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# Fit for the next century?

**Switzerland – a little country that's big on research. This was the theme of a study published in "Science" magazine at the beginning of 1997, according to which Switzerland ranks among the five top research countries in a total of 15 different fields. So is our country well equipped to remain at the cutting edge in the high-tech field? We take a closer look.**

**G**ood research needs adequate funding. According to the "Science" study, Switzerland ranks third behind Sweden and Japan in the proportion of gross domestic product (GDP) it invests in research and development.

Over the past few years the search for excellence has continued unabated. In 1997 the percentage of GDP spent on research and development was just on 2.7 percent: the same as in 1992. Of this sum, roughly 70 percent or around CHF

7 billion was spent in the private sector, with the remainder taken up at government and cantonal level.

In the private sector it is primarily the pharmaceutical, electrotechnical and machine tool industries that finance the lion's share. For Eckart Gwinner of

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*Stephanie Lahrtz\**

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Hoffman-La Roche's pharmaceutical research team, the advantages of Switzerland continue to be the outstanding standard of university-level education as well as its manageable dimensions. He believes that Switzerland boasts ex-

cellent specialists from whose know-how and international contacts the country continually benefits.

## The productivity factor

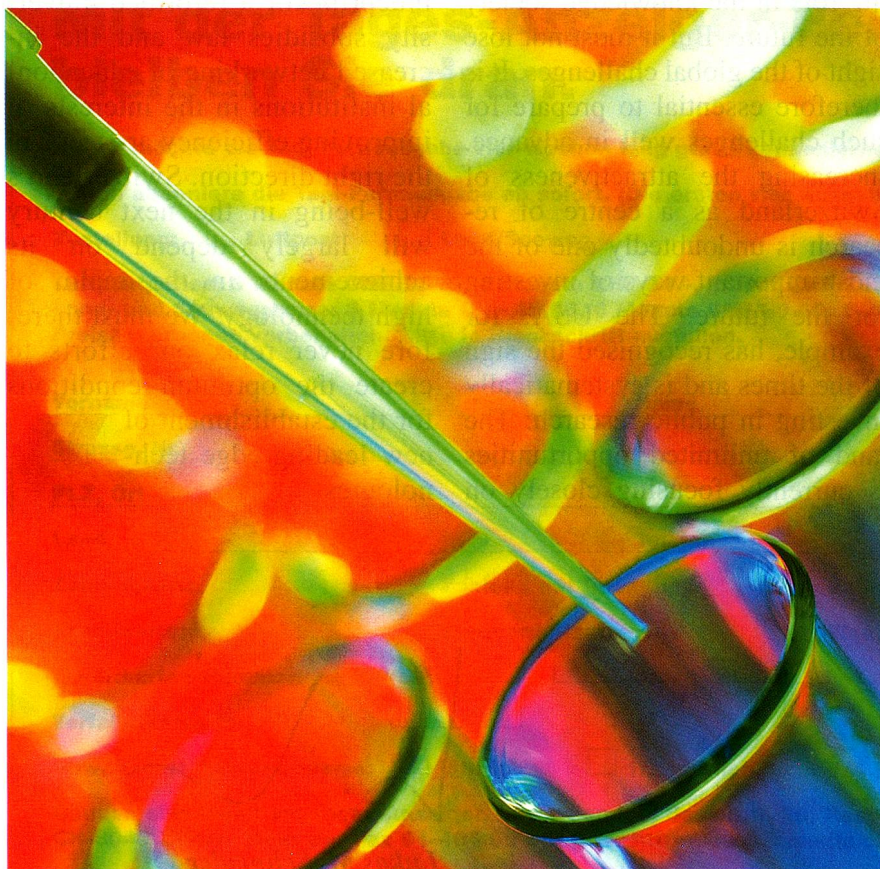
Gwinner also attributes his positive evaluation of Switzerland's status to the high proportion of foreigners engaged in research at Swiss universities and in Swiss industry. This facilitates an ongoing international exchange of knowledge. For instance, in the past decade half of the professors appointed to Lausanne's Federal Institute of Technology (ETH) have been foreigners. For Otto Lanz, Assistant Director of the ABB Corporate Research Centre in Switzerland, the continual promotion of international collaboration is an important prerequisite in the bid to sustain competitiveness. Lanz feels that research and development in Switzerland is still advantageous since the country's above-average productivity outweighs the high level of wages.

One example of how attractive Switzerland still remains as a centre of research is last year's move by Ari Helenius, an internationally renowned expert in molecular biology and virology, from America's elite University of Yale to the Federal Institute of Technology in Zurich (ETHZ). What motivated Helenius was not only the quality of Swiss research in general and of the ETHZ in particular, but also the Institute's willingness to give him free rein in the design of his new workplace. According to Helenius, the flexibility shown by the ETHZ has been sadly missing from Yale in recent years.

