



Department of Dermatology Biennial Report 2019 / 2020

Imprint

Project lead:

Prof. Lars E. French, MD
Susanne Rikl, DPhil

Contact:

Susanne.Rikl@med.uni-muenchen.de

Layout:

Interplan Congress Management – J. Karlstetter

Cover photo:

LMU Klinikum - S. Hartmann

Photos inside part:

C. Jakobec, C. M. Lingner, D. Lingk

Print:

Flyeralarm

Circulation:

300 copies

Copyright:

Department of Dermatology
LMU Klinikum München

Contents

	Foreword	04
1	Assignment	06
2	Mission statement	07
3	Team	08
4	Patient care and laboratories	11
5	Three divisions of the Department in focus	15
	A. Nursing care	15
	B. Laboratories: diagnostic laboratories, dermatopathology & research laboratories	16
	C. Allergology division	17
6	Research	18
	A. Three research groups in focus	20
	B. Research groups in overview	26
7	Clinical research: Department of Dermatology, clinical trials unit	41
8	Medical education and training	42
	Guest speakers	43
9	Congresses / scientific meetings	46
10	Focus program “inflammatory skin diseases”	49
11	Public relations	50
12	Promotions, grants, honors and awards	51
13	Partners, sponsors, collaboration with industry, fundraising	53
14	Publications of the Department (2019 and 2020)	54

Foreword

I am pleased, in the name of the entire Team of our Department of Dermatology and Allergology at the Ludwig Maximilian University (www.klinikum.uni-muenchen.de) and the Dermatology Department 1 of the Munich Municipal Hospital Group (www.muenchen-klinik.de), to share with you our first biennial report since my nomination as Chairman, covering the years 2019 and 2020.

It gives me great pleasure to look back over these two years and review the significant accomplishments of our Department, faculty and staff.

The years 2019 and 2020 were times of significant reorganisation and change in the Department, following the retirement in October 2018 of former Chairman Prof. Thomas Ruzicka, and my nomination as new Chair in November 2018. Modernization, organisational changes, digitalization, promotion of young talents and strengthening of our research were set as priorities, in order to be well prepared for future challenges in the medical field and contribute more strongly to high quality patient care and innovation. The staff of our Department has been wonderful and greatly contributed to important improvements in the organisational structure and our clinical services during the past two years. These include the implementation of a new «organigram» composed of distinct clinical divisions «Bereiche» with clear-cut leadership, responsibilities and development plans in the hands of senior faculty members of the Department.

Our Department is devoted to providing sustained leadership in education, patient care, and research in the fields of dermatology, venerology and allergology.

Our faculty and staff have a strong **educational** commitment to medical students within the LMU-University Medical Curriculum Munich (MeCuM) program, to residents in dermatology training, and to post-graduate teaching for established specialists in Dermatology and Allergology as well as international visiting fellows. Under the direction of PD Dr. Markus Reinholz, and within the Dermatology track of the MeCuM program, 42 faculty members and external private physicians or colleagues provide pregraduate dermatology training to up to 1000 students yearly in the 2nd, 3rd, 4th, 5th and 6th year of medical education. We also host up to 600 medical students per year for their bedside teaching in dermatology and up to 40 medical students for 1 – 4 months of practical training in the Department. 38 residents are currently performing their 5 years of specialised dermatology and allergology training in our clinic, and a large proportion of these exceptional residents also actively engage in translational or clinical research projects. In 2019 and 2020 15 CME events occurred within the Department, alongside a unique and successful online – given COVID-19 - 27th Training Week for Practical Dermatology and Venerology (FOBI) with over 2500 participants in July 2020 (www.fortbildungswoche.de).

Patient care in our Department is organized such that ambulatory care and diagnostic laboratories lie under the responsibility of the Bavarian state-owned Department of Dermatology and Allergology at the Ludwig Maximilian University Hospital in a building located on the Frauenlobstrasse 9-11 in downtown Munich, whereas inpatient care and daycare lies under the responsibility of the city-owned Munich Clinic located in a linked adjacent building on Thalkirchner Strasse 48. Our ambulatory care with a walk-in clinic and a large panel of specialized clinics currently counts 88'000 patient-contacts per year (stats 2019, + 3.5% over 2018), whereas our 110-bed inpatient clinic manages 4700 patients with complex clinical problems per year (stats 2019, + 6.7% over 2018), and our day-clinic provides 10'200 patient-days of care yearly (stats 2019, + 15.3% over 2018).



*Prof. Lars E. French, MD, Chairman,
Department of Dermatology and
Allergology at the Ludwig Maximilian
University Hospital + MMHG
Dermatology 1*


The two main **research focuses** of our Department are dermato-oncology and immuno-dermatology including allergology. In experimental as well as clinical research 2019 and 2020 were quite successful given the relatively low number of research groups in the Department. This will fortunately change given the recruitment of three new professors to the Department in the fields of immuno-dermatology, experimental dermato-oncology and dermato-oncology, the latter of which was attributed to Prof. Lucie Heinzerling who as an internationally recognized clinician-scientist became the Director of our Skin Cancer Center on November 1st 2020.

The productive and innovative character of the research produced by our research team is illustrated by 142 publications in 2020 (stats 2020, + 27% over 2018), and the significant rise in the Department's cumulative impact factor from 431 in 2018 to 585 (+26%) in 2020. Our Department sets a high priority for clinical research too. This is a way to ensure that patients with difficult to treat diseases may receive the best level of therapy in the future. Currently more than 100 clinical trials are ongoing in the Department mainly in the fields of skin cancer therapy and targeted immunomodulation for severe inflammatory skin diseases.

We are very happy and grateful for the continuous support and confidence that our two hospital directions, the faculty of medicine of the Ludwig Maximilian University, referring hospitals and referring physicians provide us with, and will strive to further improve our services and contribution to innovation in Dermatology in the coming years.

I thank you for taking the time to review this report, which documents two years of significant contributions made by our faculty and staff.

In the name of the Department of Dermatology and Allergology at the Ludwig Maximilian University Hospital Munich and the Department of Dermatology 1 of the Munich Municipal Hospital Group I wish you an enjoyable read.



Prof. Lars E. French

1 Assignment

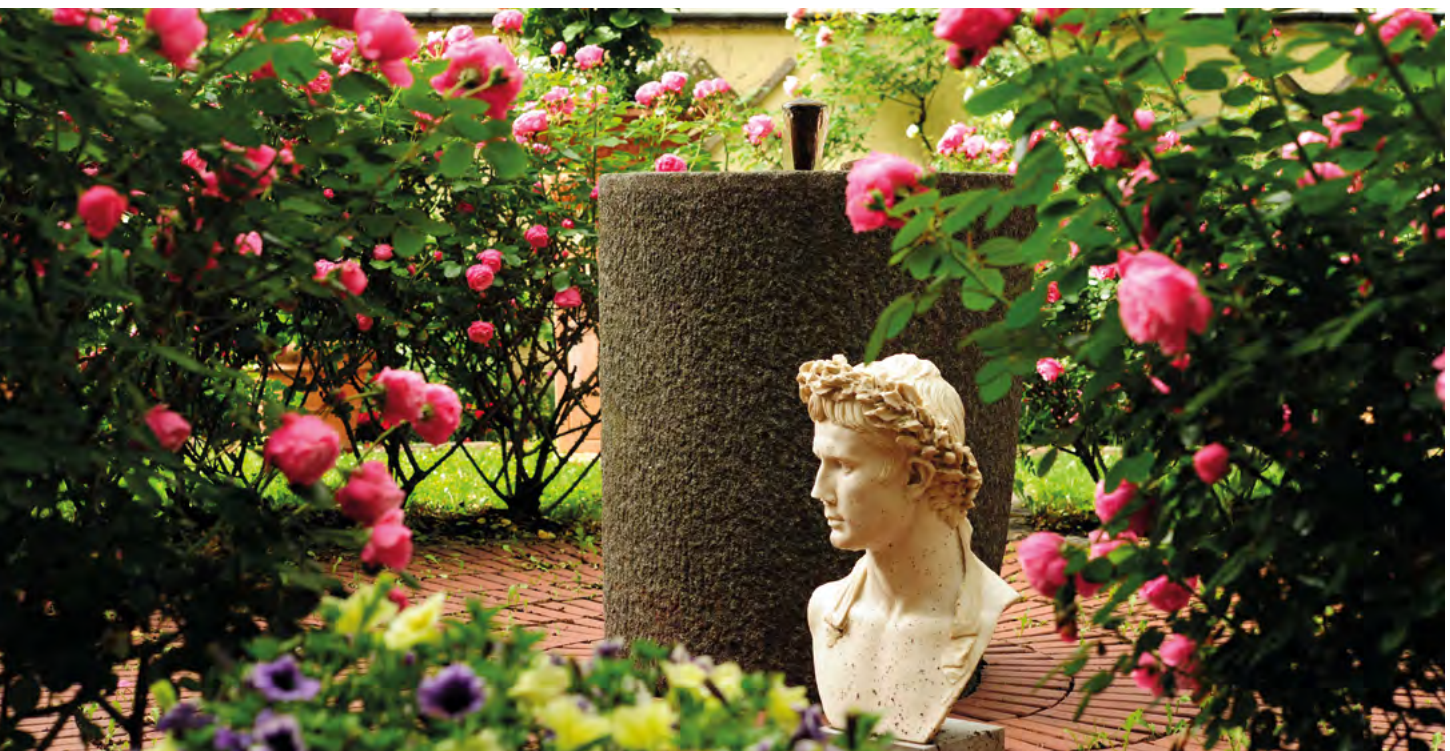
The Department of Dermatology and Allergology at the Ludwig Maximilian University Hospital in collaboration with the Department of Dermatology 1 of the Munich Clinic are devoted to provide sustained leadership in research, patient care and education in the fields of dermatology, venerology and allergology.

Our nationally and internationally recognized Department includes centers of excellence for skin cancer, inflammatory and allergic skin diseases and dermatological surgery. With a team of 19 senior physicians, 38 residents and 127 nursing members (27 at the Ludwig-Maximilians-University, 100 at the Munich Clinic) 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, autoimmune skin disease and hidradenitis suppurativa, acne and rosacea, hair and scalp disease, 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 diagnostic laboratories

for dermatopathology, molecular pathology, allergology, mycology and dermatological immune diagnostics.

Our research activities are focussed 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 Zentrum 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 principle field of activity of our Department. Our pregraduate 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.fortbildungswuche.de) round up a unique post-graduate continuing medical education offer.



2 Mission statement

The top 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 offer high quality individualized diagnosis and therapy of skin disease, as well as patient education in skin care and prevention of skin disease
- to provide a high level of teaching and training in dermatology at the pre- and post-graduate level
- to perform innovative basic and clinical research with the ultimate aim of contributing to improved patient-care
- to foster constructive collaboration and networks with private practitioners as well as primary and secondary institutional care providers

By fulfilling this mission we aim to position our Department among the leading Dermatology Departments in Europe.



3 Team

Physicians



Members of the nursing team



Members of the administrative team



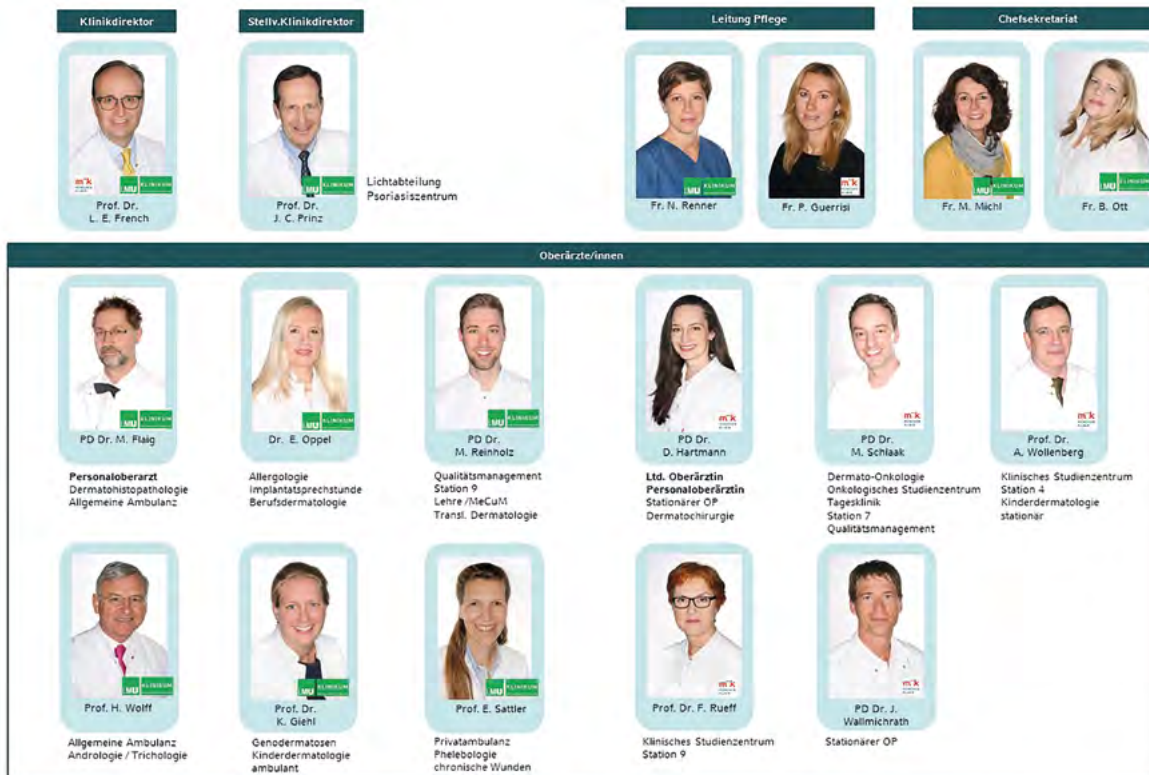
Diagnostic lab team



Secretaries / Administrative assistants



Organization chart management Management 2019



Organization chart management Management 2020



Residents

- Semra Akçetin
- Narjes Alelq
- Marwan Al Hussain
- Nora Aszodi-Pump
- Isin Sinem Bağcı
- Klaus Bauer
- Matthias Betke
- Anne-Sophie Böhm
- Federica Corsi
- Benjamin Clanner-Engelshofen
- Jan Eggen
- Laurie Eicher
- Natalie Evenschor
- Katrina Feichtner
- Zeno Fiocco
- Surina Frey
- Leonie Frommherz
- Janna Garaganova
- Lea Geimer
- Anne Gürtler
- Carolin Haas
- Kinan Hayani
- Markus Heppt
- Jawaher Jastaneyah
- Till Kämmerer
- Florian Kapp
- Benjamin Kendziora
- Nouf Khayat
- Katharina Kilian
- Macarena Pia Gonzalez Knop
- Constanze Krause
- Sebastian Krammer
- Michaela Kubieniec
- Diana Lill
- Sebastian Mastnik
- Mohammed Mitwalli
- Nizar Murshid
- Teresa Müller
- Luana Niculescu
- Anne-Charlotte Niesert
- Ugne Olendraite
- Anna Oschmann
- Rabia Pinarci
- Teodora Pumnea
- Farnaz Rahimi
- Astrid Rasch
- Christoph Rothenberger
- Suzanna Salzer
- Justin Gabriel Schlager
- Pia Schöpf
- Marlene Seegräber
- Sonja Senner
- Jérôme Srouf
- Pia-Charlotte Stadler
- Stephanie Steckmeier
- 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.

We offer a broad range of standard and state-of-the-art treatments including biologics, molecular targeted therapies, immune checkpoint inhibitors, prostaglandins, immunoglobulins, extracorporeal photopheresis, photochemotherapy and hyposensitization procedures. We also provide opportunities for participation in the latest 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 skilled interdisciplinary cooperations. Our expertise, educational offer, research achievements and commitment to patient care have made our team nationally and internationally recognized.

Divisions of the Department



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 outpatient clinic is mostly based on open access schedules to better meet patients' needs. Our general dermatology division functions 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 diagnostics, dermato-oncology, dermato-surgery, pediatric dermatology, phlebology, proctology, trichology, and wound healing.

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 in handling inquiries and clarifications for medical treatments, producing individual cost estimates, invitation letters and translation services.

Allergology

Pursuing the long tradition in allergology of the LMU

Klinikum, our clinic offers individualized diagnosis and treatment for: allergic rhinitis, asthma, contact allergy, food and drug allergy, eosinophil-associated diseases, metal-implant allergy, mastocytosis, urticaria and angioedema, and insect venom allergy. 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 diagnostics (prick- and patch tests, specific IgEs and in-vitro tests such as the basophil activation test and lymphocyte transformation tests), food and drug challenge tests and tailored therapies, including biologics and hyposensitization procedures.



Bullous autoimmune skin diseases and collagenoses

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

Dermato-oncology

Our dermato-oncology division is a reference center in Germany and internationally for melanoma and non-



melanoma skin cancer, performing more than 5600 yearly consultations. 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 check-point inhibitors, molecular targeted therapies, traditional chemotherapies and their side effects.

As a part of the Munich Comprehensive Cancer Center and tumor board, our dermato-oncology reviews and provides individualized and interdisciplinary management also for complex cases. The unit was led by world-renowned experts Prof. C. Berking until 09/19, Prof. M. Schlaak until 11/20 and is now led by Prof. L. Heinzerling, MPH, from 11/20. It includes a study center offering cutting-edge clinical trials.

The cutaneous lymphoma clinic, led by Prof. M. Flaig and Prof. M. Schlaak (until 11/20) in cooperation with Prof. L. Heinzerling, MPH, offers specialized diagnosis, follow-up and treatment for patients with cutaneous T-cell and B-cell lymphomas as well as rare lymphoma entities.

Pediatric dermatology and genodermatosis

Prof. A. Wollenberg, Prof. K. Giehl and their teams 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 nevi 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 division, 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, led by Prof. J. Prinz, a national referral center. The team also provides standardized photoprovocation protocols for photo-

sensitive 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 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, composed by doctors, specialized nurses and specialised psychology consultants (Dr. S. Zippel) sets a special focus on prevention, counselling and education.

Trichology

This division, directed by Prof. H. Wolff, performs approximately 3.800 consultations a year; it offers trichoscopy, trichogram 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 division, headed by PD 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 and reconstructive procedures, including micrographic surgery of basal cell carcinoma, surgery of melanoma with sentinel node biopsies, complex mesh-grafts and flaps, nail surgery, electrochemotherapy, dermabrasion for rhinophyma, sweat glands curettage for hyperhidrosis, blepharoplasty, vacuum therapy and hydrosurgery for chronic wounds, thermo- and laser ablation of refractory anogenital warts. The team, led by PD Dr. D. Hartmann Ph.D., and composed by specialists Dr. M. Betke, Dr. C. Rothenberger, Dr. C. Ruini and residents, also includes a hand and plastic surgeon, PD Dr. J.





Wallmichrath, as well as experienced anaesthesiologists. In our cosmetic and laser dermatology division, patients can count on modern ablative and non-ablative devices for medical and aesthetic conditions (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 division provides a special wound care unit focussing on the multidisciplinary diagnosis and treatment of difficult to treat ulcers and a phlebology unit, performing diagnosis and treatment of venous insufficiency and superficial and deep vein thrombosis.

Inpatient division

Thanks to a solid cooperation with the Dermatology Department 1 of the Munich Municipal Hospital Group (München Klinik Thalkirchnerstrasse), our Department can rely on 110 hospital beds hosting an average of 4.700 inpatients every year. Our highly skilled physicians and dermatology-trained 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 Prof. A. Wollenberg, is well renown for the treatment of

children with severe atopic dermatitis, but its team provides expert care for a broad range of conservative dermatological diseases in children and adults. Dr. L. Engels heads, together with Prof. M. Schlaak, a surgical-oncological ward, open from Monday to Friday according to our slow Mohs surgery routine. It mainly hosts our patients undergoing complex surgical procedures or infusion therapies for skin cancer or autoimmune diseases. Our largest ward is under the direction of Prof. L. French and Dr. L. Engels and it includes 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, hyposensitization to insect venom, chronic wounds and skin cancer.

Our clinic believes in continuity of care. The daycare unit takes care of patients with chronic conditions requiring long-term treatment even after hospital discharge.

It 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 PD Dr. D. Hartmann, Dr. G. Schlager and T. Müller), and an extracorporeal photopheresis unit (headed by Dr. C. Ruini) for cutaneous lymphoma, graft-versus-host disease and autoimmune skin diseases.

5 Three divisions of the Department in focus

A. Nursing care

The nursing team in the dermatology outpatient clinic at the LMU Klinikum

Even at its thickest point, the skin measures only a few millimetres. Nevertheless, it is the heaviest and largest organ of our body, making up about one seventh of our body weight: depending on body size and circumference, it weighs between 3.5 and 10 kg and has a surface area of 1.5 to 2 square metres. This underscores how important the skin is for the whole body and its metabolism.

Our skin is special, and so are the tasks of the nursing staff working in the specialist field of dermatology. Skin diseases are usually associated with psychological stress and physical limitations for the patient. Caring for these patients requires a high level of empathy.

The dermatology outpatient clinic at the LMU Klinikum has a team of 26 qualified nursing staff and medical assistants. Of these, 18 staff members work daily in 8 different specialist outpatient clinics. A rotation system helps the team achieve the required flexibility and meet changing professional tasks.

In a first step, nurses receive introductory training and then work in the „general outpatient department“ where they also treat emergency patients who do not have an appointment. Other tasks include taking blood samples from adults and children, as well as performing wound dressings and therapeutic injections. Caring for emergency patients and patients with infectious diseases, coordinating appointments for further treatment and individual counselling are among the everyday tasks of nurses in this work area. Skin biopsies and minor procedures under local anaesthesia can be performed in the affiliated outpatient operating room.

To meet the increasing professional demands on our nursing staff, we offer not only rotation but also comprehensive training and qualification all the way to specialisation. For example, we employ trained wound managers and mentors who are responsible for the practical training of the nursing students as well as for the professional training of new nursing staff.

The „allergology division“ is the second largest outpatient division of our Department, treating 40 to 50 patients daily. In this unit, patients with anaphylaxis, drug, food and insect venom allergy, allergies, mastocytosis, neurodermatitis, occupational dermatoses, urticaria etc. are treated and cared for. Different types of tests with more than 400 test substances in stock are available. Qualified nursing staff carries out the epicutaneous tests and is familiar with a wide range of test substances. Blood tests, drug tests, hyposensitisation, conjunctival tests and lung function tests are also carried out independently by nursing staff based on medical orders. Professional monitoring and individual counselling of patients on how to deal with allergies in everyday life are as much a part of the daily nursing tasks as the challenging care of patients during venom testing and sensitisation. These tests are carried out using the sting of a live bee or wasp and require special, individualised empathy and care, as extensive medical history testing and hyposensibilisation usually precedes the test.

In the „phlebology unit“ the professional tasks of the nursing staff include supporting diagnostic and therapeutic procedures as well as assisting in minor on-site interventions and outpatient operations. The wound consultation room is open for patients with medically challenging and prolonged wound treatments. Here, the nursing staff works independently when changing dressings and informing patients on how to handle their wound dressings; it also contributes to research studies by using and evaluating the latest versions of wound dressings and compression bandages.

Another special division in our clinic is that for sexually transmitted and genital diseases. Here the focus lies in the prevention, diagnosis and treatment of sexually transmitted infections, as well as of all diseases that can occur in the anogenital region. Since 1987, a special focus has been the care and treatment of patients with HIV/AIDS.

To ensure the best possible treatment, an interdisciplinary network of dermatologists, internists, gynaecologists, neurologists, urologists, psychotherapists and social workers has been established. The nursing staff advises and monitors the therapies with the patients.

This requires a trusting environment and a close relationship between patients and staff to be able to support them for years or decades. A professional focus lies on educating and counselling the patients – on the symptoms and therapy, but also on the prevention of sexually transmitted diseases. If necessary, the staff works closely with the hospital's child protection team in order to inform the network of medical staff and therapists as quickly as possible in the event of suspected child abuse

Finally, our clinic is home to another special outpatient division, the Psoriasis Center. In addition to observing patients during an ongoing UVA and UVB phototherapy, patients also receive professional counselling and expert care. Under the guidance of the nursing staff, patients are instructed to perform biologic injections. In addition, patients are trained and advised on how to deal with their disease and how to integrate it into their daily lives.

Our nursing staff is not only characterised by an exceptionally high level of empathy and professionalism, they are also experts in a specialised medical and nursing field.

The constant challenging work and the good collaboration with other professional groups are motivating factors for us to remain in the profession and to be proud of our achievements.



Nina Renner
Head of Nursing

B. Laboratories: diagnostic laboratories, dermatopathology & research laboratories

Our Department runs several fully equipped laboratories, dedicated to specialized diagnostics in dermatology and allergology, fulfilling all diagnostic needs of modern dermatology.



Our Laboratory of Allergology, led by Dr. med. E. Oppel, provides state-of-the-art assays for modern and individualized allergologic diagnosis and therapy. The broad portfolio includes total and specific IgE including allergen components, mastcell-tryptase, complex in-vitro tests (Basophil-activation-Test and Lymphocyte-transformation-Test) as well as allergen-extract preparations for skin prick-, patch-tests or food- and drug-challenges.

The Laboratory of Dermatopathology, headed by Prof. Dr. med. M.J. Flaig, examines about 30,000 specimens per year. The lab offers state-of-the-art histomorphologic and molecular diagnostics for the entire spectrum of dermatopathology. We use a broad variety of conventional staining procedures on formalin-fixed-paraffin-embedded and frozen tissues tailored to the individual task.

Conventional histopathologic evaluation by H&E and special stains is supplemented by immunohistochemistry and molecular techniques such as PCR as required. PCR and hybridisation techniques allow sensitive and specific analysis and subtyping of a variety of viral and bacterial dermatologic pathogens such as human Herpes-, Papilloma-, Parvo- or Polyomaviruses, mycobacteriaceae, spirochetes, and leishmania. Gene rearrangement studies for B-cell and T-cell allow further characterisation of lymphocytic infiltrates in skin, lymph nodes and peripheral blood, as does mutational analysis for BRAF, NRAS, TERT for malignant melanocytic tumors. We also provide dermatopathologic consultations for referring physicians throughout the country. Direct and indirect immunofluorescence assays for bullous skin diseases, collagenoses and vasculitis are provided by our specialized Laboratory for Dermatologic Autoimmune and Infectious Diseases, overseen by Dr. med. O. Horváth. This lab also provides special expertise for the high-volume diagnosis of mucocutaneous mycoses and STI's using classical cultural methods as well as direct



and bright-field microscopy of pathogens accompanied by modern PCR techniques. The growing need for space and our dedication for rising research activities brought to the continuous expansion of our laboratory space, located on the top and underground floor of the hospital building. They allow experimental studies in the field of allergy and clinical immunology, cutaneous oncology, biochemistry, cell and molecular biology. Our diagnostic and research labs comply with GMP guidelines for patient samples.

C. Allergology division

Allergies have increased continuously over the past decades. Estimates assume a lifetime prevalence of 20 - 30%. The relevance of our work is reflected in the possible severity of allergic symptoms, but also in the dramatic consequences of a restricted quality-of-life as a result of actual or supposedly necessary abstinence-measures.

The mission of our allergology division is to provide optimal patient health by providing compassionate, state-of-the-art diagnostic and therapeutic care of children and adults with allergic diseases. Medical disorders commonly managed by our allergology division are: adverse reactions to food, drugs, and latex, allergic conjunctivitis and rhinitis, anaphylaxis, urticaria, angioedema, contact dermatitis and mastocytosis. Additionally, our center is particularly specialized in the treatment of patients

with hymenoptera-venom-allergies. For the treatment of anaphylactic diseases against hymenoptera we use highly efficient and fast-acting specific immunotherapy regimens. Furthermore, we have special experience in the diagnostic and management of drug-hypersensitivity reactions (e.g. DRESS, Stevens-Johnson syndrome and TEN). All evidence-based diagnostic procedures are offered, taking into account the latest scientific findings and guidelines in the interests of quality-assurance. The range of therapies also includes the latest developments in the pharmaceutical sector, including those that are only being tested in clinical trials and are otherwise not generally available.

Our outpatient division offers various state-of-the-art diagnostic procedures, including:

- skin prick-tests and intradermal testing
- patch tests and photo patch tests
- serological diagnostics (determination of specific antibodies including molecular-based allergy diagnosis)
- cellular tests such as the basophil activation test and the lymphocyte transformation test)

Challenge tests are often indicated to establish a reliable diagnosis. We perform conjunctival, parenteral and oral challenge tests. These tests are performed under emergency conditions and inpatient observation. For therapy, we have various options available depending on the allergic disease. These range from abstinence from the defined triggering allergen, to symptomatic therapy, specific immunotherapy and/or the use of biologics. In rare cases, where therapeutic options lack and abstinence is not possible, tolerance induction is performed. Since allergic diseases often manifest themselves in more than one organ system, the various disciplines treating allergic diseases at LMU Klinikum joined forces to form the interdisciplinary Comprehensive Allergy Center of the LMU.



6 Research

The missions of our university hospital are patient care, teaching and research. These areas are closely interrelated and mutually reinforcing. Our research makes important contributions that have beneficial effects on patient care and medical education.

Our Department is committed to the highest level of research in dermatology. Our achievements in this field – as judged by the cumulative impact factors for the years between 2016 and 2020 (2016:475, 2017:544, 2018:431, 2019:579 and 2020:504) – put us in a competitive international position. Between 2017 and 2020, the number of publications published by members of the Department also increased from 98 (2017) to 142 (2020).

Our research activities focus primarily on basic, patient-oriented translational and clinical research.

It includes projects in:

- i. immunodermatology, in particular innate immunity and T-cell biology in inflammatory skin diseases such as psoriasis, neutrophilic dermatoses, cutaneous adverse drug eruptions including TEN/SJS and immune-related adverse events (irAEs) due to checkpoint inhibitors;
- ii. allergy research focusing on atopic dermatitis and allergic reactions to drugs, foods and other materials;
- iii. dermato-oncology investigating the pathogenesis, early diagnosis supported by innovative non-invasive imaging techniques and targeted treatment of skin cancer, particularly of melanoma, cutaneous lymphoma and non-melanoma skin cancers; and
- iv. autoimmune bullous skin diseases.

