



ERASMUS+ BLENDED INTENSIVE PROGRAMME

# **DRINKING WATER REQUIREMENTS FOR HEALTH**

Strategic planning for evidence-based recommendations

December 1<sup>st</sup> to 7<sup>th</sup> 2024



**PARACELSUS**  
MEDICAL  
UNIVERSITY



Erasmus+



A photograph of a modern building with a light-colored facade. The building features several rectangular windows on the upper floor and two large, arched glass doors on the ground floor. The ground floor is surrounded by a green lawn. A young tree with yellow autumn leaves stands in the foreground on the right. The sky is blue with scattered white clouds. The word "WELCOME" is written in a dark blue, sans-serif font on the left side of the building's facade. A white crosshair graphic is positioned over the leftmost window.

**WELCOME**



# ABOUT PMU

The Paracelsus Medical University (PMU) is a young, dynamic private university with a global outlook.

It aims to solve pressing medical and health issues that our societies face today through innovative and impactful teaching and research activities within and beyond its borders in the fields of medicine, pharmacy, and nursing.

With 23 university institutes, 4 research centres, and 6 research foci, the PMU, together with the Salzburg University Hospital, is able to offer first-class education programs and excellent research. In February 2014, the PMU established its second Campus in Nuremberg in cooperation with the Klinikum Nuremberg.

## AUSTRIA

Strubergasse 21  
5020 Salzburg

## GERMANY

Ernst-Nathan-Straße 1  
90419 Nuremberg



# HOW TO REACH US?



## FROM THE CITY CENTRE (FERDINAND-HANUSCH-PLATZ) WITH THE PUBLIC BUSES:

- Bus 4 - stop: "Stadtwerk Lehen"
- Bus 7 - stop: "Strubergasse"
- Bus 24 - stop: "Stadtwerk Lehen"
- Bus 9 - stop: "Salzburg Landeskrankenhaus"
- Bus 27 - stop: "Salzburg Landeskrankenhaus"

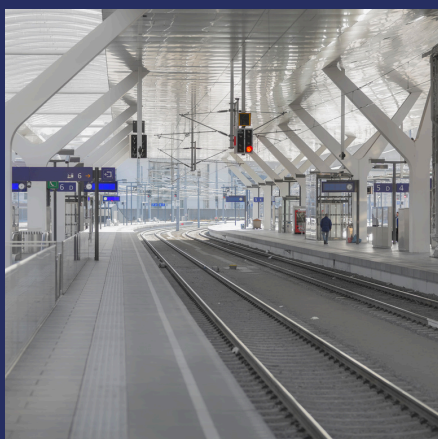


## FROM SALZBURG AIRPORT:

- Bus 2 - stop: "Gaswerksgasse"

## FROM THE MAIN TRAIN STATION:

- Bus 2 - stop: "Salzburg Gaswerksgasse"
- Bus 1 - stop: "Salzburg Gaswerksgasse"



## S-BAHN LINES:

- S2 and S3 - stop: "Salzburg-Mülln-Altstadt"

Ticket and information apps:





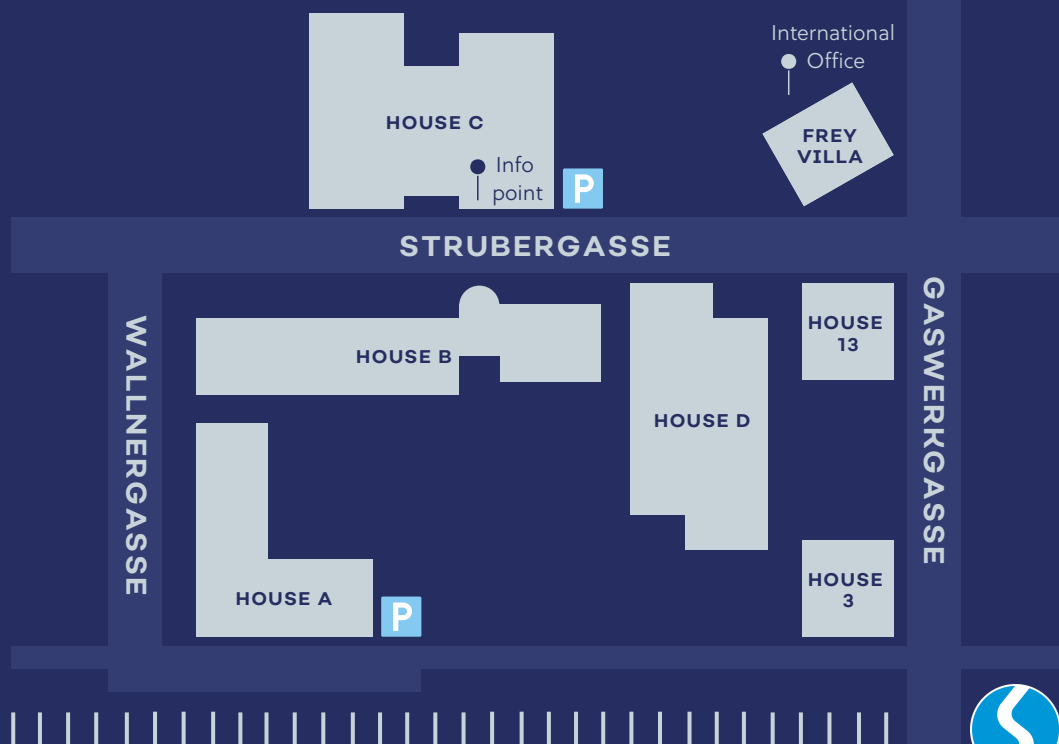
# OUR CAMPUS

All theory sessions/lectures, including the first lecture on Monday, will take place in house A, lecture room 3 (1. Floor).

Any room changes will be announced accordingly.



Campus guide:





# DRINKING WATER REQUIREMENTS FOR HEALTH

## Strategic planning for evidence-based recommendations

This course introduces students to the contentious question of how much water a person should drink. For decades, the general public has been confused about this question, because available guidance refers to total water intake, including water from any kind of beverage or food, not just plain drinking water. Public health authorities concluded in 1995, and again in 2020, even though over 20 years had passed, that evidence was insufficient to support recommendations about drinking water, specifically.

### Overview

In addition to providing a broad overview of the field of hydration, which spans many disciplines, the course will teach students methods for aligning studies for causal inference. Students will learn about strategic planning for research - key choices to make regarding definitions, measurement, and study design - to fit individual research projects into the bigger picture of accumulating evidence-base, across settings and time, culminating in systematic reviews that will eventually inform public health policy and services.

International and leading scientists from Austria, Croatia, Germany, Singapore, Sweden, Norway, the U.K. and U.S. will provide participants with in-depth insights into hydration effects on chronic disease risk factors at the cell, whole-person, and population group levels, and how to distinguish drinking water-specific effects. A special feature of the course will be the frequent alternation between theoretical lectures and practical parts, in which attendees get to witness tools and protocols required to test effects of hydration and drinking water, such as laboratory techniques, clinical preload experiments, and evidence maps for strategic planning.

**The overarching topics of the 5-day course at the PMU are: (i) regulation of cell- and body hydration (ii) controlled clinical trials, (iii) hydration epidemiology (iv) drinking water interventions and (v) public health policy.**

### PREREQUISITE FOR PARTICIPATION

No prior knowledge of hydration is required. The course is intended for students and staff in life sciences (e.g. medicine, nursing, pharmacy), public health, epidemiology, statistics, communication, business, or law (health claim). PhD candidates, licensed clinicians, and post docs, who want to deepen their knowledge and experience in hydration-related research and policy are also very welcome.

### COURSE DETAILS

The course language is English. The in-person part of the programme will be held from Sunday, Dec 1st (4 p.m.) to Friday, Dec 6th, 2024 (4.p.m.) at the Paracelsus Medical University, Salzburg, Austria. Salzburg is a highly attractive city and can be reached easily by plane, train, and car.

