Event program

AOCMF Masters Course—Orthognathic Surgery, Challenges and Controversies

December 10–13, 2017 Davos, Switzerland

Lecture hall: Pischa-Parsenn

Excellence in facial surgery across the specialties
Floor plan
The first AO Course was held in Davos in 1960—these early courses pioneered psychomotor techniques by teaching practical skills of AO Techniques. Since those early days over 455,000 surgeons and 155,000 ORP from over 110 countries have attended AO Courses.

Content

2 Floor plan
4 Mission
4 The AO Principles
5 Welcome
6 Goal of the course
6 Target participants
6 Learning objectives
6 Course description
7 Chairpersons
7 Faculty
8 Sunday, December, 10, 2017
8 Monday, December, 11, 2017
10 Tuesday, December, 12, 2017
12 Wednesday, December 13, 2017
13 Event organization
14 General information
15 Event venues
15 Business center
15 Exhibitions
15 Wireless network
16 AO Foundation—Principles of AO Educational Events
17 AO Research Institute Davos (ARI)
18 Sponsors
18 Upcoming AO Courses—Davos 2018
Mission

Our mission is to continuously set standards in postgraduate medical education and to foster the sharing of medically guided expertise in a worldwide network of healthcare professionals to improve patient care in trauma or disorders of the musculoskeletal system.

The AO principles of fracture management

1. Fracture reduction and fixation to restore anatomical relationships.
2. Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.
3. Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.
4. Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.
Welcome to AOCMF’s Masters Courses Davos 2017

Dear Colleagues,

On behalf of AOCMF and our international faculty, we would like to welcome you to the Davos Courses 2017—AO Foundation’s flagship event of the year—taking place from December 3–14. The AOCMF Masters Courses have been developed in response to the demand for more intense training for very experienced surgeons, and they provide access to the world’s leading experts in facial surgery across the specialties.

Each course is limited to a maximum number of 36 surgeons, providing participants with a remarkable learning opportunity where you will debate cases in small groups, discuss problems, develop your skills, and hear the latest practices and evidence. Develop your skills during the hands-on practical exercises on human anatomical specimens. Designed to address the latest techniques and surgical best practices, these AOCMF Masters Courses enable you to expand your knowledge and build upon your clinical expertise in an extraordinary learning environment.

AOCMF Davos Courses: 10–13 December, 2017
• AOCMF Masters Course—Facial Trauma, Challenges and Controversies
• AOCMF Masters Course—Orthognathic Surgery, Challenges and Controversies
• AOCMF Masters Course—Soft Tissue Reconstruction, Improving Functional and Aesthetic Outcomes

In addition to these exceptional courses, the Davos Courses 2017 provide numerous opportunities to share knowledge, and to network and connect with friends and colleagues. You can also visit the AO Center showcasing all research and clinical division activities across the entire AO Foundation. You can also become an official member of the AO network, which is one of the most extensive networks of more than 19,000 surgeons practicing, teaching, researching, and learning worldwide with the ultimate goal of improving patient care.

We wish you an outstanding experience at the AOCMF Masters Courses 2017 in Davos.

Sincerely,

Stefano Fusetti
Chair, AOCMF Masters Courses 2017

Max Heiland
Chair, AOCMF Masters Courses 2017
Goal of the course

This AOCMF Masters Course focuses on state-of-the-art techniques and best practices at a master’s level. Emerging technologies will be introduced and clinical controversies will be addressed.

Learning objectives

Upon completion of the course, the participant will be able to:
• Discuss the latest advances and controversies in orthodontic treatment
• Discuss how to improve aesthetics with genioplasty and chin wing procedures, simultaneous rhinoplasty, and adjunctive soft-tissue procedures
• Evaluate computerized vs articulated planning and prediction
• Discuss sequencing for bimaxillary surgery, splintless surgery, distraction osteogenesis (DO) vs osteotomies, and overcorrection to prevent relapse
• Develop a plan to deal with complications and relapse
• Address and solve specific problems such as anterior open bite, idiopathic condylar resorption, alterations of the occlusal plane, and arch width discrepancies
• Perform chin wing and Le Fort I–III osteotomies and bilateral sagittal split osteotomy (BSSO), type Obwegeser

Target participants

This course is for certified surgeons with 5–10 years experience and doctors nearing the end of their training in surgery across the craniomaxillofacial specialties (including oral and maxillofacial surgery, ENT, head and neck, plastic, oculoplastics, ophthalmology, and neuro and general surgery). It is targeted at participants who want to improve their knowledge or specialization in the management of complex patient problems in the field of CMF.

