



**PARACELSUS  
MEDIZINISCHE  
UNIVERSITÄT**

**WEBINAR**  
**TOURISM & LIFE QUALITY**  
**8 MAY 2025**



# A space for all – nature, locals and guests



Christina Pichler

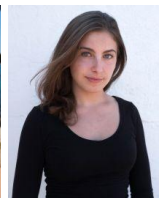
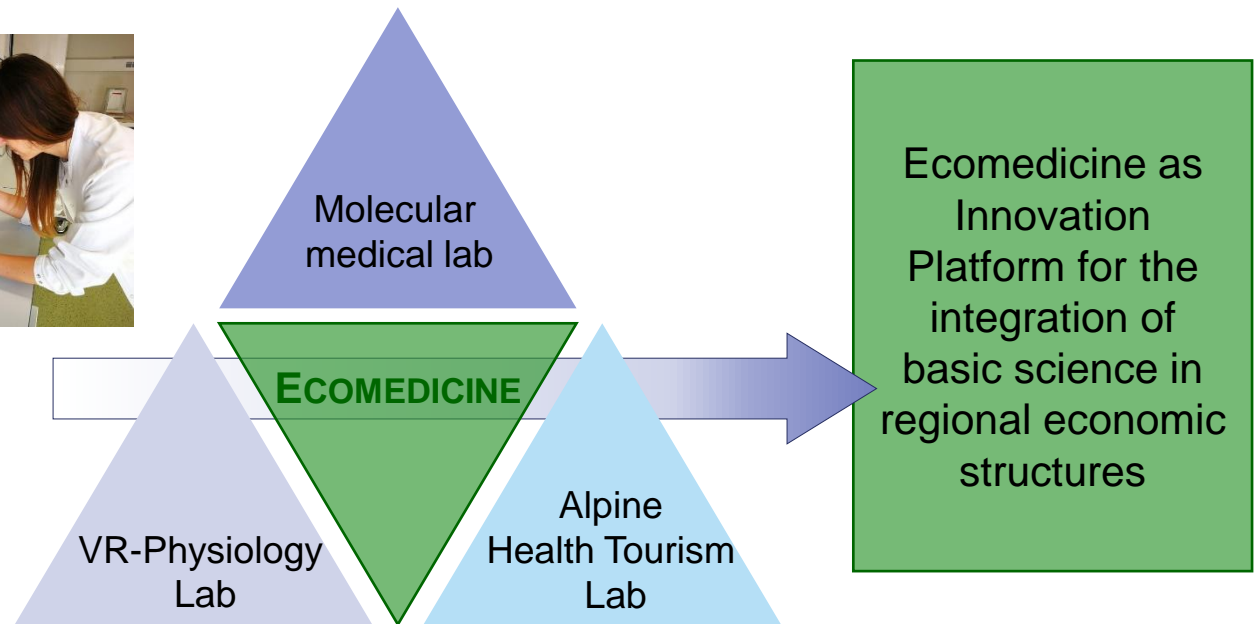
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Institute of Ecomedicine

Who we are

# The Institute of Ecomedicine: Translational Research at the interface of human health, nature & regional development



**Core Task:** Clinical studies and basic research on the efficacy of natural health resources in the prevention and curing of chronic diseases and civilization diseases



## One Health as a guiding principle for health promotion and sustainable development

“An approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to effectively prepare for, detect, assess and respond to **shared health threats** and achieve **better public health outputs**”

*One Health Joint Plan of Action*



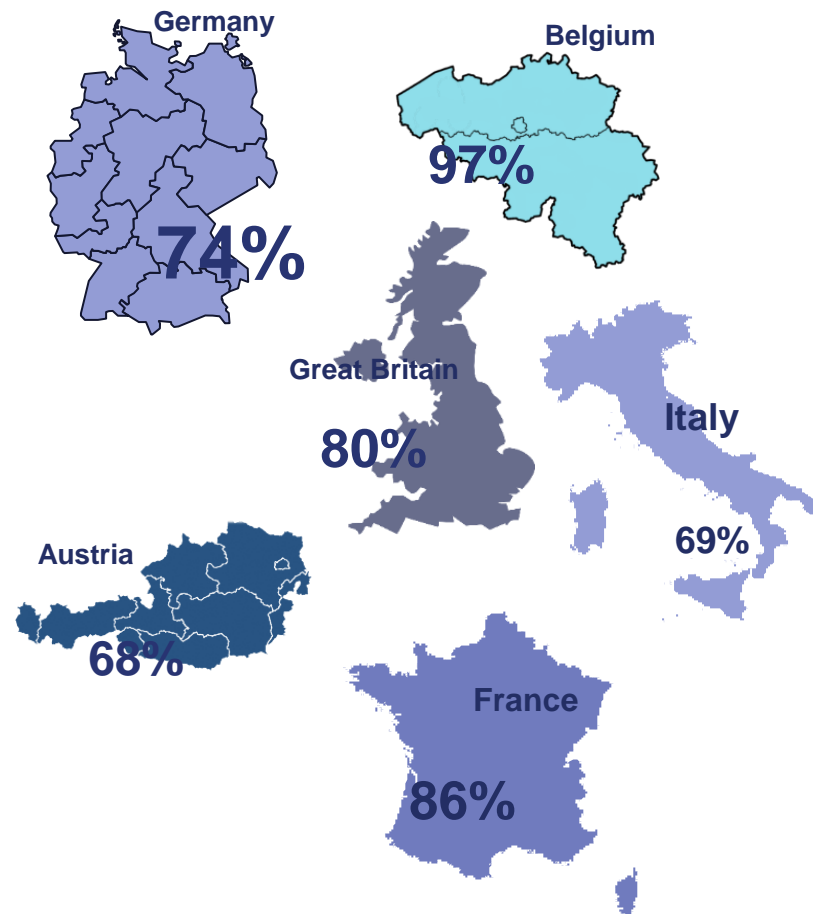
# Urbanization and related health threats

