



Profile

- Director of the Swiss Institute of Allergy and Asthma Research (SIAF)
- Professor, Zurich University Medical Faculty
- Vice President of the European Academy of Allergy Clinical Immunology (EAACI)
- Editorial board member/ editorial advisor:
 - 2001- Nature Reviews in Immunology, editorial advisor
 - 2001- Allergy Asthma Immunology, editorial board member
 - 2003- Journal of Investigational Allergology and Clinical Immunology, editorial board member
 - 2003- Allergy, editorial board member
 - 2004- Journal of Allergy Clinical Immunology (JACI), editorial board member
 - 2004- Expert Opinion on Emerging Drugs (EOED), editorial board member
 - 2006- International Reviews of Immunology, editorial board member
 - 2007- Current Opinion in Immunology, editorial board member
 - 2007- European Journal of Immunology, editorial board member
- Associate Editor: Journal of Allergy Clinical Immunology
- Founder and organizer of World Immune Regulation Meetings and EAACI-Davos meetings
- Founder and executive family member of Global Allergy Asthma European Network (GA2LEN)
- Articles in peer-reviewed journals: 162
- Total number of citations: 5884, average citation per article: 34.24
- Total IP: 794.2
- The number of first and last author articles cited more than 100 times: 14

Current areas of research:

- T regulatory cells in health and allergy: a question of balance and antigen-specificity
- Histamine and small molecular weight drug targets in allergic diseases
- Immune mechanisms and effector phase of allergic inflammation in asthma, atopic dermatitis and rhinitis
- Mechanisms of allergen-specific immunotherapy

- Development of vaccines for the curative treatment and prevention of allergic diseases

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Laboratory: 2 students, 3 post docs, 1 technical assistant. Almost all available techniques for human immunology research.

Interview

- **Q:** *What were your greatest motivations to enter your current area of research?*

- **A:** Almost one third of the adult population is atopic and 10-25% are sensitized against common allergens in the World. The prevalence of allergic diseases have particularly increased during the recent decades. Advances in the understanding of the molecular and immunological mechanisms of allergic inflammation will lead to the discovery of molecular targets that may contribute to new therapeutic strategies for allergic diseases.

- **Q:** *In your opinion, which were the breakthroughs in this area of research in the last years?*

- **A:** Mechanisms of IgE regulation, mechanisms of peripheral tolerance to allergens, mechanisms of healthy immune response to allergens

- **Q:** *What do you think are the most relevant or challenging questions to be answered in this area of research?*

- **A:** Molecular mechanisms, transcriptional regulation and signal transduction events in specific immune suppression.

- **Q:** *What do you think are the most challenging questions to be answered in Immunology?*

- **A:** Development of curative treatment and efficient prevention strategies for allergy, HIV-AIDS, cancer, organ transplantation, autoimmunity.

- **Q:** *In your opinion, what is the most important scientific contribution that you and your group have made? And why?*

- **A:** In addition to its well-characterized effects in the acute inflammatory and allergic responses, we have demonstrated that histamine regulates several essential events in the immune response. Histamine regulates antigen-specific TH1 and TH2 cells as well as related antibody isotype responses. The expression of four different histamine receptors on immune system cells (i.e.

predominant histamine receptor 1 on TH1 cells and histamine receptor 2 on TH2 cells) is regulated and diverse effects of histamine on immune regulation are due to differential expression of histamine receptors and their distinct intracellular signals. In this context, histamine receptor 2 represents a natural way of negative feed-back for the development of Th2 cells and allergic inflammation. As histamine does, other similar molecules that utilize cAMP activating G protein-coupled receptors may efficiently contribute to peripheral T cell tolerance by suppressing TH2 cells and dendritic cells through histamine receptor 2.

- **Q:** *Can you share with us the memory of a special moment of scientific discovery in your life?*

- **A:** It is a great feeling to see the development of a Western blot, coloring of ELISA, flow cytometry results right after inserting each tube in the instrument etc., if you know the conditions of the experiment. I was extremely happy, when I first saw the 3H-thymidine incorporation results showing that histamine receptor-2 suppresses Th2 cell proliferation.

