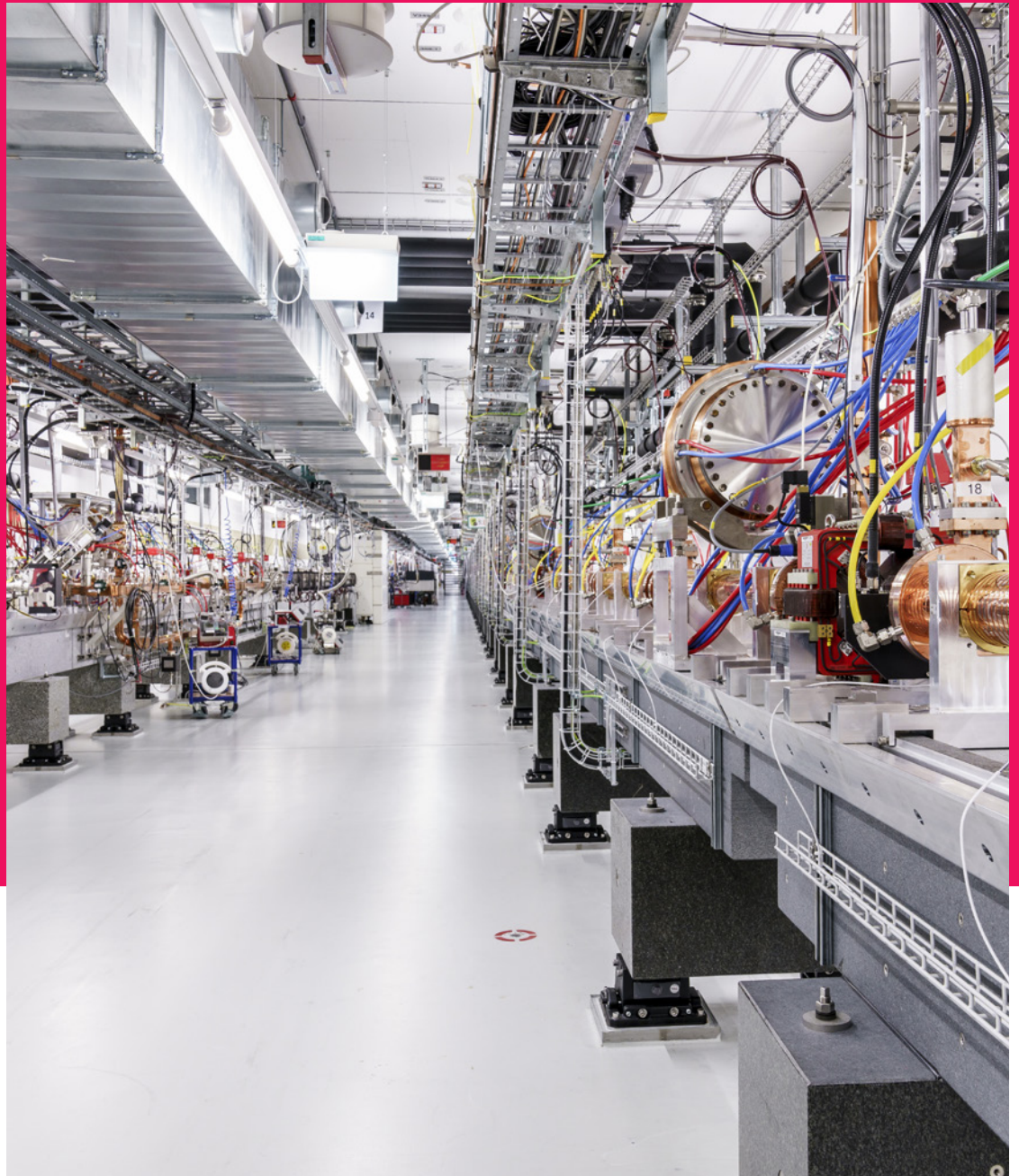


PSI

— strong research for
an outstanding Switzerland



How will we live in the future? What technologies will we use? How will we secure our energy supply, and how will we tackle the climate crisis? How do we advance the future of health? Research at PSI pursues answers to these questions.