Course description

This three-day course focuses on state-of-the-art techniques and best practices at a master’s level in orthognathic surgery. Emerging technologies and clinical controversies in orthognathics are addressed. Using human anatomical specimens, surgical access techniques are developed and chin wing, Le Fort I–III, and BSSO type Obwegeser osteotomies are performed. Patient cases and outcomes are addressed with expert faculty in small group discussions.

This course is delivered using a combination of small group discussions, cases, exercises with human anatomical specimens or other simulation materials, and summary lectures. All activities are moderated by expert faculty in a highly interactive learning environment. Participants are encouraged to discuss the cases and content in an open manner and to share their own experiences.
Course Chairs

Max Heiland
Charité Universitätsmedizin
Berlin, Germany

Gerson Mast
Ludwig-Maximilians-Universität
Munich, Germany

International Faculty

Daniel Buchbinder
Division of Maxillofacial Surgery, Department of Otolaryngology, Head
and Neck Surgery, Icahn School of Medicine at Mount Sinai, New York, USA

Regional Faculty

Daniel Danielsson
Department of OMFS, Karolinska University Hospital, Stockholm, Sweden

Beat Hammer
Cranio-Faciales-Centrum, Hirslanden, Aarau, Switzerland

Thomas Koford
Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark

Mark Metzger
Universitätsklinik Freiburg i/Br, Freiburg, Germany

Maurice Mommaerts
European Face Centre, Universitair Ziekenhuis Brussel/VUB, Brussels, Belgium

Paolo Scolozzi
Departement de Chirurgie, Service de Chirurgie Maxillo-Faciale et de
Chirurgie Buccale, Geneva, Switzerland

Guest Faculty

Maija Eltz
Zahnregulierung ELTZ, Institute for Orthodontics, Vienna, Austria

Johan Reyneke
Oral and Maxillofacial Surgeon and Professor in the department of Maxillofacial
and Oral Surgery at the University of the Western Cape, Cape Town, South Africa

Keynote Speakers

Daniel Buchbinder
Division of Maxillofacial Surgery, Department of Otolaryngology, Head
and Neck Surgery, Icahn School of Medicine at Mount Sinai, New York, USA

Guglielmo Ramieri
A.O.U. Città della Salute e della Scienza di Torino, Torino, Italy

Florian Thieringer
University Hospital Basel, Basel, Switzerland

Special Guests

Martijn Orye
Computer planning expert, Materialise, Leuven, Belgium

Charlotte Van Melkebeke
Computer planning expert, Materialise, Leuven, Belgium

Maarten Zandbergen
Computer planning expert, Materialise, Leuven, Belgium
### Sunday, December 10, 2017

<table>
<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td>15:00</td>
<td>Opening of the Congress Center</td>
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<tr>
<td>15:00–17:00</td>
<td>Registration of participants</td>
<td></td>
</tr>
<tr>
<td>17:00–18:00</td>
<td>Opening ceremony</td>
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</tr>
<tr>
<td>18:00–19:00</td>
<td>FOUNDERS’ RECEPTION</td>
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### Monday, December 11, 2017

<table>
<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td>07:15–08:00</td>
<td>Course registration</td>
<td></td>
</tr>
<tr>
<td>08:00–08:15</td>
<td>Opening of the AOCMF Masters Courses (joint session for all three courses)</td>
<td>Stefano Fusetti, Max Heiland</td>
</tr>
<tr>
<td>08:15–08:45</td>
<td>Keynote: Alloplastic TMJ reconstruction (joint session for all three courses)</td>
<td>Guglielmo Ramieri</td>
</tr>
<tr>
<td>08:45–09:00</td>
<td>Breakout into the individual masters courses</td>
<td></td>
</tr>
<tr>
<td>09:00–09:15</td>
<td>Welcome address, introduction of the faculty, course objectives</td>
<td>Max Heiland, Gerson Mast</td>
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**Module 1 Orthodontic Considerations**

