



# **Samyr Kenno, PhD**

## **Immunologist, Microbiologist**

### **Personal details:**

Name Samyr Kenno  
Date of Birth 10.05.1982  
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### **Professional profile:**

Experienced researcher in crosstalk between innate immunity and cells mediated immune response during fungal infection. Team leader performing preclinical studies and projects management. I coordinate a research group and I am responsible for planning the experiments, data analysis and presentation. Writing proposal for funding acquisition.

### **Education:**

**April 2015-March 2019:** PhD degree at “**HO**st Response in **O**pportunistic infection**S**” (HOROS) doctoral program of excellence, Prof. Reinhard Würzner’s group. Division of Hygiene and Medical Microbiology, Medical University of Innsbruck, Austria.

**March 2017-September 2017:** PhD visiting student under the student abroad program at Aberdeen Fungal Group, Prof. Neil Gow’s group. Institute of Medical Science, University of Aberdeen, Scotland, UK.

**July 2009-July 2014:** Specialization (Postgraduate) School in Microbiology and Virology, with honours. Prof. Anna Vecchiarelli’s group. Experimental Medicine Department, University of Perugia. Thesis title: Neutrophil Extracellular Trap release in response to *Candida albicans*.

**September-December 2011:** Visiting researcher at Prof. Maurizio Del Poeta’s group. Departments of Biochemistry and Molecular Biology, Medical University of South Carolina, Charleston, SC U.S.A.

**October 2002-October 2007:** Master’s degree in Medical Biotechnology, with honours, Prof. Giuseppe Servillo’s group. Experimental Medicine Department, University of Perugia. Thesis title: Identification of a new gene isolated during liver regeneration using Two Hybrid System.

### **Research activity:**

**December 2019- Today:** Scientist at the University of Modena and Reggio Emilia UNIMORE, Modena, Italy. Identification of intracellular pathways activated in vaginal epithelial cells during *C. albicans* infection. Project DORIAN: **D**efining the molecular mechanisms of **t**olerance **b**reakdown **I**n **V**ulvov**A**ginal **c**andidiasis (DORIAN).

**April 2019-November 2019:** Postdoctoral researcher at the **Institute for Systemic Inflammation Research (ISEF), University of Lübeck, Germany**. Collaborative research center (CRC) 1526, Pathomechanisms of Antibody-mediated Autoimmunity (PANTAU), Prof. Jörg Köhl’s group. Targeted *in-vivo* studies in the crosstalk between the innate immunity and the autoantibodies production in Epidermolysis Bullosa Acquisita, a rare autoimmune skin blistering disease. Deep focus of germinal center reaction after EBA immunization in mice. Purification of T and B cells and analysis of activation, proliferation and differentiation towards Follicular T cells and Plasma cells. Purification of autoantibodies antigen specific and glycosylation analysis. IgM/IgGs switch analysis by flow cytometry. Development of *ex vivo* model to induce germinal center B cells and plasma cells from mouse purified naïve B cells. Collaboration with Kira Pharmaceutical (US), pharmacological inhibition of complement system in experimental model of EBA. Evaluation of the disease development by confocal microscopy and flow cytometry.

**April 2015-March 2019: Prof. Reinhard Würzner's group, Division of Hygiene and Medical Microbiology, Innsbruck Medical University, Innsbruck, Austria.**

Study of the glucose transporter "High affinity glucose transporter 1" (Hgt1p) in *Candida albicans* as a new moonlighting empowering the ability of immune evasion of the fungus. *In-vitro* analyses of Hgt1p as Factor H binding molecule after its export by vesicles, influencing FH deposition, C3b conversion on cell wall surface. *In vitro* evidence that Hgt1 inhibits the phagocytosis and killing by human neutrophils and macrophages. Blockage of Hgt1p by generated antibodies. *In-vivo* evidence that the surface blocking by specific antibody represents a starting point for therapy in *C. albicans* systemic infection.

**March 2017-September 2017: Aberdeen Fungal Group, Prof. Neil Gow's group, Institute of Medical Science, University of Aberdeen, Scotland, UK**

Microscopic studies on distribution of the virulence factor Hgt1p on *C. albicans* by Transmission Electronic Microscopy (TEM). Studies of the beneficial effect of Hgt1p blocking on *C. albicans* cell wall surface by confocal microscopy analyses.

**May 2012-June 2014: Prof. Anna Vecchiarelli's group, Department of Experimental Medicine, Microbiology section, University of Perugia.**

*In-vitro* studies of beneficial effect of Glucoronoxilomannan (GXM), a capsular material of the opportunistic fungus *Cryptococcus neoformans*. Study of its effects in an *in-vivo* experimental system of lipopolysaccharide (LPS)-induced shock. Focus on GXM treatment reducing the mortality of mice at early stages and increasing plasma levels of anti-inflammatory cytokines.