All of the large research facilities in Switzerland are situated at PSI, the country's largest research institute for natural and engineering sciences. It is part of the ETH Domain. PSI conducts cutting-edge research in the fields of future technologies, energy and climate, health innovation, and the fundamentals of nature.

Investments in research pay for themselves: First-class science brings improvements for the Swiss society, supports political decision-makers, and endows Switzerland with innovative power as well as reinforcing its reputation as a premium business location.

“Education and research secure the prosperity and independence of Switzerland.”

Prof. Dr. Christian Rüegg,
Director of the Paul Scherrer Institute PSI





Strong figures at PSI.

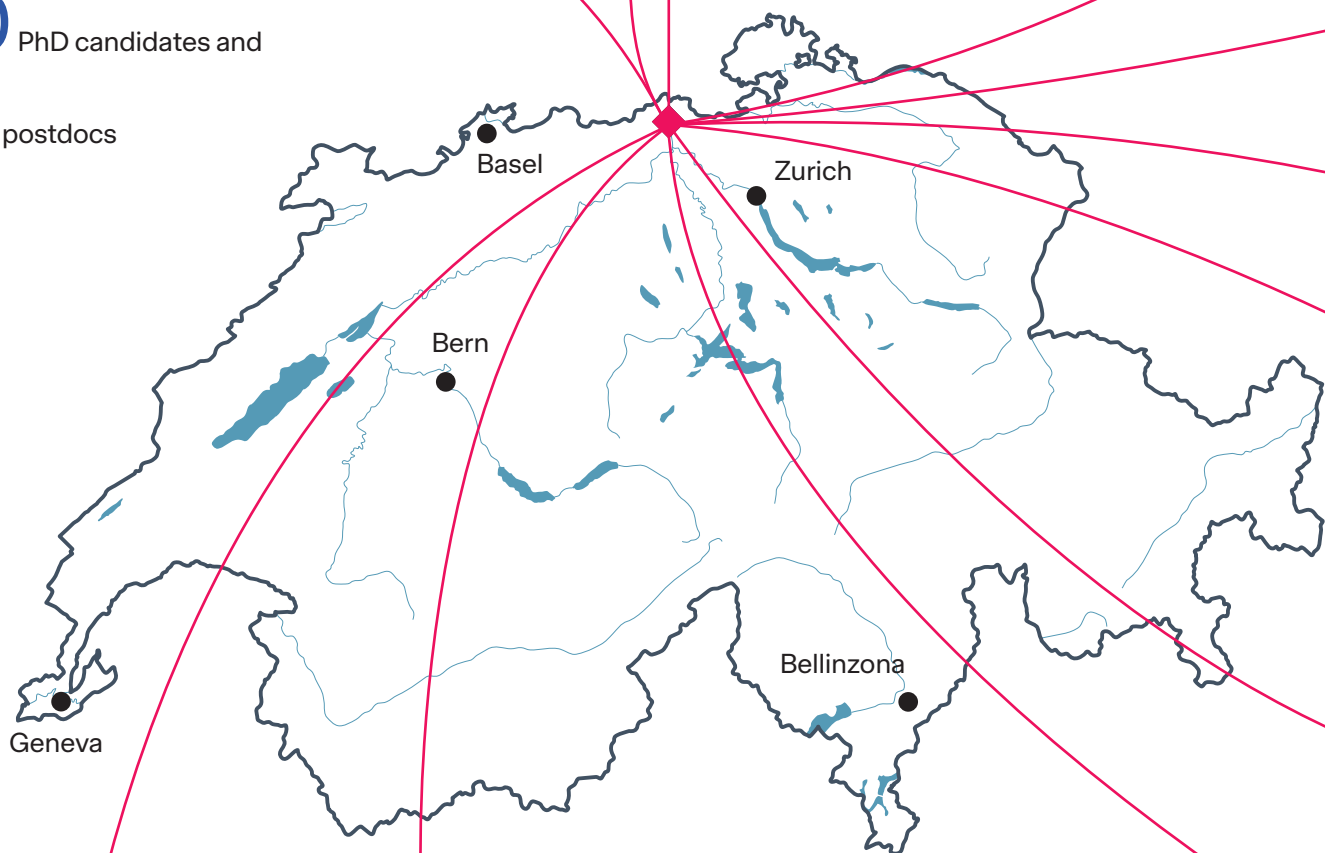
2,300 employees

Paul Scherrer Institute
5232 Villigen PSI, Switzerland

100 apprentices in
17 training professions

330 PhD candidates and

190 postdocs



CHF **48.5** million worth of total orders to companies in Aargau
and CHF **128** million in Switzerland (2023)