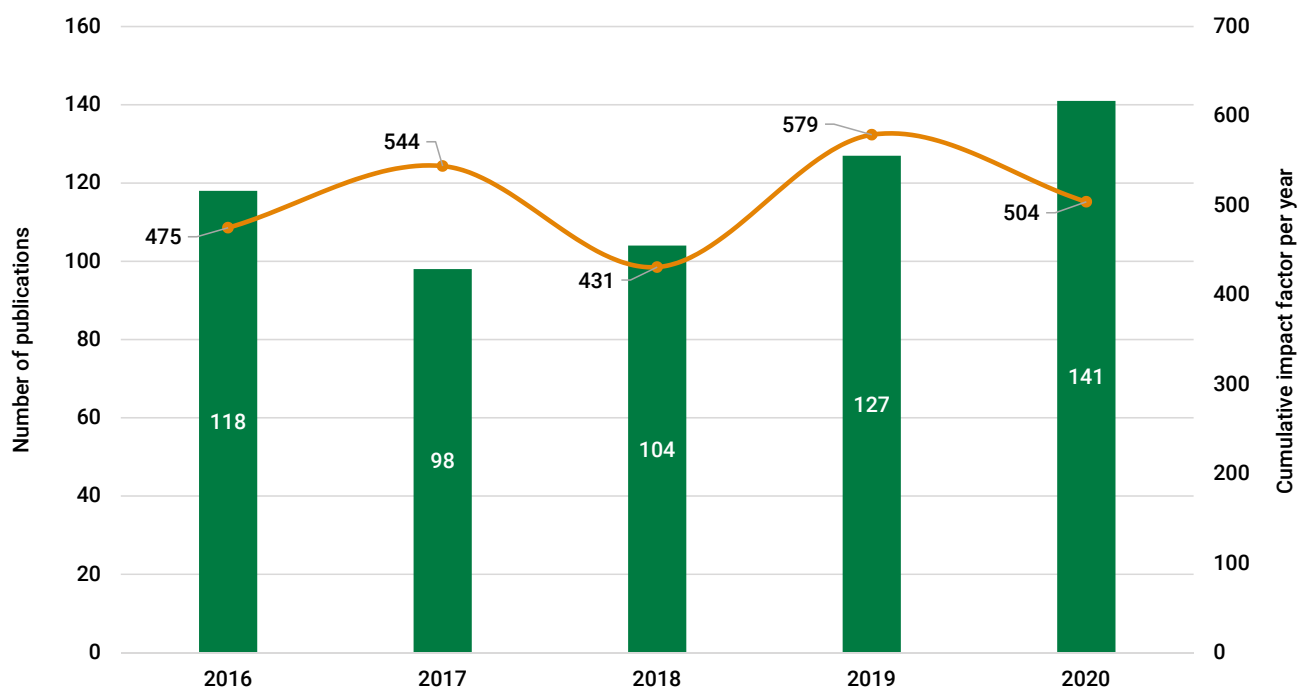


The aim of our research activities is to

- significantly advance the pathophysiological knowledge of dermatological diseases.
- improve the diagnosis and therapy of dermatological diseases.

We try to achieve this through

- investigator-initiated original research projects.
- competitive fund-raising.
- implementation of clinical trials.
- training clinician scientists.
- promoting intensive networking and collaboration with other institutes and Departments internationally and domestically.
- supporting fellowships abroad in excellent research institutions and maximize competitive research funding.



*: The sum of impact factors (2020) was calculated using the impact factors of 2019.

Key figures and highlights

■ Currently more than 100 ongoing clinical trials of new therapeutic approaches in skin disease are performed at our Department. 59 studies are for inflammatory skin diseases (atopic dermatitis, psoriasis, generalized pustulous psoriasis, acne inversa, prurigo nodularis, chronic urticaria, lichen ruber, bullous pemphigoid, pemphigus vulgaris and lamellar ichthyosis) and 45 studies are for skin cancers (melanoma, non-melanoma skin cancers and all tumor entities).

■ External funding for research was 2.3 million € in 2019 and 2.5 million € in 2020.

■ The following five publications give an insight into the broad spectrum of research:

» Ständer S, Yosipovitch G, Legat FJ, Lacour JP, Paul C, Narbutt J, Bieber T, Misery L, Wollenberg A, Reich A, Ahmad F, Piketty C. Trial of Nemolizumab in Moderate-to-Severe Prurigo Nodularis. *N Engl J Med.* 2020 Feb 20;382(8):706-716.

» Menzer C, Menzies AM, Carlino MS, Reijers I, Groen EJ, Eigentler T, de Groot JWB, van der Veldt AAM, Johnson DB, Meiss F, Schlaak M, Schilling B, Westgeest HM, Gutzmer R, Pföhler C, Meier F, Zimmer L, Suijkerbuijk KPM, Haalck T, Thoms KM, Herbschleb K, Leichsenring J, Menzer A, Kopp-Schneider A, Long GV, Kefford R, Enk A, Blank CU, Hassel JC. Targeted Therapy in Advanced Melanoma With Rare BRAF Mutations. *J Clin Oncol.* 2019 Nov 20;37(33):3142-3151.

» Clanner-Engelshofen BM, French LE, Reinholz M. *Corynebacterium kroppenstedtii* subsp. *demodicis* is the endobacterium of *Demodex folliculorum*. *J Eur Acad Dermatol Venereol.* 2020 May;34(5):1043-1049.

» Steeb T, Schlager JG, Kohl C, Ruzicka T, Heppt MV, Berking C. Laser-assisted photodynamic therapy for actinic keratosis: A systematic review and meta-analysis. *J Am Acad Dermatol.* 2019 Apr;80(4):947-956.

» Satoh TK, Mellett M, Meier-Schiesser B, Fenini G, Otsuka A, Beer HD, Rordorf T, Maul JT, Hafner J, Navarini AA, Contassot E, French LE. IL-36γ drives skin toxicity induced by EGFR/MEK inhibition and commensal *Cutibacterium acnes*. *J Clin Invest.* 2020 Mar 2;130(3):1417-1430.

A. Three research groups in focus

In the first biennial report we would like to point out three of the 17 research groups of our Department.

1. Innovative imaging in dermatology

Prof. Elke Sattler, MD

Head of non-invasive imaging in vivo

PD Daniela Hartmann, MD, Ph.D.

Head of innovative imaging ex vivo



Non-invasive imaging devices (from left to right): Optical coherence tomography device (Vivosight, Michelson, UK), reflectance confocal microscope (Vivascope 1500 and 3000, Mavig, Germany), FotoFinder ATBM master (Fotofinder, Germany), linefield-confocal OCT (Prototype, Damae, France)

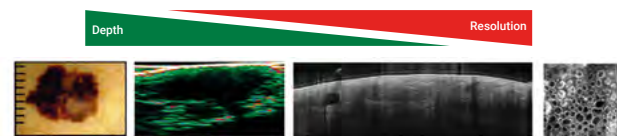
The dream of being able to look into the skin with a high resolution and without having to cut or to hurt the patient is becoming true thanks to the modern imaging techniques. Twenty years ago, as we founded our imaging research group, we had to rely mainly on dermoscopy and sonography of the skin and of the lymph nodes for skin tumor screening and surveillance. Today, new imaging methods like optical coherence tomography (OCT), confocal laser scan microscopy (CLSM), multiphoton tomography (MPT) or at the latest linefield-confocal OCT (LC-OCT) have enabled us to take a look into the skin via „optical biopsies“ with very high resolution without the need of surgery.

These devices have not replaced the older ones, like dermoscopy, but in contrast they have helped - as an addition to clinical and dermoscopic examination - to improve the sensitivity and specificity in skin cancer diagnosis into the high 90%, especially in tricky lesions. They thereby help us to lower the number of unnecessary biopsies or excisions and at the same time speed up diagnosis and the access to the correct treatment.

As the stated imaging techniques differ in crucial parameters like penetration depth and resolution, OCT with a higher penetration depth has found its mainstay in the diagnosis of non-melanoma skin cancer while CLSM has a higher resolution and was originally established for the diagnosis of melanocytic tumors. Yet all of the named imaging methods are not only used for the improvement of early skin cancer diagnosis, but have – in addition – shown their benefit also in a large variety of other indications ranging from parasite infections to inflammatory dermatoses (see representative publications below).

Non invasive imaging in vivo

Dermoscopy * 20MHz Ultrasound * Optical Coherencetomography * in vivo RCM



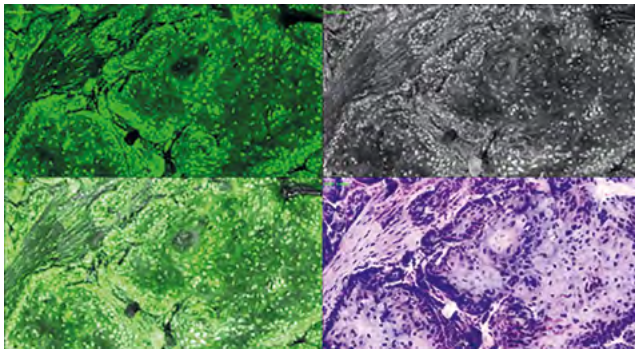
Combination of methods depending on needed resolution and depth

Advantages for doctor and patient

non-invasive view in the upper skin layers in vivo, painless, no surgery, no anaesthesia, no scar, diagnosis "in realtime", up to cellular resolution, combination with non invasive therapies

Next to the non-invasive imaging methods, innovative ex vivo examinations of freshly excised tissue are emerging, like the ex vivo confocal laser scanning microscopy (ex vivo CLSM), a new diagnostic method for ultra rapid microscopic examination of freshly cut or frozen tissue in real time. In contrast to the in vivo CLSM, whose penetration depth is limited, the ex vivo CLSM offers the possibility of examining all skin layers in depth without restriction. Another advantage of the ex vivo CLSM is the possible combination of different fluorescent dyes for tissue staining, which increase the contrast during imaging and even enable the staining of specific structures.

Ex vivo CLSM has been mainly used for the intraoperative assessment of non-melanoma skin cancer, e.g. basal and squamous cell carcinoma. It has also been successfully used for controls of surgical skin margins in microscopically controlled or micrographic surgery. Only a few reports have shown the applicability of the ex vivo CLSM for melanocytic skin tumors, infectious and inflammatory diseases of the skin as well as the applicability of ex vivo CLSM for diseases of the internal organs and for skin appendages such as hair and nails. Recently, successful investigations with specific fluorescence-labeled antibodies of skin tumors, of cutaneous vasculitis, bullous pemphigoid, pemphigus vulgaris and lichen planus have been carried out by our scientific group. This indicates a possible application of ex vivo CLSM as an



Intraoperative ex vivo CLSM examination of squamous cell carcinoma in the fluorescence, reflectance and overlay modes, as well as in digital HE-like staining

alternative method for immunohistochemical and immunofluorescence studies.

In the research group for Innovative Imaging in Dermatology, led by Prof. Elke Sattler (in vivo imaging), PD Dr. Daniela Hartmann, Ph.D., (ex vivo imaging) and Cristel Ruini, MD, as deputy of in vivo imaging, a team of senior and junior residents as well as pre- and post-graduate students work on several clinical and experimental studies using all the above mentioned techniques in order to expand the indication spectra of innovative imaging methods in dermatology, as well as on its broad integration into a daily clinical routine.

Current studies

In the current in vivo studies we are expanding the indications for all the named imaging techniques. One focus lies on the use of LC-OCT – which is combining advantages of OCT and CLSM – in defining typical patterns in keratinocyte skin cancer, melanocytic lesions and inflammatory diseases. We are evaluating the benefits and the diagnostic confidence of the method also in comparison to dermoscopy, OCT and CLSM, as well as histopathology. In cooperation with our interdisciplinary team managing patients with rare diseases, like Birt-Hogg-Dubè syndrome, we apply non-invasive imaging for the depiction and diagnosis of rare skin tumors, e.g. fibrofolliculoma. Imaging techniques also allow us to find pathogenetic relations in inflammatory diseases for example between the presence of demodex mites and inflammation in rosacea patients.

Current ex vivo confocal projects include clinical studies on the newly established digital HE-like staining in the bedside histology of skin tumors and inflammatory dermatoses as well as their correlations to the conven-

tional histopathology. Furthermore, we are testing the possibilities of integrating artificial intelligence into the ex vivo CLSM tumor analysis. This project has been chosen and funded by a national grant on Life, Science and Medicine Techniques. Our experimental studies are now focusing on finding ideal fluorescence staining methods for various kinds of disease entities as well as further development of ex vivo confocal immunofluorescence techniques, firstly described by our group.

Future projects

Future projects will study the improvement of diagnostic confidence of all named imaging methods in skin tumor diagnosis but also in inflammatory and autoimmune diseases as well as in allergic dermatoses and also including the comparison of in vivo and ex vivo imaging with correlation to histopathologic findings. Furthermore we will be evaluating the benefit of adding artificial intelligence into the workflow.

National and international collaborations

Our imaging unit is grateful and proud of several excellent national and international collaborations e.g. with the imaging groups of the University of Augsburg (Prof. Welzel), the Department of Dermatology in Modena (Prof. Pellacani) and several other groups in Germany, Austria, Italy, Denmark and Spain. Furthermore, we plan interdisciplinary ex vivo confocal collaborations, e.g. with the Urology Department of the University of Freiburg and the Maxillo-facial Surgery Department of the University of Heidelberg, in order to broaden the ex vivo CLSM horizons.

International exchange was also the focus of our Advanced Confocal Meeting in January 2020, where nine international world class experts in the field and more than 30 participants from 12 countries took part and led to one of the highlights of the year within the imaging community. Other outstanding research meetings and training courses took place during the meeting of the „Deutsche Dermatologische Gesellschaft“ in May 2019, during the „Fortbildungswoche 2020“ in July, which was held as one of the first virtual meetings in dermatology due to the Covid pandemic, as well as the courses at the „Arbeitsgemeinschaft Dermatologische Onkologie 2020“ in September 2020 added by numerous teaching courses at our Department for experts, practitioners and students alike.

Conclusion

Innovative Imaging is one of the fastest growing fields in dermatology with a large variety of different new promising techniques and a huge and growing set of indications next to skin tumor diagnosis. Further technical development in close cooperation with forward-looking companies and international excellence in research and knowledge exchange will help to improve and enlarge the benefit of innovative imaging for our patients.

Representative publications

Ex vivo imaging

- » Bağcı IS, Aoki R, Krammer S, Ruzicka T, Sárdy M, French LE, Hartmann D. Ex vivo confocal laser scanning microscopy for bullous pemphigoid diagnostics: new era in direct immunofluorescence? J Eur Acad Dermatol Venereol 2019 Nov;33(11):2123-2130
- » Bağcı IS, Aoki R, Krammer S, Ruzicka T, Sárdy M, Hartmann D. Ex vivo confocal laser scanning microscopy: An innovative method for direct immunofluorescence of cutaneous vasculitis. J Biophotonics. 2019 Sep;12(9):e201800425. doi: 10.1002/jbio.201800425. Epub 2019 May 28.
- » Hartmann D, Krammer S, Bachmann MR, Mathemeier L, Ruzicka T, Bagci IS, von Braunmühl T. Ex vivo confocal microscopy features of cutaneous squamous cell carcinoma. J Biophotonics 2018 Apr;11(4):e201700318

In vivo imaging

- » Ruini C, Rahimi F, Fiocco Z, French LE, Hartmann D, Opel E, Sattler E. Optical coherence tomography for patch test grading: A prospective study on its use for noninvasive diagnosis of allergic contact dermatitis. Contact Dermatitis. 2020 Oct 4
- » Holmes J, von Braunmühl T, Berking C, Sattler EC, Ulrich M, Reinhold U, Kurzen H, Dirschka T, Kellner C, Schuh S, Welzel J. Optical coherence tomography of basal cell carcinoma: influence of location, subtype, observer variability and image quality on diagnostic performance. Br J Dermatol 2018 May;178(5):1102-1110

2. Laboratory for immune pathogenesis

Univ.-Prof. Dr. Jörg C. Prinz

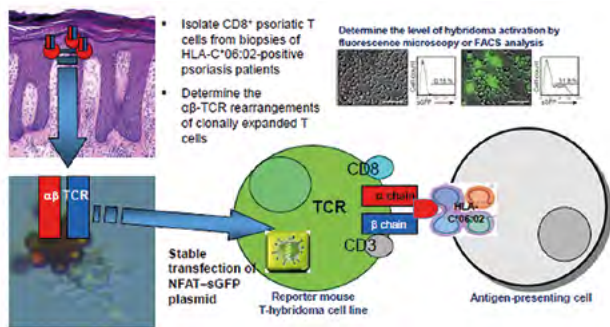
T-cell mediated immune responses play a central pathogenetic role in various inflammatory skin diseases and

in tumor defense. Deciphering the mechanisms of T-cell activation and T-cell specificity are thus of great importance for a deeper understanding of pathogenesis and therapy. A primary experimental approach to this is the analysis of the interplay of T-cell receptors with antigen processing and antigen presentation by HLA molecules. This approach has led to several projects in the group. While the main research focus is the pathogenesis of psoriasis, our work also includes aspects of Behçet's disease and the mechanisms of checkpoint inhibition in the treatment of progressive malignant melanoma. Current grant support: Deutsche Forschungsgemeinschaft, Sachbeihilfe PR 241/5-2 „Pathomechanismen der Induktion und Aufrechterhaltung der Autoimmunantwort bei Psoriasis“.

Melanocytes - target cells of the psoriatic autoimmune response

The projects of the research group are mainly concerned with the pathogenesis of psoriasis vulgaris. It is an HLA-C*06:02-associated T-cell mediated autoimmune disease of the skin. Current key molecule for studying its pathogenesis is a pathogenic Vα3S1/Vβ13S1 T-cell receptor (TCR). We cloned it from a pathogenic lesional psoriatic CD8+ T-cell clone isolated from the lesional epidermis of a psoriasis patient. We expressed this TCR in an α-β- mouse reporter T-cell hybridoma, which visualizes TCR activation by inducing super green fluorescent protein (sGFP) as read-out. This hybridoma thus carries the specificity of the pathogenic psoriatic autoimmune response. Using this TCR, we demonstrated that the psoriatic autoimmune response is directed against melanocytes in the epidermis. This autoimmune response is mediated by the major risk gene of psoriasis, HLA-C*06:02. Furthermore, we identified a peptide from ADAMTS-like protein 5 (ADAMTSL5) as a melanocytic autoantigen presented by HLA-C*06:02. Patients with psoriasis show increased immunologic reactivity against ADAMTSL5. Stimulation with ADAMTSL5 induces the production of the psoriatic key cytokine interleukin-17 (IL-17) in psoriatic T-cells.

These results clearly prove that psoriasis is a T-cell mediated autoimmune disease. They gave us a unique opportunity to establish an experimental system, which reflects the in vivo psoriatic autoimmune response and enables the investigation of numerous other issues related to psoriasis pathogenesis:



Experimental model of the pathogenic psoriatic T-cell response

Various projects have emerged from this approach:

2.1. The role of ERAP1 variants in the genetic predisposition to psoriasis

Genome-wide association studies (GWAS) have revealed that epistasis, i. e. non-additive gene-gene interaction between HLA-C*06:02 and certain variants of the gene encoding endoplasmic reticulum aminopeptidase 1 (ERAP1), controls the risk of psoriasis. ERAP1 and HLA-class I cooperate in antigen processing and presentation to CD8+ T-cells. ERAP1 trims the NH2-terminus of select antigen precursors to generate the appropriate peptide length for HLA-class I-binding and presentation. Various non-synonymous coding single-nucleotide polymorphisms (SNPs) of ERAP1 modulate the aminopeptidase activity of ERAP1. We currently examine the functional mechanism underlying the statistic association between HLA-C*06:02 and ERAP1 variants in psoriasis risk. Among other methods, we have produced ERAP1-deficient melanocyte lines using the CRISPR/Cas9 method for this purpose. We find that ERAP1 controls HLA-C cell surface expression and immunogenicity of melanocytes by selectively generating the causative ADAMTSL5 autoantigen of the HLA-C*06:02-restricted psoriatic autoimmune response against melanocytes from peptide precursors. From these studies, we expect the possibility of developing new therapeutic approaches that regulate ERAP1 function.

2.2. Environmental triggers of the psoriatic autoimmune response

TCRs are polyspecific and can recognize many different peptide antigens. We are now using the Va3S1/Vβ13S1 TCR to identify environmental antigens that trigger the psoriatic autoimmune response. Here, we have already identified peptide antigens from food and from bacteria and fungi including the human microbiome that activate

the Va3S1/Vβ13S1-TCR in a cross-reaction. Of particular interest here are antigens which we identified from wheat, for which psoriasis patients show increased immunogenicity. Initial dietary trials indicate that a wheat-free diet may be associated with improvement in psoriasis, and particularly psoriatic arthritis.

2.3. Antigen HLA-C*06:02 tetramers for the diagnosis of psoriasis

Diagnostics are in search of biomarkers of psoriasis. Fluorescent antigen-complexed HLA tetramers can detect antigen specific T lymphocytes. We are currently investigating whether ADAMTSL5-HLA-C*06:02 tetramers are suitable for the detection of pathogenic T-cells in psoriasis. This approach also involves expansion of blood lymphocytes by antigen stimulation and TCR analysis of the expanded T-cell lines.

2.4. Pathogenic mechanisms of angina as a trigger of psoriasis

Streptococcal angina is an important trigger of initial manifestations and relapses of psoriasis. In these cases, tonsillectomy can positively influence the course of psoriasis. We have confirmed the pathogenetic connection, among other things, by detecting the pathogenic psoriatic T-cell clones expanded in psoriatic lesions in the fraction of tonsil cells that can specifically migrate into the skin by expressing the skin homing receptor "cutaneous lymphocyte-associated antigen", CLA. We now discovered that the pathogenic psoriatic Va3S1/Vβ13S1-TCR also reacts against HLA-C*06:02-positive tonsillar B-cells. We speculate that the strong inflammation in streptococcal angina induces an autoimmune response against B-cells, which then translocates into the skin against melanocytes. We are currently screening the peptidomes of B-cell lines presented by HLA-C*06:02 to identify the peptide antigens from B-cells that activate the Va3S1/Vβ13S1-TCR.

2.5. Mechanisms of action of UV-B phototherapy on psoriatic autoimmune response

We use our model of psoriatic autoimmune response to analyze the mechanisms of UV phototherapy. We show that UV-B irradiation strongly decreases the immunogenicity of melanocytes. The basis of this efficacy is suppression of antigen presentation by downregulating inflammatory HLA-class I expression, mainly affecting

HLA-C. The transcriptional and molecular mechanisms of this effect are currently under more detailed analysis.

2.6. Evolutionary origin of HLA-class I risk alleles and ERAP1 haplotypes

Basically, it is surprising that only three of more than 17,000 currently identified HLA-class I alleles are associated with autoimmune diseases. HLA-C*06:02 is associated with psoriasis vulgaris, HLA-B*27 with ankylosing spondylitis, and HLA-B*51 with Behçet's disease. In all three diseases, disease risk is determined by epistasis between ERAP1 variants and the HLA risk alleles. By analyzing genomes from the 1,000 genomes project and from Neanderthals and Denisovans, we determine the evolutionary origin of the three HLA-class I alleles and the pathogenic ERAP1 haplotypes in archaic hominids or modern humans. Hybrid incompatibilities between ERAP1 variants and HLA alleles resulting from adaptive introgression seem to increase the risk of autoimmune disease and also mediate a selection pressure in the current populations. The presentation of evolutionary origins and implications will provide evolutionary insight into the origin of autoimmunity.

2.7. The inflammatory infiltrate in Behçet's disease

The epistasis between HLA-B*51 and ERAP1 in the genetic risk for Behçet's disease suggests a comparable pathogenicity to psoriasis. Therefore, we have started to characterize the infiltrate in Behçet's disease. Here, we find intense infiltrates of CD8+ T-cells in cutaneous Behçet's disease lesions as a source of strong IL-17 production, initiating neutrophil recruitment and formation of neutrophil extracellular traps (NETs). Histiocytes around blood vessels in the dermis and subcutis are a source of IL-23 in skin lesions of Behçet's disease. Overall, these results of this ongoing study shed new light on the previously unexplained pathogenesis of Behçet's disease.

Representative publications

- » Arakawa, A., K. Siewert, J. Stohr, P. Besgen, S.M. Kim, G. Ruhl, J. Nickel, S. Vollmer, P. Thomas, S. Krebs, S. Pinkert, M. Spannagl, K. Held, C. Kammerbauer, R. Besch, K. Dornmair, and J.C. Prinz. 2015. Melanocyte antigen triggers autoimmunity in human psoriasis. *The Journal of Experimental Medicine* 212:2203-2212
- » Arakawa, A., S. Vollmer, P. Besgen, A. Galinski, B. Summer, Y. Kawakami, A. Wollenberg, K. Dornmair, M. Spannagl, T. Ruzicka, P. Thomas, and J.C. Prinz. 2018. Unopposed IL-36 Activity Promotes Clonal CD4(+) T-Cell Responses with IL-17A Production in Generalized Pustular Psoriasis. *The Journal of Investigative Dermatology* 138:1338-1347
- » Arakawa, A., S. Vollmer, J. Tietze, A. Galinski, M.V. Heppt, M. Burdek, C. Berking, and J.C. Prinz. 2019. Clonality of CD4(+) Blood T-cells Predicts Longer Survival With CTLA4 or PD-1 Checkpoint Inhibition in Advanced Melanoma. *Frontiers in Immunology* 10:1336
- » Batycka-Baran, A., P. Besgen, R. Wolf, J.C. Szepietowski, and J.C. Prinz. 2016. The effect of phototherapy on systemic inflammatory process in patients with plaque psoriasis. *Journal of Photochemistry and Photobiology, B, Biology* 161:396-401
- » Besgen, P., P. Trommler, S. Vollmer, and J.C. Prinz. 2010. Ezrin, maspin, peroxiredoxin 2, and heat shock protein 27: potential targets of a streptococcal-induced autoimmune response in psoriasis. *Journal of Immunology* 184:5392-5402
- » Diluvio, L., S. Vollmer, P. Besgen, J.W. Ellwart, S. Chimentì, and J.C. Prinz. 2006. Identical TCR beta-chain rearrangements in streptococcal angina and skin lesions of patients with psoriasis vulgaris. *Journal of Immunology* 176:7104-7111
- » Ghoreschi, K., P. Thomas, S. Breit, M. Dugas, R. Mailhammer, W. van Eden, R. van der Zee, T. Biedermann, J. Prinz, M. Mack, U. Mrowietz, E. Christophers, D. Schlondorff, G. Plewig, C.A. Sander, and M. Rocken. 2003. Interleukin-4 therapy of psoriasis induces Th2 responses and improves human autoimmune disease. *Nature medicine* 9:40-46
- » Gordon, K.B., K.C. Duffin, R. Bissonnette, J.C. Prinz, Y. Wasfi, S. Li, Y.K. Shen, P. Szapary, B. Randazzo, and K. Reich. 2015. A Phase 2 Trial of Guselkumab versus Adalimumab for Plaque Psoriasis. *The New England Journal of Medicine* 373:136-144
- » Menssen, A., P. Trommler, S. Vollmer, D. Schendel, E. Albert, L. Gurtler, G. Riethmüller, and J.C. Prinz. 1995. Evidence for an antigen-specific cellular immune response in skin lesions of patients with psoriasis vulgaris. *Journal of Immunology* 155:4078-4083
- » Prinz, J.C. 2017. Melanocytes: Target Cells of an HLA-C*06:02-Restricted Autoimmune Response in Psoriasis. *The Journal of Investigative Dermatology* 137:2053-2058
- » Prinz, J.C. 2020. The Woronoff Ring in Psoriasis and the Mechanisms of Postinflammatory Hypopigmentation. *Acta dermato-venereologica* 100:adv00031

- » Prinz, J.C., S. Vollmer, W.H. Boehncke, A. Menssen, I. Laisney, and P. Trommler. 1999. Selection of conserved TCR VDJ rearrangements in chronic psoriatic plaques indicates a common antigen in psoriasis vulgaris. *European Journal of Immunology* 29:3360-3368
- » Vollmer, S., A. Menssen, and J.C. Prinz. 2001. Dominant lesional T-cell receptor rearrangements persist in relapsing psoriasis but are absent from nonlesional skin: evidence for a stable antigen-specific pathogenic T-cell response in psoriasis vulgaris. *The Journal of Investigative Dermatology* 117:1296-1301

3. Laboratory for implant allergy – collecting clues for diagnosis

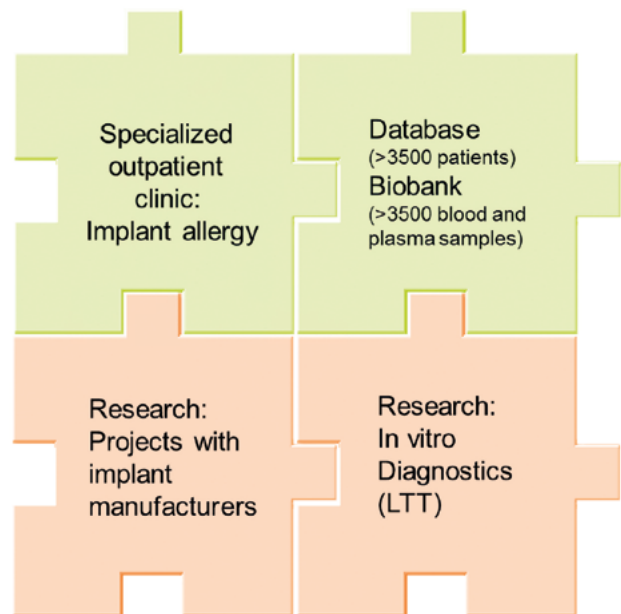
Eva Oppel, MD

PD Burkhard Summer, Bsc

Artificial joint replacement is considered one of the most successful surgical methods. Around 400,000 people receive a new hip or knee joint in Germany every year. In addition, more than one million dental implants are inserted in Germany every year. However, patients do not always remain symptom-free afterwards. Up to 20 percent of patients with a new knee joint have complaints such as swelling or pain. There are various causes for this. The orthopedist will first examine whether there is an infection or a material defect, for example. However, if no such causes are found, the question of an intolerance reaction to the implant arises.