- 1st virtual session: November 21st, 3.00 – 4.30 pm
- Programme (on-site): December 2nd to 6th, 9am – 6pm
- 2nd virtual session: December 12th, 3.00 – 3.45 pm





## ERASMUS+ BLENDED INTENSIVE PROGRAMME

# DRINKING WATER REQUIREMENTS FOR HEALTH

Strategic planning for evidence-based recommendations

### ERASMUS + ELIGIBILITY

This course awards 3 ECTS. Students can also apply for Erasmus+ funding at their home institutions for a blended short-term mobility for PhD students. The PMU can also sign an Erasmus+ bilateral agreement if required by the student's home university. University staff can also apply for an Erasmus+ grant for staff training. For information about the grant application, applicants should contact their respective home university.

### COSTS

The training week is an Erasmus+ Blended Intensive Programme, and therefore no fees will be charged to you for participating.

This means that the costs of your tuition, lunch and snacks/beverages during the week, the four social events including the opening dinner, as well as your certificate of participation will be free of charge.


You are however expected to cover the costs for your travel, accommodation, and additional meals on days when no evening activities are planned. Students and university staff from partner institutions can also apply for Erasmus+ funding. Please ask your local office for more information regarding grant applications.

We will be using public transportation for some social activities. Participants will need a valid bus ticket. It is highly recommended to purchase a weekly ticket for Salzburg (21,00 Eur) upon arrival which can be purchased online (<https://www.oebb.at>) at the main station or close by small shops /kiosks .

### VISA

If you require a visa to travel to Austria, please consult the website of the Federal Ministry of Austria for European and International Affairs: <https://www.bmeia.gv.at/en/travel-stay/entrance-and-residence-in-austria/visa>. As visa processing can take time, we highly recommend that you start these arrangements as early as possible.

### NOTES

 We kindly remind you to bring your laptops and any necessary adapters/chargers for the on-site program.

SUNDAY, DECEMBER 1ST  
16:30  
OPENING DINNER  
AT STIEGL BRAUWELT  
BRÄUHAUSSTRASSE 9, 5020  
SALZBURG  
THE DRESS CODE IS SMART  
CASUAL.



# PROGRAM IN DETAILS

## MONDAY DECEMBER 2ND 2024

08:30-09:10 Overview of the question: 'How much plain water should people drink to stay healthy into old age?' (Jodi Stookey)

09:10-09:20 Break

09:20-10:00 Strategic planning for causal inference (Jodi Stookey)

10:00-10:10 Break

10:10-10:50 Systematic reviews and policy for hydration in geriatrics (Lee Hooper)

10:50-11:00 Break

11:00-11:25 Hydration systematic review (Ellice Parkinson)

11:25-11:30 Break

11:30-12:30 Tools for hydration systematic review (Ellice Parkinson)

12:30-13:30 Lunch break

13:30-16:30 Tools for mapping gaps in evidence (Melissa Bond)

16:30-16:45 Going to the city center (Meeting point in front of House D)

BUS TICKET NEEDED

17:00-19:00 Winter markets + ice skating

## TUESDAY DECEMBER 3RD 2024

08:30-09:30 Defining hydration at the cell level & osmotic stress (Markus Ritter)

09:30-09:40 Break

09:40-10:45 Effects of osmotic stress on cells & methods to study that (Markus Ritter)

10:45-11:00 Break

11:00-12:00 Tools for mapping the evidence base (Melissa Bond)

12:00-13:00 Lunch break

13:00-14:30 PMU physiology lab tour (Martin Jakab)

14:30-15:00 Walk/Bus ride to Haus der Natur (Meeting point in front of House D)

BUS TICKET NEEDED

15:00-17:00 Aestivation - Haus der Natur



# PROGRAM IN DETAILS

## WEDNESDAY DECEMBER 4TH 2024

08:30-09:10 Defining hydration at the person level (Martin Jakab)

09:10-09:20 Break

09:20-10:00 Randomized clinical studies: SALT (Ines Drenjančević)

10:00-10:10 Break

10:10-10:50 Randomized clinical studies: WATER LOSS (animal studies of psoriasis, CKD) (Adriana Marton)

10:50-11:00 Break

11:00-11:50 Workshop: setting up for randomized study (Jodi Stookey)

11:50-12:00 Lunch appetitif (Preload)

12:00-13:00 Randomized long-term studies: WATER RESTRICTION (Natalia Dmitrieva)

13:00-15:50 Lunch served during workshop on randomized crossover experiments (Jodi Stookey)

15:50-16:00 Break

16:00-18:00 Tools for mapping the evidence base (Melissa Bond)

WEDNESDAY'S LUNCH  
WILL BE CATERED BY BELLUCCI  
RESTAURANT.



