

Long-term EAACI Research Fellowship Final Report

Research Fellow: Dr. Carole Guillet

Host supervisors: Dr. Joerg Scheffel, PD Dr. Frank Siebenhaar, Prof. Dr. Marcus Maurer

Host Location: Dermatological Allergology, Charité Universitätsmedizin Berlin, Germany

Home supervisor: Prof. Dr. Peter Schmid-Grendelmeier

Home Location: Department of Dermatology, University Hospital Zurich, Switzerland

Research project titles (host institution):

1- Investigation and characterization of the ability and efficacy of the novel compound BLU-263 on the survival, proliferation, activation and mediator release of healthy human mast cells.

2- Development of an in vitro method for the measurement of the specific IgG, IgA, IgM, IgG subclasses on the alpha subunit of the FcεRI.

Fellowship period: 01.10.2020- 30.09.2021

Project 1: Thanks to the great expertise in mast cell research, I had the opportunity to learn unique laboratory techniques such as the harvesting of human skin mast cells and the generation and culture of peripheral CD34 + stem cell-derived mast cells (PSCMCs). Furthermore, I have gained experience in cell culture and mast cell stimulation assays. Within the framework of this project, I have tried to investigate the effect of tyrosine kinase inhibitors on the function and degranulation of healthy skin mast cells and PSCMCs. Unfortunately, we were ultimately not able to acquire the compound of interest during my fellowship stay however, I have become acquainted with very interesting and, above all, unique laboratory methods in Berlin and for that alone my fellowship was very much worthwhile.

Project 2: On the other hand, I was allowed to participate in the development of a novel laboratory assay to measure antibodies for the α-subunit of the high-affinity IgE receptor (FcεRI), which may play a role in the pathogenesis of chronic spontaneous urticaria Type IIb. Within the framework of this project, I have learned to work precisely in the laboratory, to pipette accurately, and it has also taught me a certain resilience that not everything may always work out on the first try. Furthermore, I was allowed to use samples of CSU patients collected in Zurich and apply this assay. Additionally, I was able to present my preliminary results in an oral abstract presentation at the Global Urticaria Forum (GUF, December 2020) in Berlin.

Apart from my work in the laboratory in Berlin, I got to know the organization and staff of this world-leading UCARE Center (Urticaria Centers of Reference and Excellence) and I was able to plan and promote the future participation of the Department of Dermatology of the University Hospital Zurich for future collaborative studies.

Due to the coronavirus pandemic and the resulting meticulous restrictions in Germany and especially at the Charité laboratories, my laboratory activities and in particular the exchange with other researchers and physicians was unfortunately limited throughout my stay. Nevertheless, I could expand my knowledge in the field of dermatological allergology, improve my network with the Allergy Center Charité - Berlin and other UCARE centers of excellence worldwide.

I have gained valuable, hands-on laboratory experience and especially learned how to do translational research and I have managed to publish or to contribute to the publication of the following articles during my fellowship period:

- **Guillet C**, Seeli C, Meienberger N, Maul LV, Maul JT. " The impact of gender and sex in psoriasis: What to be aware of when treating women with psoriasis " accepted, *J Womens Dermatol*, in print.
- **Guillet C**, Wolfensperger M, Schmid-Grendelmeier P. Anaphylaxie beim Apero - infolge Allergie auf Insektenbestandteile in gewachster Orangenrinde. *Derm Hel*, Oct 2021, in print
- **Guillet C**, Frischbutter S, Leu N, Schmid-Grendelmeier P. Eosinophil-mast cell interaction: Eosinophils as potential targets in mast-cell driven diseases?, accepted, *J Allergy Clin Immunol Pract*, in print.
- **Guillet C**, Steinmann S, Maul JT, Kolm I. Primary Localized Cutaneous Amyloidosis: A Retrospective Study of an Uncommon Skin Disease in the Largest Tertiary Care Center in Switzerland. *Dermatology*. 2021 Sep 15:1-8.
- Cherrez-Ojeda I, Maurer M, Felix M, Bernstein JA, Ramon GD, Jardim Criado RF, Mata VL, Cherrez A, Morfin-Maciel BM, Larco JI, Tinoco IO, Chorzepa GF, Gómez RM, Raad RJ, Thomsen SF, Schmid-Grendelmeier P, **Guillet C**, Cherrez S, Vanegas E. "Chronic urticaria and obstructive sleep apnea: Is there a significant association?". *World Allergy Organ J*. 2021 Aug 24;14(8):100577.
- **Guillet C**, Schmid-Grendelmeier P. Reply to "A case of anaphylactic shock induced by mealworm antigen in the bite of a Japanese flying squirrel" by Seshimo et al. *J Eur Acad Dermatol Venereol*. 2021 May 29.
- Maurer M, (...), **Guillet C**, (...), Cherrez-Ojeda I. How are patients with chronic urticaria interested in using information and communication technologies to guide their healthcare? A UCARE study, *World Allergy Organ J*. 2021 Jun 4;14(6):100542.
- Kocatürk E, (...), **Guillet C**, (...), Maurer M. The global impact of the COVID-19 pandemic on the management and course of chronic urticaria. *Allergy*. 2021 Mar;76(3):816-830.
- Bürgler C, **Guillet C**, Kolm I, Theiler M, Schmid-Grendelmeier P, Kroiss S, Weibel L. Treatment of eosinophilic pustular folliculitis with benralizumab in a 13-year-old girl. *J Eur Acad Dermatol Venereol*. 2021 Feb 17.
- Maurer M, (...), **Guillet C**, (...), Cherrez-Ojeda I. The usage, quality and relevance of information and communications technologies in patients with chronic urticaria: A UCARE study. *World Allergy Organ J*. 2020 Oct 30;13(11):100475.
- **Guillet C**, Steinmann S, Lang C, Maul JT, Schmid-Grendelmeier P. Eosinophil-mast cell interaction: Mepolizumab leads to a reduction of clinical symptoms and serum tryptase in a patient with eosinophilic asthma and idiopathic mast cell activation. *J Allergy Clin Immunol Pract*. 2020 Oct 20:S2213-2198(20)31131-4.

In addition to my work in Berlin, I was also able to use my protected research time to write and submit proposals for third party funding to continue my projects at the department of dermatology at the University Hospital in Zurich, Switzerland.

Firstly, I would like to express my gratitude towards the EAACI for choosing me to be the winner of long-term research fellowship award 2020. The fellowship provided me with fantastic learning

opportunities and has allowed me to learn new methodologies as well as cooperating in the laboratory with fellow scientists.

I would like to express my gratefulness to my host supervisors, PD Dr. Siebenhaar, Dr. Scheffel and Professor Maurer for giving me the opportunity to contribute to these projects in their center/laboratory, for mentoring and research support throughout the year.

My sincere thanks also go to Professor Schmid-Grendelmeier in Zürich for his encouraging support, research guidance, and insightful comments which incited me to widen my research from various perspectives.

Finally, I strongly encourage any young scientists with an interest in the field of clinical immunology and allergy to apply for an EAACI fellowship.