To date more than 3500 patients have visited our specialized outpatient clinic for implant allergy. In our group, founded by Prof. Dr. Peter Thomas, we developed a diagnostic algorithm for the diagnosis of an implant allergy. This includes a standardized patient history, patch tests and in-vitro tests such as the lymphocyte transformation test (LTT). All these collected data are available in a data-base together with blood and serum samples of each patient in a biobank for scientific analysis. In different projects with implant manufacturers our group tested also new implant materials and surface coatings in vitro by developing tests for the analysis of immune reactions against these materials using immune cells of metal allergic patients.

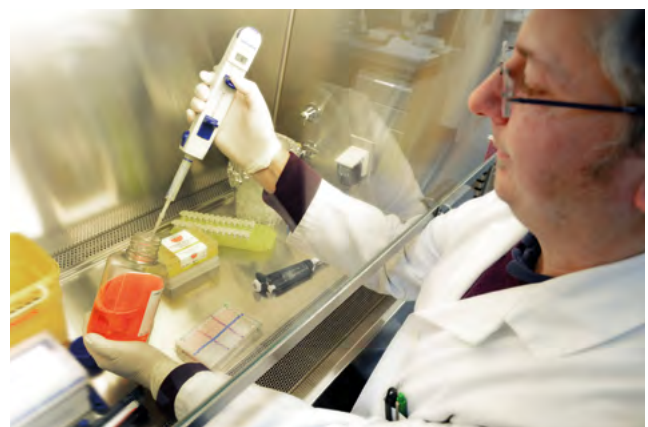
We are developing and evaluating the LTT not only for metals but also for the in vitro diagnosis of drug allergies.



The measurement method was changed to a non-radioactive method in the year 2019. Until now LTT tests for more than 20 drugs and 6 metals were developed. A bigger project for the development of beta-Lactam-LTT is ongoing. On the other hand our group also increases the diagnostic value of the LTT by measuring cytokines or analysing the cell RNA to get a better understanding of the immunologic processes.

Representative publications

- » Thomas B, Benedikt M, Alamri A, Kapp F, Bader R, Summer B, Thomas P, Oppel E. The role of antibiotic-loaded bone cement in complicated knee arthroplasty: relevance of gentamicin allergy and benefit from revision surgery – a case control follow-up study and algorithmic approach. *J Orthop Surg Res* 2020. 12;15(1):319
- » Oppel E, Kamann S, Heinemann L, Reichl FX, Högg C. The implanted glucose monitoring system Eversense: An alternative for diabetes patients with isobornyl acrylate allergy. *Contact Dermatitis*. 2020 Feb;82(2):101-104



B. Research groups in overview

Prof. Michael J. Flaig, MD

Dermatopathology research group

Group Members and Associates

- PD K. Kerl-French, MD
- Zeno Fiocco, MD
- Carolin Haas, MD
- Lena Jakob, MD
- Nora Aszodi-Pump, MD

- Natalie Evenschor, MD
- Ursula Puchta, MTA
- Johanna Laude, MTA
- Carina Merz, MTA
- Latifa Birrou, MTA
- Sirges-Szas, MTA
- Silke Krug, MTA
- Bahra Othmann, MTA
- Charlotte Donhauser, MD
- Hendrike Förster, MD
- Annika Heukäufer, MD
- Wolfgang Pollich, 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 oncogenic genesis of Merkel cell carcinoma, tumor cell-clonality in melanoma, pathogenesis of granular parakeratosis, morphogenesis of basaloid and trichoblastic neoplasms.



Selected References

- » Lapczynski NL, Flaig MJ. Polymorphes kutanes T-Zell-Lymphom [Polymorphic cutaneous T-cell lymphoma]. Hautarzt 2018 Oct;69(Suppl 1):52-55
- » Heppt MV, Siepmann T, Engel J, Schubert-Fritschle G, Eckel R, Mirlach L, Kirchner T, Jung A, Gesierich A, Ruzicka T, Flaig MJ, Berking C. Prognostic significance of BRAF and NRAS mutations in melanoma: a German study from routine care. BMC Cancer 2017 Aug 10;17(1):536
- » Berezowska S, Flaig MJ, Ruëff F, Walz C, Haferlach T, Krokowski M, Kerler R, Petat-Dutter K, Horny HP, Sotlar K. Adult-onset mastocytosis in the skin is highly suggestive of systemic mastocytosis. Mod Pathol 2014 Jan;27(1):19-29
- » Andres C, Belloni B, Puchta U, Sander CA, Flaig MJ. Prevalence of MCPyV in Merkel cell carcinoma and non-MCC tumors. J Cutan Pathol. 2010 Jan;37(1):28-34
- » Andres C, Puchta U, Sander CA, Ruzicka T, Flaig MJ. Prevalence of Merkel cell polyomavirus DNA in cutaneous lymphomas, pseudolymphomas, and inflammatory skin diseases. Am J Dermatopathol 2010 Aug;32(6):593-8
- » Andres C, Ihrler S, Puchta U, Flaig MJ. Merkel cell polyomavirus is prevalent in a subset of small cell lung cancer: a study of 31 patients. Thorax. 2009 Nov;64(11):1007-8



Prof. Lars E. French, MD

Autoinflammation and adverse cutaneous drug reactions



Group Members and Associates

- Takashi Satoh, MD/PhD, MSc
Principal Investigator
- Rui Aoki, MD/PhD
- Pia-Charlotte Stadler, MD
- Laura Calabrese, MD
- Claudia Kammerbauer, MTA, research associate

Main Fields of Research

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). 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.

Our group also established a unique worldwide patient registry called IRTEN (The International Registry for Toxic Epidermal Necrolysis, www.irten.org); an international, observational web-based registry for 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 outcome.

Selected References

- » Satoh TK, Mellett M, Meier-Schiesser B, Fenini G, Otsuka A, Beer HD, Rordorf T, Maul JT, Hafner J, Navarini AA, Contassot E, French LE. IL-36γ drives skin toxicity induced by EGFR/MEK inhibition and commensal *Cutibacterium acnes*. *J Clin Invest* 2020 Mar 2;130(3):1417-1430
- » Meier-Schiesser B, Feldmeyer L, Jankovic D, Mellett M, Satoh TK, Yerly D, Navarini A, Abe R, Yawalkar N, Chung WH, French LE, Contassot E. Culprit Drugs Induce Specific IL-36 Overexpression in Acute Generalized Exanthematous Pustulosis. *J Invest Dermatol* 2019 Apr;139(4):848-858
- » Mellett M, Meier B, Mohanan D, Schairer R, Cheng P, Satoh TK, Kiefer B, Ospelt C, Nobbe S, Thome M, Contassot E, French LE. CARD14 Gain-of-Function Mutation Alone Is Sufficient to Drive IL-23/IL-17-Mediated Psoriasisiform Skin Inflammation In Vivo. *J Invest Dermatol* 2018 Sep;138(9):2010-2023



Prof. Lars E. French, MD

Eva Oppel, MD

IRTEN – International Registry for
Toxic Epidermal Necrolysis



Group Members and Associates

- Anna Oschmann, MD
- Pia-Charlotte Stadler, MD
- Macarena Pia Gonzalez Knop, MD

International Registry for Toxic Epidermal Necrolysis (IRTEN)

Together with an international team of experts, the Department of Dermatology and Allergology 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.

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

Collaborating Centers

- Universitätsklinikum Tübingen, Germany
- Universitätsklinik Minden, Germany
- Universitätsklinikum Lübeck, Germany
- Universitätsklinikum Düsseldorf, Germany
- Kepler Uniklinikum Linz, Austria
- Hospital Clínico Pontificia Universidad Católica de Chile, Chile



Prof. Kathrin Giehl, MD

Rare genetic skin diseases



Group Members and Associates

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

Main Fields of Research

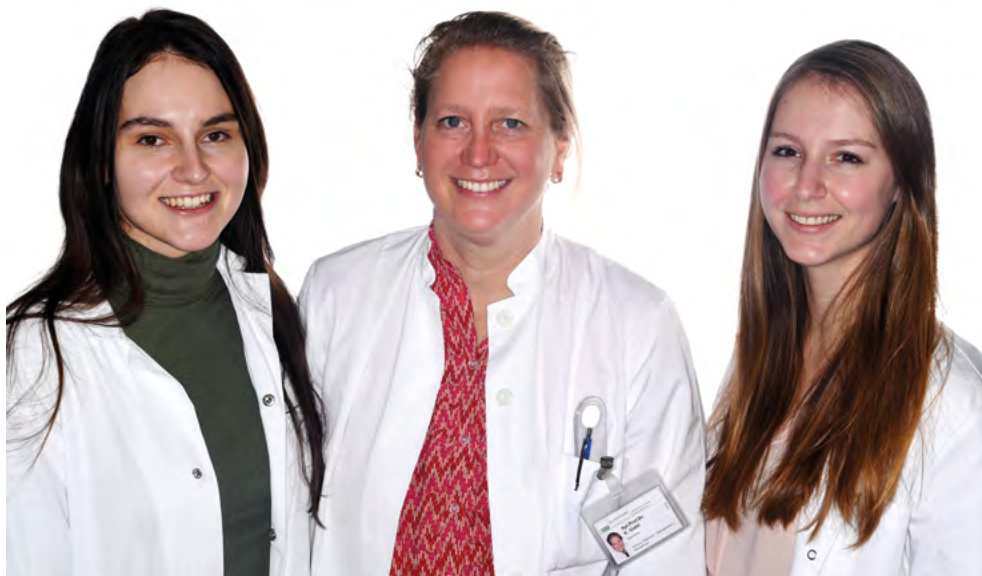
The main focus of our group is on clinical research in the field of rare and genetic skin diseases. We investigate the phenotype and genotype correlation as well as quality of life aspects in patients with basal cell nevus syndrome and patients with palmoplantar keratoderma. Specific clinical and histological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

In the field of healthcare research an especially developed 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 cooperate with other European specialists on different clinical research projects to improve patient care in rare skin diseases.

Selected References

- » Vural S, Gündoğdu M, Gökpınar İli E, Durmaz CD, Vural A, Steinmüller-Magin L, Kleinhempel A, Holdt LM, Ruzicka T, Giehl KA, Ruhi HI, Boyvat A. Association of pyrin mutations and autoinflammation with complex phenotype hidradenitis suppurativa: a case-control study. *Br J Dermatol* 2019;180 (6):1459-1467
- » De Palma AM, Mazereeuw-Hautier J, Giehl K, Hernández-Martin A, Merlos M, Moons P, Morren MA. Burden of itch in ichthyosis: a multicentre study in 94 patients. *J Eur Acad Dermatol Venereol* 2019;33 (11):2095-2100
- » Niculescu L, Wagner M, Westphal DS, Fischer M, Mi-hatsch W, Prothmann A, Ruzicka T, Wollenberg A, Wolff H, Schmidt H, Giehl KA. A Case of Ankyloblepharon-ectodermal Defects-cleft Lip/Palate-syndrome with Cho-anal Atresia and Skin Erosions: Phenotypic Variability of TP63-related Disorders. *Acta Derm Venereol* 2019;1;99 (1):111-112
- » Niculescu L, Ruini C, Srouf J, Salzer S, Schönbuchner I, von Braunmühl T, Ruzicka T, Hohenleutner U, Giehl KA, Fischer J, Wollenberg A. Tazarotene 0.015% Cream as a Potential Topical Agent for Management of Ichthyosis in Dorfman-Chanarin Syndrome. *Acta Derm Venereol* 2019;99 (3):345-346
- » Hayani K, Giehl K, Kumbrink J, Fischer J, Schlaak M, French LE, Wollenberg A. Gene Mutation Mapping in a Fatal Case of Phacomatosis Pigmentokeratolica Happle. *Acta Derm Venereol* 2020 Aug 18





PD Daniela Hartmann, MD, Ph.D.

Experimental dermatosurgery and wound healing research group

Group Members and Associates

- Justin Gabriel Schlager, MD
- Cristel Ruini, MD
- Prof. Elke Sattler, MD
- Teresa Müller, MD
- Till Kämmerer, MD
- Benjamin Kendziora, MD
- Christoph Rothenberger, MD
- Diana Lill, MD

Main Fields of Research

The main 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. Current projects of our group include studies on surgical skin infections, analyses of the wound microbiome and new approaches to promote wound healing. 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. Furthermore, our research group is preparing projects on proctologic surgery, laser-assisted skin surgery, cold-atmospheric-plasma therapy and electroporation.

Selected References

- » Schlager JG, Kendziora B, Patzak L, Kupf S, Rothenberger C, Fiocco Z, French E, Reinholz M, Hartmann D. Impact of COVID-19 on wound care in Germany. *Int Wound J* 2021. Accepted. Epub ahead of print
- » Schlager G, Guertler A, Bauer K, Sattler E, French LE, Hartmann D. Wundversorgung in der Hausarztpraxis. *CME* 2020;17(7-8):59–73
- » Kämmerer T, Wollenberg A, Engels L, Rothenberger C, Betke M, Hartmann D, Flaig MJ. Surgical treatment of verrucous Darier disease. *Hautarzt* 2020 Jul;71(Suppl 1):60-62
- » Wetzig T, Häfner HM, Hartmann D. Dermatosurgery 2019. *Hautarzt* 2019 Nov;70(11):840-841
- » Hartmann D, Krammer S, Bachmann MR, Mathemeier L, Ruzicka T, von Braunmühl T. Simple 3-criteria-based ex vivo confocal diagnosis of basal cell carcinoma. *J Biophotonics* 2018 Jul;11(7):e201800062. Epub 2018 May 24
- » Hartmann D, Krammer S, Ruini C, Ruzicka T, von Braunmühl T. Correlation of histological and ex-vivo confocal tumor thickness in malignant melanoma. *Lasers Med Sci* 2016 Jul;31(5):921-927

**Prof. Lucie Heinzerling,
MD, MPH**

i. Oncologica study group:
Melanoma,
lymphoma,
Merkel cell carcinoma



**Group Members
and Associates**

- Larissa Akçetin, MD
- Naghmeh Azadfar, Msc
- Dagmar Dick, technician
- Laura Engels, MD
- Anne Gürtler, MD
- Claudia Kammerbauer, technician
- Sonja Maier, study coordinator
- Stamatoula Patzali, tumor documentation
- Farnaz Rahimi, MD
- Cristel Ruini, MD
- Suzanna Salzer, MD
- Irina Schnaitter, nurse
- Christine Straßer, study coordinator
- Natallia Treitinger, MD/study coordinator
- Alexandra Walter, MD

Main Fields of Research

The focus of our clinical research is studying how to optimize skin cancer treatment with immunotherapy, targeted therapy and local therapy options. In this con-

text, we conduct clinical studies including investigator-initiated trials, with new compounds, combinations or treatment schemes. Additionally, we investigate the role of nutrition and 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.

Selected References

- » Daillère R, Derosa L, Bonvalet M, Segata N, Routy B, Gariboldi M, Budinská E, De Vries IJM, Naccarati AG, Zitvogel V, Caldas C, Engstrand L, Loibl S, Fieschi J, Heinzerling L, Kroemer G, Zitvogel L (2020) Trial watch: the gut microbiota as a tool to boost the clinical efficacy of anticancer immunotherapy. *Oncoimmunology* 9(1):1774298
- » Garbe C, Keim U, Suciu S, Amaral T, Eigentler TK, Gessierich A, Hauschild A, Heinzerling L, Kiecker F, Schadendorf D, Stadler R, Sunderkötter C, Tüting T, Utikal J, Wollina U, Zouboulis CC, Keilholz U, Testori A, Martus P, Leiter U, Eggermont AMM German Central Malignant Melanoma Registry and the European Organisation for Research and Treatment of Cancer (2020) Prognosis of Patients With Stage III Melanoma According to American Joint Committee on Cancer Version 8: A Reassessment on the Basis of 3 Independent Stage III Melanoma Cohorts. *J Clin Oncol* 38(22):2543-51



- » Zhang L, Zlotoff DA, Awadalla M, Mahmood SS, Nohria A, Hassan MZO, Thuny F, Zubiri L, Chen CL, Sullivan RJ, Alvi RM, Rokicki A, Murphy SP, Jones-O'Connor M, Heinzerling LM, Barac A, Forrester BJ, Yang EH, Gupta D, Kirchberger MC, Shah SP, Rizvi MA, Sahni G, Mandawat A, Mahmoudi M, Ganatra S, Ederhy S, Zatarain-Nicolas E, Groarke JD, Tocchetti CG, Lyon AR, Thavendiranathan P, Cohen JV, Reynolds KL, Fradley MG, Neilan TG (2020) Major Adverse Cardiovascular Events and the Timing and Dose of Corticosteroids in Immune Checkpoint Inhibitor-Associated Myocarditis. *Circulation* 141(24):2031-34
- » Heinzerling L, Eigentler TK, Fluck M, Hassel JC, Heller-Schenck D, Leipe J, Pauschinger M, Vogel A, Zimmer L, Gutzmer R (2019) Tolerability of BRAF/MEK inhibitor combinations: Adverse event evaluation and management. *ESMO Open*, 4(3),e000491
- » Kirchberger MC, Ugurel S, Mangana J, Heppt MV, Eigentler TK, Berking C, Schadendorf D, Schuler G, Dummer R, Heinzerling L (2018) MEK inhibition may increase survival of NRAS-mutated melanoma patients treated with checkpoint blockade: Results of a retrospective multicenter analysis of 364 patients. *Eur J Cancer*, 98:10-6

Prof. Lucie Heinzerling, MD, MPH

ii. Oncological research group: Immuno-oncology and cancer therapy

Group Members and Associates

- Larissa Akçetin, MD
- Naghmeh Azadfar, MSc
- Waltraud Fröhlich, technician
- Julio Vera-González, Prof. Bioinformatics
- Anne Gürtler, MD
- Claudia Kammerbauer, technician
- Anne-Charlotte Niesert, MD
- Takashi Satoh, MD/PhD
- Sarah Zierold, 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 immuno-therapies 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.

Selected References

- » Husain B, Kirchberger MC, Erdmann M, Schüpferling S, Abolhassani A, Fröhlich W, Berking C, **Heinzerling L** (2021) Inflammatory markers in autoimmunity induced by checkpoint inhibitors. *J Cancer Res Clin Oncol*, April 10th
- » Zlotoff DA, Hassan MZO, Zafar A, Alvi RM, Awadalla M, Mahmood SS, Zhang L, Chen CL, Ederhy S, Barac A, Bannerji D, Jones-O'Connor M, Murphy SP, Armanious M, Forrester BJ, Kirchberger MC, Coelho-Filho OR, Rizvi MA, Sahni G, Mandawat A, Tocchetti CG, Hartmann S, Gilman HK, Zatarain-Nicolás E, Mahmoudi M, Gupta D, Sullivan R, Ganatra S, Yang EH, **Heinzerling LM**, Thuny F, Zubiri L, Reynolds KL, Cohen JV, Lyon AR, Groarke J, Thavendiranathan P, Nohria A, Fradley MG, Neilan TG (2021) Electrocardiographic features of immune checkpoint inhibitor associated myocarditis. *J Immunother Cancer*, 9(3):e002007
- » Kramer R, Zaremba A, Moreira A, Ugurel S, Johnson DB, Hassel JC, Salzmann M, Gesierich A, Wepler A, Spain L, Loquai C, Dudda M, Pföhler C, Hepner A, Long GV, Menzies AM, Carlino MS, Sachse MM, Lebbé C, Baroudjian B, Tomohiro Enokida T, Makoto Tahara M, Max Schlaak M, Kinan Hayani K, Bröckelmann PJ, Meier F, Reinhardt L, Friedlander P, Eigentler T, Kähler KC, Berking C, Zimmer L, **Heinzerling L** (2021) Hematological immune related adverse events after treatment with immune checkpoint inhibitors. *Eur J Cancer*, 147:170–181
- » Krückel A, Moreira A, Fröhlich W, Schuler G, **Heinzerling L** (2019) Eosinophil-cationic protein - a novel liquid prognostic biomarker in melanoma. *BMC Cancer*, 19(1):207 (Patent granted)
- » Full F, van Gent M, Sparrer K, Chiang C, Zurenski M, Scherer M, Brockmeyer N, **Heinzerling L**, Stürzl M, Korn K, Stamminger T, Ensser A, Gack M (2019) Centrosomal protein TRIM43 restricts herpesvirus infection by regulating nuclear lamina integrity. *Nature Microbiology*, 4(1):164-76

- » Moreira A, Groß S, Kirchberger MC, Erdmann M, Schuler G, Heinzerling L (2018) Senescence markers - predictive for response to checkpoint inhibitors? Int J Cancer, 144(5):1147-50

Prof. Lucie Heinzerling, MD, MPH

iii. SERIO - Side Effect Registry Immuno-Oncology

Group Members and Associates

- Samuel Knauss, MD
- Dirk Mentzer, MD
- Natallia Treitingner, MD/study coordinator
- 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 1700 cases from 27 national and international centers documented 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.

Selected References

- » Abolhassani AR, Schuler G, Kirchberger MC, Heinzerling L. C-reactive protein as an early marker of immune-related adverse events. J Cancer Res Clin Oncol 2019;145(10):2625-31
- » Heinzerling L, Ascierto PA, Dummer R, Gogas H, Grob JJ, Lebbe C, Long GV, McArthur G, Moslehi JJ, Neilan TG, Ribas A, Robert C, Schadendorf D, Wolchok JD, Hauschild A. Adverse events 2.0-Let us get SERIOs: New reporting for adverse event outcomes needed in the era of immuno-oncology. Eur J Cancer 2019;112:29-31
- » Moreira A, Loquai C, Pföhler C, Kähler KC, Knauss S, Heppt MV, Gutzmer R, Dimitriou F, Meier F, Mitzel-Rink H, Schuler G, Terheyden P, Thoms KM, Türk M, Dummer R, Zimmer L, Schröder R, Heinzerling L. Myositis and neuromuscular side effects induced by immune checkpoint inhibitors. Eur J Cancer 2018;106:12-23
- » Mahmood SS, Fradley MG, Cohen JV, Nohria A, Reynolds KL, Heinzerling L, Sullivan RJ, Damrongwatanasuk R, Chen CL, Gupta D, Kirchberger MC, Awadalla M, Hassan MZO, Moslehi JJ, Shah SP, Ganatra S, Thavendiranathan P, Lawrence DP, Groarke JD, Neilan TG. Myocarditis in Patients Treated With Immune Checkpoint Inhibitors. J Am Coll Cardiol 2018;71(16):1755-64
- » Hofmann L, Forschner A, Loquai C, Goldinger SM, Zimmer L, Ugurel S, Schmidgen MI, Gutzmer R, Utikal JS, Göppner D, Hassel JC, Meier F, Tietze JK, Thomas I, Weishaupt C, Leverkus M, Wahl R, Dietrich U, Garbe C, Kirchberger MC, Eigentler T, Berking C, Gesierich A, Krackhardt AM, Schadendorf D, Schuler G, Dummer R, Heinzerling L. Cutaneous, gastrointestinal, hepatic, endocrine and renal side effects of anti-PD-1 therapy. Eur J Cancer 2016;60:190-209



Orsolya Horváth, MD, PhD

Bullous autoimmune diseases

Group Members and Associates

- Prof. Miklós Sárdy, MD, PhD
- Laura Bültmann, MD
- Antonia Dekorsy, MD student
- Liv Christin Hoffmann, MD student
- Victoria Reffler, MD student
- Cristina Richter, MD student
- Vivian Wietzke, MD student



Main Fields of Research

Our research activities focus on bullous autoimmune diseases, especially bullous pemphigoid. We are working on several projects analysing the laboratory diagnostics and the pathophysiology of this disease group. We monitor the effectivity of current therapeutic options for pemphigus, and participate in clinical studies offering new, innovative therapy options for our patients. We also study the psychological aspects of autoimmune connective tissue diseases with a special focus on itch, depression, life quality and the effects of the coronavirus pandemic. In addition, we investigate fungal infections from an epidemiological point of view.



Selected References

- » Horváth ON, Varga R, Kaneda M, Schmidt E, Ruzicka T, Sárdy M. Diagnostic performance of the „MESACUP anti-Skin profile TEST“. Eur J Dermatol 2016 Feb 1;26(1):56-63
- » Jankásková J, Horváth ON, Varga R, Ruzicka T, Sárdy M. Complement Fixation Test: An Update of an Old Method for Diagnosis of Bullous Pemphigoid. Acta Derm Venereol 2016 Feb;96(2):197-201
- » Horváth ON, Jankásková J, Walker A, Sárdy M. Pemphigoid diseases. Autoimmune diseases in the elderly. Hautarzt 2015 Aug;66(8):583-8
- » Horváth ON, Bagci IS, Ruzicka T, Sárdy M. Atypical anti-p200 pemphigoid with nail involvement and blisters over the joints. J Dtsch Dermatol Ges 2019 Dec;17(12):1289-1290

Sebastian Krammer, MD
PD Daniela Hartmann, MD, Ph.D.
Prof. Lars E. French, MD
Artificial intelligence (AI)

Group Members and Associates

- Prof. Elke Sattler, MD
- Prof. Hans Wolff, MD
- PD Katrin Kerl-French, MD
- Anne-Sophie Böhm, MD
- Suzan Stürmer, MD
- Nicolas Jakob, computer specialist
- Angelina Atamaniuk, computer specialist
- Yawei Li, computer specialist
- Philipp Böck, computer specialist

Main Fields of Research

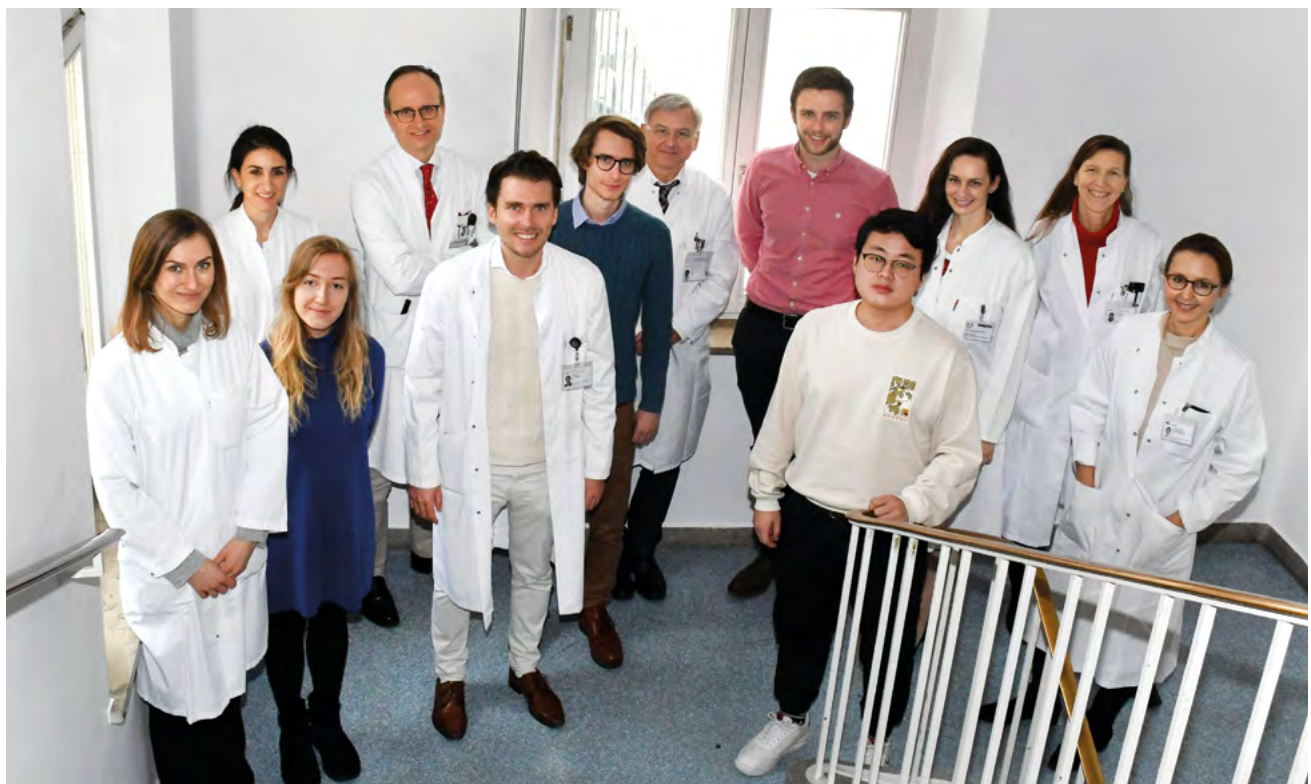
Our main research activities focus on the generation of multimodal structured data sets (clinical images, histopathological results and images, patients' history) in order to develop state-of-the-art machine learning algorithms. In the future, these algorithms will support medical staff in their daily work in order to improve patients' treatment. Our data sets are fully annotated by highly experienced, certified dermatologists, as well as profoundly tested and evaluated in the Department of Dermatology and Allergology, LMU Klinikum.



The group works together with further partners including the Department of Informatics (Prof. Dr. Nassir Navab, Assoc. Prof. Dr. Tobias Lasser, Technical University of Munich), the Department of Radiology (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).

Future Projects

The Department of Dermatology and Allergology at the LMU Klinikum is currently implementing the new modular clinical information systems platform from the start-up Veios Medical, which optimizes the clinical documentation and workflows, as well as automatically generates structured data in the background during daily clinical work. With these new extended data sets the research group can bring their existing algorithms to a new level.



Eva Oppel, MD
PD Burkhard Summer, BSc
Implant-allergy research

Group Members and Associates

- Ralf Pohl, BTA
- Prof. Peter Thomas, MD



Main Fields of Research

The main focus of our research are the immunological and allergological reactions of patients to – especially metal – implant materials. We cooperate with medical societies (orthopaedic – DGOU; allergy – ESCD, DGAKI; dermatology – DDG, DKG, EADV), international research groups (for example by EADV-grant with Amsterdam, Copenhagen, Basel, Malmö, Prague, Stettin) and implant manufacturers. Our research combines epidemiologic, genetic and experimental data to find and improve new tests and setups for the diagnosis of implant intolerance reactions. A major component of these tests is the “lymphocyte transformation test” (LTT), which we also started to evaluate now for drug hypersensitivity. Another focus are inflammatory mediators and their regulation.