<table>
<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td>09:15–09:30</td>
<td>Presurgical orthodontics (decompensation)</td>
<td>Maija Eltz</td>
</tr>
<tr>
<td>09:30–10:00</td>
<td>Surgery first</td>
<td>Thomas Kofod</td>
</tr>
<tr>
<td>10:00–10:15</td>
<td>Orthodontics following surgery first</td>
<td>Maija Eltz</td>
</tr>
<tr>
<td>10:15–10:50</td>
<td>Discussion of the pros and cons</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:50–11:20</td>
<td>COFFEE BREAK</td>
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## Monday, December 11, 2017

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<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td><strong>Module 2</strong></td>
<td><strong>Distraction</strong></td>
<td>Moderator: Beat Hammer</td>
</tr>
<tr>
<td>11:20–11:50</td>
<td>Surgically assisted rapid palatal expansion (SARPE) vs segmental maxillary osteotomies</td>
<td>Paolo Scolozzi</td>
</tr>
<tr>
<td>11:50–12:10</td>
<td>Distraction osteogenesis (DO) for widening of the mandible vs extractions</td>
<td>Gerson Mast</td>
</tr>
<tr>
<td>12:10–12:40</td>
<td>Discussion on which to use and why</td>
<td>All faculty</td>
</tr>
<tr>
<td>12:40–14:00</td>
<td>LUNCH BREAK</td>
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<td><strong>LOCATION</strong></td>
<td><strong>Sertig</strong></td>
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| **Module 3** | **Planning**           | Moderator: Max Heiland                   |
| 14:00–14:20  | Introduction in virtual surgical planning | Daniel Buchbinder                        |
| 14:20–14:50  | Learn the basics of computer planning      | Martijn Orye, Charlotte Van Melkebeke Maarten Zandbergen, |
| 14:50–15:50  | Hands-on computer, virtual planning of bimax case (set up with individual computer stations) | Marc Metzger                              |
| 15:50–16:15  | Pros and cons virtual planning             | All faculty                              |
| 16:15–16:45  | COFFEE BREAK                        |                                          |
| **LOCATION** | **Landwasser**          |                                          |