## Urbanization is a global trend:

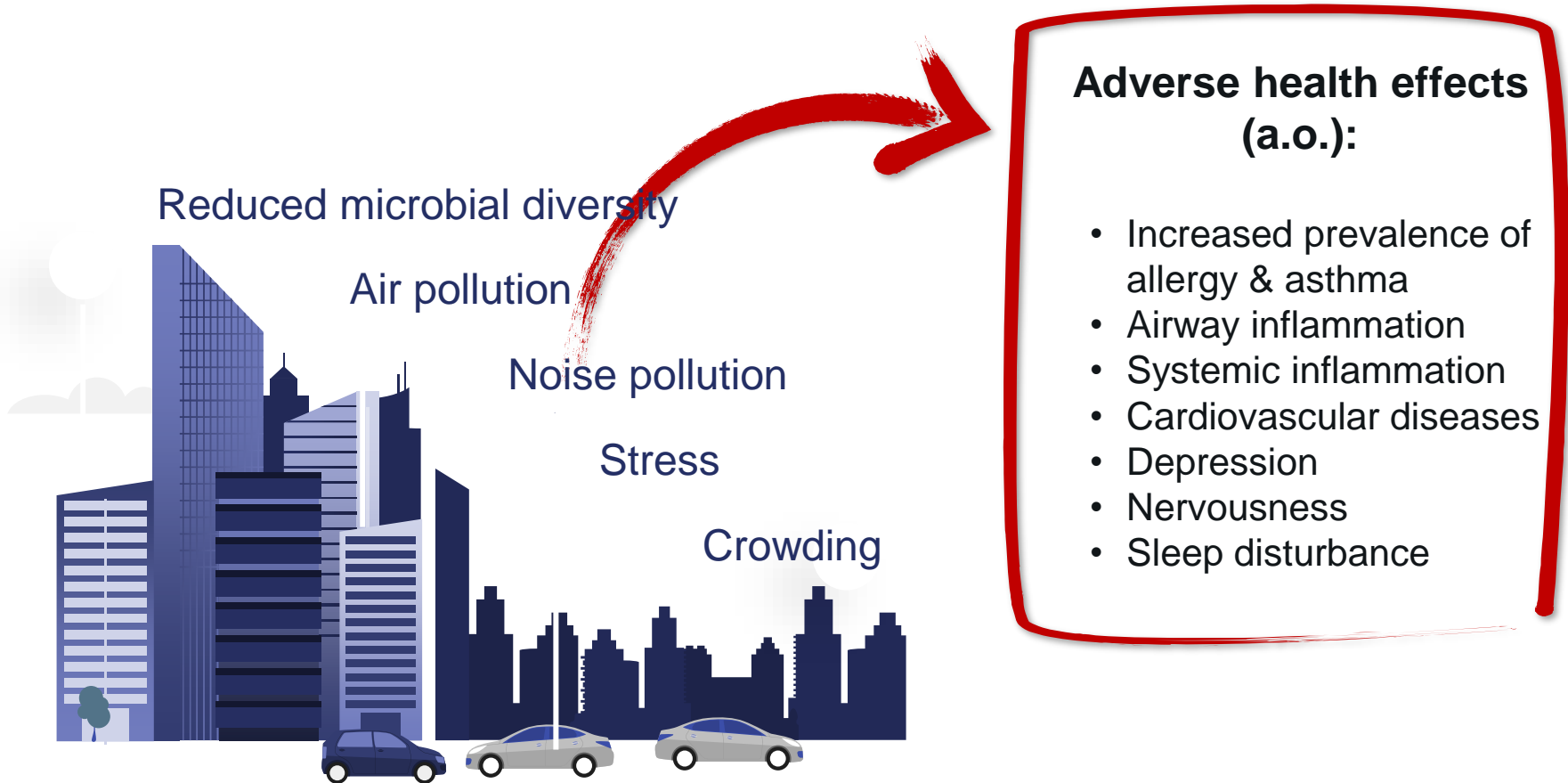
- **1940** 19 % of the world's population was urban
- **2014** 54 % of the world's population residing in urban areas in 2014
- **by 2050**, 66 % of the world's population is projected to be urban



## Degree of urbanization in selected source markets



## Urbanization and related health threats



(Brugha & Grigg, 2014; Cho et al., 2014; Morgenstern et al., 2008; Sanidas et al., 2017; Tzivan et al., 2017; World Health Organization, 2016)