Selected References

- » Kapp F, Summer B, Thomas P. Usefulness of lymphocyte transformation test and in vitro cytokine release in differentiating between independent and cross-reacting nickel/palladium allergy. *Immun Inflamm Dis* 2020. 8(4):483-492
- » Reichl FX, Högg C, Liu F, Schwarz M, Teupser D, Hickel R, Bloch W, Schweikl H, Thomas P, Summer B. Actovegin® reduces PMA-induced inflammation on human cells. *Eur J Appl Physiol* 2020. 120(7):1671-1680

Prof. Jörg C. Prinz, MD

T-cell mediated
dermatological disorders



Group Members and Associates

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

Collaborators

- Secil Vural: Department of Dermatology, Koç University School of Medicine, Istanbul, Turkey.
- Yukiyasu Arakawa: Department of Dermatology, Kyoto Prefectural University of Medicine, Kyoto, Japan

Collaboration partner

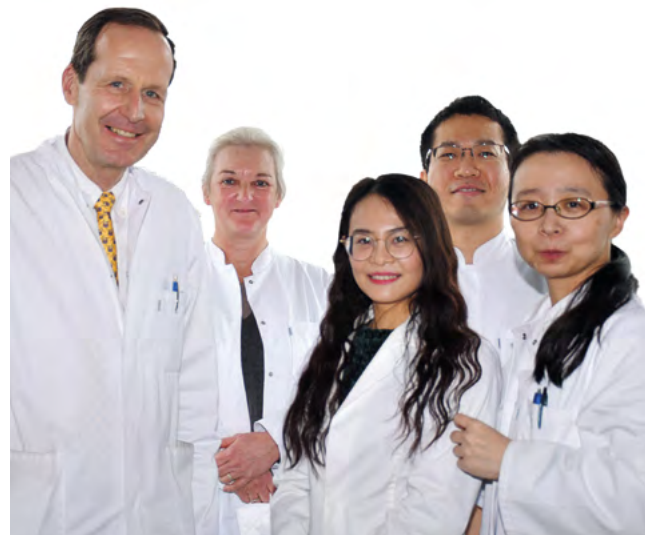
- Dr. Edd James, Associate professor, Centre for Cancer Immunology, University Hospital Southampton, Southampton, SO16 6YD, UK
- Dr. Andreas Schlosser, Rudolf-Virchow-Zentrum – Center for Integrative and Translational Bioimaging, University of Würzburg, Germany
- Dr. Christian D. Huber, School of Biological Sciences, University of Adelaide, 5005 Adelaide, Australia
- MBL International, A JSR Life Sciences Company, Woburn, MA 01801, U.S.A

Main Fields of Research

The research group mainly investigates the causes and mechanisms as well as the antigen specificity of T-cell mediated dermatological disorders. The experimental work focuses on the autoimmune response of psoriasis vulgaris and its subtypes, Behçet's disease, and aspects regarding the specific immunotherapy of malignant melanoma. Experimental approaches exploit T-cell receptor technologies, transcriptional analyses and genetically modified cells and molecules to characterize antigenic targets and immunological repertoires in relation to the aforementioned issues.

Selected References

- » Arakawa A, Vollmer S, Tietze J, Galinski A, Heppt M, Bürdek M, Berling C, Prinz JC. Clonality of CD4(+) Blood T-cells Predicts Longer Survival With CTLA4 or PD-1 Checkpoint Inhibition in Advanced Melanoma. *Frontiers in Immunology* 2019. 10:1336
- » Arakawa Y, Arakawa A, Vural S, Mahajan R, & Prinz JC. Renal clearance and intracellular half-life essentially determine methotrexate toxicity: A case series. *JAAD Case Rep* 2019, 5(1):98-100
- » Jendoubi F, Rohde M, Prinz JC. Intracellular Streptococcal Uptake and Persistence: A Potential Cause of Erysipelas Recurrence. *Front Med (Lausanne)* 2019, 6:6
- » Alsenaid A, Ezmerli M, Srouf J, Heppt M, Illigens BM, Prinz JC. Biologics and small molecules in patients with scalp psoriasis: a systematic review. *The Journal of Dermatological Treatment* 2020, June 19:1-10
- » Frey S, et al. Rare Loss-of-Function Mutation in SERPINA3 in Generalized Pustular Psoriasis. *The Journal of Investigative Dermatology* 2020;140(7):1451-1455, e1413
- » Prinz JC. The Woronoff Ring in Psoriasis and the Mechanisms of Postinflammatory Hypopigmentation. *Acta dermato-venereologica* 2020;100(3):adv00031
- » Haskamp S, et al. Myeloperoxidase Modulates Inflammation in Generalized Pustular Psoriasis and Additional Rare Pustular Skin Diseases. *Am J Hum Genet* 2020;107(3):527-538



PD Markus Reinholz, MD, PhD

Translational research in
inflammatory skin diseases



Group Members and Associates

- Larissa Akcetin, MD
- 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
- 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

Skin diseases represent one of the most frequent reasons for physician consultations. Despite this, however, little is known about the pathogenesis and about the individual needs of patients. Our research group explores the intersection of skin diseases and molecular medicine, as well as the characterization and measurability of therapeutic effects at somatic and psychological levels. The goal is to achieve a better understanding of pathogenesis, suffering and therapy. We mainly focus on human papillomavirus (HPV) infections, rosacea and acne.

Selected References

- » Clanner-Engelshofen BM, French LE, Reinholz M. *Corynebacterium kroppenstedtii* subsp. *demodicis* is the endobacterium of *Demodex folliculorum*. J. Eur. Acad. Dermatol. Venereol 2019
- » Hildebrand JA, Fischbeck AJ, Hundsdorfer B, Clanner-Engelshofen BM, Marsela E, Wollenberg A, Flaig M, French LE, Reinholz M. Retrospective Analysis of alpha Human Papillomavirus (HPV) Types in Tissue Samples from Anogenital Dysplasias – Introduction of the RICH (Risk of HPV-related Carcinoma in HIV+/-patients) Score (in press). J. Eur. Acad. Dermatol. Venereol 2019
- » Weiland T, Eckert A, Tomazic PV, Wolf A, Pondorfer P, Vassicek S, Graupp M, Holzmeister C, Moser U, Andrianakis A, Kangler G, Kiss P, Brcic L, Kappler M, Wickenhauser C, Haak A, Krüger M, Al-Nawas B, Blatt S, Brockmeyer N, Skaletz-Rorowski A, Potthoff A, French LE, Charnowski S, Reinholz M, Kaufmann AM, Thies S, Lambrecht HG, Seliger B, Wild DC, Thurnher D. DRH1 - a novel blood-based HPV tumour marker. The Lancet EBioMedicine 2020
- » Wessely A, Heppt MV, Kammerbauer C, Steeb T, Kirchner T, Flaig MJ, French LE, Berking C, Schmoeckel E, Reinholz M. Evaluation of PD-L1 Expression and HPV Genotyping in Anal Squamous Cell Carcinoma. Cancers (Basel) 2020



Prof. Elke Sattler, MD

PD Daniela Hartmann, MD, Ph.D.

In and ex vivo imaging

Group Members and Associates

- Cristel Ruini, MD – deputy lead
- Ann-Charlotte Niesert, MD
- Isin Sinem Bağcı, MD
- Michaela Kubiniec, MD
- Leonie Frommherz, MD
- Sebastian Krammer, MD
- Stephanie Steckmeier, MD
- Martina Zacher, MD
- Charlotte Gust, MD student
- Fabia Daxenberger, MD student
- Natalie Schädle, MD student
- Gabriela Vladimirova, MD student
- Sophia Schlingmann, MD student
- Elena Kunrad, MD student
- Kathrin Patzer, MD student
- Marie Düsedau, MD student
- Ramona Fenderle, MD 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 like optical coherence tomography, confocal laser microscopy and line-field confocal OCT to optimize the detection and early diagnostics 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 sensitivity and specificity of the clinical diagnosis and correlate these findings to ex vivo imaging and histopathology results.

These methods are non-invasive without pain, surgery, local anaesthesia, 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 therapy monitoring.

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 edges 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.

Selected References

Ex vivo imaging

- » 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* 2020 Dec 21
- » Hartmann D, Krammer S, Vural S, Bachmann MR, Ruini C, Sárdy M, Ruzicka T, Berking C, von Braunmühl T. Immunofluorescence and confocal microscopy for ex vivo diagnosis of melanocytic and non-melanocytic skin tumors: A pilot study. *J Biophotonics* 2018 Mar;11(3)

In vivo imaging

- » Ruini C, Schuh S, Sattler E*, Welzel J*. Line-field confocal optical coherence tomography-Practical applications in dermatology and comparison with established imaging methods. *Skin Res Technol* 2020 Oct 21
- » Sattler EC, Hoffmann VS, Ruzicka T, Maier T, Berking C. Reflectance confocal microscopy for monitoring the density of demodex mites in rosacea patients before and after treatment. *Br J Dermatol* 2015 ; 173(1):69-75



Prof. Andreas Wollenberg, MD

Atopic dermatitis



Group Members and Associates

- Prof. Franziska Rüeff, MD
- Marlene Seegräber, MD
- Teodora Pumnea, MD
- Sonja Senner, MD
- Surina Frey, MD
- Pia-Charlotte Stadler MD
- Theresa Kagerbauer, MSc
- Quirine Eijkenboom BSc, MD student

Main Fields of Research

Our research group is interested in clinical, experimental, therapeutic and educational aspects of atopic dermatitis and has a strong focus on interdisciplinary work and infectious complications of atopic dermatitis. Host-pathogen interactions and inborn errors of immunity are additional topics of our interest. Moreover, the signature of chronic inflammatory skin disease such as atopic dermatitis is compared with chronic inflammatory bowel disease such as ulcerative colitis in the interdisciplinary ImmUniverse project funded by the European Union. Finally, our group is active in international guideline work (lead authorship of the European Atopic Dermatitis Guideline).

Selected References

- » Wollenberg A, Christen-Zäch S, Taieb A, Paul C, Thyssen JP, de Bruin-Weller M, Vestergaard C, Seneschal J, Werfel T, Cork MJ, Kunz B, Fölster-Holst R, Trzeciak M, Darsow U, Szalai Z, Deleuran M, von Kobyletzki L, Barbarot S, Heratizadeh A, Gieler U, Hijnen DJ, Weidinger S, De Raeve L, Svensson Å, Simon D, Stalder JF, Ring J; European Task Force on Atopic Dermatitis/EADV Eczema Task Force. ETFAD/EADV Eczema task force 2020 position paper on diagnosis and treatment of atopic dermatitis in adults and children. *J Eur Acad Dermatol Venereol* 2020 Dec; 34(12):2717-2744
- » Seegräber M, Worm M, Werfel T, Svensson A, Novak N, Simon D, Darsow U, Augustin M, Wollenberg A. Recurrent eczema herpeticum - a retrospective European multi-center study evaluating the clinical characteristics of eczema herpeticum cases in atopic dermatitis patients. *J Eur Acad Dermatol Venereol* 2020 May; 34(5):1074-1079
- » Wollenberg A, Beck LA, Blauvelt A, Simpson EL, Chen Z, Chen Q, Shumel B, Khokhar FA, Hultsch T, Rizova E, Rossi AB, Graham NMH, Pirozzi G, Lu Y, Ardeleanu M. Laboratory safety of dupilumab in moderate-to-severe atopic dermatitis: results from three phase III trials (LIBERTY AD SOLO 1, LIBERTY AD SOLO 2, LIBERTY AD CHRONOS). *Br J Dermatol* 2020 May;182(5):1120-1135
- » Vestergaard C, Wollenberg A, Barbarot S, Christen-Zaech S, Deleuran M, Spuls P, Flohr C, Trzeciak M, von Kobyletzki L, Seneschal J, Paul C, Bieber T, Werfel T, Fölster-Holst R, Darsow U, Gieler U, Svensson Å, Cork M, Stalder JF, De Raeve L, Kunz B, Simon D, Chernyshov P, Hijnen D, Gelmetti C, Ring J, Taieb A, de Bruin-Weller M, Thyssen JP. European task force on atopic dermatitis position paper: treatment of parental atopic dermatitis during pre-conception, pregnancy and lactation period. *J Eur Acad Dermatol Venereol* 2019 Sep;33(9):1644-1659



7 Clinical research: Department of Dermatology, clinical trials unit

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

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. In 2015, Prof. Franziska Rüeff and Prof. Andreas Wollenberg founded the DASZ, a clinical trial unit specialized in chronic inflammatory and allergic skin diseases. 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 and investigator initiated 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 four student assistants. Specialists for bullous diseases (Dr. Horváth) and pediatric dermatology (Prof. Giehl) amend the team as needed. 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
- Pemphigus vulgaris
- Prurigo nodularis
- Pustular psoriasis
- Psoriasis vulgaris
- Allergic rhinoconjunctivitis, induced by various triggers
- Urticaria, chronic spontaneous and chronic inducible

In 2019 and 2020 a total of 65 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.

Selected References

- » Wollenberg A, Howell MD, Guttman-Yassky E, Silverberg JI, Kell C, Ranade K, Moate R, van der Merwe R. Treatment of atopic dermatitis with tralokinumab, an anti-IL-13 mAb. *J Allergy Clin Immunol.* 2019; 143: 135-141
- » Ständer S, Yosipovitch G, Legat FJ, Lacour JP, Paul C, Narbutt J, Bieber T, Misery L, Wollenberg A, Reich A, Ahmad F, Piketty C. Trial of Nemolizumab in Moderate-to-Severe Prurigo Nodularis. *N Engl J Med.* 2020; 382: 706-716
- » Simpson EL, Sinclair R, Forman S, Wollenberg A, Aschoff R, Cork M, Bieber T, Thyssen JP, Yosipovitch G, Flohr C, Magnolo N, Maari C, Feeney C, Biswas P, Tatulych S, Valdez H, Rojo R. Efficacy and safety of abrocitinib in adults and adolescents with moderate-to-severe atopic dermatitis (JADE MONO-1): a multicentre, double-blind, randomised, placebo-controlled, phase 3 trial. *Lancet.* 2020; 396: 255-266
- » Wollenberg A, Beck LA, Blauvelt A, Simpson EL, Chen Z, Chen Q, Shumel B, Khokhar FA, Hultsch T, Rizova E, Rossi AB, Graham NMH, Pirozzi G, Lu Y, Ardeleanu M. Laboratory safety of dupilumab in moderate-to-severe atopic dermatitis: results from three phase III trials (LIBERTY AD SOLO 1, LIBERTY AD SOLO 2, LIBERTY AD CHRONOS). *Br J Dermatol.* 2020; 182: 1120-1135
- » Paller AS, Siegfried EC, Thaçi D, Wollenberg A, Cork MJ, Arkwright PD, Gooderham M, Beck LA, Boguniewicz M, Sher L, Weisman J, O'Malley JT, Patel N, Hardin M, Graham NMH, Ruddy M, Sun X, Davis JD, Kamal MA, Khokhar FA, Weinreich DM, Yancopoulos GD, Beazley B, Bansal A, Shumel B. Efficacy and safety of dupilumab with concomitant topical corticosteroids in children 6 to 11 years old with severe atopic dermatitis: A randomized, double-blinded, placebo-controlled phase 3 trial. *J Am Acad Dermatol.* 2020; 83: 1282-1293

8 Medical education and training

Medical education is essential for guaranteeing a high level of professionalism among physicians and health-care professionals. Our continued commitment to education consists of:

1. Student education at the University of Munich's (Ludwig Maximilian University; LMU) medical faculty.
2. Specialist training for resident physicians qualifying in dermatology and venereology, allergology, proctology, dermatopathology, phlebology and oncologic drug therapy.
3. Ongoing medical education for private practitioners – primarily dermatologists and allergologists, as well as general practitioners and (to a lesser extent) other healthcare professionals.

Student education

We train approximately 560 medical students of the medical faculty and up to 200 students of the dental faculty of the Ludwig Maximilian University (LMU) every year.

University development

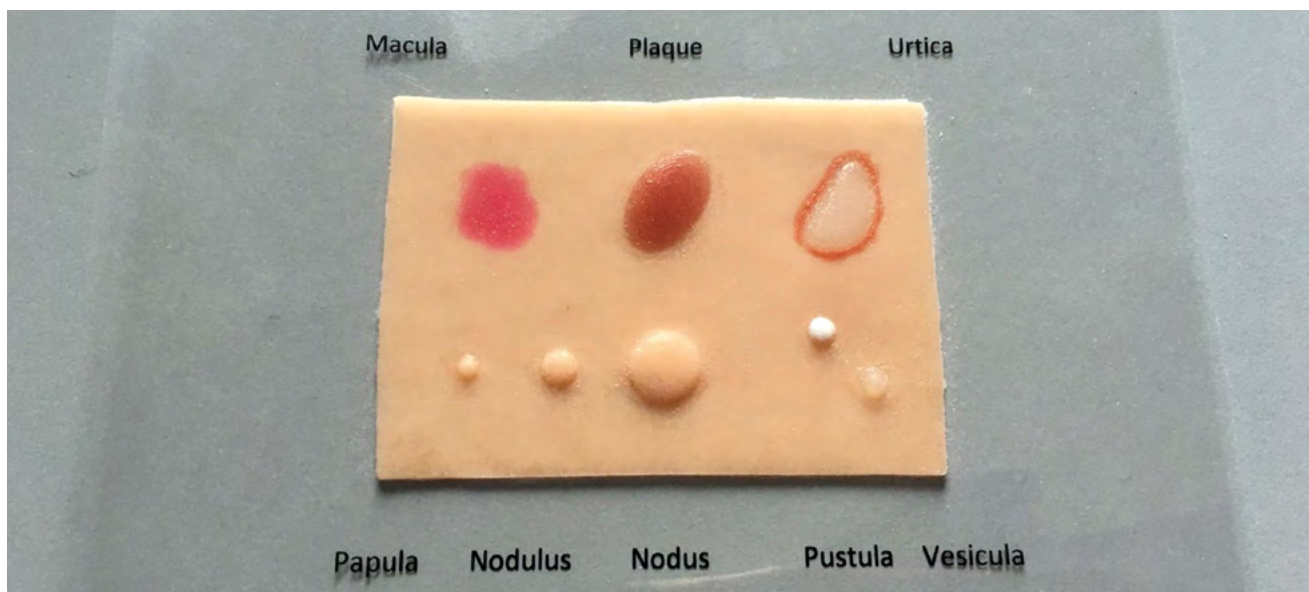
The Department of Dermatology is strongly involved in the Development of the curriculum of the medical school of the Ludwig Maximilian University of Munich and in the education of future assistant and university professors in teaching methodics and didactics.

Overview of the teaching areas at the Department of Dermatology and Allergology

The teaching curriculum of Munich Medical school is structured in a preclinical part (including the first four semesters), a clinical part (5th until the 10th semester) and a practical year / last medical year (11th and 12th semester traineeship, so called practical year; PJ). The clinical part is clustered into interdisciplinary organ specific courses. The dermatological education of medical students takes mainly part in the 8th semester of medical school and deals with the "sensorium" / all clinical specializations dealing with sense organs. The teaching in dermatology comprises different formats: bedside teachings, seminars, main lectures and specialized lectures on practical skills like dermatoscopy. Furthermore, we train dental students in dermatology. The Department of Dermatology is strongly involved in the curricular development of the medical school of the LMU.

Detailed teaching structure

The teaching structure and teaching at the Department of Dermatology and Allergology of the Ludwig Maximilian University of Munich consists of lectures for medical students, lectures for dentistry students, and the lectures in Occupational and Environmental Medicine. Furthermore, we offer tutorials (problem-based learning seminars; PBLs), seminars and bedside-teachings. The total number of teaching hours given by our faculty per



year exceeds 1300. Most of the teaching units run in parallel (seminars, bedside teaching, PBL).

Quality assurance / continuous improvement process

To maintain high quality in teaching we continuously evaluate and assess our teaching through surveys with questionnaires, and regular feed-back from students concerning their needs. Necessary improvements are regularly implemented in the curriculum. We strongly believe in the PDCA (plan-do-check-act)-cycle as this effort leads to continuous improvement (Japanese: kaizen) of our medical education with an extremely positive feed-back of from our medical students.

SARS-CoV2 – challenge and “chance” for medical education

Due to the SARS-CoV-2 pandemic and the associated containment measures since March 2020, “live” courses in classrooms / or at patient’s beds had to be drastically reduced. To offer all students in dermatology the same standards of quality of teaching as previously, we digi-

talized all lectures and seminars as podcasts and made them available on the Moodle (internal online) university platform. Furthermore, in each case as a PDF document is made available for the personal study of the content. To enable students to still have the opportunity to ask questions about dermatology and interact with faculty, we created a “Meet the Expert” consultation within an interactive zoom conference.

Innovations in dermatology education

Recently, we also developed inverted classroom formats for education within the zoom platform of our seminars and lectures. This has the big advantage that frontal teaching is put in the home learning phase and students can easily interact with teachers, which fosters critical thinking and interactivity, and promotes a higher level of application of knowledge.

In 2020, we also developed the R&D project “Moulages re-invented” that develops and makes use of haptic didactic tools with a 3D printer. This project is currently being evaluated and analyzed and may serve as a “role model” for 3-D education in dermatology.

Guest Speakers

2019/2020

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
Böhm Markus Prof. Dr. med.	Poliklinik am Universitätsklinikum Münster, DE	Vitiligo – Update Pathophysiologie und aktuelle Therapiekonzepte
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
Ernst Edzard Prof. Dr. med.	University of Exeter, GB	SCHMU – Scheinmedizinischer Unfug
Farnetani Francesca Ass. Prof. Dr. med.	Università di Modena e Reggio Emilia, IT	Differential diagnosis: difficult pigmented lesions, atypical nevi, early melanoma, and patients with many moles: clinical cases
Fischer Judith Prof. Dr. Dr. med.	Albert-Ludwigs-Universität Freiburg, DE	Molekulargenetische Diagnostik in der Dermatologie
Gieler Uwe Prof. Dr. med.	Psychosomatische Dermatologie, Justus-Liebig-Universität Gießen, DE	Psychodermatologie bei Kindern mit Hautproblemen

Speaker	Institution	Topic
Guenova Emmanuella PD Dr. med.	Universitätsspital Zürich, CH	Photopherese
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
Livingstone Elisabeth Dr. med.	Universitätsklinikum Essen, DE	Adjuvante und neoadjuvante zielgerichtete Therapie
Longo Caterina Prof. Dr. med.	Università di Modena e Reggio Emilia, IT	Amelanotic-hypopigmented tumors
Maurer Marcus Prof. Dr. med.	Klinik für Dermatologie, Venerologie und Allergologie, Charité - Universitätsmedizin Berlin, DE	Diagnostik und Therapie der Urtikaria – ein Update
Meier Friedegund Prof. Dr. med.	Universitätsklinikum Dresden, DE	Zielgerichtete Therapie von Hirnmetastasen
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.	Universitätsklinikum Münster, DE	Entzündliche kongenitale Ichthyosen
Pampena Riccardo Ass. Prof. Dr. med.	Università di Modena e Reggio Emilia, IT	Evidence for the use of RCM in clinical practice: Cochrane, metanalysis and preliminary results from NET randomized trial
Pellacani Giovanni Prof. Dr. med.	Università di Modena e Reggio Emilia, IT	Differential diagnosis: difficult pigmented lesions, atypical nevi, early melanoma, and patients with many moles
Pellacani Giovanni Prof. Dr. med.	Università di Modena e Reggio Emilia, IT	Use of hand-held probe in melanocytic and non-melanocytic skin tumors
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	Immuntherapien in der Dermatologie: Mechanismen ihrer Wirkung und Nebenwirkungen
Schaller Martin Prof. Dr. med.	Hautklinik des Universitätsklinikums Tübingen, DE	Rosazea – Was gibt es Neues?
Schnopp Christina PD Dr. med.	Klinik und Poliklinik für Dermatologie und Allergologie der Technischen Universität München, DE	Potpourri der pädiatrischen Allergologie – praktische Bilder von Hauterscheinungen im Alltag und Prozedere
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

Speaker	Institution	Topic
Stebut-Borschitz Esther von Prof. Dr. med.	Uniklinik der Universität zu Köln, DE	Die IgE-Apherese zur Neurodermitistherapie
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.	University of Bordeaux, F	Atopic Dermatitis in Sub-Saharan Africa
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
Welzel Julia Prof. Dr. med.	Universitätsklinikum Augsburg, DE	Inflammatory diseases
Wiesent Franziska Dr. med.	Medizinisches Versorgungszentrum München, DE	Impfung von immunsupprimierten Patienten
Wohlrab Johannes Prof. Dr. med.	Dermatologische Universitätsklinik der Martin-Luther-Universität Halle-Wittenberg, DE	Galenik bei topischer Hauttherapie
Wohlrab Johannes Prof. Dr. med.	Dermatologische Universitätsklinik der Martin-Luther-Universität Halle-Wittenberg, DE	Optimale Anwendung von Topika beim atopischen Ekzem

LMU-Klinikum

Speaker	Institution	Topic
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.	Stabsstelle Antibiotic Stewardship, Klinikum der Universität München, DE	Kalkulierter Einsatz und Absetzen von Antibiotika in wichtigen Behandlungssituationen
Erickson Nicole	IZDE und CCC München, Klinikum der Universität München, DE	Ernährung und Krebs
Häberle Beate Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Zeitgemäße chirurgische Therapie kongenitaler melanozytärer Naevi
Messmer Elisabeth Prof. Dr. med.	Augenklinik Mathildenstraße Klinikum der Universität München, DE	Haut und Auge
Peschel Oliver Prof. Dr. med.	Institut für Rechtsmedizin Klinikum der Universität München, DE	Der Tod ist nicht das Ende: Leichenschau und Totenschein
Schaub Bianca Prof. Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Allergieprävention – Neues aus Forschung und Klinik
Schmidt Heinrich Prof. Dr. med.	Dr. von Haunersches Kinderspital Klinikum der Universität München, DE	Hormone und Haut



Training week for Practical Dermatology and Venerology
For the 230 guest speakers see www.fortbildungswoche.de

9 Congresses / scientific meetings

27. Fortbildungswoche für praktische Dermatologie und Venerologie/ FOBI 2020 DIGITAL / 27th Training week for practical dermatology and venereology

07.07.2020 - 11.07.2020

Surely the most important event of the two last years, held by the Department of Dermatology and Allergology, LMU Klinikum, the „27. Fortbildungswoche für praktische Dermatologie und Venerologie“, took part in the challenging year of 2020 during the COVID-19-pandemic and had to be re-organized into a fully digital form on a very short notice. Since it was the first big medical event held solely online in Germany, the organization team, led by Professor Lars E. French, was proud and relieved to see that it immediately proved to be highly successful, as reflected in the feedback and number of participants. At last count, this figure stood at more than 2500 participants, primarily practicing dermatologists, thus confirming that this event is one of the most important dermatology congresses in the German speaking countries. The six-day intensive event for ongoing dermatological training offers a mix of high-grade plenary lectures, numerous practical workshops including whole- and half-day courses as well as the so-called Laser and Aesthetic Day. For the 2020 edition specialized workshops were held



One of the virtual workshops on skin surgery and its speakers at the “27. Fortbildungswoche für praktische Dermatologie und Venerologie/ FOBI 2020 DIGITAL” organized by the Department of Dermatology and Allergology, LMU Klinikum in July 2020 (from left: Werner Saxinger, Michael Mühlstädt, Christian Kunte, Daniela Hartmann).

also for medical practitioner assistants and nurses, as well as pharmacological coworkers of pharmaceutical and biotech companies.

This year's congress offered many innovations including the “What's new” sessions, the “Practical management courses” with no additional costs for the participants and many new topics among the virtual practical courses. Another novelty was the on-demand variant of the congress, marking it the first time that all presenta-



Virtual foyer of the one of the first digital dermatological congresses in Germany during the COVID-19-pandemics, the “27. Fortbildungswoche für praktische Dermatologie und Venerologie/ FOBI 2020 DIGITAL” organized by the Department of Dermatology and Allergology, LMU Klinikum in July 2020.



Participants and speakers at the Advanced Reflectance Confocal Microscopy Course organized by the Department of Dermatology and Allergology, LMU Klinikum in January 2020

tions were made available on the website, free of charge for pre-registered participants, and could be accessed by the interested parties for a period lasting six months. Thus, providing the opportunity to continue to explore all presented subjects long after the end of the congress.

The virtual congress resulted in many interesting interactive exchanges between the participants, our organization team and our speakers and they motivate us to explore the digital or hybrid form of congress for dermatological education in the future.

Other selected meetings

In the years 2019 and 2020 our Department organized and co-organized several other successful seminars, scientific meetings and events. We would like to mention a selection of the most memorable ones, including:

- the meeting on Atopic Eczema Management ("Management der Neurodermitis in Klinik und Praxis") organized annually by Prof. Andreas Wollenberg (26.06.2019 and 07.10.2020).
- the Summer Meeting of the Munich Dermatological Society ("MDG Sommersitzung") held at the Technical University and co-organized by Prof. Michael Flaig, Head of our Dermatopathological unit.
- a two-day Laser Certification Course, held on the 16.-17.10.2020 and organized by Assoc. Prof. Dr. Daniela Hartmann, Ph.D., and our laser team, consisted of practical demonstrations of various laser treatments, as well as numerous plenary lectures. This year's hybrid variant of the course (partly pres-
- the Autumn Meeting of the Munich Dermatological Society (MDG) in honor of the former Head of our Department Prof. Gerd Plewig's 80th birthday ("MDG Herbstsitzung zu Ehren von Prof. Gerd Plewig") was held at our Department, organized by Prof. Michael Flaig on the 6th of November 2019.
- 30 Years of Dermoscopy - From Munich into the World - a jubilee symposium held on 22.-23.11.2019 at the Department of Dermatology and Allergology, LMU Klinikum under the lead of Prof. Wilhelm Stolz and Prof. Lars French honoring the impact of dermoscopy on dermatological diagnostics and presenting innovative imaging techniques as successful and promising successors of dermoscopy.
- the annual Pediatric Dermatology and Allergology Meeting („Pädiatrische Dermatologie und Allergologie“) organized by Prof. Andreas Wollenberg, Prof. Kathrin Giehl and Prof. Bianca Schaub (16.10.2019 as well as 11.11.2020).
- the Update on the guidelines and innovative therapies of rare skin cancer diseases ("Aktuelle Leitlinien und innovative Therapien bei seltenen Hautkrebserkrankungen", Prof. Max Schlaak; 13.11.2019).
- CME on Rosacea (PD Dr. Markus Reinholz; 11.12.2019 as well as 08.12.2020).