1,300 scientific publications per year

5 large research facilities
that are unique across Switzerland

3,000 guest researchers
per year from Switzerland and the entire world

400 cancer patients are treated
at the Centre for Proton Therapy every year

18 existing spin-offs

1 affiliated Switzerland Innovation site
and **2** technology transfer centres

100 active patent families

Our contribution to Switzerland:

1. We strengthen the Swiss society and economy.
2. We train the top-level professionals of the future.
3. We advance medicine.
4. We conduct cutting-edge research that makes Switzerland a beacon to the world.
5. We're an innovation engine for the Canton of Aargau.

1. We strengthen the Swiss society and economy.

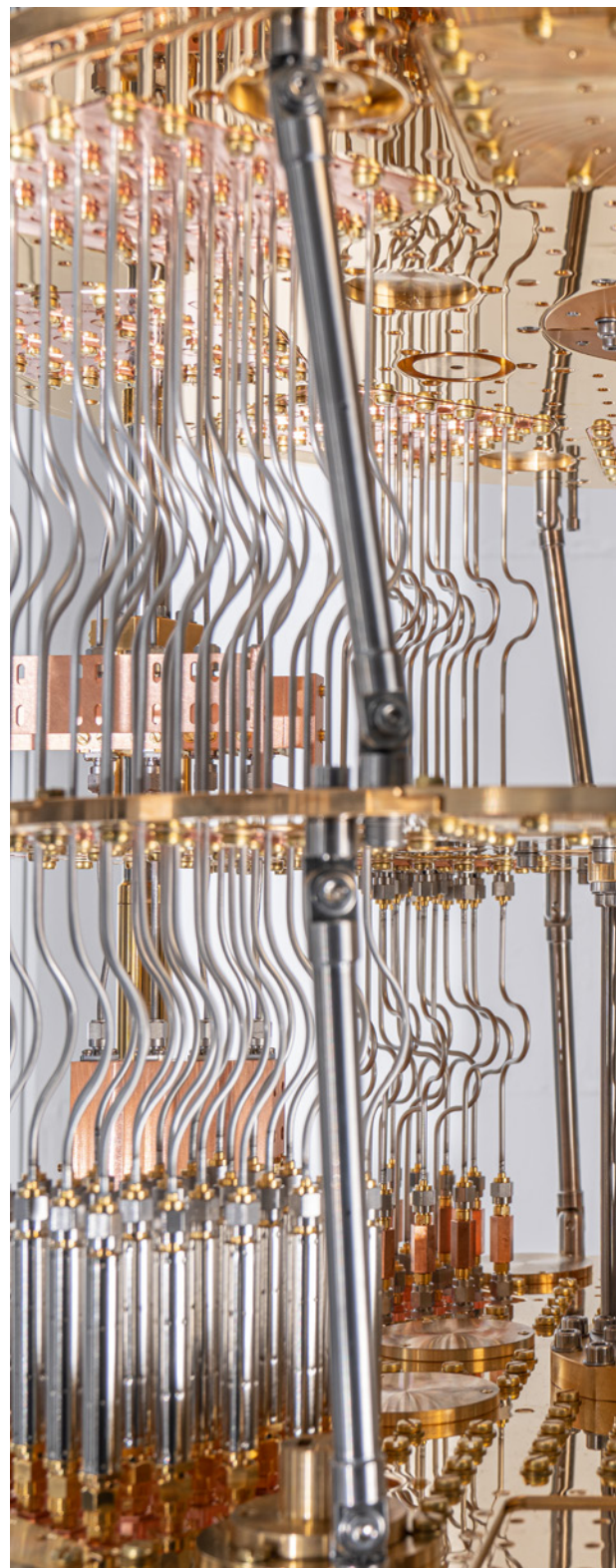


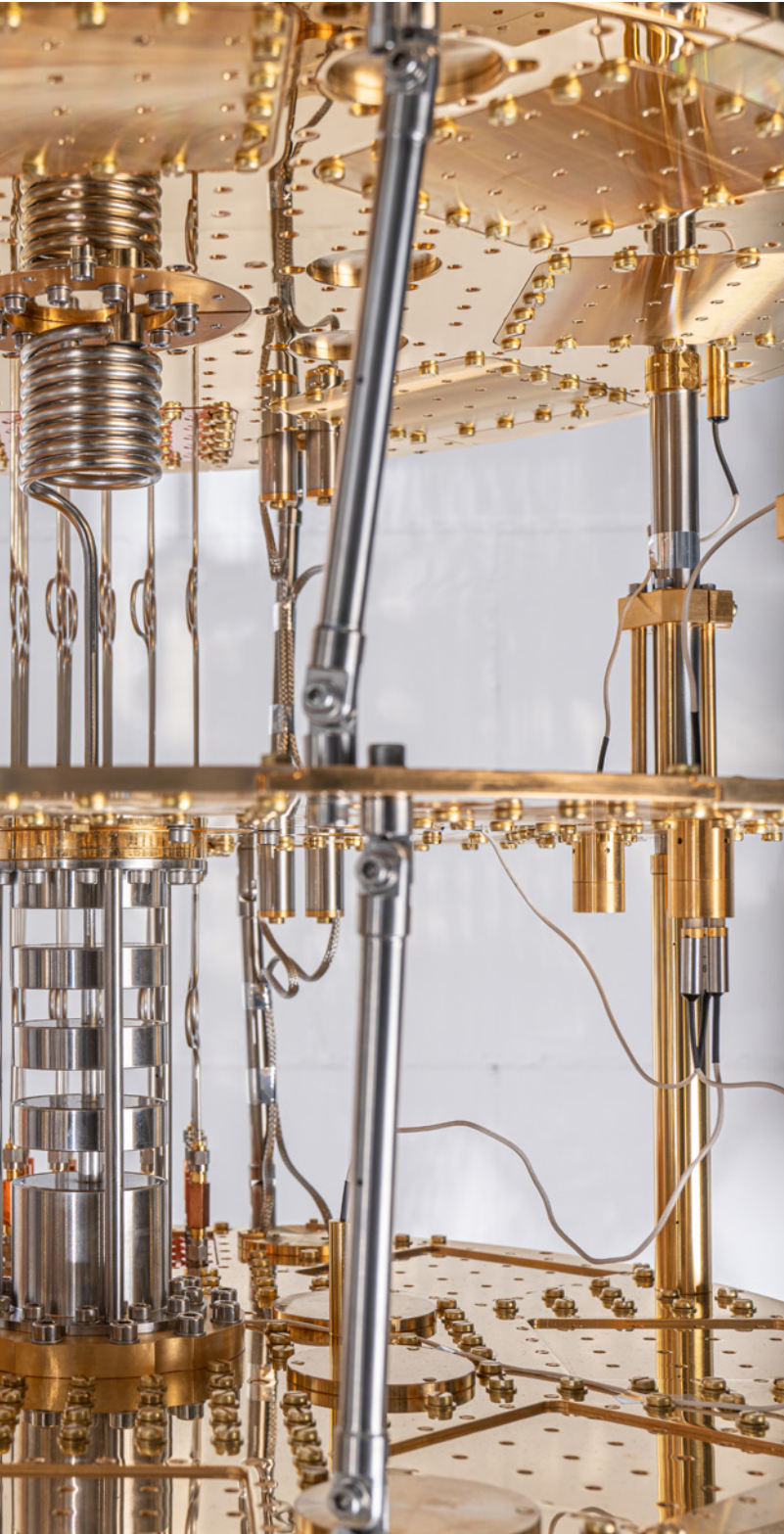
“In the coming decades, quantum technology will lead to enormous technological changes. PSI will ensure that Switzerland is a key international player in this area.”

Prof. Dr. Gabriel Aepli,
Head PSI Center for Photon Science

PSI's cutting-edge research provides solutions for current societal challenges.

- PSI identifies the latest high-tech and research trends and is a crucial driving force for Swiss innovation.
- PSI is the site of the Quantum Computing Hub, where it conducts applied research on quantum computers together with ETH Zurich.
- In addition, PSI conducts research in the pioneering fields of data sciences, simulation of complex processes, and the development of artificial intelligence.
- In the field of energy transition research, PSI operates the Energy System Integration Platform together with approximately 50 industrial partners.
- PSI can react flexibly to specific societal challenges and can swiftly develop successful solutions. For instance, starting in March 2020, PSI promptly prioritised research into the coronavirus and made concrete contributions to the development of COVID tests and vaccinations.





