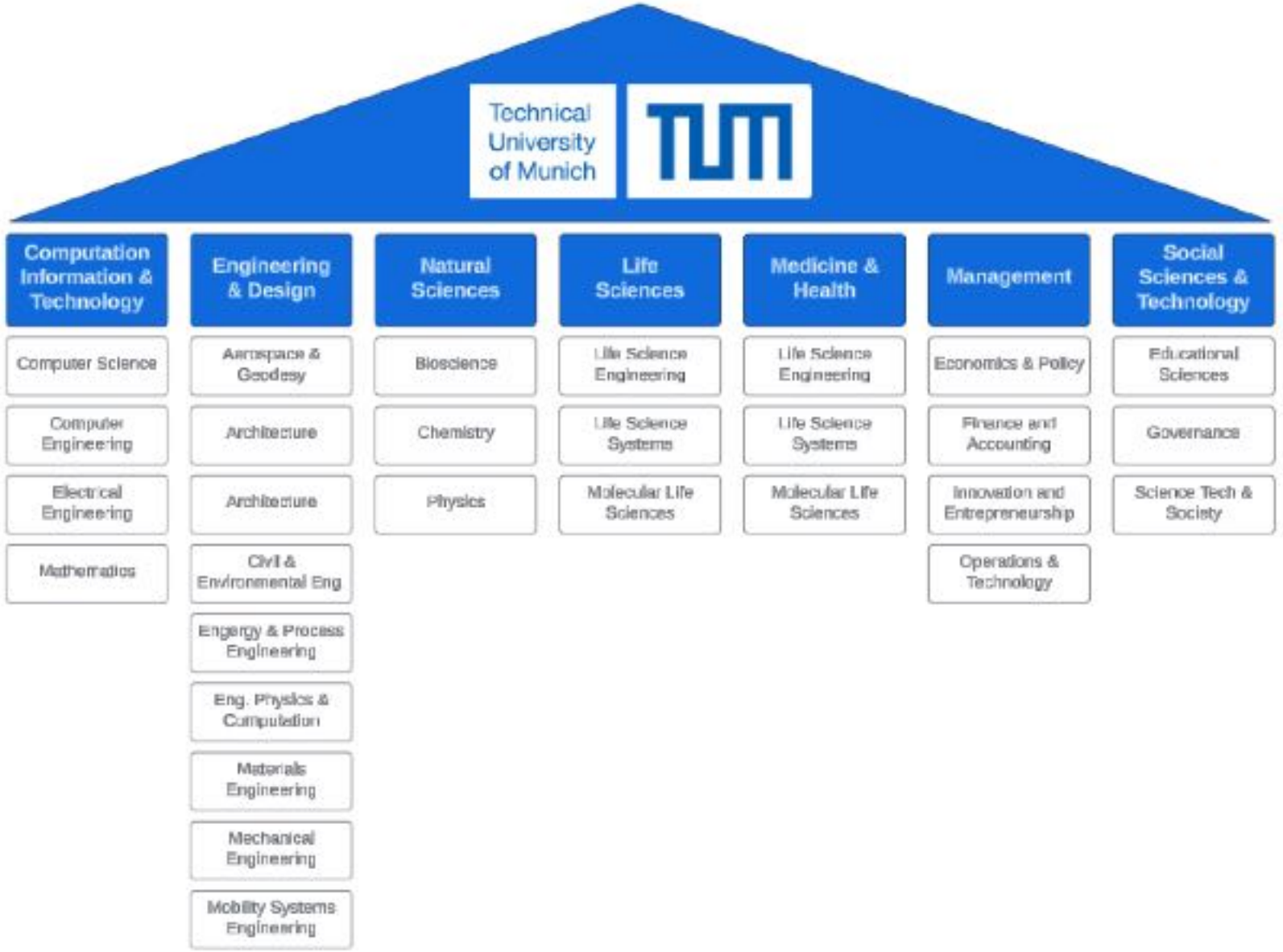
- **Leading Industry HQs** – BMW, Allianz, Siemens, Re
- **US Companies** – Apple, Google, NVIDIA, Amazon
- **Human Capital** – TUM and LMU
- **Life Sciences and Biotech –** TUM, Max Planck, Helmholtz
- **Entrepreneurship** – UnternehmerTUM, Start2

Locations

A University born in Bavaria

TUM spans six large sites in Bavaria and one in neighboring Baden-Wuerttemberg.