<p>| 16:45–18:15 | Small group discussions on cases related to the topics covered throughout the day | All Faculty                              |
| <strong>Group 1</strong> | Surgery first pitfalls | Maija Eltz, Thomas Kofod, Max Heiland   |
| <strong>Group 2</strong> | Distraction osteogenesis problems | Paolo Scolozzi, Maurice Mommaerts       |
| <strong>Group 3</strong> | Segmental necrosis      | Johan Reyneke, Gerson Mast               |
| <strong>Group 4</strong> | 3D Planning pitfalls    | Mark Metzger, Daniel Buchbinder, Florian Thieringer |
| 18:15       | End of day 1            |                                          |</p>
<table>
<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td></td>
<td><strong>LOCATION Pischa-Parsenn</strong></td>
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<tr>
<td>07:45–08:15</td>
<td>Keynote: Medical 3D Printing – Principles and Applications for Cranio-Maxillofacial Surgery</td>
<td>Florian Thieringer</td>
</tr>
<tr>
<td>08:15–08:30</td>
<td>AOCMF membership and AO World announcement</td>
<td>Warren Schubert</td>
</tr>
<tr>
<td>08:30–08:45</td>
<td>Group photograph</td>
<td>All faculty</td>
</tr>
<tr>
<td>08:45–09:00</td>
<td>Breakout into individual masters courses</td>
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<tr>
<td>Module 4</td>
<td><strong>Temporomandibular Joint Disorders TMJ</strong></td>
<td>Moderator: Thomas Kofod</td>
</tr>
<tr>
<td>09:00–09:15</td>
<td>The TMJ–orthognathic patient</td>
<td>Daniel Danielsson</td>
</tr>
<tr>
<td>09:15–09:30</td>
<td>Condylar positioning</td>
<td>Gerson Mast</td>
</tr>
<tr>
<td>09:30–09:45</td>
<td>Idiopathic condylar resorption</td>
<td>Johan Reyneke</td>
</tr>
<tr>
<td>09:45–10:30</td>
<td>Panel case discussion and Q&amp;A</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:30–11:00</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>Module 5</td>
<td><strong>Aesthetics</strong></td>
<td>Moderator: Paolo Scolozzi</td>
</tr>
<tr>
<td>11:00–11:30</td>
<td>Aesthetics in orthognathic surgery–focus zygoma</td>
<td>Maurice Mommaerts</td>
</tr>
<tr>
<td>11:30–12:00</td>
<td>Aesthetics in orthognathic surgery–focus chin</td>
<td>Maurice Mommaerts</td>
</tr>
<tr>
<td>12:00–12:30</td>
<td>Aesthetics in orthognathic surgery–focus mandibular angle</td>
<td>Thomas Kofod</td>
</tr>
<tr>
<td>12:30–13:00</td>
<td>Aesthetics in orthognathic surgery–focus soft tissue</td>
<td>Johan Reyneke</td>
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<tr>
<td>13:00–14:00</td>
<td>LUNCH BREAK</td>
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</table>
**Tuesday, December 12, 2017**

**Module 6** | **Other Topics of Interest**
---|---
14:00–14:20 | Case presentation sequencing (bi-maxillary surgery)  
14:20–14:40 | Anterior open bites—are any treatments stable?  
14:40–15:00 | Vertical ramus osteotomy (VRO)  
| vs sagittal split ramus osteotomy (SSRO)  
15:00–15:30 | COFFEE BREAK

**LOCATION** | **Landwasser**
---|---
15:30–16:50 | Small group discussions on cases related to the topics covered throughout the day  
**Group 1**  
TMJ and condyle problems  
**Group 2**  
Aesthetics pitfalls  
**Group 3**  
Open bite  
**Group 4**  
Amelogenesis imperfecta

**LOCATION** | **Pischa-Parsenn**
---|---
16:50–17:40 | Summary of the day, evaluation and instructions for the next day  
Workflow Le Fort III osteotomy

17:40–18:00 | Summary and end of day 2

18:00–20:30 | AO WORLD NIGHT
### Wednesday, December 13, 2017

<table>
<thead>
<tr>
<th>TIME</th>
<th>AGENDA ITEM</th>
<th>WHO</th>
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<tbody>
<tr>
<td><strong>LOCATION Pischa-Parsenn</strong></td>
<td></td>
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<tr>
<td>08:00–08:30</td>
<td>Keynote: Innovations in Computer Assisted CMF Surgery and Patient Specific Devices (joint session for all three courses)</td>
<td>Daniel Buchbinder</td>
</tr>
<tr>
<td>08:40</td>
<td>TRANSFER TO DAVOS HOSPITAL (MEETING POINT: MAIN ENTRANCE CONGRESS CENTER)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Breakout into individual masters courses</td>
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<tr>
<td><strong>LOCATION Davos Hospital Laboratory</strong></td>
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<tr>
<td><strong>Module 7</strong></td>
<td><strong>Hands-on with Human Anatomical Specimens</strong>&lt;br&gt;Practical Exercises</td>
<td>All Faculty</td>
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<tr>
<td>09:15–12:00</td>
<td>Chin wing osteotomy, BSSO, type Obwegeser</td>
<td>Beat Hammer</td>
</tr>
<tr>
<td>12:00–13:00</td>
<td>LUNCH BREAK</td>
<td></td>
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<tr>
<td>13:00–15:00</td>
<td>Surgical approaches&lt;br&gt;Le Fort III, Le Fort II</td>
<td>Beat Hammer</td>
</tr>
<tr>
<td>15:00–15:30</td>
<td>COFFEE BREAK</td>
<td></td>
</tr>
<tr>
<td>15:30–16:00</td>
<td>Surgical approaches&lt;br&gt;Le Fort III, Le Fort II (if time allows Le Fort I)</td>
<td>Beat Hammer</td>
</tr>
<tr>
<td>16:00–17:00</td>
<td>Malar osteotomies</td>
<td>Maurice Mommaerts</td>
</tr>
<tr>
<td><strong>LOCATION Davos Hospital Lecture Theatre</strong></td>
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<tr>
<td>17:00–17:30</td>
<td>Summary of the day, closing remarks, and distribution of certificates</td>
<td>Max Heiland, Gerson Mast</td>
</tr>
<tr>
<td>17:30</td>
<td>End of course</td>
<td></td>
</tr>
<tr>
<td>17:30</td>
<td>TRANSFER TO DAVOS CONGRESS CENTRE</td>
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</tbody>
</table>
Event organization