List of 10 publications you consider the most significant (July 2009)

1. **Akdis CA**, T. Blesken, M. Akdis, B. Wüthrich, K. Blaser. Role of interleukin 10 in specific immunotherapy. J. Clin. Invest. 1998; 102:98-106.

Impact Faktor (IF): 16.5

Number of citations: 436

2. **Akdis CA**, M. Akdis, T. Blesken, D. Wymann, S.S. Alkan, U. Müller, K. Blaser. Epitope-specific T cell tolerance to phospholipase A2 in bee venom immunotherapy and recovery by IL-12 and IL-15 in vitro. J. Clin. Invest. 1996; 98:1676-1683.

IF: 16.5

Number of citations: 171

3. M. Jutel* M. Akdis*, F. Budak, C.Aebischer-Casaulta, M. Wrzyszcz, K. Blaser and **Akdis CA**. IL-10 and TGF- β cooperate in regulatory T cell response to mucosal allergens in normal immunity and specific immunotherapy. Eur. J. Immunol. 2003; 33:1205-1214*: First co-authors

IF: 5.0

Number of citations: 257

4. **Akdis CA**. (Editorial) Mechanisms of Allergic Disease. Curr Opin Imm. 2006; 18:718-26.

5. **Akdis CA**, A. Joss, M. Akdis, A. Faith, K. Blaser. A molecular basis for T cell suppression by IL-10: CD28-associated IL-10 receptor inhibits CD28 tyrosine phosphorylation and phosphatidylinositol 3-kinase binding. FASEB J. 2000; 14: 1666-1668.

IF: 7.1

Number of citations: 80

6. Larché M, **Akdis CA** and Valenta R. Immunological mechanisms of allergen-specific immunotherapy. *Nature Reviews Immunology*. 2006; 6:761-71.

IF: 30.0

Number of citations: 91

7. Muller U, **Akdis CA**, Fricker M, et al. Successful immunotherapy with T-cell epitope peptides of bee venom phospholipase A2 induces specific T-cell anergy in patients allergic to bee venom. *Journal of Allergy and Clinical Immunology* 1998; 101: 747-754

IF: 9.8

Number of citations: 216

8. M. Jutel, T. Watanabe, S. Klunker, M. Akdis, O.A.R. Thomet, J. Malolepszy, T. Zak-Nejmark, R. Koga, T. Kobayashi, K. Blaser, & **Akdis CA** Histamine regulates T-cell and antibody responses by differential expression of H1 and H2 receptors. *Nature*. 2001; 413:420-425.

IF: 31.0

Number of citations: 210

9. M. Akdis, J. Verhagen, A. Taylor, F. Karamloo, C. Karagiannidis, R. Cramer, S. Thunberg, G. Deniz, R. Valenta, H. Fiebig, C. Kegel, R. Disch, C. B. Schmidt-Weber, K. Blaser, **Akdis CA**. Immune responses in healthy or allergic individuals are characterized by a fine balance between allergen-specific T regulatory 1 and T helper 2 cells. *J. Exp. Med.* 2004; 199: 1567-1575.

IF: 15.2

Number of citations: 259

10. A. Trautmann, M. Akdis, D. Kleemann, F. Altnauer, H.-U. Simon, T. Gaeve, M. Noll, E.B. Bröcker, K. Blaser, **Akdis CA**. T cell-mediated, Fas-induced keratinocyte apoptosis plays a key pathogenetic role in eczematous dermatitis. *J. Clin. Invest.* 2000; 106: 25-35.

IF: 16.5

Number of citations: 173

Major contributions with these papers

Demonstration of human Treg cells

Mechanisms of immune tolerance to allergens

Mechanisms of allergen-specific immunotherapy

Molecular and cellular mechanisms of eczema

Molecular and cellular mechanisms of epithelial shedding

Immune regulation by histamine and histamine receptors

- **Q:** *What would you like to accomplish along your line of research?*

- **A:** With an intensive research background added on a medical background, I would like to concentrate on the demonstration of mechanisms that enable long-term cure and efficient prevention of allergic diseases.