PSI supports Swiss companies.

- Innovative technologies, know-how, and competencies developed at PSI give Swiss industry an international competitive edge.
- PSI holds approximately 100 active patent families, further enhancing its appeal as a partner for industry.
- Industrial companies and SMEs from numerous sectors, including the IT, pharmaceutical, automotive, electrical and automation industries as well as the energy sector, can conduct their own studies or joint research projects here. Using PSI infrastructure allows companies to expand their own opportunities for industrial research and development. In this way, they can initiate innovation processes and gain key competitive advantages. A high level of innovation is crucial to stay competitive and secure value creation, especially in the industrial sector.
- This offer is very popular: in 2023, PSI fulfilled research contracts and performed scientific services for the private sector totalling CHF 13.6 million.

PSI is part of the internationally prominent Swiss high-tech sector.

- Through its collaborations with research institutions, universities, and industrial partners around the world, PSI is helping to further establish Switzerland's position as a high-tech location and a leading country in research and technology.
- The high-tech sector changes especially quickly, and past successes may soon be overshadowed. PSI's cutting-edge research helps the Swiss economy to remain at the forefront of this sector. In this way, Switzerland can develop state-of-the-art products, services, and processes and strengthen its international competitive edge.



“Research always has to keep abreast of developments. Only then can the high-tech sector also profit.”

Prof. Dr. Christian Rüegg,
Director of the Paul Scherrer Institute PSI

2. We train the top-level professionals of the future.



“The elevated standard of education and training, excellent universities, and a high degree of internationality in university research ensure a high level of innovation. I believe it is very important that we in Switzerland manage to maintain or, if possible, even improve this level.”

Dr. Severin Schwan,
Chairman of the Board of Directors, Roche Holding AG

Education and advanced training are an integral part of PSI.

- The outstanding qualifications, experience, and motivation of its employees are the most important asset of PSI. This is why education and advanced training are of central importance for us, both in academic and non-academic areas.
- At PSI, we train exceptional future workers at all levels. This will increase the availability of highly qualified employees for Swiss companies and strengthen both the canton of Aargau and Switzerland as a whole as a business location.
- The PSI Education Center contributes to internal and external programmes for continuing education and advanced training, some of which are unique in Switzerland.

PSI trains top-level apprentices in 17 training professions.