Professor Lars E. French (left), current Head of the Department of Dermatology and Allergology, LMU Klinikum congratulates his pre-predecessor, Professor Gerd Plewig (right) at The Autumn Munich Dermatological Society (MDG) Meeting held at the Department of Dermatology and Allergology, LMU Klinikum in November 2019 organized in honor of his 80th birthday ("MDG Herbstsitzung zu Ehren von Prof. Gerd Plewig")

- International Meeting The Advanced Reflectance Confocal Microscopy Course organized by Prof. Elke Sattler, Prof. Giovanni Pellacani from Modena and our imaging team (17.-18.01.2020) showed high interest in confocalists from all over Europe.
- ASPO Meeting ("Aktuelle Standards und Perspektiven in der Onkologie") on Skin Cancer (11.11.2020, Prof. Heinzerling and Comprehensive Cancer Center), a dermatooncological digital event „In conversation with..." organized by Prof. Lucie Heinzerling and Andrew Furness (NCRI, biomarker/ checkpoint resistance/ side effects).
- Virtual meeting on Systemic psoriasis therapies ("Systematische Therapie der Psoriasis"; Prof. Jörg Prinz and Prof. Lars E. French; 18.11.2020).

- oncological event „Leopoldina – Präzisionsonkologie" (Prof. Lucie Heinzerling, 20.-21.11.2020).
- CME on Actinic Keratosis/Squamous cell carcinoma ("Aktinische Keratosen / Plattenepithelkarzinom", PD. Dr. Markus Reinholz; 02.12.2020).
- "Update Dermatoonkologie", 03.-04.12.2020, Prof. Lucie Heinzerling.
- "Immunonkologie 2.0 – Nebenwirkungsmanagement", 05.12.20, Prof. Lucie Heinzerling addressing skin cancer diseases, the therapeutical options, and organ side effects in the newest oncological treatments in dermatology.
- CME on Chronic Urticaria ("Chronische Urtikaria"; 09.12.2020) was held virtually and organized by Dr. Eva Oppel.

Numerous internal meetings, educational sessions and events were organized for the coworkers and students from our Department by several senior and junior physicians including interesting case reports and guidelines updates, as well as standard operating procedures or research slams (1., 2 and 3. Research Slam, Assoc. Prof. Markus Reinholz; 05.12.2019, 28.05.2020, 01.12.2020). Several patient-oriented seminars and courses were held in our Department, lately in the virtual form due to the pandemic regulations, in order to expand patients' disease knowledge and to enhance patients' involvement within the therapeutic efforts.



Organizers and participants of the 30 Years of Dermoscopy - From Munich into the World - a jubilee symposium held in November .2019 at the Department of Dermatology and Allergology, LMU Klinikum under the lead of Prof. Wilhelm Stolz and Prof. Lars French.

10 Focus program “inflammatory skin diseases”

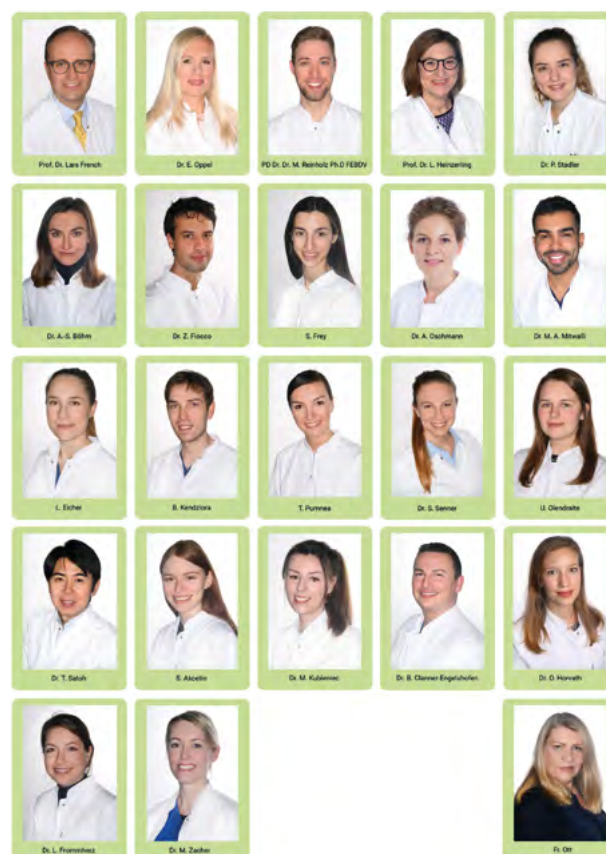
The Focus program «inflammatory skin disease» of the Department of Dermatology and Allergology, Klinikum Munich, has the objective of, on the one hand, informing different target groups about inflammatory skin diseases in a constant and highly professional manner and, on the other hand, further educating 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 Klinikum is to be 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 disease» are as follows:

- a. Promoting awareness of the general public with regard to inflammatory skin diseases as well as influencing behavioral patterns and raising awareness for underdiagnosed diseases, such as hidradenitis suppurativa. This being in view of the fact that today very effective treatments are available, in particular biologics and small molecules specific to signaling pathways, but not sufficiently known to many of those affected.
- b. Ongoing continuing education for medical professional, i.e. physicians (mostly dermatologists, but also general practitioners), medical assistants and nursing staff regarding prevention, diagnosis and treatment.
- c. Promoting research in the area of inflammatory skin diseases as well as furthering young medical academics in this area at the Department of Dermatology and Allergology of the LMU Klinikum, which will benefit patients in the long run.

A large group of very motivated senior physician and residents is actively involved in promoting the focus program under the direction of Prof. Lars E. French (see figure of participants).

In 2020 the following activities were completed:



For the general public

- Production of informational brochures about important diseases including psoriasis, atopic dermatitis, hidradenitis suppurativa and hand eczema.
- Public information events on hidradenitis suppurativa and rosacea

For healthcare professionals

- Department of Dermatology and Allergology, LMU Klinikum two quarterly CME events on psoriasis and urticaria
- Conceptualization and production of an informational pocket booklet for physicians entitled “Use of Immunomodulatory Systemic Therapies in Daily Dermatological Practice”

Biomedical research

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

11 Public relations

Events for the public and patients

Our Department regularly organizes information events for patients on dermatological topics such as neurodermitis, rosacea and acne. These events are highly appreciated. There also exist training courses (e.g. neurodermitis) 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>) is updated regularly to provide most actual informations to patients and medical staff. Also social media are supported by informations and blogs on www.twitter.com/LMU_Uniklinikum and www.facebook.de/LMU.Klinikum. The physicians of our clinic are highly appreciated for interviews, articles or videos about dermatological questions and problems. These are published for example in Internet (Youtube, Instagram), newspapers (Spiegel, NZZ) or TV (BR-Mediathek).

IL-36 γ induction underlies EGFR inhibitor-associated skin toxicity

429 Aufrufe • 04.02.2020

MAG ICH MAG ICH NICHT TEILEN SPEICHERN

Journal of Clinical Investigation 2920 Abonnenten

ABONNIEREN

In this episode, Lars French, Takashi K. Satoh and colleagues show that EGFR/MEK inhibitors and the commensal Cutibacterium acnes synergistically induce IL-36 γ in keratinocytes, resulting in neutrophilic acneiform skin toxicities.



© Merkur tz Redaktions GmbH & Co. KG

Patient information brochures for specific illnesses

New patient information brochures were created to give informations about most common skin diseases, such as psoriasis, hand eczema, acne inversa and others. These have the purpose to give objective informations to patients and will be available free of charge from our webpage. Also practicing dermatologists can order them for distribution to their patients.



12 Promotions, grants, honors and awards

Promotions

- Prof. Lucie Heinzerling, MPH, was appointed Professor (Univ.-Prof.) for dermatolo-oncology at Ludwig Maximilian University in 2020.
- Prof. Michael Flaig was appointed Adjunct Professor for dermatology at Ludwig Maximilian University in 2020.
- Prof. Max Schlaak was appointed Adjunct Professor for dermatolo-oncology at Ludwig Maximilian University in 2020.
- Priv.-Doz. Daniela Hartmann, MD, Ph.D., was appointed lead consultant (Itd. Oberärztin) at Dermatologie 1, München-Klinik, on 01.10.2019.
- Priv.-Doz. Markus Reinholz was appointed consultant (Oberarzt) at Ludwig Maximilian University in 2019.
- Dr. Julia Walch was appointed consultant (Funktionsoberärztin) at Ludwig Maximilian University on 01.01.2020.
- Dr. Lena Jakob was appointed consultant (Funktionsoberärztin) at Ludwig Maximilian University on 01.01.2020.
- Priv.-Doz. Dr. Katrin Kerl-French was appointed consultant (Oberärztin) at Ludwig Maximilian University on 01.02.2020.
- Prof. Franziska Ruëff was appointed consultant (Oberärztin) for dermatology at Ludwig Maximilian University on 01.07.2020.
- Dr. Orsolya Horvath was appointed consultant (Funktionsoberärztin) at Ludwig Maximilian University on 01.10.2020.
- Dr. Laura Engels was appointed consultant (Oberärztin) at Dermatologie 1, München-Klinik, on 01.05.2020.
- Dr. Cristel Ruini was appointed consultant (Funktionsoberärztin) at Dermatologie 1, München-Klinik, on 01.12.2020.

FHM board exam, Dermatology and Venerology

- » 2019: Dr. Markus Heppt
- » 2020: Dr. Britta Feichtner
Dr. Kinan Hayani
Dr. Orsolya Horváth
Dr. Rabia Pinarci
Dr. Christoph Rothenberger
Dr. Cristel Ruini

Specialization Allergology, Medical Tumor Therapy, Proctology or Medical Quality Management

- » 2019: PD Dr. Markus Heppt
Dr. Ali Alamri
PD Dr. Markus Reinholz
- » 2020: PD Dr. Markus Reinholz
Dr. Cristel Ruini
Dr. Kinan Hayani

European Board of Dermatology Exam (EBDV)

- » 2019: PD Dr. Markus Reinholz

Acceptance of chair positions at other medical/university Departments in Germany and abroad

- Prof. Carola Berking: Since October 2019 Chairwoman of the Department of Dermatology, Universitätsklinikum Erlangen

Grants

The Department of Dermatology at the LMU-Klinikum has been awarded grants amounting to more than € 4 million in 2019 und 2020:

Prof. Lars E. French, MD, PD 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" (900.000,- € of 2.424.745,- €)



Prof. Max Schlaak, MD

- » Research grant, Bundesministerium für Gesundheit. Project „SCP2-Skin Classification Project: Smarte Algorithmen zur Unterstützung in der Melanomdiagnostik“ (100.699,- €, transferred to Prof. Heinzerling, MPH, and Prof. French)

Dr. Justin Gabriel Schlager

- » Research grant, Verein zur Förderung von Wissenschaft und Forschung, WiFoMed, Faculty of Medicine, Ludwig-Maximilian University, Munich. Project “Surgical site infection in skin surgery: risk factors, prophylaxis and the role of the skin microbiome” (16.000,- €)

PD Daniela Hartmann, MD, Ph.D.

- » Research grant, Bayern innovativ, Bayer. Staatsministerium für Wirtschaft, Landentwicklung und Energie. Project „Ex vivo konfokale Laserscanmikroskopie 2020“ (126.000,- €)

»

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 melanoma patients and patients with autoimmunity – Systems medicine analysis of melanoma and autoimmunity regarding 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 ImmunoTherapy” (538.730,- € of 581.775,- € transferred)
- » Research grant, Stiftung Immunonkologie, Bristol Myers Squibb. Project “SERIO: Side Effect Registry Immuno-Onco-logy” (100.000,- € of 200.000,- € transferred)

Prof. Franziska Rüeff, MD and Prof. Andreas Wollenberg, MD

- » Research grant, Novartis. Project “Lebensqualität und Sexualität bei Patienten mit Psoriasis” (122.000,- €)

Dr. Cristel Ruini

- » Grant, FöFoLe Program, Faculty of Medicine, Ludwig Maximilian University, Munich. Project „Prospektive Studie zur Evaluation der Line-field konfokalen optischen Kohärenztomographie (LC-OCT) zur in-vivo Diagnostik von pigmentierten und nicht-pigmentierten Läsionen der Haut“ (44.900,- €)

PD Burkhard Summer, MBc

- » WAP-Cluster grant for new IT equipment of the Department from the Bayer. Staatsministerium für Bildung und Kultus, Wissenschaft und Kunst. (127.000,- €)

Prof. Andreas Wollenberg, MD

- » Grant, European Union, Horizon 2020. 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“ (492.479,- € of 15.500.000,- €)
- » Research grant, Foundation pour la Dermatite Atopique. Project “Evaluation of the Munich Compact Education Project NeKoS” (50.000,- €)

Honors and awards

- Prof. Lars E. French, MD, has been elected on 13.07. 2019 as president of the International League of Dermatological Societies (ILDS: www.ilds.org).
- Prof. Kathrin Giehl, MD, has received the “International Award for Social Responsibility in Dermatology 2019” from the pharmaceutical company L’Oréal, 20.000,- €.
- Prof. Gerd Plewig, MD, has received the Honorary Membership of the European Society for Dermatological Research (ESDR) in 2020.
- The psychologist Dr. Stefan Zippel has been awarded with the silver medal „München leuchtet – Den Freundinnen und Freunden Münchens“ for his teaching activities targeting the prevention of sexual transmitted diseases on 11.12.2019.

13 Partners, sponsors, collaboration with industry, fundraising

A high quality of medical performance requires continuous efforts in training and research. Therefore, we are particularly committed to medical education and training as well as to deepening our understanding of the development, diagnosis and treatment of dermatological diseases through clinical and experimental research projects. The biennial "Training Week for Practical Dermatology and Venereology", known as Fobi, is an important conference for the continuing medical education of dermatologists in Germany. In addition, we hold numerous continuing education events in our clinic. The partnership with pharmaceutical companies and medical device manufacturers is an important prerequisite in the implementation of these events.



New therapeutic procedures and drugs require clinical trials. Here, it is the confidence of the sponsors in the clinical performance of ours that enables us to conduct numerous clinical trials that significantly expand the treatment options for our patients. Treatment studies on malignant melanoma and other tumors as well as on inflammatory skin diseases reflect the trust that the research-based pharmaceutical industry has in working with us.

Clinical and experimental research is dependent on third-party funding sources. Fundraising from public sponsors and foundations to support research projects is one of the important tasks of a university hospital in order to be able to carry out the research projects. Here, we are grateful to the funders who process and manage our research applications and finance our research activities. They give us the opportunity to address important scientific issues. Therefore, within the context of this Biennial Report, we would like to express our particular gratitude to our partners in science and industry for their trustful cooperation.

With special acknowledgement of our partners:

Focus program „inflammatory skin diseases“

- AbbVie Deutschland GmbH & Co KG
- Almirall Herman GmbH
- Janssen-Cilag GmbH
- Novartis Pharma GmbH
- UCB Pharma GmbH

Other corporate sponsors

- ALK Abelló A/S
- Amgen GmbH
- AstraZeneca GmbH
- Beiersdorf AG
- 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 GmbH
- La Roche Posay
- Sanofi-Aventis Deutschland GmbH
- Texamed GmbH
- Thermo Fisher Scientific
- Töpfer GmbH



14 Publications of the Department (2019 and 2020)

Original Publications

- » Abraham S, Haufe E, Harder I, Heratizadeh A, Kleinheinz A, Wollenberg A, Weisshaar E, Augustin M, Wiemers F, Zink A, Biedermann T, von Kiedrowski R, Hilgers M, Worm M, Pawlak M, Sticherling M, Fell I, Handrick C, Schäkel K, Staubach P, Asmussen A, Schwarz B, Bell M, Neubert K, Effendy I, Bieber T, Homey B, Gerlach B, Tchitcherina E, Stahl M, Schwichtenberg U, Rossbacher J, Buck P, Mempel M, Beissert S, Werfel T, Weidinger S, Schmitt J; TREATgermany study group. Implementation of dupilumab in routine care of atopic eczema: results from the German national registry TREATgermany. *Br J Dermatol*. 2020 Aug;(Letter)183(2):382-384
- » Akinlade B, Guttman-Yassky E, de Bruin-Weller M, Simpson EL, Blauvelt A, Cork MJ, Prens E, Asbell P, Akpek E, Corren J, Bachert C, Hirano I, Weyne J, Korotzer A, Chen Z, Hultsch T, Zhu X, Davis JD, Mannent L, Hamilton JD, Teper A, Staudinger H, Rizova E, Pirozzi G, Graham NMH, Shumel B, Ardeleanu M, Wollenberg A. Conjunctivitis in dupilumab clinical trials. *Br J Dermatol* 2019;181(3):459-473
- » Alamri A, Lill D, Summer B, Thomas P, Thomas B, Oppel E. Artificial nail wearing: Unexpected elicitor of allergic contact dermatitis, oral lichen planus and risky arthroplasty. *Contact Dermatitis* 2019;81(3):210-211
- » Alexander H, Paller AS, Traidl-Hoffmann C, Beck LA, De Benedetto A, Dhar S, Girolomoni G, Irvine AD, Spuls P, Su J, Thyssen JP, Vestergaard C, Werfel T, Wollenberg A, Deleuran M, Flohr C. The role of bacterial skin infections in atopic dermatitis: expert statement and review from the International Eczema Council Skin Infection Group. *Br J Dermatol* 2020 Jun;182(6):1331-1342
- » Alexis AF, Rendon M, Silverberg JI, Pariser DM, Lockshin B, Griffiths CE, Weisman J, Wollenberg A, Chen Z, Davis JD, Li M, Eckert L, Gadkari A, Shumel B, Rossi AB, Graham NM, Ardeleanu M. Efficacy of Dupilumab in Different Racial Subgroups of Adults With Moderate-to-Severe Atopic Dermatitis in Three Randomized, Placebo-Controlled Phase 3 Trials. *J Drugs Dermatol* 2019;18(8):804-813
- » Alharbi R, Clanner-Engelshofen B, Hildebrand JA, Schinabeck-Kühne N, Niculescu L, French LE, Kaudewitz P, Reinholz M. Diode lasers for the treatment of genital warts. *Eur J Dermatol* 2019; 29(4): 409-416
- » Alsenaid A, Ezmerli M, Srouf J, Heppt M, Illigens BM, Prinz JC. Biologics and small molecules in patients with scalp psoriasis: a systematic review. *J Dermatolog Treat* 2020 Jun 19:1-10
- » Anzengruber F, Alotaibi F, Kaufmann LS, Ghosh A, Oswald MR, Maul JT, Meier B, French LE, Bonmarin M, Navarini AA. Thermography: High sensitivity and specificity diagnosing contact dermatitis in patch testing. *Allergol Int* 2019;68(2):254-258
- » Anzengruber F, Augustin M, Radtke MA, Thaci D, Yawalkar N, Streit M, Reich K, Drach M, Sorbe C, French LE, Mrowietz U, Maul JT, Itin PH, Navarini AA. Smoking does not Alter the Therapy Response to Systemic Anti-psoriatic Therapies: A Two-country, Multi-centre, Prospective, Non-interventional Study. *Acta Derm Venereol* 2019;99(10):871-877
- » Anzengruber F, Ignatova D, Schlaepfer T, Chang YT, French LE, Pascolo S, Contassot E, Bobrowicz M, Hoetzenecker W, Guenova E. Divergent LAG-3 versus BTLA, TIGIT, and FCRL3 expression in Sézary syndrome. *Leuk Lymphoma* 2019;60(8):1899-1907
- » Aoki R, Clanner-Engelshofen BM, Charnowski S, Ruzicka T, Reinholz M. Distribution of high-risk α -genus human papillomavirus genotypes impacts cutaneous neoplasms. *J Eur Acad Dermatol Venereol* 2019;33(7):1304-1311
- » Arakawa A, Vollmer S, Tietze J, Galinski A, Heppt MV, Bürdek M, Berking C, Prinz JC. Clonality of CD4+ Blood T-cells Predicts Longer Survival With CTLA4 or PD-1 Checkpoint Inhibition in Advanced Melanoma. *Front Immunol* 2019;10
- » Arakawa Y, Arakawa A, Vural S, Mahajan R, Prinz JC. Renal clearance and intracellular half-life essentially determine methotrexate toxicity: A case series. *JAAD* 2019; (Case Report) 5(1):98-100
- » Aszodi N, Thurau S, Seegräber M, de Bruin-Weller M, Wollenberg A. Management of dupilumab-associated conjunctivitis in atopic dermatitis. *J Dtsch Dermatol Ges* 2019 May;17(5):488-492
- » Aszodi N, Pumnea T, Wollenberg A. Dupilumab-Associated Healing of Alopecia Areata in an Atopic Dermatitis Patient. *Dtsch Med Wochenschr* 2019;144(9):602-605
- » Aszodi N, Engels L, Hayani K, Flaig MJ, Oppel EM. Epidermodysplasia verruciformis. *Hautarzt*. 2020 Jul; (Case Report) 71(Suppl 1):47-49
- » Aurich S, Dölle-Bierke S, Francuzik W, Bilo MB, Christoff G, Fernandez-Rivas M, Hawranek T, Pföhler C, Poziomkowska-Gesicka I, Renaudin JM, Oppel E, Scherer K, Treudler R, Worm M. Anaphylaxis in Elderly Patients-Data From the European Anaphylaxis Registry. *Front Immunol* 2019;10
- » Awadalla M, Mahmood SS, Groarke JD, Hassan MZO, Nohria A, Rokicki A, Murphy SP, Mercaldo ND, Zhang L, Zlotoff DA, Reynolds KL, Alvi RM, Banerji D, Liu S, Heinzerling LM, Jones-O'Connor M, Bakar RB, Cohen JV, Kirchberger MC, Sullivan RJ, Gupta D, Mulligan CP, Shah SP, Ganatra S, Rizvi MA, Sahni G, Tocchetti CG, Lawrence DP, Mahmoudi M, Devereux RB, Forrester BJ, Mandawat A, Lyon AR, Chen CL, Barac A, Hung J, Thavendiranathan P, Picard MH, Thuny F, Ederhy S, Fradley MG, Neilan TG. Global Longitudinal Strain and Cardiac Events in Patients With Immune Checkpoint Inhibitor-Related Myocarditis. *J Am Coll Cardiol*;75(5):467-78
- » Bağcı IS, Aoki R, Krammer S, Ruzicka T, Sárdy M, Hartmann D. Ex vivo confocal laser scanning microscopy: An innovative method for direct immunofluorescence of cutaneous vasculitis. *J Biophotonics* 2019;12(9)
- » Bağcı IS, Aoki R, Krammer S, Ruzicka T, Sárdy M, French LE, Hartmann D. Ex vivo confocal laser scanning microscopy for bullous pemphigoid diagnostics: new era in direct immunofluorescence? *J Eur Acad Dermatol Venereol* 2019;33(11):2123-2130
- » Bağcı IS, Aoki R, Krammer S, Vladimirova G, Ruzicka T, Sárdy M, French LE, Hartmann D. Immunofluorescence and histopathological assessment using ex-vivo

- confocal laser scanning microscopy in lichen planus. *J Biophotonics* 2020 Oct 6
- » 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* 2020 Dec 21
 - » Barbarot S, Wollenberg A, Silverberg JL, 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* 2020 Jun 8:1-12
 - » Böhmer D, Seegräber M, Horváth ON, Wollenberg A. Bullous pemphigoid on a healed herpes zoster: A rare example of an isotopic response. *Hautarzt* 2020 Jan;(Case Report) 71(1):53-56
 - » Brandl L, Hartmann D, Kirchner T, Menssen A. Expression of n-MYC, NAMPT and SIRT1 in Basal Cell Carcinomas and their Cells of Origin. *Acta Derm Venereol* 2019;99(1):63-71
 - » Brinker TJ, Hekler A, Enk AH, Klode J, Hauschild A, Berking C, Schilling B, Haferkamp S, Schadendorf D, Fröhling S, Utikal JS, von Kalle C, Collaborators. A convolutional neural network trained with dermoscopic images performed on par with 145 dermatologists in a clinical melanoma image classification task. *Eur J Cancer* 2019;111:148-154
 - » Brinker TJ, Hekler A, Hauschild A, Berking C, Schilling B, Enk AH, Haferkamp S, Karoglan A, von Kalle C, Weichen-thal M, Sattler E, Schadendorf D, Gaiser MR, Klode J, Utikal JS. Comparing artificial intelligence algorithms to 157 German dermatologists: the melanoma classification benchmark. *Eur J Cancer* 2019;111:30-37
 - » Brinker TJ, Hekler A, Enk AH, Klode J, Hauschild A, Berking C, Schilling B, Haferkamp S, Schadendorf D, Holland-Letz T, Utikal JS, von Kalle C, Collaborators. Deep learning outperformed 136 of 157 dermatologists in a head-to-head dermoscopic melanoma image classification task. *Eur J Cancer* 2019;113:47-54
 - » Brinker TJ, Hekler A, Enk AH, Berking C, Haferkamp S, Hauschild A, Weichen-thal M, Klode J, Schadendorf D, Holland-Letz T, von Kalle C, Fröhling S, Schilling B, Utikal JS. Deep neural networks are superior to dermatologists in melanoma image classification. *Eur J Cancer* 2019;119:11-17
 - » Brinker TJ, Schlager G, French LE, Jutzi T, Kittler H. Computer-assisted skin cancer diagnosis : Is it time for artificial intelligence in clinical practice? *Hautarzt* 2020; 71(9): 669-676
 - » Bruckner-Tuderman L, French L, Prinz JC. In honor of Prof. Dr. med. Dr. h.c. mult. Gerd Plewig on the occasion of his 80th birthday : Gerd Plewig-a lifetime for dermatology. *Hautarzt* 2019;70(5):386-387
 - » Brügggen M-C, Valencak J, Stranzenbach R, Li N, Stadler R, Jonak C, Bauer W, Porkert S, Blaschke A, Meiss F, Nicolay J, Wehkamp U, Schlaak M, Nguyen V A, Romani N, Cozzio A, Gayathri N, Dimitriou F, French L, Dummer R, Guenova E, Clinical diversity and treatment approaches to blastic plasmacytoid dendritic cell neoplasm: a retrospective multicentre study. *J Eur Acad Dermatol Venereol* 2020;34(7):1489-1495
 - » Brütting J, Reinhardt L, Bergmann M, Schadendorf D, Weber C, Tilgen W, Berking C, Meier F, NVKH. Quality, Readability, and Understandability of German Book-lets Addressing Melanoma Patients. *J Cancer Educ* 2019;34(4):760-767
 - » Brütting J, Bergmann M, Garzarolli M, Rauschenberg R, Weber C, Berking C, Tilgen W, Schadendorf D, Meier F, on behalf of the NVKH supporting group. Unmet information needs of patients with melanoma in Germany. *Melanoma Res* 2019;29(2):196-204
 - » Bürkel F, Jost T, Hecht M, Heinzerling L, Fietkau R, Distel L. Dual mTOR/DNA-PK Inhibitor CC-115 Induces Cell Death in Melanoma Cells and Has Radiosensitizing Potential. *Int J Mol Sci* 2020 Dec;21(23):9321
 - » Clanner-Engelshofen BM, French LE, Reinholz M. *Corynebacterium kroppenstedtii* subsp. *demodicis* is the endobacterium of *Demodex folliculorum*. *J Eur Acad Dermatol Venereol* 2020 May;34(5):1043-1049
 - » Clanner-Engelshofen BM, French LE, Reinholz M. Methods for extraction and ex-vivo experimentation with the most complex human commensal, *Demodex* spp. *Exp Appl Acarol* 2020 Jan;80(1):59-70
 - » Clanner-Engelshofen BM, Marsela E, Engelsberger N, Guertler A, Schaubert J, French LE, Reinholz M. *Condylomata acuminata*: A retrospective analysis on clinical characteristics and treatment options. *Heliyon* 2020 Mar 11;6(3)
 - » Clanner-Engelshofen BM, French LE, Reinholz M. Octenidine disinfection during the SARS-CoV-2 pandemic. *Eur J Dermatol* 2020; (Letter) 30(5):613-614
 - » Contassot E, French LE. A new link between autoinflammation and hidradenitis suppurativa? *Br J Dermatol* 2019;180(6):1294-1295
 - » Cork MJ, Simpson EL, Armstrong A, Barbarot S, Puig L, Girolomoni G, de Bruin-Weller M, Wollenberg A, Kataoka Y, Remitz A, Beissert S, Mastey V, Ardeleanu M, Chen Z, Gadkari A, Chao J. Dupilumab improves patient-reported symptoms of atopic dermatitis, symptoms of anxiety and depression, and health-related quality of life in moderate-to-severe atopic dermatitis: analysis of pooled data from the randomized trials SOLO 1 and SOLO 2. *J Dermatolog Treat* 2020 Sep;31(6):606-614
 - » Cussigh CS, Fink C, Winkler JK, Toberer F, Enk A, Sattler EC, Haenssle HA. Reflectance confocal microscopy in Shiitake dermatitis. *Hautarzt* 2019;70(10):811-814
 - » Daillère R, Derosa L, Bonvalet M, Segata N, Routy B, Gariboldi M, Budinská E, De Vries IJM, Naccarati AG, Zitvogel V, Caldas C, Engstrand L, Loibl S, Fieschi J, Heinzerling L, Kroemer G, Zitvogel L Trial watch: the gut microbiota as a tool to boost the clinical efficacy of anticancer immunotherapy. *Oncoimmunology*, 9(1):1774298.
 - » De Palma AM, Mazereeuw-Hautier J, Giehl K, Hernández-Martin A, Merlos M, Moons P, Morren MA. Burden of itch in ichthyosis: a multicentre study in 94 patients. *J Eur Acad Dermatol Venereol* 2019;33(11)
 - » Didona D, Pumnea T, von Braunmühl T, Wolf R. Efficacy of oral alitretinoin in the treatment of nail lichen planus E-poster EADV Virtual Congress 2020 (Letter)
 - » Dimitriou F, Matter AV, Mangana J, Urosevic-Maiwald M, Micaletto S, Braun RP, French LE, Dummer R. Cytokine Release Syndrome During Sequential Treatment With Immune Checkpoint Inhibitors and Kinase Inhibitors for Metastatic Melanoma. *J Immunother* 2019;42(1):29-32
 - » Dimitriou F, Schanz U, Nair G, Kimeswenger S, Brügggen MC, Hoetzenecker W, French LE, Dummer R, Cozzio A, Guenova E. Long-Term Disease Control After Allogeneic Hematopoietic Stem Cell Transplantation in Primary

