LMU KLINIKUM

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN
FACULTY OF MEDICINE

Fact Sheet Research 2022

LMU Faculty of Medicine

The Faculty of Medicine and the University Hospital of Ludwig-Maximilians-Universität in Munich (LMU) are among European's leading centers of scholarly medicine. The university is connected to milestones and persons in 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 eight national and European projects. Members of the faculty hold currently five Advanced Grants, two Consolidator Grants and eight 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 treatment 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 11,070 staff members in the areas of medicine, patient care, administration, technology and maintenance are taking care of patients in 49 clinical departments, institutes and divisions. In addition, 52 interdisciplinary centers offer individual medical care. Interdisciplinary collaboration of experts from different medical areas enables efficient diagnosis and therapy. Around 500,000 patients are treated annually at both locations, the Campus City Center and the Campus Großhadern. With 2,058 beds, the university hospital provides the highest standard of diagnosis, treatment and nursing, and is the second largest university hospital in Germany. The university hospital has an annual revenue of 1.3 billion Euro. This includes an annual research and teaching budget of 154 million Euro from the state of Bavaria. The faculty and the university hospital secure additional third-party funding of over 146 million Euro per year.

German Strategy for Excellence ("Exzellenzstrategie")*

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

DFG (Collaborative Research Centers and Graduate Colleges)*

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)

GRK 2274 – Advanced medical physics for image-guided cancer therapy (since 2017 – Prof. Dr. K. Parodi)

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)

European Union and BMBF*

UNITE4TB – Academia and industry 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 – Dr. U. Fischer)

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

mitoNET – German network for mitochondrial diseases (2019 to 2022 – Prof. Dr. T. Klopstock)

TRACE – Transfer of multivirusspecific T-cells following transplantation (2018 to 2022 – Prof. Dr. T. Feuchtinger)

DIFUTURE – Data integration for future medicine (2018 to 2022 – Prof. Dr. U. Mansmann)

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

Bavarian Centers for Health Research

BZKF – Bavarian center for cancer research (LMU Representatives on the Executive Board of BZKF: Prof. Dr. C. Belka, Prof. Dr. J. Mayerle)

G-BA Innovation Fund*

PARTNER (2022 to 2025 – Prof. Dr. T. Dreischulte

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

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

TARGET (2021 to 2023 – Prof. Dr. V. Heinemann)

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. Filipp M. Filippopulos)

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

COMPANION (2019 to 2022 – Prof. Dr. C. Bausewein)

RiDe-PPI (2019 to 2022 – Prof. Dr. J. Linseisen

Palli-MONITOR (2018 to 2022 – Prof. Dr. C. Bausewein)

* with speaker or coordinator function at LMU

European Research Council (ERC)

- Advanced Grant – NeuroCentro – Novel mechanisms of neurogenesis (2020 to 2025 – Prof. Dr. M. Götz)
- Advanced Grant – Immunothrombosis – Cross-talk between platelets and immunity (2019 to 2024 – Prof. Dr. S. Massberg)
- Advanced Grant – Tolerance Footprint – Clonal deletion versus clonal diversion (2017 to 2022 – Prof. Dr. L. Klein)
- Advanced Grant – PAPA – Pathophysiology of primary aldosteronism (2017 to 2022 – Prof. Dr. M. Reincke)
- Advanced Grant – PROVASC – Cell-specific vascular protection by CXCL12/CXCR4 (2016 to 2022 – Prof. Dr. C. Weber)
- Consolidator Grant – Calvaria – Translational aspects of the discovery of skull marrow-meninges connections (2021 to 2025 – Dr. A. Ertürk)
- Consolidator Grant – EvoGutHealth – Evolution of gut-associated microbial communities (2020 to 2025 – Prof. Dr. B. Stecher)
- Starting Grant – oxDOPAMIN – Unraveling the mystery of preferential degeneration of midbrain neurons (2021 to 2026 – Prof. L. Burbulla)
- Starting Grant – T-MEMORE – Thrombotic memory-linking a break in tolerance to platelets to re-thrombosis (2020 to 2025 – PD Dr. K. Stark)
- Starting Grant – Proteofit – Adapting protein fate for muscle function and fitness (2019 to 2024 – Prof. Dr. A. Bartelt)
- Starting Grant – Neuroprecise – Precision medicine in traumatic brain injury (2019 to 2024 – Prof. Dr. I. Koerte)
- Starting Grant – RecoverInFlame – T-cell-driven inflammatory mechanisms promote recovery after acute brain injury (2018 to 2023 – Prof. Dr. A. Liesz)
- Starting Grant – ARMOR-T – Armoring multifunctional T-cells for cancer therapy (2018 to 2023 – Prof. Dr. S. Kobold)
- Starting Grant – AstroNeuroCrosstalk – Astrocyte-neuronal crosstalk in obesity and diabetes (2018 to 2023 – Prof. Dr. C. García Cáceres)
- Starting Grant – Baby DCs – Age-dependent regulation of dendritic cell development (2017 to 2022 – Prof. Dr. B. Schraml)