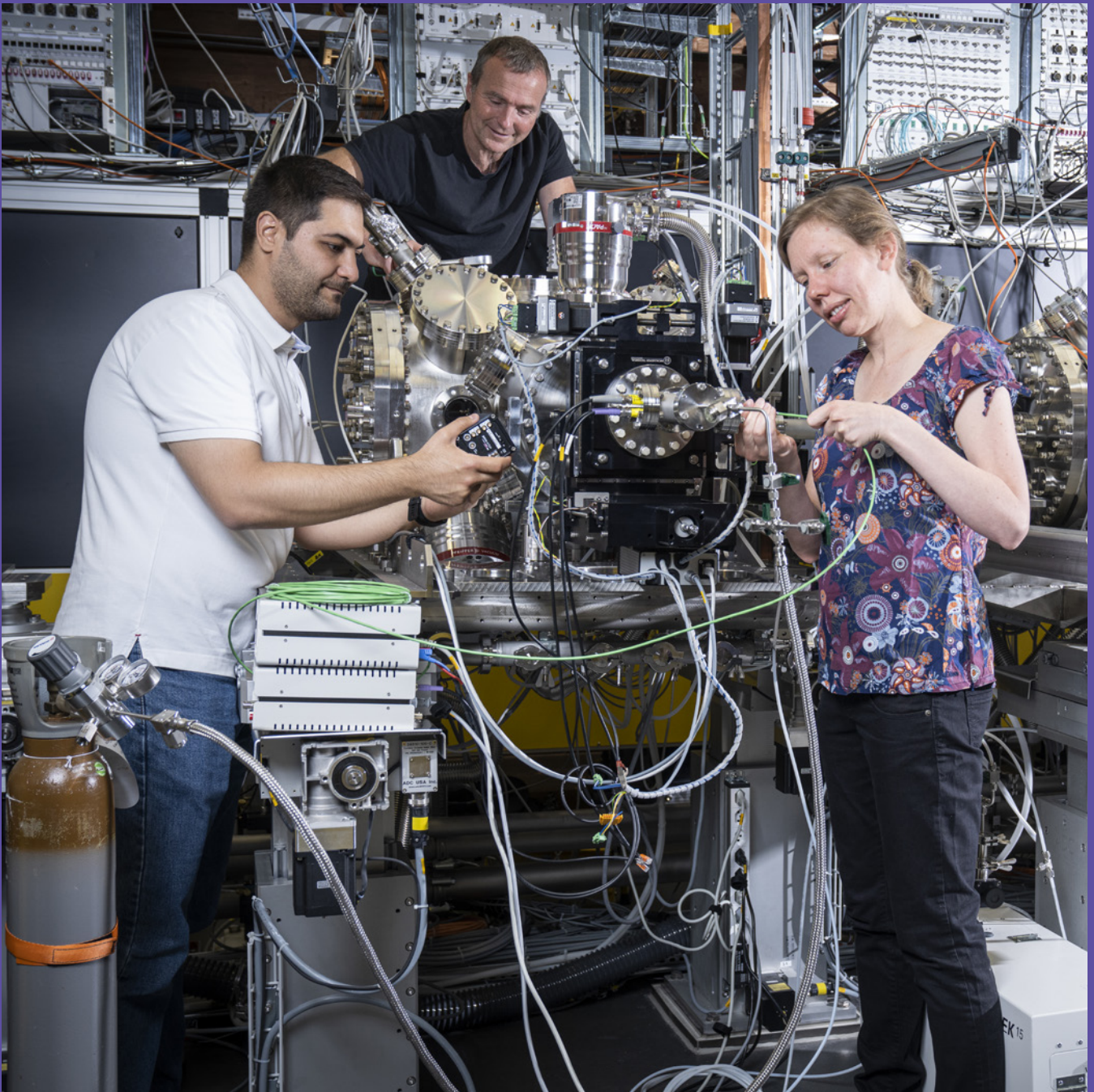
- PSI currently has 100 apprentices in 17 training professions.
- They receive excellent training and are among the best: At the WorldSkills Competition 2022, PSI electronics engineer Mario Liechti won the silver medal; other PSI apprentices have repeatedly taken first place in national championships

PSI trains the researchers of the future.

- Currently, 330 PhD candidates and 190 postdocs are working in research at PSI to start their careers in key areas of science.
- In 2023, 700 PhD candidates conducted measurements at PSI's large research facilities for their doctoral theses.

PSI alumni are a driving force for Switzerland.

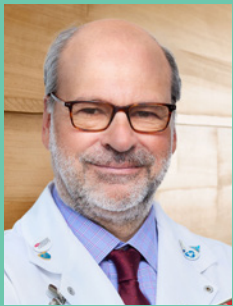
- Former PSI employees are founders of successful spin-offs and startups or hold high-ranking leadership positions in Swiss companies.
- A majority of the research conducted at PSI paves the way for pioneering industrial developments. The knowledge and experience of former PSI researchers are therefore in demand at Swiss companies to help new technologies make the leap into series production.



“Nothing can move forward without skilled professionals. As a research and innovation site, PSI produces top-level workers for Switzerland. PSI promotes the development of more than 600 young employees – both in vocational training and on academic career tracks. These people are an indispensable asset for the Swiss economy.”

Karsten Bugmann,
Head of Human Resources Management, PSI

3. We advance medicine.



“Since children are still growing, conventional irradiation can have major side-effects for them. The high accuracy of proton therapy is therefore particularly helpful for children. Patients who have tumours close to sensitive organs can also benefit greatly from it.”

Prof. Dr. Damien Weber,
Head and Chairman of the Center for Proton Therapy, PSI



“The immediate proximity to PSI’s large research facilities enables us to keep developing new drugs and to produce them directly on site for clinical trials.”

Susanne Geistlich, pharmacist,
responsible for clinical drug supply at the Center
for Radiopharmaceutical Sciences, PSI





PSI operates the only centre for proton therapy in Switzerland.

