

# EAACI Summer Symposium on Epithelial Barriers and Microbiome

28 - 29 July 2022 | Medicin Campus Davos, Switzerland

Final Program and Abstracts



**EAACI**  
EUROPEAN ACADEMY OF ALLERGY  
AND CLINICAL IMMUNOLOGY

**SIAP**

## Main Program 1. Day - Thursday, 28 July 2022 - Plenary Hall Parsenn

### Session 1 Development of Allergy & Autoimmunity

*Chairs: Ioana Agache, Marek Jutel*

#### Main Talks

08:30 - 09:00

**Erika von Mutius**

The Hygiene Hypothesis

09:00 - 09:30

**Mohamed Shamji**

Innate immune cell interaction with tissue cells

09:30 - 10:00

**Cezmi A. Akdis**

The Epithelial Barrier Hypothesis

10:00 - 10:30

*Coffee break*

### Session 2 Molecular control of epithelial barrier integrity

*Chairs: Marie-Charlotte Brügggen, Ruby Pawankar*

#### Main Talk

10:30 - 11:00

**Eran Elinav**

Molecular control of the gut epithelial barrier integrity

#### Short Talks

11:00 - 11:10

**Gudmundur H. Gudmundsson**

Inducers of Host Defense Peptide expression improve the epithelial barrier integrity

11:10 - 11:20

**Holger Garn**

Side-directed release of differentially loaded extracellular vesicles by bronchial epithelial cells of healthy and asthmatic subjects

11:20 - 11:30

**Fridrik R. Gardarsson**

Barriolides: Novel macrolides with epithelial barrier modulating properties but lacking antimicrobial potency

11:30 - 11:40

**Mirelle Kleuskens**

Activated human mast cells impair esophageal barrier: role of a possible bidirectional crosstalk

11:40- 11:50

**Sanja Kezic**

Nano-mechanical properties of corneocytes and skin barrier

11:50- 12:00

**Gordo G. Rubén**

Crosstalk between intestinal epithelial barrier and microbiota-derived shortchain fatty acids in the context of food allergy

12:00 - 14:30

*Lunch break*

12:00 - 14:30

**Lake walk with the experts** (*Lunch provided to participants*)

**Group 1** Mohamed Shamji and Milena Sokolowska

**Group 2** Erika von Mutius and Yasutaka Mitamura

**Group 3** Kari Nadeau and Willem van de Veen

**Group 4** Eran Elinav and Hideaki Morita

**Group 5** Maria J. Torres and Ismail Ögülür

**Group 6** Claudia Traidl-Hoffmann and Mario Zaiss

**Group 7** Marek Jutel and Urszula Radzikowska

**Group 8** Cezmi A Akdis, Ruby Pawankar and Yagiz Pat

**Group 9** Isabella Annesi-Maesano and Oscar Palomares

### Session 3 Factors that induce epithelial barrier leakiness

*Chairs: Eran Elinav, Maria J. Torres*

#### Main Talk

14:30 - 15:00

**Hideaki Morita**

Inhaled laundry detergents induce eosinophilic airway inflammation through IL-33 and ILC2 activation

## Main Program 1. Day - Thursday, 28 July 2022 - Plenary Hall Parsenn

### Short Talks

- 15:00 - 15:10 **Ismail Ögüller**  
Gut epithelial barrier damage caused by commonly used emulsifiers polysorbate-20 and polysorbate-80
- 15:10 - 15:20 **Marit Zuurveld**  
Ovalbumin induced epithelial activation directs moDC to instruct type 2 inflammation in Th cells which is differentially modulated by 2'FL and 3FL
- 15:20 - 15:30 **Yagiz Pat**  
Differentiation of bronchial epithelial spheroids in the presence of IL-13 recapitulates characteristic features of asthmatic airway epithelia

### Session 4 Novel techniques for an extensive look at the defective epithelial barriers

*Chairs: Hideaki Morita, Ismail Ögüller*

### Main Talk

- 15:30 - 16:00 **Yasutaka Mitamura**  
Single-cell seq, visium spatial seq, imaging mass cytometry and targeted proteomics for the investigation of atopic dermatitis lesions

