

# Fact Sheet Research

2023



## LMU Faculty of Medicine

The Faculty of Medicine and the University Hospital of Ludwig-Maximilians-Universität in Munich (LMU) are among Europe's leading centers of scholarly medicine. The university is connected to milestones and persons of the history of medicine: Wilhelm Conrad Röntgen (x-rays), Alois Alzheimer (neurodegenerative dementia), Max von Pettenkofer (hygiene), Adolf Friedrich Johann Butenandt (sexual hormones) and Feodor Lynen (cholesterol synthesis).

The faculty is member of all eight German Centers for Health Research (cancer, cardiovascular diseases, child and youth health, diabetes, infection, lung diseases, mental health and neurodegenerative diseases research). These centers reflect the foci of medical research that are actively pursued in Munich, from the basic preclinical and clinical disciplines to rare diseases research.

As part of the national program for excellence the faculty hosts the Munich Cluster for Systems Neurology. The faculty is speaker of six nationally supported Collaborative Research Centers ("Sonderforschungsbereiche") by the German Research Foundation (DFG) and coordinates ten national and European projects. Members of the faculty hold currently four Advanced Grants, two Consolidator Grants and nine Starting Grants by the European Research Council (ERC).

## LMU University Hospital

"Gemeinsam. Fürsorglich. Wegweisend – Sharing. Caring. Pioneering." – is the mission of LMU University Hospital. Together with its patients and partners it strives for groundbreaking research and treatments in a caring environment.

Thanks to its achievements in research, teaching and patient care, the university hospital enjoys an excellent reputation both nationally and internationally. Its 11,173 staff members in the areas of medicine, patient care, administration, technology and maintenance are taking care of patients in 48 clinical departments, institutes and divisions. In addition, 53 interdisciplinary centers offer individual medical care. Interdisciplinary collaboration of experts from different medical areas enables efficient diagnosis and therapy. Close to 500,000 patients are treated annually at both locations, the Campus City Center and the Campus Großhadern. With 2,062 beds, LMU university hospital provides high standards of diagnosis, treatment and nursing, and is one of the largest university hospitals in Europe. The university hospital has an annual turnover of 1.3 billion Euro. This includes an annual research and teaching budget of 161 million Euro from the state of Bavaria. The faculty and the university hospital secure additional third-party funding of over 167 million Euro per year.



## Campus City Center

LMU University Hospital is one of the largest hospital complexes in Germany. The Campus City Center is located only one kilometer from Marienplatz, the heart of Bavaria's capital. Its history dates back to the founding of a municipal hospital in 1813.

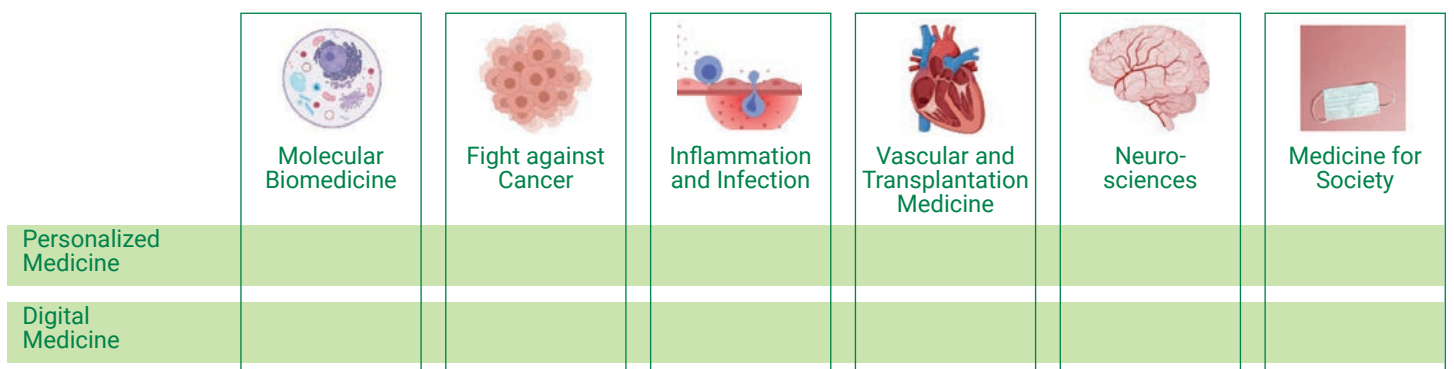
The **Max von Pettenkofer Institute (1)** is named after Max Joseph von Pettenkofer, the scientific founder of modern city sanitation and hospital hygiene. The **Institute of Anatomy (2)** was completed in 1907. It is one of the first steel concrete constructions in Germany. Other preclinical institutes of the faculty include the **Institutes of Physiology (3)**, **Medical Psychology (4)**, **Ethics, History and Theory of Medicine (5)**, **Pharmacology and Toxicology (6)**, **Legal Medicine (7)** and **Pathology (8)**.