- **Q:** *Could you give a message or advice to students and young scientists?*

- **A:** Goal Setting is an achievement technique that has long been used by many of the most successful people in the world. Goals give us something to shoot for, they keep our efforts focused, and they allow us to measure our success. There is power in your purpose and in your goals. It is the power that takes you over obstacles and propels you toward the life you envision. Never ever give up to accomplish your research endeavors.

- **Q:** *What is your management style?*

- **A:** An interactive management style is being used in the institute with open doors any time for any urgent matter, in addition to planned administrative meetings.

This management style is employee oriented, because of continuous circulation of young scientists. It is also tasks oriented because of international research collaborations and reporting system of the third party funds.

It explains and listens instead of telling and ordering.

It develops commitment instead of using forces of compliance.

It is both people and tasks oriented.

It is highly adaptable for applying recent developments and modern techniques in the institute.

It is employed to satisfy needs for both high quality science and personal needs for good education.

It establishes trust and understanding instead of creating fear and tension.

Yearly written feedback from all employees is collected and new personal directions as well as institutional directions are being developed.

Group leader meetings, foundation board meetings as well as advisory board meetings efficiently take place.

Collaboration and problem solving meetings are being organized between relevant members whenever needed.

Transparency, equal treatment for equal positions, no sex and race discrimination are essential.

- **Q:** *What are your future perspectives for SIAF?*

- **A:** Need: Over the last decades, the prevalence of allergy has increased and the reasons still remain to be clarified. Currently, allergic diseases, such as allergic rhinitis, asthma and eczema are among the most common chronic diseases in Europe. Their prevalence continues to grow with one child in three now affected by an allergic disease. Trends indicate that half of all Europeans will suffer from some kind of allergy by 2015. It is becoming clear that there is significant under-diagnosis and under-treatment in all areas of allergy, with up to 90% of patients left untreated according to existing medical standards. In addition to the rising public health impact of these diseases, the socio-economic impact is also increasing. As the prevalence of allergic diseases continues to grow in Europe, the costs to both healthcare systems and workplaces are increasing.

These numbers significantly demonstrate that there is continuous need for high quality and focused research, which fully adheres to the main aims of SIAF.

Personnel and financing: SIAF will continue to do human research on mechanisms of allergic disease and asthma and development of novel treatment modalities and therefore will continue to educate students and employ high talented scientists, who will perform front research on a high level. SIAF is well equipped for the aimed type research and receives international interest for third party funds from industry and foundations that support research. A healthy and growing budget, which has been established during the last two years (2006, 2007) is in the trend to continue during the next years. Third party funds are being increased and this will continue. New instruments are continuously being purchased and adapted to the ongoing research.

Management: An interactive management style will continue to be used in the future. It is both “employee oriented”, because of continuous circulation of young scientists and “tasks oriented” because of international research collaborations and reporting system of the third party funds. The tasks are well defined and a matrix organization scheme will continue to be used. In this matrix organization, four research groups make the horizontals. Technicians, IT group, group leaders meeting, secretary and house keeping make the verticals. An interactive, supportive and problem solving approach will continue.

Research: The research activities at SIAF will continue to be focused on the immune-pathological mechanisms of allergic diseases and asthma. The cellular and molecular mechanisms regulating the healthy and the allergic response to allergenic compounds and the effects of the activated immune cells on the tissue cells in affected organs will continue to be investigated. More emphasis will be given to identify novel targets for drug development and development of novel vaccines for allergen-specific immunotherapy. In particular, the studies are focused on human *in vivo* relevant research with direct analyses of human biopsy samples, body fluids and peripheral blood and this will continue. SIAF has published 271 peer-reviewed articles and 101 unreviewed articles and book chapters since the year 2000. Average impact factor per publication is approximately 4.8. Total number of citations of all SIAF articles is more than 13'000. The trend for receiving high citations is expected to continue.

Education and career development: Continuous PhD education and career development opportunities will continue. The two congresses, World Immune Regulation Meeting (700 – 800 participants) and EAACI Davos Meeting (100 participants) will continue to be organized by SIAF annually in the future. SIAF's clinical conferences for the education of medical doctors of Davos will continue. SIAF's group leaders will continue to efficiently take part in the education of Zurich University and look forward to new educational tasks.