## Stress & the city

# NEWS & VIEWS

### SOCIAL NEUROSCIENCE

## Stress and the city

Many of us were raised or currently live in an urban environment. A neuroimaging study now shows how brain function when an individual is faced with a stressful situation. [SEE LETTER P.498](#)

DANIEL P. KENNEDY & RALPH ADOLPHS

The landscape of human society is changing drastically. In 1950, only 30% of the world's population lived in urban regions; today, more than 50% live in cities. By 2050, this figure is expected to almost 70% (Fig. 1). An isolation is well known to have negative effects<sup>2</sup>, so does the opposite: crowding can induce stress and anxiety in species ranging from insects to primates, including humans<sup>4</sup>. In addition, mental illness in humans has been linked to the urban environment: living in a city increases the risk of depression and anxiety, and the rate of schizophrenia is markedly higher in people born and brought up in cities<sup>5</sup>. Writing on page 498 of this issue, Lederbogen *et al.*<sup>6</sup> use functional magnetic resonance imaging

## City living and urban upbringing affect neural social stress processing in humans

Florian Lederbogen<sup>1\*</sup>, Peter Kirsch<sup>1\*</sup>, Leila Haddad<sup>1\*</sup>, Fabian Streit<sup>1</sup>, Heike Tost<sup>1</sup>, Philipp Schuch<sup>1</sup>, Stefan Wüst<sup>1</sup>, Jens C. Pruessner<sup>2</sup>, Marcella Rietschel<sup>1</sup>, Michael Deuschle<sup>1</sup> & Andreas Meyer-Lindenberg<sup>1</sup>

**Figure 1 | The city allure.** The percentage of the global population living in urban (blue) and rural (red) regions since 1950, with projected<sup>1</sup> figures up to 2050.

in these two regions. A similar pattern of reduced cingulate–PACC coupling has previously been associated<sup>7</sup> with genetic risk for psychiatric disorders, and the amygdala has recently been linked both to social-network size<sup>8</sup> and to the sense of personal-space violation<sup>9</sup>. Taken together, the findings suggest that the cingulate–amygdala circuit is one on which genetic and environmental risks for mental illness may converge.

The sheer number and complexity of the factors involved in studies of real-world society raise concerns about both the reliability of effects and the possibility of confounding

(Kennedy & Adolphs, 2011; Lederbogen *et al.*, 2011)



Push factors: Urbanization and related health threats

# Impact on childhood asthma

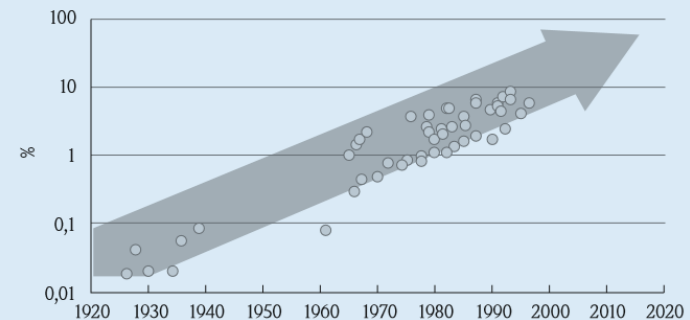
## The Urban Environment and Childhood Asthma Study

James E. Gern, MD *Madison, Wis*

Childhood asthma is not distributed evenly throughout the population, and children who grow up in crowded urban neighborhoods have higher rates of asthma and experience greater morbidity because of asthma. There are several environmental and lifestyle factors associated with urban living that are suspected to promote the development of asthma, particularly in the first few years of life. Collectively, this information suggests the hypothesis that exposure in early life to adverse environmental and lifestyle factors associated with disadvantaged urban environments modifies immune development to increase the risk for allergic diseases and asthma. The Urban Environment and Childhood Asthma (URECA) birth cohort study was initiated in 2004 to test this hypothesis. The study population was recruited prenatally and consisted of 560 families from 4 urban areas who were at high risk for allergies and/or asthma on the basis of parental histories, along with an additional 49 families without atopic parents. Immune development, respiratory illnesses, and exposure to stress, indoor pollutants, microbial products, and allergens were measured prospectively, and the major study outcomes are recurrent wheeze at 3 years of age and asthma at age 7 years. This review summarizes the study design, methods, and early findings of the URECA study. (*J Allergy Clin Immunol* 2010;125:545-9.)

**Key words:** Asthma, children, environment, immune development, cytokines

## Development of prevalence of asthma in children and adolescents in Europe



Asthma-Häufigkeit bei Kindern und jungen Erwachsenen in Europa  
Quelle: Daten der Universität Köln

Children that are raised in high urban density areas and near busy roads develop more allergies and suffer more often from asthmatic, spastic and obstructive bronchitis.

