LMU KLINIKUM
Klinik und Poliklinik
für Dermatologie und Allergologie

Department of Dermatology
Biennial Report 2021 / 2022

MÜNCHEN KLINIK

Imprint

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Department of Dermatology
LMU Klinikum München

Contents

Foreword

Prof. Lars E. French, MD, Chairman, Department of Dermatology and Allergy at the LMU University Hospital and Munich Municipal Hospital Group Dermatology 1

It is my pleasure in this biennial report to present you an overview of our activities in patient care, education, and research in 2021 and 2022, highlighting areas of focus, significant accomplishments and the people who made them possible.

On January 27th, 2021, the first case of COVID-19 in Germany was confirmed near Munich, Bavaria. The pandemic which resulted in over 174'000 deaths in Germany and 6.9 million worldwide, created an unprecedented challenge to health care workers, health care systems and public health. In 2021 and 2022 the COVID-19 pandemic hampered our operations significantly. Mastering the conditions by providing help in managing hospitalized COVID-19 patients whilst still maintaining best care for our patients with skin diseases, was only possible due to the performance of devoted employees, to whom I would like to express my sincere thanks.

Patient care in our department is organized such that ambulatory care and diagnostic laboratories are under the responsibility of the Bavarian state-owned Department of Dermatology and Allergy at the Ludwig Maximilian University Hospital in downtown Munich, whereas inpatient care and daycare are under the responsibility of the city-owned Munich Clinic located in an adjacent building. Our ambulatory care with a walk-in clinic and a large panel of specialized clinics counted over 74'000 patient-contacts yearly in 2021-2022 despite the pandemic, whereas our 110-bed inpatient clinic managed over 3500 patients with complex clinical problems per year.

The Department's two main research focuses, dermato-oncology and immuno-dermatology including allergology, performed strongly both clinically and academically, with innovative research focused on deep phenotyping (clinical + transcriptomics + proteomics) of inflammatory skin diseases, strategies to lift resistance to melanoma immune therapy, the investigation of the role of the human gut microbiome on the therapeutic response of patients with advanced melanoma and over 50 clinical trials yearly, amongst others. New is the recruitment alongside of Prof. Lucie Heinzerling as an internationally recognized clinician-scientist in cutaneous oncology (01.11.2020), and of Prof. Iris Helfrich PhD as our Head of Experimental Dermato-Oncology and our research labs. Her expertise lies in the biology of melanoma metastasis and the reciprocal communication of tumor cells with cells of the microenvironment with respect to cancer therapy (immune checkpoint therapy).

The productive and innovative character of our research is illustrated by the department's increasing cumulative impact factor (>130% since 2019), and a record number of peer-reviewed publications reaching 150 in 2021. Our third-party research funding also increased to a new high of 2.7 million € in 2022. Collectively this increase in our academic performance led to our department ranking amongst the top 3 of 41 departments and Institutes within the LMU University Hospital in 2022!

Our faculty and staff are heavily engaged in the education and training of the next generations. Our 42 faculty members and external private physicians provide pre-graduate dermatology training to 1000 medical students yearly within the LMU-University Medical Curriculum Munich (MeCuM), and post-graduate specialty training in dermatology for 38 residents within their 5-year board-certification curriculum. Besides numerous regionally attended CME events, our unique internationally attended 28th continuous medical education meeting for Practical Dermatology and Venerology (FOBI) attracted over 2500 participants in July 2022 (www.fortbildungswoche.de).

It is great to see the opportunities that the Ludwig Maximilian University, the Department of Dermatology and Allergy of the Ludwig Maximilian University Hospital Munich and the Department of Dermatology 1 of the Munich Municipal Hospital Group offer us.

I am very grateful for the continuous support and confidence of our two hospital directions, the faculty of medicine of the Ludwig Maximilian University, and my team that have enabled such achievements in challenging times.

I sincerely hope that you find our biennial report interesting and informative and wish you an enjoyable read as you delve into the highlights of our accomplishments and endeavors of the past 2 years.

Prof. Lars E. French

1 Assignment

The Department of Dermatology and Allergy at the Ludwig Maximilian University Hospital in collaboration with the Department of Dermatology 1 of the Munich Clinic are devoted to providing sustained leadership in research, patient care, and education in the fields of dermatology, venerology and allergology.

Our nationally and internationally recognized Department includes centers of excellence for skin cancer (ISO 9001-Certified), inflammatory and allergic skin diseases, and cutaneous surgery. With a team of 22 senior physicians, 36 residents and 130 nursing members we offer high-level patient care in all areas of dermatology, venerology and allergology in the context of our large out-patient ambulatory care clinic, our daycare clinic, and our 106-bed inpatient dermatology service. We offer a wide array of specialized outpatient clinics including skin cancer, bullous and autoimmune skin disease, medical dermatology, psoriasis, atopic dermatitis, autoinflammatory skin disease and hidradenitis suppurativa, acne and rosacea, trichology, allergology, dermatologic surgery, laser and aesthetic dermatology, chronic wounds, sexually transmitted diseases and physical therapies (phototherapy, PDT and laser therapy). Supporting our patient care are professional in-house diagnostic laboratories for dermatopathology, molecular pathology, allergology, mycology and dermatological immune diagnostics. Our research activities are focused on basic and translational research with relevance to skin disease, mainly in the fields of skin cancer and inflammatory skin disease. Collaboration and networking with talented scientists and research groups within the Ludwig Maximilian University, the Technical University of Munich, the Helmholtz Center and Max-Planck-Institute, as well as collaborative networks with academic Departments in Bavaria, Germany and other leading international Dermatology Centers is of key importance to us.

Education is the third principal field of activity of our Department. Our pre-graduate training is an integral part of the extremely well organized LMU-University Medical Curriculum Munich (MeCuM) which makes optimal use of online and face-to-face onsite resources for an optimal blend of theoretical and practical bedside patient-oriented teaching. At a post-graduate level, regular grand rounds in the Department combined with our large biennial Training Week for Practical Dermatology and Venerology (FOBI, www.fortbildungswoche.de) round up a unique post-graduate continuing medical education offer.

2 Mission statement

Department of Dermatology and Allergy at the Ludwig Maximilian University Hospital and 106-Bed-Inpatient Wards of Dermatology 1 of the Munich Clinic

The top 4 priorities of the Department of Dermatology and Allergy at the Ludwig Maximilian University Hospital in collaboration with the Department of Dermatology 1 of the Munich Municipal Hospital Group – are to:

1. **offer high quality individualized diagnosis and therapy of skin disease, as well as patient education in the prevention and care of skin disease,**

2. **provide high level education and training in dermatology at the pre-, post-graduate, and CME level,**

3. **perform innovative translational research with the aim of contributing to improved patient care,**

4. **foster constructive collaboration and networks with private practitioners as well as primary and secondary institutional care providers.**

3 Team

Physicians

Secretaries / Administrative assistants

Members of the nursing team

Members of the administrative team

Diagnostic lab team

Organization chart management

Management 2021

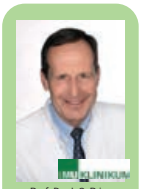
LMU KLINIKUM
Klinik und Poliklinik
für Dermatologie und Allergologie

MÜNCHEN KLINIK

Klinikdirektor

Prof. Dr. L. E. French

Stellv. Klinikdirektor



Prof. Dr. J. C. Prinz

Lichtabteilung
Psoriasiszentrum

Ltd. Oberärztin Derma I MüK

PD Dr.
D. Hartmann, Ph. D.

Stellv. Chefarzt Derma I
Dermatochirurgie
Ästhetische Dermatologie
Lasermedizin
Imaging

Leitung Pflege

Fr. N. Renner

Fr. P. Guerrisi

Chefsekretariat

Fr. M. Michl

Fr. B. Ott

Oberärzte/innen

Prof. Dr. M. Flaig

Controlling & Finanzen
Diagnostische Labore
Dermatohistopathologie

Prof. Dr. K. Giehl

Genodermatosen
Kinderdermatologie

Prof. Dr.
L. Heinzerling

Hauttumorzentrum

Dr. L. Engels

Station 9
Trichologie

Dr. D. Tomsitz

Station 7
Tagesklinik
Onkologie

PD Dr.
K. Kerl-French

Dermatohistopathologie

Dr. E. Oppel

Allergologie
Implantatsprechstunde
Berufsdermatologie

PD Dr. M. Reinholz,
Ph. D., FEBDV

Personaloberarzt KUM
Leiter Poliklinischer Bereich
Leiter Allgemeine Ambulanz
Qualitätsmanagement
Lehre /MeCuM

PD Dr.
J. Wallmichrath

Dermatochirurgie

Prof. Dr.
A. Wollenberg

Station 4
Kinderdermatologie
Klinisches Studienzentrum

Prof. Dr. F. Rueff

Klinisches Studienzentrum
Allergologie

Prof. E. Sattler

Privatambulanz
Phlebologie
Imaging

Prof. H. Wolff

Allgemeine Ambulanz
Trichologie

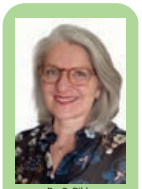
Funktionsoberärztinnen

Dr. O. Horvath

Labor für dermatologische
Immun- und
Infektionsdiagnostik

Dr. C. Ruini

Photopherese



Dr. S. Rikl

Personalmanagement

Dr. L. Jakob

Immunambulanz

Dr. M. Seegräber

Operative Station
Dermatochirurgie
Ästhetische Dermatologie
Lasermedizin

Dr. S. Zippel

Psychosoziale Beratung

Dr. J. Walch

Konsiliardienst
Großhadern

Organization chart management

Management 2022

LMU KLINIKUM
Klinik und Poliklinik
für Dermatologie und Allergologie

MÜNCHEN KLINIK

Klinikdirektor

Prof. Dr. L. E. French

Stellv. Klinikdirektor LMU

Prof. Dr. M. Flaig

Controlling & Finanzen
Diagnostische Labore
Dermatohistopathologie

Ltd. Oberärztin, Stellv. Chefärztin MüK

Prof. Dr.
D. Hartmann, Ph. D.

Dermatochirurgie
Ästhetische Dermatologie
Lasermedizin
Imaging

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Fr. N. Renner

Pflege - ambulanter Bereich

Fr. P. Guerrisi

Pflege - stationärer Bereich

Chefsekretariat

Fr. M. Michl

Fr. B. Ott

Oberärztinnen und Oberärzte

Prof. Dr.
L. Heinzerling

Hauttumorzentrum
Infusionszentrum

Prof. Dr. K. Giehl

Genodermatosen
Kinderdermatologie
BesonderHaut

PD Dr.
K. Kerl-French

Dermatohistopathologie

PD Dr. C. Pfeiffer

Privatstation
Autoimmunerkrankungen

Dr. D. Tomsitz

Konservative Station
Tagesklinik
Onkologie

Prof. Dr. M. Reinholz,
Ph. D., FEBDV

Allgemeine Ambulanz
Lehre /MeCuM

Dr. E. Oppel

Allergologie
Implantatsprechstunde
Berufsdermatologie
Lichtabteilung

Dr. Pumnea

Entzündliche Dermatosen
Immunambulanz
Privatambulanz
ab 01.10.2022

PD Dr.
J. Wallmichrath

Dermatochirurgie

Dr. M. Seegräber

Operative Station
Dermatochirurgie
Ästhetische Dermatologie
Lasermedizin

Prof. Dr. F. Rueff

Klinisches Studienzentrum
Allergologie

Prof. E. Sattler

Privatambulanz
Imaging

Prof. H. Wolff

Allgemeine Ambulanz
Trichologie

Funktionsoberärztinnen und -oberärzte

Dr. L. Jakob

Immunambulanz

Dr. O. Horvath

Autoimmunerkrankungen
Entzündliche Dermatosen

Dr. A.-C. Kuna

Aufnahmezentrum

Dr. S. Rikl

External Relations

Dr. J. Walch

Konsiliardienst
Großhadern

Dr. S. Steckmeier

Privatambulanz
Ästhetische Dermatologie
Lasermedizin

Dr. J. Srour

Extrakorporale Photopherese
Aufnahmezentrum

Dr. S. Zippel

Psychosoziale Beratung

Residents

- Larissa Akçetin
- Narjes Alelq
- Bedour Alshalwi
- Marie Amecke
- Bassam Alshareef
- Nora Aszodi-Pump
- Pinar Avci
- Mattis Bertlich
- Matthias Betke
- Anne-Sophie Böhm
- Benjamin Clanner-Engelshofen
- Federica Corsi
- Sophia Czell
- Maximilian Deußing
- Laurie Eicher
- Natalie Evenschor
- Zeno Fiocco
- Surina Frey
- Leonie Frommherz
- Lea Geimer
- Anne Gürtler
- Carolin Haas
- Kinan Hayani
- Jawaher Jastaneyah
- Till Kämmerer
- Florian Kapp
- Benjamin Kendziora
- Katharina Kilian
- Macarena Pia Gonzalez Knop
- Sebastian Krammer
- Anne-Charlotte Kuna
- Irma Kupf
- Julia Leding
- Anna Leonhardt
- Diana Lill
- Michaela Maurer
- Sebastian Mastnik
- Nora Mittag
- Mohammed Mitwalli
- Nizar Murshid
- Teresa Müller
- Matthias Neulinger
- Ugne Olendraite
- Anna Oschmann
- Rabia Pinarci
- Teodora Pumnea
- Farnaz Rahimi
- Christoph Rothenberger
- Katharina Rübsam
- Suzanna Salzer
- Justin Gabriel Schlager
- Pia Schöpf
- Marlene Seegräber
- Sonja Senner
- Bashair Sharqi
- Pia-Charlotte Stadler
- Suzan Stürmer
- Annett Walker
- Alexandra Walter
- Martina Zacher
- Sarah Zierold

4 Patient care and laboratories

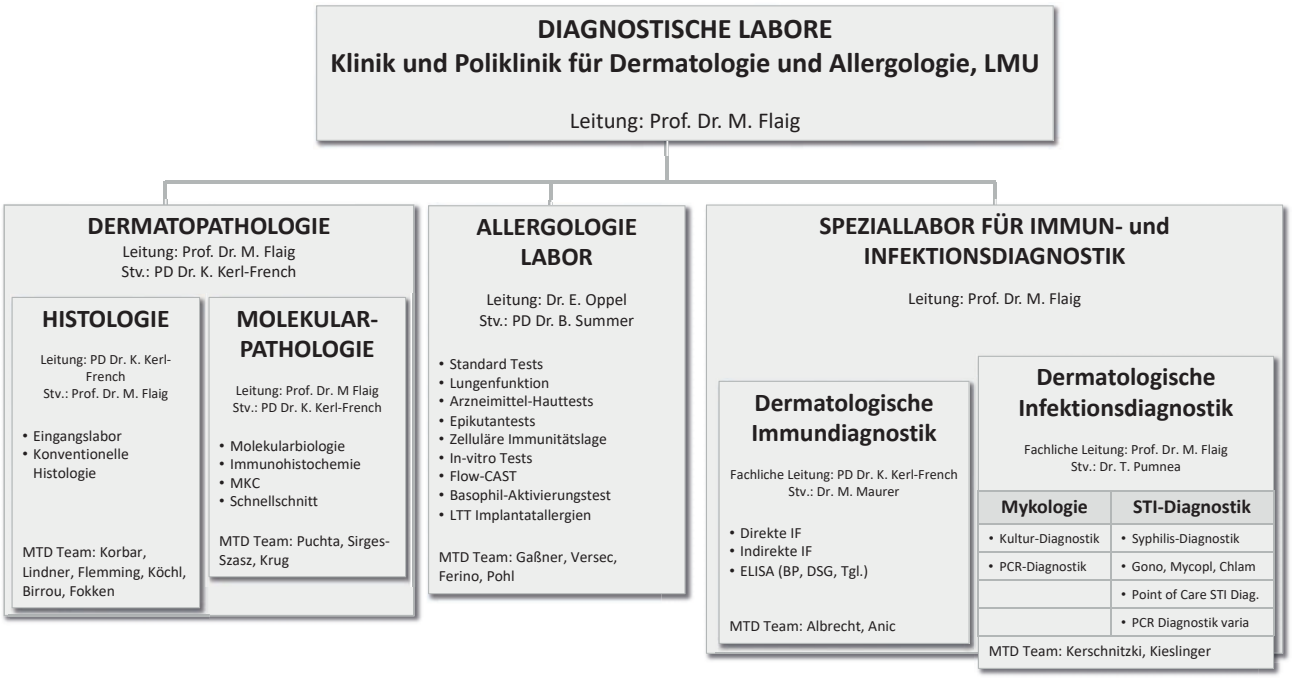
With around 4.700 inpatients and 88.000 outpatient consultations a year, our hospital is the largest academic dermatology center in Europe. We provide care of the highest standard for a large spectrum of illnesses, ranging from general dermatology to rare and complex conditions. Our team draws on the expertise of world-class specialists in allergology, dermato-oncology, inflammatory skin diseases and pediatric dermatology.

Units of the Department

We offer a broad range of standard and state-of-the-art treatments including molecular targeted drugs, immune checkpoint inhibitors, prostaglandins, immunoglobulins, extracorporeal photopheresis, photochemotherapy and hyposensitization procedures. We also provide opportunities for participation in cutting-edge clinical trials for skin cancer and inflammatory skin diseases. We benefit from a wide referral base of external dermatologists and practitioners, as well as from advanced interdisciplinary cooperations. Our expertise, educational offer, research achievements and commitment to patient care have made our team nationally and internationally recognized.

Outpatient unit (policlinic) and specialist care clinics

Our comprehensive service encompasses a public and a private outpatient unit for general dermatology, as well as an emergency service. Our general outpatient clinic is mostly based on open access schedules to better meet patients' needs. Our general dermatology unit functions



Private outpatient unit

as a filter to our specialized units and consultations, which cover following areas of interest: aesthetic medicine, acne and rosacea, allergology, atopic dermatitis, autoimmune bullous diseases and collagenoses, genital and venereal diseases, genodermatoses, laser therapy, psoriasis and phototherapy, inflammatory skin diseases, non-invasive diagnosis, dermato-oncology, dermatosurgery, pediatric dermatology, phlebology, proctology, trichology and wound healing disorders.

Our private outpatient unit, headed by Prof. L. French and Prof. E. Sattler, is equipped with modern high-tech diagnostic devices (total body photography, digital dermoscopy, confocal microscopy, optical coherence tomography, sonography) and includes its own small surgery room. It also offers support for inquiries and clarifications for medical treatments, individual cost estimations, invitation letters and translation services.

Allergology

Pursuing the long tradition in allergology of the LMU Klinikum, our clinic offers individualized diagnosis and treatment for: contact allergy, food and drug allergy, insect venom allergy, metal-implant allergy, mastocytosis, urticaria and angioedema, allergic rhinitis, asthma and eosinophil-associated diseases. Led by Dr. E. Oppel and Prof. F. Rueff, the doctor and nurse staffs perform more than 10.000 consultations a year, offering on site in vitro and in-vivo diagnostics, such as prick- and patch tests, food and drug challenge tests, specific IgE's, basophil activation test, and lymphocyte transformation tests. We provide individually tailored therapies, using a wide range of hyposensitization procedures and biopharmaceuticals as needed.

Team of the allergology unit

Dr. E. Oppel, head physician, allergology unit

Bullous autoimmune skin diseases and collagenoses

PD Dr. C. Pfeiffer (left), lead physician and board-certified physician Dr. S. Stürmer (right)

The unit, led by PD Dr. C. Pfeiffer and Dr. O. Horváth, takes care of patients with bullous skin diseases such as pemphigus and bullous phemphigoid, rarer forms of autoimmune bullous disease and complex collagenoses including dermatomyositis, lupus and scleroderma.

Dermato-oncology

Our dermato-oncology unit is a national and international reference center for melanoma and non-melanoma skin cancer, performing more than 5600 consultations annually. In this unit, patients with locally advanced and metastatic disease benefit from comprehensive follow-up and therapeutic management, performed by a team of highly skilled physicians and nurses. Our team has deep knowledge of all state-of-the-art and experimental therapies, including immune checkpoint inhibitors, molecular targeted therapies, traditional chemotherapies and respective side effects.

As a part of the Munich Comprehensive Cancer Center and tumor board, our dermato-oncology reviews and provides individualized and interdisciplinary management especially for complex cases. The unit was led by world-renowned experts Prof. C. Berking until September 2019, Prof. M. Schlaak until November 2020 and is now led by Prof. L. Heinzerling, MPH, since November 2020. It includes a study center offering cutting-edge clinical trials.

The cutaneous lymphoma clinic, led by Prof. M. Flaig in cooperation with Prof. M. Schlaak (until November 2020) and now with Dr. D. Tomsitz and Prof. L. Heinzerling, MPH, offers specialized diagnosis, follow-up and treatment for patients with all kinds of cutaneous lymphoproliferative diseases, such as cutaneous T-cell and B-cell lymphomas, pseudolymphomas as well as rare lymphoma entities.

Prof. L. Heinzerling, head of the department's skin cancer center

Dr. S. Zierold

Pediatric dermatology and genodermatosis

Left to right: Prof. K. Giehl, Dr. N. Murshid, Dr. L. Frommherz

Prof. K. Giehl and her team focus on routine and highly specialized care for common to rare dermatologic diseases of infants, children and adolescents. These include atopic dermatitis, congenital disorders of keratinization (ichthyosis), melanocytic tumors and vascular anomalies. Genetic counselling for rare hereditary diseases (genodermatoses) is also available. The unit cooperates with the LMU Dr. von Hauner children's hospital to ensure the best interdisciplinary treatment for our youngest patients.

Psoriasis, photodiagnostics & phototherapy

In our psoriasis unit, patients with all types of psoriasis can access state-of-the-art treatment, encompassing topical medications, phototherapy, photochemotherapy, traditional systemic drugs and newer biologics. A strong basic and clinical research background and more than 8.000 yearly consultations make this unit, now led by Dr. E. Oppel and Dr. J. Srour, a national referral center. The team also provides standardized photoprovocation protocols for photosensitive disorders and phototherapy for patients with atopic dermatitis, cutaneous lymphoma, lichen sclerosus, prurigo nodularis, scleroderma and vitiligo.

Sexually transmitted and genital diseases

Our drop-in clinic, headed by PD Dr. M. Reinholz and Dr. L. Jakob, is specialized on sexually transmitted diseases and genital skin problems and counts around 3.800 yearly consultations. It offers confidential testing and dedicated medical care for STI, including HIV and other genital diseases such as lichen sclerosus. The multidisciplinary staff, encompassing physicians, specialized nurses, a social worker and a psychologist (Dr. S. Zippel) sets a special focus on prevention, counselling and education.

Trichology

This unit, directed by Prof. H. Wolff, performs approximately 3.800 consultations a year; offers trichoscopy, trichograms, and specialized counselling and care for all hair and scalp diseases, from androgenic alopecia to hair shaft disorders.