AO Foundation
AOCMF
Sarah Groves
Clavadelerstrasse 8
7270 Davos, Switzerland
Phone +41 81 414 25 52
Fax +41 81 414 22 84
Email sarah.groves@aocmf.org
www.aocmf.org

AO funding sources
Unrestricted educational grants from different sources are collected and pooled together centrally by the AO Foundation. All events are planned and scheduled by local and regional AO surgeon groups based on local needs assessments. We rely on industrial/commercial partners for in-kind support to run simulations/skills training if educationally needed.
General information

**Event fee**
AOCMF Masters Course—Orthognathic Surgery, Challenges and Controversies: CHF 3,600.–
Included in the event fee is the conference bag with documentation, coffee breaks, lunches, AO World Night and course certificate.

**European CME Accreditation**
For this course the UEMS-EACCME® in Brussels have granted 21 European CME credits (ECMEC®s).

**Swiss CME Accreditation**
Additionally, for this course the following Swiss society: Die Schweizer Chirurgeninnen und Chirurgen (SGC/SSC), have granted 24 Swiss CME credits.

**Course certificate**
The course certificates will be available at the end of the event at the welcome desk.

**Evaluation guidelines**
All AOCMF events apply the same evaluation process, online (pre- and post-event evaluation) and on-site by paper and pencil questionnaires. This helps AOCMF to ensure that we continue to meet your training needs.

**Intellectual property**
Event materials, presentations, and case studies are the intellectual property of the event faculty. All rights are reserved. Check hazards and legal restrictions on www.aofoundation.org/legal.

**Recording, photographing, or copying of lectures, practical exercises, case discussions, or any event materials is absolutely forbidden.**

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The AO Foundation reserves the right to film, photograph, and audio record during their events. Participants must understand that in this context they may appear in these recorded materials. The AO Foundation assumes participants agree that these recorded materials may be used for AO marketing and other purposes, and made available to the public.

**Security**
There will be a security check at the entrance of the building. Wearing of a name tag is compulsory during lectures, practical exercises, and group discussions.

**No insurance**
The event organization does not take out insurance to cover any individual against accidents, thefts or other risks.

**Mobile phone use**
Mobile phone use is not allowed in the lecture halls and in other rooms during educational activities. Please be considerate of others by turning off your mobile phone.

**Picture Gallery**
Check out aodavoscourses.org for a daily selection of pictures from the Davos Courses, the best from last year’s courses, and a selection of photographs from the first ever AO Davos Courses.

**Dress code**
Warm clothes and suitable shoes are advisable.

**Event language**
English
Event venues

**Congress Center Davos**
Talstrasse 49A
7270 Davos, Switzerland
Phone +41 81 414 62 00
Fax +41 81 414 62 29

**Wet Laboratory: Spital Davos**
Promenade 4
7270 Davos Platz
Phone +41 81 414 88 88
Info@spitaldavos.ch

General information
Sunday 12:00–19:00
Monday to Wednesday 07:30–19:00

**AO World**
Sunday 15:00–17:00
Monday to Wednesday 09:00–17:00 (Tuesday –20:30)

**Industry exhibition**
Sunday 15:00–19:00
Monday to Wednesday 09:00–17:00 (Tuesday –18:00)

Exhibitions

**AO World**
Visit the AO World in the main foyer, home to the AO Clinical Divisions, AO Institutes and the AO Foundation Initiatives. Here you can explore membership opportunities, browse our print and electronic publications and learn about groundbreaking activities within the AO. Discover research, development, fellowships, and other opportunities available to you by visiting all the booths in the AO World.