TUM Schools and Departments



Pursuing a Masters @ TUM

Why TUM for a Master's Degree

World-Class Education in a World-Class City with a World-Class Economy

For a Fraction of the Cost

- **Low Tuition Costs**
  - TUM tuition for a master's degree is €4000 - € 6000 annually
  - Average annual tuition at a top 25 university in the USA
    - $40,000 to $75,000 at private universities
    - $25,000 to $50,000 at state universities
- **English Language Instruction** – many but not all programs
- **International Experience**
- **Strong Industry Collaborations**
- **Interdisciplinary and Flexible Curriculum**
- **Elite Masters Programs**
- **Gateway to PhD Programs**

Popular Majors

- **Software Engineering and Information Sciences**
  - AI and Machine Learning
  - Applied AI – robotics, mobility, digital health
  - Fintech
- **Management and Science**
  - Business degree with approx. 1/3 of coursework related to a technology or field of science of your choice.
- **Sustainability Related Programs**
  - AgriFood Economics, Policy, and Regulation
  - Sustainable energy and science
  - Sustainable management and technology
- **Logistics / Supply Chain Management**
  - Strong emphasis on AI, sustainability, and the circular economy
- **Aerospace Engineering**
  - Flight
  - Satellites
  - Communications – autonomous driving, agricultural sensors, etc.
- **Finance and Information Management**

Applying for a Masters @ TUM

https://www.tum.de/en/studies/application/master

Rule Driven Process

- Two annual admission cycles – Winter & Summer Semesters
- Provide all required documentation exactly as specified
- Complete the process on time
- Make use of all online resources

Overview

https://www.tum.de/en/studies/application/master/application-master

- **Check eligibility requirements** – degree equivalency, proof of language skills for some majors
- **Submit application and required documentation** via TUMonline https://campus.tum.de/tumonline/
- **Complete Aptitude Assessment** – application review, possible tests or interviews
- **Accept Admission and Enroll** – proof of health insurance, tuition fees, obtain student card

International Applicants

https://www.tum.de/en/studies/application/master/application-master

- **Check eligibility requirements**
  - ***Does your degree meet the standards for a master's program?***
    - Must be the equivalent of a 3-year German bachelor's degree
    - Start with this link: https://tinyurl.com/5n77xvj8
  - Language proficiency https://tinyurl.com/5d3ky8uf
    - Some degrees require German, some don't.
    - Check for English requirements too.
- **Obtain authentic documents for your application** https://tinyurl.com/27j6fzwv
- **Process documents with Uni-Assist** https://www.tum.de/en/studies/application/application-info-portal/uni-assist https://www.uni-assist.de/
- **Understand requirements for your country** https://tinyurl.com/27j6fzwv

TUM Open Positions and Funding Opportunities

TUM Open Positions

- **Start Your Search Here:** https://www.tum.de/en/about-tum/careers-and-jobs/careers-at-tum
- **You'll find guidance for:**
  - Open positions for faculty, doctorates (PhDs), and Postdocs
  - Application process information
  - Funding options
  - Support for dual career candidates

Pursuing a PhD @ TUM

Application Workflow and the TUM Graduate School

TUM Graduate School

https://www.gs.tum.de/en/gs/doctorate-at-tum/

What is the TUM Graduate School?

- TUM Graduate School (TUM-GS) is a central academic and administrative institution at TUM that:
  - Promotes structured training for **doctoral candidates**.
  - Collaborates with the degree-awarding institutions at TUM to provide the best possible supervision.
  - Serves as a **resource center** for PhD candidates:
    - Application support
    - Funding opportunities based on the type of doctoral degree
    - International experiences
    - Counseling
    - Diversity and networking

PhD Application Overview

- **General requirements** https://www.gs.tum.de/en/gs/path-to-a-doctorate/application/
  - Must have a two-year master's degree, diploma, or equivalent degree
  - Must have an above average GPA
  - Foreign degrees must be reviewed and approved as part of the application process. Leave plenty of time for this. Plan on paying for certified translations.
- In Germany, **you are a student until you finish your master's degree**.
  - Beyond that, you are a PhD or Doctoral candidate
- Generally speaking, **PhD candidates are considered employees of the university** and are governed by German labor laws.
  - PhD Candidates do not pay tuition.
  - Other funding models: https://www.gs.tum.de/en/gs/path-to-a-doctorate/types-of-doctorate/
- The application process is **rule driven**. Allow time and patience for the process!
- The **application process is not driven by seasonal admissions.** Reach out at any time!