Dermatologic surgery, laser and aesthetic medicine, phlebology and wound healing

This multidisciplinary unit, headed by Prof. Dr. D. Hartmann MD, Ph.D., offers a wide portfolio of interventional dermatology, combining inpatient and outpatient care.

Our skilled dermatologic surgeons perform complex oncological procedures, including surgery of melanoma with sentinel node biopsies, micrographic surgery of basal cell carcinoma and offer complex reconstructive procedures such as flaps and mesh grafts. Electrochemotherapy, vacuum therapy and hydrosurgery for chronic wounds, nail surgery, sweat gland curettage for hyperhidrosis, dermabrasion for rhinophyma,

Laser and aestethic medicine team, left to right: Dr. M. Seegräber, Prof. Dr. D. Hartmann, Dr. S. Steckmeier, Dr. A. Gürtler

blepharoplasty thermo- and laser ablation of refractory anogenital warts add to the portfolio. The team is led by Prof. D. Hartmann, MD, Ph.D., supported by hand and plastic surgeon, PD J. Wallmichrath and residents, as well as experienced anaesthesiologists.

In our cosmetic and laser dermatology unit, patients can count on modern ablative and non-ablative devices for medical and aesthetic issues (erb-YAG, CO2, pulsed-dye, ruby, neodym-YAG). Qualified specialists, amongst them Dr. S. Steckmeier, perform a wide range of medical-aesthetic procedures such as Botox, dermal fillers, chemical peels, microneedling, skin resurfacing, sclerotherapy and comprehensive scar treatment. Our team is also supported by a medical cosmetician (A. Meichsner), for a complete on-site care.

To complete the clinical offer, the unit provides a special wound care and phlebology unit focusing on the multidisciplinary diagnosis and treatment of difficult to treat ulcers, performing diagnosis and treatment of venous insufficiency and superficial and deep vein thrombosis.

Inpatient dermatology

Thanks to a solid cooperation with the Dermatology Department 1 of the Munich Municipal Hospital Group (München Klinik Thalkirchnerstrasse), our Department can rely on 106 hospital beds hosting an average of 4.700 inpatients every year in non-covid times. Our highly skilled physicians and dermatology-specialized nurses cooperate with a multidisciplinary team of other professionals (physiotherapist Ms. S. Scholz, social workers D. Berghoff and C. Guggemos, and many more) to ensure the best comprehensive treatment for our patients. Our pediatric and general dermatology ward, led by Dr. D. Tomsitz, is well renowned for the treatment of children with severe atopic dermatitis, but its team also provides expert care for a broad range of conservative dermatological diseases in children and adults. Dr. M. Seegräber heads a surgical-oncological ward, open from Monday to Friday. It mainly hosts our patients undergoing complex surgical procedures, slow Mohs surgery or infusion therapies for skin cancer and autoimmune diseases. Our largest ward is under the direction of Prof. L. French and PD Dr. C. Pfeiffer providing within it a section for privately insured patients.

Our committed staff takes care of particularly severe and recalcitrant skin pathologies, requiring appropriate diagnostics and treatment. The most common conditions include therapy-resistant psoriasis, autoimmune and autoinflammatory skin diseases, food and drug challenges in allergic patients, hyposensitization to insect venom, chronic wounds and skin cancer.

Our clinic believes in continuity of care and uses our day-care unit to manage complex patients with chronic conditions requiring long-term treatment even after hospital discharge.

Daily rounds on an inpatient ward

Our day-care unit also provides infusion therapy for patients with melanoma and non-melanoma skin cancer, photodynamic therapy of non-melanoma skin cancer, photochemotherapy of psoriasis and cutaneous lymphoma. It also includes a wound healing section (led by Prof. Dr. D. Hartmann, Dr. G. Schlager and T. Müller), and an extracorporal photopheresis unit (headed by Dr. J. Srour) for cutaneous lymphoma, graft-versus-host disease and autoimmune skin diseases.

5 Avelios Medical brings digitization at LMU Klinikum to a new level

Left to right Dr. S. Krammer, C. Albrecht, N. Jakob
Co-Founders of Avelios Medical (Picture: Avelios Medical)

Through the hospital-wide implementation of the modular software platform from Avelios Medical, daily workflows are digitized and optimized, the quality of patient treatment is increased, and up to 2,000 unique structured data points per treatment are generated automatically.

The idea for the development of the software Avelios came to life while Dr. Sebastian Krammer, a brilliant resident, and Nicolas Jakob, an outstanding computer science expert, were doing research on Machine Learning and Artificial Intelligence at the Department of Dermatology at LMU Klinikum.

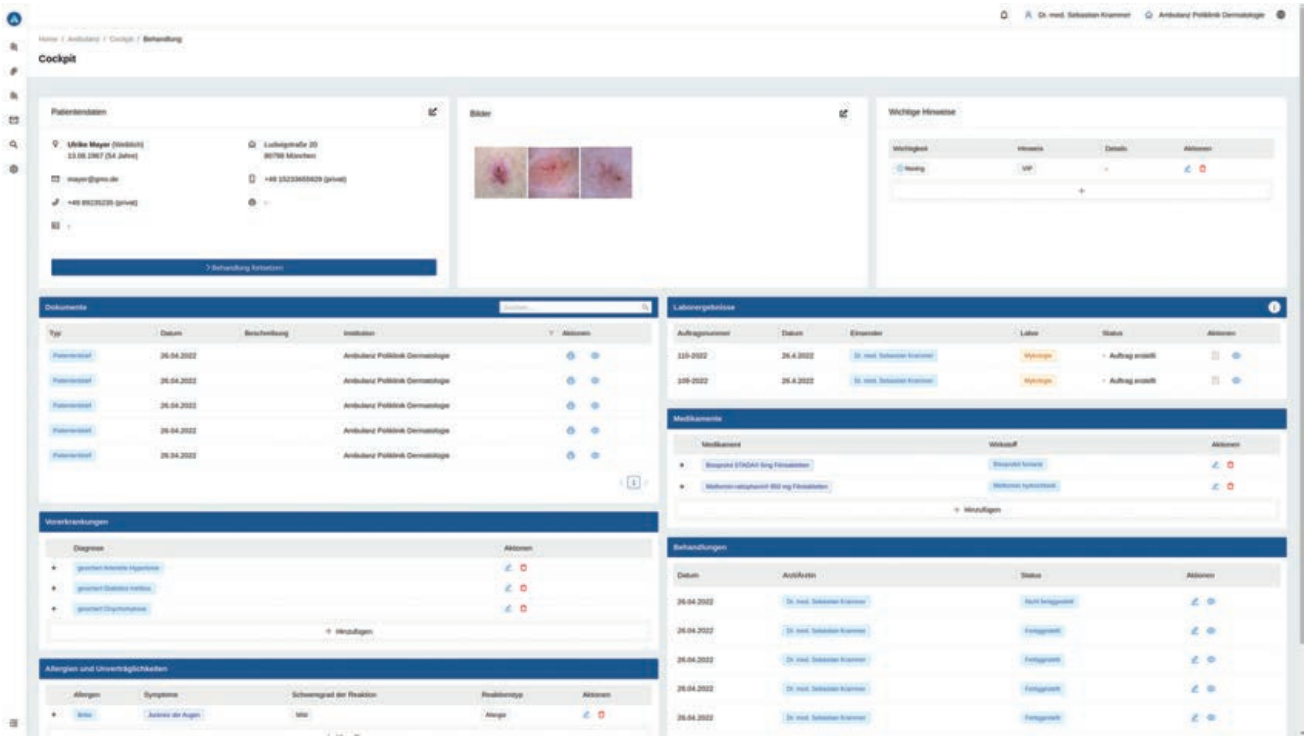
Dr. Sebastian Krammer, as a physician, together with the computer scientist Nicolas Jakob, established the research group for Artificial Intelligence in our Department of the Ludwig Maximilian University (LMU) Hospital and successfully initiated the research consortium DR-AI, which was funded by the German Federal Ministry of Health with 2.8 million €.

However, both quickly realized that the successful use of state-of-the-art technologies would only be possible in highly digitized hospitals. Unfortunately, many processes in the hospital are still paper-based, analog and inefficient, while existing software solutions are outdated and do not communicate with each other. This makes it very difficult and time-consuming to even collect structured data, let alone use it to apply machine learning algorithms.

To solve these problems and find a convincing solution, they explored the market as part of a task force for digitization at the Ludwig Maximilian University (LMU) Hospital. Since there was not a single satisfying solution, both decided to develop a state-of-the-art digital hospital platform themselves. It was apparent that a software solution that enables hospitals to digitize and improve workflows across all departments, that seamlessly integrates and communicates with existing systems, and that offers a modern and easy-to-use interface would add major value to many hospitals and enable them to significantly improve patient care. As a first step, a pilot Clinical Information Software tailored to today's medical needs was developed, tested successfully at the Dermatologic outpatient clinic and rapidly became a valuable tool cherished by our doctors and promoting high quality patient documentation combined with increased efficiency. With its modular hospital platform, Avelios enables an in-depth digitization of all medical workflows (e.g. outpatient, ward), the interconnection with patients and the healthcare system (e.g. patient portal, consultations), a data-driven automation of administrative processes (e.g. billing, controlling,) as well as AI, Big Data and research based on the structured data.

After the software Avelios was successfully deployed in the dermatological outpatient department, one of the largest outpatient departments with more than 88,000 patients per year, the Management Board and IT of the Ludwig Maximilian University (LMU) Hospital made the strategic decision to roll out the software across all outpatient departments.

With the introduction of the software, daily processes have become much more efficient, and features such as the automatically generated doctor's letter and the integrated photo app have freed up more time for patients,



significantly improving the quality of treatment. In addition, the software has already automatically generated a multitude of valuable structured treatment data, contributing to the success of numerous research projects. This data is already linked to international ontologies such as SNOMED CT and LOINC, opening new opportunities for collaboration in international research.

Press release

PRESSEMITTEILUNGEN | 26.09.2022

DIGITALES KLINIKUM

Großer Schritt in der Digitalisierung der ambulanten Behandlung

Durch die Digitalisierung mit der Software von Avelios Medical werden am LMU Klinikum inzwischen nicht nur ambulante Prozesse tiefgehend digitalisiert, sondern zeitgleich auch bis zu 2.000 strukturierte Datenpunkte pro ambulanter Behandlung transparent während der Dokumentation generiert.

Eine Ärztin führt innerhalb der Avelios-Software eine Fotodokumentation mittels integrierter Avelios-Fotoapp durch, wobei alle Aufnahmen direkt im zentralen Fotoarchiv des Klinikums gespeichert werden.

© LMU Klinikum

Big step in the digitalisation of outpatient treatment

Through digitalisation with the software from Avelios Medical, outpatient processes at the LMU Klinikum are now not only digitalized in depth, but at the same time up to 2,000 structured data points per outpatient treatment are generated transparently during the documentation.

Official press release by Ludwig Maximilian University (LMU) Hospital on the hospital-wide roll-out of the software Avelios.

6 Three divisions of the department in focus

A. Skin cancer center

The "Infusion Unit" at the Dermatological Outpatient Clinic – a successful project from the nursing staff's point of view ...

Left to right: L. Akçetin, Prof. Dr. L. Heinzerling, MPH, N. Renner (Head of Nursing), R. Buchillon and A. Mahmutović in the new infusion unit

In June 2021, an additional unit was opened in our Dermatological Outpatient Clinic: the Outpatient Infusion Unit.

The goal of this outpatient infusion unit is to provide continuing care and treatment to oncological patients. Previously, chemotherapy and immunotherapy were administered only at the München Klinik (Munich Municipal Hospital Group). After about six months of orientation, staff training, and structuring of the outpatient clinic, we had reached the point where the outpatient clinic was running well with an improved workflow. We simultaneously also started with a nursing project to observe and recognize possible therapy-associated side effects in immunotherapy.

In 2022, a total of 245 patients were treated and cared for at the infusion unit and over 2,000 infusions administered, 70 percent of which were immunotherapies. Immune checkpoint inhibitor therapies administered included pembrolizumab, nivolumab, ipilimumab, cemiplimab, and avelumab for cutaneous melanoma, non-melanoma skin cancer (squamous cell carcinoma-SCC and basal cell carcinoma), and Merkel cell carcinoma or off-label Kaposi sarcoma as well as the bispecific antibody tebentafusp for uveal melanoma. For cutaneous lymphoma we employ rituximab, mogamulizumab and brentuximab vedotin. We also evaluate patients for a potential stem cell transplantation. EGFR-inhibitors are used in patients resistant to cemiplimab and chemotherapy use is becoming less frequent.

In the first phase, we created a questionnaire for patients in which they recorded general side effects. The patients were given the questionnaire on each day of therapy. It served as a guide for the medical staff during the patient consultations and examinations before the therapy.

Skin cancer center

The skin cancer center has undergone a major phase of growth reaching a record number of outpatient contacts, a recruitment peak in clinical studies, the launch of a professionalized infusion unit and interdisciplinary reference center for complex side effects.

Team of outpatient infusion unit (left to right: Prof. L. French, Prof. L. Heinzerling, MPH, A. Mahmutović, N. Renner (Head of Nursing), F. Rahimi, Dr. S. Zierold

Outpatient care

We have an integrated approach for counselling our skin cancer patients. These include structured information about the disease, support offers, therapy recommendations and prognosis. Since we have a high resident turnover in the oncology unit we have created a set of

standard operating procedures to ensure quality of care. In 2022, we had a total of 8276 patient contacts.

Skin cancer clinical trial unit

We have a dedicated study team including two nurses, one MD and one nutrition specialist. Our Department and skin cancer center offers a large panel of interventional studies for patients with melanoma, non-melanoma skin cancer and cutaneous lymphoma. In 2022, a total of 259 patients participated in clinical trials.

Side effect management and interdisciplinary toxboard

All patients undergoing systemic tumor therapy receive an emergency pass with general instructions, the type of therapy they are receiving and the contact number to reach us 24/7. We have an interdisciplinary Toxboard to discuss patients with complex and severe side effects and optimize side effect management. This also makes us a reference center for immunotherapy-induced side within the entire Ludwig Maximilian University Hospital.

The success of this approach is highlighted by the fact that we have not lost a single patient due to check-point-induced myocarditis – a huge success compared to a reported mortality rate of 46%.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

ZERTIFIKAT

Die Zertifizierungsstelle der TÜV SÜD Management Service GmbH

bescheinigt, dass das Unternehmen

LMU Klinikum Anstalt des öffentlichen Rechts
Frauenlobstr. 9-11
80337 München
Deutschland

für den Geltungsbereich

Krebszentrum – CCC MünchenLMU – Comprehensive Cancer Center München Hautkrebszentrum

ein Qualitätsmanagementsystem eingeführt hat und anwendet.

Durch ein Audit, Auftrags-Nr. **707008190**, wurde der Nachweis erbracht, dass die Forderungen der

ISO 9001:2015

erfüllt sind.

Dieses Zertifikat ist gültig in Verbindung mit dem Hauptzertifikat vom **08.06.2021** bis **26.06.2023.**

Zertifikat-Registrier-Nr.: **12 100 46977/09 TMS.**

Leiter der Zertifizierungsstelle
München, 09.06.2021

TÜV SÜD Management Service GmbH • Zertifizierungsstelle • Ridlerstrasse 57 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check

Team of the skin cancer center

B. Pediatric dermatology

Our new "BesonderHaut" (special skin) unit is an outpatient counseling unit for children and families with rare and special skin diseases.

Left to right: S. Berger, Dr. L. Frommherz, C. Fuchs , Prof. K. Giehl

With the financial support of the charitable foundation Sternstunden e.V., the unit is able to fund the salary of a social pedagogue with qualifications for the counseling of children, adolescents and their families with rare skin diseases.

Since November 2021, in addition to specialized pediatric dermatology care in the outpatient clinic, sick children and their families receive free support on the following topics in our new, spacious "SpecialSkin" counseling center with equipment suitable for children: psychosocial counseling, social legal counseling, parent/ family counseling, information on networks and self-help associations, information on therapy motivation (DermaClub app) and patient networking (patient forum), accompanying discussion offers for children in dealing with severe and rare skin diseases, patient/parent training (general and disease-specific training), psychosocial and psychological support for children and adolescents, relieving discussions with caregivers, recommendation and mediation of outpatient measures, co-organization and implementation of training courses and workshops.

In the special skin unit we focus on counseling and family-oriented support, teaching special communication skills, so that children and their parents learn to better cope with, and feel more confident in dealing with their illness. Our goal is for sick children to be accepted and appreciated in their private environment, kindergarten, school and neighborhood without reservations or rejection. We have also set ourselves the task of improving existing patient networks and actively supporting the initiative of self-help groups.

The counseling unit "SpecialSkin" was renovated thanks to a generous donation of the Marianne Strauss Stiftung, and it is located in a newly remodeled and friendly designed room within the department. The 30 square meter room has an office area with new furniture, a seating area for conversations and a play corner for patients. A digital whiteboard has been attached to the wall so that this space-saving and innovative technology can also be used for events or group work. The self-painted pictures of children from a previous "SpecialSkin" art project complete the room and give it an authentic touch. In the meantime, many families have already taken advantage of the counseling center's offer and the children have inaugurated the play corner.

Since September 2022 the team of the unit also has the possibility to offer affected children, adolescents and their relatives the services of a child and adolescent psychotherapist. Furthermore, a clinical study conducted by Mrs. Gundi Waldmann study has been launched to study the quality-of-life of young patients with skin and hair diseases.

Research on the "Clinical characterization and gene expression analysis of patients with epidermolytic ichthyosis" is being performed by a board-certified dermatologist Dr. Frommherz who is specialized in pediatric dermatology.

DermaClubApp and patient forum

To motivate children and adolescents in their regular care rituals, work is currently underway to upgrade our DermaClubApp. With this App, therapy progress can be tracked concretely and rewards can be set by reaching certain milestones.

C. Private outpatient unit

Prof. Elke C. Sattler, MD and Prof. Lars E. French, MD

Team of the Department's private outpatient unit

In our private outpatient clinic we are able to offer the entire spectrum of modern diagnostics and treatments for dermatologic diseases. Direct consultation requests from national and international patients make up the main part of over 8000 patients that visit us yearly, but also referral of privately insured patients from external dermatologists and doctors from other specialties within and without the LMU University Hospital.

All private patients are seen by an experienced board-certified dermatologist of our private outpatient unit, if possible accompanied by Prof. French, Professor Sattler, or another senior faculty member.

In addition to classical state-of-the-art investigations, we offer modern non-invasive imaging techniques that are one research focus of the Department and are available in our imaging facility that is part of the private outpatient unit. Here we offer video-dermoscopy, total body mapping, sonography, and in addition other innovative non-invasive imaging techniques of the skin including optical coherence tomography (OCT), linefield confocal OCT and confocal laser microscopy.

A modernly equipped operating room is also at hand for diagnostic and interventional skin surgery, including nail and Mohs surgery. Laser therapy with a large variety of lasers, photodynamic therapy, UV-light diagnostic and treatment options are available as well as allergologic testing in cooperation with our allergy unit.

Thanks to this large diagnostic armentarium and the opportunity to collaborate with specialists from a team of more than 100 nurses, doctors and researchers within our Dermatology Department as well as from other specialties within the the LMU University Hospital, we can offer top-level care to patients with all kinds of dermatoses and skin-related diseases.

7 Research

Our department has **two main research focuses**:

i) dermato-oncology and
ii) immuno-dermatology including allergology.

In the last 2 years (2021-22) our clinical and translational research teams have been performing strongly with innovative research focused on:

- deep phenotyping (clinical + transcriptomics + proteomics) of inflammatory skin diseases,
- strategies to lift resistance to melanoma immune therapy,
- investigation of the role of the human gut microbiome on therapeutic response of patients with advanced melanoma,
- and over 50 clinical trials yearly, to cite a few.

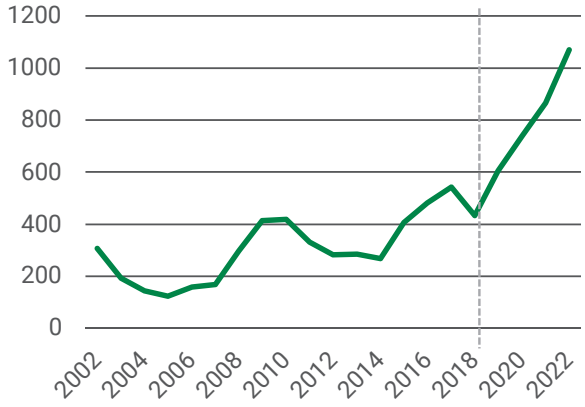
The growth, productive and innovative character of our research is illustrated by the department's strong increase in cumulative impact factor (>130 % since 2019), a record number of peer-reviewed publications reaching 150 in 2021, and increasing third-party research funding at a new high of 2.7 million € in 2022.

Collectively the increase in our academic performance led to a new ranking amongst the top 3 of 41 departments and Institutes of the LMU University Hospital in 2022!

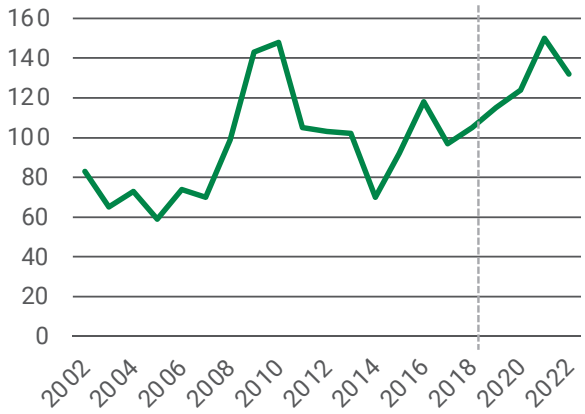
Significant research projects were initiated or carried forward in 2021-22 with consequent funding and included:

i) <u>DR-AI Project (Dermatology-Radiology Artificial Intelligence) - PI's: S Krammer, L French</u>
The DRAI project, funded by the German federal ministry of health with 2 million euros, aims to find solutions for integrating artificial intelligence into clinical practice and making AI decisions more understandable and explainable for medical professionals, with significant progress made in developing prototype AI systems, a novel approach to explainable AI, and successful integration of AI into radiology and dermatology practice.