Please scan the QR and choose a menu

## THURSDAY DECEMBER 5TH 2024

08:30-09:10 Defining hydration and water intake at the population level (Jodi Stookey)

09:10-09:20 Break

09:20-10:00 Behavioural and social approaches to drinking (Diane Bunn)

10:00-10:10 Break

10:10-10:50 Effects of osmotic stress biomarkers in longitudinal studies: COPEPTIN, AVP (Sofia Enhörning)

10:50-11:00 Break

11:00-11:50 Effects of drinking water intervention, Public health impact (Rebecca Muckelbauer)

11:50-12:00 Break

12:00-13:00 Tools for mapping the evidence base (Melissa Bond)

13:00-14:00 Lunch break

14:00-15:15 Walk to the Water museum (Meeting point in front of House D)

BUS TICKET NEEDED

15:15-16:15 Water museum tour

16:30-18:00 Free time in the city

18:00 Social Dinner at Szene Restaurant

PLEASE BRING  
APPROPRIATE  
FOOTWEAR FOR  
THURSDAY'S WALK UP  
THE WATER MUSEUM.

# PROGRAM IN DETAILS

## FRIDAY DECEMBER 6TH 2024

08:30-09:10 Strategic planning inputs (Jodi Stookey)

09:10-09:20 Break

09:20-10:00 'Overview of the EFSA water DRV opinion' (Susan Fairweather-Tait)

10:00-10:10 Break

10:10-10:50 Evidence can translate into national recommendations and policy: The story of sodium recommendations in Croatia (Ines Drenjančević)

10:50-11:00 Break

11:00-11:50 Outline for a strategic plan (Stakeholder roles, content) (Jodi Stookey)

11:50-12:00 Break

12:00-13:00 Consensus for strategic plan vision (definitions of hydration, health, inference, causal mechanisms) (Jodi Stookey)

13:00-14:00 Lunch break

14:00-15:20 Evidence gap map to identify goals and track progress (Workgroup-presentations and discussions)

15:20-15:30 Break

15:30-16:30 Summary, Colloquium & Good Bye

## SATURDAY DECEMBER 7TH 2024

Individual departure



# COURSE LEAD



**PROF. DR. JODI STOOKEY, PHD**  
**SAN FRANCISCO DEPARTMENT OF PUBLIC**  
**HEALTH, CALIFORNIA, USA.**

Jodi Stookey, a US Fulbright Scholar at the Paracelsus Medical University and Nutrition Epidemiologist in San Francisco, California, USA, is an internationally recognized hydration researcher. Her expertise focuses on how to translate causal effects of hydration, which are well-established at the cellular level, into reduced risk of chronic disease at the population-level. Her work has encompassed biomarker studies, crossover experiments, randomized clinical trials, observational analyses of nationally representative data, and systematic literature reviews. She is interested in strategic planning across sectors to develop health authority recommendations, policy, and initiatives that support optimal hydration and health for all.



**PROF. DR. MED. MARKUS RITTER,**  
**PARACELSUS MEDICAL UNIVERSITY,**  
**SALZBURG, AUSTRIA**

Markus Ritter is a medical specialist in Physiology and Internal Medicine. He is a professor of physiology at PMU. His research focuses on molecular and functional membrane physiology, with special emphasis on cellular ion and water transport. He specifically investigates the mechanisms and principles of cell hydration and cell volume regulation in the context of physiological, pathophysiological, and clinical conditions. Markus has published over 200 scientific articles. He is also author of textbook chapters.