PhD Application Workflow

- https://www.gs.tum.de/en/gs/path-to-a-doctorate/application/application-steps/
- Two types of applications
  - **Open Position Application**
    - Apply for position through the TUM jobs portal
    - https://www.tum.de/en/about-tum/careers-and-jobs/careers-at-tum?theme=system&cHash=180e3e918aef2a709714c857937ecc45
  - **Self-Initiative Application**
    - Decide on a research topic.
    - Engage directly with supervisor.
    - Generally speaking, you bring your own funding.
    - https://www.gs.tum.de/en/gs/path-to-a-doctorate/funding/

PhD Application Workflow

Words to the Wise

Reach out to potential PI's and administrative support, regardless of whether there are open positions.
Start building the relationship early.

Work with the Schools!

- Google “TUM School Name” + applications for either master’s or PhD programs.
  - While the application process is similar from school to school, each school manages the process of signing a supervisor agreement.
  - They also offer application and onboarding support.

Postdocs at TUM

Support Center and Funding Opportunities for Postdocs

TUM Talent Factory for Postdocs

https://www.forte.tum.de/en/forte/research-support/tum-talent-factory-for-postdocs/

TUM Talent Factory

Provides support and trainings for all early-career researchers at TUM and to international postdocs who want to conduct a research project at TUM, including:

- Research Support
- Funding opportunities and proposal support
  - National research grants
  - International grants
  - Seed funding
  - Funding databases
- Entrepreneurial guidance
  - Startup support
  - IP and licensing

TUM Global Postdoc Fellowship

https://www.tum.de/en/about-tum/careers-and-jobs/postdocs/tum-global-postdoc-fellowship

- This attractive two-year fellowship program offers excellent researchers who have recently completed their PhD the chance to continue their academic career at TUM.
- Two calls per year for applications (March and September)
  - Promotes structured training for **doctoral candidates**.

Faculty Recruiting

Faculty Recruiting

https://www.tum.de/en/about-tum/careers-and-jobs/faculty-recruiting

- This website contains information regarding:
  - Open faculty positions
  - Tenure track stages
  - Application process

TUM Clusters of Excellence

Cluster of Excellence

e-conversion

How can we convert and store energy efficiently and sustainably?

Phase 1 (complete)

- Investigated fundamental processes of energy conversion.

Phase 2

- Focus on developing realistic, sustainable, and efficient methods for conversion and storage.

TUM Partners

LMU Munich, Max Planck Institutes for Solid State Research and Chemical Energy Conversion

https://www.e-conversion.de/

Cluster of Excellence

SyNergy

How do complex neurological diseases such as Alzheimer's, multiple sclerosis, or strokes develop?

Key Goals

- Through cross-disciplinary research, decipher shared mechanisms of neurovascular, neurodegenerative, and neuroimmunological diseases.
- Develop novel diagnostic and therapeutic methods.

TUM Partners

LMU Munich, Max Planck Institutes of Biochemistry, Neurobiology and Psychiatry, Helmholtz Center München, German Center for Neurodegenerative Diseases

https://www.synergy-munich.de/synergy

Cluster of Excellence

NUCLEATE

How do nucleic acids (DNA and RNA) regulate biological processes? How can we modulate their functions for novel diagnostics and therapeutics?

Key Goals

- Combine expertise in RNA/DNA, structural biology, bioengineering, and translational medicine.
- Unlock the full potential of nucleic acids in biological research and medicine

TUM Partners

LMU München (LMU), JMU Würzburg, Max Planck Institute of Biochemistry, Helmholz Instititute for RNA-based Infection Research

This cluster launched in January, 2026.

Cluster of Excellence

BioSysteM

How can we use synthetic biology and AI to design biological systems that perform reliably, even in complex environments?