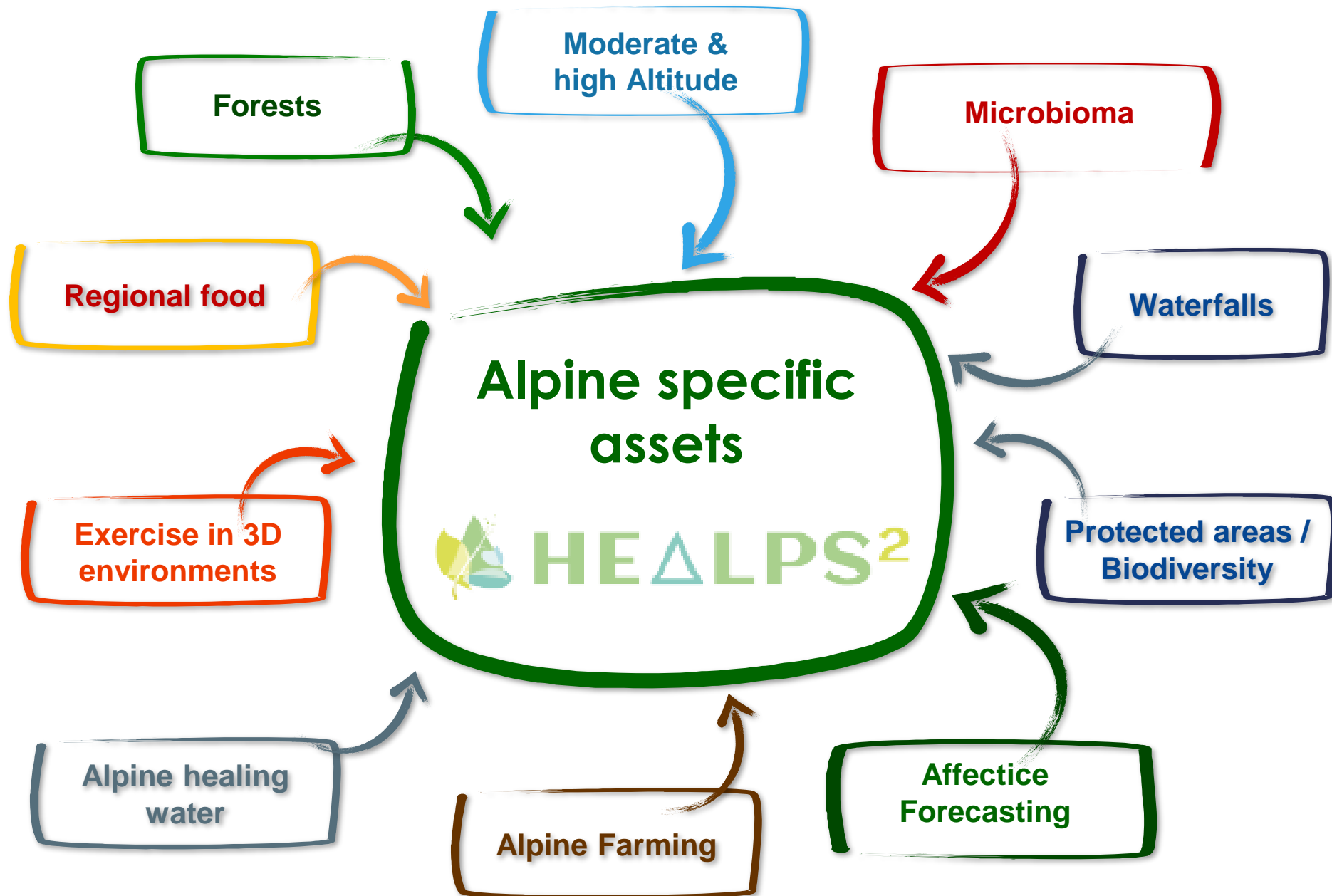
(Bröms et al., 2009; Gern, 2010; Murrison et al., 2019)

Alpine natural resources as base for regional development

## Alpine natural health resources







# Alpine Natural Health Resources



TABLE OF CONTENTS	
Air ions	6
Spa Therapy in Alpine healing waters	8
Alpine water – blue spaces	10
Alpine streams for Kneipp hydrotherapy	12
Waterfalls	14
Alpine mountain hiking	16
Rock climbing / outdoor bouldering	18
Forest therapy	20
Protected areas & biodiversity	22
Alpine farming & Alpine pastures – environmental microbes	24
High altitude (2,500+ metres)	26
Medium altitude (1,000 – 2,500 metres)	28
Apitherapy	30
Honey	32
Alpine milk & dairy products	34
Plants / phytotherapy	36
Mud baths & packs	38
Winter – snow-based activities	40
Winter – non-snow-based activities	42
Radon	44
Speleotherapy	46

(Pichler et al., 2023)

[Resources – Healing Alps \(healing-alps.eu\)](https://healing-alps.eu)

# Nature therapies for chronic stress

RCT, 3 arms: Green Exercise +/- waterfall, control group (no intervention)

Green exercise in moderate to high altitude (1.100 – 2.500 hm) in combination with daily stays at the Gartl Waterfall

- improves lung function and
- physiological stress parameters (GE WF+, GE WF-)
- WF+ provides additional benefits in terms of mucosal immunity and subjective stress perception

Grafetstätter et al. *Journal of Physiological Anthropology* (2017) 36:10  
DOI 10.1186/s40101-016-0117-3


