AO Vision
Our vision is excellence in the surgical management of trauma and disorders of the musculoskeletal system.

AO Mission
Our mission is to foster and expand our network of healthcare professionals in education, research, development, and clinical investigation to achieve more effective patient care worldwide.
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Dr. Kellam, you became President of the AO Foundation in June 2004. What was your first impression?

James Kellam: After 20 years of active involvement in the organization, I can’t say I had a “first” impression. However, new for me was the intensive contact with the group of individuals working at the AO Center in Davos and our Dübendorf office. I was extremely impressed with their enthusiasm, their interest in what the surgeons want, and their ability to react on these needs. This positive energy at the core of the organization is crucial, as the AO Center functions as a hub for the entire global network.

Have you also had a chance to meet with people outside the AO Center?

Kellam: The AO is people. The identification of their problems and the attempts to address and be sensitive to them are extremely important for the network. During 2004, I attended a number of events in Latin America, North America, and Europe. This has brought me in touch with the regions and specialties and, most important, their specific needs and accomplishments. In addition, I meet regularly with the Past President and the President-Elect to share our experiences and ensure continuity. All of us have the responsibility to be tuned to what is going on in the different regions, specialties, and suborganizations.

How innovative was the AO in 2004?

Kellam: Innovation is a cornerstone of our vision and mission. Every year, we need to deliver innovative new concepts, methods, and services. But more importantly, we need to assure that we will be innovative in the future. To ensure this future ability for innovation, the AO executive boards have begun a major review and reorganization of the Foundation to improve its efficiency and effectiveness in addressing the surgical and clinical needs of the future. Two examples are the reorganization of the Academic Council and better incorporation of the Biotechnology Advisory Board—established in 2003—into the clinical priorities of the AO Foundation.

Markus Rauh: Innovation here is not to follow the state of the art but to be leading edge in all areas of the organization. This means that we also need to know what others do, for instance by doing peer reviews to measure our status. And we need to be innovative in how we run our organization. We need to concentrate our resources and intelligence on the right topics and projects. In this respect, the strategic planning process started in 2003 across the AO organization has already paid off. We are today investing the time and brainpower of our staff in Davos and Dübendorf in a much more focused way.

Can you be more specific about the focus of the organization?

Rauh: The Academic Council decided in 2004 on four clinical priorities. Now the entire organization has to align its activities to these four topics.

What are these four clinical priorities?

Kellam: Bone neogenesis, fracture treatment and osteoporosis, spine degeneration and regeneration, and the biological signals for bone formation by mechanical stimulation are the four priorities. With these priorities, we believe that the AO will regain relevance for the practicing surgeon as we are addressing our research and development programs to find solutions to important clinical problems.

Rauh: In this respect, it is important that the Biotechnology Advisory Board has become...
productivity, for example with a first call for papers. Biotechnology will be important to advance in our four clinical priorities.

The AO Knowledge Portal was launched in 2004 and has won the IBM Beacon Award as best new portal. What is its concrete impact for the AO?

**Rauh:** Our vision is to achieve excellence in the surgical management of trauma and disorders of the musculoskeletal system. The new portal brings a quantum leap in the dissemination of our knowledge and expertise to the medical community. We’re now having the right logistics, so to speak, and the large and growing number of hits we have on the site shows that it enjoys high acceptance. It does not replace our existing educational activities but complements them by making our know-how available around the globe at any time.

**Kellam:** It is great to see in our daily work how much interest there is for the portal. People who did not have access at the beginning actively approached us to ask for it. With the Surgery module going online in 2005, the added value will again increase sharply.

Have the issues between the AO Foundation and AO Germany been resolved?

**Rauh:** I am very pleased that AO Germany and the AO Foundation have been able to find a mutually positive and helpful solution for their differences.

**Kellam:** It is important that the Foundation is more sensitive to the specific regional concerns and issues, and addresses them earlier. Well-functioning and mutually beneficial relationships are the glue of any network organization.
What is the role of communication in keeping the network alive?

Kellam: We must communicate more and in a professional manner. The Chairman’s executive experience in corporate environments has been instrumental in bringing the surgeons together as a cooperative group of people to work towards a common goal. Most importantly, he has fostered the idea of transparency and honesty of opinion, and this has strengthened the Foundation. If there is a critique, we need to take it seriously. If there is an issue, we need to address it immediately.

Has the AO been growing?

Kellam: We’ve had some quantitative growth, including the establishment of four new Alumni chapters. Still, I believe we need to take a more active stance in managing our global growth. This also means being more open to younger surgeons, redefining AO membership, and communicating our benefits more actively.

How did the networking develop in 2004?

Kellam: Qualitative growth of the Foundation is excellent. There has been much more interaction between AO institutions and the Alumni. Two highlights were the excellent AOAA symposia of the Latin American and the East Asian regions. I have also noticed an increase in faculty retreats, local Alumni meetings, and regional activities of the TK-System.

There is a lot of talk about interdisciplinary cooperation. How’s the reality within the AO?

Rauh: The interdisciplinary cooperation between groups within the Foundation has probably been adequate. By focusing activities on four priorities, we are aligning the different units, which makes it easier to cooperate. The AO Executive Management team has had a key role in driving implementation through the strategy process and will continue to do so.

Kellam: Exploring the opportunities of biotechnology has made the organization more sensitive to interdisciplinary cooperation. Those organizations which unite the best minds from a variety of disciplines in well-functioning teams will be the ones who turn biotech into breakthrough innovations.

What will be the key to leverage cooperation in the future?

Kellam: One of the aspects the AO groups and individuals must understand is the need for us to act as a team with a common goal. We are not in the Foundation as individuals but are all working together to improve what we are delivering to the patient.

How has the partnership with Synthes, Inc. developed?

Rauh: In 2004, Synthes, Inc. completed the acquisition of the osteosynthetic part of Mathys Medical Ltd. This is a major plus for the Foundation as it is much easier to work with one industrial partner instead of three. I am also pleased with the progress of the contract negotiations with Synthes, Inc. At present, both organizations work towards a viable outcome that will meet the requirements of the anti-trust authorities.

What do you consider the two or three key priorities for 2005?

Kellam: A successful start of our clinical priorities, which means organizing them in the right way to make them work! Connected to this, we need to ensure that the reorganization of the Academic Council is implemented effectively in 2005.

Rauh: It is key to establish adequate structures and financing for the specialties and in particular for the regions. We must keep focus on our general objectives. For this, the Foundation must be one strong organization, but at the same time we must respect more the needs of the specialties and the regions.

“There is a need for us to act as a team with a common goal.”

James Kellam
Twentieth anniversary of the AO Foundation: A time to look back and forward

2004 marked the twentieth anniversary of the AO Foundation. While celebrating the occasion in Davos, Switzerland, the organization also geared up for continued success, for the benefit of the patient, by entering into a new strategic partnership.

The origins
Under the leadership of Maurice E. Müller, Martin Allgöwer, Robert Schneider, and Hans Willenegger, the AO (short for “Arbeitsgemeinschaft für Osteosynthesefragen” or “Association for the Study of Internal Fixation”) was established in Biel almost half a century ago with the aim of further optimizing and promoting new approaches to fracture care that permitted immediate, active postoperative rehabilitation of patients. This was made possible through stable skeletal fixation of bone fractures with the help of metal plates and screws. To cope with the new realities as a result of rapid growth, a non-profit organization—the AO Foundation—was established in 1984 in Davos, which today employs 191 people who coordinate and support the AO’s surgical network.

No time to rest
In October, the AO Foundation signed an agreement with BrainLAB, a leading innovator in image-guided medical technology. This cooperation will allow the AO’s experts in computer-aided orthopedic surgery (CAOS) to realize the potential for this methodology. Through teaching and training, this state-of-the-art technology will benefit the entire AO network.

Finally, the tsunami disaster which hit South Asia at the end of the year dramatically epitomized the importance of education and a well-functioning network, through which the AO and Synthes, Inc. were able to mount effective joint relief efforts in the region without delay.

The AO Foundation has come a long way since its creation on December 8, 1984. What began with the formation of a study group of 13 surgeons in 1958 today caters to an ever-growing network of more than 5,000 surgeons and operating room personnel (ORP) worldwide.

Selected highlights
May 6–8
AO Alumni Association (AOAA) Asian Chapter Symposium in Chiang Mai, Thailand
10-year anniversary of AO East Asia

May 13–15
Three-Country Symposium of AO Austria, Germany, and Switzerland in Ascona, Switzerland

June 21–24
Trustee Meeting in Venice, Italy

July
Launch of AO Knowledge Portal

October 18
Announcement of strategic cooperation with BrainLAB

October 24–27
AO Alumni Association (AOAA) Latin American Symposium in Punta Cana, Dominican Republic

December 4–17
80th/81st AO Davos Courses

December 8
20th anniversary of the AO Foundation

1 Visit at BrainLAB (from left to right): Stefan Vilsmeier, Markus Rauh, Gregor Strasser, and Urs Jann.

2 The anniversary celebrations drew many AO community members and representatives from local and regional authorities to the Davos town hall.

3 James Kellam, Doris Straub Piccirillo, and Anita Anthon introducing the 20th anniversary cookbook “Bone Appétit.”
The AO network

Through its world-spanning network of three regions, five sections, and 47 Alumni chapters, the AO strives to achieve more effective patient care around the globe.
Strategy on track to achieve the AO Vision

The strategic planning process started in 2003 was put into action in 2004. The focus has, therefore, shifted to strategy implementation, with tangible progress in all areas. Together with the definition of the AO’s clinical priorities, the individual measures will increase the performance of the AO’s medically guided value chain. This brings the organization closer to achieving its mission and vision.