The **Dr. von Hauner Children's Hospital (9)** from 1846 is named after its founder, Dr. August von Hauner. The **Departments of Psychiatry and Psychotherapy (10)** saw Alois Alzheimer's first

description of Alzheimer's disease and the work of Emil Kraepelin. Germany's first heart transplantation was performed in 1969 at the **Department of Surgery (11)** in Nußbaumstraße. Other departments of the university hospital at the Campus City Center include the **Departments of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy (12)**, **Dental Medicine (13)**, **Oral and Maxillo-facial Surgery and Facial Plastic Surgery (14)**, **Radiation Oncology (15)**, **Dermatology and Allergy (16)**, **Radiology and Nuclear Medicine (17)**, **Internal Medicine (18)**, **Otorhinolaryngology (19)** and **Ophthalmology (20)**. Opened 2021, the modern, interdisciplinary "**Klinikum Innenstadt**" (21) with 200 patient beds bundles expertise in the fields of internal medicine, surgery, emergency aid and obstetrics and gynecology. On a total of additional 12,400 square meters of floor space it provides high-end medicine in the city center for generations of patients to come.

## Biomedicine for Life and Quality of Life

The research profile of the Faculty of Medicine comprises six focal areas (columns). They are connected by the two interdisciplinary areas "Personalized Medicine" and "Digital Medicine" (rows).





## Campus Großhadern

The Campus Großhadern hosts most of the high-tech medicine of the university hospital. The **Main Patient Ward Building (1)** is lovingly called “the toaster”. It hosts 1,200 beds in total. Adjacent to it, the **Surgical and Acute Care Center (2)** houses emergency rooms, operating rooms and intensive care units. The main building is connected to the **Lecture Halls (3)**, a main teaching site of the faculty. Together, these buildings form the heart of the university hospital Campus Großhadern. The Campus will be greatly expanded in the coming 20 years, including a new **Children’s Hospital (4)**. The university hospital is surrounded by a cluster of excellent biomedical, preclinical and clinical research centers including the **Center of Stroke and Dementia Research (5)**. With the planned completion of the new research building “**Interfaculty center for endocrine and cardiovascular disease network modeling and clinical transfer (ICON) (6)**” in 2024 research in the field of endo-

crine and cardiovascular diseases will be bundled and the translation from basic biomedical research to clinical application will be strengthened. A new joint building (7) will host both **Microbiological and Virology Diagnostics and Cardiovascular Research** in proximity to **Neuropathology (8)**. The **Gene Center (9)**, **BioSysM**, the **Center for Molecular Biosystems (10)**, and the **Faculty of Chemistry and Pharmacy (11)** are strong partners in research and teaching. At the western border of the Campus Großhadern, separated by sports facilities and a small forest, lies the **Biomedical Center (12)** of the Faculty of Medicine, the LMU Biocampus Martinsried housing the **Faculty of Biology (13)**, the **Startup Campus (14)** and the **Max Planck Institutes for Neurobiology (15)** and **Biochemistry (16)**. Together, these institutions and the startup companies at Campus Großhadern and Martinsried form one of the largest and most active biomedical clusters in Europe.