- Cutaneous T-cell Lymphoma: Results from a Single Institution Analysis. *Front Med (Lausanne)* 2020;7:290
- » Distler M, Maul JT, Steiner UC, Jandus P, Kolois AGA, Murer C, Graf N, Seebach JD, Pichler WJ, Navarini AA, French LE, Helbling A, Schmid-Grendelmeier P. Efficacy of Omalizumab in Mastocytosis: Allusive Indication Obtained from a Prospective, Double-Blind, Multicenter Study (XOLMA Study). *Dermatology* 2020;236(6):529-539
 - » Doerschner M, Pekar-Lukacs A, Messerli-Odermatt O, Dommann-Scherrer C, Rütli M, Müller AM, Nair G, Kamarachev J, Kerl K, Beer M, Messerli M, Frauenknecht K, Haralambieva E, Hoetzenecker W, French LE, Guenova E. Interferon alfa-2a maintenance after salvage autologous stem cell transplantation in atypical mycosis fungoides with central nervous system involvement. *Br J Dermatol* 2019;181(6):1296-1302
 - » Drick N, Milger K, Seeliger B, Fuge J, Korn S, Buhl R, Schuhmann M, Herth F, Kendziora B, Behr J, Kneidinger N, Bergmann KC, Taube C, Welte T, Suhling H. Switch from IL-5 to IL-5-Receptor α Antibody Treatment in Severe Eosinophilic Asthma. *J Asthma Allergy* 2020 Nov 11;13:605-614
 - » Drick N, Milger K, Korn S, Buhl R, Schumann M, Felix H, Kendziora B, Bergmann K, Taube C, Welte T, Suhling H. Umstellung der Antikörpertherapie bei schwerem eosinophilen Asthma bronchiale von anti-IL5- auf anti-IL5-Rezeptor Antikörper. 61. Kongress der Deutschen Gesellschaft für Pneumologie und Beatmungsmedizin e.V. 2020 (Letter)
 - » Edwards S, Boffa MJ, Janier M, Calzavara-Pinton P, Rovati C, Salavastru CM, Rongioletti F, Wollenberg A, Butacu AI, Skerlev M, Tiplica GS. 2020 European guideline on the management of genital molluscum contagiosum. *J Eur Acad Dermatol Venereol*. 2020 Sep 2
 - » Eicher L, Flaig MJ, Senner S, Betke M. Linear porokeratosis. *Hautarzt*. 2020 Jul;(Case Report) 71(Suppl 1):54-56.
 - » Engels L, Jakob L, Sattler E. Fournier gangrene. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):10-13
 - » Eyerich K, Brown SJ, Perez White BE, Tanaka RJ, Biss-onette R, Dhar S, Bieber T, Hijnen DJ, Guttman-Yassky E, Irvine A, Thyssen JP, Vestergaard C, Werfel T, Wollenberg A, Paller AS, Reynolds NJ. Human and computational models of atopic dermatitis: A review and perspectives by an expert panel of the International Eczema Council. *J Allergy Clin Immunol* 2019;143(1):36-45
 - » Fischer T, Sattler G, Prager W, Rzany B, Pavicic T, Gauglitz G, Weissenberger P, Riaz S. Safety, Tolerability, and Efficacy of Repeat-Dose Injections of Incobotulinum-toxinA in the Treatment of Upper Facial Lines: Results from a Prospective, Open-Label, Phase III Study. *J Drugs Dermatol*. 2020; 19(5):461-469
 - » Francuzik W, Ruëff F, Bauer A, Bilò MB, Cardona V, Christoff G, Dölle-Bierke S, Ensina L, Fernández Rivas M, Hawranek T, O'B Hourihane J, Jakob T, Papadopoulos NG, Pföhler C, Poziomkowska-Gesicka I, Van der Brempt X, Scherer Hofmeier K, Treudler R, Wagner N, Wedi B, Worm M. Phenotype and risk factors of venom-induced anaphylaxis: A case-control study of the European Anaphylaxis Registry. *J Allergy Clin Immunol* 2020 Jun 22:S0091-6749(20)30838-1
 - » Felcht M, Klemke CD, Nicolay JP, Weiss C, Assaf C, Wobser M, Schlaak M, Hillen U, Moritz R, Tantcheva-Poor I, Nashan D, Beyer M, Dippel E, Müller CSL, Sachse MM, Meiss F, Géraud C, Marx A, Goerdts S, Geissinger E, Kempf W. Primary cutaneous diffuse large B-cell lymphoma, NOS and leg type: Clinical, morphologic and prognostic differences. *J Dtsch Dermatol Ges* 2019;17(3):275-285
 - » Freeman EE, McMahon DE, Fitzgerald ME, Fox LP, Rosenbach M, Takeshita J, French LE, Thiers BH, Hruza GJ. The AAD COVID-19 Registry: Crowdsourcing Dermatology in the Age of COVID-19. *Am Acad Dermatol* 2020; 83:509-510
 - » Freeman EE, McMahon DE, Lipoff JB, Rosenbach M, Kovarik C, Takeshita J, French LE, Thiers BH, Hruza GJ, Fox LP. Pernio-like skin lesions associated with COVID-19: A case series of 318 patients from 8 countries. *J Am Acad Dermatol* 2020;83:486-492
 - » Freeman EE, McMahon DE, Lipoff JB, Rosenbach M, Kovarik C, Desai SR, Harp J, Takeshita J, French LE, Lim HW, Thiers BH, Hruza GJ, Fox LP. The spectrum of COVID-19-associated dermatologic manifestations: An international registry of 716 patients from 31 countries. *J Am Acad Dermatol* 2020;83:118-1129
 - » Freeman EE, McMahon DE, Hruza GJ, Irvine AD, Spuls PI, Smith CH, Mahil SK, Castelo-Soccio L, Cordoro KM, Kara-Corrales I, Naik HB, Alhusayen R, Ingram JR, Feldman SR, Balogh EA, Kappelman MD, Wall D, Meah N, Sinclair R, Beylot-Barry M, Fitzgerald M, French LE, Lim HW, Griffiths CEM, Flohr C. International collaboration and rapid harmonization across dermatologic COVID-19 registries. *J Am Acad Dermatol* 2020;83:e261-e266
 - » Freeman EE, McMahon DE, Hruza GJ, Lipoff JB, French LE, Fox LP, Fassett MS. Timing of PCR and antibody testing in patients with COVID-19-associated dermatologic manifestations. *J Am Acad Dermatol* 2020 Sep 10
 - » French L, Prinz JC, Bruckner-Tuderman. Laudatio zum 80. Geburtstag für Prof. Dr. med. Dr. h.c. mult. Gerd Plewig. *J Dtsch Dermatol Ges* 2019;17(6):676-677
 - » Frey S, Sticht H, Wilsmann-Theis D, Gerschütz A, Wolf K, Löhr S, Haskamp S, Frey B, Hahn M, Ekici AB, Uebe S, Thiel C, Reis A, Burkhardt H, Behrens F, Köhm M, Rech J, Schett G, Assmann G, Kingo K, Köks S, Mössner R, Prinz JC, Oji V, Schulz P, Muñoz LE, Kremer AE, Wenzel J, Hüffmeier U. Rare Loss-of-Function Mutation in SERPINA3 in Generalized Pustular Psoriasis. *J Invest Dermatol* 2020 Jul;140(7):1451-1455.e13
 - » Frey S, Kendziora B, Holch JW, Lindner L, French LE, Wollenberg A. Immune Thrombocytopaenic Purpura in a Patient with Atopic Dermatitis Treated with Dupilumab. *Acta Derm Venereol* 2020 Dec 22
 - » Fleschutz K, Walter L, Leistner R, Heinzerling L: ALK Inhibitors Do Not Increase Sensitivity to Radiation in EML4-ALK Non-small Cell. *Lung Cancer. Anticancer Res* 2020
 - » Galldiks N, Abdulla DS, Scheffler M, Wolpert F, Werner JM, Huellner MW, Stoffels G, Schweinsberg V, Schlaak M, Kreuzberg N, Landsberg J, Lohmann P, Ceccon G, Baues C, Trommer M, Celik E, Ruge MI, Kocher M, Mar-nitz S, Fink GR, Tonn JC, Weller M, Langen KJ, Wolf J, Mauch C. Treatment Monitoring of Immunotherapy and Targeted Therapy using 18F-FET PET in Patients with Melanoma and Lung Cancer Brain Metastases: Initial Experiences. *J Nucl Med* 2020 Sep
 - » Garbe C, Keim U, Suciu S, Amaral T, Eigentler TK, Gesierich A, Hauschild A, Heinzerling L, Kiecker F, Schandendorf D, Stadler R, Sunderkötter C, Tüting T, Utikal J, Wollina U, Zouboulis CC, Keilholz U, Testori A, Martus P, Leiter U. Eggermont AMM German Central Malignant Melanoma Registry and the European Organisation for Research and Treatment of Cancer. Prognosis of Pa-

- tients With Stage III Melanoma According to American Joint Committee on Cancer Version 8: A Reassessment on the Basis of 3 Independent Stage III Melanoma Cohorts. *J Clin Oncol*;38(22):2543-51.
- » Giehl K, Hamm H, Has C. Role of the dermatologist in recognizing syndromes. *Hautarzt* 2019;70(7):472-473
 - » Graf SA, Heppt MV, Wessely A, Krebs S, Kammerbauer C, Hornig E, Strieder A, Blum H, Bosserhoff AK, Berking C. The myelin protein PMP2 is regulated by SOX10 and drives melanoma cell invasion. *Pigment Cell Melanoma Res* 2019;32(3):424-434
 - » Guertler A, Reinholz M, Steckmeier S, Gauglitz GG. Evaluation of a non-ablative, fractional 1565 nm laser for the improvement of striae distensae albae. *J Eur Acad Dermatol Venereol* 2019;33(1):220-226
 - » Guertler A, Haas C, Sattler E. Bilateral pulmonary embolism after superficial thrombophlebitis of the upper extremity. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):24-26
 - » Guertler A, Moellhoff N, Schenck TL, Hagen CS, Kendziora B, Giunta RE, French LE, Reinholz M. Onset of occupational hand eczema among healthcare workers during the SARS-CoV-2 pandemic: Comparing a single surgical site with a COVID-19 intensive care unit. *Contact Dermatitis* 2020 Aug;83(2):108-114
 - » Guertler A, Jontvedt NM, Clanner-Engelshofen BM, Cappello C, Sager A, Reinholz M. Efficacy and Safety Results of Micellar Water, Cream and Serum for Rosacea in comparison to a control group. *J Cosmet Dermatology* 2020
 - » Guertler A, Schwaiger H, Poetschke J, Steckmeier S, Gauglitz G. Objective evaluation of an occlusive overnight intensive patch (OIP) containing onion extract and allantoin for hypertrophic scars. *J Cosmet Dermatology* 2020
 - » Gutzmer R, Wiegand S, Koelbl O, Wermker K, Hepp M, Berking C. Actinic Keratosis and Cutaneous Squamous Cell Carcinoma. *Dtsch Arztebl Int* 2019;116(37):616-626
 - » Hackenberg B*, Horváth ON*, Petachti M*, Schult R*, Yenigün N*, Bannenberg P. Scabies therapy in Germany: Results of a nationwide survey with a special focus on the efficacy of first-line therapy with permethrin. *Hautarzt* 2020 May;71(5):374-379
 - » Hadaschik E, Eming R, French LE, Girolomoni G, Hertl M, Jolles S, Karpatis S, Steinbrink K, Stingl G, Volc-Platzer B, Zillikens D, Enk A. European Guidelines (S1) on the use of high-dose intravenous immunoglobulin in dermatology. *Hautarzt* 2020;71(7): 542-552
 - » Haenssle HA, Fink C, Toberer F, Winkler J, Stolz W, Deinlein T, Hofmann-Wellenhof R, Lallas A, Emmert S, Buhl T, Zutt M, Blum A, Abassi MS, Thomas L, Tromme I, Tschandl P, Enk A, Rosenberger A, Sattler EC as Reader Study Level I and Level II Groups. Man against machine reloaded: performance of a market-approved convolutional neural network in classifying a broad spectrum of skin lesions in comparison with 96 dermatologists working under less artificial conditions. *Ann Oncol.* 2020 Jan;31(1):137-143
 - » Haenssle HA, Winkler JK, Fink C, Toberer F, Enk A, Stolz W, Deinlein T, Hofmann-Wellenhof R, Kittler H, Tschandl P, Rosendahl C, Lallas A, Blum A, Abassi MS, Thomas L, Tromme I, Rosenberger A, Sattler EC as Reader study level-I and level-II Groups Christina Alt. Skin lesions of face and scalp - Classification by a market-approved convolutional neural network in comparison with 64 dermatologists. *Eur J Cancer* 2020 Dec 25;144:192-199
 - » Hall R, Lebowitz MG, Bushmakina AG, Simpson EL, Gooderham MJ, Wollenberg A, Gater A, Wells JR, Cappelleri JC, Hsu MA, Papacharalambous J, Peeva E, Tallman AM, Zhang W, Chen L. Development and Content Validation of Pruritus and Symptoms Assessment for Atopic Dermatitis (PSAAD) in Adolescents and Adults with Moderate-to-Severe AD. *Dermatol Ther (Heidelb)* 2020 Dec 26
 - » Hamann CR, Egeberg A, Wollenberg A, Gislason G, Skov L, Thyssen JP. Pregnancy complications, treatment characteristics and birth outcomes in women with atopic dermatitis in Denmark. *J Eur Acad Dermatol Venereol* 2019;33(3):577-587
 - » Hartmann ES, Schluessel S, Köhler M, Beck F, Redeker JI, Summer B, Schönlitz V, Fottner A, Mayer-Wagner S. Fibroblast-like cells change gene expression of bone remodelling markers in transwell cultures. *Eur. J. Med. Res* 2020
 - » Hasan Ali O, Yurchenko AA, Pavlova O, Sartori A, Bmze D, Hiigis R, Ring SS, Hartmann F, Bühler D, Fritzsche FR, Jochum W, Navarini AA, Kim A, French LE, Dermitzaki E, Christiano AM, Hohl D, Bickers DR, Nikolaev SI, Flatz L. Genomic profiling of late-onset basal cell carcinomas from two brothers with nevoid basal cell carcinoma syndrome. *J Eur Acad Dermatol Venereol* 2020 Jun21;10.1111/jdv.16767
 - » Haskamp S, Bruns H, Hahn M, Hoffmann M, Gregor A, Löhr S, Hahn J, Schauer C, Ringer M, Flamann C, Frey B, Lesner A, Thiel CT, Ekici AB, von Hörsten S, Aßmann G, Riepe C, Euler M, Schäkel K, Philipp S, Prinz JC, Mößner R, Kersting F, Sticherling M, Sefiani A, Lyahyai J, Sondermann W, Oji V, Schulz P, Wilschmann-Theis D, Sticht H, Schett G, Reis A, Uebe S, Frey S, Hüffmeier U, Haskamp S, et al. Myeloperoxidase Modulates Inflammation in Generalized Pustular Psoriasis and Additional Rare Pustular Skin Diseases. *Am J Hum Genet* 2020 Sep 3;107(3):527-538
 - » Hayani KM, Escherich G, Koch K, French LE, Wolff HH. Juvenile Blastic Plasmacytoid Dendritic Cell Neoplasm. *Acta Derm Venereol* 2020;18:100(15):adv00245
 - » Hayani K, Giehl K, Kumbink J, Fischer J, Schlaak M, French LE, Wollenberg A. Gene Mutation Mapping in a Fatal Case of Phacomatosis Pigmentokeratolica Happle. *Acta Derma Venereol* 2020 Aug18;100(15):adv00245
 - » Hekler A, Utikal JS, Enk AH, Solass W, Schmitt M, Klode J, Schadendorf D, Sondermann W, Franklin C, Bestvater F, Flaig MJ, Krahl D, von Kalle C, Fröhling S, Brinker TJ. Deep learning outperformed 11 pathologists in the classification of histopathological melanoma images. *Eur J Cancer* 2019 Sep;118:91-96
 - » Hekler A, Utikal JS, Enk AH, Berking C, Klode J, Schadendorf D, Jansen P, Franklin C, Holland-Letz T, Krahl D, von Kalle C, Fröhling S, Brinker TJ. Pathologist-level classification of histopathological melanoma images with deep neural networks. *Eur J Cancer* 2019;115:79-83
 - » Hekler A, Utikal JS, Enk AH, Hauschild A, Weichenthal M, Maron RC, Berking C, Haferkamp S, Klode J, Schadendorf D, Schilling B, Holland-Letz T, Izar B, von Kalle C, Fröhling S, Brinker TJ, Collaborators. Superior skin cancer classification by the combination of human and artificial intelligence. *Eur J Cancer* 2019;120:114-121
 - » Hekler A, Kathner JN, Krieghoff-Henning E, Utikal JS, Meier F, Gellrich FF, Upmeyer Zu Belzen J, French L, Schlager JG, Ghoreschi K, Wilhelm T, Kutzner H, Berking C, Heppt MV, Haferkamp S, Sondermann W, Schadendorf D, Schilling B, Izar B, Maron R, Schmitt M, Fröhling

- S, Lipka DB, Brinker TJ. Effects of Label Noise on Deep Learning-Based Skin Cancer Classification. *Front Med* 2020 Mmicroay 6
- » Heppt MV, Graf S, Wessely A, Krebs S, Kammerbauer C, Hornig E, Strieder A, Blum H, Bosserhoff AK, Berking C. The myelin protein PMP2 is regulated by SOX10 and drives melanoma cell invasion. *Exp Dermatol* 2019;28(3):E94-E94
 - » Heppt MV, Berking C. Möglichkeiten und Grenzen von prognostischen Gensignaturen im frühen Melanom. *J Dtsch Dermatol Ges* 2019;17(8):769-770
 - » Heppt MV, Steeb T, Leiter U, Berking C. Efficacy of photodynamic therapy combined with topical interventions for the treatment of actinic keratosis: a meta-analysis. *J Eur Acad Dermatol Venereol* 2019;33(5):863-873
 - » Heppt MV, Amaral T, Kähler KC, Heinzerling L, Hassel JC, Meissner M, Kreuzberg N, Loquai C, Reinhardt L, Utikal J, Dabrowski E, Gesierich A, Pföhler C, Terheyden P, Thoms KM, Zimmer L, Eigentler TK, Kirchberger MC, Stege HM, Meier F, Schlaak M, Berking C. Combined immune checkpoint blockade for metastatic uveal melanoma: a retrospective, multi-center study. *J Immunother Cancer* 2019;7(1)
 - » Heppt MV, Steeb T, Schmitz L, Garbe C, French LE, Leiter U, Berking C. Harmonisation of Outcome Parameters and Evaluation (HOPE) for actinic keratosis: protocol for the development of a core outcome set. *Trials* 2019;20(1)
 - » Heppt MV, Leiter U, Steeb T, Amaral T, Bauer A, Becker JC, Breitbart E, Breuninger H, Diepgen T, Dirschka T, Eigentler T, Flaig M, Follmann M, Fritz K, Greinert R, Gutzmer R, Hillen U, Ihrler S, John SM, Kölbl O, Kraywinkel K, Löser C, Nashan D, Noor S, Nothacker M, Pfannenberger C, Salavastru C, Schmitz L, Stockfleth E, Szeimies RM, Ulrich C, Welzel J, Wermker K, Berking C, Garbe C. S3 guideline for actinic keratosis and cutaneous squamous cell carcinoma - short version, part 1: diagnosis, interventions for actinic keratoses, care structures and quality-of-care indicators. *J Dtsch Dermatol Ges* 2020 Mar;18(3):275-294
 - » Heppt MV, Clanner-Engelshofen BM, Marsela E, Wessely A, Kammerbauer C, Przybilla B, French LE, Berking C, Reinholz M. Comparative analysis of the phototoxicity induced by BRAF inhibitors and alleviation through Antioxidants. *Photodermatol Photoimmunol Photomed* 2020;36:126-134
 - » Heratzadeh A, Haufe E, Stölzl D, Abraham S, Heinrich L, Kleinheinz A, Wollenberg A, Weisshaar E, Augustin M, Wiemers F, Zink A, von Kiedrowski R, Hilgers M, Worm M, Pawlak M, Sticherling M, Fell I, Handrick C, Schäkel K, Staubach-Renz P, Asmussen A, Schwarz B, Bell M, Effendy I, Bieber T, Homey B, Gerlach B, Tchitcherina E, Stahl M, Schwichtenberg U, Rossbacher J, Buck P, Mempel M, Beissert S, Biedermann T, Weidinger S, Schmitt J, Werfel T; TREATgermany Study Group. Baseline characteristics, disease severity and treatment history of patients with atopic dermatitis included in the German AD Registry TREATgermany. *J Eur Acad Dermatol Venereol* 2020 Jun;34(6):1263-1272
 - » van Herpen CML, Agarwala SS, Hauschild A, Berking C, Beck JT, Schadendorf D, Jansen R, Queirolo P, Ascierto PA, Blank CU, Heinrich MC, Pal RR, Derti A, Antona V, Nauwelaerts H, Zubel A, Dummer R. Biomarker results from a phase II study of MEK1/2 inhibitor binimetinib (MEK162) in patients with advanced NRAS- or BRAF-mutated melanoma. *Oncotarget* 2019;10(19):1850-1859
 - » Higgins R, Jensen AN, Wachstein J, Bruckner-Tuderman L, Spiegel R, Traber H, Achermann J, Schaller M, Fehrenbacher B, Röcken M, Ignatova D, Chang YT, Fischer T, Schwieger-Briel AE, French LE, Hoetzenecker W, Hornung R, Malzacher A, Cozzio A, Navarini A, Has C, Guenova E. Uniparental Disomy of Chromosome 2 Unmasks New ITGA6 Recessive Mutation and Results in a Lethal Junctional Epidermolysis Bullosa in a Newborn. *Acta Derm Venereol* 2020;100:adv00041
 - » Hildebrand JA, Fischbeck AJ, Hundsdoerfer B, Clanner-Engelshofen BM, Marsela E, Wollenberg A, Flaig M, French LE, Reinholz M. Retrospective Analysis of alpha Human Papillomavirus (HPV) Types in Tissue Samples from Anogenital Dysplasias – Introduction of the RICH (Risk of HPV-related Carcinoma in HIV+/-patients) Score (in press). *J Eur Acad Dermatol Venereol*. 2020 Feb;34(2):377-384
 - » Hoepfner A, Marsela E, Clanner-Engelshofen BM, Horvath ON, Sardy M, French LE, Reinholz M. Rosacea and perioral dermatitis: a single-center retrospective analysis of the clinical presentation of 1032 patients. *J Dtsch Dermatol Ges*. 2020 Jun;18(6):561-570
 - » Horváth ON, Bagci IS, Ruzicka T, Sárdy M. Atypical anti-p200 pemphigoid with nail involvement and blisters over the joints. *J Dtsch Dermatol Ges* 2019;17(12):1289-1290
 - » Horváth ON, Tóth MD, Ádám S, Purebl G. Factors associated with serious intent to die among suicide attempters in Hungary. *Int J Ment Health Nurs* 2020 Aug;29(4):632-638
 - » Howells L, Thomas KS, Sears AV, Nasr I, Wollenberg A, Schuttelaar MLA, Romeijn GLE, Paller AS, Mueller K, Doytcheva K, Kataoka Y, Daguze J, Barbarot S, von Kobyletzki LB, Beckman L, Ratib S, Cowdell F, Santer M, Chalmers JR, long-term control of eczema working group for the HOME initiative. Defining and measuring 'eczema control': an international qualitative study to explore the views of those living with and treating atopic eczema. *J Eur Acad Dermatol Venereol* 2019;33(6):1124-1132
 - » Jakob L, Steeb T, Fiocco Z, Pumnea T, Jakob SN, Wessely A, Rothenberger CC, Brinker TJ, French LE, Berking C, Heppt MV. Patient Perception of Mobile Phone Apps or the Care and Prevention of Sexually Transmitted Diseases: Cross-Sectional Study. *JMIR Mhealth Uhealth* 2020;8(11):e16517
 - » Jarzebska NT, Lauchli S, Iselin C, French LE, Johansen P, Guenova E, Kündig TM, Pascolo S. Functional differences between protamine preparations for the transfection of mRNA. *Drug Deliv* 2020;27(1):1231-1235
 - » Jendoubi F, Rohde M, Prinz JC. Intracellular Streptococcal Uptake and Persistence: A Potential Cause of Erysipelas Recurrence. *Front Med (Lausanne)* 2019;6
 - » John SM, Garbe C, French LE, Takala J, Yared W, Cardone A, Gehring R, Spahn A, Stratigos A. Improved protection of outdoor workers from solar ultraviolet radiation: position statement. *J Eur Acad Dermatol Venereol* 2020 Nov 21
 - » Joly P, Horvath B, Patsatsi A, Uzun S, Bech R, Beissert S, Bergman R, Bernard P, Borradori L, Caproni M, Caux F, Cianchini G, Daneshpazhooh M, De D, Dmochowski M, Drenovska K, Ehrchen J, Feliciani C, Goebeler M, Groves R, Guenther C, Hofmann S, Ioannides D, Kowalewski C, Ludwig R, Lim YL, Marinovic B, Marzano AV, Mascaró JM Jr, Mimouni D, Murrell DF, Pincelli C, Squarcioni CP, Sárdy M, Setterfield J, Sprecher E, Vassileva S, Wozniak K, Yayli S, Zambruno G, Zillikens D, Hertl M, Schmidt E. Updated S2K guidelines on the management of pem-

- phigus vulgaris and foliaceus initiated by the european academy of dermatology and venereology (EADV). *J Eur Acad Dermatol Venereol* 2020 Sep;34(9):1900-1913
- » Juche A, Siegert E, Mueller-Ladner U, Riemekasten G, Günther C, Kötter I, Henes J, Blank N, Voll RE, Ehrchen J, Schmalzing M, Susok L, Schmeiser T, Sunderkoetter C, Distler J, Worm M, Kreuter A, Horváth ON, Schön MP, Korsten P, Zeidler G, Pfeiffer C, Krieg T, Hunzelmann N, Moinzadeh P. Reality of inpatient vasoactive treatment with prostacyclin derivatives in patients with acral circulation disorders due to systemic sclerosis in Germany. *Z Rheumatol* 2020 Dec;79(10):1057-1066
 - » Kähler KC, Hassel JC, Heinzerling L, Loquai C, Thoms KM, Ugurel S, Zimmer L, Gutzmer R. Side effect management during immune checkpoint blockade using CTLA-4 and PD-1 antibodies for metastatic melanoma – an update. *J Dtsch Dermatol Ges* 2020 Jun;18(6):582-609
 - » Kämmerer T, Wollenberg A, Engels L, Rothenberger C, Betke M, Hartmann D, Flaig MJ. Surgical treatment of verrucous Darier disease. *Hautarzt* 2020 Jul;71;(Case Report) (Suppl 1):60-62
 - » Kämmerer T, Clanner-Engelshofen BM, French LE, Reinholz M. Cryoglobulinemic vasculitis associated with chronic hepatitis C: a case of skin lesions/purpura in A 49-year-old Caucasian male patient. *Int J Dermatol* 2020;(Case Report) 59(12):e440-e442
 - » Kämmerer T, Walch J, Flaig M, French LE. COVID-19-associated herpetic gingivostomatitis. *Clin Exp Dermatol* 2021 Jan;46(1):174-176
 - » Kamann S, Oppel E. Hydrocolloid blister plaster decreases allergic contact dermatitis caused by Freestyle Libre and isobornyl acrylate. *Contact Dermatitis* 2019; 81(5): 380-381
 - » Kamann S, Oppel E, Liu F, Reichl FX, Heinemann L, Högg C. Evaluation of Isobornyl Acrylate Content in Medical Devices for Diabetes Treatment. *Diabetes Technol Ther* 2019;21(10)
 - » Kapp F, Reinholz M, Wollenberg A, Jakob T, Hertl M, Wolf R, Ruzicka T. Proceedings of the 13th congress of the German-Japanese Society of Dermatology. *Hautarzt* 2019;70(1):76-78
 - » Kapp F, Giehl K, Flaig MJ, Engels L. Cutaneous polyarteritis nodosa. *Hautarzt* 2020 Jul;71(Suppl 1):32-34
 - » Kapp F*, Summer B*, Thomas P. Usefulness of lymphocyte transformation test and in vitro cytokine release in differentiating between independent and cross-reacting nickel/palladium allergy. *Immun. Inflamm. Dis.* 2020
 - » Kendziora B, Dewey M. Prognostic value of the myocardial salvage index measured by T2-weighted and T1-weighted late gadolinium enhancement magnetic resonance imaging after ST-segment elevation myocardial infarction: A systematic review and meta-regression analysis. *PLoS One* 2020 Feb 13;15(2):e0228736
 - » Kendziora B, Stier H, Schlattmann P, Dewey M. MRI for measuring therapy efficiency after revascularisation in ST-segment elevation myocardial infarction: a systematic review and meta-regression analysis. *BMJ Open* 2020 Sep 28;10(9):e034359
 - » Kendziora B, Guertler A, Ständer L, Frey S, French LE, Wollenberg A, Reinholz M. Evaluation of hand hygiene and onset of hand eczema after the outbreak of SARS-CoV-2 in Munich. *Eur J Dermatol* 2020 Dec 8
 - » Kendziora B, Dewey M. Prognostic value of the myocardial salvage index measured by T2-weighted and T1-weighted late gadolinium enhancement magnetic resonance imaging after ST-segment elevation myocardial infarction: A systematic review and meta-regression analysis. *European Society of Radiology Annual Congress.* 2020 (Letter)
 - » Kendziora B, Ruëff F. Acne inversa: gar nicht so selten – häufig übersehen. *Medizin professionell.* 2020 (Letter)
 - » Kirchberger MC, Heppt MV, Schuler G, Berking C, Heinzerling L. Merkel Cell Carcinoma of the Head and Neck Compared to Other Anatomical Sites in a Real-World Setting: Importance of Surgical Therapy for Facial Tumors. *Facial Plast Surg* 2020, 36(3):249-54.
 - » Klein A, Kamann S, Högg C, Oppel EM. Contact allergy to continuous glucose monitoring systems and insulin patch pumps. *Hautarzt* 2020 Jul;71(Suppl 1):41-43.
 - » Knispel S, Stang A, Zimmer L, Lax H, Gutzmer R, Heinzerling L, Weishaupt C, Pföhler C, Gesierich A, Herbst R, Kaehler KC, Weide B, Berking C, Loquai C, Utikal J, Terheyden P, Kaatz M, Schlaak M, Kreuter A, Ulrich J, Mohr P, Dippel E, Livingstone E, Becker JC, Weichenthal M, Chorti E, Gronewold J, Schadendorf D, Ugurel S. Impact of a preceding radiotherapy on the outcome of immune checkpoint inhibition in metastatic melanoma: a multicenter retrospective cohort study of the DeCOG. *J Immunother Cancer* 2020 May 5; 8(1):e000395
 - » Knobler R, Arenberger P, Arun A, Assaf C, Bagot M, Berlin G, Bohbot A, Calzavara-Pinton P, Child F, Cho A, French LE, Gennery AR, Gniadecki R, Gollnick HPM, Guenova E, Jaksch P, Jakob L, Steeb T, Fiocco Z, Purnea T, Jakob SN, Wessely A, Rothenberger CC, Brinker TJ, French LE, Berking C, Heppt MV. Patient Perception of Mobile Phone Apps for the Care and Prevention of Sexually Transmitted Diseases: Cross-Sectional Study. *JMIR Mhealth Uhealth* 2020 Nov 10;8(11):e16517
 - » Jantschitsch C, Klemke C, Ludvigsson J, Papadavid E, Scarisbrick J, Schwarz T, Wolf P, Zic J, Zouboulis C, Zuckermann A, Greinix H. European dermatology forum: Updated guidelines on the use of extracorporeal photopheresis 2020 – Part 1. *J Eur Acad Dermatol Venereol* 2020;34(12):2693-2716
 - » Knobler R, Arenberger P, Arun A, Assaf C, Bagot M, Berlin G, Bohbot A, Calzavara-Pinton P, Child F, Cho A, French LE, Gennery AR, Gniadecki R, Gollnick HPM, Guenova E, Jaksch P, Jantschitsch C, Klemke C, Ludvigsson J, Papadavid E, Scarisbrick J, Schwarz T, Wolf P, Zic J, Zouboulis C, Zuckermann A, Greinix H. European dermatology forum: Updated guidelines on the use of extracorporeal photopheresis 2020 – Part 2. *J Eur Acad Dermatol Venereol* 2020 Sep 22
 - » Knuever J, Weiss J, Persa OD, Kreuzer K, Mauch C, Hallek M, Schlaak M: The use of circulating cell-free tumor DNA in routine diagnostics of metastatic melanoma patients. *Sci Rep.* 03/2020
 - » Koch E, Nickel F, Heinzerling L, Schulz Y, Berking C, Erdmann M. Immune checkpoint inhibitor-induced bilateral vestibulopathy. *J Immunother* 2020 Dec 22
 - » Kraft M, Scherer Hofmeier K, Ruëff F, Pföhler C, Renaudin JM, Bilò MB, Treudler R, Lang R, Cichocka-Jaroszc E, Fernandez-Rivas M, Christoff G, Papadopoulos NG, Ensi- na LF, Hourihane JO, Maris I, Koehli A, García BE, Jappe U, Vogelberg C, Ott H, Lange L, Spindler T, Dölle-Bierke S, Worm M. Risk Factors and Characteristics of Biphasic Anaphylaxis. *J Allergy Clin Immunol Pract.* 2020 Nov-Dec;8(10):3388-3395
 - » Krammer S, Krammer C, Salzer S, Bağcı IS, French LE, Hartmann D. Recurrence of Pemphigus Vulgaris Under Nivolumab Therapy. *Front Med (Lausanne)* 2019;6