Focusing the organization and improving the use of resources were the starting point of the strategic planning process initiated in 2003. In 2004, the shift from planning to implementation was pursued under the responsibility of the AO Executive Management team.

New paths in education
Education has an important multiplier function and is crucial for fostering excellence. The new AO Knowledge Portal and the “Tips for Trainers” courses are two examples of leveraging reach. Besides such visible activities, internal measures such as the integration of the video production unit into the AO’s education and publishing activities at the end of 2004 are important in the context of strategy implementation.

Focused research in four areas
The decision to focus on four clinical priorities in the future has a major impact on the organization of research. This has already affected the allocation of funds and is also reflected in the reorganization of the AO Research Fund. Peer reviews of all programs have been initiated to benchmark AO research internationally.

Clinical studies as guiding lights
Two strategies were followed in 2004 to increase the impact of the AO’s activities in the field of clinical studies. To expand reach, AO Clinical Investigation and Documentation (AOCID) opened a branch office in New York and strengthened educational activities. To increase the value of its activities, economic cost-benefit measures were added as standard elements to new studies wherever feasible.

Clinical priorities drive alignment of the AO
A prime example of how the newly defined clinical priorities link the entire organization is the priority “fracture treatment and osteoporosis,” a topic that is currently on the agenda in almost every stage of the medically guided AO value chain.

Sociodemographic analysis and input from the global network of AO surgeons have brought osteoporosis into sharp focus. The AO Research Institute is currently investigating several aspects related to osteoporosis, such as the exploration of mechanical, chemical, and biological technologies for better implant anchorage in osteoporotic bone.

The AO Development Institute decided in 2004 to focus on fracture fixation in osteoporotic bone as a core competence area. As a consequence, it has extended existing projects in this field and increased the number of participating university hospitals to ensure clinical relevance.

The TK-System will enforce highest quality standards on the resulting solutions, which is of particular importance regarding outcome in clinical application.
To satisfy the need for cost-benefit analysis of different treatment methods, AOCID has introduced economic evaluations in new studies. The AO has generally increased investments in evidence-based studies.

Once concepts and products for the treatment of osteoporotic bone have been approved, the educational program of AO International is instrumental to ensure that surgeons around the globe are able to make optimal use of them.

In conclusion, the clinical priorities align all activities along the AO value chain, including medical input and guidance at all stages.
AO expertise at a click of the mouse

With the launch of the new Knowledge Portal in July 2004, the AO community and other healthcare professionals benefit from 24/7 access to a host of valuable information services.

With its new online Knowledge Portal, the AO lives up to its vision of furthering excellence in the surgical management of trauma and disorders of the musculoskeletal system by sharing the network’s expertise with healthcare professionals worldwide.

Tailored services for AO communities

The AO community benefits from exclusive services such as the “Faculty Support,” which offers AO surgeons engaged in teaching activities a wide range of information for preparing courses. The section includes course syllabi, the AO image database, a service for viewing AO videos online, a searchable faculty directory, and tips on giving lectures.

Similar specific access areas exist for the Trustees, the Alumni, and the operating room personnel (ORP) group. They contain exclusive information and services such as web mail or the “Alumni People Finder” that lets Alumni search for each other with a minimum of information. In the new case discussions, entries can now be rated, which adds value to the interaction.

The “InSite” section functions as an intranet for AO employees. It is used for internal communications and offers services such as web mail, news, press clippings, and other useful items including templates and logos.

Pooled expertise

Surgeons who are not members of these AO communities benefit from non-restricted services, such as “Innovations,” where all tools and implants newly approved by the TK-System are introduced in text, images, and sometimes cases and video material.

The “Clinical Research” module is another revolutionary AO service. This online textbook offers a step-by-step guide to clinical research which is targeted at residents and surgeons inexperienced in clinical studies. It offers not only the equivalent of 250 pages of in-depth guidance but also useful links to online resources such as funding agencies, statistical tools, and government regulations.

The AO Knowledge Portal wins Beacon Award

Knowledge Services’ hard work was crowned by the announcement of IBM Lotus in December that the AO website was the winner of the Beacon Award for “Best Portal Website of the Year 2004.” The award is the most prestigious international prize for portal websites and recognizes that the AO’s online offering is of the same first-class quality that surgeons have come to expect of the AO.

Around 40 surgeons from all regions have been working in eight teams on what will become the heart of the Knowledge Portal: the “Surgery” module. This unique reference tool will give surgeons all over the world guidance in patient treatment and offer reference along the whole surgical management process. Through close collaboration with AO Publishing and AO International, the Surgery module will become a reference tool for everyday clinical life. The editors of the different parts are some of the AO’s most renowned surgeons.

1 The AO Knowledge Portal gives users 24/7 access to AO expertise, around the world.
2 AO faculty members benefit from a host of services and information to facilitate teaching activities.
3 The AO Knowledge Portal gives an overview of all instruments and implants approved under the TK-System.

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Tackling new frontiers in general trauma

As a result of cooperation with internal and external experts, General Trauma has introduced several new systems for improved management of fractures.

An important innovation in General Trauma was the introduction of the Expert Tibial Nail System, which addresses the problems of proximal and distal tibial fracture fixation. This system will offer surgeons an intramedullary nailing system, which will help control the potential for malalignment in these difficult fractures. With the addition of more locking options, the range of tibial fractures amenable to intramedullary nailing will be expanded. The Expert Tibial Nail System and the locked plating systems provide the surgeon with two options for management of these fractures using minimally invasive surgical access.

Cooperation between Synthes, Inc., the AO Development Institute (ADI), the Long Bone Expert Group, and other trauma surgeons has produced a solution to the potential problems of intramedullary reaming. The Reamer Irrigator Aspirator System benefits patients with pulmonary contusions or bilateral femoral fractures by lowering the amount of marrow emboli to the lungs. It may also be a method of obtaining a bone graft. Further investigations are underway by the AO Research Institute (ARI) into the bioactivity of the reamings for bone-healing stimulation.

Another highlight was the launch of anatomically contoured locked plates for the distal humerus. The new metaphyseal locking plates enable the surgeon to control the angular deformation in osteoporotic bone or where significant fragmentation compromises stability.

Finally, the pelvic plate fixation system was improved by providing low-profile implants. This will decrease the amount of plate impingement from the implant and allow for better placement of screws.

Tapping into biotechnology

Recognizing the potential use of biotechnology within the AO, interdisciplinary cooperation between the Biotechnology Advisory Board (BAB), which consists of world experts in biotechnology and biomaterials, and the various AO expert technical groups, as well as the Academic Council (AcC), has been strengthened to identify the most promising applications. Biotechnology will provide a solution for a new method of stimulating bone neogenesis—identified by the AcC as a priority clinical problem.

Interaction between experts and users

The TK-System has facilitated improved interaction between experts and users within the AO. Through an educational venue, an opportunity has arisen for regional surgeons to address their issues in implant development, technical problems, and management dilemmas with the AO’s technical experts.

In September, the First Transatlantic LCP (Locking Compression Plate) Meeting in Berlin brought together leading young academic surgeons involved in the early development and use of locking compression plating and other innovative intramedullary fracture fixation techniques. The two-day symposium entitled
“Innovations in Trauma Surgery” showed the numerous similarities surgeons face in Europe and in North America with specific types of fracture patterns. This type of meeting will allow the AO’s expert groups to include more surgeons in the innovative development process. The 2004 meetings with the AO East Asian and the AO Latin American Alumni Chapters were extremely fruitful with regard to general trauma techniques and implants.

Finally, under the direction of the TK-System and ARI, a workshop on antiseptics and antibiotics implant coatings brought together leading European researchers in the fields of infection control, implant coating, and clinical surgery to discuss the needs for coated implants. The concept of bioactive-coated implants is an innovation that will undergo in-depth discussion over the next several years as to its value for patients.

Such interdisciplinary linkages are going to be crucial for the AO in order to provide cost-efficient care for patients with long-bone fractures.

Knowledge sharing among ORP

The AO Educators Seminar for operating room personnel (ORP), held December 12–17, 2004, in Davos not only helped advance knowledge but also strengthened the ties among ORP.

Attended by 27 participants from 25 countries, the fifth international ORP Educators Seminar held in Davos in mid-December provided an ideal platform for both learning and networking. The seminar focused on what to teach, how to teach, and how to organize AO courses for operating room personnel (ORP).

For the first time, three members of the ORP Alumni Chapter, which was ratified just a year earlier, contributed to the program as core faculty with teaching, mentoring, and coaching tasks.

In their course evaluations, participants expressed how much they appreciated the new professional and personal relationships they had forged through the seminar. It is anticipated that they will keep on networking and, with their newly gained knowledge, will have an impact in their home countries.

In addition, the seminar showed the way towards increased cohesion among ORP. They can continue networking by joining the new ORP Alumni Chapter and passing on their knowledge as faculty members, as well as participating in events such as the Triennial AOAA Symposium.
AOSpine is growing strong

With its new regional structure consolidated, AOSpine was able to significantly grow membership and leverage synergies both across the AO and with its external partners.

Based on its vision to foster the leading nonprofit global community of spine specialists that drives continuous improvement in spine surgery for the benefit of members, healthcare payers, and ultimately the patient, AOSpine grew both in terms of activities and membership. Its 50 educational courses attracted some 2,500 participants from all over the world and engaged 300 faculty members. Within the scope of its academic programs, 15 long-term and 57 short-term fellowships were awarded. In addition, four outcome projects were approved, and three EBSS (evidence-based spine surgery) seminars were held. Finally, the AOSpine TK approved more than 20 new products, a testimony to the innovation and drive within this AO specialty.