## Knowledge and Technology Transfer



LMU drives knowledge and technology transfer through its Technology Transfer Office (TTO) and its Innovation and Entrepreneurship Center (IEC). As per the new higher education innovation law in Bavaria (BayHIG), this includes support for founders and startups. Student founders and scientist founders may receive office space, lab space, equipment, and other infrastructure for free or at greatly reduced rates. Similarly, LMU hospital is an active player in the incubation of knowledge and tech-based startups. Munich is an excellent spawning ground for young spin offs, offering unique conditions. The biotech cluster m4 in Grosshadern-Martinsried and the founders’ center UnternehmerTUM are the largest of their kind in Europe. They are at the centre of an ecosystem that provides startups with ample infrastructure, support and cooperation partners.

At the Medical Faculty and the LMU Hospital, there have been 30 startups in the past 20 years. Their innovative solutions cover a range from new pharmaceuticals therapies and novel diagnostics to applied software development and e-learning.

### Awards:

- 2022 bytes for life – Innovation Prize by Stifterverband
- 2021 NEUREVO – Science4Life Venture Cup
- 2019 Eisbach Bio – Winner Startup Slam at BioEurope, Rising Stars Award, EIT Health Germany Headstart Awards
- 2019 Mecuris – EIT Digital Challenge Winner, ANSYS-Best Start-Up
- 2019 Ferrosens – BioVaria audience price for best startup presentation

## Facts and Figures

### Departments and staff



- 14 basic science and preclinical institutes
- 48 university hospital departments



- 12,720 staff members, thereof:
- 1,547 basic science & preclinical
- 11,173 university hospital

### Research



- 32 Mio. Euro third-party (basic science & preclinical)
- 135 Mio. Euro third-party (university hospital)
- 161 Mio. Euro research and teaching (university hospital)



- 4,021 publications, 32,749 JIF (total), thereof:
- 553 publications, 5,369 JIF (basic science & preclinical)
- 3,468 publications, 27,380 JIF (university hospital)

### Patient care



- 2,062 in-patient beds
- 83,551 in-patients (including day-care patients)
- 395,129 out-patients

### Teaching



- 203 professors, thereof:
- 64 basic science & preclinical
- 139 university hospital



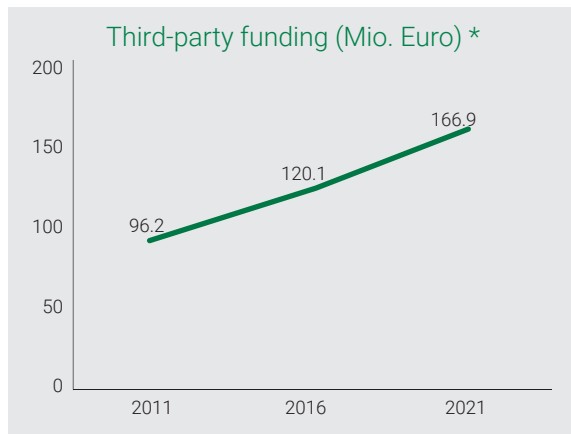
- 63 habilitations
- 655 doctoral degrees



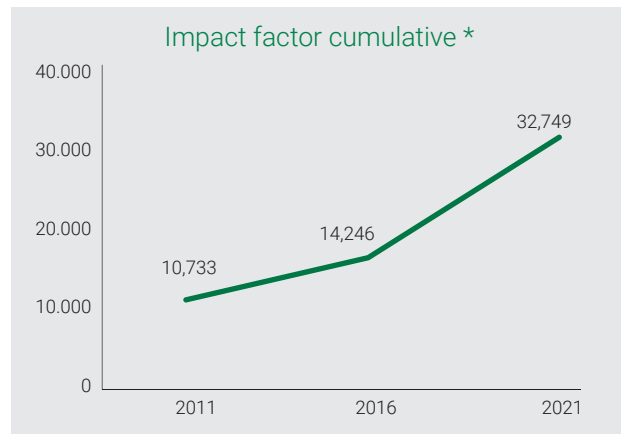
- 6,682 students, summer term 2021
- 7,123 students, winter term 2021/22

(numbers from 2021)