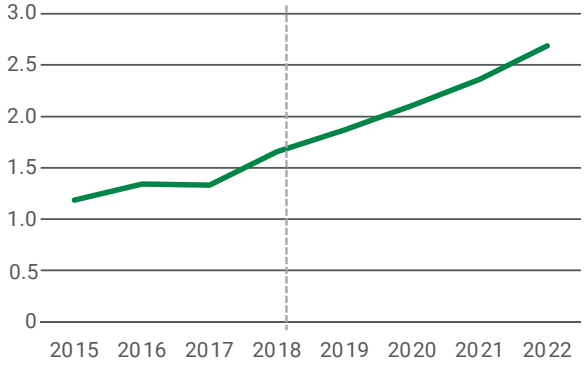
Cumulative impact factor



Number of publications



Third-party research funding (mio €)



= Change in department Chair

ii) Skin ID - PI's: D Hartmann, L French
Skin ID, a cutting-edge AI diagnostic support system designed to assist in the precise resection of malignant skin tumors using ex-vivo confocal laser scanning microscopy, was developed in collaboration with Vivascope and funding from the state of Bavaria (Bayern Innovativ) winning the German Medical Award 2021

iii) PROMIT (PReconditioning of tumOr, tumor Microenvironment and the Immune system to immunoTherapy) - L Heinzerling
A Phase 2, single arm study on dacarbazine (DTIC) followed by immunotherapy rechallenge in unresectable or metastatic melanoma with primary resistance to PD-1/PD-L1 or PD-1 + CTLA-4 blockade.

iv) SERIO (Side Effect Registry Immuno-Oncology) - L Heinzerling
The SERIO side effect registry in immuno-oncology collects rare, complex and severe immune-related adverse events in an online side effect registry in cooperation with the Paul Ehrlich Institute (https://serio-registry.org/)

v) IRTEN (International Registry for Toxic Epidermal Necrolysis) - L French, E Oppel, A Oschmann, P Stadler)
IRTEN is an international, observational web-based registry for prospective anonymized collection of clinical data and biological samples in individuals suffering of SJS/TEN. The registry data should lead to a better understanding SJS/TEN including its epidemiology, pathogenesis, clinical characteristics including outcome, short- and long-term complications, real-time data concerning causative drugs, and therapy, with the ultimate aim of fostering improved patient care (www.irten.org)

vi) SCP2 (Skin Classification Projekt) - L Heinzerling, D Tomsitz, G Schlager
This multicentric project under the leadership of Dr. T Brinker (Digital Biomarkers for Oncology Group, German Cancer Research Center (DKFZ), Heidelberg, Germany) is aimed as developping smart algorythms to support melanoma diagnosis and is funded by the German Federal Ministry of Health.

vii) MelAutim (profiling of MELanoma patients and patients with AUToIMmunity) - L Heinzerling
MelAutim is aimed at discovering and evaluation evaluating markers that may predict or determine autoimmunity by profiling of melanoma patients and patients with autoimmunity using modern omics technologies. Here we study patients with metastatic melanoma under immunotherapy with and without immune-related adverse events as well as autoimmune diseases such as rheumatoid arthritis and inflammatory bowel disease.

viii) ImmUniverse
The EU funded multicentric ImmUniverse project was established as a European transdisciplinary consortium (Grant Agreement No. 853995; https://immuniverse.eu/). The goal is to improve diagnostic and therapeutic options for patients with immune-mediated inflammatory diseases such as atopic dermatitis and ulcerative colitis over the next five years. The long-term goal is to enable personalized therapy through new insights into disease severity and progression. Our department is participating in two clinical studies, focusing on atopic dermatitis: the first called "Molecular Mechanisms and Signatures of Atopic Dermatitis" and the second called "Exploratory Pilot Study to Assess Skin Microcirculatory Parameters Using Dermal Open Microperfusion." The clinical studies aim to better understand the influence of systemic therapy on the course of atopic dermatitis. Tracking patients and examining their biomaterials serves to better understand the disease mechanisms and find biomarkers associated with the severity, progression and/or subtypes of the disease.

ix) Defining the molecular heterogeneity of, and role of IL-1 family members in the inflammatory skin diseases hidradenitis suppurativa (HS), acne vulgaris and palmoplantar pustulosis (PPP) - L French, T Satoh
This externally funded research project is devoted to the use of multiomics technolgies (RNAseq, proteomics) and ex vivo disease models to develop a deeper understanding of the molecular immunopathogenesis of HS acne vulgaris and PPP, and to better characterize disease heterogeneity/subtypes according to the molecular signatures/driver cytokines with the aim of defining new therapeutic targets for future subtype-specific therapeutic interventions.

In 2021 and 2022 over 50 **clinical trials** on potentially new treatments for skin diseases were conducted with the following breakdown:

- 12 mono-centric clinical trials
- 1 multi-centric phase 1 clinical trial
- 16 multi-centric phase 2 clinical trials
- 24 multi-centric phase 3 clinical trials
- 1 multi-centric phase 4 clinical trial

A. Three research groups in focus

a. Experimental dermato-oncology in malignant melanoma

Director: Univ.-Prof. Dr. rer. nat. Iris Helfrich

Group members (in alphabetical order)

- Egea-Rodriguez Sara, PhD candidate
- Herrera-Rios Dayana, Dr. rer. nat.
- Klein Juliane, BSc
- Mach Agnieszka, MD candidate
- Odidika Stanley, Dr. rer. nat.
- Reitberger Siegfried, MD candidate
- Schönherr Rebecca, MD candidate
- Werderits Isabelle, MD candidate

Main fields of research

1. Phenotypic Plasticity of Tumor and Immune Cells and their Impact on Resistance to Immune Checkpoint Therapy in Malignant Melanoma:

Increasing evidence indicates that resistance to immune checkpoint therapy is not solely driven by genetic evolution, but also by the epigenetic adaptive plasticity of tumor cell phenotypes. Despite the historic successes achieved in recent years using signaling targeted drugs and immune checkpoint inhibitors in the treatment of advanced cancers, the cure of patients with advanced cancers is still hampered by the resistance of tumor cells against drugs and immune mechanisms. Thus, patients still die from persistent or recurrent metastases.

In addition, tumor cells are capable of deceiving the immune system and evading immune responses such as recognition and killing ("immune escape"). The analysis of the interaction of tumor cells with cells of the immune system in the process of metastasis requires the use of preclinical tumor models.

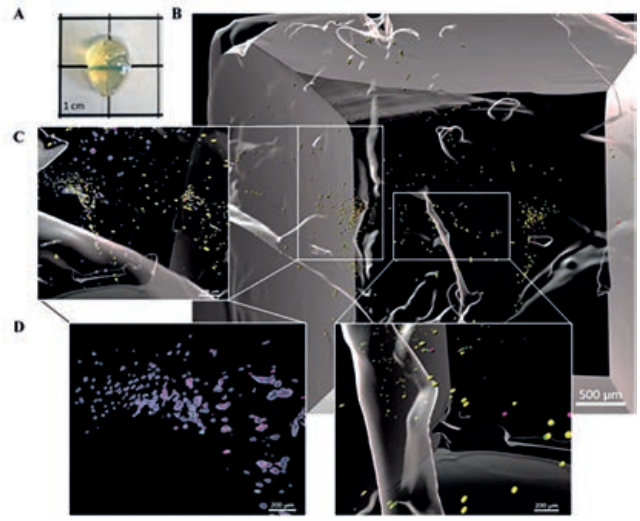
By generating different "primary tumor models", which spontaneously develop tumors and organ metastases without external inflammatory triggers mediated by tumor cell transplantation (due to ret-protooncogene expression under the control of a metallothionein promoter), we have already been able to identify crucial mechanisms of tumor progression and therapy resistance. Furthermore, these preclinical tumor models provide an ideal platform for the identification of novel therapeutic targets as well as for the validation of new compounds and lead structures in the field of melanoma therapy.

However, malignant tumors are genetically heterogeneous and so-called driver mutations usually arise early in the evolution of a tumor. Detailed studies by US and international colleagues have shown that genetic alterations alone cannot explain the broad spectrum clinically observed tumor heterogeneity and, in particular, the rapid temporal dynamics of treatment resistance.

Genetic heterogeneity of tumors represents a massive clinical problem, as resistance mutations are often already present in small subclones before therapy and proliferate in a selected manner under therapy. Therefore, our aim is to identify and functionally validate "target structures" in the context of tumor cell plasticity and to translationally address their therapeutic potency.

Project-related funding:

- *Deutsche Krebshilfe:*
  „Role of HSD11B1-mediated glucocorticoid activation in melanoma pathobiology and immunotherapy resistance"
- *Else Kröner-Fresenius Stiftung:*
  „Erforschung der molekularen Grundlage des MIA-Proteins bei der Metastasierung im malignen Melanom" („*The study of the molecular function of MIA-protein in melanoma metastatisation*")



Light sheet visualization of CNS-penetrating melanoma cells in the context of the immunogenic tumor microenvironment. (A) Brain of a 6-week-old mouse with cerebral metastases after chemical de-pigmentation of the tissue (clearing). (B) Representative image and (C) magnified section of tumor cell interaction with immune cells. Shown is the colonization of the CNS after successful intracardiac transplantation of melanoma cells (yellow) in the context of recruited CD3+ (pink) and CD8+ (green) immune cells. (D) Formation of cell accumulation rates (purple).

2. Unraveling the phenotypic coevolution of melanoma cells and neutrophils fostering metastasis and therapy resistance

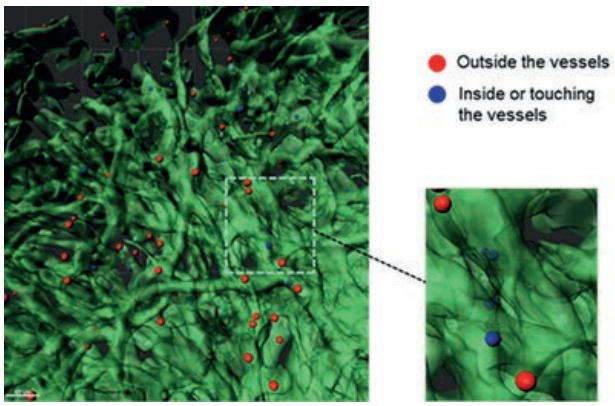
As part of the Clinical Research Unit 337 „Phenotypic Therapy and Immune Escape in Cancer", PhenoTIme, funded by the DFG (https://www.uni-due.de/phenotime/phenotime-project-7.php), we would like to understand how Tumor-Associated Neutrophil granulocytes (TAN) impact disease progression and therapy response in melanoma. TAN constitute a significant part of the immunological infiltrate in solid tumors.

Developing melanomas recruit migrating TAN into the vicinity or even the very center of the tumor. TAN are equipped with an enormous functional heterogeneity. On the one hand they can foster tumor growth, dissemination and the development of therapy-resistance. On the other hand, clearly anti-tumorigenic TAN have been described. However, the molecular mechanisms behind this diverse functionality are not understood. Hence it remains impossible to modulate TANs for the improvement of tumor therapy.

The use of unique experimental systems as well as primary patient material allows functional and genetic analyses of TAN during the development of metastasizing melanoma. In addition, we have developed innovative mouse models with transplanted or spontaneously developing melanomas that at the same time carry genetically fluorescent TAN for direct microscopic visualization. The use of these models will allow us to investigate how TANs modulate the efficacy of therapeutic immune checkpoint blockade.

Project-related funding:

- *DFG Clinical Research Group 337 "PhenoTImE":* „Unraveling the phenotypic coevolution of melanoma cells and neutrophils fostering metastasis and therapy resistance"



Fluorescence-based 3D visualization of neutrophil granulocytes in the vascular network in the brain of a mouse. Representative image of extravasated (red) and adhered (blue) neutrophil granulocytes in the vessel.

3. Understanding the biological basis of melanoma brain metastases

Brain metastasis is a frequent and devastating complication of many cancer entities, with increasing incidence. Paradoxically, this can be partly explained by improved systemic therapies: they increase overall survival of cancer patients, but apparently fail to prevent the occurrence of brain metastases (BM). In general, systemic therapies have not been developed to specifically target the metastatic process and to achieve its long-term suppression. When BM have established, treatment options are compromised by the delicate organ that is colonized, and the multilocular nature of the disease. The brain is an "immuno-privileged" organ with limited capacity for inflammatory responses, which makes it plausible that the effectivity of cancer immunotherapies is specifically limited here. This appears particularly relevant in the context of immune cell activity against extravasated single cancer cells and micrometastases, when the normal

brain parenchyma including its blood-brain barrier is still largely intact. In line with this concept, melanoma patients developed remarkably high rates of BM during Ipilimumab therapy, which fits to the empirical impression of many clinical experts in the field. In contrast, brain macrometastases have been found to respond well to Ipilimumab and other immune checkpoint inhibitors in some patients, which supports the general concept that preventing metastatic outgrowth is very different (biologically and therapeutically) from targeting large established macrometastases. Nevertheless, the duration of response to these therapies is lower in intracranial metastases than in extracranial metastases, and it has been suggested that there are unique features of the brain microenvironment that contribute to treatment failure.

Modelling metastatic disease in animal models is an important resource to study the complexity of this multistep process in a relevant system with a functional immune system. We are using preclinical mouse models and novel human/murine cell lines establised from intra- and extracranial metastases to address homing mechanisms and to identify genetic or functional features that melanoma cells require to invade the brain. In addition, by using so called „matched-paired" patient samples from intra- and extracranial metastases we are able to provide new insights into the landscape of immunosuppressive factors in melanoma brain metastases that may be useful in the development of novel therapeutic strategies for patients undergoing cancer immunotherapy.

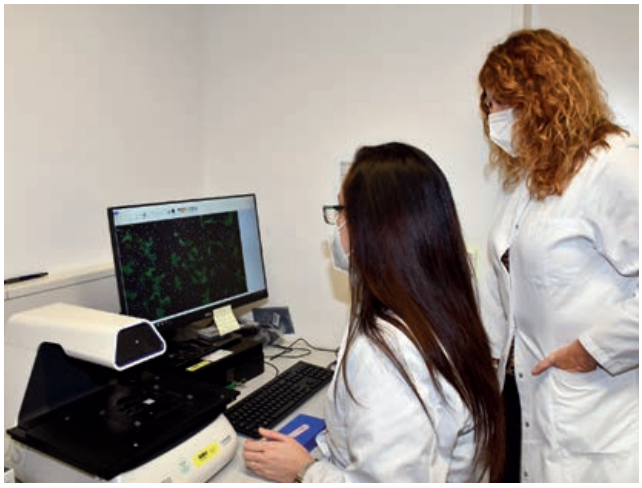
Thus, the goals in this project are to understand the biological and immunological processes involved in the development of brain metastases, but also to unravel the mechanisms of cell-cell interactions that impact treatment response and efficacy.

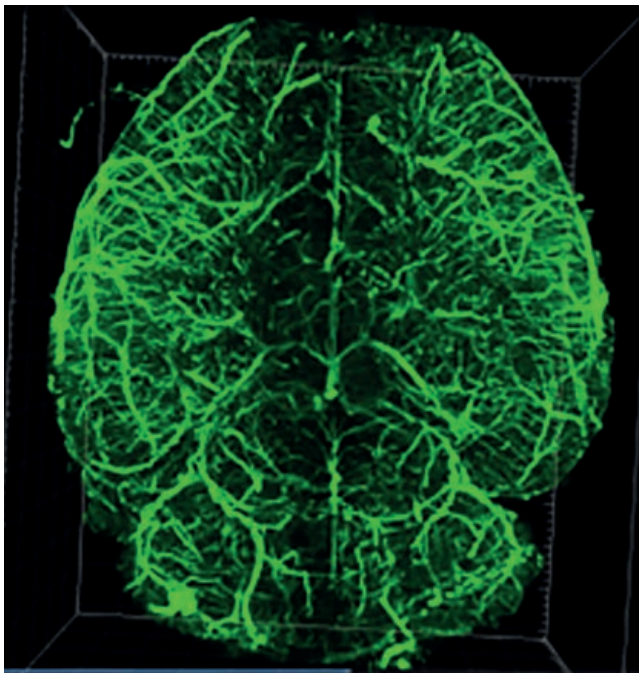
Project-related funding:

- *Deutsche Krebshilfe, Priority Program Translational Oncology:*
  „Preventing outgrowth of brain metastases under immunotherapy: Driving T-cells to the brain"

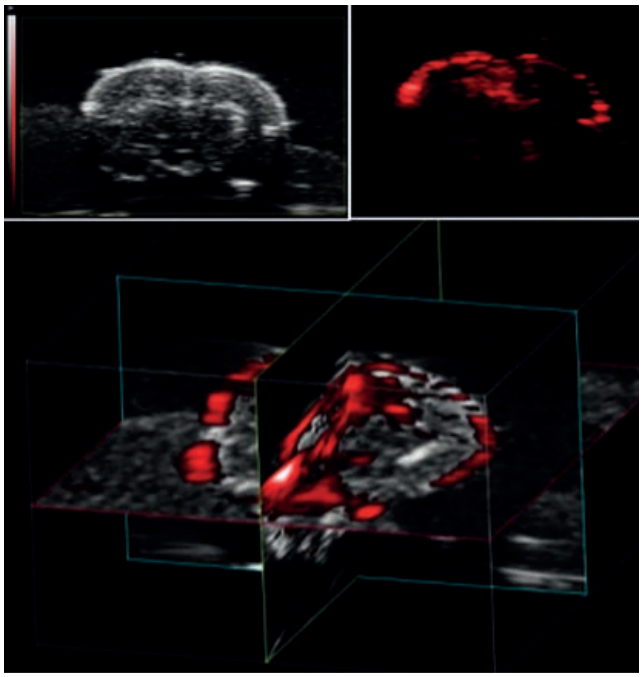
- Hiege Stiftung – Die Deutsche Hautkrebsstiftung:
  „Tumorgenetisches Untersuchung von Hirnmetastasen des malignen Melanoms zur Identifizierung klinisch-relevanter Zielstrukturen - Präklinische Modelle versus klinische Situation" (*Tumor genetic investigation of brain metastases from malignant melanoma to identify clinically relevant target structures - preclinical models versus clinical situation*)
  „Einfluss der Tumorzellplastizität auf Etablierung und Therapie von Hirnmetastasen des Malignen Melanoms – Neue Modelle, Neue Optionen" (*Influence of tumor cell plasticity on the establishment and therapy of brain metastases from malignant melanoma – new models, new options*)

- Monika Kutzner Stiftung:
  „Identifizierung und therapeutische Validierung von NK-Zell-vermittelten „immune-escape" Mechanismen bei der Etablierung zerebraler Melanommetastasen unter Einsatz des ersten, präklinischen Modells für spontane Hirnmetastasierung" (*Identification and therapeutic validation of natural killer cell-mediated "immune escape" mechanisms involved in the establishment of cerebral melanoma metastases using the first preclinical model for spontaneous brain metastases*)





3D fluorescence whole mount image of murine brain vasculature by detection of the panendothelial marker CD31. Vascular structures are presented in green.



Visualization of brain metastases in a preclinical model by PAT. Melanoma metastases in the brain are shown in red.

4. Therapeutic validation of DNA helicases in cancer

DNA helicases use the energy of ATP hydrolysis to separate double-stranded nucleic acids to facilitate essential processes such as replication, recombination, transcription and repair. They are important genome caretakers due to their role in replication stress response and repair and, together with their function in cellular checkpoint responses, they contribute to cancer suppression. Thus, loss of function mutations in DNA helicase genes cause different genetic disorders, some of them associated with increased cancer susceptibility. On the other hand, DNA helicases are frequently overexpressed in tumour tissues in response to DNA damage, leading to chemotherapy resistance. DNA helicases could thus serve as potential biomarkers for therapy response. Our first aim is to investigate the role of DNA helicases in cancer progression, putting the focus on RECQL4 helicase.

As part of the AntiHelix Consortium Horizon2020-MSCA-ITN, financed by the EU, we hypothesized that inhibition of DNA helicases could improve the current treatment strategies in cancer patients. This idea is also reinforced by the concept of synthetic lethality and the fact that some DNA repair inhibitors, such as PARP1 inhibitors, are already used in the clinic in combination with chemotherapy or immunotherapy to improve patients' clinical outcome.

Project-related funding:

- *EU, Horizon2020-MSCA-ITN:*
  „Therapeutic validation of DNA helicases in cancer"

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2. Chauvistré H, Shannan B, Daignault-Mill SM, Ju RJ, Picard D, Egetemaier S, Váraljai R, Gibhardt CS, Sechi A, Kaschani F, Keminer O, Stehbens SJ, Liu Q, Yin X, Jeyakumar K, Vogel FCE, Krepler C, Rebecca VW, Kubat L, Lueong SS, Forster J, Horn S, Remke M, Ehrmann M, Paschen A, Becker JC, **Helfrich I**, Rauh D, Kaiser M, Gul S, Herlyn M, Bogeski I, Rodríguez-López JN, Haass NK, Schadendorf D, Roesch A. Persister state-directed transitioning and vulnerability in melanoma. ***Nat Commun.*** 2022 Jun 1;13(1):3055. doi: 10.1038/s41467-022-30641-9.

3. Bordbari S, Mörchen B, Pylaeva E, Siakaeva E, Spyra I, Domnich M, Droege F, Kanaan O, Lang KS, Schadendorf D, Lang S, **Helfrich I**#, Jablonska J#. SIRT1-mediated deacetylation of FOXO3a transcription factor supports pro-angiogenic activity of interferon-deficient tumor-associated neutrophils. ***Int J Cancer***. 2022 Apr 1;150(7):1198-1211. # **equally contributed**

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b. The human exposome – where medicine meets biochemistry

Dr. Benjamin Clanner-Engelshofen, MD / PhD

The exposome represents all endogenous and exogenous environmental exposures that begin at preconception and carry on throughout the entire lifespan. Exposome research strives to assess the range and diversity of exposures to dietary constituents, synthetic chemicals, physical factors, psychosocial stressors and their corresponding biological responses. Multiple genetic, epigenetic, nutrogenetic or pathogen-related risk factors can induce or maintain an inflammatory state.

However, the impact of the exposome on the skin expands far beyond skin inflammation, affecting processes such as carcinogenesis, pigmentation, immune response, skin barrier properties, sebaceous function and modulating many dermatoses. Importantly, some components of the exposome can harm the skin while others have beneficial properties. Although the importance of the exposome is now widely accepted, we are only at the beginning of understanding the effects of each component of the exposome on the skin and far from embracing the complexity of the interaction of all these factors. This will require the development of better monitoring of the exposures, the use of omics strategies and advanced lab work.

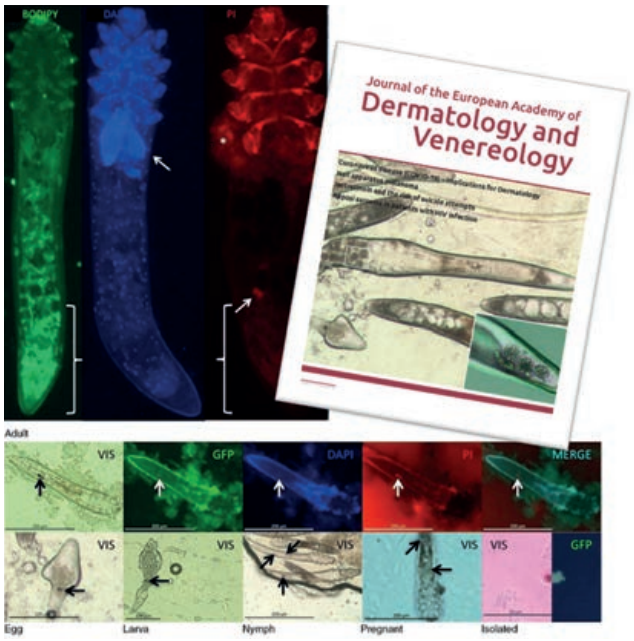
Differences in the composition of skin microbiota have been linked to distinct clinical and inflammatory features among patients with a variety of dermatological diseases, e.g. acne, rosacea, atopic dermatitis and many others. My group has a focus on the skin microbiome in the context of those inflammatory dermatoses. The human face mite – Demodex sp. – is of special interest to us, as it is strongly associated with rosacea.