Journal of  
Physiological Anthropology

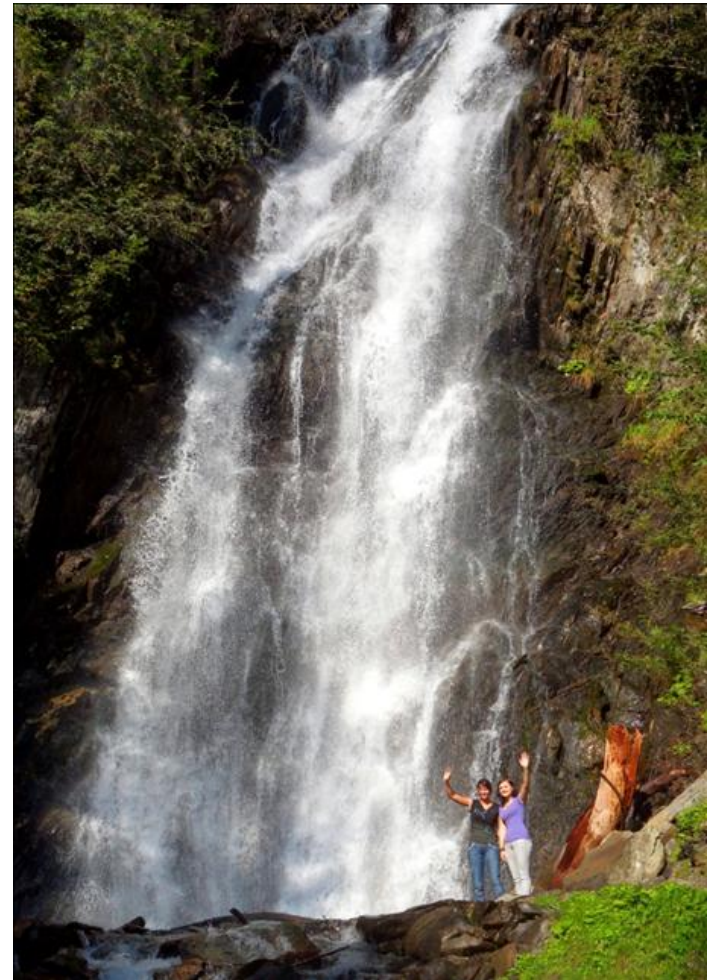
ORIGINAL ARTICLE

Open Access

Does waterfall aerosol influence mucosal immunity and chronic stress? A randomized controlled clinical trial



Carina Grafetstätter<sup>1†</sup>, Martin Gaisberger<sup>2,3,4†</sup>, Johanna Prosegger<sup>1</sup>, Markus Ritter<sup>2,3,4</sup>, Predrag Kolarz<sup>5</sup>, Christina Pichler<sup>1</sup>, Josef Thalhammer<sup>6</sup> and Arnulf Hartl<sup>1\*</sup> 



# Improving relationship quality

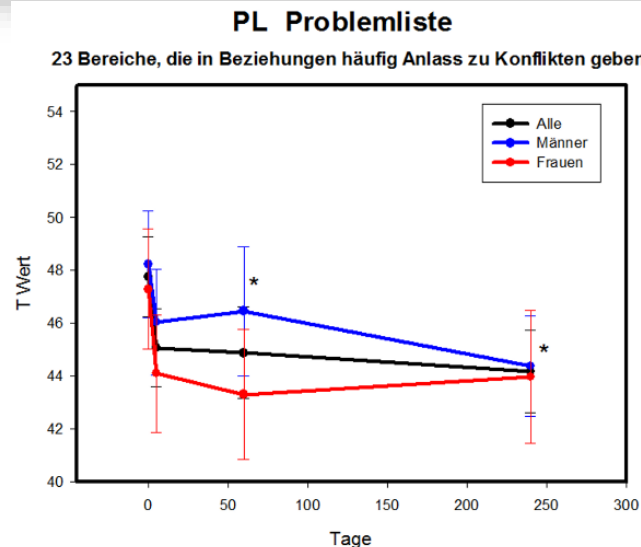
Nine days of mountain and thermal spa holidays in the Alps improve the quality of relationships for 240 days (but only for 50-65 year olds)

Radiat Environ Biophys (2015) 54:123–136  
DOI 10.1007/s00411-014-0568-z

## ORIGINAL PAPER

### Radon balneotherapy and physical activity for osteoporosis prevention: a randomized, placebo-controlled intervention study

Martina Winklmayr · Christian Kluge ·  
Wolfgang Winklmayr · Helmut Küchenhoff ·  
Martina Steiner · Markus Ritter · Arnulf Hartl



Pichler & Hartl: Evidenzbasierter Tourismus als Chance für den Alpenraum, 2017 in « Alpenreisen » (K. Luger/F.Rest);



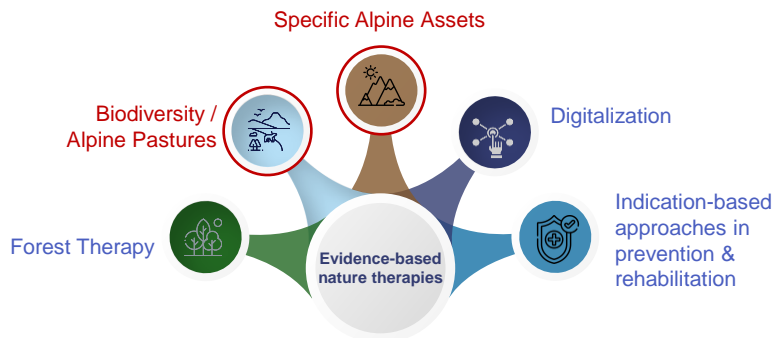
# Alpine Pastures & Health

## Focus: Specific microbiome of Alpine pastures

- **Analysis of Alpine pastures microbiome compared to urban microbiome**
- **Pilot study: Is a holiday on Alpine farms able to strengthen the immune system?**
  - Clinical study with urban-dwelling people on the health effects of Alpine pastures (1 week intervention, focus on microbial biodiversity and immunomodulation)