2004 was the first full year of AOSpine’s pioneering regionalization policy. The four regional boards for Asia Pacific (AOSAP), Europe (AOSEU), Latin America (AOSLA), and North America (AOSNA) were fully functioning within the newly decentralized structure. A country chapter structure was created to allow local groups more participation.

AOSpine is flourishing; all spine teams worldwide accept its new identity and the individual groups are building up steam to drive new and exciting activities.

The AO Research Institute (ARI) has two project teams involved in the Spine Research Network in the field of disc degeneration. A close working relationship with AO Publishing was forged to prepare the launch of three AOSpine manuals in 2005.

New links are being built with the regional and national spine societies. AOSpine announced this new strategy by hosting special AOSpine lounges and receptions at key spine society events (SSE, NASS, SRS, and APOA) in all regions of the world.

In terms of education, joint regional courses were held with AO International (AOI) in Slovenia and Dubai.

Growing strong
AOSpine’s progressive membership scheme bore fruit with membership rising to 2,500 in 72 countries. AOSpine membership, offered free of charge, is open to all spine surgeons and researchers. With new member-oriented services, membership is set to increase even further in the future. AOSpine is pleased to introduce new members and welcomes back some old colleagues who are returning to a new AO!

Leveraging synergies
In an effort to leverage synergies within the AO, AOSpine embarked on new joint ventures with the AO Institutes. For example, AOSNA is collaborating closely with AO Clinical Investigation and Documentation (AOCID) on outcome studies, while AOSpine International is working with AOCID on evidence-based spine topics.

1 AOSpine International promotes “Excellence in Spine” at an AOSpine course in Berlin, Germany, in November.
2 Dedicated to training, AOSpine ran 50 educational courses in 2004.
3 The development of scientific committees is fostered. Here the SciCom North America showing (from left to right) Michael Fehlings, Alex Vaccaro, Darrel Brodke, and Jens Chapman.
4 India: AOSpine’s regionalization efforts give local groups more say.

AOSpine website
With www.aospine.org, AOSpine members now benefit from a valuable information gateway to a variety of spine-related topics. In addition, the new web portal is constantly updated with new services and administration functions to maintain AOSpine’s position as a lean, transparent, and dynamic organization dedicated to excellence in spine.
Craniomaxillofacial: in the educational forefront

AO Craniomaxillofacial (AO CMF) has made significant progress in anchoring CMF education in Asia, Australia, and South Africa while at the same time strengthening the CMF network by forming a new guiding board.

Thanks to its well-functioning International Education Group, AO Craniomaxillofacial (AO CMF) was able to organize 17 basic and advanced courses, six seminars and symposia, as well as dispatch several congress delegations. Particular emphasis was placed on spurring educational activities in Asia, where the demand for CMF courses has increased sharply. In addition, first courses were held in Australia and South Africa, and a regional course was organized in Dubai.

New concepts and course materials
AO CMF has been working on new course concepts, such as “comprehensive” courses, which include not only endoscopic techniques but also computer-assisted surgery (CAS).

A great effort was made to produce new course videos that reflect both interdisciplinary (oral-maxillofacial, plastic, ear, nose, and throat) and individual opinions. Special care was taken to approach the task from an international angle by including colleagues from several continents on the production team. The new videos will be the standard for all courses worldwide.

Development of a new two-volume CMF manual, which will be at the heart of all basic courses, saw significant progress in 2004. In addition, through cooperation between AO CMF and AO Clinical Investigation and Documentation (AOCID), the development of a new, user-friendly fracture classification system was accelerated.

Several meetings were held where test classifications of more than 200 fractures were established. These tests have made clear that the classification system must be further refined to ensure unambiguous classification of all fractures.

Sustained knowledge transfer
At the Trustee Meeting in June, a CMF Board was formed consisting of CMF Trustees, the chairmen of the CMF International and Regional Education Committees, CMF representatives in international AO committees, and a representative from Synthes, Inc.

In addition to a dedicated CMF website, the development of a CMF alumni association was identified as a priority by the Board. This will help guarantee follow-up with younger colleagues who have participated in courses or received fellowships. To ensure a smooth information flow, the Board advocated relaunching a previous CMF journal, which had reached the stage of Index Medicus listing, under the editorship of Paul Manson and Adrian Sugar.

In a next step, the new specialty academic council members and the CMF representatives for the TK-System will be elected from among the Board members. This will result in a formal specification of the tasks and responsibilities of the new Board.

Finally, a need for organizational improvement was identified for Asia, the Middle East, Eastern Europe, Australia, and Africa.
Continued improvement of animal patient care

AO Veterinary (AO Vet) has made significant progress in several new developments for improved fracture management in small and large animals.

Two development highlights in 2004 were the CRIF (Clamp Rod Internal Fixation), or formerly Vetfix, and two types of new LC-DCP (Low-Contact Dynamic Compression Plate).

AO Vet concluded the clinical testing phase of CRIF, which proved to be a very versatile method of fracture fixation with many potential applications. Several CRIF labs were offered to test overall interest in this solution, with very promising results. In a next phase, some improvements will be made to ensure the new method will meet the demanding AO standards.

Development of the LC-DCPs was finalized. A broad LC-DCP 3.5 for small animals and the LC-DCP 5.5 for large animals will be available in the near future. The LC-DCP will replace the DCP (Dynamic Compression Plate) as the standard veterinary plate, starting in 2005 in the USA.

At the Trustee Meeting in June, Vet representatives met with the top executives of Synthes, Inc. to discuss expansion in the veterinary market. Hansjörg Wyss and his team signaled great interest and promised to pursue the idea of a “Synthes Vet.” This represents an exciting opportunity for AO Vet as it strives to ensure a greater variety of specialty-specific implants at more competitive prices.

Excellence in education

The AO courses offered during the year were a resounding success. New course concepts were explored to further improve the quality of the courses. The Ohio AO Vet courses are now organized through AO North America, which proved to be a significant improvement over previous courses.

In addition to residency trainings, young surgeons received fellowships in approved AO veterinary clinics. Efforts will now focus on training surgeons in new countries, especially in Latin America, Asia, Africa, and Oceania.

More efficient communication

A task force was set up to develop content for the veterinary section on the new AO Knowledge Portal. As a second new channel for communication with members, the Veterinary and Comparative Orthopaedics and Traumatology (VCOT) journal became the official scientific journal of AO Vet. Members are offered a discount on subscriptions.

New reference in animal fracture management

The new small animal textbook is due for release in summer 2005. It is the result of contributions from experts from around the world. In accordance with the requests of numerous course participants, all AO Vet teaching videos will also be included.
Trustee Meeting 2004

The twentieth annual meeting of the Board of Trustees of the AO Foundation was held from June 21–24, 2004, in Venice, Italy. With its rich history, the lagoon city provided an excellent setting for networking and discussion. The meeting was characterized by a constructive, forward-looking atmosphere.

Chairled by René Marti, the outgoing President of the AO Foundation, the meeting was attended by 129 Trustees and ex-officio Trustees.

James Kellam was elected as new President and Christiaan van der Werken President-Elect of the AO Foundation. Bruno Noesberger was reelected and Tim Pohlemann was elected to the Board of Directors (AOVA) of the AO Foundation. Cléber Paccola was reelected and Peter Trafton and Michael Wagner were elected new members to the Academic Council (AcC). Günther Hierholzer, Robert Mathys, Peter Matter, and Ernesto Zerbi were appointed honorary members of the Board of Trustees.

Tackling the challenges of today and tomorrow

An overview of current concepts and issues as well as future challenges was given in scientific presentations and breakout sessions.

Moderated by Margarethe Hofmann, the Biotechnology breakout session covered the following topics: “Assessment of a Road Map for Bone Tissue Engineering—A Voyage from the Laboratory to the Clinical Application” (Dietmar W. Hutmacher), “An Image-Based Design Engineering Approach to Temporomandibular Joint Reconstruction” (Stephen E. Feinberg), “Prospects for Biological Repair of the Disc” (Jocelyn Penelope Urban), and “Are Growth Factors Ready to Enter the Orthopedic Market?” (Thomas A. Einhorn).


The “Clinical Problems of the Surgeons of Today” session devoted its attention to “Fracture Treatment in Normal and Osteoporotic Bone” (Keita Ito), “Stimulation of Wound Healing and Prevention of Scarring” (Mark W.J. Ferguson), “Fracture Treatment in Osteoporotic Bone—A Challenge to AO Development” (Norbert Suhm), and “Osteoporosis and the Spine” (Max Aebi).

Scientific presentations

- Osteoporosis and the Orthopedic Surgeon (W. Angus Wallace)
- The Cell and Molecular Biology of Fracture Healing (Thomas A. Einhorn)
- Scar-Free Healing: From Discovery in Embryos to Novel Human Therapeutics (Mark W.J. Ferguson)
- The Relevance of Knowledge Management (Gilbert Probst)
- Current Concept of Scaffold-Based Tissue Engineering (Dietmar W. Hutmacher)
- Reduction Supported by Technology Integration (Christian Krettek)
- Clinical Studies Today (Beate Hanson)
- The History of the Introduction of Rubber Gloves in Surgery (Urs Heim)
- Médecins sans Frontières, Problems with Fracture Treatment (François Boillot)
- Three and a Half Decades of Interaction between Clinicians and Research (Berton Rahn)

In addition, James Kellam and Hansjörg Wyss gave a presentation on the AO and “global Synthes.”
Finally, the Knowledge Services session discussed “The Extranet as Part of our Communication Future” (Gregor Strasser) and “Knowledge Services as a Tool for the AO Community” (Michael Redies).

**Strengthening personal ties**
Regional luncheons gave colleagues from geographical neighborhoods the opportunity to discuss local issues and share their experiences.