# SPEAKERS



**DR. MELISSA BOND**

**UNIVERSITY OF STAVANGER, NORWAY**

Dr. Melissa Bond is a Research Fellow at the EPPI Centre (UCL) and the National Institute of Teaching, as well as an Adjunct Associate Professor in Qualitative Evidence Synthesis at the University of Stavanger. Her research focuses on digital evidence synthesis tools, including the use of automation, as well as improving evidence synthesis methods and researcher capacity, alongside research in digital learning and teacher education. Melissa is Co-Editor-in-Chief of the Review of Education journal, a founding editorial board member of the Nordic Journal of Systematic Reviews in Education, and a member of the Center for Open Education Research.



**DR. DIANE BUNN**

**SCHOOL OF HEALTH SCIENCES,  
UNIVERSITY OF EAST ANGLIA, UK**

Dr. Diane Bunn is an Associate Professor of Nursing Research. Her core areas of research are hydration care for older people and impact of infectious diseases in care homes, using a range of different methods. She adopts collaborative and inclusive approaches, working alongside care home residents, staff and the wider multi-professional team in her research. Her teaching roles include teaching on pre-and post registration courses at undergraduate and postgraduate levels across the Faculty of Medicine and Health, as well as post-graduate supervision for MSc and PhD students. She is a committee member of the British Society of Gerontology Care Homes' Research Special Interest Group: [Care Homes Research: British Society of Gerontology \(britishgerontology.org\)](https://www.britishgerontology.org/care-homes-research).

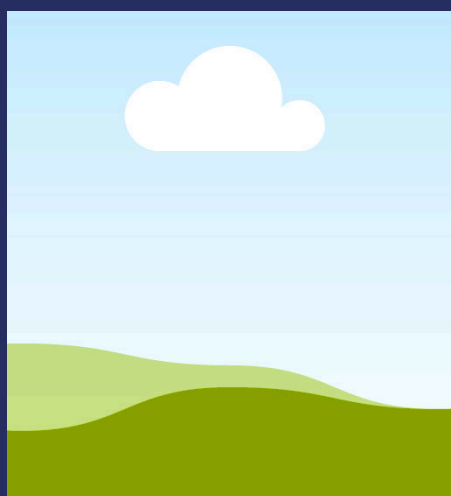


# SPEAKERS



**PROF. INES DRENJANČEVIĆ, MD, PHD**  
**MEDICAL FACULTY OSIJEK, CROATIAN**  
**PHYSIOLOGICAL SOCIETY, CROATIA**

Prof. Ines Drenjančević, PhD, MD, is an award-winning, nationally and internationally recognized scientist (Republic of Croatia – Annual State Award for Science 2017; international awards (Ukraine, Hungary, Serbia, The Microcirculatory Society USA)). She has written a large number of scientific papers, and she stands out in particular for the number and quality of scientific and infrastructure projects that she led at her home college or university. She has been the head of the national Scientific Center of Excellence for Personalized Health Care since 2015. Awarded several times for the quality of published scientific works (Medical Faculty Osijek, Croatian Physiological Society). She is a vice-president of Croatian Physiological Society, vice-president of Croatian Society of Hypertension, member of European Society of Microcirculation, member of European Hypertension Society (working group small arteries) and member of European Society for Cardiology (working group of pathophysiology of coronary microcirculation, editor of WG Newsletter).



**DR. NATALIA DMITRIEVA, PHD**  
**NATIONAL HEART, LUNG AND BLOOD**  
**INSTITUTE, USA**

Dr. Natalia Dmitrieva is a Senior Scientist at the National Heart, Lung, and Blood Institute, part of the National Institutes of Health in Maryland, USA. Among her research interests, she studies the effects of hydration on health, focusing on how high extracellular sodium and osmolality—linked to suboptimal hydration—impact cellular and organismal damages and adaptive changes. Over the long term, these factors can accelerate aging and increase the risk of chronic diseases. Her current work involves analyzing long-term clinical studies and electronic medical records to develop criteria based on sodium and osmolality levels for identifying underhydrated individuals at risk of chronic diseases who would benefit from increased water intake. This research aims to support the creation of guidelines for including hydration assessment and preventive interventions in clinical practice.