**Industry exhibitors**
Visit the exhibitions of our major industry partners DePuy Synthes and Siemens, who are also contributing in-kind support (material and logistics), and the other exhibitors: SYNBO, Ethicon, Invibio, Victorinox, Augmedics, and ICUC.

**Media exhibitors**
Lehmanns Media can be found at the entrance to the Congress Center.

Business center

There are business centers facilities in the Congress Center which are accessible to everybody.

**Services**
- Internet and e-mail access
- Printer access
- [www.aofoundation.org](http://www.aofoundation.org)
  - AO Course website offering course-related information

**Opening hours**
- 30 minutes before the first course of the day starts until
- 30 minutes after the last course ends

**Disclaimer**
The use of your own computer in the business center network is inherently not secure. We strongly recommend that you take appropriate actions to protect your computer against unauthorized use or theft (eg. Firewall, VPN-Connection, VirusScanner). AO cannot be held responsible for any data loss or theft.

For further information or support please contact:

AO Foundation
Phone +41 81 414 62 15
E-mail it.helpdesk@aofoundation.org

Wireless network

**How to connect to the AO Wireless LAN**

- Open the wireless network connection window
- Choose the **AO Business** network as shown in the printscreen below and click on the **Connect** button

  ![Wireless network connection window](image)

  - Our "AO Business" wireless network requires a WPA network key: **aowireless**
  - Then click on the **OK** button

  ![Network key entry](image)
AO Foundation—Principles of AO Educational Events

1) Academic independence
Development of all curricula, design of scientific event programs, and selection of faculty are the sole responsibilities of volunteer surgeons from the AO network. All education is planned based on needs assessment data, designed and evaluated using concepts and evidence from the most current medical education research, and involving the expertise of the AO Education Institute (www.aofoundation.org).

Industry participation is not allowed during the entire curriculum development and planning process to ensure academic independence and to keep content free from bias.

2) Compliance to accreditation and industry codes
All planning, organization, and execution of educational activities follow existing codes for accreditation of high-quality education:
- Accreditation Criteria of the Accreditation Council for Continuing Medical Education, USA (www.accme.org)
- ACCME Standards for Commercial Support: Standards to Ensure Independence in CME Activities (www.accme.org)
- Criteria for Accreditation of Live Educational Events of the European Accreditation Council for Continuing Medical Education (www.uems.eu)

Events that receive direct or indirect unrestricted educational grants or in-kind support from industry also follow the ethical codes of the medical industry, such as:
- Eucomed Guidelines on Interactions with Healthcare Professionals (www.medtecheurope.org)
- AdvaMed Code of Ethics on Interactions with Health Care Professionals (www.advamed.org)
- Mecomed Guidelines on Interactions with Healthcare Professionals (www.mecomed.org)

3) Branding and advertising
No industry logos or advertising (with the exception of the AO Foundation and AO Clinical Division) are permitted in the area where educational activities take place.

Sponsors providing financial or in-kind support are allowed to have a promotional booth or run activities outside the educational area with approval from the event chairperson.

4) Use of technologies and products in simulations
If case simulations are chosen as an educational method to educate skills, we only use technology approved by the AOTK System (AOTK)—a large independent group of volunteer surgeons developing and peer-reviewing new technology (more information about AOTK, its development and approval process can be found on the AO Foundation website: www.aofoundation.org).

5) Personnel
Industry staff is not allowed to interfere with the educational content or engage in educational activities during the event.
AO Research Institute Davos (ARI)

Mission
Excellence in applied Preclinical Research and Development within trauma and disorders of the musculoskeletal system and translation of this knowledge to achieve more effective patient care worldwide.