### Short Talks

- 16:00 - 16:10 **Moran Morelli**  
An organ-on-a-chip screening platform to evaluate the intestinal epithelial response to microbial toxins and identify potential modulators
- 16:10 - 16:20 **Duygu Yazici**  
High Throughput Investigation of Epithelial Barrier Affecting Compounds with Gut-on-a-chip System
- 16:20 - 16:30 **Jamie Afghani**  
New Developments in Eczema Research: Skin Metabolome Sampling and Skin Bacterial Secretions; Oxygen Exposure and pH Stability
- 16:30 - 16:40 **Eva-Maria Rick**  
Molecular Allergology between precision medicine and elucidation of pathomechanisms
- 16:40 - 16:50 **Sayantani B. Sindher**  
Identification of Skin Epithelial Barrier Defects Using Nevisense Go
- 16:50 - 17:00 **Caroline Roduit**  
The use of electrical impedance spectroscopy to identify skin barrier impairment in children with atopic dermatitis
- 17:00 - 17:30 *Coffee break*

### Session 5 Epithelial barriers immune response & inflammation

*Chairs: Isabella Annesi-Maesano, Milena Sokolowska*

### Main Talks

- 17:30 - 18:00 **Mario Zaiss**  
Gut barrier and rheumatoid arthritis
- 18:00 - 18:30 **Kari Nadeau**  
Immune response in epithelial barrier leaky individuals

### Short Talks

- 18:30 - 18:40 **Leonie S. Herzog**  
Mast cells influence epidermal barrier homeostasis
- 18:40 - 18:50 **Katleen Martens**  
Epithelial barrier dysfunction contributes to mast cell degranulation and neutrophilic airway inflammation in vivo
- 18:50 - 19:00 **Rebecca Pospich**  
T cells specific to skin bacteria are clonally propagated in lesional atopic dermatitis skin and mount a Th1 response
- 19:00 - 22:00 *Dip & Discuss Dinner Buffet*
- 19:30 - 22:00 **Poster Sessions 1 - 6**, Room: Poster Sessions

## Main Program 2. Day - Friday, 29 July 2022 - Plenary Hall Parsenn

### Session 6 Microbiome and epithelial barriers in the skin and lung

*Chairs: Yoon-Seok Chang, Mohamed Shamji*

#### Main Talks

08:30 - 09:00

**Claudia Traidl-Hoffmann**

Microbiome and epithelial barriers

09:00 - 09:30

**Ioana Agache**

Epithelial inflammation in the asthmatic lung

#### Short Talks

09:30 - 09:40

**Mahmoud I. A. Ibrahim**

Oropharyngeal microbiome clusters in children with wheeze and asthma associate with allergy, exacerbation risk and transcriptional activity of immune pathways in blood

09:40 - 09:50

**Aurélien Trompette**

Gut-derived short-chain fatty acids modulate skin barrier integrity by promoting keratinocyte metabolism and differentiation

09:50 - 10:00

**Anna S. Wenning**

The maternal microbiota drives embryonic epidermal formation and sets neonatal skin barrier

10:00 - 10:30

*Coffee break*

### Session 7 Air pollution asthma and impact of treatments

*Chairs: Mübeccel Akdis, Kari Nadeau*

#### Main Talks

10:30 - 11:00

**Isabella Annesi-Maesano**

Air pollution asthma and allergy in the exposome era

11:00 - 11:30

**Marek Jutel**

Asthma and the impact of biological treatments on microbiome and epithelial barrier

#### Short Talks

11:30 - 11:40

**Martin Himly**

Immune impact of particulates combined with biological matter at human alveolar epithelia

11:40 - 11:50

**Sabine Hofer**

Direct SARS-CoV-2 inoculation of epithelia in the pulmonary alveolar region and the inflammatory response in COVID-19: Challenging the top-down virus migration and disease progression hypothesis

11:50 - 12:00

**Marianne Raith**

The effects of environmental factors and nasal fluid on Bet v 1, the major birch pollen allergen

12:00 - 13:00

*Lunch break (Lunch provided to participants)*

## Main Program 2. Day - Friday, 29 July 2022 - Plenary Hall Parsenn

### Session 8

#### Epithelial cells and viral infections

*Chairs: Oscar Palomares, Mario Zaiss*

#### Main Talks

13:00 - 13:30

#### Milena Sokolowska

Epithelial cell responses in COVID-19 and rhinovirus infections

13:30 - 14:00

#### Ruby Pawankar

Epithelial cells and chronic rhinosinusitis

#### Short Talks

14:00 - 14:10

#### Ismail Ögülür

Novel biomarkers of disrupted gut permeability in severe COVID-19 patients

14:10 - 14:20

#### Kornel Golebski

Dysregulated barrier function of nasal epithelium from long-COVID-19 patients: results of the Precision Medicine for more Oxygen-COVID-19 study

14:20 - 14:30

#### Urszula Radzikowska

Rhinovirus-induced epithelial RIG-I inflammasome activation suppresses antiviral immunity and promotes inflammatory responses in virus-induced asthma exacerbations and COVID-19