#### **Training:**

**June 2009-2012: Clinical Microbiology Laboratory, Faculty of Medicine and Surgery, Santa Maria della Misericordia Hospital, University of Perugia.**

Molecular diagnosis and infection monitoring. Isolation of bacteria from clinical specimens, MALDI-TOF identification. Samples preparation for Mycobacteria isolation and cell growth (MIGIT). Serology applied to the identification of pathogenic antigens and IgM/IgGs antibodies titers. RT-PCR and Nested PCR techniques applied for detection and identification of pathogenic microorganisms. Identification of viral markers by immunofluorescence analysis.

**September-December 2011: Biochemistry and Molecular Biology department, Medical University of South Carolina, Charleston, SC, U.S.A.**

Recombinant DNA techniques and microbial mutagenesis. Bioinformatics for DNA screening and analysis.

#### **Laboratory skills:**

***In-vitro* cell culture:** White blood cells isolation and maintenance of cells in culture. Drug administration. Cell transfection and protein purification. Cell lysis and signaling analyses. Murine T and B cells purification from secondary lymphoid organs (MACS system and cell sorting). Restimulation of T cells for Th1, Th17, Treg induction. Murine bone marrow cells isolation. Development of *ex-vivo* system for Germinal Center B cell induction from purified naïve B cells.

***In-vivo* mouse model:** Infection models and drug administration of mice and rats by SC, IM, IP, EV injections. Experience on skin autoimmunity induction. Blood collection, surgery and removal of specimens for functional immunoassays. Federation of European Laboratory Animal Science Associations (FELASA) certification issued by Innsbruck Medical University on April 2016.

**Flow Cytometry:** Strong experience in Spectral flow cytometry (CYTEK, AURORA, 5 Laser) and canonical flow cytometry (BD LSRII, 5 lasers and BD FACS Calibur 3 lasers). Design of multicolor panels, up to twenty intra/extra cell staining simultaneously. High familiar with FlowJo, SpectroFlo and DIVA software for data analysis.

**DNA and RNA recombinant techniques:** DNA cloning. DNA/RNA extraction from mammalian cells. Primers design for conventional and Real Time PCR. SYBR Green, Taqman techniques. Gene expression

analysis. RNAseq analysis. DNA electrophoresis. Microbial knock-out generation by homologous recombination.

**Microscopy:** Experience in confocal microscope Keyence BZ-H4XD and BZ-X800 analysis software for immunohistochemical analyses of murine tissue samples, up to four staining simultaneously. Experience in confocal microscope Olympus Fluoview FV1000 and Transmission Electronical Microscopy (TEM, Zeiss). Experience in light microscopy.

**Protein investigation:** Direct and Indirect ELISA. Western Blotting and band intensity analysis.

**Antibody investigation:** Induction of antibodies production in mice. Antibody purification by affinity chromatography. IgGs Fc glycosylation analysis by Lectin blot.

**Microbiological standard procedures:** High familiarity in preparation and maintenance of liquid and solid microbial culture. MIC test. Antibiogram. Direct/Indirect ELISA. Avidity test. Bacterial cells count CFU/ml.