Doctoral Programs, Clinician Scientist Programs*

- Else Kröner-Fresenius Clinician Scientist Program – IOLIN – Immuno-oncology and local inetrvention (2022 to 2025 – Prof. Dr. S. Kobold)
- Else Kröner-Fresenius "Promotionskolleg"– FöFoLe Inflammation (2021 to 2024 – Prof. Dr. H. Anders)
- Marie Curie ITN – T- OP – Training network for optimizing adoptive T-cell therapy of cancer (2020 to 2024 – Prof. Dr. S. Kobold)
- 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)
- Else Kröner-Fresenius Clinician Scientist Program – Cancer immunotherapy (2017 to 2023 – Prof. Dr. M. Subklewe)
- Else Kröner-Fresenius Clinician Scientist Program – Translational psychiatry (2017 to 2023 – Prof. Dr. P. Falkai)
- Else Kröner-Fresenius Clinician Scientist Program – Rare immune system diseases (2014 to 2022 – Prof. Dr. Dr. C. Klein)
- Elite Network of Bavaria – i-Target – Immunotargeting of cancer (2014 to 2022 – Prof. Dr. S. Endres)

* with speaker or coordinator function at LMU

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

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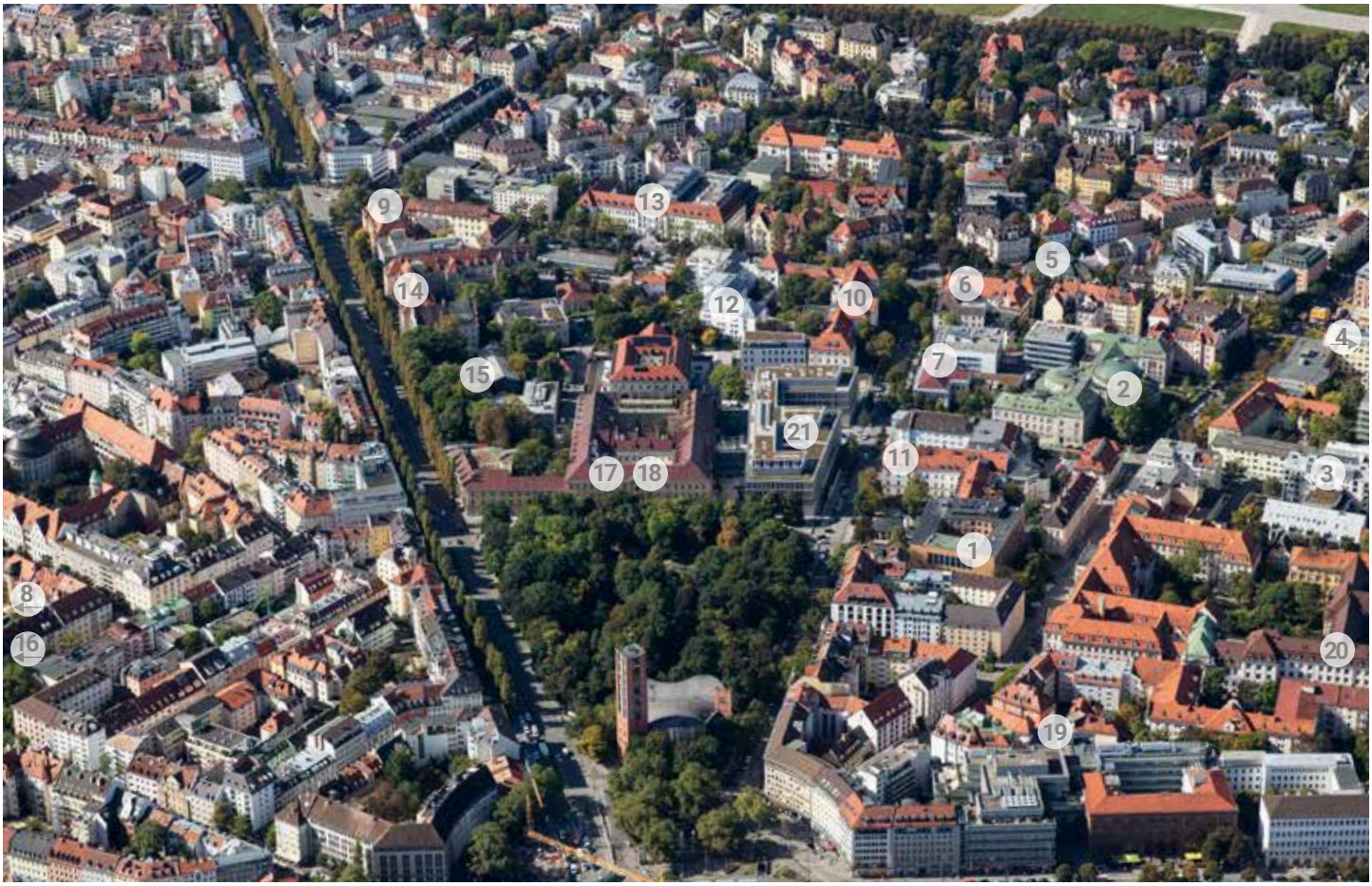
Prof. Dr. Markus M. Lerch

References: Annual report 2020 EvaLuna 2010, 2015, 2020, DFG, EU, BMBF, Else Kröner-Fresenius Stiftung, Elitenetzwerk Bayern, G-BA

Picture Credit: LMU Klinikum, LMU, IZB GmbH / Luftbildverlag Bertram GmbH (arial view Campus Großhadern), BioRender



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 Maxillofacial 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 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).

	 Molecular Biomedicine	 Fight against Cancer	 Inflammation and Infection	 Vascular and Transplantation Medicine	 Neuro-sciences	 Medicine for Society