Key Goals

- Engineer self-organizing molecular and cellular systems for fundamental research and applications in biotech and biomedicine.
- Develop with DNA, RNA, and proteins, implemented across scales for testing and translation, including, molecular machines, synthetic cells, and organoids

TUM Partners

TUM, Ludwig-Maximilians-Universität München (LMU), Max Planck Institute of Biochemistry and Helmholtz Munich

https://www.biosystem.design

Cluster of Excellence

ORIGINS

How did our universe become a place where life can exist, from the Big Bang to the present?

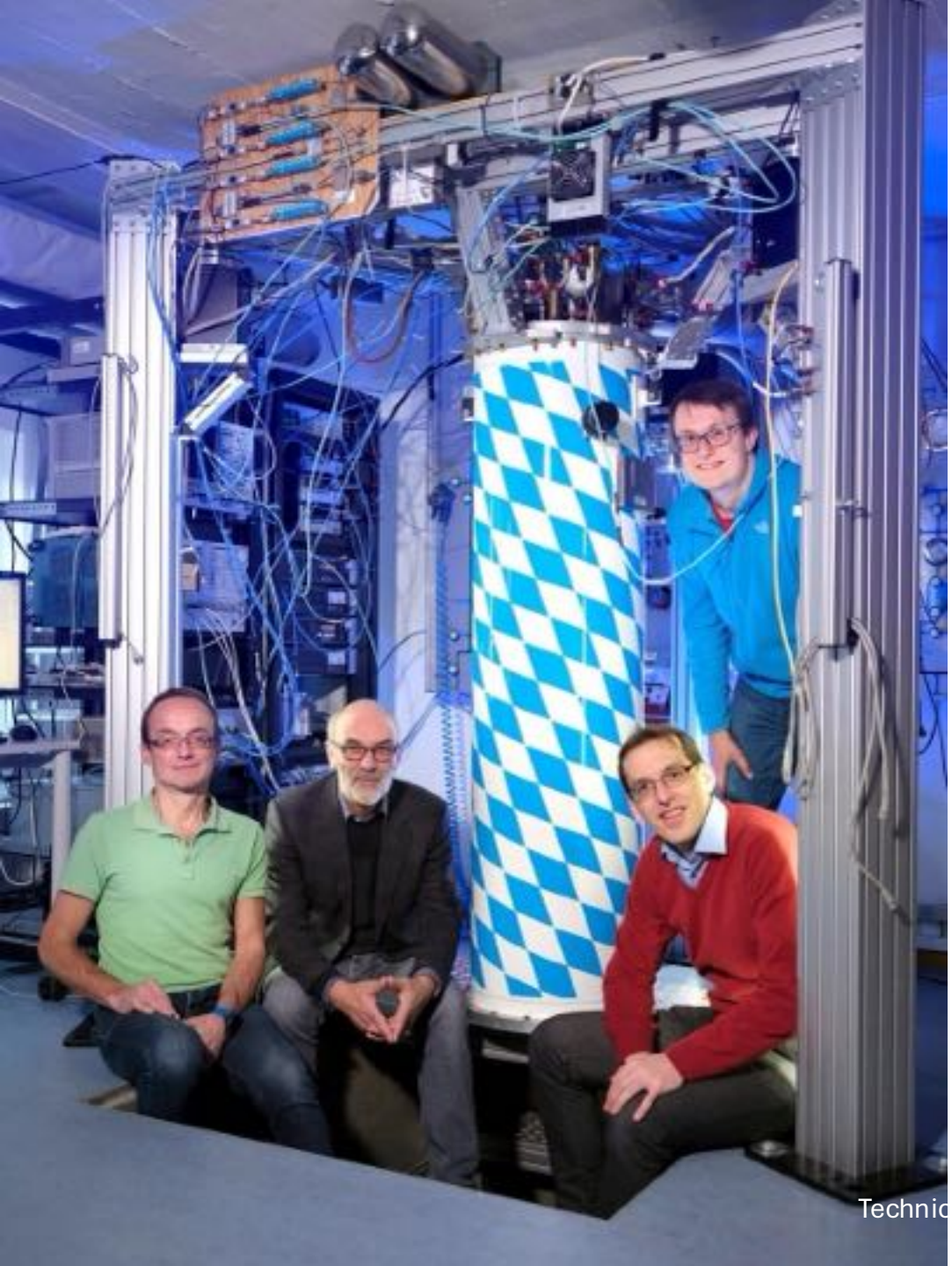
Key Goals

- Through cross-disciplinary research in particle physics, astrophysics, chemistry, and geology, explore the cosmic origins of matter and life
- Develop a deeper understanding of h ow cosmic structures and life emerged.