**Real time monitoring** of microbial *in-vivo* infection by In Vivo Imaging System (IVIS).

### Publications:

1. Seiler D.L., Kleingarn M., Kähler K.H., Gruner C., Schanzenbacher J., Ehlers-Jeske E., **Kenno S.**, Sadik C.D, Schmidt E., Bieber K., Köhl J., Ludwig R.J., Karsten C.M., **C5aR2 deficiency ameliorates inflammation in murine epidermolysis bullosa acquisita by regulating FcγRIIb expression on neutrophils.** *J. Invest. Dermatol*, 2022. DOI: [10.1016/j.jid.2021.12.029](https://doi.org/10.1016/j.jid.2021.12.029)
2. Harpf V., **Kenno S.**, Rambach G., Fleischer V., Parth N., Weichenberger C.X., Garred P., Huber S., Lass-Flörl C., Speth C., Würzner R. **Influence of glucose on *Candida albicans* and the relevance of the complement FH-binding molecule Hgt1 in a murine model of candidiasis.** *Antibiotics*, 2022. DOI: [10.3390/antibiotics11020257](https://doi.org/10.3390/antibiotics11020257)
3. Kellnerová S., Chatterjee S., Bayarri-Olmos R., Justesen L., Talasz H., Posch W, **Kenno S.**, Garred P., Orth-Höller D, Grasse M., Würzner R. **Shiga Toxin 2a Binds to Complement Components C3b and C5 and Upregulates Their Gene Expression in Human Cell Lines.** *Toxins*, 2021. <https://doi.org/10.3390/toxins13010008>
4. Clauder A.K., Kordowski A., Bartsch Y.C, Köhl G., Lilienthal G.M., Almeida N.L., Lindemann T., Petry J., Rau C.N, Schmitz G.A., Dühring L., Elbracht C., **Kenno S.**, Tillmann J., Wuhler M., Ludwig R.J, Ibrahim S.M, Bieber K., Köhl J., Ehlers M, Manz R.A. **IgG Fc N-Glycosylation Translates MHCII Haplotype into Autoimmune Skin Disease.** *J. Invest. Dermatol*, 2021. <https://doi.org/10.1016/j.jid.2020.06.022>
5. **Kenno S.**, Speth C., Rambach G., Binder Ulrike B., Chatterjee S., Caramalho R., Haas H., Lass-Flörl C., Shaughnessy J., Ram S., Neil A.R. Gow , Orth-Höller D., Würzner R. ***Candida albicans* factor H binding molecule Hgt1p – a low glucose-induced transmembrane protein is trafficked to the cell wall and impairs phagocytosis and killing by human neutrophils.** *Frontiers in Microbiology*, 2019. <https://doi.org/10.3389/fmicb.2018.03319>
6. **Kenno S.**, Perito S., Mosci P., Vecchiarelli A., Monari C. **Autophagy and Reactive Oxygen Species are involved in Neutrophil Extracellular Traps release induced by *C. albicans* morphotypes.** *Frontiers in Microbiology*, 2016. <https://doi.org/10.3389/fmicb.2016.00879>
7. Vecchiarelli A., Pericolini E., Gabrielli E., **Kenno S.**, Perito S., Cenci E., Monari C. **Elucidating the immunological function of the *Cryptococcus neoformans* capsule.** *Future Microbiology*, 2013. <https://doi.org/10.2217/fmb.13.84>
8. Mosci P., Pericolini E., Gabrielli E., **Kenno S.**, Perito S., Bistoni F., d'Enfert C., Vecchiarelli A. **A novel bioluminescence mouse model for monitoring oropharyngeal candidiasis in mice.** *Virulence*, 2013. <https://doi.org/10.4161/viru.23529>
9. Piccioni M., Monari C., **Kenno S.**, Pericolini E., Gabrielli E., Pietrella D., Perito S., Bistoni F., Kozel TR., Vecchiarelli A. **A purified capsular polysaccharide markedly inhibits inflammatory response during endotoxic shock.** *Infection and Immunity*. 2013. <https://doi.org/10.1128/IAI00533-12>

## Awards:

1. Travel grant from 8th European Meeting on Complement in Human Disease (EMCHD), August 26<sup>th</sup>-29<sup>th</sup> 2022, Bern, Switzerland. Abstract: The C5a/C5ar1 axis controls the early IgM to IgG switch of Collagen type VII autoantibodies in experimental Epidermolysis Bullosa Acquisita.
2. Selected Poster presentation at 27th International Complement Workshop (ICW2018), 16<sup>th</sup> - 21<sup>st</sup> September 2018, Santa Fe, NM, USA. Abstract: *Candida albicans* factor H binding molecule Hgt1p - a low glucose-induced transmembrane protein, trafficked to the cell wall, impairing phagocytosis.
3. Travel grant from Deutsche Gesellschaft für Hygiene und Mikrobiologie (DGHM) - Fachgruppe Eukaryontische Krankheitserreger- Statusworkshop, January 28<sup>th</sup>-29<sup>th</sup> 2016, Aachen, Germany. Abstract: The *Candida albicans* factor H binding molecule Hgt1p *in vitro* and *in vivo* evidence that it functions as virulence factor.