Recent studies

Earlier publications in former years put an emphasis on developing methods to work with Demodex mites, i.e. the efficient isolation of larger numbers of the mites via sucrose gradient centrifugation technique and peel-off polymer films, the use of different fluorescent dyes to evaluate the viability and visualize specific internal structures, cryo-preservation, exoskeleton lysis methods and behavioral studies.

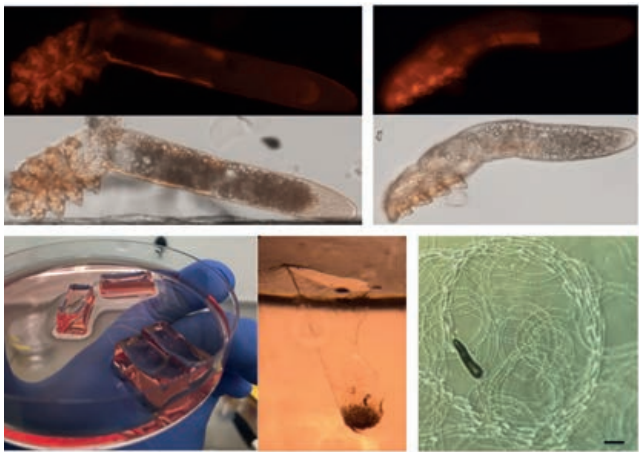
As different bacterial species have been suggested to be the endobacterium of Demodex mites, including Bacillus oleronius, B. simplex, B. cereus and B. pumilus, we hypothesized that indentifying the true endobacterium of Demodex folliculorum could be a starting point for a deeper understanding of the tripartite microbe-host interaction between the mite, its bacterial endosymbiont and the human host. Using robust techniques to disinfect the mites' exterior and with mites from different sources, we identified Corynebacterium kroppenstedtii subsp. demodicis as the endobacterium of Demodex folliculorum mites. The distinct genetic and phenotypic differences and similarities between the type strain and native isolates were described by DNA sequencing, PCR, MALDI-TOF, DNA-DNA hybridization, fatty and mycolic acid analyses and antibiotic resistance testing.

Until recently, there was no ex vivo culture system available for Demodex mites except for using live vertebrate hosts. In our latest publication we established an ex vivo culture system for human Demodex mites and characterized the sebogenesis-dependent mite density using anabolic steroids (testosterone and trenbolone) as well as retinol and retinoic acid (isotretinoin), which both yielded a reduced mite density. Demodex mites



Corynebacterium kroppenstedtii subsp. demodicis is the endobacterium of Demodex folliculorum

were cultivated in pilosebaceous units of human skin explants, called human organotypic skin explant culture (hOSEC). Mites and mite survival were evaluated using light and fluorescence microscopy. After 90 days of incubation, living Demodex mites - including eggs, larvae and nymphs - were detected in the dissected skin samples. With this technique, mites can be cultivated ex vivo for the first time, thereby establishing new ways to investigate Demodex spp. The sebostatic effect of isotretinoin might explain the mechanism of action in the off-label treatment of rosacea.



First ex vivo cultivation of human Demodex mites and evaluation of different drugs on mite proliferation

Epidemiological studies

Additionally, to expand the knowledge and understanding of rosacea and about affected patients, epidemiological studies are performed on a regular basis.

Initially, we evaluated the prevalence and epidemiology of rosacea and perioral dermatitis (POD) in an ambulatory care setting by retrospectively analyzing medical data of 1032 patients with a confirmed diagnosis of rosacea (81.5%) or perioral dermatitis (POD) presenting at our university hospital outpatient clinic during a 3-year period. The overall prevalence was 1.4 % for rosacea and 69.3 % of the analyzed patients were female. The most common phenotypes were papulopustular rosacea, erythematotelangiectatic rosacea and phymatous rosacea.

The large patient cohort analyzed in this study provides a good estimate of the frequency of rosacea subtypes in a hospital-based outpatient care setting. To follow up, the next study was performed to provide an updated and in-depth perspective on the current state of rosacea epidemiology in Germany. A cohort of 777 rosacea patients was assessed based on a detailed online questionnaire. Information regarding patients' demographics, course and clinical presentation of rosacea, trigger factors, dermatological consultations, treatment adherence and satisfaction as well as quality-of-life were obtained. The study was the largest German-based assessment exclusively focusing on rosacea patients.

In 2022, we focussed on a special form of rosacea, called ocular rosacea, which is very often underdiagnosed. Data of 777 rosacea patients were assessed using a detailed online questionnaire regarding ocular and skin symptoms, previous dermatological and ophthalmological consults, presence of type 1 hypersensitivities, and Demodex testing. Most patients reported ocular symptoms, including red eyes, itching, sty or chalazion and dryness. Eye involvement in rosacea patients was common, often presenting with unspecific symptoms.

Future projects

For future projects, we plan to expand the knowledge and understanding of interactions between Demodex mites and their endobacterium Corynebacterium kroppenstedtii subsp. demodicis as well as between the mites and their human host. The mites are thought to live symbiotically with their endobacteria, offering them a protected environment and getting support in digestion of their highly specialized diet of sebum and scaling of keratinocytes in the pilosebaceous unit.

Of even more interest might be the interaction between man and mite. Harboring these commensals for an estimated 100 to 200 million years, mammals are likely to benefit at multiple levels from them, for example protection of the pilosebaceous unit against pathogenic bacteria and fungi as well as break-up and digestion of intrafollicular constituents, to name just two.

Future projects include studies on the anatomy of Demodex mites, behavioral studies and the establishment of an in-vitro culture system to cultivate the mites without the need for skin-explants.

Conclusion

Our research is a starting point for a deeper understanding of the tripartite microbe-host interaction between Demodex mites, its bacterial endosymbiont and the human host, and should facilitate future Demodex research and

fuel further the generation of knowledge. Our findings might act as a solid basis for accelerated research on our most complex commensal, its life, biology and physiology.

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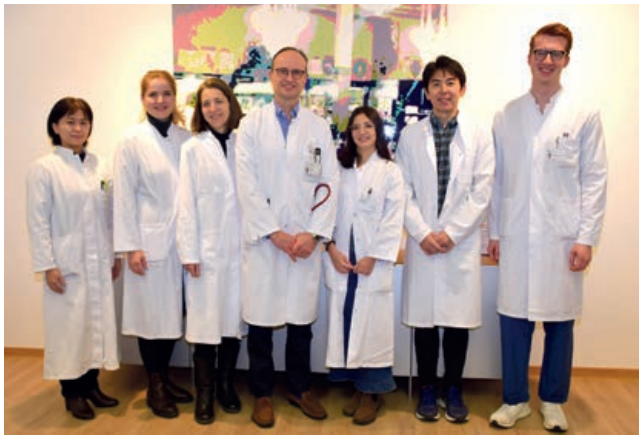
c. Laboratory of molecular cutaneous immunopathology

Prof. Lars E. French



- Prof. Lars E. French, MD, head of the laboratory
- Takashi Satoh, MD/PhD, MSc, principal investigator
- Rui Aoki-Urano, MD/PhD
- Laura Calabrese, MD, PhD student
- Pia-Charlotte Stadler, MD
- Matthias Neulinger Munoz, MD
- Claudia Kammerbauer, MTA, research associate

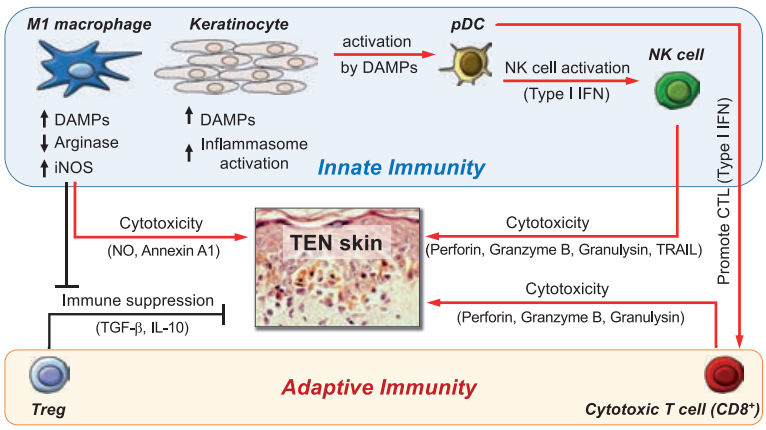
Cutaneous inflammation is a very common condition in dermatology, and numerous insults from the environment or endogenous danger signals can lead to inflammation. The aim of our research is to better understand the molecular events leading to inflammatory responses in the skin.

We are particularly interested in i) the immune responses and driver cytokines involved in cutaneous adverse drug reactions including Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN); ii) the mechanisms involved in immune-related adverse events (irAEs) during anticancer immunotherapy; iii) the immune responses specifically involved in neutrophilic dermatoses such as hidradenitis suppurativa (HS) and pyoderma gangraenosum (PG); and iv) deep phenotyping (transcriptomics and proteomics) of a wide range of inflammatory skin diseases. Using different technologies, we investigate the molecular pathogenesis of inflammatory skin diseases with the aim of deciphering disease heterogeneity (endotypes) and defining new therapeutic targets as well as precision medicine approaches to diagnosis and management.

The role of innate immune cells in SJS/TEN

TEN and SJS are life-threatening mucocutaneous adverse reactions that occur most frequently as a result of prescription drug use. TEN and SJS are now considered to be minor (<10% body-surface skin detachment) and major (>30% body-surface skin detachment) variants of the same life-threatening cutaneous adverse reactions. Even though the estimated incidences of TEN and SJS are not very high (two and seven cases per million population per year, respectively), the mortality rate is extremely high, ranging from 5% in SJS to 34% in TEN, and thus, SJS/TEN has a high burden on the health system. Early symptoms of the abrupt onset of SJS/TEN usually start with fever, sore throat and malaise, followed by rapidly developing blistering exanthema of macules and target-like lesions accompanied by mucosal involvement. Prevention of SJS/TEN is difficult due the virtual absence of predictive tests or specific biomarkers and its rare incidence upon drug exposure. Consensus therapy of SJS/TEN is best supportive care and no effective and accepted specific therapy exists.

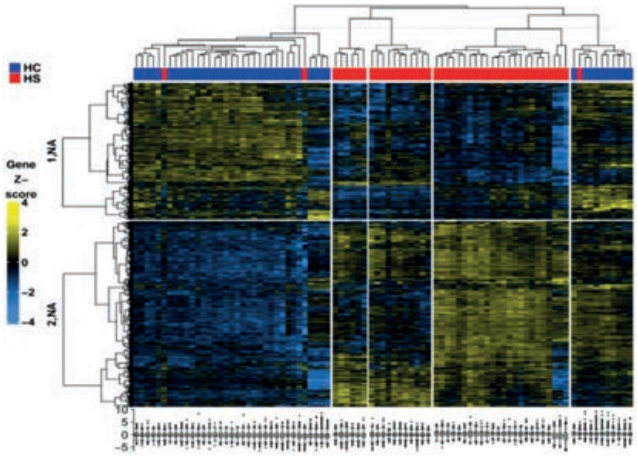
SJS/TEN have been considered as immune disorders involving both the adaptive and innate immune systems. However, it is poorly understood why the skin is the main target organ and which cellular and molecular signals underlie the immune activation by drugs and subsequent massive keratinocyte cell death in SJS/TEN. Our aim is to identify the role of immune signaling pathways that regulate cutaneous inflammation and keratinocyte cell death in SJS/TEN as well as to investigate disease biomarkers, optimal therapy targets and therapeutic candidates for SJS/TEN. Our group has established a unique worldwide patient registry called IRTEN (The International Registry for Toxic Epidermal Necrolysis, www.irten.org), which is an international, observational web-based registry for



Hypothesis of the molecular mechanisms in SJS/TEN

prospective anonymized collection of clinical data and biological samples of individuals suffering from SJS/TEN. With IRTEN, we aim to provide a better understanding of SJS/TEN, to improve the management of SJS/TEN patients and enhance clinical outcomes.

Disease heterogeneity in neutrophilic dermatoses



Heterogeneity of HS skins shown in a heatmap

Neutrophilic dermatoses are a group of skin diseases mainly characterized by an infiltration of the skin by mature neutrophils without evidence of overt infection. Neutrophilic dermatoses include a spectrum of disorders such as Sweet's syndrome, hidradenitis suppurativa (HS) and pyoderma gangraenosum (PG). Despite the fact that they are not extremely rare, their pathogenesis remains poorly understood.

Hidradenitis suppurativa (HS, also known as acne inversa), is a chronic inflammatory skin disorder affecting approximately 1% of the general population. The disease manifests clinically as recurrent episodes of neutrophilic inflammation, predominantly in the axillary and inguinal folds and perianal area. The inflammation starts from the hair follicles and evolves into painful nodules, abscesses and pus-discharging tunnels (sinus tracts or fistulas) at a later stage. Even with disease improvement, extensive scars due to HS can cause pain and restrict movement, which is a very common problem in people with HS.

Our aim is to understand the molecular pathogenesis and provide evidence for the appropriate management and the application of targeted therapies in HS, by identifying distinct molecular disease subtypes (endotypes) of HS. For this purpose, we are performing gene expression profiling of HS lesions. In addition, we perform spatial transcriptomic analysis combined with single-cell RNA sequencing, to gain insight into the tissue heterogeneity of HS and investigate cellular and molecular targets that regulate inflammation in HS.

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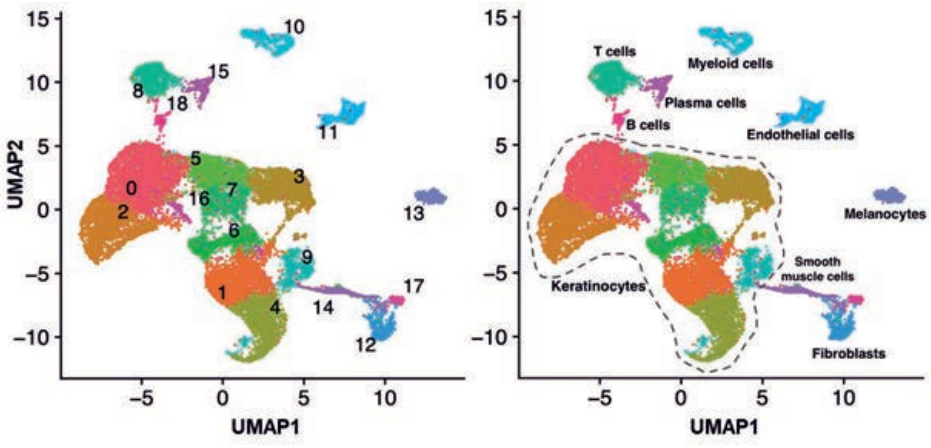

Cell type and gene expression analysis of HS lesions by single-cell RNA sequencing

B. Research groups in overview

a. Dermathopathology

Prof. Michael Flaig, MD
PD Dr. Katrin Kerl-French, MD

Prof. M. Flaig, MD

PD K. Kerl-French, MD

Dermatopathology group members and associates

- Prof. D. Hartmann, MD, Ph.D.
- Lena Jakob, MD
- Michaela Maurer, MD
- Mohammed Mitwalli, MD
- Natalie Evenschor, MD
- Ursula Puchta, MTA
- Johanna Laude, MTA
- Carina Merz, MTA
- Latifa Birrou, MTA
- Sabine Sirges-Szas, MTA
- Kerstin Lindner, MTA
- Wencke Flemming, MTA
- Silke Krug, MTA
- Annika Heukäufer, MD
- Lena Feder, MD student

Main fields of research

The main focus of our research concerns oncogenesis and the characterization of solid and lymphocytic cutaneous neoplasms with special emphasis on oncogenic pathogens. Current efforts are dedicated to the oncogenetic genesis of Merkel cell carcinoma, tumor cell-clonality in melanoma, pathogenesis of granular parakeratosis, and the morphogenesis of basaloid and trichoblastic neoplasms.

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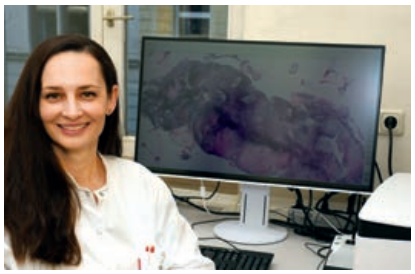
Histopathological conference

b. Imaging

Group members and associates

Prof. Daniela Hartmann, MD, Ph.D.
Lead ex vivo imaging
Prof. Elke Sattler, MD
Lead in vivo imaging


Prof. D. Hartmann


Prof. E. Sattler

Senior house officer:
- Cristel Ruini, MD
- Stephanie Steckmeier, MD

Dermatologist:
- Anne Gürtler, MD

Doctor in specialization:
- Isin Sinem Bağcı, MD
- Maximilian Deußing, MD
- Laurie Eicher, MD
- Sebastian Krammer, MD
- Benjamin Kendziora, MD
- Sebastian Mastnik, MD
- Michaela Maurer, MD

Medical / doctoral thesis students:
- Fabia Daxenberger, MD student
- Marie Düsedau, MD student
- Quirine Eijkenboom, MD student
- Ramona Fenderle; MD student
- Charlotte Gust, MD student
- Elena Kunrad, MD student
- Natalie Schädle, MD student
- Sophia Schlingmann, MD student
- Kathrin Patzer, MD student
- Kristina Iwanitz, MD dent. student
- Alexander Winster, MD dent. student

Main fields of research

The main focus of the in vivo imaging group is to establish, develop and use modern non-invasive imaging techniques including optical coherence tomography, confocal laser microscopy and line-field confocal OCT to optimize the detection and early diagnosis of melanoma and non-melanoma skin cancer, but also for inflammatory and infectious dermatoses. In new prototype devices, we recognize and establish new patterns for diagnosis to improve the sensitivity and specificity of the clinical diagnosis and correlate these findings to ex vivo imaging and histopathology results.

Imaging team

These methods are non-invasive, painless, do not require surgery or local anaesthesia, and devoid of scarring etc. but yet allow a precise diagnosis in real-time and therefore can spare unnecessary biopsies or excisions or speed up referral to the right treatment. As the same skin site can be visualized over time e.g. before and after treatment, these methods are also valuable tools for monitoring therapy.

Ex vivo confocal laser scanning microscopy (ex vivo CLSM) is a novel diagnostic method allowing rapid, high-resolution imaging of freshly excised skin samples in an intraoperative setting. It enables the surgeon to know the diagnosis and whether the resection margins are clear or not within few minutes after the excision. This innovative bedside histology may decrease the number of surgical procedures and length of hospitalization in the near future. Current projects examine the integration of artificial intelligence into the ex vivo CLSM examination process.

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Ex vivo imaging

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c. IRTEN

Prof. Lars E. French, MD
Dr. Eva Oppel, MD

Group members and associates

- Anna Oschmann, MD
- Pia-Charlotte Stadler, MD

International Registry for Toxic Epidermal Necrolysis (IRTEN)

Together with an international team of experts, the Department of Dermatology and Allergy of the LMU Klinikum in Munich/Germany launched the „International Registry for Toxic Epidermal Necrolysis“ (IRTEN).

IRTEN is an international, web-based registry for the prospective, pseudonymised collection of clinical data and biological samples of patients suffering from Stevens-Johnson Syndrome (SJS), Toxic Epidermal Necrolysis (TEN) and SJS-TEN-Overlap Syndromes.

The aim of IRTEN is to gain a better understanding of SJS, TEN and SJS-TEN-Overlap Syndromes. We expect new insights into the epidemiology of the disease, clinical characteristics and genetic features of the patients, as well as information about culprit drugs and therapeutic options. We would be very pleased to recruit new competence centers for our project.

Prof. L. E. French

Dr. E. Oppel

Dr. P. Stadler

Dr. A. Oschmann

Up to date the registry already included >20 patients.

You can find more information on our website www.irten.org, where you can also register online as participating center. Please do not hesitate to contact us with any questions (derma.irten@med.uni-muenchen.de).

Founding Centers

- LMU Klinikum Munich, Germany
- Universitätsspital Zürich, Switzerland
- Hôpitaux Universitaires Henri Mondor, France
- University of Miami, USA
- Kyoto University, Japan
- Niigita University, Japan

Collaborating centers

- Universitätsklinikum Lübeck, Germany
- Kepler Uniklinikum Linz, Austria
- Hôpital Edouard Herriot Lyon, France
- Hôpital Necker, Paris, France
- Hôpital Saint-Eloi, Montpellier, France
- Hôpital Charles Nicolle, Rouen, France
- Hôpital Saint-André, Bordeaux, France
- CHU Hôpital Dieu, Nantes, France
- Hôpital Morvan, CHU de Brest, France
- Hôpital de la Cavale Blanche, CHU Brest, France
- CHU Bichat, Paris, France
- Hôpital Roger Salengro, CHU de Lille, France
- Hôpital Claude Huriez, CHU de Lille, France
- CHU Angers, Angers, France

IRTEN team LMU Munich

d. Rare gegentic skin diseases

Prof. Kathrin Giehl, MD

Group members and associates

- Gabriela Frömel, MD student
- Adriana Usheva, MD student
- Theresa Schöniger, MD student
- Perlya Roussel, MD student

Main fields of research

The main focus of our group is clinical research in the field of rare and genetic skin diseases. We investigate the phenotype and genotype correlation as well as quality-of-life aspects in patients with basal cell nevus syndrome and patients with palmoplantar keratoderma. Specific clinical and histological aspects are investigated in disseminated and systemic juvenile xanthogranulomatosis.

In the field of healthcare research a newly developped App to improve motivation and clinical care in children with ichthyosis is currently being investigated.

As an active member of the European Reference Network for Skin disorders (ERN-skin) we coorporate with other European specialists on different clinical research projects to improve patient care in rare skin diseases.

Prof. K. Giehl

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e. Experimental dermatosurgery and wound healing research group

Prof. D. Hartmann

Head of the experimental dermatosurgery and wound healing research group
Prof. Daniela Hartmann, MD, Ph.D.

Group members and associates

- Prof. Daniela Hartmann, MD, Ph.D.
- Justin Gabriel Schlager, MD
- Benjamin Kendziora, MD, Ph.D.
- Maximilian Deußing, MD
- Prof. Elke Sattler, MD, Ph.D.
- Assoc. Prof. Cristel Ruini, MD
- Kristina Iwanitz
- Alexander Winster
- Kathrin Patzer
- Daniel Stiefel

Dr. G. Schlager

Dr. B. Kendziora

Dr. M. Deußing

Main fields of research

The focus of the Experimental Dermatosurgery and Wound Healing Research Group is to establish, develop and apply modern surgical treatments, techniques, approaches and diagnostic methods in skin surgery and wound therapy. A great part of the experimental dermatosurgery research is covered by the ex vivo confocal laser scanning microscopy for the use in Mohs surgery and ultra-rapid, intraoperative tumor assessment, enabling the surgeon to perform immediate reexcision or wound closure within a single session. Current projects examine the integration of artificial intelligence into the ex vivo CLM examination process. Furthermore, our research group is preparing projects on proctologic surgery, laser-assisted skin surgery, cold-atmospheric-plasma therapy and electroporation.