Venice gave a special ambience to the social events, where the Trustees met on an informal basis. Impressions from the visit of the Basilica San Marco, the “Mini Film Festival” with short teasers of movies shot in Venice, and the colorful mask ball at the Palazzo Pisani Moretta provided an ideal context for strengthening personal and professional ties.

The next annual meeting of the Board of Trustees is scheduled for June 21–24, 2005, on Amelia Island, Florida.
AOAA: bustling activity around the world

2004 was yet another successful year for the AO Alumni Association (AOAA): It was able to significantly expand its offering to members worldwide, while at the same time adding four new local chapters in Latin America, in Europe, and in the Middle East.

Guided by its mission of disseminating the AO philosophy and techniques around the world, the AO Alumni Association (AOAA) founded four new local chapters in Costa Rica, Estonia, Lebanon, and the United Arab Emirates. In addition, the ORP Alumni Chapter for operating room personnel (ORP) working in a clinical setting, which was officially ratified by the AOAA’s Executive Committee in December of the previous year, became fully functional in 2004. As per the end of 2004, the AOAA counted a total of 47 local chapters. Additional local chapters are in the organizing phase.

Between the foundation of the AOAA in 1989 and the end of 2004, membership grew to 3,209 in 92 countries. 691 new members joined in 2004. 625 memberships were discontinued as members chose not to renew their membership. This resulted in a net increase of 66.

Increasing benefits

Alumni members, all of whom are actively practicing surgeons or operating room personnel, benefited from an increase in the quality and quantity of services extended to them via AOAA membership in 2004. With the new AO Knowledge Portal going live in July 2004, the Alumni received a password-protected section dedicated to exchanging information and knowledge with colleagues in an efficient way. Among others, the section features an Alumni directory with a special search function to facilitate networking. All Alumni received an individual e-mail account (firstname.name@aolumni.org) with web-mail functionality. This new feature has enjoyed increasing acceptance as the clear upward trend in the number of hits from October to December has shown.

Moreover, members now have full access to the AO image database and a special interactive case discussion forum. The introduction of a new database facilitates specialty-oriented communication to members and reduces the amount of administrative work. In addition, members are able to register and pay their membership fees directly online.

Starting in February, the Alumni were able to subscribe to a bimonthly electronic newsletter pointing out attractive offers to them, such as upcoming conferences or free-of-charge online access to the new AO journal “Orthopedic Trauma Directions” (OTD). Moreover, discounts on AO books are offered to Alumni members every other month. In addition to those AO publications, such as the “Scientific Supplements to Injury” and “AO Dialogue,” offered to them free of charge, the Alumni benefit from discounts on other AO publications and AO videos.

Alumni members also have something to look forward to: They will be granted access to the new online Surgery module that will be ready in 2005.

Face-to-face encounters

Membership eligibility and benefits
AO faculty members, AO Fellows, participants in AO advanced courses, or other interested parties related to the worldwide AO effort are eligible to join the AO Alumni Association (AOAA). For more information, go to www.aofoundation.org/aoi/alumni or directly to the Alumni chapters at www.aoalumni.org.

Alumni members benefit from a range of services, including complimentary access to AO publications such as the “Orthopedic Trauma Directions” (OTD) journal, “AO Dialogue,” and the “Scientific Supplements to Injury.”

366 delegates from 23 nations attended the first AOAA Asian Chapter Symposium, organized under the leadership of the Thai local chapter. The large international faculty ensured a high-calibre exchange of ideas and experiences. One clear highlight of the event, which coincided with the tenth anniversary of AO East Asia (AOEA) and the twentieth anniversary of AO Thailand, was the live surgery transmissions from Nakorn Chiang University Hospital, where a team of international AO surgeons performed four procedures. According to Surapong Anuraklekha of AO Thailand, this was an excellent opportunity to observe exceptionally experienced surgeons and learn from them not only during surgery but also in terms of preoperative planning and correct patient positioning. “The learning experience was highly interactive. A lot of participants directed questions at the surgeons during the live surgery. This was a good chance to clarify the individual steps of these procedures,” says Surapong Anuraklekha.

Although the Punta Cana event had to be postponed at short notice due to hurricane Jeanne, it was attended by more than 240 participants. This third Latin American symposium, which was organized as a collaboration between the different local chapters, kicked off with plenary sessions dealing with news and controversies in skeletal trauma, followed by a debate of the LCP (Locking Compression Plate) concept and specialty-driven breakout sessions. On this occasion, tribute was paid to the AO pioneers Roberto Masliah, Hugo Max Grove, Eduardo Patow, the late Victorio de la Fuente, and Diego Fernandez.

The hosts of both symposia did an outstanding job and received cordial congratulations from the participants. They excelled in spreading the AO spirit that keeps the network alive. The next milestone will be the Triennial AOAA Symposium in Chia Laguna (Cagliari), Sardinia (Italy), scheduled for September 18–21, 2005.
The AO was again very active through its regions, sections, and the Socio Economic Committee (SEC). This local activity is crucial, as the organization strives to disseminate excellence in the surgical management of trauma and disorders of the musculoskeletal system around the world.

**News from the regions**

The uncontested educational highlight for Latin America (AOLAT) was the third AO Alumni Association (AOAA) Latin American Symposium held in Punta Cana, Dominican Republic, from October 24–27. An important focus was the increasing relevance of clinical investigation for the region, a topic tackled in close collaboration with AO Clinical Investigation and Documentation (AOCID) and the TK-System. Another highlight in the region was the formation of a new local chapter in Costa Rica. AOLAT now comprises twelve AOAA chapters with a total of 855 members.

Focusing on those areas in East Asia that have not yet benefited from AO educational activities, AO East Asia (AOEA) organized two regional exchange meetings involving the local orthopedic associations. The first-ever AO educational activity in Myanmar was held in September. An AO seminar on diaphyseal fractures followed in Sri Lanka in October. The meeting program and content acknowledged the different health and economic situations in these countries. Standard AO treatment methods were illustrated with the use of implants meeting regional needs.

The first AOAA Asian Chapter Symposium in Chiang Mai, Thailand, from May 6–8, was another milestone in the ten-year history of the AOEA. It provided a chance for intensive exchange between AO surgeons from all parts of Asia, as well as with the experts of the TK-System, AOCID, and other AO departments and bodies.

To foster the development of operating room personnel (ORP) education in East Asia, an ORP ad-hoc group was established. It consists of representatives from Thailand, Malaysia, Singapore, Taiwan, and Hong Kong.

By focusing its efforts on education and faculty development, AO North America (AONA) was able to grow membership to 725 surgeons in all specialties. Over 30 surgeon courses and 27 ORP courses with more than 2,000 participants were accomplished in 2004. Other AONA programs, such as Visiting Professor preceptorships and Resident Research grants, were well utilized by members. Both the Spine and Cranio-maxillofacial specialties held outstandingly successful AONA faculty forums in August and November respectively.

AONA started using “e-room” for most courses and at multiple levels within the organization, which has helped improve communication and include more members in the decision-making process.

**News from the sections**

From May 13–15, 2004, the German-speaking AO sections Austria, Germany, and Switzerland met for a three-country meeting in Ascona, Switzerland. More than 150 participants attended the scientific sessions, which covered polytrauma, implant removal, reoperations, problems in bone healing including joints, and new possibilities from research. The gathering fostered a much appreciated exchange on problems in the healthcare systems of all three countries, for example the current shortage of residents.

AO Austria (AOA) held numerous courses and symposia including a national AO Prin-
Networking 21

The section closely cooperated with the AOAA and recruited all instructors and some faculty members for the AO Principles and ORP courses from the Austrian Alumni Chapter.

An event was hosted by Section President Michael Wagner in February on the occasion of the 85th birthday of Emanuel Trojan, former President of AO Austria and honorary member of the AO Foundation.

While seeking close collaboration with the Swiss Alumni Chapter, AO Switzerland (AOCH) members rejected the idea of an associate membership for Alumni who did not otherwise qualify for active membership. In a follow-up survey, however, a clear majority of members was in favor of opening up active membership to the Alumni, although not by merging the two organizations. In a survey, the AO Alumni equally demonstrated their will to intensify collaboration and expressed their support for the proposed active membership in AO Switzerland for individual members. The topic will remain on the AOCH agenda for 2005 and is set to be decided in May 2005.

On the educational front, the Swiss Residents Course stood out as a highlight with considerable time allocated to open discussions among the 73 residents from Swiss hospitals. Through an SEC fellowship, an Eritrean surgeon and a scrub nurse were received in Fribourg in October. Cooperation will continue beyond this fellowship with a Swiss orthopedic surgeon from Fribourg spending two months in Eritrea starting in April 2005, to inaugurate the so-called “Reverse AO Fellowship.”

AO Germany (DAO) organized more than 20 AO events in 2004 under the ultimate direction of the EDUC Committee. All events were rated very positively by the participants. The German Alumni were also very active and, among other events, held two major seminars. With currently more than 220 participants, DAO is one of the largest sections within the AO. It counts a total of 15 project groups, such as the Shoulder and Foot Groups, who conduct research in close cooperation with the relevant expert groups of the TK-System.

2004 was a year of further expansion for AOUK. Faculty membership grew from 317 to 329. This represents an equal increase in membership as membership is currently through appointment of faculty. The more rigorous faculty selection procedures defined in 2002–2003 were put in place and worked satisfactorily. Further refinements were made to the committee structure.

Lorraine Harry from Imperial College, Charing Cross Hospital, receives the 2004 Research Prize from AOUK President Anthony Cross for her work on the “Comparison of Skin and Fascia versus Muscle in the Healing of Open Tibial Fractures.”
AOUK’s “Tips for Trainers” course, which has been recognized by AO International (AOI) to set the gold standard in teaching techniques, was successfully run for Swiss and Dutch faculty. It will be taken across the Atlantic in 2005 to support AOLAT.