14:30 - 14:40

#### Heidi Makrinioti

Early wheeze relapse following a first wheezing episode is associated with peripheral blood MxA levels

### Session 9

#### Novel interactions between the epithelial barriers and microbiome

*Chairs: Yasutaka Mitamura, Willem van de Veen*

#### Main Talks

14:40 - 15:10

#### Harald Renz

Models of epithelial barrier and microbiome

15:10 - 15:40

#### Oscar Palomares

Novel molecular regulation of dendritic cells, microbiome and epithelial barriers

#### Short Talks

15:40 - 15:50

#### Maciej Chałubiński

The effect of epithelium-derived alarmins IL-33, IL-25 and TSLP on the rhinoviral and coronaviral infections of the human lung vascular endothelium

15:50 - 16:00

#### Claudia Hülpüsch

Skin microbiome and pH are associated with the development of severe radiodermatitis

16:00 - 16:10

#### Lucas Morel

Interaction between the microbiome, epithelial cells and immune cells in the context of allergic airway inflammation

16:10

#### End of the Symposium

## Poster Program 1. Day - Thursday, 28 July 2022 - Room Poster Sessions

Poster Session 1		Molecular control of epithelial barrier integrity
19:30, Room: Poster Sessions		Chairs: Pierre-Yves Mantel, Ruby Pawankar, Milena Sokolowska
P01	<b>Gudmundur H. Gudmundsson</b>	Inducers of Host Defense Peptide expression improve the epithelial barrier integrity
P02	<b>Holger Garn</b>	Side-directed release of differentially loaded extracellular vesicles by bronchial epithelial cells of healthy and asthmatic subjects
P03	<b>Fridrik R. Gardarsson</b>	Barriolides: Novel macrolides with epithelial barrier modulating properties but lacking antimicrobial potency
P04	<b>Mirelle Kleuskens</b>	Activated human mast cells impair esophageal barrier: role of a possible bidirectional crosstalk
P05	<b>Sanja Kezic</b>	Nano-mechanical properties of corneocytes and skin barrier
P06	<b>Gordo G. Rubén</b>	Crosstalk between intestinal epithelial barrier and microbiota-derived shortchain fatty acids in the context of food allergies
P33	<b>Ivone Jakasa</b>	Sphingolipids in atopic dermatitis
P40	<b>Ozan C. Kùçùkkase</b>	Nicotinamide supports gut epithelial barrier integrity in human organoids and gut on a chip models
P42	<b>Angela Hoyer</b>	Filaggrin mutations in relation to skin barrier and atopic dermatitis in early infancy
Poster Session 2		Immune response & inflammation
19:30, Room: Poster Sessions		Chairs: Eran Elinav, Maria J. Torres, Erika von Mutius
P07	<b>Ismail Ögùlùr</b>	Gut epithelial barrier damage caused by commonly used emulsifiers polysorbate-20 and polysorbate-80
P08	<b>Marit Zuurveld</b>	Ovalbumin induced epithelial activation directs moDC to instruct type 2 inflammation in Th cells which is differentially modulated by 2'FL and 3FL
P09	<b>Yagiz Pat</b>	Differentiation of bronchial epithelial spheroids in the presence of IL-13 recapitulates characteristic features of asthmatic airway epithelia
P16	<b>Leonie S. Herzog</b>	Mast cells influence epidermal barrier homeostasis
P17	<b>Katleen Martens</b>	Epithelial barrier dysfunction contributes to mast cell degranulation and neutrophilic airway inflammation in vivo
P18	<b>Rebecca Pospich</b>	T cells specific to skin bacteria are clonally propagated in lesional atopic dermatitis skin and mount a Th1 response
P34	<b>Ming Yang</b>	Effect of an immune-supportive diet on gut permeability and allergic symptoms in children with peanut and/or nut allergy: a study protocol
P35	<b>Gisem K. Aksoy</b>	Effects of hydrogen peroxide and butyrate on permeability, cell viability and inflammatory changes in lung epithelial cells
P39	<b>Valentina Faihs</b>	Hydrolysed wheat proteins (HWP) in the diagnosis of omega-5 gliadin-negative wheat-dependent exercise-induced anaphylaxis (WDEIA)s
Poster Session 3		Novel techniques for an extensive look at the defective epithelial barriers
19:30, Room: Poster Sessions		Chairs: Hideaki Morita, Ismail Ögùlùr, Claudia Traidl-Hoffmann
P10	<b>Moran Morelli</b>	An organ-on-a-chip screening platform to evaluate the intestinal epithelial response to microbial toxins and identify potential modulators
P11	<b>Duygu Yazici</b>	High Throughput Investigation of Epithelial Barrier Affecting Compounds with Gut-on-a-chip System
P12	<b>Jamie Afghani</b>	New Developments in Eczema Research: Skin Metabolome Sampling and Skin Bacterial Secretions; Oxygen Exposure and pH Stability
P13	<b>Eva-Maria Rick</b>	Molecular Allergology between precision medicine and elucidation of pathomechanisms
P14	<b>Sayantani B. Sindher</b>	Identification of Skin Epithelial Barrier Defects Using Nevisense Go
P15	<b>Caroline Roduit</b>	The use of electrical impedance spectroscopy to identify skin barrier impairment in children with atopic dermatitis