Through different research projects, which included three meta-analyses and a large observational study, we could provide new evidence on risk factors for surgical site infections in dermatologic surgery. As part of the Antibiotic Stewardship Working Group of the German Society of Dermatologic Surgery (DGDC) under the lead of Prof. Hartmann, we developed new recommendations for the use of perioperative antibiotic prophylaxis in skin surgery. These recommendations are now being embedded in a guideline in collaboration with the Robert Koch Institute in Berlin. The other scientific focus lies on new innovative approaches to promote healing of chronic wounds. We recently performed an investigator initiated clinical study on effectiveness and safety of cold atmospheric plasma and are currently recruiting patients for a multicenter trial using allogenic mesenchymal stem cells.

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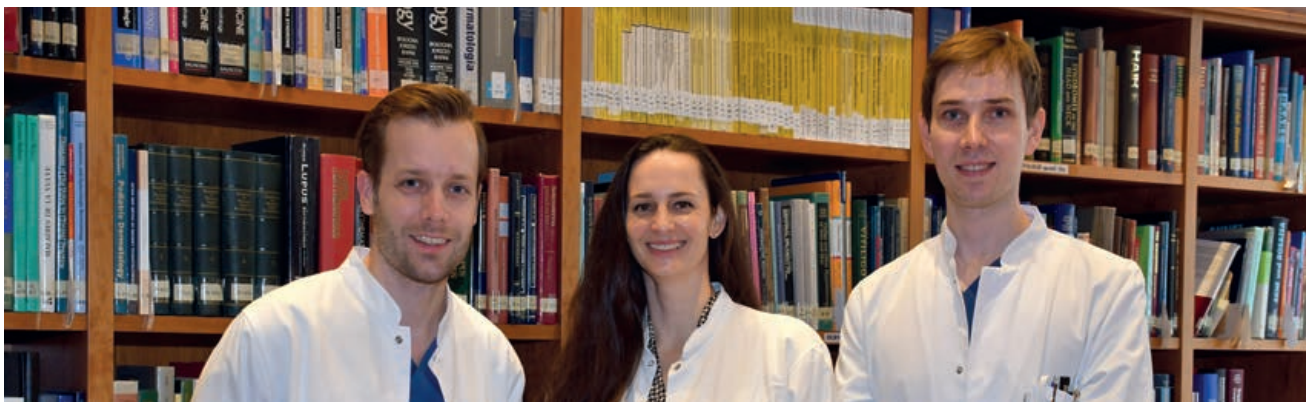

f. Oncology study group: Melanoma, Lymphoma, Merkel cell carcinoma, Rare skin cancers

Prof. Lucie Heinzerling, MD, MPH

Prof. L. Heinzerling, MD, MPH

Group members and associates

- Raquel Bouchillon, nurse
- Dagmar Dick, technician
- Zeno Fiocco, MD
- Surina Frey, MD
- Xiomara Garza Vazquez, MD
- Anne Gürtler, MD
- Sebastian Haferkamp, MD
- Claudia Kammerbauer, technician
- Sonja Maier, study coordinator
- Bastian Schilling, MD
- Irina Schnaitter, nurse
- Dirk Tomsitz, MD
- Christine Straßer, study coordinator

Main fields of research

The focus of our clinical research is studying how to optimize skin cancer treatment with immunotherapy, cellular therapies, targeted therapy and local therapy options. In this context, we conduct clinical studies including investigator-initiated trials, with new compounds, combinations or treatment schemes. In 2022, we have recruited 259 patients into clinical studies. Additionally, we investigate the role of the microbiome with respect to response and toxicity of immunotherapy.

We assess how to break checkpoint inhibitor resistance with other immunotherapies, cellular therapies, targeted therapy and oncolytic viruses. We also assess modern imaging techniques for diagnostic procedures. Within our biomarker research we try to establish prognostic and predictive biomarkers.

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g. SERIO – Side effect registry immuno oncology

Prof. Lucie Heinzerling, MD, MPH

Group members and associates

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- Samuel Knauss, MD
- Mingzi Kong, PhD
- Dirk Mentzer, MD
- Theresa Ruf, MD
- Thomas Schulz, cand. med.
- Dirk Tomsitz, MD
- Sarah Zierold, MD

Focus of research

The Side Effect Registry Immuno-Oncology (SERIO) documents rare, complex and severe side effects of immunotherapy since 2011. In cooperation with the Paul-Ehrlich Institute access to the data base is online since February 2020 (www.serio-registry.org) with more than 52 national and international centers from 8 countries documenting so far. We analyze the data bank with respect to clinical characteristics, risk factors, outcome and treatment of immune-related adverse events and regularly publish articles about specific topics of interest. Via the registry we can also access biological samples especially of rare side effects like biopsies from patients with cardiomyositis or with neurological side effects to further investigate pathomechanisms.

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h. Bullous autoimmune diseases

Dr. Christiane Pfeiffer, MD, PhD (PD Dr. med. habil.)

Group members and associates

- Orsolya Horváth, MD, PhD
- Prof. Miklós Sárdy, MD, PhD

PD Dr. C. Pfeiffer

Main fields of research

Our group strives to improve patient care and treatment in the field of bullous autoimmune diseases, mainly pemphigus vulgaris and bullous pemphgoid. Our specialized bullous disease clinic, including a second opinion service for rare autoimmune bullous diseases as well our high-end laboratory for diagnosis of autoimmune bullous diseases enable us to better serve this group of patients with rare inflammatory diseases. We offer access to new treatment options, including participation in clinical trials.

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i. Autoimmune connective tissue diseases

Dr. Christiane Pfeiffer, MD, PhD
(PD Dr. med. habil.)

Group members and associates

- Orsolya Horváth, MD, PhD
- Sebastian Fröber, cand.med.

Main fields of research

As founding partner of the German Network for Systemic Sclerosis, we are interested in registry-based clinical science. Our special clinic for connective tissue diseases offers assessment, as well as second opinion for patients with systemic sclerosis, lupus erythematosus and dermatomyositis. Specialised in systemic forms, we also treat patients with severe forms of local disease. As part of the ERN we strive to improve treatment for affected patients. Through the registry work we collect new knowledge. Treatment offers include participation in clinical trials. An investigator-initiated trial addresses vasculature in scleroderma.

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j. Artifical intelligence

Dr. Sebastian Krammer, MD
Prof. Daniela Hartmann, MD, Ph.D.
Prof. Lars E. French, MD

Group members and associates

- Prof. Elke Sattler, MD
- Prof. Hans Wolff, MD
- PD Katrin Kerl-French, MD
- Melia Fleischmann, MD
- Larissa Akçetin, MD
- Anne-Sophie Böhm, MD
- Suzan Stürmer, MD
- Yawei Li, computer scientist
- Nicolas Jakob, computer scientist
- Theodor Cheslerean Boghiu, computer scientist
- Hui Zeng, computer scientist
- Theresa Willem, PhD candidate

Prof. L. E. French

Prof. D. Hartmann

Dr. S. Krammer

M. Fleischmann

Main fields of research

The main research activities focus on the generation of multimodal structured data sets (clinical images, histopathological results and images, patients' history) in order to develop state-of-the-art machine learning algorithms to support medical staff in their daily work and to improve patients' treatment.

The use of Avelios Medical's software provides considerable support to the working group. By documenting in the Avelios software, up to 2.000 structured data points are automatically generated per patient treatment for approximately 88,000 outpatients annually in the Department of Dermatology.

Project DR-AI

The group is supported by the German Federal Ministry of Health with a total of 2.8 million € for the DR-AI project (2520DAT920), which investigates the application areas of Artificial Intelligence in medicine within a consortium lead by the Department of Dermatology together with partners from the Department of Informatics (Prof. Dr. Nassir Navab; Assoc. Prof. Dr. Tobias Lasser, Technical University of Munich), the Department of Radiology (Assoc. Prof. Dr. Bastian Sabel, MD; Prof. Michael Ingrisch, LMU Klinikum) and the Department of Ethics (Prof. Alena Buyx, Institute of History and Ethics in Medicine, Technical University of Munich). As part of the project, the research group was granted the market's largest whole-slide scanner. The goal is to come up with new algorithms that can help diagnose skin diseases using histological slides and photos.

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2. T. Willem, **S. Krammer**, A.-S. Böhm, **L.E. French**, **D. Hartmann**, T. Lasser, A. Buyx. Risks and benefits of dermatological machine learning healthcare applications - an overview and ethical analysis. Journal of the European Academy of Dermatology and Venereology 36, 2022

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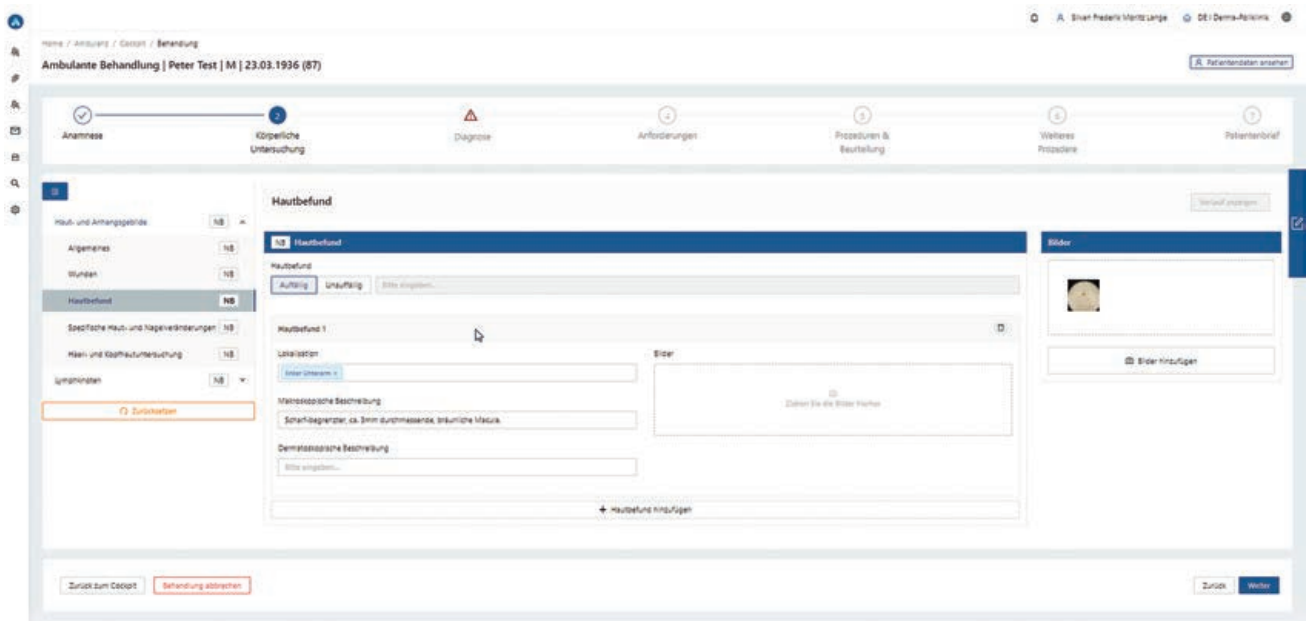
Making artifical intelligence ready for clinical practice

Scientists from various Germany-based AI working groups actively engage in scientific dialogue with each other in Berlin.

DR-AI Workshop Berlin, October 2022
f.l.t.r. back row: Prof. Lars French, Prof. Jens Kleesiek, Saša Čečatka, PD Dr. Tobias Lasser, Dr. Christian Bayer, Dr. Sebastian Krammer, Prof. Alexander Nast, Prof. Michael Ingrisch
f.l.t.r. front row: Alessandro Wollek, Theresa Willem, Melia Fleischmann, Larissa Akcetin, Sonia Amend, PD. Dr. Bastian Sabel

The DR-AI research consortium presented its projects and current findings in the fields of Artificial Intelligence in Dermatology and Radiology to a hybrid audience in Berlin on October 22, 2022 as part of a workshop.



The workshop's focus was the exchange of participants from academia, clinics and other stakeholders in order to improve research translation into clinical practice.

Key messages of the workshop

After Prof. Lars French's opening speech, PD Dr. Tobias Lasser talked about the latest results of his TUM research group "Computational Imaging and Inverse Problems" and showed how explainability and interpretability could make it possible to use Artificial Intelligence in clinical practice.

Opening speech from Prof. Lars French, Lead of DR-AI & Director of the Department of Dermatology at University Hospital Munich (LMU)

Dr. Sebastian Krammer then presented the latest results of his research group on image-based detection of skin diseases as well as how digitization with the software from Avelios Medical has made treatment documentation at the LMU Klinikum not only more efficient but also allows to generate automatically up to 2,000 structured data points per each treatment. With this additional metainformation, a new algorithm for detecting skin diseases is currently being developed that is based on a multimodal, multi-stage data fusion process.

Another crucial factor is according to Prof. Michael Ingrisch, head of the LMU Clinical Data Science group, that the right questions are asked questions from the clinic and with clinical relevance. Above all, it is important that these questions are answered in the clinical context and with the right data – for example, to answer the performance of an AI system on the important, critical subgroups. PD Dr. Bastian Sabel outlined in his presentation the opportunities and challenges of integrating Artificial Intelligence into clinical practice. He demonstrated, using ongoing and completed research projects from his working group at the Department of Radiology (LMU Hospital), how radiologists can be assisted by AI technology in repetitive tasks, quantitative analysis and the prioritization of routine investigations.

In addition, Prof. Jens Kleesiek, head of the Medical Machine Learning department at the Institute for Artificial Intelligence in Medicine at the University Hospital Essen, gave a comprehensive lecture on the application of self- and weakly monitored learning paradigms to the recognition of clinically relevant patterns in health data, as well as the integration of multimodal information to improve decision-making at the point-of-care. In his opinion, Artificial Intelligence is only the tip of the iceberg when it comes to medical digitization.

The program was completed by Prof. Alena Buyx's TUM Embedded Ethics team. It was stated that ethics of machine learning in healthcare is a combination of existing ethical principles and new machine-learning-specific frameworks. The most important task of this discipline is to adapt to agile research and development methods so that future support in the development of ethical machine learning healthcare applications can be provided based on subsequent evaluation.

Finally, Prof. Jens Kleesiek (University Hospital Essen), Nicolas Jakob (Avelios Medical), Dr. Christian Bayer (WMC Healthcare), and Prof. Alexander Nast (Charité - University Medicine Berlin) discussed the current situation and problem-solving approaches in the panel discussion. In order to be able to use Artificial Intelligence in hospitals, it is first necessary to have a state-of-the-art digital infrastructure that, on the one hand, helps to continuously develop algorithms through structured data and, on the other hand, is flexible in terms of architecture to seamlessly integrate algorithms into the workflow.

In conclusion, both the attendees and the speakers were able to have a productive day of learning, sharing ideas, and getting both personal and professional benefits.

f.l.t.r: Prof. Jens Kleesiek (University Hospital Essen), Prof. Alexander Nast (Charité - University Medicine Berlin), Nicolas Jakob (Avelios Medical), Dr. Christian Bayer (WMC Healthcare), Sonia Amend (moderator)

k. Implant allergy research

Dr. Eva Oppel, MD
PD Burkhard Summer, BSc

Group members and associates

- Ralf Pohl, BTA
- Maria Benedikt, student
- Vinzenz Diewald, student
- Prof. Peter Thomas, MD

Main fields of research

The main objectives of the group's research are immunological and allergological reactions to implant materials, especially metals and dental materials. There is a close cooperation with orthopedic (DGOU), allergological (ESCD, DGAKI) and dermatological societies (DDG, DKG, EADV). We also work with implant manufacturers on the development and testing of new materials with regard to hypoallergenic properties. Our research approach includes epidemiological, genetic and experimental data. The main focus is based on the "Lymphocyte transformation test", which is continuously evaluated and further developed in our laboratory. In addition, we have extensive experience using this test to detect drug hypersensitivity reactions.

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Dr. B. Summer

Dr. E. Oppel

R. Pohl

Prof. P. Thomas

I. Translational research in inflammatory skin diseases

Prof Dr. Markus Reinholz, MD, PhD

Prof. M. Reinholz

Group members and associates

- Benjamin M. Clanner-Engelshofen, MSc, MD
- Anne Gürtler, MD
- Anne-Charlotte Niesert, MD
- Leonie Frommherz, MD
- Pia-Charlotte Stadler, MD
- Benjamin Kendziora, MD
- Till Kämmerer, MD
- Zeno Fiocco, MD
- Larissa Akçetin, MD
- Simone Berger, MD student
- Phuong Do, MD student
- Sara Ecke, Dentist, MD student
- Barend Feldner, MD, doctoral student
- Tobias Fiedler, MD student
- Matthias Frohwein, MD, doctoral student
- Corbinian Fuchs, MD student
- Nora Jøntvedt, MD student
- Verena Kappler, MD student
- Enklajd Marsela, MD student
- Sebastian Mastnik, Dentist, MD student
- Dentist, MD student
- Tobias Nellessen, doctoral student
- Katharina Neu, doctoral student
- Marcel Rummel, MD, doctoral student
- Luka Ständer, MD student
- Larissa Ulbrecht, MD student
- Arina Volsky, MD student
- Erdong Wei, MD student
- Stephan Zierl, MD student
- Nicole Engelsberger, MD, alumna
- Andreas Höpfner, MD, alumnus
- Brund Hundsdörfer, Dentist, MD student, alumnus
- Julian Pötschke, MD, alumnus
- Hannah Schwaiger, MD, alumna

Main fields of research

Diseases of the skin are among the primary reasons for physician visits. Nevertheless, there exists limited knowledge concerning the pathogenesis and specific requirements of patients. Our research group is dedicated to examining the intersection of skin diseases and molecular medicine, as well as the characterization and quantification of therapeutic outcomes at both somatic and psychological levels. Our objective is to attain a more comprehensive comprehension of pathogenesis, suffering, and therapy. Our primary research areas include human papillomavirus (HPV) infections, rosacea, and acne.

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Research team Prof. M. Reinholz

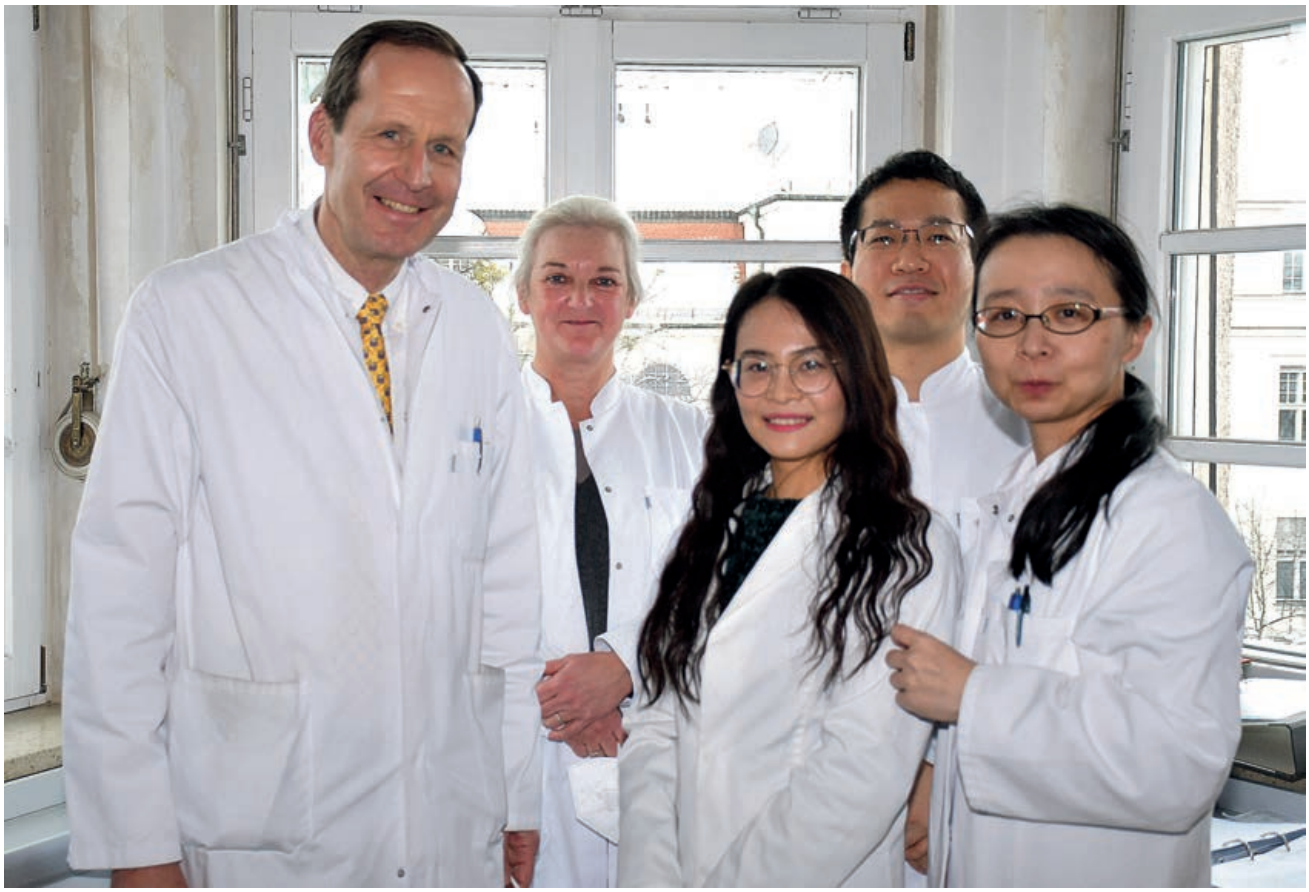
m. Laboratory for immune pathogenesis "Revealing the autoimmune pathogenesis of psoriasis"

Univ.-Prof. Dr. Jörg Prinz

Group members during the past period

- Dr. Akiko Arakawa
- Sigrid Vollmer
- Tatsushi Ishimoto, MD, PhD
- Mengwen He, MD

The working group is primarily concerned with the immunopathogenesis of psoriasis vulgaris. We previously had discovered that the actual psoriasis risk gene HLA-C*06:02 mediates an autoimmune response of CD8+ T-cells against melanocytes by presenting an autoantigenic peptide from ADAMTS-like protein 5. The HLA-C*06:02-mediated risk of psoriasis is controlled by variants in the gene encoding the endoplasmic reticulum aminopeptidase 1 (ERAP1). We now demonstrate that ERAP1 generates the autoantigenic ADAMTSL5 peptide from precursor peptides. This has clarified the essential functional role of the epistasis between ERAP1 variants and HLA-C*06:02 in the genetic susceptibility for psoriasis (1). Psoriasis, however, is not a congenital disease but triggered by environmental and lifestyle factors. Using a pathogenic psoriatic Vα3S1/Vβ13S1 TCR from a lesional psoriatic CD8+ T-cell clone we identified various environmental peptide antigens from the Firmicutes of the intestinal microbiota, yeasts, bacterial pathogens, tobacco and wheat that activate the Vα3S1/Vβ13S1 TCR and CD8+ T-cells of psoriatic patients and may thus cross-activate or maintain the psoriatic autoimmune response against melanocytes. Remarkably, they correspond to risk associations that had previously been associated with psoriasis. By establishing peptide-loaded fluorescence-labelled HLA-C*06:02 tetramers, we demonstrate increased numbers of circulating CD8+ T-cells with specificity for the autoantigenic ADAMTSL5 peptide and wheat peptides in psoriasis patients. Identification of autoreactive T-cells by peptide-loaded HLA-C*06:02 tetramers may serve as a biomarker for psoriasis (2). The environmental antigenic stimuli are further complemented by numerous mechanisms that can break the immune tolerance to self-peptides (3).
ERAP1 variants also control the HLA-B*51-mediated disease risk to Behçet's disease. Our studies reveal that the infiltration of CD8+ T-cells in skin lesions is an important



Left to right: Prof. J. Prinz, S. Vollmer, M. He, Dr. T. Ishimoto, Dr. A. Arakawa

element in the pathogenesis of Behçet's disease. These infiltrating CD8+ T-cells produce IL-17, indicating that Behçet's disease is a CD8+ T-cell-mediated vasculitis based on a similar genetic architecture as psoriasis (4).

