Dermatology

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MD (1986) at University of Bern; Resident in dermatology (1989-1993) at University Hospitals of Paris (FR), Lausanne and Geneva. Postdoc at National Cancer Institute, NIH, Bethesda (US) (1993-1995) and Division of Cell Biology, Netherlands Cancer Institute (NL) (1995-1997). Since 2005, Associate Professor, Geneva University Hospitals. Since 2008, Chair and Head, Department of Dermatology, Inselspital.

Dr. Arnaud Galichet
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PhD (1999) at University of Reims (FR). Postdoc (1999-2004) at University of California at Berkeley (US) and ETH Zurich. Senior Postdoc (2005-2008) at Department of Pediatrics, University Children's Hospital Zurich and at Division of Psychiatry Research, University of Zurich (2005-2008). Since 2008, Group Leader at Institute of Animal Pathology and since 2015, also at Department of Dermatology, Inselspital.

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Studied medicine (1984-1990) at Universities of Freiburg (DE) and Bern; MD-PhD (1996) at University of Bern; board certification in Dermatology (2001). Postdoc (2001-2003) at Department of Dermatology, University of California, Los Angeles (US). Since 2011, Associate Professor, Department of Dermatology, Inselspital.

Research Highlights 2015 / Outlook 2016

Allergies

Acute generalised exanthematous pustulosis (AGEP) and generalised pustular psoriasis (GPP) are rare pustular skin disorders with systemic involvement. Interleukin-17 (IL17) is a key cytokine in the pathogenesis of neutrophilic inflammatory disorders. In collaboration with Mariagrazia Uguccioni (IRB, Bellinzona), we found that IL-17A/F-expressing cells were significantly increased in subcorneal pustules, epidermis and dermis of AGEP and GPP compared to normal skin. Innate immune cells such as neutrophils and mast cells are important cellular sources of IL-17A/F.

Eosinophils play a role in host defence as part of the innate immune system. They are able to kill bacteria by generating extracellular DNA traps (EETs). Eosinophilic oesophagitis (EoE) is characterised by oesophageal dysfunction owing to an eosinophil-predominant inflammation. We found that EETs in EoE tissue samples were proportional to the abnormally high number of eosinophils, which correlated with both a decreased expression of epithelial barrier proteins and an increased level of several cytokines. The formation of EETs could therefore serve as a firewall against the invasion of pathogens in oesophagi with impaired epithelial barrier function.

Autoimmune diseases

Pemphigus vulgaris (PV) autoantibodies mainly target an intercellular adhesion molecule of the desmosomal cadherin family in skin and mucous membranes. Our group and others discovered that these adhesion molecules act as receptors to transmit outside-in signals, which are required for normal skin homeostasis and are deregulated in PV. In 2015, we identified another pathogenic signalling pathway in PV implicating proliferation and the non-apoptotic level of caspase-3 activity. Furthermore, we found that deregulated Wnt and epidermal growth factor signalling in PV result in a transient loss of stem cell potential affecting normal skin renewal.

Chronic skin diseases

Hidradentitis suppurativa (HS) mainly affects the anogenital and axillary regions. Although the disease is relatively common (1% prevalence), our knowledge about the pathogenesis is very limited. In an ongoing project, we are analysing the molecular and cellular mechanisms leading to the chronic inflammation. We found that the antimicrobial peptide LL37 is up-regulated in the inflamed lesions and might maintain the chronic inflammation by directly stimulating resident T cells.

Cancer

Human T helper (TH) cells are crucial mediators of the immune system in health and disease. TH9 cells, a novel subset of TH cells that produce interleukin 9, mediate strong anti-tumour immunity in mouse models of melanoma. However, their identity and function in humans remain largely unknown. We therefore aim to define the surface phenotype of these cells in order to easily isolate them from human blood and tissues, and investigate their effector functions, phenotypic stability, and genetic regulation. A better understanding of TH9 cells will guide innovative T cell-based tumour immunotherapies.

Prof. Dr. Eliane J. Müller
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PhD (1991) at University of Fribourg. Postdocs at University of Sherbrooke (CA) (1991-1993) and Institutes of Microbiology (1993-1995) and Animal Pathology (1995-1997), University of Bern. Since 2008, Associate Professor, Institute of Animal Pathology and since 2014, also at Department of Dermatology, University of Bern. Head of DermFocus, Vetsuisse Faculty and Platform for Stem Cells and Regenerative Medicine, University of Bern.

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MD (2008) and MD-PhD (2012) at University of Bern. Postdoc (2011-2012) at Harvard Skin Disease Research Center, Boston (US). Since 2012, Resident and Group Leader, Department of Dermatology, Inselspital.

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MD (1989) at Friedrich Schiller University Jena (DE). Research fellowship (1991-1992) at Women's College Hospital, University of Toronto (CA). Board certifications in Dermatology (1993) and Allergy and Clinical Immunology (2003); PD (2006) at University of Bern. Since 2010, Associate Professor, Department of Dermatology, Inselspital.

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Group Members

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Dr. Arnaud Galichet, Group Leader
Prof. Dr. Robert Hunger, Group Leader
Prof. Dr. Eliane Müller, Group Leader
Dr. Christoph Schlapbach, Group Leader
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William Hariton, PhD Student
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Selected Collaborators

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Selected Grants

Amounts allocated for 2015:

- SNF Sinergia: A One Health approach to Genodermatoses (subproject E. Müller) CHF 268,562
- Hans-Sigrist Foundation: Adhesion-dependent repair mechanisms in the hair follicle stem cell niche (E. Müller) CHF 58,493
- Martha Foundation: Unraveling EGFR-related signal pathways in pemphigus vulgaris (E. Müller) CHF 91,062
- Olga Mayenfisch Foundation: The role of human Th9 cells in cutaneous inflammation (C. Schlapbach) CHF 60,000
- Werner and Hedy Berger-Janser Foundation: Characterization of human interleukin 9 producing T helper cell (C. Schlapbach) CHF 60,000

Selected Publications

Immune response in pemphigus and beyond: progresses and emerging concepts. Di, ZG; Amber, KT; Sayar, BS; Muller, EJ; Borradori, L (2015) in: Semin Immunopathol, e-pub ahead of print.

Preclinical studies identify non-apoptotic low-level caspase-3 as therapeutic target in pemphigus vulgaris. Luyet, C; Schulze, K; Sayar, BS; Howald, D; Muller, EJ; Galichet, A (2015) in: PLoS One, 10(3), p. e0119809.

Homozygous missense mutation in IL36RN in generalized pustular dermatosis with intraoral involvement compatible with both AGEP and generalized pustular psoriasis. Navarini, AA; Simpson, MA; Borradori, L; Yawalkar, N; Schlapbach, C (2015) in: JAMA Dermatol, 151(4), p. 452-453.

The continuing evolution of targeted therapy for inflammatory skin disease. Schlapbach, C and Navarini, AA (2015) in: Semin Immunopathol, e-pub ahead of print.

Active eosinophilic esophagitis is characterized by epithelial barrier defects and eosinophil extracellular trap formation. Simon, D; Radonjic-Hosli, S; Straumann, A; Yousefi, S; Simon, HU (2015) in: Allergy, 70(4), p. 443-452.