The 2004 Research Prize was awarded to Lorraine Harry from Imperial College, Charing Cross Hospital, for her work on the “Comparison of Skin and Fascia versus Muscle in the Healing of Open Tibial Fractures.”

AO Spain (AOE) held its annual Scientific and Administrative Meeting in Marbella from September 23–26. The meeting included an amendment to the statutes and election of Víctor Alvarez as the AOE’s new president.

During the year, AOE focused on providing numerous educational opportunities to its members. More than 10 national courses and seminars were held. Preparations are underway for two simultaneous AO Principles Courses in April 2005 attracting some 250 participants.

To attract and hold the interest of leading young trauma surgeons, the AOE created the AOE Prize endowed with EUR 1,500.

Activities in developing countries
The Socio Economic Committee (SEC) supports developing countries by promoting teaching of appropriate methods of fracture and soft-tissue injury management. It has activities in South America, Oceania, Asia, and Africa.

The SEC engagement in Africa has expanded demonstrably. For example, in Malawi, 23 participants from four different countries attended an ORP course held in Blantyre in September and October. At the end of September, an SEC-sponsored teaching facility for Orthopedic Clinical Officers (OCO) was inaugurated with a keynote address from the Malawi Minister of Health. The prospective study on ORIF (Open Reduction and Internal Fixation) in HIV-positive patients with AOCID and the scholarship program with the School of Medicine and Beit Trust Cure International Hospital were continued. New educational activities were prepared for Kenya and Cameroon.

In South America, the Ribeirão Preto Fellowship Program was continued. It has benefited an average of 18 Brazilian orthopedic surgeons annually since 2001. After a thorough outcome assessment, the project is planned to be expanded within Brazil and into Colombia.

The vast distances and low numbers of doctors have made progress difficult in Oceania. The fellowship invitation to units in Australia and New Zealand continued. An information drive from the SEC will hopefully attract interest from a larger number of doctors.

In India, a first ORP workshop was conducted by a former AO Fellow with great success. With the large number of orthopedic surgeons in India interested in the AO, penetration of AO know-how throughout the subcontinent is bound to increase further.

An AO seminar on diaphyseal fractures was held in Sri Lanka.
The AO held its first educational activity in Yangon, Myanmar.
Thomas Rüedi received a warm welcome from the Thai hosts in Chiang Mai, Thailand, at the first AOAA Asian Chapter Symposium.

The SEC online
The Socio Economic Committee (SEC) supports numerous projects around the world. More information on the SEC’s objectives and strategy, the individual projects, and the responsible AO contacts can be found at www.aofoundation.org/sec.
New ways to strengthen the AO educational offering

The key activities of AO International (AOI) in 2004 were the introduction of new innovative formats in course contents and educational channels as well as in faculty education, while regionalization of AOI activities has been expanded. In addition, AO Publishing introduced several major new reference books.

In striving to disseminate the AO principles and philosophy of fracture management to the worldwide surgical and operating room personnel (ORP) community, the educational arm of AO International (AOI) continued to enlarge and broaden its offerings to students and faculty alike.

In 2004, the number of AO courses increased by 30% to 220 events worldwide, with more than 14,000 surgeons and operating room personnel as participants. With minimally invasive surgery (MIS) and the “comprehensive” courses, two new course formats were introduced. The latter focuses on endoscopic techniques in CMF and, in the future, will include computer-assisted surgery (CAS) and navigation. In cooperation with the MIS task force, AO East Asia organized the first such AO course in Singapore with great success.

Together with Joseph Green, Associate Consulting Professor at the Duke University School of Medicine and AO consultant in adult education, a new means of course evaluation was started successfully at the Davos Courses in 2004. It is based on focus groups and personal interviews conducted by senior faculty, which proved to stimulate more clear-cut answers and recommendations for improvement.

Targeted faculty support package
The AO faculty profited from the new faculty support package for the AO Principles Courses, including a syllabus with PowerPoint presentations and all videos. The AO image database includes all images from AO publications for downloading. For the preparation of teaching activities or as quick reference, all AO teaching videos can be viewed online via the AO Knowledge Portal.

With the launch of the new AO Knowledge Portal in July 2004, all AO faculty members have had password-secured access to AOI

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1 The 2004 Davos Courses were attended by more than 1,400 surgeons and ORP from all over the world.
2 A new approach to reference books: case-based step-by-step procedures, with predominantly visual presentation, including videos and animations.

Comprehensive AO educational offering
AO Education provides the full range of up-to-date online and offline academic postgraduate medical education, including the provision of electronic media such as this pilot project DVD by Theddy Slongo that will be available in early 2005.
educational assets. A growing interest in clinical videos has been addressed by providing more on-site video productions from the operating rooms of AO surgeons.

The three module series “AO Course Companions,” “AO Briefings,” and “AO Case Series,” which were developed within the scope of the big eLearning project launched in 2003, were introduced to a wider public in 2004. These modules, which have gained good acceptance among their users, will represent an important component of the multimedia educational offering of AOI. More than 80 modules were produced in 2004 to meet the rising demand for interactive learning formats. The eLearning modules will be the gateway to earning CME (Continuing Medical Education) credits online.

Four two-day “Tips for Trainers” courses were offered in 2004 to close to 80 young and promising faculty members in the UK, the Netherlands, Italy, and Switzerland. More such courses are planned for the future, including other countries and languages as the request is steadily rising.

New references for the bookshelf
AO Publishing launched three new books. The “AO Manual—Hand and Wrist” by Jesse Jupiter and David Ring is a new concept of presenting educational content in case-related, step-by-step procedures in a very image-oriented way, combined with videos and animations on a DVD-ROM.

The textbook on “AO Principles of Teaching and Learning” by Piet de Boer and Joseph Green is a unique guide to improve teaching performance of AO surgeons and ORP faculty.

The pocket-sized handbook on “Musculoskeletal Outcomes Measures and Instruments” by Michael Suk, Beate Hanson, Daniel Norvell, and David Helfet is an interdisciplinary coproduction with AO Clinical Investigation and Documentation (AOCID) and has attracted much attention. It presents the most comprehensive overview of musculoskeletal outcomes measures and instruments.

Advancing regionalization
The two successful Alumni symposia held in the Dominican Republic and Thailand highlighted the importance of the geographical and cultural regions, which are gaining importance and confidence. To further strengthen the concept of regionalization, AOI organized combined AO courses (advanced, principles, spine, CMF, and ORP) in Porto Roz, Slovenia, for the former Eastern European countries and in Dubai for the Middle East including Egypt. More such combined regional parallel courses are planned for the future.

As a common language is still a problem in many parts of the world, national and regional AO reference clinics in Latin America, Asia, and India have been acknowledged to host AO Fellows from the area, which allows for a better and more personal distribution of AO knowledge and know-how to the next generation of surgeons.

As in previous years, the AO supported delegates to large national and international conferences, including Eurotrauma and DGOOC/DGU. It has also been preparing AO symposia for upcoming events such as the 7th EFOR Congress in Portugal in June 2005. At several regional AO courses and major orthopedic conferences, where the AO was present, AOI had a booth to offer information about AO courses, AO Fellowships, the AO Alumni Association (AOA), AO journals, books, and eLearning.
AO Fellowships: a window to the world

In 2004, AO International (AOI) provided 240 fellowships to surgeons and operating room personnel (ORP) from around the world, while at the same time expanding the list of AO host clinics to embrace more hospitals in Brazil, Colombia, Chile, and Mexico. Navid M. Ziran, University of Rochester, New York, reports on his AO Fellowship experience in Colombia, South America.

“I spent approximately one month in Bogotá, Colombia, as part of an AO Fellowship. During that time, I worked in two hospitals: the Fundación de Santa Fe and the Hospital de San Jose. The Fundación de Santa Fe is a private hospital with an orthopedic surgery residency program.

While at Santa Fe, I spent time in both the clinic with Dr. Rodrigo Pesantez and in the operating room. I had the opportunity to participate in surgeries in hand, foot, sports, and trauma: ACL (Anterior Cruciate Ligament) reconstructions, shoulder arthroscopy, rotator cuff repair, femoral nails, acetabulum fractures, brachial plexus repair, forearm fracture repair, and several others. I worked with numerous attendings from different specialties and learned several different techniques that are not done at my home institution.

I attended journal club and grand rounds every week, where articles were discussed and cases presented. I also went on a tour of the bone bank at Santa Fe, spent an afternoon at AO Latin America, and visited the military hospital.

The Hospital de San Jose is a public hospital situated more centrally in Bogotá. The volume of trauma is significantly higher at San Jose with trauma cases being performed daily. I spent my time in both the clinic and the operating room. I assisted in numerous cases including total hip replacements, tibial intramedullary nails, proximal humerus fractures, and femoral head fractures to name a few.

To summarize, my experience in Bogotá, Colombia, was outstanding both personally and professionally. More important than the cases I observed and the different techniques I learned were the individuals that I met. Dr. Rodrigo Pesantez was not only an excellent teacher but a role model in both his professional and personal life. The residents at both hospitals were extremely hospitable. I established numerous relationships while in Bogotá that I plan to maintain throughout my career.

In conclusion, my AO Fellowship in Colombia was the pinnacle of my orthopedic residency to date, and I would recommend that all residents travel to other countries not only to broaden their knowledge but also to establish new relations with others in the international orthopedic community.

I plan on furthering my relationship with the AO community as much as possible in the future.”

The AO Fellowship
The AO offers fellowships for surgeons and operating room personnel (ORP) in more than 100 hospitals around the world. An AO Fellowship gives the practicing surgeon and ORP the opportunity to enhance their professional know-how in an international environment during a typically 4-to-8-week stay.