### Results:

- Better Quality of Life
- better cardiorespiratory fitness (Chester Step Test)
- Decrease of cholesterol





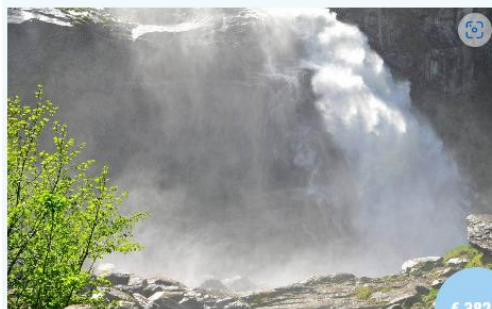
# The Krimml Waterfalls – natural remedy for allergy & asthma

- High concentration of negatively charged, finely atomized, inhalable aerosols.
- 10.000 aerosols/m<sup>3</sup> at the therapy area close to the waterfalls.
- Droplet size is 200 times smaller than the droplets from an emergency asthma spray.
- Because of the small size, the aerosol can penetrate deep into the respiratory tract.
- Within the respiratory tract, the aerosols induce an immune-modulatory effect.
- Sustainable health effects up to 4 months!



**Aerosol Size: 5 nm**

# Based on the study results, the health tourism initiative „Hohe Tauern Health“ was developed



€ 382,-

22.05.2023 - 23.09.2023

## HTH-INHALATIONS-THERAPIE (14/21 TAGE)

Die klassische Aerosol-Inhalations-Therapie bietet Ihnen die perfekte Kombination aus Aerosol-Inhalation, Bewegung und Asthma-Verhaltenstraining.



€ 197,-

22.05.2023 - 23.09.2023

## HTH-GESUNDHEITSWOCHE

Erfahren Sie in kurzer Zeit die positive Wirkung des Krimmler Wasserfalls und lernen Sie unser umfangreiches Therapieprogramm kennen!



€ 190,-

22.05.2023 - 23.09.2023

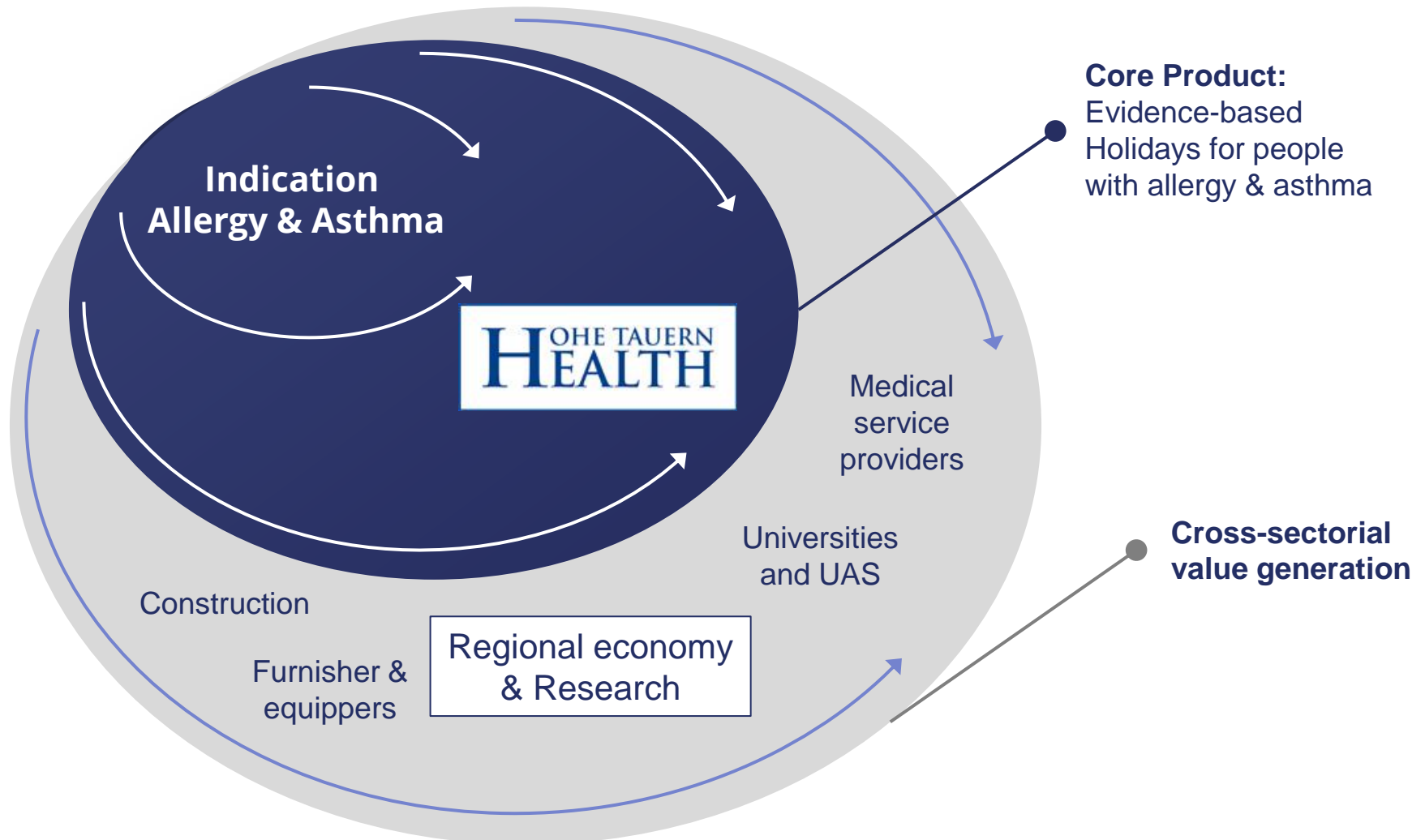
## HTH-THERAPIEPAKET FÜR KINDER (14/21 TAGE)