## Conferences as invited speaker and invited lecturer:

1. The C5a/C5ar1 axis controls the induction of Germinal Center B cells, their IgM/IgG1 production and plasma cells differentiation. **29<sup>th</sup>International Complement Workshop (ICW2023)**, 31<sup>st</sup>-05<sup>th</sup> September 2023, Newcastle, UK.
2. The C5a/C5aR1 axis drives autoimmune inflammation in Epidermolysis Bullosa Acquisita (EBA) through the control of early IgGs autoantibodies formation and glycosylation. **Life Science PhD meeting, April 12<sup>th</sup>-14<sup>th</sup>, 2023, Innsbruck, Austria.**
3. *Candida albicans* factor H binding molecule Hgt1p – a low glucose-induced transmembrane protein, trafficked to the cell wall, impairing phagocytosis. **German speaking Mycological Society (DMyKG) e. V., September 6<sup>th</sup>-8<sup>th</sup>, 2018, Innsbruck, Austria.**
4. *Candida albicans* factor H binding molecule Hgt1p – a molecule also executing non-canonical functions. **The Life Science PhD Meeting, 5<sup>th</sup> - 6<sup>th</sup> April 2018, Innsbruck Austria.**
5. *In-vitro* blockage of *Candida albicans* factor H binding molecule Hgt1p by antibody – an approach for *in-vivo* immunotherapy? **German speaking Mycological Society (DMyKG) e. V., September 8<sup>th</sup>-10<sup>th</sup>, 2016, Essen, Germany.**
6. Selected as representative student for interim evaluation of Horos II (doctoral program) at FWF (Austrian Science Found) hearing. **September 25<sup>th</sup> 2017, Vienna, Austria.**

## Poster presentations:

1. **Samyr Kenno**, Borus S., Bieber K., Köhl J., The C5a/C5ar1 axis controls the early IgM to IgG switch of Collagen type VII autoantibodies in experimental Epidermolysis Bullosa Acquisita. DGfI & ÖGAI Joint Meeting 2022, September 07<sup>th</sup>-10<sup>th</sup> 2022, Hannover, Germany
2. **Samyr Kenno**, Borus S., Bieber K., Köhl J., The C5a/C5ar1 axis controls the early IgM to IgG switch of Collagen type VII autoantibodies in experimental Epidermolysis Bullosa Acquisita. European Meeting Complement Human Disease 2022 (EMCHD2022), August 26<sup>th</sup>-29<sup>th</sup> 2022, Bern, Switzerland.
3. **Samyr Kenno.**, Speth C., Rambach G., Ulrike B., Chatterjee S., Caramalho R., Haas H., Lass-Flörl C., Shaughnessy J., Ram S., Neil A.R. Gow ., Orth-Höller D., Würzner R. *Candida albicans* factor H binding molecule Hgt1p - a low glucose-induced transmembrane protein, trafficked to the cell wall, impairing phagocytosis. 27th International Complement Workshop (ICW2018), 16<sup>th</sup> - 21<sup>st</sup> September 2018, Santa Fe, NM, USA.
4. **Samyr Kenno**, Dorothea Orth-Höller, Cornelia Speth, Sneha Chatterjee, Neil Gow, Reinhard Würzner. *Candida albicans* factor H binding molecule Hgt1p - a molecule also executing non-canonical functions. 70.Jahrestagung der Deutschen Gesellschaft für Hygiene und Mikrobiologie e. V., 18<sup>th</sup> - 21<sup>st</sup> February 2018, Bochum, Germany
5. **Samyr Kenno**, Dorothea Orth-Höller, Reinhard Würzner. *In-vitro* blockage of *Candida albicans* factor H binding molecule Hgt1p by antibody - an approach for *in-vivo* immunotherapy? ÖGAI annual meeting Innsbruck, 16<sup>th</sup> - 19<sup>th</sup> November 2016, Innsbruck, Austria.
6. **Samyr Kenno**, Dorothea Orth-Höller, Reinhard Würzner. *In-vitro* blockage of *Candida albicans* factor H binding molecule Hgt1p by antibody - an approach for *in-vivo* immunotherapy? IFoFun 2016, 5-7 October 2016, Erlangen, Germany.
7. **Samyr Kenno**, Dorothea Orth-Höller, Reinhard Würzner. *In-vitro* blockage of *Candida albicans* factor H binding molecule Hgt1p by antibody - an approach for *in-vivo* immunotherapy? 68.

Jahrestagung der Deutschen Gesellschaft für Hygiene und Mikrobiologie e. V. 11<sup>th</sup>-14<sup>th</sup> September 2016, Ulm, Germany

8. **Samyr Kenno**, Dorothea Orth-Höller, Reinhard Würzner. The *Candida albicans* factor H binding molecule Hgt1p *in-vitro* and *in-vivo* evidence that it functions as virulence factor. Life Science Innsbruck Symposium. 31<sup>st</sup> March and 1<sup>st</sup> April 2016, Innsbruck, Austria

**Lecturer at University of Lübeck, Germany. Module of “Infection Biology”.**

Course of “Parasite infection and Immune response”. Summer Semester 2022 and Summer Semester 2023.

**Language skills:**

Italian: Native proficiency.

English: Full professional proficiency.

German: Minimum professional proficiency.

**Hobbies:**

Daily, after lab work, I like to practice my favorites sports as running, swimming and gym. I like to discover what the current city offers on historical traditions. I really like to have a better understanding of the city where I live.