Since the inception of the AO Fellowship program in 1971, a total of about 5,000 fellows have been sponsored. Many of these former AO Fellows have become leading orthopedic surgeons in their home countries. For more information or to download the application form, go to www.aofoundation.org/fellowships.
Research for improved patient care

The AO Research Board streamlines and coordinates the research activities within the AO. As part of this effort, the AO Research Institute (ARI) focuses its activities in the areas of bone, cartilage, and disc research and continues to expand its international partner network.

The AO Research Institute (ARI) performs its research within four programs. Biomaterials & Tissue Engineering and Mechano-Biology involve basic research addressing the issues identified by the Academic Council in order to meet the defined mid and long-term goals. The research in Bio-Performance is more applied, and addresses general aspects of implant and tissue interactions, while Contract Research & Support maintains many of the most advanced research methods and applies them to projects both within and outside the AO community.

Biomaterials & Tissue Engineering
The goals are to address cortical and cancellous bone defects using resorbable scaffolds and to gain understanding of the problems associated with cartilage repair in a tissue-engineering approach. The Polymer Research Group is synthesizing novel biodegradable polyurethanes (PUs) for cancellous bone regeneration. In a nude mice test, porous scaffolds produced from PUs induced the formation of significant amounts of bone already at five weeks post implantation, indicating a great potential of this material. With the Rush University Medical Center, Chicago, the Biochemistry & Cell Biology Group has developed a bioreactor which reproduces the motion and load characteristics of articular joints to stimulate cartilage tissue-engineered constructs. The idea that complex motion trajectories as they occur in vivo in the joint are especially beneficial for the function of articular cartilages has resulted in a patent.

Mechano-Biology
This program focuses on exploring mechanical, chemical, and biological technologies for better implant anchorage in osteoporotic bone; identifying basic mechanisms and implications of intervertebral disc degeneration to develop long-term functional treatments; and elucidating regulation mechanisms in fracture repair to overcome complications of healing. In cooperation with the Robert Mathys Foundation, Bettlach, and the Inselspital, Bern, the Fracture Fixation in Osteoporotic Bone Group developed a new, softer polymethyl-methacrylate bone cement for vertebroplasty. The Tissue Biomechanics and the Biochemistry & Cell Biology Groups cooperate on projects concerning the intervertebral disc, and work with the AOSpine Research Centers to find solutions for the degenerated disc. Here, a system to maintain disc explants (with endplates) in vitro was developed to study the degenerative process as well as to evaluate possible treatments.

Bio-Performance
This program investigates implant surface modifications in order to control soft-tissue adhesion, osteointegration, or implant infection resistance. In order to understand tendon adhesion to implant surfaces, the “standard” finishes of stainless steel, “commercially pure” titanium, and titanium aluminum niobium alloy (TAN), which vary considerably in surface microtopography, were compared. This research demonstrated that TAN topography is the cause of cell proliferation difficulties and that material topography is extremely important in implant-tissue integration.

Contract Research & Support
Skills, experience, and knowledge are provided by this program to assist researchers in a modular manner starting with project

1 Leading international spine surgeons at an MIS workshop in Davos.
2 A fibroblast culture on electropolished TAN, triple-labeled for Actin, DNA, and Fibronectin.
3 Comparative in vitro testing of three implants for distal humerus fracture fixation in a custom-made loading setup.
4 Rat bone marrow mesenchymal progenitor cells are harvested for intervertebral disc tissue engineering experiments.
5 Porous 3-D polyurethane scaffolds for bone substitutes (left) and its porous structure (right).
design and ending with data analysis and publication. The main partners for collaborative projects are the different ARI groups, the AO Development Institute (ADI), the AO clinicians, Synthes, Inc., and external institutions. Services provided include surgery, animal care, mechanical testing, finite element analysis, computed tomography analysis, statistics, library service, machine shop, and general laboratory support.

**AO Collaborative Research Centers**

The Collaborative Research Centers have been established to add expertise within the AO focus fields, to complement the ARI and enhance the AO network by partnering with prominent universities and research institutions. Currently, four such institutions exist.

The Institute for Surgical Technology and Biomechanics is part of the MEM Research Center for Orthopedic Surgery at the University of Bern, Switzerland. Under the direction of Lutz Nolte and Stephen Ferguson, it addresses the performance of mechanical disc prostheses, the noninvasive in vivo determination of spinal motion, the implications of nutrition for disc degeneration and regeneration, and the development of smart surgical instrumentation.

Under the direction of Georg Duda, the influence of loading on the clinical course of healing and bone adaptation is investigated at the Musculoskeletal Research Center at the Charité, University Medicine, which is part of the Free and Humboldt University, Berlin. Their aim is to elucidate optimal designs of fixation systems and fracture treatments.

The Institute of Biomechanics is part of the School of Mechanical, Materials, and Manufacturing Engineering at the University of Nottingham, UK. Under the direction of Donal McNally, the focus is on tissue and organ mechanics, in particular the study of failure mechanics of tissues under high loading rates, the study of the function of the spine in normal, disease, and injury conditions, and general biomechanics such as tendon repair and bone anchor strength.

The Hand and Upper Extremity Service is part of the Harvard Medical School at the Massachusetts General Hospital in Boston, USA. Under the direction of Jesse Jupiter, an international training center for fellows was established and research is carried out in the area of scaphoid fractures, distal radius fractures, and fractures in older patients.

### Distinctive achievement recognized

The AO Research Institute’s efforts in 2004 were acknowledged by high-ranking scientific awards and academic recognition of several individuals.

Among them is R. Geoff Richards, who won the prestigious 2004 Jean Leray Award from the European Society for Biomaterials. This award is given to a researcher under the age of 40 who has demonstrated distinctive achievement and insight into biomaterials research.

Lorin Benneker received the Spine Journal Young Investigator Award 2004 for his paper "Vertebral endplate marrow contact channel occlusions and intervertebral disc degeneration." This research was conducted in the ARI under the guidance of Keita Ito and Mauro Alini and in collaboration with Paul Heini and Suzanne Anderson at the Inselspital, University of Bern.
Promoting excellence in research

The AO Research Fund (AORF), whose primary task is to provide seed money to individual researchers and research groups, supported 56 new projects in 2004.

2004 was another year of increasing demand for research funding. Applications were welcomed for research in the areas of osteosynthesis in osteoporotic bone, minimally invasive surgery (MIS), computer-assisted surgery (CAS) of the locomotor system, treatment of defects (bone substitute, inducers, etc.), locked screw fixation implants, non-metallic implant materials, and clinical outcome.

The independent AO Research Fund Board reviewed 114 applications requesting support of over CHF 9.3 million. 56 projects were approved with a total funding of CHF 2.6 million, resulting in an approval rate of 28%. The AORF is currently supporting 96 ongoing studies.

The deadlines for research grant applications in 2005 are March 15 and August 15. Guidelines and the application form may be obtained from the AO Research Fund office or from the AO website at www.aofoundation.org/aorf.

Reorganization

In 2004, the AORF Board started a reorganization process in order to deal with the increasing number of applications and studies more efficiently and to better oversee the results of the individual projects. In the near future, two thirds of funds will continue to be allocated chiefly to seed money applications, while one third will be made available for larger projects often carried out by more experienced research groups. To encourage excellence in research, a prize will be established for the best project completed each year.

The Board greatly appreciates the considerable effort that applicants put into their proposals. It has established new methods for assessing and deciding on applications, which will guarantee that all are given the consideration they deserve. The Board will provide feedback to those applicants who are unsuccessful, with the aim of helping them develop their skills to successfully apply for research grants.

New chairman elected: Otmar Trentz (left), who had chaired the AO Research Fund since 1998 with great expertise, integrity, and loyalty, retired from the AO Research Fund Board in October 2004. Christiaan van der Werken (middle) kindly assumed interim responsibility. With Adrian Sugar (right), the Board now has a worthy successor. Adrian Sugar is a consultant in cleft and maxillofacial surgery at Morriston Hospital in Swansea, UK, and a senior clinical lecturer to the University of Wales Swansea. His main research interests are in facial trauma and deformity.
Advancing development through collaboration

Focusing on one major core competence—fracture fixation in osteoporotic bone—and extending the number of active collaborations were the key topics for the AO Development Institute (ADI) in 2004.

In 2004, the AO Development Institute (ADI) focused on fracture fixation in osteoporotic bone as a core competence, in addition to providing support in other areas. In this context, the Concept Development Group has run a project for the past 18 months with the goal of defining standardized augmentation techniques for application in different anatomical regions. It seeks to improve implant fixation in osteoporotic bone by combining the implant with bone cements or other bone-substitute materials. In 2004, the scope of the project was broadened and the number of partners was substantially increased. Several university hospitals are already involved in order to ensure a high level of clinical relevance.

The best partners in each subfield
In order to decide on the most appropriate fixation technique, the mechanical properties of the bone at the fracture site need to be determined before implant insertion. In the field of diagnostics, therefore, radiological and mechanical tools are developed and evaluated for their capability to quantify local bone quality. These studies are performed in close collaboration with the trauma department of Innsbruck University Hospital and the University for Medical Informatics and Technology (UMIT).

With respect to implant systems, design changes are required in order to apply standard implants in combination with the augmentation technique. In 2004, the main focus was on the DHS (Dynamic Hip Screw) implant system, involving close collaboration with Synthes, Inc.

Extensive testing is required in order to implement an augmentation technique that guarantees optimal distribution of bone cement around the implant. Several test models were designed and evaluated in 2004 for their capability to simulate osteoporotic bone. This task is competently supported by the AO Research Institute (ARI).