## Academic Excellence



\*university hospital, basic science, and preclinical institutes



### Research consortia



- 1 Cluster of Excellence
- 6 Collaborative Research Centers (nationally funded, Speaker)
- 8 German Centers for Health Research
- 4 Advanced Grants, 2 Consolidator Grants, 9 Starting Grants by the European Research Council (ERC)
- 10 coordinated EU- and BMBF network projects
- 10 coordinated doctoral and clinician scientist programs
- 13 G-BA Innovation Fund projects

### Gottfried Wilhelm Leibniz Prizes



- Prof. Dr. Erika von Mutius (2013)
- Prof. Dr. Christoph Klein (2010)
- Prof. Dr. Magdalena Götz (2007)
- Prof. Dr. Peter B. Becker (2005)
- Prof. Dr. Christian Haass (2002)

### High impact publications of the past five years

Journal	Impact factor 2021	Number of publications 2017 to 2021
Lancet	202.7	49
New England Journal of Medicine	176.1	51
Nature Medicine	87.2	17
Nature	69.5	20
Cell	66.9	33
Nature Reviews Disease Primers	65.0	12
Lancet Neurology	59.9	36
Lancet Oncology	54.4	28
Annals of Oncology	51.8	55
Journal of Clinical Oncology	50.7	33
Lancet Diabetes & Endocrinology	44.9	13
Immunity	43.5	19
Intensive Care Medicine	41.8	10
Nature Genetics	41.3	36
Circulation	39.9	33
Cancer Cell	38.6	15
European Heart Journal	35.9	73

Selected journals with impact factor >35 and ≥ 10 publications

## German Strategy for Excellence (“Exzellenzstrategie”)\*

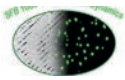


SyNerg – Munich cluster for systems neurology (since 2012 – Prof. Dr. Dr. C. Haass)

## DFG (Collaborative Research Centers, Graduate Colleges and Research Units)\*



SFB 1123 – Atherosclerosis – Mechanisms and networks of novel therapeutic targets (since 2014 – Prof. Dr. C. Weber)



SFB 1064 – Chromatin dynamics (since 2013 – Prof. Dr. P. Becker)



SFB 1054 – Control and plasticity of cell-fate decisions in the immune system (since 2013 – Prof. Dr. T. Brocker)



SFB 914 – Trafficking of immune cells in inflammation, development and disease (since 2011 – Prof. Dr. B. Walzog)



TRR 152 – Maintenance of body homeostasis by TRP channel modules (since 2014 – Prof. Dr. T. Gudermann)



TRR 127 – Biology of xenogeneic cell and organ transplantation – from bench to bedside (since 2012 – Prof. Dr. B. Reichart, Prof. Dr. E. Wolf)



GRK 2621 – Predictors and outcomes in primary depression care (since 2021 – Prof. Dr. J. Gensichen)



GRK 2338 – Targets in toxicology – deciphering therapeutic targets in lung toxicology (since 2018 – Prof. Dr. T. Gudermann)



FOR 2879 – ImmunoStroke – From immune cells to stroke recovery (since 2019 – Prof. Dr. A. Liesz)

## German Centers for Health Research (“Deutsche Gesundheitszentren”)



DKTK – German Cancer Consortium (LMU speaker: Prof. Dr. Dr. M. von Bergwelt)



DZD – German Center for Diabetes Research (LMU speaker: Prof. Dr. E. Wolf)



DZHK – German Center for Cardiovascular Research (LMU speaker: Prof. Dr. C. Weber)



DZIF – German Center for Infection Research (LMU speaker: Prof. Dr. M. Hoelscher)



DZKJ - German Center for Child and Youth Health (LMU speaker: Prof. Dr. Dr. C. Klein)



DZL – German Center for Lung Research (LMU speaker: Prof. Dr. E. von Mutius)



DZNE – German Center for Neurodegenerative Diseases (LMU speaker: Prof. Dr. Dr. C. Haass)



DZPG - German Center for Mental Health (LMU speaker: Prof. Dr. P. Falkai)