Through clinical observations we found that Covid 19 vaccinations may trigger various immune-mediated skin diseases (5). Further research activities relate to specific aspects of generalized pustular psoriasis and psoriasis treatment (7-10).

Collaboration partners

- MBL International, Woburn, MA
- Christian D. Huber, Department of Biology, The Pennsylvania State University, University Park, 16802 PA, USA
- Edd James, Centre for Cancer Immunology, University Hospital Southampton, Southampton, UK
- Andreas Schlosser, Rudolf-Virchow-Zentrum, Center for Integrative and Translational Bioimaging Universität Würzburg
- Efstratios Stratikos, Laboratory of Biochemistry, Department of Chemistry, National and Kapodistrian University of Athens, Greece

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8 Clinical research: Department of Dermatology, clinical trials unit

A. Skin cancer

Prof. Lucie Heinzerling, MD, MPH
Oncological research group:
Immuno-oncology and cancer therapy

Prof. L. Heinzerling, MD, MPH

Group members and associates

- Lars Engstrand, MD
- Waltraud Fröhlich, technician
- Canan Kabakci, MD
- Julio Vera-González, Prof. Bioinformatics
- Claudia Kammerbauer, technician
- Giulia Pesch, cand. med.
- Ignazio Piseddu, MD
- Takashi Satoh, MD/PhD
- Christina Schmitt, MD

Main fields of research

The focus of our translational and basic research is studying how to modulate the immune system for better outcome of skin cancer with immunotherapies and to optimize management of immune-related side effects (irAE). We compare autoimmunity in this context with autoimmune disease and characterize the respective pathomechanisms. Within a translational research project, we determine factors for checkpoint inhibitor resistance and assess how resistance can be overcome. Within our biomarker research we try to establish prognostic and predictive biomarkers. Importantly, we identified a gene expression signature in primary melanoma tumors for assessment of risk of formation of metastases. We also investigate the mechanisms by which the microbiome modulates response and toxicity in cancer patients.

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B. Clinical Trials Center for Allergy and Inflammatory Skin Disease

The Dermato-Allergological Study Center / Dermato-allergologisches Studien-Zentrum (DASZ)

Prof. Franziska Ruëff, MD

Prof. F. Ruëff, MD

Group members and associates

- E. Oppel, MD
- Ch. Kuna, MD
- T. Pumnea, MD
- I. Pfeiffer, MD
- I. Kupf, MD
- M. Winkler, MD

The development of innovative drugs and new therapeutic methods has a long tradition in our Department. Today clinical research can no longer be carried out „on the side", but requires a large team of motivated, well-trained nurses and physicians, who focus on these activities. In certain studies, separate "blinded" and "unblinded" teams are required, which almost doubles the human resources needs and expenditure. Since 2015 in the DASZ many clinical trials with a focus on chronic inflammatory and allergic skin diseases have been performed. The focus includes clinical trials on atopic dermatitis and psoriasis, as well as some other inflammatory skin diseases and allergic diseases. Drug licensing studies of phase II and phase III; some phase IV studies, and quality-of-life studies are performed at the DASZ. At present, the DASZ team consists of two senior physicians, three resident doctors, six study nurses and three student assistants. A particular advantage of our unit is the large number of patients presenting themselves here every year, so that we are a high recruiting center in many trials in which we choose to participate. The following indications have been studied in the DASZ with innovative medicinal substances in clinical trials in recent years:

- Atopic dermatitis
- Acne inversa (hidradenitis suppurativa)
- Bullous pemphigoid
- Ichthyosis congenita
- Lichen planus
- Lupus erythematosus
- Indolent systemic Mastocytosis
- Pemphigus vulgaris
- Prurigo nodularis
- Generalized pustular psoriasis
- Psoriasis vulgaris
- Allergic rhinoconjunctivitis , induced by various triggers
- Urticaria, chronic spontaneous and chronic inducible

In 2021 and 2022 a total of 40 clinical trials in the above indications were performed at the DASZ, almost half of them in atopic dermatitis. Most patients benefit greatly from participating in clinical trials at DASZ and receive innovative care that frees them from a disease that has often been endured for years. Being at the forefront of the development of new pharmaceuticals gives us the opportunity to make new clinical discoveries and, last but not least, to participate in important publications.

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9 Medical education and training

Dr. Anne Gürtler, MD

Medical education is essential for guaranteeing a high standard amongst students, physicians and health-care professionals and marks a central pillar of our Department, besides everyday clinical practice, and research.

Our continued commitment to education consists of:

1. Education and training of medical students and dental students of the Ludwig Maximilian University Munich.
2. Education and training of international visiting medical students.
3. Specialist training for residents qualifying in dermatology including subspecialties such as venerology, dermatosurgery, aesthetic dermatology, allergy, dermathopathology, pediatric dermatology, inflammatory skin diseases, hair and nail disorders, non-invasive imaging, phlebology and dermatooncology.
4. Ongoing medical education for private practitioners – primarily board-certified dermatologists, as well as general practitioners and other healthcare professionals, including (study) nurses.

Each year, we train approximately 560 medical students and up to 200 dental students. Starting from the preclinical part of medical school (1st - 4th semester), the Department of Dermatology is involved in so-called longitudinal courses on general patient history, clinical examination, and case discussion. In the clinical part of medical school (5th - 10th semester) we teach the broad field of dermatology throughout three student lectures, five seminars and five bedside teachings. Lectures and seminars each focus on different aspects starting form general cutaneous manifestation of diseases including the significance of distinguishing efflorescences, to dermatopathology, inflammatory and infectious skin diseases, hair and nail disorders, dermatooncology, autoimmune diseases, allergy, dermatosurgery, pediatric dermatology, topical and systemic treatments.

Since the Covid-19 pandemic, all lectures and seminars are provided in a podcast and PDF format on a digital platform to access in advance. By the time the students come to our clinic, topics are discussed only based on

clinical images to promote a practical understanding and support a high level of interaction. Bedside teachings are always one of the best evaluated teaching formats in dermatology. Thanks to many patients on the wards, who are willing to present their skin lesions to students, dermatology can be experienced up close (in the truest sense of the german word “hautnah”). Impressive skin findings are often remembered for life, even for those who never become a dermatologist following their medical career.

Throughout this year, lectures and seminars will, once again, be extensively revised incorporating new guidelines and therapy standards. Hereby, students’ feedback from previous semester are always incorporated. Thus, for example, a more diverse range of skin types (Fitzpatrick I-IV) will be presented in the following year.

Students in their final year (practical year) can choose dermatology as their elective besides mandatory disciplines of internal medicine and general surgery. Due to limited slots, application is highly competitive. Students, who choose dermatology as their elective usually aspire to start their specialist training in this field. We therefore aim to offer exceptionally high level of training including diverse rotations throughout our department. Each student will spend two months on the ward and two months in the out-patient departments. Students in their final year are an integral part of the medical team and are encouraged to work independently, however always with medical supervision at any time.

At noon, students can profit from interactive discussions of special patient cases in the great lecture hall. Furthermore, student trainings are held once a week on different subjects.

Furthermore, the department welcomes up to 20 visiting international students from all over the world each year. German residents are selected and assigned as mentors, not only welcoming each student but also answering any questions and supporting with problems during their stay. Like national students, each international visitor receives a coordinated schedule. Hereby, specific interests regarding certain rotations are always considered.

To maintain this high level of medical education we ask students to evaluate and assess our teaching methods through surveys and feedback rounds, striving to continuously implement improvements into our curriculum.

Guest speakers 2021/2022

Speaker	Institution	Topic
Biedermann Tilo Prof. Dr. med.	Klinik und Poliklinik für Dermatologie und Allergologie der Technischen Universität München, DE	Dermatologische Herausforderungen aus der Sicht des Präsidenten der DDG
Blume-Peytavi Ulrike Prof. Dr. med.	Klinik für Dermatologie, Venerologie und Allergologie, Charité Universitätsmedizin Berlin, DE	JAK-Inhibitoren bei Alopecia areata
Böhm, Markus Prof. Dr. med.	Poliklinik am Universitätsklinikum Münster, DE	Vitiligo - Update Pathophysiologie und aktuelle Therapiekonzepte
Bruckner-Tuderman Leena Prof. Dr. med.	Klinik für Dermatologie und Venerologie Universitätsklinikum Freiburg, DE	Unmet dermatological needs - die Herausforderung der kommenden Jahre
Callewaert Chris Dr. med.	Center of Microbial Ecology and Technology, Ghent University, Belgium; Rob Knight Lab, University of California San Diego, USA	Metamorphosis of the human microbiome during ageing urbanization and skin diseases
Deleuran Mette Prof. Dr. med.	Department Dermatology, Aarhus University, Hospital Aarhus, DNK	Treatment of atopic dermatitis in 2019 - What is new in the pipeline?
Dietrich Andreas H. Dr. med.		Individualisierte Therapie der Varikosis - State of the Art
Dechant Claudia Dr. med.	Rheuma-Einheit, Medizinische Klinik und Poliklinik IV, Klinikum der Universität München, DE	Einführung in die Kapillarmikroskopie
Draenert Rika Prof. Dr. med.	Klinikum der Universität München Stabsstelle Antibiotic Stewardship, DE	Kalkulierter Einsatz und Absetzen von Antibiotika in wichtigen Behandlungssituationen
Erickson Nicole	IZDE und CCC München, Klinikum der Universität München, DE	Ernährung und Krebs
Ernst Edzard Prof. Dr. med.	University of Exeter, GB	SCHMU – Scheinmedizinischer Unfug
Flohr Carsten Prof. Dr. med.	St John's Institute of Dermatology Kings College London, GB	COVID and atopic dermatitis: lessons from the SECURE-AD registry and beyond
Gieler Uwe Prof. Dr. med.	Psychosomatische Dermatologie, Justus-Liebig-Universität Gießen, DE	Prävention psychischer Störungen in der Therapie der Neurodermitis
Guenova Emmanuella PD Dr. med.	Universitätsspital Zürich, CH	Photopherese
Günther Claudia Prof. Dr. rer. nat.	Uniklinikum Erlangen, DE	Dermatomyositis – Eine vielgestaltige Erkrankung

Speaker	Institution	Topic
Gutermuth Jan Prof. Dr. med.	Dept. of Dermatology and Allergology Vrije Universiteit, Brussel University Hospital Brussels, B	Immunologische Zielstrukturen der Ekzemerkrankungen
Häberle Beate Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Zeitgemäße chirurgische Therapie kongenitaler melanozytärer Naevi
Happle Rudolf Prof. Dr. med.	Universitätsklinikum Freiburg, DE	Dermatologische Highlights im Rückblick
Helfrich Iris PD Dr. rer. nat.	Medizinisches Forschungszentrum (MFZ) Universitätsklinikum Essen, DE	Dynamics of Conversation – Tumor trifft Mikroumgebung
Heppt Markus Dr. med.	Universitätsklinikum Erlangen, DE	Aktuelle Leitlinie und neue medikamentöse Therapien für Patienten mit fortgeschrittenem Plattenepithelkarzinom der Haut
Hovnanian Alain Prof. Dr. Dr. med.	Hôpital Necker-Enfants Malades, Paris, F	Gene diagnostics and gene therapy of inflammatory skin diseases
Kaufmann Roland Prof. Dr. med.	Klinik für Dermatologie Universitätsklinikum Frankfurt, DE	Dermatologen heute: Beauty Docs oder leitlinienunterworfene Oberflächentherapeuten – eine soziokulturelle Bewertung
Kirsten Natalia Dr. med.	Universitätsklinikum Hamburg-Eppendorf, DE	Biobank und weitere Kooperationen
Livingstone Elisabeth Dr. med.	Universitätsklinikum Essen, DE	Adjuvante und neoadjuvante zielgerichtete Therapie
Maison, Nicole Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Ekzeme im Kindesalter
Maurer Marcus Prof. Dr. med.	Klinik für Dermatologie, Venerologie und Allergologie, Charité - Universitätsmedizin Berlin	Diagnostik und Therapie der Urtikaria – ein Update
Meier Friedegund Prof. Dr. med.	Universitätsklinikum Dresden, DE	Zielgerichtete Therapie von Hirnmetastasen
Messmer Elisabeth Prof. Dr. med.	Augenklinik Mathildenstraße Klinikum der Universität München, DE	Haut und Auge
Nast Alexander Prof. Dr. med.	Klinik für Dermatologie, Venerologie und Allergologie, Charité Universitätsmedizin Berlin, DE	Leitlinien und systemische Reviews „maßschneidern“
Nicolay Jan Prof. Dr. med.	Universitätsmedizin Mannheim, DE	Aktuelle Empfehlung und innovative Therapie für Patienten mit kutanem Lymphom
Oji Vinzenz PD Dr. med.	Universitätshospital Münster, DE	Entzündliche kongenitale Ichtyosen
Peschel Oliver Prof. Dr. med.	Institut für Rechtsmedizin der Universität München, DE	Der Tod ist nicht das Ende: Leichenschau und Totenschein
Pfeiffer Christiane PD Dr. med.	Universitätsklinikum Ulm, DE	Pemphigus vulgaris praxisnah – Bewährte und aktuelle Therapieoptionen zwischen Klinik und Praxis
Reese Imke Dr. oec. troph.	Ernährungsberatung und -therapie Schwerpunkt Allergologie München, DE	Urtikaria – kann es vielleicht am Essen liegen?
Röcken Martin Prof. Dr.med.	Hautklinik des Universitätsklinikums Tübingen, DE	Dermatologische Therapie – von der Creme zur Spritze und zurück
Röcken Martin Prof. Dr.med.	Hautklinik des Universitätsklinikums Tübingen, DE	Neue praxisrelevante Entwicklungen in der Dermatologie
Schaller Martin Prof. Dr. med.	Hautklinik des Universitätsklinikums Tübingen, DE	Rosazea – Was gibt es Neues?

Speaker	Institution	Topic
Schaub Bianca Prof. Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Allergieprävention – Neues aus Forschung und Klinik
Schnopp Christina PD Dr. med.	Klinik und Poliklinik für Dermatologie und Allergologie der Technischen Universität München, DE	Therapieoptionen bei Psoriasis im Kindesalter
Schmidt Heinrich Prof. Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Hormone und Haut
Schmitt Jochen Prof. Dr. med.	Zentrum für Evidenzbasierte Gesundheitsversorgung, Universitätsklinikum Carl Gustav Carus, Dresden, DE	Versorgungsforschung im Bereich Neurodermitis
Schwieger-Briel Agnes Dr. med.	Universität-Kinderspital Zürich, CH	Lichen sclerosus und weitere Kollagenosen
Seidel Heide Dr. med.	Institut für Humangenetik, TU München, DE	Bindegewebserkrankungen
Staubach Petra Prof. Dr. med.	Hautklinik und Poliklinik der Universitätsmedizin Mainz, DE	Besonderheiten bei Urtikaria im Kindesalter
Stebut-Borschitz Esther von Prof. Dr. med.	Uniklinik der Universität zu Köln	Die IgE-Apherese zur Neurodermitistherapie
Stingl Georg Prof. Dr. med.	Medizinische Universität Wien Dermatologische Klinik, A	Dermatologische Diagnostik – von der Morphologie zum Genearray
Surber Christian Prof. Dr. phil. nat.	Universitätsspital und Dermatologische Klinik, Basel und Zürich, CH	Welche Salbe haben Sie heute verordnet? Gedanken zur Vehikelwahl
Szeimies Rolf-Markus Prof. Dr. med.	Akademisches Lehrkrankenhaus der Ruhr-Universität Bochum, DE	Ein Update zur photodynamischen Therapie
Taieb Alain Prof. Dr. med.	Centre Hospitalier Universitaire Bordeaux, F	Atopic Dermatitis in Sub-Saharan Africa
Tanew Adrian Prof. Dr. med.	Universitätsklinik für Dermatologie, Wien, A	Lichen ruber und frontal fibrosierende Alopezie
Terheyden Patrick PD Dr. med.	Universitätsklinikum Schleswig-Holstein, Campus Lübeck, DE	Aktuelle Leitlinie und neue medikamentöse Therapien für Patienten mit metastasiertem Merkelzellkarzinom
Thyssen Jacob Pontoppidan Prof. Dr. med.	Gentofte University Hospital, Hellerup, DNK	Registry mining for the benefit of AD patients
Weidinger Stephan Prof. Dr. med.	Klinik für Dermatologie, Venerologie und Allergologie, Universitätsklinikum Schleswig-Holstein, Kiel, DE	Pathophysiologie und genetische Variabilität des atopischen Ekzems
Wiesent Franziska Dr. med.	Medizinisches Versorgungszentrum München, DE	Impfung von immunsupprimierten Patienten
Wobser Marion Prof. Dr. med.	Universitätsklinikum Würzburg, DE	Therapie kutaner Lymphome
Wohlrab Johannes Prof. Dr. med.	Dermatologische Universitätsklinik der Martin-Luther-Universität Halle-Wittenberg, DE	Topika bei Neurodermitis - Von der Pathophysiologie zur Anwendung
Wüstermann Peter Dr. med.	Betriebsärztlicher Dienst München Klinik, DE	Affenpocken-Arbeits- und Gesundheitsschutz

This list does not include speakers at the training week for Practical Dermatology and Venerology (FOBI) - 230 guest speakers: see www.fortbildungswoche.de

10 Psychosocial counseling center

Dr. Stefan Zippel, M.Sc.
Psychologist & human biologist
Corbinian Fuchs
Doctoral student & psychosocial counseling

Dr. S. Zippel

C. Fuchs

"Although the number of new HIV infections has declined overall in recent years, according to the Robert Koch Institute, one third of diagnoses in Germany are made in cases of advanced immunodeficiency. In 18% of cases, an AIDS-defining disease is already present at the time of the initial HIV diagnosis. This proportion has not decreased in recent years, although the occurrence of AIDS could be prevented by regular HIV testing and rapid initiation of therapy". (DAIG, 2022)

In 1987, State Minister Dr. Karl Hillermeier opened the first state-supported psychosocial AIDS counseling center in Bavaria at our Department of Dermatology and Allergy, LMU University Hospital. In his opening speech, he spoke of fear and despair, prejudice and ignorance, misconceived shame and helplessness. He welcomed open language and frankness that should not stop at taboo subjects. He emphasized the importance of support in the psychosocial field and called for breaking down the isolation, exclusion & stigmatization to which society condemns HIV-infected people.

Today, the staff is still committed to this demand, and the underlying situation is still essentially the same. Every year, more than 500 people make use of the counseling services. The Psychosocial AIDS counseling center in our Department is the only contract counseling center in Bavaria and one of the few in Germany that cooperates closely with an STI & HIV outpatient clinic department. Staff continuity and interdisciplinary composition of the consultation team have proven to be very important in terms of holistic care.

Prevention through information and education of pupils at secondary schools has also become another important focus of the counseling center. In this regard, topics such as HIV and STIs, their transmission paths and how to protect oneself are covered. In addition, the topic of sexual identity and equality also plays a decisive role within the prevention work. Teachers are now also specifically involved in the educational work. The focus is on holding seminars on these subjects in connection with didactic principles. The aim is to empower teachers, to expand their range of topics within sexual education in schools and to strengthen their methodology.

Almost 400,000 !!! pupils from large parts of Bavaria have been reached in more than 2000 lectures in the large lecture hall of our Department or at school. Even during the Corona pandemic, the important prevention work could be ensured, as it could be converted to an online format. A 4-digit number of specialists have received further training at our clinic through specialist conferences for the training of multipliers for trainee and student teachers.

Another important component of this work is basic research on sexual and psychological health of youth. In this regard, quantitative studies are conducted to better tailor prevention programs to the target group. Doctoral theses have also been written in this context.

In addition, Dr. Zippel dedicated to another focus of work. He wants to ensure that more young people get vaccinated against human papillomaviruses. The idea is that students who have attended the lecture will be more aware of the problem of HP virus infection (Goetsch, 2020).

Dr. Stefan Zippel received the Bavarian Health and Care Medal in 2014 and the medal "Munich shines – To the friends of Munich" in silver in 2019 for his activities with us.

The counseling center has an enormous level of awareness at state agencies and institutions, in the press, maintains networks with the Bavarian State Ministry for Education and Culture, various health offices, district offices, social services, NGOs and consequently has an incredible media reach in professional circles and in the school system.

Selected references

1. DAIG - Deutsche AIDS-Gesellschaft e.V. „PRESSEMITTEILUNG DER DAIG ZUM WELT-AIDS-TAG 2022". Hamburg, 28.11.2022

2. Monika Goetsch, Artikel „Kämpfer gegen Ausgrenzung und Stigmatisierung". IN: Open Access LMU 31.7.2020

Education of school students on STI and prevention in the Department

11 28th Continuous medical education meeting for practical dermatology and venerology / FOBI 2022

The Munich Advanced Training Week or Continuous Medical Education Meeting for Practical Dermatology and Venerology is a 71-year-old success story. Since its founding by Professor Alfred Marchionini in 1951, the German-language conference is organized by the Department of Dermatology of the Ludwig Maximilian University Munich and is recognized as a leading conference in German-speaking countries within Europe. With the aspect of practical relevance at the forefront, the FOBI continuous medical education meeting presents established and new knowledge covering the fields of dermatology, allergology, cutaneous surgery and aesthetic dermatology.