Clinicians from Heidelberg University Hospital and Basel University Hospital became actively involved in development and testing of the augmentation technique.

Database of CT scans
Within the scope of the CT Database project, the Development Institute partnered with BrainLAB to create improved bone templates. The combined access to the data sets and to the segmentation know-how of the CT Database project group is of special interest for BrainLAB. Combined with BrainLAB’s resources and experience in computer-assisted navigation, it will be possible to build improved navigation technology applications for trauma surgery.

The overall number of bone models enclosed in the database exceeded 400, and routine delivery of converted data was begun. During 2004, ADI delivered a total of 84 converted data sets of eight different bones to various development groups.

Outstanding achievement recognized
For his manifold contributions in implant and instrument developments, Romano Matthys, Switzerland, was awarded the TK Certificate of Merit.
Growing impact of AOCID clinical studies

AO Clinical Investigation and Documentation (AOCID) made progress in all its core activities in the year 2004. It consolidated and expanded the existing research network, initiated new clinical studies addressing forward-looking issues, and extended the training sessions for evidence-based orthopedic surgery (EBOS).

In 2004, AO Clinical Investigation and Documentation (AOCID) concentrated on converting the aims, as defined in the strategy process, into reality. This included the advancement and expansion of the AO network, the continued development of the core activity “clinical studies,” and the anticipation of demographic and economic changes. The main focus here was on identifying priority changes with regard to clinical questions and the expansion of the network, especially in North America, with the main impetus coming from the New York branch office.

Cost-benefit analysis high on the agenda

In addition to supervising 23 ongoing studies, AOCID completed one prospective randomized study and initiated six new multicenter studies. Recently initiated studies are an indication of the possible directions that traumatology research may take in the future. These include two prospective studies on the application of bone substitutes and a study on the application of computer-assisted surgery (CAS) software for traumatologists.

In the light of emerging demographic changes and limited personnel and material resources in the healthcare sector, cost-benefit analysis is indispensable, and has been a major component of all studies initiated by AOCID since early 2004. A cost-benefit analysis of different treatment procedures is the main focus of the novel AOCID project, set up in 2003, in collaboration with the Chilean Health Care Organization. This is the first study of its type in Latin America. 2004 saw the completion of data collection and publication of the findings can be expected in 2005.

At the service of surgeons and patients

Demand for services continued to rise in 2004, with inquiries coming from surgeons all over the world, the majority requiring methodological support for evaluating clinical data. The “Services” section offers valuable support to partners in the realization of evidence-based orthopedic surgery (EBOS) in their routine clinical work, and its relevance has been increasing steadily over the past three years. As a continuation of this trend is foreseeable, AOCID has made a strategic decision to expand this section, and so offer clinicians more broad-based professional support that is scientifically sound.

Evidence-based orthopedic surgery

Following the successful integration of training sessions for EBOS at the Davos Courses in 2003, AOCID again presented various events in 2004 in close collaboration with the AO Research Institute (ARI). The number of participants more than doubled. An indication of the growing relevance of this subject is the unanimously positive feedback, and the success of the training sessions for the AO Alumni in Asia and Latin America and for the Scientific Committee of AOSpine North America.

AOCID mission

The main responsibility of AOCID, as part of the AO, is to implement clinically relevant studies for the benefit of the patients. In this endeavor, it focuses on testing implants for fracture treatment and demonstrating advantages or disadvantages in comparison to alternative treatment procedures.
In collaboration with AO Publishing, AOCID published the manual entitled "Musculoskeletal Outcomes Measures and Instruments", with the aim of supporting clinicians in their decision-making processes by providing scientifically sound data. This volume summarizes the scores and measurement methods most frequently employed in clinics and presents them in a meaningful way; it includes an evaluation of their scientific value with regard to clinical research. The manual gives surgeons the tools to evaluate scientific publications and plan their own research projects.

**AO Classification Task Force**

The projects of the AO Classification Task Force (CTF) play a significant role in the activities of AOCID. In 2004, a new project was initiated for the classification of scapula fractures, together with the Orthopaedic Trauma Association (OTA). This joint research project represents a further step to strengthening and expanding collaboration with North American surgeons on a scientific basis—for the benefit of patients worldwide.

AOCID’s new focus on incorporating cost-benefit analysis and realizing EBOS will gain in importance in the future with the emergence of new clinically relevant issues.

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of clinics</th>
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<tr>
<td>Australia</td>
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<tr>
<td>Austria</td>
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<tr>
<td>Belgium</td>
<td>3</td>
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<tr>
<td>Canada</td>
<td>2</td>
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<tr>
<td>China</td>
<td>10</td>
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<tr>
<td>Finland</td>
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<tr>
<td>France</td>
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<td>Germany</td>
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<td>Hungary</td>
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<td>Italy</td>
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<tr>
<td>Mexico</td>
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<tr>
<td>Norway</td>
<td>1</td>
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<tr>
<td>Netherlands</td>
<td>8</td>
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<td>Singapore</td>
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<td>South Africa</td>
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<td>Sweden</td>
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<td>Switzerland</td>
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<td>Taiwan</td>
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<td>UK</td>
<td>6</td>
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<tr>
<td>USA</td>
<td>10</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>159</strong></td>
</tr>
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</table>
TK-System: safeguarding AO standards

The TK-System has intensified regional involvement of surgeons and put the three specialties General Trauma, Spine, and CMF onto a more autonomous footing while maintaining coordination between them.

The TK-System handles development and clinical testing and provides the educational material for new instruments and implants.

To better respond to the different needs of the Spine and CMF specialties, the TK-System has been reorganized into 16 specialty Expert Groups, which report to three Technical Commissions (AOTKs). After establishment of the AOSpine TK in 2003, an AOTK CMF was approved in early 2005 by the AOVA. The “old” AOTK is responsible for the Expert Groups in General Trauma. The AOTKs are dominated by surgeons, which serves to safeguard AO standards. The new TK Executive Board above these autonomous but interacting bodies ensures common standards, communication, and a joint strategic approach in overlapping areas.

New treatment options

As the only bodies within the AO Foundation empowered to approve new devices and technologies sold under the Synthes trademark, the AOTKs approved 26 new products for spine, 29 for trauma, 18 for CMF, and one for veterinary surgery during 2004.

Regional involvement intensified

Representation from Latin America and Asia in the groups of the TK-System has proliferated. Regional exchange meetings with AO East Asia and AO Latin America, as well the First Transatlantic LCP (Locking Compression Plate) Meeting were important highlights. Overall, about 100 surgeons are providing medical guidance to over 250 development projects.

Efforts in the field of biomaterials have been intensified. Together with Synthes, Inc., coated nails, bone substitution materials, and bioreabsorable materials are now being tested. In collaboration with the AO Research Institute and external researchers, an initiative in the area of antiseptics and prevention of infections has been launched.

The increased autonomy of the specialties, the increased involvement of medical members from Asia and Latin America, and cooperation with a now global Synthes, Inc. strengthen the innovative potential of the TK-System. Additional efforts will be undertaken to incorporate more surgeons, intensify contacts to the AO Alumni, and step up synergetic collaborations in the field of biomaterials.

TK Executive Board

<table>
<thead>
<tr>
<th>AOSTK Trauma</th>
<th>Upper Extremity EG</th>
<th>Pediatric EG</th>
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</thead>
<tbody>
<tr>
<td>Lower Extremity EG</td>
<td>Knee EG</td>
<td>Hand EG</td>
</tr>
<tr>
<td>Pelvic EG</td>
<td>Foot &amp; Ankle EG</td>
<td>Veterinary EG</td>
</tr>
<tr>
<td>Foot &amp; Ankle EG</td>
<td>MIS Working Group</td>
<td>Orthopedic Foot Task Force</td>
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<tr>
<td>Veterinary EG</td>
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AOSTK CMF

<table>
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<tr>
<th>Mandible EG</th>
<th>Craniofacial EG</th>
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</thead>
<tbody>
<tr>
<td>Comprehensive EG</td>
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</tbody>
</table>

Exceptional achievement recognized

Stephan Perren was awarded the AO Prize for his lifetime achievements and exceptional contributions to the development of new concepts, technologies, and treatment options.

Emanuel Gautier, Switzerland, and Michael Schütz, Australia, were honored with the AO Recognition Prize for their outstanding contribution to the development and implementation of new concepts, implants, and instruments.

1 Meeting in New York with the chairmen of the three new AOTKs: Norbert Haas (Trauma; fourth from left, back row), Paul Pavlov (Spine; second from left, back row), and Ed Ellis (CMF, middle, front row).

2 Emanuel Gautier (middle) and Michael Schütz (right) are honored with the AO Recognition Prize.
Corporate development and finance

From 1985 to 2004, the AO Foundation spent some CHF 569 million supporting the various AO institutions and promoting the AO. Total expenditure since 1960 has reached almost CHF 630 million.

In 2004, the AO Foundation spent a total of CHF 58.6 million, of which 23% was contributed to research, 9% to development, 21% to education, and 13% to AOSpine. Regional activities were supported with 14% of total allocations, the AO Center with 6%, quality assurance with 7%, and Foundation and Trustees activities with 7%.

From a functional point of view, 32% was spent on personnel costs, 61% on operating costs, and 7% on investments. In addition, an important allocation of CHF 6.2 million could be made to the reserve pool.

In 2004, the AO Foundation placed particular emphasis on biotechnology, spine, knowledge services, IT projects, and community communication.

Funding
With the merger of Synthes-Stratec and Mathys to a “global Synthes,” the AO Foundation has now a single worldwide operating industrial partner. About 54% of the royalties were generated in North America, 29% in Europe, 12% in Asia, and 5% in other regions.