### BMBF\*



UNITE4TB – United innovation and treatment for tuberculosis (2021 to 2028 – Prof. Dr. M. Hölscher)



CLINSPECT-M – Clinical mass spectrometry center Munich (2020 to 2023 – Prof. Dr. D. Teupser)



MOBISTAR – Mobilization of people in need of intensive care (2020 to 2023 – Prof. Dr. U. Fischer)

### RESPONSE

RESPONSE – Adaptation and clinical use of existing robotic systems (2020 to 2023 – Prof. Dr. U. Fischer)



DIFUTURE – Data integration for future medicine (2018 to 2026 – Prof. Dr. U. Mansmann)



MobilE-Net – Enabling participation by enabling mobility (2017 to 2023 – Prof. Dr. E. Grill)

## Bavarian Center for Health Research



BZKF – Bavarian center for cancer research (LMU representatives: Prof. Dr. C. Belka, Prof. Dr. J. Mayerle)

## G-BA Innovation Fund\*



FissVers (2022 to 2023 – Prof. Dr. J. Kühnisch)



EvidenT-HiP (2023 to 2024 – Prof. Dr. C. Neuerburg)



S3 LL FASD (2022 to 2025 – PD Dr. M. N. Landgraf)



PARTNER (2022 to 2025 – Prof. Dr. J. Hübner)



VerSeErZ (2022 to 2024 – Prof. Dr. J. Kühnisch)



PÄD-ONKO-PALL (2022 to 2024 – Prof. Dr. M. Führer)



OptiNIV (2021 to 2025 – Prof. Dr. A. Bender)



TARGET (2021 to 2023 – PD Dr. K. Berger-Thürmel)



FLS-CARE (2020 to 2024 – Prof. Dr. W. Böcker, Prof. Dr. C. Kammerlander)



INFO-LE (2020 to 2023 – Dr. I. Kirchberger)



INTEGRATION-Program (2020 to 2023 – Prof. Dr. S. Theurich)



PoiSe (2020 to 2023 – Dr. F. M. Filippoulos)



TELE-KASPER (2020 to 2023 – Prof. Dr. J. Hübner)

## European Union\*

### ERA-NET

BiotaBB – Modulation of brain barrier function (2023 to 2026 – C. Benakis, PhD)

### ERA-NET

VasOX – Role of oxidative stress for neuro-vascular function (2023 to 2026 – Prof. Dr. N. Plesnila)

### ERA-NET

IMMOSCAN – The role of immuneosteoclasts in cancer (2022 to 2025 – Prof. Dr. H. Taipaleenmäki)



TRACE – Transfer of multi-virus-specific T-cells (2018 to 2023 – Prof. Dr. T. Feuchtinger)

\* with speaker or coordinator function at LMU

## European Research Council (ERC)

**erc** **Advanced Grant** | APROSUS – Microbiome-derived asthma and allergy protective substances for prevention (2023 to 2027 – Prof. Dr. E. von Mutius)

**erc** **Advanced Grant** | NeuroCentro – Novel mechanisms of neurogenesis (2020 to 2025 – Prof. Dr. M. Götz)

**erc** **Advanced Grant** | Immunothrombosis – Cross-talk between platelets and immunity (2019 to 2024 – Prof. Dr. S. Massberg)

**erc** **Advanced Grant** | PROVASC – Cell-specific vascular protection by CXCL12/CXCR4 (2016 to 2023 – Prof. Dr. C. Weber)

**erc** **Consolidator Grant** | Calvaria – Translational aspects of the discovery of skull marrow-meninges connections (2021 to 2025 – Prof. Dr. A. Ertürk)

**erc** **Consolidator Grant** | EvoGutHealth – Evolution of gut-associated microbial communities (2020 to 2025 – Prof. Dr. B. Stecher)

**erc** **Starting Grant** | ImmGenDC – Dissecting the context-specificity of genetic immune regulation in plasmacytoid dendritic cells (2023 to 2028 – Dr. S. Kim-Hellmuth)

**erc** **Starting Grant** | oxDOPAMIN – Unraveling the mystery of preferential degeneration of midbrain neurons (2021 to 2026 – Prof. L. Burbulla)