TUM Partners

LMU Munich, the Max Planck Institutes of Astrophysics, Biochemistry, Extraterrestrial Physics, Physics and Plasma Physics, the European Southern Observatory (ESO), the Leibniz Supercomputing Center, and the Deutsches Museum

Origins-cluster.de



Cluster of Excellence

MCQST

How can we achieve precise control over entanglement and exploit it to extend the boundaries of quantum science, paving the way for next-generation quantum devices?

Key Goals

Push the frontiers of quantum information science by mastering entanglement, engineering complex multi-body systems, and translating them to impactful applications?

TUM Partners

LMU Munich, the Max Planck Institute of Quantum Optics, and the Walther-Meißner-Institute for Low Temperature Research

https://www.mcqst.de

Cluster of Excellence

TransforM

How do we get from more innovation to better innovation?

Key Goals

- Advance social science for highly technologized societies to better understand and shape the transformative power of technology
- Improve mechanisms for understanding, anticipating, monitoring, embedding, and shaping transformative technological pathways

https://www.transform-cluster.de

TUM Entrepreneurship and Venture Labs

TUM Excels as a Highly-Connected Innovation Ecosystem

Built on the strengths of two Europe-wide leading institutions:

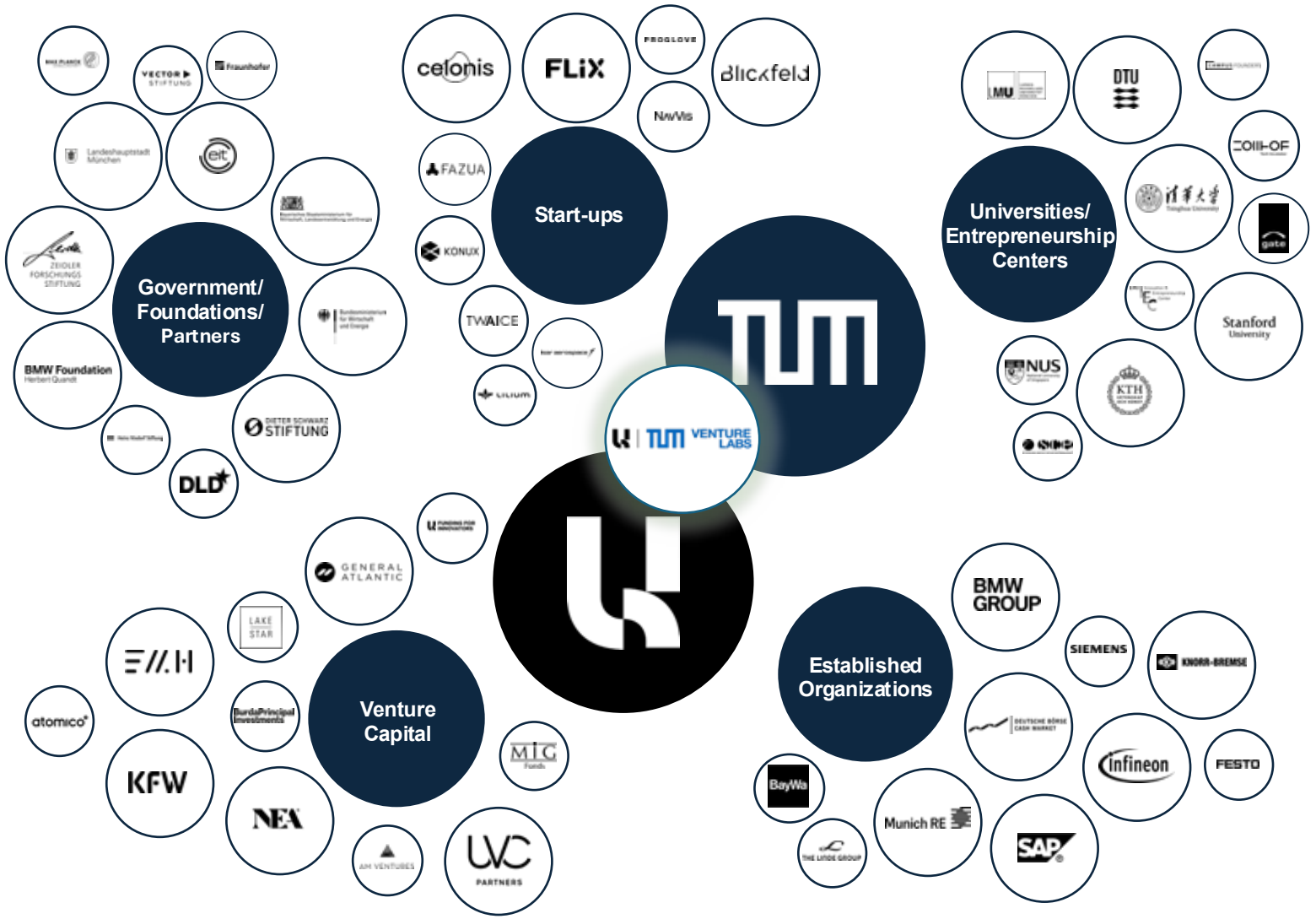
TUM

- Top ranked university in the EU
- >50k students (~40% international)
- > 6k scientist
- Biggest Computer Science department in Europe
- Ranked in the top ten in AI globally

UnternehmerTUM

- Europe's largest entrepreneurship center
- More than 20 years experience in supporting founders & start-ups
- 20+ programs for talents and founders along the entrepreneurial journey

>100 start-ups p.a. &
€2Bn investments p.a.



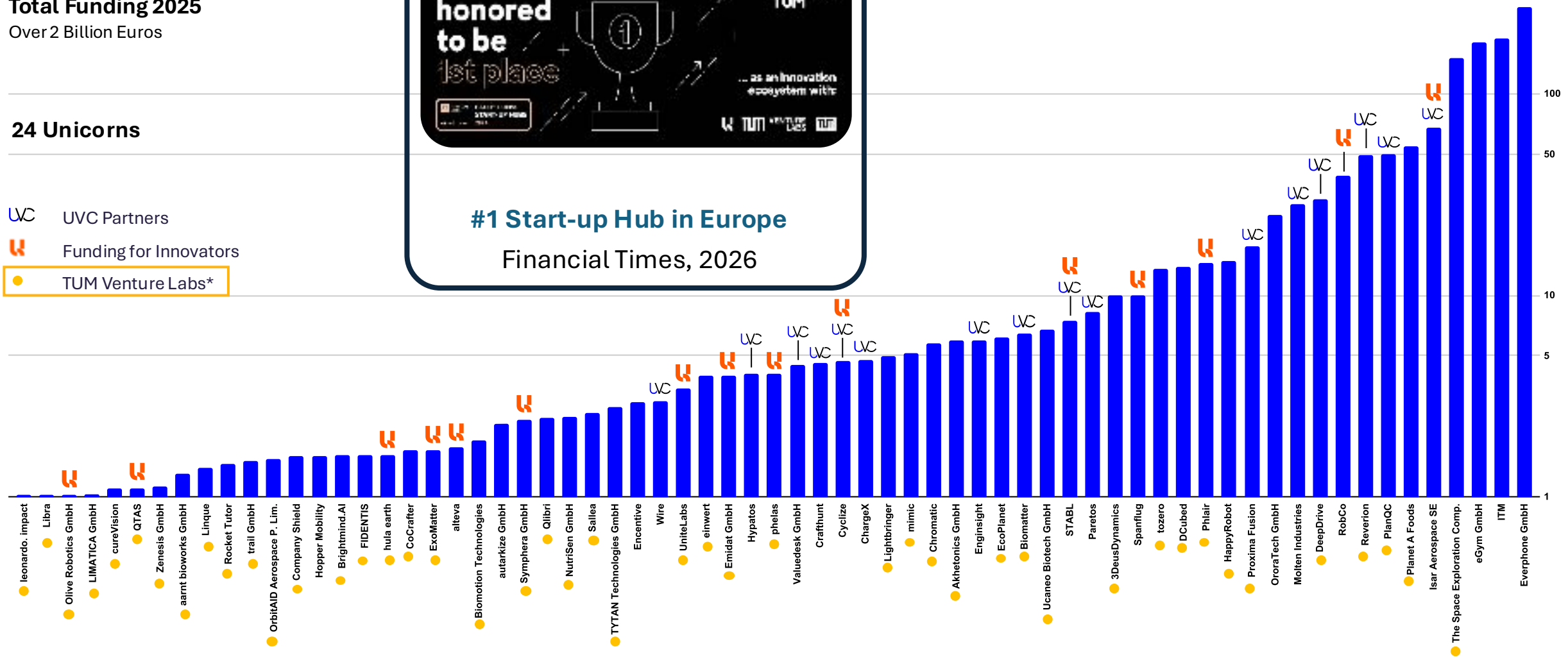
In 2024, TUM Venture Labs, UnternehmerTUM, and TUM supported start-ups raising around 2 Billion EUR in over 100 funding rounds