Personalized Medicine						
Digital Medicine						

Campus Großhadern

The Campus Großhadern hosts most of the high-tech medicine of the university hospital. The **Main Patient 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 endocrine and cardiovascular diseases will be bundeled 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** which currently shares a building with **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.

Clinical Trials at LMU University Hospital

Fostering medical innovation across all medical specialities

At the LMU university hospital highly specialized study teams cooperate to ensure optimal patient care, safety and data integrity in compliance with highest European and international regulatory standards. Our clinical research activities cover all medical specialities across our 49 departments, institutes and divisions extending from innovative medical devices to advanced pharmaceutical therapy.

Enabling translation from bench to bed side

Our trials encompas the complete spectrum from first-in-human phase 1 to phase 4 clinical trials, from industry sponsored trials to dedicated trials sponsored by the institution (IITs). An early clinical trial unit (ECTU) facilitates translation of novel therapeutic concepts from bench to bedside. Specialized infrastructure such as an in house safety unit, the institute for laboratory medicine, and a pharmacy support all international regulatory standards (GCP, GMP and GLP). A central unit for clinical trials advises our researchers and supports IITs serving as sponsor quality assurance unit. An internal, interdisciplinary sponsor-panel of internationally recognized medical experts evaluates all IIT projects to ensure scientific and medical quality.