Currently organized every 2-years in July, the 28th Continuous Medical Education Meeting for Practical Dermatology and Venerology presided by Professor French took place in a post-Covid live format from July 12-16, 2022,

Workshops, courses, and plenary lectures: the backbone of the Munich Advanced Training Week

Plenary lectures by Professors A. Hauschild (left), K. Reich (middle), S. Grabbe (right) of the Munich Advanced Training Week

at the Munich Congress Center and was a true dermatological highlight that year in Germany.

The scientific program of the training week is based on the proven successful structure comprising exceptional clinical case presentations and thematic plenary lectures in the morning and early afternoon, followed by sponsored symposia and parallel practical hands-on workshops and courses in the later afternoon.

To round up this offer up, the last day offers a half-day "What's new" session with focused 20-minute plenary lectures highlighting new developments of clinical relevance on the following topics: new clinical presentations of disease, inflammatory skin diseases, cutaneous oncology, dermatological infectious diseases, cutaneous surgery, pediatric dermatology, and new topical and systemic therapies.

New in the 2022 Edition was the launch of the first Braun-Falco Memorial Lecture to mark the 100th birthday of Prof. Dr. med. Dr. h.c. mult. Otto Braun-Falco (Born 25. April 1922 in Saarbrücken; † 9. April 2018 in Munich).

Professor Braun-Falco was a giant of our specialty who headed the Department of Dermatology and Allergy at the Ludwig Maximilian University Hospital from 1967 to 1990 and contributed to the early successful development of the Munich Advanced Training Week amongst

Award Ceremony - 1st Prof. O. Braun-Falco Memorial Lecture given by Prof. T. Bieber (Awardee-center), Prof. M. Braun-Falco (left), Prof L. E. French (right)


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others. Professor Thomas Bieber, one of the exceptional trainees of Prof. Braun-Falco, was selected to be the first speaker in this honorary memorial lecture series. He gave an outstanding lecture entitled „Atopic Eczema - Yesterday, Today, Tomorrow".

Attendance during the 2022 edition of the Munich Advanced Training Week was excellent, reaching a total of 3,403 participants!

Sold out Plenary lecture hall - FOBI 2022
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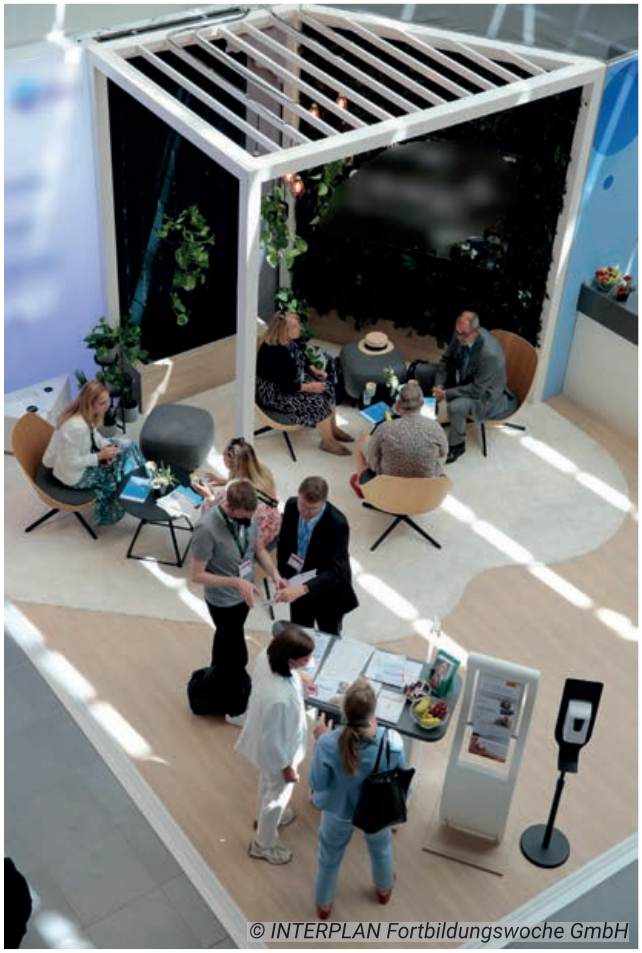
I am very grateful to the Scientific Program Committee, our PCO Interplan (www.interplan.de), and our speakers who have worked so hard to make FOBI 2022 a high-quality live event at the International Congress Center Munich (ICM). We look forward to the FOBI 2024 (July 8-13) which is in the making.

Scientific Program Committee
Prof. Dr. Lars E. French
Prof. Dr. Lucie Heinzerling
Prof. Dr. Hans Wolff
Prof. Dr. Daniela Hartmann
Prof. Dr. Markus Reinholz
Prof. Dr. Josef Pilz

FOBI 2022 in numbers
3,403 participants
246 speakers (scientific program)
52 courses & workshops
62 seminars & symposia
114 exhibitors and sponsors
16 exceptional clinical case presentations
10 thematic plenary sessions with 44 plenary lectures
52 workshops and courses
62 seminars and symposia



12 Congresses / Scientific meetings

Lecture by Prof. G. Stingl at the spring meeting of the Munich Dermatological Society (MDG)

In the years 2021 and 2022 our Department organized and co-organized several other successful scientific meetings, seminars and events. Due to the pandemic these took place in hybrid format or even only online. Most importantly, we would like to shed a light on the high quality seminars. Listed below are the most memorable ones, including:

Quarterly CME seminar series on Inflammatory skin diseases („Entzündliche Dermatosen") including public Information events, education for medical professionals as well as quarterly CME events were established at our Department with great success, and have been organized in cooperation with our senior physicians and our residents.

A meeting on Atopic Eczema Management ("Management der Neurodermitis in Klinik und Praxis") was organized by Prof. Andreas Wollenberg (22.09.2021).

A virtual meeting on applied allergology (Symposium „Angewandte Allergologie" des Allergiezentrums der LMU) was organized by Dr. Eva Oppel (16.02.2022). This cooperation has been rewarded with great success due to its development within the LMU clinic.

The spring meeting of the Munich Dermatological Society in honor of Prof. Dr. Dr. h.c. Otto Braun-Falco's 100th birthday was held at our Department and co-organized by Prof. Dr. Markus Braun-Falco (27.4.2022) as well as the autumn meeting of the Munich Dermatological Society in honor of Prof. Dr. Reinhard Breit held at our Department and co-organized by Prof. Dr. Wilhelm Stolz (26.10.2022).

Two 2-day Laser certification courses, held on the 15. - 16.10.2021 and 21. – 22.10.2022 organized by Prof. Dr. Daniela Hartmann, Ph.D., and our laser team, consisted of practical demonstrations of various laser treatments, as well as numerous plenary lectures. The hybrid variant of the course (partly presence, partly virtual form due to the COVID-19 pandemic) proved to be a successful follower of the previous Laser certification courses held in 2019 and 2020.

In May 2022, 30 superb clinical dermatologists of the North American Clinical Dermatologic Society (NACDS) who enjoy traveling to different countries, came to visit our department. Presentations of interesting patients as well as our clinical research took place in a morning meeting.

Prof. French opening the spring meeting of the Munich Dermatological Society (MDG) in honour of Prof. Otto Braun-Falco's 100th birthday

Several dermatooncological meetings organized by Prof. Lucie Heinzerling were held in 2021 and 2022 in our department:

2021:

- Brain metastasis in melanoma („Meningeosis melanomatosa und Hirnmetastasierung bei Melanom") (27.04.2021)

2022:

- Local therapy on metastasis („Lokale Metastasentherapie – Welche Möglichkeiten gibt es und wann geht was?") (05.04.2022)
- "Update Dermatoonkologie" (20.10.2022 – 21.10.2022)
- „Vortrag historische Mikroskope und Bilderwelten" (29.10.2022)
- The meeting on „News on therapy of skincancer" (Neues zur Therapie von Hauttumoren) (30.11.2022)
- The meeting on BPDCN interdisciplinary (23. 03. 2022)
- Side-effects of Immune-Oncology (IO-Nebenwirkungen)

Our residents are actively taking part in organization of educational meetings and trainings. As an example, two of such meetings organized by Dr. Dr. Benjamin Clanner-Engelshofen:

- 2021: Virtual interactive training event on „Rezepturgrundlagen in der Dermatologie" (04.2021)
- 2022: Virtual interactive training event on „Phytodermatologie" (02.2022)

Numerous further internal meetings, educational session and events were organized for the coworkers and students from our Department by several senior and junior physicians including interesting case reports and guideline updates, as well as standard operating procedures. Several patient-oriented seminars and courses were held in order to expand patients' disease knowledge and to enhance patients' involvement within the therapeutic efforts.

Visit of the North American Dermatological Society in 2022

13 Focus program “Inflammatory skin diseases”

Team of the Focus program “Inflammatory skin diseases”

The Focus Program «Inflammatory skin diseases» of the Department of Dermatology and Allergy, University Hospital, LMU Munich, has the objective of informing different target groups about inflammatory skin diseases in a constant and professional manner and further educating healthcare professionals in the best possible way. The training of specialists with a focus on inflammatory skin diseases as well as internationally recognized research in the field of severe inflammatory skin diseases at the Department of Dermatology of the LMU University Hospital is also herein promoted as best as possible, allowing patients to benefit as quickly as possible from the latest research findings.

The objectives of Focus Program «Inflammatory skin diseases» are as follows:

a. Promoting awareness of the general public in regard to inflammatory skin diseases, as well as influencing behavioral patterns and raising awareness for underdiagnosed diseases, such as hidradenitis suppurativa, pyoderma gangraenosum and many others.

b. Ongoing education for medical professionals, i.e. physicians (mostly dermatologists, but also general practitioners), medical assistants and nursing staff regarding prevention, diagnosis and treatment of inflammatory skin diseases.

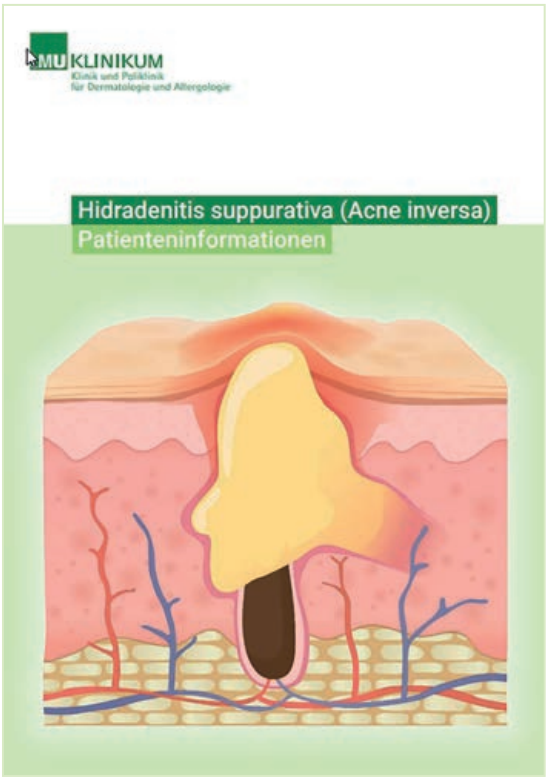
c. Promoting research in the area of inflammatory skin diseases as well as furthering young medical academics in this area at the Department, which will benefit patients in the long run.

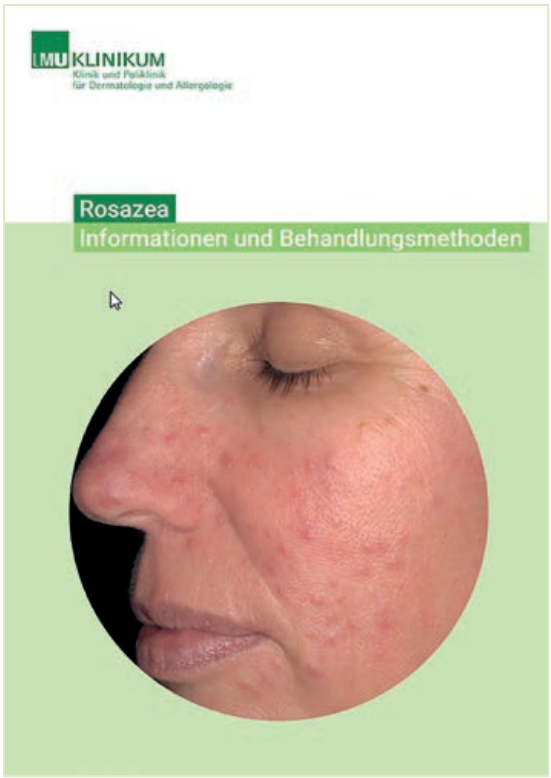
A large group of very motivated senior physicians and residents is actively involved in promoting the focus program under the direction of Prof. Lars E. French.

In past 2 years, following activities were completed:

For the general public

- Production of informational brochures for patients and the public about important diseases including acne, sexually transmitted diseases, laser therapies, urticaria, rosacea
- Public information events on atopic dermatitis, psoriasis, urticaria, vitiligo, lichen planus, hidradenitis suppurativa, hand eczema, pruritus





For healthcare professionals

- 4 CME events per year on hidradenitis suppurativa, systemic therapies of inflammatory skin diseases, autoimmune diseases, inflammatory skin diseases of the scalp, neutrophilic diseases
- Conceptualization and production of an informational pocket booklet for physicians entitled "Use of Immunomodulatory Systemic Therapies in Daily Dermatological Practice" which is updated yearly

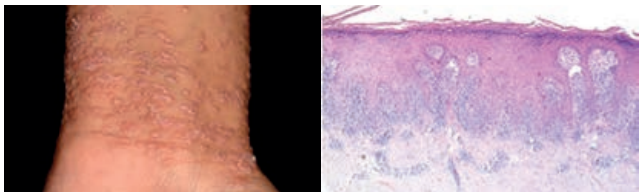
Pocket booklet "Use of immunomodulatory systemic therapies in daily dermatologocal practice" that is only available online for doctors

Biomedical research

The group of physicians involved are also engaged in an ambitious and innovative clinically relevant research project aimed at transcriptionally profiling inflammatory skin diseases with the aim of discovering endotypes of individual inflammatory diseases, identifying molecular classifiers of the individual diseases and discovering novel biomarkers.

Deep phenotyping of inflammatory skin diseases

Inflammatory skin diseases affect almost one-third of the global population and exhibit a broad range of clinical heterogeneity. In fact, over 3000 different types of skin diseases have been identified to date. Accurate diagnosis currently relies on the integration of visual, clinical, and histological features and requires extensive specialized experience. However, diagnostic delay or even misdiagnosis in more complex cases still occurs. Those diagnostic challenges can lead to treatment delay as well as the need for repeated biopsies, thereby increasing patient burden.



The pathomechanisms driving the majority of inflammatory skin diseases are not well studied. Disease specific therapies are available in only a minority of diagnosed cases, while others receive broad immunosuppressive medications such as corticosteroids, causing potential harmful side effects.

Rapid advancements have been made in the field of omics technologies. Integration of molecular and disease-specific tissue signatures has the potential to improve diagnostic accuracy and are increasingly applied for diagnostic purposes and personalized-treatment in medical oncology. Despite these advancements, molecular-based diagnostic procedures have not been applied in the field of inflammatory diseases.

Together with my highly motivated residents and clinical research team, I founded the Inflammatory Dermatoses Research Group in which we apply omic technologies on inflammatory dermatoses in cooperation Prof. Matthias Mann from the Institute of Biochemistry at the Max-Planck-Institute. The department of Prof. Matthias Mann at the Max Planck Institute of Biochemistry is leading the field of mass spectrometry (MS)-based proteomics, and we anticipate that this collaboration will lead to significant progress in further establishing omics technologies in inflammatory diseases.

We are performing multiplexed transcriptomic and high-throughput untargeted MS-based proteomic profiling of tissue samples from all major inflammatory diseases and integrate the outcome with clinical metadata. The goal is to characterize inflammatory skin dermatoses providing disease-specific signatures and novel mechanistic and therapeutic insights.

Inflammatory skin diseases research group members

Prof. Lars E. French, MD

- Eva Oppel, MD
- Christiane Pfeiffer, MD
- Teodora Pumnea, MD
- Pia-Charlotte Stadler, MD
- Takashi Satoh, MD, PhD
- Matthias Neulinger, MD
- Sonja Senner, MD
- Anne-Sophie Böhm, MD
- Surina Frey, MD
- Laurie Eicher, MD
- Mohammed Mitwalli, MD
- Larissa Akçetin, MD
- Nora Aszodi-Pump, MD
- Gabriel Schlager, MD
- Benjamin Kendziora, MD, PhD
- Michaela Maurer, MD

Cooperation:

MAX-PLANCK-INSTITUT FÜR BIOCHEMIE

- Thierry Nordmann, MD, PhD
- Prof. Matthias Mann, PhD

14 Public relations

Public events

Our clinic regularly organizes very well-attended quarterly events for patients, employees in the medical health service and physicians.

The focus is on common clinical pictures and the latest updates on therapy options such as inflammatory dermatoses or diagnoses from the oncological field. In addition, training courses (e.g. atopic eczema) are offered for persons concerned.

Internet / Intranet / Social media / Media relations

The web page of the Department (http://www.klinikum.uni-muenchen.de/Klinik-und-Poliklinik-fuer-Dermatologie-und-Allergologie/de/index.html) provides most up-to-date information to patients and medical staff.

Also social media are supported by information and blogs on www.twitter.com/LMU_Uniklinikum and www.facebook.de/LMU.Klinikum.

On Rare Disease Day this year, the new psychosocial and socio-legal support service of the BesonderHaut counselling centre was presented. This is part of the interdisciplinary centre for rare and genetic skin diseases at the LMU Klinikum München.

The physicians of our clinic are highly appreciated for interviews, articles or videos about dermatological questions and problems (BR-Mediathek, Süddeutsche Zeitung, Münchner Merkur).


Tipps bei Allergien

"Den meisten, auch Allergikern, wird die Impfung nicht schaden"

10. Mai 2021, 7:09 Uhr | Lesezeit: 2 min

© Pressestelle des LMU Klinikums

15 Promotions, grants, honors and awards

Promotions

- Prof. Iris Helfrich was appointed Associate Professor for experimental dermato-oncology at Ludwig Maximilian University in 2022.
- Priv.Doz. Daniela Hartmann was appointed Adjunct Professor for dermatology at Dermatologie 1, München-Klinik on 01.02.2022.
- Priv.Doz. Dr. Markus Reinholz was appointed Adjunct Professor for dermatology at Ludwigs Maximilian University in 2022.
- Dr. Cecilia Dietrich, was appointed consultant (Oberärztin) at Ludwig Maximilian University in 2021.
- Dr. Dirk Tomsitz was appointed consultant (Oberarzt) at Dermatologie 1, München-Klinik in 2021.
- Dr. Marlene Seegräber was appointed consultant (Oberärztin) at Dermatologie 1, München-Klinik in 2022.
- Dr. Theodora Pumnea was appointed consultant (Oberärztin) at Ludwig Maximilian University for inflammatory dermatoses in 2022.
- Dr. Jerome Srour was appointed consultant (Funktionsoberarzt) at Dermatologie 1, München-Klinik for extracorporeal photopheresis in 2022.
- Dr. Anne-Charlotte Kuna was appointed consultant (Funktionsoberärztin) at Dermatologie 1, München-Klinik for the inpatient onboarding center in 2022.
- Dr. Stephanie Steckmeier was appointed consultant (Funktionsoberärztin) at Ludwig Maximilian University for aesthetics, stand-in private outpatient clinic, and polyclinic in 2022.
- PD Dr. Gerd Gauglitz was appointed Adjunct Professor for dermatology in 2022.

Successful Board Certification of residents in Dermatology and Venerology (FHM board exam)

2021:

- Dr. Suzanna Stürmer
- Dr. Martina Kapp (né Zacher)
- Dr. Alexandra Walter
- Jawaher Jastaneyah

2022:

- Dr. Florian Kapp
- Dr. Anne-Charlotte Kuna
- Dr. Jérôme Srour
- Dr. Anne Gürtler
- Dr. Teodora Pumnea
- Dr. Nizar Murshid

Specialization Allergology, Andrology, Medical Tumor Therapy, Proctology, Plastic Surgery, Palliative Medicine or Medical Quality Management

2021:

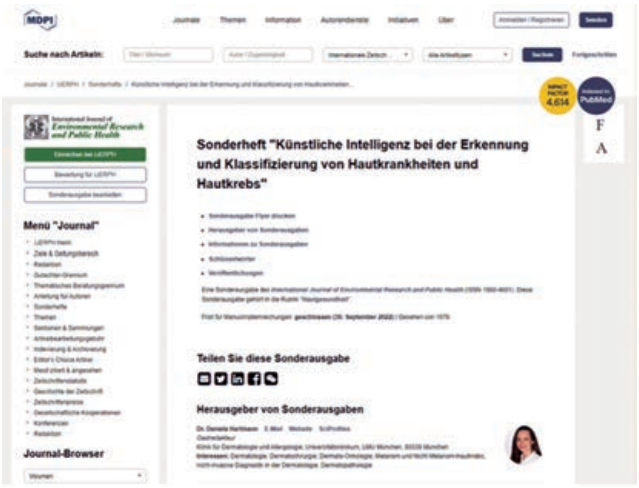
- Dr. Marlene Seegräber
- Priv. Doz. Dr. Markus Reinholz
- Priv. Doz. Dr. Mattis Bertlich

2022:

- Priv. Doz. Dr. Mattis Bertlich

Specialization Micrographic Surgery

Prof. Daniela Hartmann as Certified Micrographic Surgeon of the European Society for Micrographic Surgery (ESMS)



Prof. Daniela Hartmann has been guest editor of the special issue „Artificial Intelligence in the Detection and Classification of Skin Diseases and Skin Cancer", Journal of Environmental Research and Public Health

Grants

The Department of Dermatology and Allergy at the LMU has received grants amounting to more than six million € in 2021 and 2022:

Prof. Lars E. French, MD, Prof. Daniela Hartmann, MD, Ph.D, Sebastian Krammer, MD

- Research grant, Bundesministerium für Gesundheit. Project „Entwicklung von anwendungsbezogenen Analysealgorithmen in den bildgebenden Fachdisziplinen Dermatologie und Radiologie mithilfe von Artificial Intelligence DR-AI" (1.763.668 € of 2.424.745 €)

Prof. Lars E. French

- Research grant, Leo Pharma: Project: "Defining the molecular heterogeneity of-, and the role of IL-1 family members in-, the inflammatory skin diseases hidradenitis suppurativa, acne vulgaris and palmoplantar pustulosis" (703.300€)

Prof. Daniela Hartmann, MD Ph.D.