- » Krammer S, French LE, Flaig M. A Fateful Trip to the Beach. *Dtsch Arztebl Int.* 2020 Feb 28;117(9):147
- » Lill D, Steinlein O, Engels L, Nasifoglu S, Srour J, Hayani K, Seegräber M, Flaig MJ, Schlaak M, Sattler E. Squamous cell carcinoma with lung metastasis in a young male patient. *Hautarzt.* 2020 Jul;71(Suppl 1):44-46
- » Krammer S, Krammer C, Vladimirova G, Salzer S, Ruini C, Sattler E, French LE, Hartmann D. Ex vivo confocal laser scanning microscopy: a potential new diagnostic imaging tool in onychomycosis comparable with gold standard techniques. *Front Med (Lausanne).* 2020 Nov 6;7:586648
- » Lang BM, Balermipas P, Bauer A, Blum A, Brölsch GF, Dirschka T, Follmann M, Frank J, Frerich B, Fritz K, Hauschild A, Heindl LM, Howaldt HP, Ihrler S, Kakkassery V, Klumpp B, Krause-Bergmann A, Löser C, Meissner M, Sachse MM, Schlaak M, Schön MP, Tischendorf L, Tronnier M, Vordermark D, Welzel J, Weichenthal M, Wiegand S, Kaufmann R, Grabbe S. S2k Guidelines for Cutaneous Basal Cell Carcinoma - Part 1: Epidemiology, Genetics and Diagnosis. *J Dtsch Dermatol Ges* 2019;17(1):94-103
- » Lang BM, Balermipas P, Bauer A, Blum A, Brölsch GF, Dirschka T, Follmann M, Frank J, Frerich B, Fritz K, Hauschild A, Heindl LM, Howaldt HP, Ihrler S, Kakkassery V, Klumpp B, Krause-Bergmann A, Löser C, Meissner M, Sachse MM, Schlaak M, Schön MP, Tischendorf L, Tronnier M, Vordermark D, Welzel J, Weichenthal M, Wiegand S, Kaufmann R, Grabbe S. S2k Guidelines for Cutaneous Basal Cell Carcinoma - Part 2: Treatment, Prevention and Follow-up. *J Dtsch Dermatol Ges* 2019;17(2):214-230
- » Lang BM, Balermipas P, Bauer A, Blum A, Brölsch GF, Dirschka T, Follmann M, Frank J, Frerich B, Fritz K, Hauschild A, Heindl LM, Howaldt HP, Ihrler S, Kakkassery V, Klumpp B, Krause-Bergmann A, Löser C, Meissner M, Sachse MM, Schlaak M, Schön MP, Tischendorf L, Tronnier M, Vordermark D, Welzel J, Weichenthal M, Wiegand S, Kaufmann R, Grabbe S. S2k-Leitlinie Basalzellkarzinom der Haut - Teil 1: Epidemiologie, Genetik und Diagnostik. *J Dtsch Dermatol Ges* 2019;17(1):94-104
- » Lebowitz M, Kircik L, Lacour JP, Liljedahl M, Lynde C, Mørch MH, Papp KA, Perrot JL, Gold LS, Takhar A, Thaçi D, Warren RB, Wollenberg A. Twice-weekly topical calcipotriene/betamethasone dipropionate foam as proactive management of plaque psoriasis increases time in remission and is well tolerated over 52 weeks (PSO-LONG trial). *J Am Acad Dermatol* 2020 Sep 18:S0190-9622(20)32625-6
- » Leiter U, Heppt MV, Steeb T, Amaral T, Bauer A, Becker JC, Breitbart E, Breuninger H, Diepgen T, Dirschka T, Eigentler T, Flaig M, Follmann M, Fritz K, Greinert R, Gutzmer R, Hillen U, Ihrler S, John SM, Kölbl O, Kraywinkel K, Löser C, Nashan D, Noor S, Nothacker M, Pfannenberger C, Salavastru C, Schmitz L, Stockfleth E, Szeimies RM, Ulrich C, Welzel J, Wermker K, Garbe C, Berking C. S3 guideline for actinic keratosis and cutaneous squamous cell carcinoma (cSCC) - short version, part 2: epidemiology, surgical and systemic treatment of cSCC, follow-up, prevention and occupational disease *J Dtsch Dermatol Ges* 2020 Apr;18(4):400-413
- » Leiter U, Stadler R, Mauch C, Hohenberger W, Brockmeyer NH, Berking C, Sunderkötter C, Kaatz M, Schatton K, Lehmann P, Vogt T, Ulrich J, Herbst R, Gehring W, Simon JC, Keim U, Verver D, Martus P, Garbe C, German Dermatologic Cooperative Oncology Group. Final Analysis of DeCOG-SLT Trial: No Survival Benefit for Complete Lymph Node Dissection in Patients With Melanoma With Positive Sentinel Node. *J Clin Oncol* 2019;37(32):3000-3008
- » Leiter U, Loquai C, Reinhardt L, Rafei-Shamsabadi D, Gutzmer R, Kaehler K, Heinzerling L, Hassel J C, Glutsch V, Sirokay J, Schlecht N, Rübber A, Gambichler T, Schatton K, Pfoehler C, Franklin C, Terheyden P, Haferkamp S, Mohr P, Bischof L, Livingstone E, Zimmer L, Weichenthal M, Schadendorf, Meiwes A, Keim U, Garbe C, Becker J C, Ugurel S. Immune checkpoint inhibition therapy for advanced skin cancer in patients with concomitant hematological malignancy: a retrospective multicenter DeCOG study of 84 patients. *J Immunother Cancer*;8(2)
- » Lill D, Steinlein O, Engels L, Nasifoglu S, Srour J, Hayani K, Seegräber M, Flaig MJ, Schlaak M, Sattler E. Squamous cell carcinoma with lung metastasis in a young male patient. *Hautarzt* 2020 Jul; (Case Report) 71(Suppl 1):44-46
- » Lio PA, Wollenberg A, Thyssen JP, Pierce EJ, Rueda MJ, DeLozier AM, Ross Terres JA, Anderson P, Milligan G, Piercy J, Silverberg JI, Paul C. Impact of Atopic Dermatitis Lesion Location on Quality of Life in Adult Patients in a Real-world Study. *J Drugs Dermatol* 2020 Oct 1;19(10):943-948
- » Livingstone E, Zaremba A, Horn S, Ugurel S, Casalini B, Schlaak M, Hassel JC, Herbst R, Utikal JS, Weide B, Gutzmer R, Meier F, Koelsche C, Hadaschik E, Sucker A, Reis H, Merkelbach-Bruse S, Siewert M, Sahm F, von Deimling A, Cosgarea I, Zimmer L, Schadendorf D, Schilling B, Griewank KG: GNAQ and GNA11 mutant non-uvéal melanoma, a subtype distinct from both cutaneous and uveal melanoma. *Br J Dermatol* 02/2020
- » Maron RC, Utikal JS, Hekler A, Hauschild A, Sattler E, Sondermann W, Haferkamp S, Schilling B, Heppt MV, Jansen P, Reinholz M, Franklin C, Schmitt L, Hartmann D, Kriehoff-Henning E, Schmitt M, Weichenthal M, von Kalle C, Fröhling S, Brinker TJ. Artificial Intelligence and Its Effect on Dermatologists' Accuracy in Dermoscopic Melanoma Image Classification: Web-Based Survey Study. *J Med Internet Res* 2020 Sep 11;22(9):e18091.
- » Maron RC, Weichenthal M, Utikal JS, Hekler A, Berking C, Hauschild A, Enk AH, Haferkamp S, Klode J, Schadendorf D, Jansen P, Holland-Letz T, Schilling B, von Kalle C, Fröhling S, Gaiser MR, Hartmann D, Gesierich A, Kähler KC, Wehkamp U, Karoglan A, Bär C, Brinker TJ, Collabrat-ors. Systematic outperformance of 112 dermatologists in multiclass skin cancer image classification by convolutional neural networks. *Eur J Cancer* 2019;119:57-65
- » Marsela E, Fischbeck AJ, Hildebrand JA, Aoki R, French LE, Wollenberg A, Schmoeckel E, Reinholz M. Coexistence of Oncogenic Human Papillomavirus Genotypes in Condylomata Acuminata among Children and Adolescents. *Acta Derm Venereol* 2020 Feb 25;100(4):adv00061
- » Mastnik S, Wollenberg A, Engels L. Varicella vaccination and congenital immunodeficiency. *Hautarzt* 2020 Jul; (Case Report) 71(Suppl 1):38-40
- » Maul JT, Navarini AA, Sommer R, Anzengruber F, Sorbe C, Mrowietz U, Drach M, Blome C, Boehncke WH, Thaci D, Reich K, von Kiedrowski R, Körber A, Yawalkar N, Mainetti C, Laffitte E, Streit M, Rustenbach S, Conrad C, Borradori L, Gilliet M, Cozzio A, Itin P, Häusermann P, French LE, Radtke MA, Augustin M. Gender and age significantly determine patient needs and treatment goals in psoriasis - a lesson for practice. *J Eur Acad Dermatol*

- Venereol 2019;33(4):700-708
- » Maurer M, Raap U, Staubach P, Richter-Huhn G, Bauer A, Oppel EM, Hillen U, Baeumer D, Reinhardt M, Chapman-Rothe N. Antihistamine-resistant chronic spontaneous urticaria: 1-year data from the AWARE study. *Clin Exp Allergy* 2019;49(5):655-662
 - » Meier-Schiesser B, Feldmeyer L, Jankovic D, Mellett M, Satoh TK, Yerly D, Navarini A, Abe R, Yawalkar N, Chung WH, French LE, Contassot E. Culpit Drugs Induce Specific IL-36 Overexpression in Acute Generalized Exanthematous Pustulosis. *J Invest Dermatol* 2019;139(4):848-858
 - » Menzer C, Menzies AM, Carlino MS, Reijers I, Groen EJ, Eigentler T, de Groot JWB, van der Veldt AAM, Johnson DB, Meiss F, Schlaak M, Schilling B, Westgeest HM, Gutzmer R, Pföhler C, Meier F, Zimmer L, Suikerbuijk KPM, Haalck T, Thoms KM, Herbschleb K, Leichsenring J, Menzer A, Kopp-Schneider A, Long GV, Kefford R, Enk A, Blank CU, Hassel JC. Targeted Therapy in Advanced Melanoma With Rare BRAF Mutations. *J Clin Oncol* 2019;37(33):3142-3151
 - » Merola JF, Sidbury R, Wollenberg A, Chen Z, Zhang A, Shumel B, Rossi AB. Dupilumab prevents flares in adults with moderate to severe atopic dermatitis in a 52-week randomized controlled phase 3 trial. *J Am Acad Dermatol* 2020 May 7:S0190-9622(20)30822-7
 - » Moinszadeh P, Kuhr K, Siegert E, Blank N, Sunderkoetter C, Henes J, Krusche M, Schmalzing M, Worm M, Schmeiser T, Günther C, Aberer E, Susok L, Riemekasten G, Kreuter A, Zeidler G, Juche A, Hadjiski D, Müller-Ladner U, Gaebele-Wissing N, Distler JHW, Sárdy M, Krieg T, Hunzelmann N. Scleroderma Renal Crisis: Risk Factors for an Increasingly Rare Organ Complication. *J Rheumatol* 2020 Feb;47(2):241-248
 - » Moreira A, Loquai C, Pföhler C, Kähler KC, Knauss S, Heppt MV, Gutzmer R, Dimitriou F, Meier F, Mitzel-Rink H, Schuler G, Terheyden P, Thoms KM, Türk M, Dummer R, Zimmer L, Schröder R, Heinzerling L. Myositis and neuromuscular side-effects induced by immune checkpoint inhibitors. *Eur J Cancer* 2019; 106:12-23
 - » Nasifoglu S, Srour J, Lill D, Seegräber M, Schlaak M: Vismodegib therapy for a large basal cell carcinoma on the midface with orbital involvement. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):57-59
 - » Nasifoglu S, Horvath O, Kapp F, Wollenberg A. A polymorphous exanthem with a solitary crust. *Hautarzt* 2020 Oct;(Case Report) 71(10):827-829
 - » Nast A, Gauglitz G, Lorenz K, Metelmann HR, Paasch U, Strnad V, Weidmann M, Werner RN, Bauerschmitz J. S2k guidelines for the therapy of pathological scars (hypertrophic scars and keloids) - Update 2020. *J Dtsch Dermatol Ges* 2020 Oct 4
 - » Niculescu L, Wagner M, Westphal DS, Fischer M, Mihatsch W, Prothmann A, Ruzicka T, Wollenberg A, Wolff H, Schmidt H, Giehl KA. A Case of Ankyloblepharon-ectodermal Defects-cleft Lip/Palate-syndrome with Choanal Atresia and Skin Erosions: Phenotypic Variability of TP63-related Disorders. *Acta Derm Venereol* 2019;99(1):111-112
 - » Niculescu L, Ruini C, Srour J, Salzer S, Schönbuchner I, von Braunmühl T, Ruzicka T, Hohenleutner U, Giehl KA, Fischer J, Wollenberg A. Tazarotene 0.015% Cream as a Potential Topical Agent for Management of Ichthyosis in Dorfman-Chanarin Syndrome. *Acta Derm Venereol* 2019;99(3):345-346
 - » Niesert AC, Oppel EM, Nellessen T, Frey S, Clanner-Engelshofen BM, Wollenberg A, French LE, Reinholz M. "Face Mask Dermatitis" due to compulsory facial masks during the SARS-CoV-2 pandemic – data from 550 health care- and non-health care workers in Germany. *Eur J Dermatol*. Accepted
 - » Niesert AC, Gürtler A, Schlaak M, Flaig MJ. Urticarial mycosis fungoides. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):21-23
 - » Oppel E, Kamann S, Reichl FX, Högg C. The Dexcom glucose monitoring system-An isobornyl acrylate-free alternative for diabetic patients. *Contact Dermatitis* 2019; 81(1):32-36
 - » Oppel E, Kamann S, Heinemann L, Klein A, Reichl FX, Högg C. Freestyle libre 2: The new isobornyl acrylate free generation. *Contact Dermatitis* 2020 Nov;83(5):429-431
 - » Paller AS, Siegfried EC, Thaçi D, Wollenberg A, Cork MJ, Arkwright PD, Gooderham M, Beck LA, Boguniewicz M, Sher L, Weisman J, O'Malley JT, Patel N, Hardin M, Graham NMH, Ruddy M, Sun X, Davis JD, Kamal MA, Khokhar FA, Weinreich DM, Yancopoulos GD, Beazley B, Bansal A, Shumel B. Efficacy and safety of dupilumab with concomitant topical corticosteroids in children 6 to 11 years old with severe atopic dermatitis: A randomized, double-blinded, placebo-controlled phase 3 trial. *J Am Acad Dermatol* 2020 Nov;83(5):1282-1293
 - » Pinarci M, Haas C, Flaig MJ, Oppel EM. Frontal sinus mucocoele. *Hautarzt* 2020 Jul;71(Suppl 1):14-15.
 - » Plewig G. , Despised, Pursued, Expelled, but still Forgiven. *J Dtsch Dermatol Ges* 2019;17(8):877-879
 - » Ponti G, Maccaferri M, Manfredini M, Micali S, Torricelli F, Milandri R, Del Prete C, Ciarrocchi A, Ruini C, Benassi L, Bettelli S, Kaleci S, Ozben T, Tomasi A. Quick assessment of cell-free DNA in seminal fluid and fragment size for early non-invasive prostate cancer diagnosis. *Clin Chim Acta* 2019;497:76-80
 - » Ponti G, Ruini C, Tomasi A. Homocysteine as a potential predictor of cardiovascular risk in patients with COVID-19. *Med Hypotheses* 2020 Oct;(Letter) 143:109859
 - » Prinz JC. The Woronoff Ring in Psoriasis and the Mechanisms of Postinflammatory Hypopigmentation. *Acta Derm Venereol*. 2020 Jan 30;100(3):adv00031.
 - » Pujol C, Müssigmann M, Schiele S, Nagdyman N, Niesert AC, Kaemmerer H, Ewert P, Tutarel O. Direct oral anticoagulants in adults with congenital heart disease - a single centre study. *Int J Cardiol*. 2020 Feb 1;300:127-131
 - » Rauschenberg R, Bruns J, Brütting J, Daubner D, Lohaus F, Zimmer L, Forschner A, Zips D, Hassel JC, Berking C, Kaehler KC, Utikal J, Gutzmer R, Terheyden P, Meiss F, Rafei-Shamsabadi D, Kiecker F, Debus D, Dabrowski E, Arnold A, Garzarolli M, Kuske M, Beissert S, Löck S, Linn J, Troost EGC, Meier F. Impact of radiation, systemic therapy and treatment sequencing on survival of patients with melanoma brain metastases. *Eur J Cancer* 2019;110:11-20
 - » Reich K, DeLozier AM, Nunes FP, Thyssen JP, Eichenfield LF, Wollenberg A, Ross Terres JA, Watts SD, Chen YF, Simpson EL, Silverberg JI. Baricitinib improves symptoms in patients with moderate-to-severe atopic dermatitis and inadequate response to topical corticosteroids: patient-reported outcomes from two randomized monotherapy phase III trials. *J Dermatolog Treat* 2020 Nov 22:1-10
 - » Reichl FX, Högg C, Liu F, Schwarz M, Teupser D, Hickel R, Bloch W, Schweikl H, Thomas P, Summer B. Actovegin®

- reduces PMA-induced inflammation on human cells. *Eur. J. Appl. Physiol* 2020
- » Reinholz M, Clanner-Engelshofen BM, Heppt MV, Hirai Y, Ruzicka T, Berking C, von Braunmühl T. Successful Treatment of Genital Warts with Ingenol Mebutate Monitored with Optical Coherence Tomography and Reflectance Confocal Microscopy. *Ann Dermatol* 2019;31(4):434-437
 - » Reinholz M, Clanner-Engelshofen BM, Heppt MV, Marsella E, Kawakami Y, Wiest LG, French LE, Stolz W, Gauglitz GG. Dermal fillers do not induce upregulation of NLRP3 inflammasomes or expression of inflammatory cytokines in granulomas. *J Cosmet Dermatol* 2020 Nov;(Letter) 19(11):2838-2844
 - » Reinholz M, French LE. Medical education and care in dermatology during the SARS-CoV2 pandemic: challenges and chances. *J Eur Acad Dermatol Venereol* 2020;(Letter) 34 (5):e214-e216
 - » Reinholz M, French LE, Berking C, Heppt MV. The COVID-19 pandemic: implications for patients undergoing immunomodulating or immunosuppressive treatments in dermatology. *Eur J Dermatol* 2020 Dec 3 (Letter)
 - » Reinholz M, Guertler A, Schwaiger H, Poetschke J & Gauglitz G.G. Treatment of keloids using 5-fluorouracil in combination with crystalline triamcinolone acetonide suspension: evaluating therapeutic effects by using non-invasive objective measures. *J Eur Acad Dermatol Venereol* 2020
 - » Rojo J, Oteros J, Picornell A, Ruëff F, Werchan B, Werchan M, Bergmann K-C, Schmidt-Weber CB, Buters J. Land-Use and Height of Pollen Sampling Affect Pollen Exposure in Munich, Germany. *Atmosphere* 2020;11:145
 - » Rothenberger C, Jakob L, Betke M, French L, Bartsch H, Knösel T, Flaig MJ. Myxofibrosarcoma. *Hautarzt* 2020 Jul;71(Suppl 1):30-31
 - » Ruini C, Hartmann D, Bastian M, Ruzicka T, French LE, Berking C, von Braunmühl T. Non-invasive monitoring of subclinical and clinical actinic keratosis of face and scalp under topical treatment with ingenol mebutate gel 150 mcg/g by means of reflectance confocal microscopy and optical coherence tomography: New perspectives and comparison of diagnostic techniques. *J Biophotonics* 2019;12(7)
 - » Ruini C, von Braunmühl T, Ruzicka T, French LE, Hartmann D. Granulomatous reaction after cholla cactus spine injury. *Cutis* 2020;(Case Report) 105(3):143-145; E2
 - » Ruini C, Schuh S, Pellacani G, French L, Welzel J, Sattler E. In vivo imaging of *Sarcoptes scabiei* infestation using line-field confocal optical coherence tomography. *J Eur Acad Dermatol Venereol*. 2020 Dec;34(12):e808-e809
 - » Ruini C, Nasifoglu S, Sattler E, Prinz J, Flaig MJ. Pustular psoriasis and the chameleon syphilis. *Hautarzt* 2020 Jul;71(Suppl 1):50-53
 - » Ruini C, Rahimi F, Fiocco Z, French LE, Hartmann D, Oppel E, Sattler E. Optical coherence tomography for patch test grading: A prospective study on its use for noninvasive diagnosis of allergic contact dermatitis. *Contact Dermatitis*. 2020 Oct 4. *Contact Dermatitis* 2020;PMID: 33012002
 - » Ruini C, Clanner-Engelshofen BM, Heppt M, Herzinger T, Sárdy M, Ruzicka T, French LE, Reinholz M. Cantharidin as an Alternative Treatment for Genital Warts: A Case Monitored With Optical Coherence Tomography. *Acta Derm Venereol* 2020 Sep 8;100(16):adv00259.
 - » Ruini C, Schuh S, Sattler E, Welzel J. Line-field confocal optical coherence tomography-Practical applications in dermatology and comparison with established imaging methods. *Skin Res Technol* 2020 Oct 21
 - » Ruini C, Nasifoglu S, Sattler E, Preinz J, Flaig M. Pustular psoriasis and the chameleon syphilis. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):50-53
 - » Ruini C, Haas C, Mastnik S, Knott M, French LE, Schlaak M, Berking C. Primary Biliary Cirrhosis and Granulomatous Hepatitis after Immune Checkpoint Blockade in Patients with Metastatic Melanoma: Report of 2 Cases and Literature Discussion. *J Immunother* 2020 Dec 14
 - » Ruini C, Schuh S, Hartmann D, French L, Welzel J, Sattler E. Noninvasive real-time imaging of mite skin infestations with line-field confocal optical coherence tomography. *Br J Dermatol* 2020 Dec 14
 - » Salzer S, Giehl K. 6-month-old female with increasing Hyperpigmentation following suspected neonatal HSV-Infection Preparation for the Specialist Examination: Part 30. *Hautarzt* 2019;70
 - » Sand J, Fenini G, Grossi S, Hennig P, Di Filippo M, Levesque M, Werner S, French LE, Beer HD. The NLRP1 Inflammasome Pathway Is Silenced in Cutaneous Squamous Cell Carcinoma. *J Invest Dermatol* 2019;139(8):1788-1797
 - » Satoh TK, Mellett M, Meier-Schiesser B, Fenini G, Otsuka A, Beer HD, Rordorf T, Maul JT, Hafner J, Navarini AA, Contassot E, French LE. IL-36γ drives skin toxicity induced by EGFR/MEK inhibition and commensal cutibacterium acnes. *J Clin Invest* 2020;130:1417-1430
 - » Sattler EC, Syunyaeva Z, Mansmann U, Steinlein OK. Genetic risk factors for spontaneous pneumothorax in Birt-Hogg-Dubé syndrome. *Chest* 2020 Jan 17
 - » Sattler EC, Syunyaeva Z, Mansmann U, Steinlein OK. Response. *Chest*. 2020 Oct;(Letter) 158(4):1793-1794
 - » Schlager JG, Hayani KM, Betke M, Wolff H. Prurigo pigmentosa. *Hautarzt* 2020; 71(Suppl 1): 63-66
 - » Schlager J, Guertler A, Bauer K, Sattler E, French L E, Hartmann D. Wundversorgung in der Hausarztpraxis. *CME-Fortbildung*, 7-8/2020
 - » Schmidt E, Sticherling M, Sárdy M, Eming R, Goebeler M, Hertl M, Hofmann SC, Hunzelmann N, Kern JS, Kramer H, Nast A, Orzechowski HD, Pfeiffer C, Schuster V, Sitaru C, Zidane M, Zillikens D, Worm M. S2k guidelines for the treatment of pemphigus vulgaris/foleaceus and bullous pemphigoid: 2019 update. *J Dtsch Dermatol Ges* 2020 May;18(5):516-526
 - » Seago M, Shumaker PR, Spring LK, Alam M, Al-Niaimi F, Anderson R, Artzi O, Bayat A, Cassuto D, Chan HH, Dieckx C, Donelan M, Gauglitz GG, Leo Goo B, Goodman GJ, Gurtner G, Haedersdal M, Krakowski AC, Manuskiatti W, Norbury WB, Ogawa R, Ozog DM, Paasch U, Victor Ross E, Tretti Clementoni M, Waibel J. Laser Treatment of Traumatic Scars and Contractures: 2020 International Consensus Recommendations. *Lasers Surg Med* 2020; 52(2):96-116
 - » Seegräber M, Engels L, Flaig MJ. Treatment-refractory progressive nodular histiocytosis. *Hautarzt* 2020 Jul;71(Suppl 1): 2-5
 - » Seegräber M, Worm M, Werfel T, Svensson A, Novak N, Simon D, Darsow U, Augustin M, Wollenberg A. Recurrent eczema herpeticum - a retrospective European multicenter study evaluating the clinical characteristics of eczema herpeticum cases in atopic dermatitis patients. *J Eur Acad Dermatol Venereol* 2020 May;34(5):1074-1079
 - » Senner S, Eicher L, Aszodi N, Prinz JC, French LE,