Allergien und Asthma betreffen sehr oft auch Kinder. Aus diesem Grund gibt es für Kinder im Alter von 6-14 Jahren in Begleitung eines Erwachsenen ein...

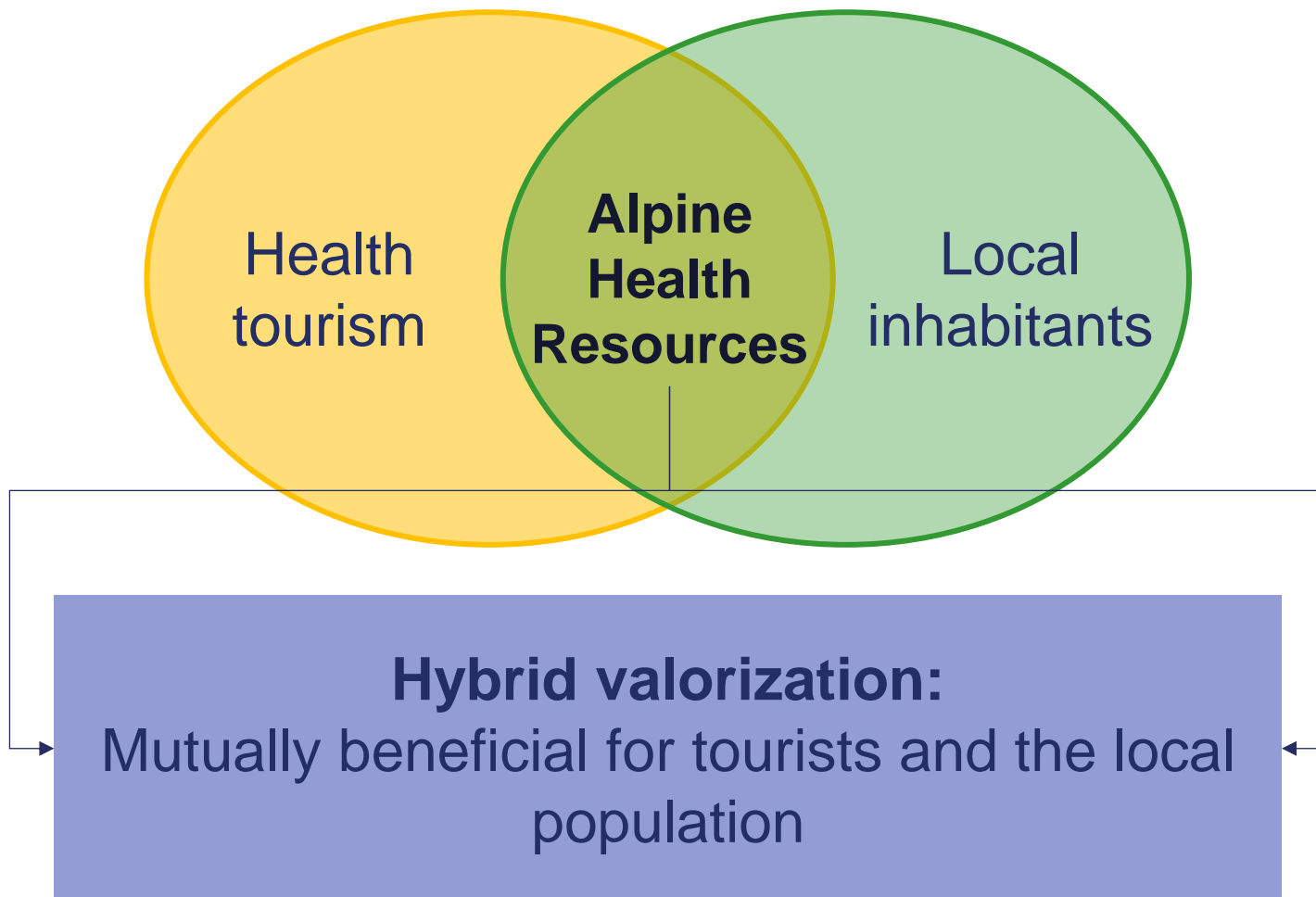
# Development of an indication-based value chain