Total Funding 2025
Over 2 Billion Euros

24 Unicorns

#1 Start-up Hub in Europe
Financial Times, 2026

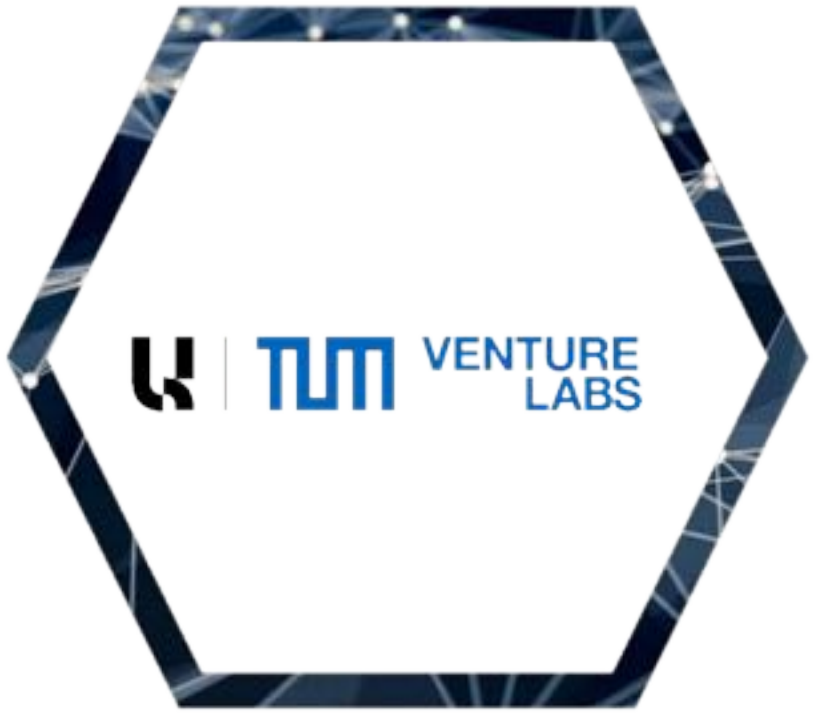
UVC Partners
Funding for Innovators
TUM Venture Labs*



*These start-ups are part of the TUM Venture Labs Initiative

Last updated 27.01.2025

TUM Venture Labs – European hub for Deep Tech and Life Sciences



The **TUM Venture Labs** are a springboard for aspiring **entrepreneurs in deep tech and life sciences**.

They are a joint initiative by **TUM**, the top-ranked university in the EU, and **UnternehmerTUM**, Europe‘s leading entrepreneurship center.

Leveraging the **unique ecosystem**, the goal is to increase the quality and quantity of **scalable technology spin-offs** and ventures **by a factor of ten.**

The resulting **leading technology hub in Europe** aims to become a driving force for the **future technological sovereignty of the continent.**

A unique entrepreneurial deep tech network

The **TUM Venture Labs** support talents and teams to turn their deep tech or life science idea into **scalable businesses with strong real world impact.**

We act as an **integrated network**, combining **exceptional domain expertise** across a wide area of technologies and markets with deep **entrepreneurial experience.**

We are embedded in a **large ecosystem** of TUM, UnternehmerTUM, a network of corporate and finance partners and many engaged individuals and organizations.

We support teams **across the entire early life-cycle** from idea generation to business launch and impact.