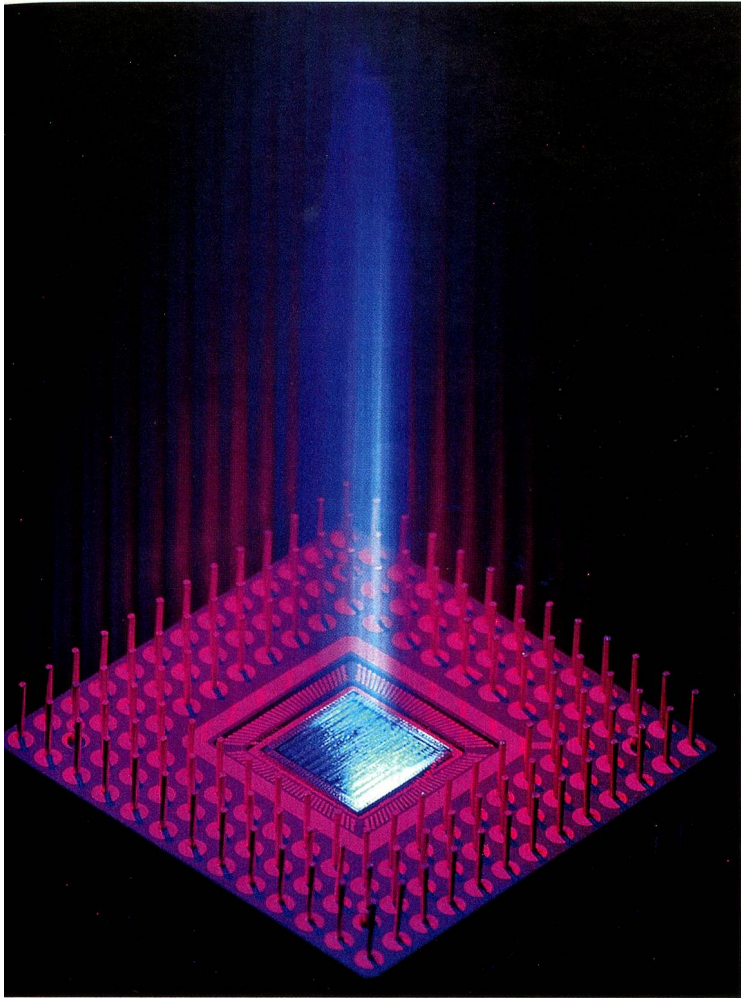
## Promoting excellence

To ensure a good standard of education into the future despite the anticipated increase in student numbers and stagnating funding, an amendment to the university subsidies law is currently under discussion. According to Nivardo

**The chemical industry is one of the traditionally strong pillars of the Swiss economy.**  
(Photo: Keystone)







The microchip industry is one of the most important growth industries. (Photo: Keystone)

Ischi, General Secretary of the Conference of Swiss Universities, the aim is to implement a more flexible and efficient form of financing. Another positive trend in his view is the increased autonomy of universities as well as the planned move to create national competence centres by centralising certain research activities in one location and facilitating inter-university networking.

Nevertheless, as Albert Waldvogel, Vice President of Research at the ETH Zurich, points out, only good research staff are capable of producing good results. Merging research activities on its own is no guarantee of excellence. This is why the ETH aims to continue fostering top-level staff and leading-edge research despite cost-cutting measures, as the example of Helenius shows. According to Waldvogel, promoting the right calibre of expert is much more important than any organisational restructuring.

### Lack of biotechnology companies

In spite of all these positive factors, some large companies have transferred their research operations abroad in recent years. However, a publication by

Pharmainformation, the association of pharmaceutical companies engaged in research, claims that Swiss pharmaceutical companies are still investing between 30 and 77 percent of their funds in research and development in Switzerland. According to Otto Lanz, ABB invests far more proportionally in domestic research operations than elsewhere in its corporate empire. For the pharmaceutical industry, one important reason for transferring research abroad has been the lack of biotechnology firms. In this respect Switzerland is about 20 years behind the USA.

### More risk-taking desirable

This example, coupled with similar situations in the information technology and liquid crystal display segments, shows up Switzerland's weakness in this area, says Thomas von Waldkirch, Head of the Technopark Foundation in Zurich. While a very high standard has been reached in all educational spheres, the resultant ideas are often not translated into practice. Young research scientists exhibit a general aversion to risk and a lack of interest. Added to this is society's reluctance to contemplate failure and a certain distrust of technology by the general populace. To address

this situation, many universities have set up liaison offices with the aim of providing a point of contact for future young entrepreneurs and a way of imparting the necessary knowledge through courses and discussions.

For example, participants at the ETHZ courses for founders of new businesses created more than 250 jobs in over 70 companies. Admittedly this is only a fraction of the volume resulting from comparable campaigns in the USA, but according to Regula Altmann of ETH-Transfer, the survival rate of over 90 percent is much higher.

Elsewhere, too, the targeted promotion of young entrepreneurs has become a key objective. Young companies receive startup assistance from the cantons, the Federal Commission for Technology and Innovation, right up to the Technopark Institute. Von Waldkirch would like to see a greater willingness on the part of financiers to invest their money in projects. He suggests offering tax advantages as an incentive. Moreover, the establishment of small and medium-sized enterprises (SMEs) in the high-tech area is an important prerequisite in the bid to maintain Switzerland's competitive international standing.

Von Waldkirch and Lanz also favour more contacts between universities and industry. To this end they have set up programmes to promote a mutual understanding of the different timescales and working methods. All in all, both experts believe that Switzerland is well equipped to tackle the technological future. ■

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