- Wollenberg A. Psoriasis in dupilumab-treated atopic dermatitis. *Hautarzt* 2020 May;(Case Report) 71(5):383-386
- » Senner S, Fiocco Z, Eicher L, Flaig MJ. Eczematous psoriasis vulgaris. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):35-37
- » Shannan B, Matschke J, Chauvistré H, Vogel F, Klein D, Meier F, Westphal D, Bruns J, Rauschenberg R, Utikal J, Forschner A, Berking C, Terheyden P, Dabrowski E, Gutzmer R, Rafti-Shamsabadi D, Meiss F, Heinzerling L, Zimmer L, Livingstone E, Váraljai R, Hoewner A, Horn S, Klode J, Stuschke M, Scheffler B, Marchetto A, Sannino G, Grünewald TGP, Schadendorf D, Jendrosseck V, Roesch A. Sequence-dependent cross-resistance of combined radiotherapy plus BRAFV600E inhibition in melanoma. *Eur J Cancer* 2019;109:137-153
- » Simpson EL, Lacour JP, Spelman L, Galimberti R, Eichenfield LF, Bissonnette R, King BA, Thyssen JP, Silverberg JI, Bieber T, Kabashima K, Tsunemi Y, Costanzo A, Guttman-Yassky E, Beck LA, Janes JM, DeLozier AM, Gamalo M, Brinker DR, Cardillo T, Nunes FP, Paller AS, Wollenberg A, Reich K. Baricitinib in patients with moderate-to-severe atopic dermatitis and inadequate response to topical corticosteroids: results from two randomized monotherapy phase III trials. *Br J Dermatol* 2020 Aug;183(2):242-255
- » Simpson EL, Sinclair R, Forman S, Wollenberg A, Aschoff R, Cork M, Bieber T, Thyssen JP, Yosipovitch G, Flohr C, Magnolo N, Maari C, Feeney C, Biswas P, Tatulych S, Valdez H, Rojo R. Efficacy and safety of abrocitinib in adults and adolescents with moderate-to-severe atopic dermatitis (JADE MONO-1): a multicentre, double-blind, randomised, placebo-controlled, phase 3 trial. *Lancet* 2020 Jul 25;396(10246):255-266
- » Silverberg JI, Pinter A, Pulka G, Poulin Y, Bouaziz JD, Wollenberg A, Murrell DF, Alexis A, Lindsey L, Ahmad F, Piketty C, Clucas A. Phase 2B randomized study of nemolizumab in adults with moderate-to-severe atopic dermatitis and severe pruritus. *J Allergy Clin Immunol* 2020 Jan;145(1):173-182
- » Silverberg JI, Guttman-Yassky E, Agner T, Bissonnette R, Cohen DE, Simpson E, Wollenberg A, Thyssen JP. Chronic Hand Eczema Guidelines from an Expert Panel of the International Eczema Council. *Dermatitis* 2020 Sep 30
- » Silverberg JI, Guttman-Yassky E, Gooderham M, Worm M, Rippon S, O'Quinn S, van der Merwe R, Kragh N, Kurbasic A, Wollenberg A. Health-related quality of life with tralokinumab in moderate-to-severe atopic dermatitis. A phase 2b randomized study. *Ann Allergy Asthma Immunol* 2020 Dec 14:S1081-1206(20)31242-4
- » Sondermann W, Utikal JS, Enk AH, Schadendorf D, Klode J, Hauschild A, Weichenthal M, French LE, Berking C, Schilling B, Haferkamp S, Fröhling S, von Kalle C, Brinker TJ. Prediction of melanoma evolution in melanocytic nevi via artificial intelligence: A call for prospective data. *Eur J Cancer* 2019;119:30-34
- » Srour J, Berg E, Mahltig B, Smolik T, Wollenberg A. Evaluation of antimicrobial textiles for atopic dermatitis. *J Eur Acad Dermatol Venereol* 2019;33(2):384-390
- » Srour J, Bengel J, Linden T, Jovanovic Z, Roggenkamp D, Reinholz M, Rothenberger C, Neufang G, Wollenberg A. Efficacy of a skin care cream with TRPV1 inhibitor 4-t-butylcyclohexanol in the topical therapy of perioral dermatitis. *J Cosmet Dermatol* 2020 Jun;19(6):1409-1414
- » Srour J, Seegräber M, Nasifoglu S, Schlaak M, Wollenberg A, Flaig MJ, Sattler E. Giant basal cell carcinoma on the leg and known HIV infection. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):16-17
- » Ständer S, Yosipovitch G, Legat FJ, Lacour JP, Paul C, Narbutt J, Bieber T, Misery L, Wollenberg A, Reich A, Ahmad F, Piketty C. Trial of Nemolizumab in Moderate-to-Severe Prurigo Nodularis. *N Engl J Med*. 2020 Feb 20;382(8):706-716
- » Steeb T, Wessely A, French LE, Heppt MV, Berking C. Skin Cancer Smartphone Applications for German-speaking Patients: Review and Content Analysis Using the Mobile App Rating Scale. *Acta Derm Venereol* 2019;99(11):1043-1044
- » Steeb T, Schlager JG, Kohl C, Ruzicka T, Heppt MV, Berking C. Laser-assisted photodynamic therapy for actinic keratosis: A systematic review and meta-analysis. *J Am Acad Dermatol* 2019;80(4):947-956
- » Steeb T, Wessely A, Mastnik S, Brinker TJ, French LE, Niesert AC, Berking C, Heppt MV. Patient Attitudes and Their Awareness Towards Skin Cancer-Related Apps: Cross-Sectional Survey. *JMIR mHealth uHealth* 2019;7(7)
- » Steeb T, Wessely A, Niesert AC, Ruzicka T, von Braunmühl T, Berking C, Heppt MV. Patient Attitude towards Videodermatoscopy for the Detection of Skin Cancer: A Cross-Sectional Study. *Oncology Research and Treatment* 2019; 42(6):319-325
- » Steeb T, Heppt MV, Becker L, Kohl C, French LE, Berking C. Long-term efficacy of interventions for actinic keratosis: protocol for a systematic review and network meta-analysis. *Syst Rev* 2019; 8(1)
- » Steeb T, Hayani KM, Förster P, Liegl R, Toussaint F, Schlaak M, Berking C, Heppt MV. Guidelines for uveal melanoma: a critical appraisal of systematically identified guidelines using the AGREE II and AGREE-REX instrument. *J Cancer Res Clin Oncol* 02/2020
- » Steeb T, Wessely A, von Bubnoff D, Dirschka T, Drexler K, Falkenberg C, Hassel JC, Hayani K, Hüning S, Kähler KC, Karrer S, Krammer C, Leiter U, Lill D, Marsela E, Meiwes A, Nashan D, Nasifoglu S, Schmitz L, Sirokay J, Thiem A, Utikal J, Zink A, Berking C, Heppt MV. Treatment Motivations and Expectations in Patients with Actinic Keratosis: A German-Wide Multicenter, Cross-Sectional Trial. *J Clin Med* 2020 May 12;9(5):1438
- » Steeb T, Wessely A, Drexler K, Salzmann M, Toussaint F, Heinzerling L, Reinholz M, Berking C, Heppt MV. The Quality of Practice Guidelines for Melanoma: A Methodologic Appraisal with the AGREE II and AGREE-REX Instruments. *Cancers (Basel)* 2020 Jun 18;12(6):1613
- » Steeb T, Wessely A, Leiter U, French LE, Berking C, Heppt MV. The more the better? An appraisal of combination therapies for actinic keratosis. *J Eur Acad Dermatol Venereol* 2020;34:727-732
- » Süß H, Dölle-Bierke S, Geier J, Kreft B, Oppel E, Pföhler C, Skudlik C, Worm M, Mahler V. Contact urticaria: Frequency, elicitors and cofactors in three cohorts (Information Network of Departments of Dermatology; Network of Anaphylaxis; and Department of Dermatology, University Hospital Erlangen, Germany). *Contact Dermatitis* 2019;81(5):341-353
- » Thiem A, Hesbacher S, Kneitz H, di Primio T, Heppt MV, Hermanns HM, Goebeler M, Meierjohann S, Houben R, Schrama D. IFN-gamma-induced PD-L1 expression in melanoma depends on p53 expression. *J Exp Clin Cancer Res* 2019;38(1)
- » Thomas B, Benedikt M, Alamri A, Kapp F, Bader R, Sum-

- mer B, Thomas P, Oppel E. The role of antibiotic-loaded bone cement in complicated knee arthroplasty: relevance of gentamicin allergy and benefit from revision surgery - a case control follow-up study and algorithmic approach. *J. Orthop. Surg. Res* 2020
- » Thurm T, Giehl K, Flaig M, Reiter K, Hoffmann F. Rare cause of hemoptysis. A 15-year-old girl with eosinophilic granulomatosis with polyangiitis. *Monatsschr Kinderheilkd* 2019;167(3):234-240
 - » Thyssen JP, de Bruin-Weller MS, Paller AS, Leshem YA, Vestergaard C, Deleuran M, Drucker AM, Foelster-Holst R, Traidl-Hoffmann C, Eyerich K, Taieb A, Su JC, Bieber T, Cork MJ, Eichenfield LF, Guttman-Yassky E, Wollenberg A. Conjunctivitis in atopic dermatitis patients with and without dupilumab therapy - international eczema council survey and opinion. *J Eur Acad Dermatol Venereol* 2019;33(7)
 - » Thyssen JP, Vestergaard C, Deleuran M, de Bruin-Weller MS, Bieber T, Taieb A, Seneschal J, Cork MJ, Paul C, Flohr C, Weidinger S, Trzeciak M, Werfel T, Heratizadeh A, Barbarot S, Darsow U, Simon D, Torrelo A, Chernyshov PV, Stalder JF, Gelmetti C, Szalai Z, Svensson Å, von Kobyletzki LB, De Raeve L, Fölster-Holst R, Cristen-Zaech S, Hijnen D, Gieler U, Ring J, Wollenberg A. European Task Force on Atopic Dermatitis (ETFAD): treatment targets and treatable traits in atopic dermatitis. *J Eur Acad Dermatol Venereol*. 2020 Dec;(Letter) 34(12):e839-e842
 - » Trommer M, Yeo SY, Persigehl T, Bunck A, Grüll H, Schlaak M, Theurich S, von Bergwelt M, Morgenthaler J, Herter JM, Celik E, Marnitz S, Baues C. Abscopal Effects in Radio-Immunotherapy-Response Analysis of Metastatic Cancer Patients With Progressive Disease Under Anti-PD-1 Immune Checkpoint Inhibition. *Front Pharmacol* 2019;10
 - » Tusup M, French LE, De Matos M, Gatfield D, Kundig T, Pascolo S. Design of in vitro Transcribed mRNA Vectors for Research and Therapy. *Chimia (Aarau)* 2019;73(6):391-394
 - » Uchida Y, Gherardini J, Schulte-Mecklenbeck A, Alam M, Chéret J, Rossi A, Kanekura T, Gross C G, Arakawa A, Gilhar A, Bertolini M, Paus R. Pro-inflammatory Vδ1+T-cells infiltrates are present in and around the hair bulbs of non-lesional and lesional alopecia areata hair follicles. *J Dermatol Sci* 2020; 100(2):129-138
 - » Urošević-Maiwald M, Schwotzer R, Kerl-French K, Karamachev J, Hafner J, French LE, Brüggen MC. Rapid growth of congenital angioma in an HIV patient with POEMS syndrome. *Eur J Dermatol* 2020;30:66-67
 - » Vestergaard C, Wollenberg A, Barbarot S, Christen-Zaech S, Deleuran M, Spuls P, Flohr C, Trzeciak M, von Kobyletzki L, Seneschal J, Paul C, Bieber T, Werfel T, Fölster-Holst R, Darsow U, Gieler U, Svensson Å, Cork M, Stalder JF, De Raeve L, Kunz B, Simon D, Chernyshov P, Hijnen D, Gelmetti C, Ring J, Taieb A, de Bruin-Weller M, Thyssen JP. European task force on atopic dermatitis position paper: treatment of parental atopic dermatitis during preconception, pregnancy and lactation period. *J Eur Acad Dermatol Venereol* 2019;33(9):1644-1659
 - » Vestergaard C, Wollenberg A, Thyssen JP. European Task Force on Atopic Dermatitis (ETFAD) Position Paper: treatment of parental atopic dermatitis during preconception, pregnancy and lactation period. *J Eur Acad Dermatol Venereol* 2020 Feb;34(2):426-427
 - » Vestergaard C, Thyssen JP, Barbarot S, Paul C, Ring J, Wollenberg A. Quality of care in atopic dermatitis - a position statement by the European Task Force on Atopic Dermatitis (ETFAD). *J Eur Acad Dermatol Venereol*. 2020 Mar;(Letter)34(3):e136-e138
 - » Vukovic S, Anagnostopoulos A, Zbinden R, Schönenberger L, Guillod C, French LE, Navarini A, Roeder E. Painful lymphadenopathy after an insect bite-a case report. *Hautarzt* 2019;70(1):7-50
 - » Vural S, Gündoğdu M, Gökpınar E, Durmaz CD, Vural A, Steinmüller-Magin L, Kleinhempel A, Holdt LM, Ruzicka T, Giehl KA, Ruhi H, Boyvat A. Association of pyrin mutations and autoinflammation with complex phenotype hidradenitis suppurativa: a case-control study. *Br J Dermatol* 2019;180(6):1459-1467
 - » Wasel N, Thaci D, French LE, Conrad C, Dutronc Y, Gallo G, Berggren L, Lacour JP. Ixekizumab and Ustekinumab Efficacy in Nail Psoriasis in Patients with Moderate-to-Severe Psoriasis: 52-Week Results from a Phase 3, Head-to-Head Study (IXORA-S). *Dermatol Ther (Heidelberg)* 2020;10(4):663-670
 - » Weigert V, Jost T, Hecht M, Knippertz I, Heinzerling L, Fietkau R, Distel LV. PARP inhibitors combined with ionizing radiation induce different effects in melanoma cells and healthy fibroblasts. *BMC Cancer*, 20(1):775
 - » Weiland T, Eckert A, Tomazic PV, Wolf A, Pondorfer P, Vassicek S, Graupp M, Holzmeister C, Moser U, Andrianakis A, Kangler G, Kiss P, Brcic L, Kappler M, Wickenhauser C, Haak A, Krüger M, Al-Nawas B, Blatt S, Brockmeyer N, Skaletz-Rorowski A, Potthoff A, French LE, Charnowski S, Reinholz M, Kaufmann AM, Thies S, Lambrecht HG, Seliger B, Wild DC, Thurnher D. DRH1 - a novel blood-based HPV tumour marker. *EBioMedicine*. 2020 Jun;56:102804
 - » Weiland T, Brcic L, Reinholz M, French LE, Thurnher D. Response to: Study results and related evidence do not support use of HPV16 L1 DRH1 antibodies as a cancer screening test. *EBioMedicine* 2020 Dec;(Letter) 62:103139
 - » Weiss J, Kirchberger MC, Heinzerling L. Therapy preferences in melanoma treatment-Willingness to pay and preference of quality versus length of life of patients, physicians, healthy individuals and physicians with oncological disease. *Cancer Med*, 10;9(17):6132-40
 - » Werner JM, Schweinsberg V, Schroeter M, von Reutern B, Malter MP, Schlaak M, Fink GR, Mauch C, Galldiks N. Successful Treatment of Myasthenia Gravis Following PD-1/CTLA-4 Combination Checkpoint Blockade in a Patient With Metastatic Melanoma. *Front Oncol* 2019;9
 - » Wessely A, Waltera A, Reichert TE, Stöckl S, Grässel S, Bauer RJ. Induction of ALP and MMP9 activity facilitates invasive behavior in heterogeneous human BMSC and HNSCC 3D spheroids. *FASEB J* 2019;33(11):11884-11893
 - » Wessely A, Steeb T, Erdmann M, Heinzerling L, Vera J, Schlaak M, Berking C, Heppt MV. The Role of Immune Checkpoint Blockade in Uveal Melanoma. *Int J Mol Sci* 2020;21(3):879
 - » Wessely A, Heppt MV, Kammerbauer C, Steeb T, Kirchner T, Flaig MJ, French LE, Berking C, Schmoekel E, Reinholz M. Evaluation of PD-L1 Expression and HPV Genotyping in Anal Squamous Cell Carcinoma. *Cancers (Basel)* 2020 Sep 4;12(9):2516
 - » Wetzig T, Häfner HM, Hartmann D. Dermatosurgery 2019. *Hautarzt* 2019;70(11)
 - » Wohlrab J, Werfel T, Wollenberg A. Pathomechanism of dupilumab-associated inflammatory eye symptoms. *J Eur Acad Dermatol Venereol* 2019 Nov;33(11):e435-e436

- » Wolf GK, Glueck T, Huebner J, Muenchhoff M, Hoffmann D, French LE, Keppler OT, Protzer U. Clinical and Epidemiological Features of a Family Cluster of Symptomatic and Asymptomatic Severe Acute Respiratory Syndrome Coronavirus 2 Infection. *J Pediatric Infect Dis Soc* 2020; (3):362-365
- » Wolff H, Flaig MJ. Posttraumatic erosive pustular dermatosis on the scalp of a young woman. *Hautarzt* 2020 Jul;71(Suppl 1):27-29
- » Wollenberg A, Srour J, Smolik T, Berg E, Mahltig B. Silver, silk, atopic eczema and the CLOTHES trial - reply to a letter. *J Eur Acad Dermatol Venereol* 2019 Apr;33(4):e169
- » Wollenberg A, Deleuran M, Ring J. Methotrexate in atopic eczema - Reply to a letter. *J Eur Acad Dermatol Venereol* 2019 Apr;33(4):e155-e156
- » Wollenberg A, Schmid-Grendelmeier P, Christen-Zäch S, Ring J. Reply to a correspondence addressing the European guideline for treatment of atopic eczema, functional textiles and the CLOTHES trial. *J Eur Acad Dermatol Venereol* 2019 Apr;33(4):e153-e154
- » Wollenberg A, Howell MD, Guttman-Yassky E, Silverberg JI, Kell C, Ranade K, Moate R, van der Merwe R. Treatment of atopic dermatitis with tralokinumab, an anti-IL-13 mAb. *J Allergy Clin Immunol* 2019;143(1):135-141
- » Wollenberg A, Thureau S, de Bruin-Weller M. Reply. *J Allergy Clin Immunol Pract* 2019;7(2):753-754
- » Wollenberg A, Szepietowski J, Taieb A, Ring J. Corrigendum: Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: part I. *J Eur Acad Dermatol Venereol* 2019 Jul;33(7):1436
- » Wollenberg A, Flohr C, Simon D, Cork MJ, Thyssen JP, Bieber T, de Bruin-Weller MS, Weidinger S, Deleuran M, Taieb A, Paul C, Trzeciak M, Werfel T, Seneschal J, Barbarot S, Darsow U, Torrelo A, Stalder JF, Svensson Å, Hijnen D, Gelmetti C, Szalai Z, Gieler U, De Raeve L, Kunz B, Spuls P, von Kobyletzki LB, Fölster-Holst R, Chernyshov PV, Christen-Zaech S, Heratizadeh A, Ring J, Vestergaard C. European Task Force on Atopic Dermatitis statement on severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) infection and atopic dermatitis. *J Eur Acad Dermatol Venereol* 2020 Jun;34(6):e241-e242
- » Wollenberg A, Beck LA, Blauvelt A, Simpson EL, Chen Z, Chen Q, Shumel B, Khokhar FA, Hultsch T, Rizova E, Rossi AB, Graham NMH, Pirozzi G, Lu Y, Ardeleanu M. Laboratory safety of dupilumab in moderate-to-severe atopic dermatitis: results from three phase III trials (LIBERTY AD SOLO 1, LIBERTY AD SOLO 2, LIBERTY AD CHRONOS). *Br J Dermatol* 2020 May;182(5):1120-1135
- » Wollenberg A, Blauvelt A, Guttman-Yassky E, Worm M, Lynde C, Lacour JP, Spelman L, Katoh N, Saeki H, Poulin Y, Lesiak A, Kircik L, Cho SH, Herranz P, Cork MJ, Peris K, Steffensen LA, Bang B, Kuznetsova A, Jensen TN, Østerdal ML, Simpson EL; ECZTRA 1 and ECZTRA 2 study investigators. Tralokinumab for moderate-to-severe atopic dermatitis: results from two 52-week, randomized, double-blind, multicentre, placebo-controlled phase III trials (ECZTRA 1 and ECZTRA 2). *Br J Dermatol* 2020 Sep 30
- » Wollenberg A, Beck LA, Blauvelt A, Simpson EL, Chen Z, Chen Q, Shumel B, Khokhar FA, Hultsch T, Rizova E, Rossi AB, Graham NMH, Pirozzi G, Lu Y, Ardeleanu M. Assessing the need for routine safety testing for patients being treated with dupilumab for moderate-to-severe atopic dermatitis. *Br J Dermatol* 2020 Jun;182(6):e186-e209
- » Wollenberg A, Christen-Zäch S, Taieb A, Paul C, Thyssen JP, de Bruin-Weller M, Vestergaard C, Seneschal J, Werfel T, Cork MJ, Kunz B, Fölster-Holst R, Trzeciak M, Darsow U, Szalai Z, Deleuran M, von Kobyletzki L, Barbarot S, Heratizadeh A, Gieler U, Hijnen DJ, Weidinger S, De Raeve L, Svensson Å, Simon D, Stalder JF, Ring J; European Task Force on Atopic Dermatitis/EADV Eczema Task Force. ETFAD/EADV Eczema task force 2020 position paper on diagnosis and treatment of atopic dermatitis in adults and children. *J Eur Acad Dermatol Venereol* 2020 Dec;34(12):2717-2744
- » Worm M, Ballmer-Weber B, Brehler R, Cuevas M, Gschwend A, Hartmann K, Hawranek T, Hötzenecker W, Homey B, Jakob T, Novak N, Pickert J, Saloga J, Schäkel K, Trautmann A, Treudler R, Wedi B, Sturm G, Rüeff F. Healthcare provision for insect venom allergy patients during the COVID-19 pandemic. *Allergo J Int* 2020 Dec 8:1-5
- » Zacher M, Niesert AC, Pinarci RM, Wollenberg A, Oppel EM. Palmoplantar contact dermatitis. *Hautarzt* 2020 Jul;(Case Report) 71(Suppl 1):6-9
- » Zhang L, Awadalla M, Mahmood SS, Nohria A, Hassan MZO, Thuny F, Zlotoff DA, Murphy SP, Stone JR, Golden DLA, Alvi RM, Rokicki A, Jones-O'Connor M, Cohen JV, Heinzerling LM, Mulligan C, Armanious M, Barac A, Forrestal BJ, Sullivan RJ, Kwong RY, Yang EH, Damrongwatanasuk R, Chen CL, Gupta D, Kirchberger MC, Moslehi JJ, Coelho-Filho OR, Ganatra S, Rizvi MA, Sahni G, Tocchetti CG, Mercurio V, Mahmoudi M, Lawrence DP, Reynolds KL, Weinsaft JW, Baksi AJ, Ederhy S, Groarke JD, Lyon AR, Fradley MG, Thavendiranathan P, Neilan TG. Cardiovascular magnetic resonance in immune checkpoint inhibitor-associated myocarditis. *Eur Heart J*, 41(18):1733-43
- » Zhang L, Zlotoff DA, Awadalla M, Mahmood SS, Nohria A, Hassan MZO, Thuny F, Zubiri L, Chen CL, Sullivan RJ, Alvi RM, Rokicki A, Murphy SP, Jones-O'Connor M, Heinzerling LM, Barac A, Forrestal BJ, Yang EH, Gupta D, Kirchberger MC, Shah SP, Rizvi MA, Sahni G, Mandawat A, Mahmoudi M, Ganatra S, Ederhy S, Zatarain-Nicolas E, Groarke JD, Tocchetti CG, Lyon AR, Thavendiranathan P, Cohen JV, Reynolds KL, Fradley MG, Neilan TG. Major Adverse Cardiovascular Events and the Timing and Dose of Corticosteroids in Immune Checkpoint Inhibitor-Associated Myocarditis. *Circulation*, 141(24):2031-4
- » Zopfs D, Bousabarah K, Lennartz S, Santos DPD, Schlaak M, Theurich S, Reimer RP, Maintz D, Haneder S, Große Hokamp N. Evaluating body composition by combining quantitative spectral detector computed tomography and deep learning-based image segmentation. *Eur J Radiol* 2020 Jul

Reviews

- » Aszodi N, Thureau S, Seegräber M, de Bruin-Weller M, Wollenberg A. Management of dupilumab-associated conjunctivitis in atopic dermatitis. *J Dtsch Dermatol Ges* 2019;17(5):488-492
- » Brinker TJ, Schlager G, French LE, Jutzi T, Kittler H. Computer-assisted skin cancer diagnosis: Is it time for artificial intelligence in clinical practice. *Hautarzt* 2020;71(9):669-676
- » Chen W, Plewig G. Lipschütz genital ulcer revisited: is juvenile gangrenous vasculitis of the scrotum the male counterpart? *J Eur Acad Dermatol Venereol* 2019;33(9):1660-1666
- » Eicher L, Knop M, Aszodi N, Senner S, French LE, Wollenberg A. A systematic review of factors influencing treatment adherence in chronic inflammatory skin disease – strategies for optimizing treatment outcome. *J Eur Acad Dermatol Venereol* 2019;33(12):2253-2263
- » French LE. Adverse Cutaneous Drug Reactions. *Drug Res (Stuttg)* 70(S 01):S13-S14, 2020
- » Guttman-Yassky E, Hanifin JM, Boguniewicz M, Wollenberg A, Bissonnette R, Purohit V, Kilty I, Tallman AM, Zielinski MA. The role of phosphodiesterase 4 in the pathophysiology of atopic dermatitis and the perspective for its inhibition. *Exp Dermatol* 2019;28(1):3-10
- » Hartmann D. Ex vivo konfokale Laserscanmikroskopie – die neue Bedside-Histologie. *Aktuelle Dermatol* 2020;46(04):152-157
- » Heppt MV, Steeb T, Niesert AC, Zacher M, Leiter U, Garbe C, Berking C. Local interventions for actinic keratosis in organ transplant recipients: a systematic review. *Br J Dermatol* 2019;180(1):43-50
- » Heppt MV, Steeb T, Ruzicka T, Berking C. Cryosurgery combined with topical interventions for actinic keratosis: a systematic review and meta-analysis. *Br J Dermatol* 2019;180(4):740-748
- » Kamann S, Oppel E. Allergic contact dermatitis to continuous glucose monitoring systems and insulin patch-pumps. *Allergologie* 2019;42(9):397-403
- » Kuijper EC, French LE, Tensen CP, Vermeer MH, Bouwes Bavinck JN. Clinical and pathogenic aspects of the severe cutaneous adverse reaction epidermal necrolysis (EN). *J Eur Acad Dermatol Venereol* 2020, 34(9):1957-1971
- » Ponti G, Maccaferri M, Ruini C, Tomasi A, Ozben T. Biomarkers associated with COVID-19 disease progression. *Crit Rev Clin Lab Sci* 2020 Sep;57(6):389-399
- » Reinholz M, French LE, Berking C, Heppt MV. The COVID-19 pandemic: implications for patients undergoing immunomodulating or immunosuppressive treatment in dermatology. *Eur J Dermatol* 2020 Dec 3
- » Rüeff F. Natural history and long-term follow-up of Hymenoptera allergy. *Curr Opin Allergy Clin Immunol*. 2020 Oct;20(5):445-451
- » Ruini C, von Braunmühl T, Ruzicka T, French LE, Hartmann D. Granulomatous reaction after cholla cactus spine injury. *Cutis* 2020 Mar;105(3):143-145
- » Ruini C, Haas C, Mastnik S, Knott M, French LE, Schlaak M, Berking C. Primary Biliary Cirrhosis and Granulomatous Hepatitis After Immune Checkpoint. Blockade in Patients With Metastatic Melanoma: Report of 2 Cases and Literature. Discussion. *J Immunother* 2020 Dec 14
- » Sattler EC, Steinlein OK. Birt-Hogg-Dubé Syndrome. *GeneReviews®* [Internet] 2006 Feb 27 Updated 2020 Jan 30;1993-2020
- » Sattler EC, Engels L, Oppel EM, Betke M, Flaig MJ, French LE. Preface to the DIA-KLINIK of the 27th Training Week for Practical Dermatology and Venerology FOBI digital 2020. *Hautarzt* 2020 Jul;71(Suppl 1):1
- » Schlager G, Guertler A, Bauer K, Sattler E, French LE, Hartmann D. Wundversorgung in der Hausarztpraxis CME 2020;17(7-8):59-73.
- » Senner S, Seegräber M, Frey S, Kendziora B, Eicher L, Wollenberg A. Dupilumab for the treatment of adolescents with atopic dermatitis. *Expert Rev Clin Immunol* 2020 Jul;16(7):641-650
- » Senner S, Eicher L, Nasifoglu S, Wollenberg A. Linear patterns of the skin and their dermatoses. JDDG: Journal der Deutschen Dermatologischen Gesellschaft 2020;18(4):341-365.
- » Simon D, Wollenberg A, Renz H, Simon HU. Atopic Dermatitis: Collegium Internationale Allergologicum (CIA) Update 2019. *Int Arch Allergy Immunol* 2019;178(3):207-218
- » Steeb T, Niesert AC, French LE, Berking C, Heppt MV. Microneedling-assisted photodynamic therapy for the treatment of actinic keratosis: Results from a systematic review and meta-analysis. *J Am Acad Dermatol* 2020;82:515-519
- » Walter A, Seegräber M, Wollenberg A. Food-Related Contact Dermatitis, Contact Urticaria, and Atopy Patch Test with Food. *Clin Rev Allergy Immunol* 2019;56(1):19-31
- » Wohlrab J, Wollenberg A, Reimann H, Pleyer U, Werfel T. Interdisciplinary recommendations for action in dupilumab-related inflammatory eye diseases. *Hautarzt* 2019;70(1):64-67
- » Wohlrab J, Mrowietz U, Weidinger S, Werfel T, Wollenberg A. Recommendations when switching therapy from immunosuppressive drugs to dupilumab in patients with atopic dermatitis. *Hautarzt* 2020 Nov 11
- » Wurpts G, Aberer W, Dickel H, Brehler R, Jakob T, Kreft B, Mahler V, Merk HF, Mülleneisen N, Ott H, Pfützner W, Röseler S, Rüeff F, Sitter H, Sunderkötter C, Trautmann A, Treudler R, Wedi B, Worm M, Brockow K. Guideline on diagnostic procedures for suspected hypersensitivity to beta-lactam antibiotics: Guideline of the German Society for Allergy and Clinical Immunology (DGAKI) in collaboration with the German Society of Allergy (AeDA), German Society for Pediatric Allergy and Environmental Medicine (GPA), the German Contact Dermatitis Research Group (DKG), the Austrian Society for Allergy and Immunology (ÖGAI), and the Paul Ehrlich Society for Chemotherapy (PEG). *Allergol Select*. 2020 May 28;4:11-43

Book Chapters

- » Ruini C., Sattler E. Line-field confocal OCT. *Aktuelle Dermatologie* (Thieme) 2020, April; Indexed Scopus/Wos.





Klinik und Poliklinik für Dermatologie und Allergologie der Universität München
Frauenlobstr. 9-11
80337 München

Marion.Michl@med.uni-muenchen.de

www.klinikum.uni-muenchen.de/Klinik-und-Poliklinik-fuer-Dermatologie-und-Allergologie



München Klinik Thalkirchner Straße
Thalkirchner Straße 48
D-80337 München

www.muenchen-klinik.de/krankenhaus/thalkirchner-strasse/derma-1-french