# SPEAKERS



**DR. SOFIA ENHÖRNING, MD, PHD**  
**DEPARTMENT OF CLINICAL SCIENCES**  
**MALMÖ, LUND UNIVERSITY, SWEDEN**

Dr. Sofia Enhörning is Associate Professor at the department of Clinical Sciences at Lund University in Sweden and a medical doctor and specialist in Internal Medicine at the department of Internal Medicine at Skane University Hospital in Malmö, Sweden. She graduated from medical school at Lund University and obtained her Ph.D degree in Internal Medicine at Lund University. Her research has focused on epidemiological and experimental studies of the vasopressin system and its links to metabolic disease. She is currently focusing on experimental intervention studies, investigating the role of hydration on the vasopressin system and glucose regulation, and on epidemiological studies, investigating the links between hydration markers, cardiometabolic disease and seasonal stressors including outdoor temperature.



**DR. LEE HOOPER PHD, RD**  
**NORWICH MEDICAL SCHOOL, UNIVERSITY**  
**OF EAST ANGLIA, UK**

Lee is a Reader in Research Synthesis, Nutrition & Hydration in the Norwich Medical School at the University of East Anglia and has a BSc in Biochemistry, PhD (University of Manchester) and current dietetic registration. She worked as a dietitian in the National Health Service for ten years, with extensive experience of community health promotion and cardiovascular health. Lee moved to research in 2000 and has since published over 100 peer-reviewed publications, mainly in the areas of dehydration and nutrition of older people and the effects of dietary change on health. Her publications have been cited over 40,000 times with an h-index of 86.



# SPEAKERS



**UNIV.-PROF. DR. RER. NAT. MARTIN JAKAB,  
MSC**

**PARACELSUS MEDICAL UNIVERSITY,  
SALZBURG, AUSTRIA**

Martin Jakab is a principal investigator and lecturer at the Institute of Physiology and Pathophysiology, part of the Center of Physiology, Pathophysiology, and Biophysics at Paracelsus Medical University, Salzburg and Nuremberg. He earned his doctoral degree from Paris-Lodron University of Salzburg (PLUS) and received the *venia docendi* in Physiology at Paracelsus Medical University in 2009. With extensive expertise in medical education and a broad skill set in basic and experimental science, Dr. Jakab has led the Laboratory of Functional and Molecular Membrane Physiology (FMMP) since 2012. His research focuses on the mechanisms of cell volume and intracellular pH regulation, exploring their effects on electrophysiological cell behavior, cell proliferation and viability, cell migration, cell death, and the pathogenesis of conditions like cancer and osteoarthritis.



**DR. ADRIANA MARTON  
CLINIC NUREMBERG, GERMANY**

Adriana Marton is a Nephrology Consultant and Principal Clinical Investigator at Klinikum Nuremberg, Germany. She also holds an appointment as a Visiting Senior Research Fellow in the Cardiovascular and Metabolic Disease Programme at Duke-NUS Medical School, Singapore. Her main research interest is body water and energy homeostasis in health and disease. Before joining Duke-NUS, Dr Marton worked as a postdoctoral research fellow in Clinical Pharmacology at Vanderbilt University Medical Center, where she focused on translational research and started bringing experimental animal research findings into mechanistic clinical studies. As a clinician scientist, she combines established clinical investigation with innovative methods such as <sup>23</sup>NaMRI imaging and metabolomic analysis in order to understand pathophysiological processes and gain mechanistic insights into renal and cardiovascular disease.

# SPEAKERS



**PRIV.-DOZ. DR. REBECCA MUCKELBAUER**  
**FEDERAL JOINT COMMITTEE**  
**(HEALTHCARE), MEDICAL CONSULTANCY**  
**DEPARTMENT, BERLIN, GERMANY**

Priv.-Doz. Dr. Rebecca Muckelbauer is an expert in nutrition science and public health, with a focus on the impact of water intake on body weight outcomes. As a researcher at Charité – Universitätsmedizin Berlin, she has applied advanced epidemiological methods to generate robust evidence on preventive interventions and chronic disease risk factors. Rebecca is also dedicated to teaching, contributing to master's programs in epidemiology and public health at the Charité, where she teaches courses on research methodologies and evidence-based medicine. In her current role at the Gemeinsamer Bundesausschuss (Federal Joint Committee), a key decision-making body in the German healthcare system, Rebecca contributes to shaping public health standards and advancing evidence-based policies within Germany's healthcare system.