- Funding amount, Bayerischen Landesamt für Pflege i.R. vom Krankenhauszukunftsgesetz. Project „Virtuelle Derma" (765.000€)

Prof. Lucie Heinzerling, MD, MPH

- Research grant, European Union, Horizon 2020. Project „Oncobiome: GutOnco Microbiome Signatures (GOMS) associated with cancer incidence, prognosis and prediction of treatment response" (847.125,- €)
- Research grant, e: Med, Bundesministerium für Bildung und Forschung. Project „Melautim: Profiling of melano-ma patients and patients with autoimmunity – Systems medicine analysis of melanoma and autoimmunity re- garding in the context of immunotherapy" (541.037,- € of 4.754.671,- € transferred)
- Research grant, Deutsche Krebshilfe. Project "PROMIT: Preconditioning of Tumor, Tumor Microenvironment and the Immune system to Immuno-Therapy" (538.730,- € of 581.775,- € transferred)
- Research grant, Stiftung Immunonkologie, Bristol Myers Squibb/ Therakos (UK) Ltd. Project "SERIO: Side Effect Registry Immuno-On- cology " (160.000,- € of 290.000,- € transferred)

Prof. Katrin Giehl, MD, Leonie Frommherz, MD

- Research grant, FöFoLe+ of the Munich Clinician Scientist Program (MCSP). Project „Genotyp-Phänotyp Korrelationen, Einfluss von Inflammationsparameter/ Mikrobiom und Signalkaskaden für mögliche Therapieansätze bei epidermolytischer Ichthyosis" (126.500€)

Prof. Iris Helfrich, MBc

- German Cancer Foundation DFG, Klinische Forschungsgruppe 337 "PhenoTImE" „Unraveling the plasticity and tumor-promoting role of neutrophils as a function of tumor heterogeneity" (387.840 €)
- Hiege Stiftung – Die Deutsche Hautkrebsstiftung „Einfluss der Tumorzellplastizität auf Etablierung und Therapie von Hirnmetastasen des Malignen Melanoms" –Neue Modelle, Neue Optionen (37.000€)

Prof. Franziska Ruëff, MD

- Grant, European Union, Horizon 2021-22. Project „ImmUniverse: Better control and treatment of immune-mediated diseases by exploring the universe of microenvironment imposed tissue signatures and their correlates in liquid biopsies" (151.634,- € of 15.500.000,- €)

Department Awards

The Department received in 2021 ans 2022 the Focus Magazine Certificate of one of the top Dermatology Departments in Germany:

Honors and awards

- Prof. Daniela Hartmann has received the "German Medical Award 2021 in the category Medical Innovation Award - Practice & Clinic Diagnostic"

Prof. D. Hartmann

- Univ.-Prof. Jörg C. Prinz has received the Translational Research Award 2021 by Novartis for the Project "Autoantigen generation of the HLA-C 0602 mediated autoimmune response against melanocytes in psoriasis is ERAP1-dependent"

- Prof. Lars E. French was invited to give the distinguished DOHI Memorial Lecture of the Japanese Dermatological Association in June 2022.

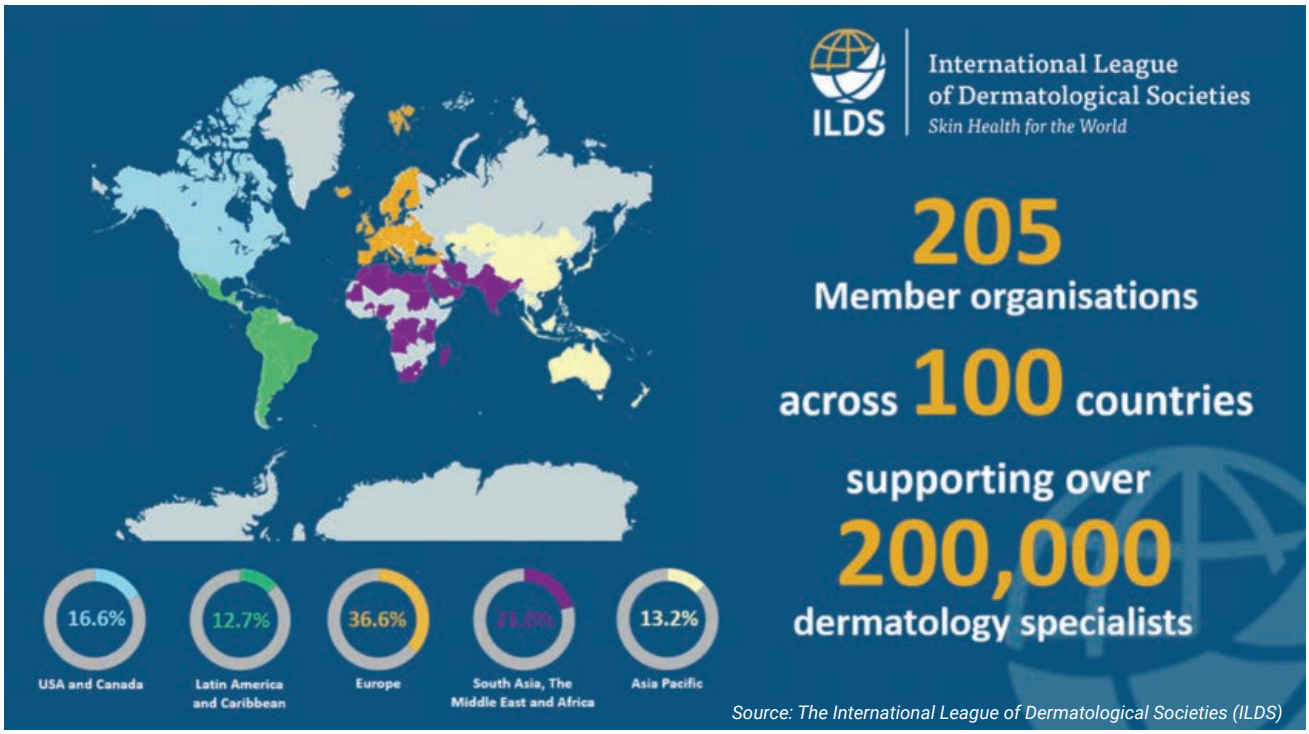
- Prof. Lars E. French has received the International Honorary Membership of the Japanese Dermatology Association 2022 onwards

- Prof. Gerd Plewig has received the Honorary Membership of the French Society of Dermatology

- Prof. Gerd Plewig has received the Braun-Falco-Medal in 2021

Prof. G. Plewig

16 International League of Dermatological Societies (ILDS)



Source: The International League of Dermatological Societies (ILDS)

As President of ILDS (2019-2023), Professor French together with 19 international members of the board of directors have been at the lead of the International League of Dermatological Societies (ILDS) – a unique umbrella organisation for over 200 professional dermatology organisations indirectly representing over 200'000 dermatologists globally.

The ILDS represents dermatology at the highest level through its status as a non-state actor in official relations with the World Health Organization (WHO), championing dermatology and skin health to ensure its inclusion in global health policy.

The **vision** of the ILDS is to attain the best possible skin health for all people around the world which we aim to achieve through our **mission** which is to increase awareness, cooperation and communication within the global dermatology community to promote high quality education, clinical care, research and innovation that will improve skin health globally.

The main fields of action of the ILDS are:

- Organizing the **World Congress of Dermatology** – this is an ILDS flagship event held every four years. Each Congress, hosted by an ILDS Member organisation, brings together dermatology professionals from all over the world to share their experience and learn from the best. The next WCD takes place 3-8 July 2023 in Singapore.
- Raising dermatology issues to the highest level, notably by **working closely with the World Health Organization (WHO)**, national and regional dermatological societies and global patient organizations.
- **Humanitarian work through the International Foundation for Dermatology (IFD)**, an integral part of the ILDS that was created in 1987 to carry out the humanitarian work of the ILDS.
- Organizing the **World Skin Summit**, a meeting that brings the leaders of our Member and Partner organisations together to discuss the challenges they face. The Summit provides an opportunity for leaders to share experiences and develop strategies to improve skin health at local, national, regional and global levels.

The International League of Dermatological Societies (ILDS) Board of Directors 2019-2023

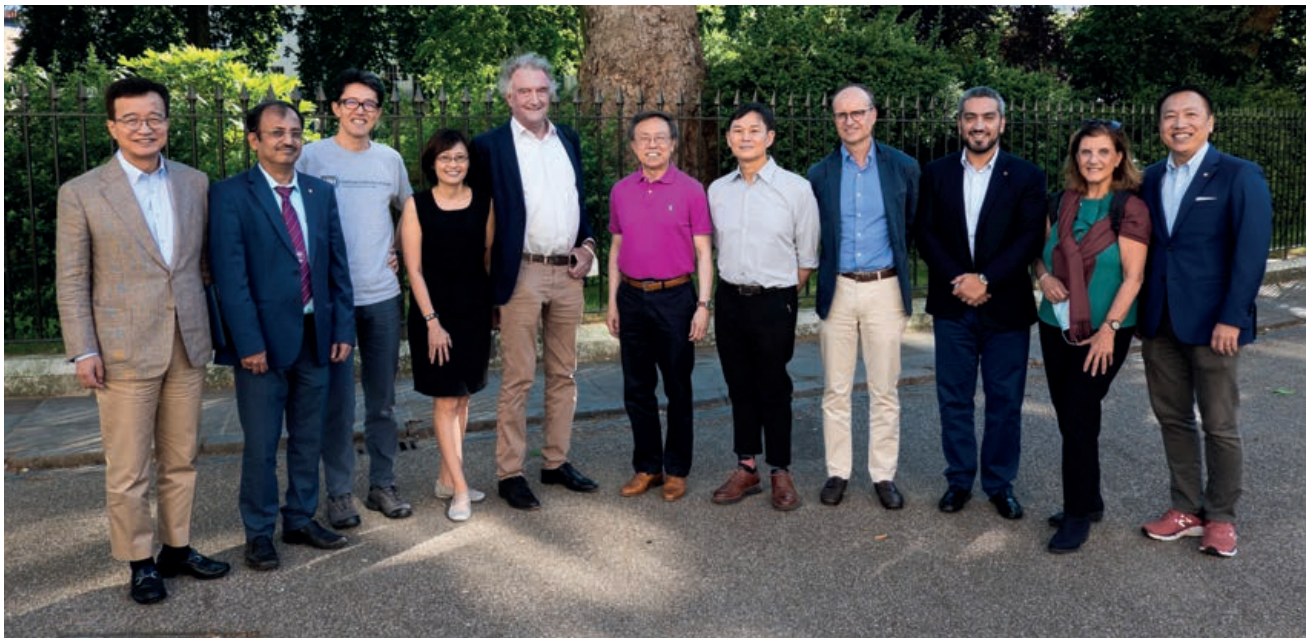
Left to right: Profs. H. Lui (ILDS Past President 2015-2019), L. French (ILDS President 2019-2023), H. Lim (ILDS President elect 2023-2027)

i) World Congress of Dermatology

The 25th World Congress of Dermatology (WCD) will be held in Singapore from the 3 to the 8 of July 2023 comprising distinguished lectures, keynote lectures, controversies and symposia sessions, courses, expert forums, free communication sessions and regional dermatology sessions.

13 Board Members contributed intensively for developing the scientific program for the 2023 World Congress of Dermatology (WCD) including distinguished and keynote speakers, program chairs, co-chairs, speakers and rising stars.

Building on the successes of World Congress of Dermatology (WCD) 2015 in Vancouver and 2019 in Milan, the World Congress of Dermatology 2023 in Singapore (3-8 July) promises to be a very special event. With an outstanding scientific program developed under the leadership of Professors Martin Röcken and Henry Lim together with the hospitality of the Singaporean hosts under the leadership of Prof Roy Chan, ILDS is convinced of contributing an enriching and memorable event.



The ILDS World Congress of Dermatology (2023 Singapore) Scientific Program Committee in London 2022
Left to right: Profs. J. Ho, R. Bhat, K. Kabashima; Y. Loo, M. Röcken (Chair), H. Lim (Vice-Chair), R. Chan, L. French, H. Galadari; M. Larralde; H. Lui / Photo source: The International League of Dermatological Societies (ILDS)

Onsite meeting of the ILDS WHO Committee with our WHO partners at the WHO Headquarters in Geneva, Switzerland
Left to right: Profs. S. M. John, C. Fuller, A. Taieb, L. French, M. Murdoch, C. Flohr, C. Griffiths, E. Freeman, R. Hay
Photo source: The International League of Dermatological Societies (ILDS)

ii) ILDS's non-state actor status in official relations with WHO

The WHO Executive Board admitted the International League of Dermatological Societies into official relations with WHO, and in this activity, Professor French acts as the focal point responsible for the collaboration with the WHO. The objective of WHO's collaboration with non-State actors is to promote the policies and strategies derived from the decisions of the governing bodies of WHO. The agreed activities are intended to contribute to the outcome targets in WHO General Programme of Work for the period 2019-2023.

Working closely with the World Health organization (WHO), seven key areas have been targeting that include but aren't limited to International Classification of Diseases, Essential medicines, and the Dermatology COVID-19, Monkeypox (mpox), and Emerging Infections Registry.

ILDS committee WHO meeting at the WHO
Left to right: Profs. C. Fuller, L. French, C. Griffiths
Photo source: The International League of Dermatological Societies (ILDS)

iii) The International Foundation for Dermatology

The ILDS Regional Dermatology Training Centre (RDTC) in Moshi, Tanzania

Drawing on the expertise of ILDS Members, Partners and networks, the International Foundation for Dermatology (IFD) aims to improve skin health and reduce skin health inequalities in low-resource areas through dermatological education and training, global health partnerships and the influencing of policy. The GLODERM program, aimed at building connections between dermatologists, trainees, and healthcare professionals around the world, is already enjoying great success with its first cohort of mentors and mentees. The IFD hosted the first global migrant skin health summit in Malta in 2022 to develop dermatological solutions for the skin health needs of migrants, displaced people and refugees. The Regional Dermatology Training Centre in Tanzania has an inpatient dermatology ward and provides training programs, which have already benefited 300 graduates from 17 countries.

iv) The World Skin Summit

In October 2022, the ILDS held a very successful World Skin Summit in Lima, Peru. The ILDS presided by Prof French welcomed 119 delegates from 47 member societies. In partnership with its member societies, patient organisations and corporate partners, future developments planned at the summit will help ILDS to lead the dialogue focused on improving care for patients around the world.

Based on it's truly global set-up and outstanding dedication, the ILDS has been recognized for its Global Health Policy (GHP) ever since being founded in 1935. By providing leadership and support through global initiatives, projects and policies to help people affected by skin disease, the ILDS and under the leadership of its President Prof French is proud of the contributions made to date as a charitable organization aiming to improve skin health globally (see more under www.ilds.org, https://www.ilds.org/news-events/news/prof-lars-frenchs-presidency-lookback/).

Prof. L. French wrapping up the results of working groups at the ILDS World Skin Summit, Peru 2022
Photo source of all pictures in this page: The International League of Dermatological Societies (ILDS)

17 Partners, collaboration with industry, fundraising

A whole series of clinical studies are carried out in our Department, which continuously expand and supplement the treatment options for our patients. The number of studies shows the trust that the research-based pharmaceutical industry has in us. Some of the research projects conducted at our clinic are supported by public funds. The support of government funding is an important pillar for university hospitals to be able to carry out such projects. Without this support, especially rarer diseases could not be researched on a high scientific basis. Therefore, we would like to express our great gratitude to our cooperation and support partners from science and industry and thank them for their trustful cooperation.

Focus program „inflammatory skin diseases“

- AbbVie Deutschland GmbH & Co KG
- Almirall Hermal GmbH
- Amgen GmbH
- Janssen-Cilag GmbH
- Lilly Deutschland GmbH
- Novartis Pharma GmbH
- Pfizer Pharma GmbH
- Sanofi-Aventis Deutschland GmbH
- UCB Pharma GmbH

Other corporate partners

- ALK Abelló A/S
- Amgen GmbH
- AstraZeneca GmbH
- Beiersdorf AG
- Bencard Allergie GmbH
- Biofrontera AG
- Bristol-Myers Squibb GmbH & Co. KGaA
- Celgene GmbH
- Dermapharm AG
- Euroimmun Medizinische Labordiagnostika AG
- Galderma Laboratorium GmbH
- GlaxoSmithKline GmbH & Co. KG
- HAL Allergy GmbH
- Hans Karrer GmbH
- Kyowa Kirin GmbH
- LEO Pharma GmbH
- Lilly Deutschland GmbH
- MSD Sharp & Dohme GmbH
- Mylan Pharma GmbH
- Nestlé Nutrition GmbH
- Nutricia GmbH
- L'Oréal Deutschland GmbH
- P&M Cosmetics GmbH & Co. KG
- PellePharm
- Pfizer Pharma GmbH
- Dr. Pfleger Arzneimittel GmbH
- Pierre-Fabre Pharma GmbH
- La Roche Posay
- Sanofi-Aventis Deutschland GmbH
- Sun Pharmaceuticals Germany GmbH
- Takeda Pharma Vertrieb GmbH & Co. KG
- Texamed GmbH
- Thermo Fisher Scientific
- Töpfer GmbH
- Ultrasun

18 Publications of the Department (2019 and 2020)

» Abeck F, Hansen I, Wiesenhütter I, Brookman-May SD, Sharaf K, Kött J, Bertlich M, Schneider SW, von Büren J. A Rejected Hypothesis: Phenomenon of High Treatment Adherence in Direct-to-Consumer Teledermatology Despite Lack of Direct Physician-Patient Interaction. Telemed J E Health 2022

» Agaimy A, Stoehr R, Hornung A, Popp J, Erdmann M, Heinzerling L, Hartmann A. Dedifferentiated and Undifferentiated Melanomas: Report of 35 New Cases With Literature Review and Proposal of Diagnostic Criteria. Am J Surg Pathol 2021;45: 240-254

» Alelq NA, Kubieniec ME, French LE, Prinz JC. Influence of Covid-19 vaccination on immune-mediated skin diseases. J Eur Acad Dermatol Venereol 2022;36:e965-e968

» Alsenaid A, Ezmerli M, Srour J, Heppt M, Illigens BM, Prinz JC. Biologics and small molecules in patients with scalp psoriasis: a systematic review. J Dermatolog Treat 2022;33:473-482

» Amweg A, Tusup M, Cheng P, Picardi E, Dummer R, Levesque MP, French LE, Guenova E, Läuchli S, Kundig T, Mellett M, Pascolo S. The A to I editing landscape in melanoma and its relation to clinical outcome.RNA Biol 2022;19:996-1006

» Antunes-Duarte S, Marcos-Pinto A, French LE, Kutzner H, Soares-de-Almeida L. NLRP12 and IL36RN mutations in a Portuguese woman with autoinflammatory syndrome. JAAD Case Rep 2022;26:91-94

» Arakawa A, Kambe N, Nishikomori R, Tanabe A, Ueda M, Nishigori C, Miyachi Y, Kanazawa N. NOD2 Mutation-Associated Case with Blau Syndrome Triggered by BCG Vaccination. Children (Basel) 2021;8

» Arakawa A, Reeves E, Vollmer S, Arakawa Y, He M, Galinski A, Stöhr J, Dornmair K, James E, Prinz JC . ERAP1 Controls the Autoimmune Response against Melanocytes in Psoriasis by Generating the Melanocyte Autoantigen and Regulating Its Amount for HLA-C*06:02 Presentation. J Immunol 2021;207:2235-2244

» Arteaga-Henríquez M, Frommherz L, Fischer J, Has C. Autosomal recessive congenital ichthyoses (ARCI) in a „bathing-suit“ distribution: progression over time. Int J Dermatol 2021;60:e296-e297

» Bağcı IS, Aoki R, Vladimirova G, Ergün E, Ruzicka T, Sárdy M, French LE, Hartmann D. New-generation diagnostics in inflammatory skin diseases: Immunofluorescence and histopathological assessment using ex vivo confocal laser scanning microscopy in cutaneous lupus erythematosus. Exp Dermatol 2021;30:684-690

» Bağcı IS, Aoki R, Vladimirova G, Sárdy M, Ruzicka T, French LE, Hartmann D. Simultaneous immunofluorescence and histology in pemphigus vulgaris using ex vivo confocal laser scanning microscopy. J Biophotonics 2021;14

» Barbarot S, Wollenberg A, Silverberg JI, Deleuran M, Pellacani G, Armario-Hita JC, Chen Z, Shumel B, Eckert L, Gadkari A, Lu Y, Rossi AB. Dupilumab provides rapid and sustained improvement in SCORAD outcomes in adults with moderate-to-severe atopic dermatitis: combined results of four randomized phase 3 trials. J Dermatolog Treat 2022;33:266-277

» Belheouane M, Hermes BM, Van Beek N, Benoit S, Bernard P, Drenovska K, Gerdes S, Gläser R, Goebeler M, Günther C, von Georg A, Hammers CM, Holtsche MM, Homey B, Horváth ON, Hübner F, Linnemann B, Joly P, Márton D, Patsatsi A, Pföhler C, Sárdy M, Huilaja L, Vassileva S, Zillikens D, Ibrahim S, Sadik CD, Schmidt E, Baines JF. Characterization of the skin microbiota in bullous pemphigoid patients and controls reveals novel microbial indicators of disease. J Adv Res 2022

» Ben Khaled N, Piseddu I, Boehmer DFR, Zierold S, Heinzerling L, Mayerle J, De Toni EN. Checkpoint inhibition in cancer. Onkologe 2021;27:1075-1084

» Bertlich M, Freytag S, Dombrowski T, Jurmeister P, Spiegel JL, Bertlich I, Ihler F, Weiss BG, Haubner F, Gröger M. Subgroups in the treatment of nasal polyposis with dupilumab: A retrospective study. Medicine (Baltimore) 2022;101

» Bertlich M, Ihler F, Bertlich I, Weiss BG, Gröger M, Haubner F. Management of chronic rhinosinusitis with nasal polyps in Samter triad by low-dose ASA desensitization or dupilumab. Medicine (Baltimore) 2021;100

» Bertlich M, Ihler F, Bertlich M, Jakob M, Canis M, Haubner F. Nasal Septal Perforation Closure by „Sandwich Grafts“: Technique, Initial Results. Facial Plast Surg 2022;38 .504-508

» Bertlich M, Ihler F, Sommerlath Sohns JM, Canis M, Weiss BG. From the Bottlecap to the Bottleneck: Frequent Esophageal Impaction of Bottlecaps Among Young Males in a Small University Town. Dysphagia 2022;37:192-197

» Bertlich M, Ihler F, Spiegel JL, Canis M, Weiss BG. Intratympanal administration of lidocaine in the management of Ménière's Disease. Acta Otolaryngol 2021;141:209-215

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» Bertlich M, Kashani F, Weiss BG, Wiebringhaus R, Ihler F, Freytag S, Gires O, Kühnel T, Haubner F. Safety and Efficacy of Blue Light Laser Treatment in Hereditary Hemorrhagic Telangiectasia. Lasers Surg Med 2021;53:309-315

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» Bertlich M, Stihl C, Lüsebrink E, Hellmuth JC, Scherer C, Freytag S, Spiegel JL, Stoycheva I, Canis M, Weiss BG, Ihler F, Haubner F. The course of subjective and objective chemosensory dysfunction in hospitalized patients with COVID-19: a

6-month follow-up. Eur Arch Otorhinolaryngol 2021;278:4855-4861

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