Goals
• Contribute high quality applied Preclinical Research and Development focused towards clinical applications/solutions.
• Investigate and improve the performance of surgical procedures, devices and substances.
• Foster a close relationship with the AO medical community, academic societies, and universities.
• Provide research environment/support/training for AO clinicians.

At the AO World booths, meet with our team including our ARI Medical Research Fellows, establish contacts, freely discuss your clinical problems, ideas, and learn about the latest results from the AO Research Institute Davos (ARI). Insight into the AO Center will show our infrastructure under one roof and enable you to meet some of our research team.

Areas:

Collaborative Research Programs
• Annulus Fibrosus Rupture
• Acute Cartilage Injury

Craniofacial
• Imaging and planning of surgery, computer aided preoperative planning
• Medication-Related Osteonecrosis of the Jaw
• Bone Regeneration

Spine
• Degeneration and regeneration of the intervertebral disc
• Fracture fixation in osteoporotic bone

Trauma
• Bone infection, including the development and testing of active anti-infective interventions
• Fracture fixation in osteoporotic bone including intraoperative assessment of bone quality, augmentation techniques and prophylaxis
• Evaluation of the cortical and trabecular bone remodeling (with special regards to the porosity) in the proximal humerus and its impact on the fracture zones
• Development of smart surgical instruments and implant concepts for optimized bone healing
• Patient outcomes and biomarkers

Veterinary Medicine
• Improving osteosynthesis for small and large animals

Multidisciplinary
• Analysis of implant-specific functional anchorage with CT-technology
• Ex vivo testing using advanced biomechanical models
• In vivo studies using established or newly developed preclinical models
• Gene transfer- non-viral and viral
• Implant design using the Finite Element Methods
• Implant positioning assistance, C-arm guided implant placement
• Telemetric monitoring of bone healing
• In vivo and in vitro quantification of bone turnover and scaffold degradation
• Longitudinal analysis within in-vivo studies using CT-technology
• Medical image processing and analysis
• Polymers to deliver cells and biological factors, create potential space for tissue development and guide the process of tissue regeneration
• Prototype development and production
• Stem cell therapies for the treatment of bone, intervertebral disc and cartilage defects
• Bioreactor culture systems and mechanobiology
• Surface modification of PEEK to improve tissue integration
• Thermosresponsive gel for delivery of antibiotics, stem cells, growth factors, transfected cells etc.
• 3R – refinement of preclinical studies
• Development, standardization, optimization and improvement of preclinical models and methods

For the 2016 AO Research Institute Davos activity report and recent publications go to: www.aofoundation.org/ari/publications
Upcoming AO Courses—Davos 2018

**AO Courses—December 2–7, 2018**
- AOTrauma Course—Basic Principles of Fracture Management
- AOTrauma Course—Advances Principles of Fracture Management
- AOTrauma Course—Advanced Principles of Fracture Management for Swiss Residents
- AOTrauma Masters Course—Current Concepts
- AOTrauma Course—Foot and Ankle
- AOTrauma Course—Pediatrics
- AOTrauma Masters Kurs
- AOREcon Course

**AO Courses—December 9–13, 2018**
- AOTrauma Course—Basic Principles of Fracture Management for Swiss Surgeons
- AOSpine Courses
- AOCMF Courses
- AOVET Courses

List subject to changes. The final Davos courses list as well as worldwide courses lists will be available on www.aocmf.org in January 2018.
Conventional 2D imaging may not always provide enough information to safeguard correct placement of screws and implants. Intraoperative 3D imaging can therefore be an important factor in improving surgical outcomes.

To provide 3D capabilities that can be seamlessly integrated into clinical routine, we developed Cios Spin®: a mobile 2D and 3D C-arm for intraoperative quality assurance. Delivering new insights and perspectives, Cios Spin gives you more certainty in surgical routine – and full control over your procedures.

*Cios Spin is currently under development; is not for sale in the U.S. Its future availability cannot be guaranteed.*
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