**erc** **Starting Grant** | T-MEMORE – Thrombotic memory-linking a break in tolerance to platelets to re-thrombosis (2020 to 2025 – Prof. Dr. K. Stark)

**erc** **Starting Grant** | Proteofit – Adapting protein fate for muscle function and fitness (2019 to 2024 – Prof. Dr. A. Bartelt)

**erc** **Starting Grant** | Neuroprecise – Precision medicine in traumatic brain injury (2019 to 2024 – Prof. Dr. I. Koerte)

**erc** **Starting Grant** | RecoverInFlame – T-cell-driven inflammatory mechanisms promote recovery after acute brain injury (2018 to 2023 – Prof. Dr. A. Liesz)

**erc** **Starting Grant** | ARMOR-T – Armoring multi-functional T-cells for cancer therapy (2018 to 2023 – Prof. Dr. S. Kobold)

**erc** **Starting Grant** | AstroNeuroCrosstalk – Astrocyte-neuronal cross-talk in obesity and diabetes (2018 to 2023 – Prof. Dr. C. García Cáceres)

**erc** **Starting Grant** | Baby DCs – Age-dependent regulation of dendritic cell development (2017 to 2023 – Prof. Dr. B. Schraml)

## Doctoral Programs, Clinician Scientist Programs\*

**Eise Kröner-Fresenius Stiftung** | Else Kröner-Fresenius Clinician Scientist Program – Immuno-oncology and local intervention (2022 to 2025 – Prof. Dr. S. Kobold)

**Eise Kröner-Fresenius Stiftung** | Else Kröner-Fresenius “Promotionskolleg” – FöFoLe Inflammation (2021 to 2024 – Prof. Dr. H. Anders)

**MARIE CURIE ACTIONS** | Marie Curie ITN – T-OP – Training network for optimizing adoptive T-cell therapy of cancer (2020 to 2024 – Prof. Dr. S. Kobold)

**cell2cell heterogeneity** | Marie Curie ITN – Cell2Cell heterogeneity (2019 to 2023 – Dr. S. Braun, Prof. Dr. T. N. Siegel)

**PRIME** | PRIME – Clinician scientist program in vascular medicine (2018 to 2024 – Prof. Dr. S. Massberg)

**Eise Kröner-Fresenius Stiftung** | Else Kröner-Fresenius Clinician Scientist Program – Cancer immunotherapy (2017 to 2023 – Prof. Dr. M. Subklewe)

**Eise Kröner-Fresenius Stiftung** | Else Kröner-Fresenius Clinician Scientist Program – Translational psychiatry (2017 to 2023 – Prof. Dr. P. Falkai)

**Elite Network of Bavaria** | Elite Network of Bavaria – i-Target – Immunotargeting of cancer (2014 to 2023 – Prof. Dr. S. Endres)



Dean

Prof. Dr. Thomas Gudermann



Vice Dean

Prof. Dr. Reinhard Hickel



Dean of Research

Prof. Dr. Stefan Endres



Chief Medical Officer & CEO

Prof. Dr. Markus M. Lerch



Chief Commercial Officer

Markus Zendler



Chief Nursing Officer (acting)

Alfred Holderied

## Ludwig-Maximilians-Universität München

Faculty of Medicine  
Bavariaring 19 | 80336 Munich | Germany  
[www.med.uni-muenchen.de/forschung](http://www.med.uni-muenchen.de/forschung)

Dean: Prof. Dr. Thomas Gudermann  
Dean of Research: Prof. Dr. Stefan Endres (v.i.S.d.P)

LMU University Hospital  
Marchioninistraße 15 | 81377 Munich | Germany  
[www.lmu-klinikum.de](http://www.lmu-klinikum.de)

Chief Medical Officer & CEO:  
Prof. Dr. Markus M. Lerch



References: Annual report 2021, EvaLuna 2011, 2016, 2021, DFG, EU, BMBF, Else Kröner-Fresenius Stiftung, Elitenetzwerk Bayern, G-BA

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