**DR. ELLICE PARKINSON, PHD**  
**HEALTH INNOVATION EAST, CAMBRIDGE**  
**SCHOOL OF HEALTH SCIENCES AT**  
**UNIVERSITY OF EAST ANGLIA, UK**

Ellice currently project manages and leads evaluations of innovations and innovative clinical pathways and working practices in healthcare systems. Ellice's PhD thesis focused on the hydration care of older people, including those living with dementia. Her PhD comprised a systematic review and meta-analysis which estimated the prevalence of low-intake dehydration amongst older people, an ethnographic case study of how people living with dementia drink in care homes and a thematic discourse analysis of online forum data of how people living with dementia drink in care homes. Ellice has worked in dementia research for 10 years and is passionate about making an impact on the lives of people living with dementia. Ellice has vast experience teaching higher education students about hydration care, meta-analysis and research methods. Ellice has presented her PhD research at local engagement events as well as national and international conferences.





## ACCOMMODATION SALZBURG

- [IMLAUER Hotel](#): (15 min. walk)
- [Das Salz](#): (6 min. walk)
- [Motel One](#): (10 min. walk)
- [Riverside Hotel](#): (4 min. walk)
- [Hotel Lehenerhof](#): (8 min. walk)

Note: . The PMU has an existing agreement with Motel One Salzburg-Mirabell, and you may avail of their special rates (please state that you are a PMU training week participant when booking). All other providers are not affiliated with the PMU, and therefore we cannot take responsibility for their actions.







## ACCOMMODATION SALZBURG

- [Yoho International Youth Hostel Salzburg:](#) (20 min. walk)
- [MEININGER Salzburg City Center:](#) (20 min. by bus)
- [a&o Salzburg Hauptbahnhof:](#) (20 min. walk)
- [Guesthouse Salzburger Studentenwerk:](#) (20 min. walk)
- [Short term rental Salzburg](#)
- [The Seminary Guest House, Salzburg:](#) (20 min. walk)
- [Katholisches Hochschulwerk:](#) (25 min. walk)
- [ÖJAB \(Austrian Young Workers Movement\)](#)





# DURING YOUR STAY

## SALZBURG IN WINTER



## SALZBURG ADVENT



## SALZBURG SIGHTS





# DURING YOUR STAY

## SALZBURG DINING AND SHOPPING



## SALZBURG EVENTS



## SALZBURG MUSEUMS







## PMU INTERNATIONAL OFFICE

Postal address: International Office, Strubergasse 21,  
5020 Salzburg, Austria

Email address: [international.office@pmu.ac.at](mailto:international.office@pmu.ac.at)

Physical address: Strubergasse 16, Frey Villa Building,  
1/F

<https://international.pmu.ac.at/>

## CONTACTS

DR. ROSALYN EDER, MA: T: +43 662 2420-80290

AJDA MEDVEŠEK, MA: T: +43 662 2420-80291

MAIA SEEGER, BA: T: +43 662 2420-80292

Prof. Dr. Jodi Stookey, PhD: [jodi.stookey@pmu.ac.at](mailto:jodi.stookey@pmu.ac.at)

Prof. Dr. med. Markus Ritter: [markus.ritter@pmu.ac.at](mailto:markus.ritter@pmu.ac.at)

## IN CASE OF EMERGENCY

International emergency: 112

Police: 133

Fire department: 122

Ambulance / medical emergency: 144

Mountain rescue service: 140

Poison center: +43 1 406 43 43

## PARACELSUS MEDICAL UNIVERSITY

Strubergasse 21, 5020 Salzburg

Tel.: +43 (0)662 / 2420-0

Fax: +43 (0)662 / 2420-80009

Email: [infopoint@pmu.ac.at](mailto:infopoint@pmu.ac.at)

[www.pmu.ac.at](http://www.pmu.ac.at)

Infopoint, House C

Mo.-Fr. 08:00 - 16:00 Uhr