Accessing large patient populations

Close collaboration with the Munich Study Center of the Technical University Munich enables full access to the large patient population of both university hospitals in the Munich area , including vulnerable subjects and rare diseases.

Facts and Figures

Departments and staff

14 basic science and preclinical institutes
49 university hospital departments, institutes and divisions

12,648 staff members, thereof:
1,578 basic science & preclinical
11,070 university hospital

Research

36.8 Mio. Euro third-party (basic science & preclinical)
109.5 Mio. Euro third-party (university hospital)
154 Mio. Euro research and teaching (university hospital)

3,503 publications, 24,266JIF (total), thereof:
539 publications, 3,815 JIF (basic science & preclinical)
2,964 publications, 20,451 JIF (university hospital)

Patient care

2,058 in-patient beds
81,894 in-patients
363,997 out-patients

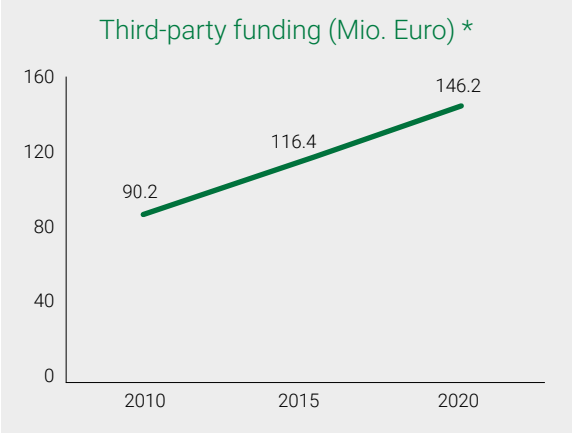
Teaching

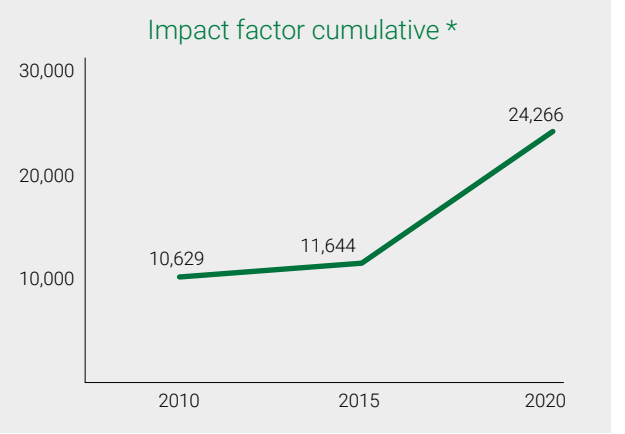
197 professors, thereof:
61 basic science & preclinical
136 university hospital

54 habilitations
495 doctoral degrees

6,575 students, summer term 2020
7,092 students, winter term 2020/21

Academic Excellence





*university hospital, basic science and preclinical

Research consortia

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

Gottfried Wilhelm Leibniz Prizes

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

High impact publications of the past five years

Journal	Impact factor 2020	Number of publications 2016-2020
New England Journal of Medicine	91.2	61
Lancet	79.3	56
Nature Medicine	53.4	15
Nature Reviews Disease Primers	52.3	11
Nature	50.0	25
Journal of Clinical Oncology	44.5	44
Lancet Neurology	44.2	27
Cell	41.6	33
Lancet Oncology	41.3	30
Nature Genetics	38.3	37
Annals of Oncology	33.0	64
Lancet Diabetes & Endocrinology	32.0	11
JAMA Oncology	31.8	15
Immunity	31.8	16
Cancer Cell	31.8	18
European Heart Journal	30.0	66
Circulation	29.7	29
Nature Reviews Nephrology	28.3	10
Cell Metabolism	27.3	11
Journal of Hepatology	25.1	19

Selected journals with impact factor >25 and ≥ 10 publications