In addition to the direct funding of the AO Foundation, external funding totaling CHF 2 million was obtained in 2004. The Landschaft Davos, the Canton of Grisons, and others also supported the AO’s activities.

AO as an employer
At year-end, the AO Foundation employed 191 people, as compared to 186 in the previous year. This represents an increase of 3% over 2003. Within the AO Center, four apprenticeships could be offered to young people.
Governing bodies of the AO Foundation
(as per December 31, 2004)

Board of Trustees
The Board of Trustees is the “AO parliament,” consisting of 90 leading surgeons from around the world. The Trustees approve amendments to the charter and elect the members of the Academic Council (AcC). They function as ambassadors of the AO in their country or region and communicate the AO philosophy. They transmit AO information to national institutions and other AO surgeons and bring feedback regarding special needs into the AO. Since each Trustee serves for a limited number of years, constant rejuvenation of the Board is guaranteed.

Board of Directors (AOVA)
The Board of Directors implements the goals and proposals of the Academic Council. Its 11 members include three representatives of the licensed manufacturer of Synthes products.

Markus Rauh, Chairman **
James Kellam, President of the AO Foundation
Christiaan van der Werken, President-Elect
Roland Brönnimann, Synthes, Inc.
James Gerry, Synthes, Inc.
Eric Johnson
Paul Manson
Bruno Noesberger
Tim Pohlemann
Jaime Quintero
Ciro Römer, Synthes, Inc.
Gregor Strasser, CEO of the AO Foundation*
Urs Jann (Advisory Member)*
Urs Weber (Minutes)*

* non-voting members
** casting vote
**Academic Council (AcC)**

The Academic Council lays down the AO Foundation’s basic medical and scientific goals. Elected by the Board of Trustees, it has 17 members and is supported by four specialized steering boards and other ex-officio members.

James Kellam, President of the AO Foundation  
René Marti, Past President of the AO Foundation  
Christiaan van der Werken, President-Elect  
Max Aebi, AOSpine  
Brian Alpert, AO CMF  
Jörg Auer, AO Vet  
Norbert Haas, Chairman TK-System  
Beate Hanson, Director AOCID  
David Helfet, Chairman AO Documentation & Publishing Board  
Jesse Jupiter, Chairman AO Education Board  
Lutz Noile  
Antonio Pace, President AOAA**  
Cléber Paccola  
Markus Rauh, Chairman AOVa  
Pietro Regazzoni, Chairman AO Development Board  
Thomas Rüedi, President AOI  
Erich Schneider, Director ARI  
Norbert Südkamp, Chairman AO Research Board  
Norbert Suhm, Head of ADI **  
Peter Trafton  
Michael Wagner  
Gregor Strasser, CEO of the AO Foundation*  
Urs Jann (Minutes)*  

* non-voting members  
** not present in picture

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**AO Executive Management (AOEM)**

Gregor Strasser, CEO of the AO Foundation  
Heike Grahlow, Head of Communications  
Beate Hanson, Director AOCID  
Urs Jann, Director Finance & Administration  
Michael Piccirillo, Director AOSpine  
Thomas Rüedi, President AOI  
Erich Schneider, Director ARI  
Philip Schreiterer, Head of TK-System  
Norbert Suhm, Head of ADI
# Abbreviations

## Organizational terms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AODI</td>
<td>AO Development Institute</td>
</tr>
<tr>
<td>AOA</td>
<td>AO Austria (section)</td>
</tr>
<tr>
<td>AOA</td>
<td>AO Alumni Association</td>
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<tr>
<td>AOCH</td>
<td>AO Switzerland (section)</td>
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<tr>
<td>AOCID</td>
<td>AO Clinical Investigation and Documentation</td>
</tr>
<tr>
<td>AOEA</td>
<td>AO East Asia (region)</td>
</tr>
<tr>
<td>AOE</td>
<td>AO Executive Management</td>
</tr>
<tr>
<td>AOI</td>
<td>AO International</td>
</tr>
<tr>
<td>AOLAT</td>
<td>AO Latin America (region)</td>
</tr>
<tr>
<td>AONA</td>
<td>AO North America (region)</td>
</tr>
<tr>
<td>AORF</td>
<td>AO Research Fund</td>
</tr>
<tr>
<td>AOTK</td>
<td>AO Technical Commission</td>
</tr>
<tr>
<td>AOUK</td>
<td>AO United Kingdom (section)</td>
</tr>
<tr>
<td>AOOA</td>
<td>Board of Directors (from the German &quot;Verwaltungsausschuss&quot;)</td>
</tr>
<tr>
<td>AROF</td>
<td>AO Research Institute</td>
</tr>
<tr>
<td>ASIF</td>
<td>Association for the Study of Internal Fixation (cf. AO)</td>
</tr>
<tr>
<td>BAB</td>
<td>Biotechnology Advisory Board</td>
</tr>
<tr>
<td>CTF</td>
<td>Classification Task Force</td>
</tr>
<tr>
<td>DAO</td>
<td>AO Germany (section)</td>
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<tr>
<td>EG</td>
<td>Expert Group, within the TK-System</td>
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## Technical terms

<table>
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<th>Description</th>
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<tr>
<td>CAOS</td>
<td>Computer-aided orthopedic surgery</td>
</tr>
<tr>
<td>CAS</td>
<td>Computer-assisted surgery</td>
</tr>
<tr>
<td>CMF</td>
<td>Craniomaxillofacial</td>
</tr>
<tr>
<td>CT</td>
<td>Computed tomography</td>
</tr>
<tr>
<td>DHS</td>
<td>Dynamic Hip Screw</td>
</tr>
<tr>
<td>DCP</td>
<td>Dynamic Compression Plate</td>
</tr>
<tr>
<td>EBOS</td>
<td>Evidence-based orthopedic surgery</td>
</tr>
<tr>
<td>EBSS</td>
<td>Evidence-based spine surgery</td>
</tr>
<tr>
<td>LCO</td>
<td>Low-Contact Dynamic Compression Plate</td>
</tr>
<tr>
<td>LCP</td>
<td>Locking Compression Plate</td>
</tr>
<tr>
<td>MIS</td>
<td>Minimally invasive surgery</td>
</tr>
<tr>
<td>ORIF</td>
<td>Open Reduction and Internal Fixation</td>
</tr>
<tr>
<td>ORP</td>
<td>Operating room personnel</td>
</tr>
</tbody>
</table>
## Addresses

### AO head office

| AO Foundation | Clavadelerstrasse  
|               | CH-7270 Davos Platz  
|               | Switzerland  
| Phone         | +41 (0)81 414-2801  
| Fax           | +41 (0)81 414-2280  
| E-mail        | foundation@aofoundation.org  
| Web           | www.aofoundation.org  

### AO Austria (AOA)

- **Prof. Dr. Michael Wagner**  
- Head of the Department of Traumatology  
- Wilhelminenspital  
- Montleartstrasse 37  
- A-1160 Vienna  
- Austria  
- Phone: +43 149 150-4301  
- Fax: +43 149 150-4309  
- E-mail: michael.wagner@unf.wil.magwien.gv.at

### AO East Asia (AOEA)

- **P.O. Box 53**  
- Laksi  
- Donmuang  
- Bangkok 102 10  
- Thailand  
- E-mail: aoea@access.inet.co.th

### AO Germany (DAO)

- **Prof. Dr. Hans-Jörg Oestern**  
- Direktor der Klinik für Unfall- und Wiederherstellungschirurgie  
- Allgemeines Krankenhaus  
- Siemensplatz 4  
- D-29223 Celle  
- Germany  
- Phone: +49 5141 72 1100 or 1101  
- Fax: +49 5141 72 1109  
- E-mail: hans-joerg.oestern@akh-celle.de  
- Web: www.ao-deutschland.de

### AO Latin America (AOLAT)

- **Calle 134 No. 13-83 Of. 809**  
- Bogotá  
- Colombia  
- Phone: +57 1 520 09 20  
- E-mail: aolat@cable.net.co  
- Web: www.aolat.org

### AO North America (AONA)

- **P.O. Box 308**  
- Devon, PA 19333-0308  
- U.S.A  
- Phone: +1 (610) 251-9007  
- Fax: +1 (610) 251-9059  
- E-mail: elissa@aona.org  
- Web: www.aona.org

### AO Spain (AOE)

- **Victor Manuel Alvarez Fernandez MD**  
- Dept. of Orthopaedic Surgery & Traumatology  
- Hospital de Jove  
- Avda. Eduardo Castro  
- E-33290 Gijón  
- Phone: +34 985 32 0308  
- Fax: +34 985 31 5710  
- E-mail: traumatologia@hospitaldejove.com  
- Web: www.aoke.org

### AO Switzerland (AOCCH)

- **Clavadelerstrasse**  
- CH-7270 Davos Platz  
- Switzerland  
- Phone: +41 (0)81 414-2700  
- Fax: +41 (0)81 414-2284  
- E-mail: claudio.gubser@aofoundation.org

### AO UK (AOUK)

- **Mr. Anthony Cross**  
- Consultant Orthopedic Surgeon  
- Sunderland District  
- General Hospital  
- Kayll Road  
- GB-Sunderland  
- Phone: +44 1388 816 520  
- Fax: +44 1388 816 529  
- E-mail: atx.ortho@onxynet.co.uk  
- Web: www.aouk.org

### Alumni

| AO Alumni Association (AOAA) | Clavadelerstrasse  
|                             | CH-7270 Davos Platz  
|                             | Switzerland  
| Phone                       | +41 (0)81 414-2690  
| Fax                         | +41 (0)81 414-2283  
| E-mail                      | alumni@aofoundation.org  
| Web                         | www.aofoundation.org/aoi/alumni

AO International