Multiple Roles and Excellence Strategies of the Austrian Academy of Sciences

Uwe Sleytr and Peter Schuster

ALLEA and the European Research Area

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THE AUSTRIAN ACADEMY OF SCIENCES

1. A learned society
2. An organization promoting young scientists
3. A research performing institution
The Austrian Academy of Sciences (AAS)

- Founded in 1847
- Autonomous status: legal entity under public law, "under the special protection of the Federal Republic of Austria"
- "Its mission is to promote the sciences and humanities in every respect and in every field, particularly in basic research."

- 3 major activities:
  - A learned society
  - An organisation promoting young scientists
  - An organisation performing research: 66 research facilities, 33 institutes, approx. 1,300 employees in research and administration
The Austrian Academy of Sciences as a learned society

<table>
<thead>
<tr>
<th></th>
<th>sciences</th>
<th>humanities</th>
<th>total</th>
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<tbody>
<tr>
<td>full members</td>
<td>84</td>
<td>78</td>
<td>162</td>
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<tr>
<td>corr. members, Austrian</td>
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<td>73</td>
<td>152</td>
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<tr>
<td>corr. members, foreign</td>
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<td>142</td>
<td>299</td>
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<td>honorary members</td>
<td>9</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>total</td>
<td>329</td>
<td>299</td>
<td>628</td>
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Young Academy (founded 2006) 70 members (currently 38) members elected for eight years, age below 45
The Austrian Academy of Sciences as an agency promoting young scientists

Seven scholarship programs for doctoral students and post-docs ...

... among them DOCfFORTE and L‘Oreal Scholarships being special programs supporting women in science
Scholarship budget within the last ten years
The Austrian Academy of Sciences as a research institution

1100 scientists and technicians doing research in 33 institutes and 8 centers

- Historical aspects
- A few highlights in the last few years
1910 ... the Institute for Radium Research becomes the first research institute of the AAS

Private sponsor: Dr. Karl Kupelwieser
The Institute for Radium Research became an Austrian success story ...

... two Nobel prizes

George de Hevesy

Victor Franz Heß
Two phases of expansion of the ÖAW
Funding within the last ten years
Research units and head count within the last ten years
Research at the AAS today

- **Autonomous**: oriented towards basic research – flexible
- **Heterogeneous**: covering diverse research fields and missions

- Initiatives for new trend-setting research areas
- Complementary research activities (with regard to Austrian universities)

- Strengthening already existing excellence
- Room for long-term research

- Ensuring excellence based upon quality assessment and evaluation
Each institute or center

- has its own international science advisory board,
- provides a research plan for five years, and
- is evaluated by an external committee every five years.

The Academy has an international research board that

- gives advice to the presiding committee in research matters,
- nominates the heads of evaluation committees, who in turn nominate all other committee members.
| Institute for Biomedical Aging Research | Founded 1992 |
| Institute for Molecular Biotechnology GmbH | Founded 1999 |
| Research Center for Molecular Medicine | Founded 2000 |
| Gregor Mendel-Institute for Molecular Plant Biology | Founded 2000 |
| Johann Radon-Institute for Computational and Applied Mathematics | Founded 2003 |
| Institute for Quantum Optics and Quantum Information | Founded 2003 |
| Institute for Studies of Iranian Culture | Founded 2003 |
| Institute for Demography | Enlarged 2003 |
Institute for Quantum Optics and Quantum Information

Innsbruck:  
R. Blatt,  
H. Briegel,  
R. Grimm and  
P. Zoller

Wien:  
A. Zeilinger

Founded by the AAS in 2003
Ultracold atoms

investigation of novel states of matter at very low temperatures:

„quantum gases“
A light touch
Purifying entangled photons

Water
The world’s forgotten crisis

AIDS virus
Protected by a sugar shield?

Drug discovery
Target practice

Quantum teleportation with atoms

Oil exploitation
Getting every last drop

Visual orientation
Where the bee looks

Water on Mars
The Utah connection
Gregor Mendel-Institute for Molecular Plant Biology

Analysis of defective genes of the 'model plant' *Arabidopsis thaliana* for the exploration of gene and genome function

Founded by the AAS in 2000
two A1-genes yield the red color of the flower

three A1-genes: expression of A1-genes is unstable

The discovery by Marjori and Antonius Matzke was a basis for the Nobel Prize on RNA interference in 2006
Institute for Space Research of the AAS

construction of high precision instruments for space missions

the first atomic force microscope in space

a miniature microphone to measure weathering and storms on the Saturn moon Titan
Eight research groups with group leaders from five Austrian universities

60 scientific coworkers from 15 different countries, about 50% on project money

Organization of special semesters with guests from all over the world on predefined topics in applied mathematics
Design of models and development of algorithms for applications from many different disciplines

- Engine
- Multibody Model
- Numerical Simulation

**Dynamic Simulation**
- Nodal Results
- Vibration & Noise
- Bearing Analysis
charging of ore and coke layers
indirect reduction of ore by CO and H₂
softening / melting of ore starts
direct reduction by FeO dripping over C
removal of liquid iron and slag

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THANK YOU FOR YOUR ATTENTION!