# Poster Program 1. Day - Thursday, 28 July 2022 - Room Poster Sessions

<b>Poster Session 4</b>		<b>Air pollution asthma and impact of treatments</b>
<i>19:30, Room: Poster Sessions</i>		<i>Chairs: Mübeccel Akdis, Isabella Annesi-Maesano, Kari Nadeau</i>
P23	<b>Martin Himly</b>	Immune impact of particulates combined with biological matter at human alveolar epithelia
P24	<b>Sabine Hofer</b>	Direct SARS-CoV-2 inoculation of epithelia in the pulmonary alveolar region and the inflammatory response in COVID-19: Challenging the top-down virus migration and disease progression hypothesis
P25	<b>Marianne Raith</b>	The effects of environmental factors and nasal fluid on Bet v 1, the major birch pollen allergen
P44	<b>Jorge Parrón-Ballesteros</b>	An in vitro model of bronchial epithelium for chronic exposure to environmental proteases
<b>Poster Session 5</b>		<b>Epithelial cells and viral infections</b>
<i>19:30, Room: Poster Sessions</i>		<i>Chairs: Oscar Palomares, Willem van de Veen, Mario Zaiss</i>
P26	<b>Ismail Ögülür</b>	Novel biomarkers of disrupted gut permeability in severe COVID-19 patients
P27	<b>Kornel Golebski</b>	Dysregulated barrier function of nasal epithelium from long-COVID-19 patients: results of the Precision Medicine for more Oxygen-COVID-19 study
P28	<b>Urszula Radzikowska</b>	Rhinovirus-induced epithelial RIG-I inflammasome activation suppresses antiviral immunity and promotes inflammatory responses in virus-induced asthma exacerbations and COVID-19
P29	<b>Heidi Makrinioti</b>	Early wheeze relapse following a first wheezing episode is associated with peripheral blood MxA levels
P37	<b>Mateusz Gawrysiak</b>	Human lung vascular endothelium may serve as a mechanical and antiviral barrier during rhinoviral airway infections and asthma exacerbations
P36	<b>Norbert Hofstätter</b>	Airborne SARS-CoV-2 transmission to respiratory epithelial barriers in children: the protective role of the juvenile lung morphometry and ventilatory pattern against inoculation in the deep lungs' epithelia
P41	<b>Oral Alpan</b>	Role of Pannexin-1 in epithelial barrier and immune cells in COVID19
<b>Poster Session 6</b>		<b>Novel interactions between the epithelial barriers and microbiome</b>
<i>19:30, Room: Poster Sessions</i>		<i>Chairs: Yoon-Seok Chang, Yasutaka Mitamura, Mohamed Shamji</i>
P20	<b>Mahmoud I. A. Ibrahim</b>	Oropharyngeal microbiome clusters in children with wheeze and asthma associate with allergy, exacerbation risk and transcriptional activity of immune pathways in blood
P21	<b>Aurélien Trompette</b>	Gut-derived short-chain fatty acids modulate skin barrier integrity by promoting keratinocyte metabolism and differentiation
P22	<b>Anna S. Wenning</b>	The maternal microbiota drives embryonic epidermal formation and sets neonatal skin barrier
P30	<b>Maciej Chałubiński</b>	The effect of epithelium-derived alarmins IL-33, IL-25 and TSLP on the rhinoviral and coronaviral infections of the human lung vascular endothelium
P31	<b>Claudia Hülpüsch</b>	Skin microbiome and pH are associated with the development of severe radiodermatitis
P32	<b>Lucas Morel</b>	Interaction between the microbiome, epithelial cells and immune cells in the context of allergic airway inflammation
P43	<b>Murty N. Darisipudi</b>	Staphylococcus aureus-serine protease-like protein B (SplB) activates PAR2 and induces endothelial barrier dysfunction

# VENUE PLACE



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## CONTACT

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