## Cross-sectoral value generation



# Hybrid valorization of Alpine health resources





## Sustainability

Alpine regions as globally  
attractive health promoting  
places

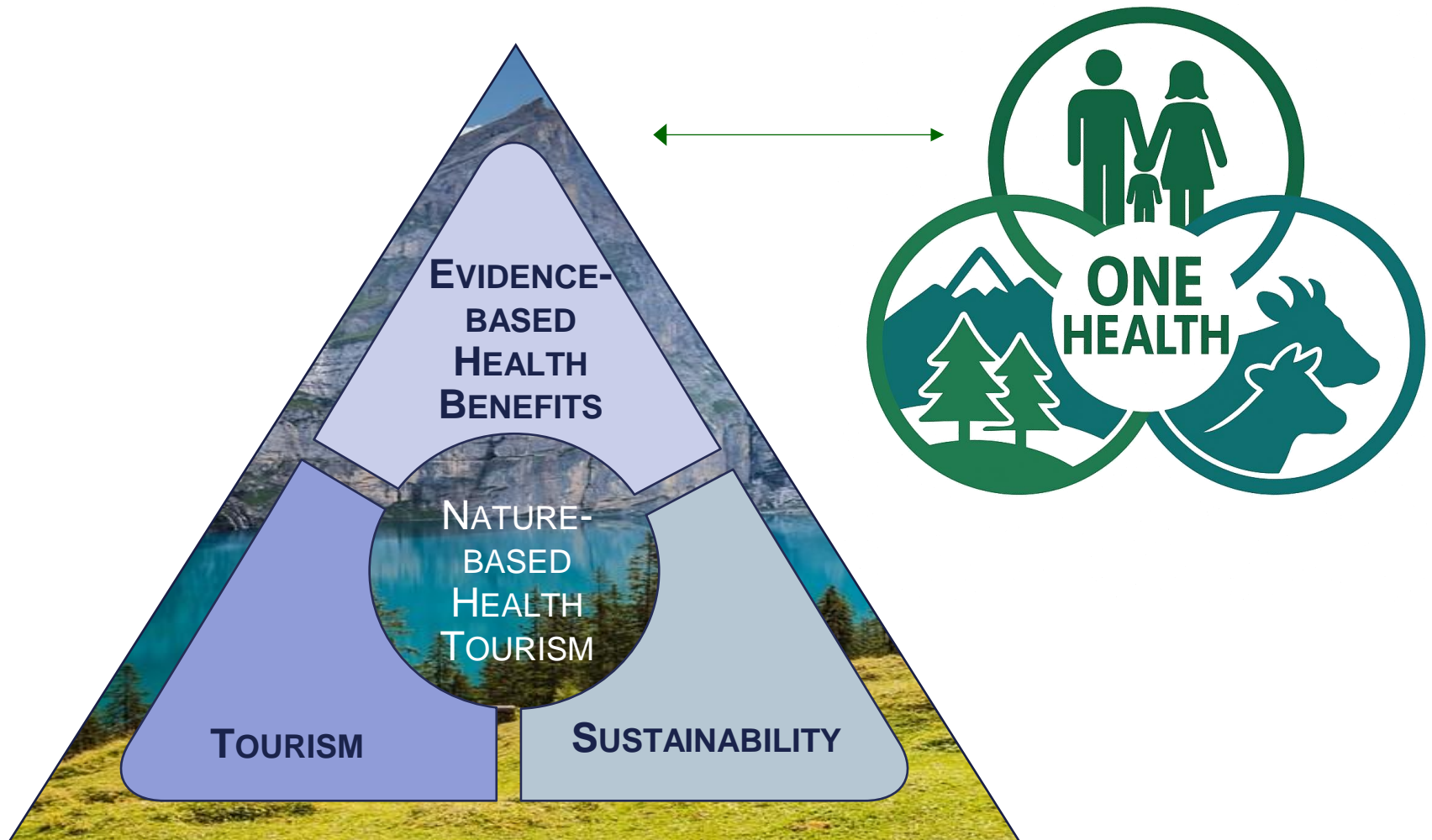
The economic valorization of Alpine health  
resources depend on their continued existence

Therefore → strong interest in the responsible  
use and conservation of these resources

Result (at best...): increased awareness and  
protection of these natural resources

Protection of  
natural resources

## Evidence-based Health Tourism



One Health Approach adapted to Alpine Tourism: From global challenges to local solutions

## Sustainable Tourism Innovation to improve Quality of Life for Locals and Tourists



# Insights in current projects

**Interreg**  Co-funded by  
the European Union  
**Alpine Space**

LiveAlpsNature

## LiveAlpsNature

Promoting biodiversity protection through innovative and health orientated nature-based activities in Alpine Protected Areas based on biodiversity responsible visitor management and digital outreach.



**CONNATURALP**

**Interreg**  
Italia – Österreich



Co-funded by  
the European Union

CONNECTING NATURE AND HEALTH IN THE ALPS



**resonate**  
RESILIENCE THROUGH  
NATURE-BASED THERAPIES

**RESONATE:**  
Building individual and community resilience  
through nature-based therapies





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