- Protons can be used to irradiate tumours with an exceptionally high degree of precision. The surrounding healthy tissue is better protected than in the case of conventional irradiation. This also means that there are fewer side effects in the long term.
- The spot-scanning method used in proton therapy was developed at PSI almost 30 years ago and is now the gold standard at all proton therapy centres worldwide.
- PSI's Center for Proton Therapy (CPT) is still the only place in Switzerland where this treatment is performed. 400 cancer patients are treated here every year.
- For more than 20 years, the CPT has also offered proton therapy for children, as they can benefit especially from the method. The CPT has treated more than 800 children in total. The CPT treats more children than any other centre for radiation therapy in Switzerland.
- The CPT is continuously researching new, even better treatment options. To this end, it participates in international clinical trials. In addition, it is involved in European research projects to optimise irradiation facilities in order to make the treatment faster and less expensive.

PSI develops cutting-edge medical technology.

- PSI works with leading Swiss hospitals in continuously promoting the development of innovative, cutting-edge technology for medical research and its direct clinical application. For example, PSI researchers have developed an innovative, reliable, and painless method to diagnose breast cancer.

PSI develops new medications.

- The Center for Radiopharmaceutical Sciences (CRS) operated by PSI and ETH Zurich develops innovative radiopharmaceuticals for the personalised diagnosis and treatment of cancer in close collaboration with medical specialists and industry. These radiopharmaceuticals are manufactured in special cleanroom laboratories at PSI and are tested in clinical trials in Switzerland.

PSI's large research facilities advance medicine.

- PSI's expertise in particle accelerators has allowed it to further develop the proton therapy facilities and produce new radionuclides of medical interest for cancer diagnosis and therapy.
- Fundamental research in the field of medicine takes place at the large research facilities. For example, 3D imaging of cells and their components allows for a better understanding of biology and medicine. In addition, the analysis of protein structures aids in the development of new medical active ingredients in collaboration with the pharmaceutical industry.

4. We conduct cutting-edge research that makes Switzerland a beacon to the world.



“Researchers from Switzerland value PSI because they can conduct high-level experiments here that are simply not possible at their technical or general universities. PSI is also an integral part of the international research community. It has the reputation of being an active partner in many large research projects throughout Europe, including the European Spallation Source ESS.”

Prof. Dr. Helmut Schober,
Director of the European Spallation Source ESS in Lund, Sweden



PSI is a magnet for international cutting-edge research.

- Researchers at PSI work in the fields of future technologies, energy and climate, health innovation, and the fundamentals of nature.
- PSI continuously expands its international cooperation with research institutions and universities.
- PSI researchers enjoy an excellent international reputation as cooperation partners. 80% of the approximately 1,300 scientific publications issued by PSI researchers in 2023 were based on international cooperation.
- Around 3,000 guest researchers use the large research facilities at PSI for unique experiments every year. They come from Switzerland and abroad, and from both academia and industry. Some of them visit multiple times per year. PSI recorded approximately 40,500 visits from external researchers between 2014 and 2023.
- PSI was and is involved in establishing international large research facilities where Switzerland acts as a partner country, including the European XFEL (Germany), the European Synchrotron Radiation Facility ESRF (France), and the European Spallation Source ESS (Sweden). In this process, PSI researchers take on the role of scientific delegates for Switzerland.

PSI operates Switzerland's large research facilities.

- Switzerland is an internationally significant and respected research location. This is due not least to the Swiss large research facilities that are located centrally at PSI.
- PSI develops, constructs, and operates these large research facilities. PSI thus acquires and expands Switzerland's competencies in the area of large research facilities.
- The combination of particle accelerator-based large research facilities that exists at PSI is unique worldwide.
- Many of the individual facilities are themselves unique: PSI has the world's most powerful muon source, a unique proton and neutron source, an internationally important synchrotron that has contributed 16% to the protein structures determined throughout Europe, and one of only five X-ray free-electron lasers worldwide with hard X-rays.
- The large research facilities at PSI are available to all researchers in Switzerland, which means that they can conduct highly complex measurements in their own country. The universities of science and technology in the ETH Domain, as well as general universities and universities of applied sciences, rely on PSI for this.
- PSI's infrastructure, which is also available to postgraduate students and PhD candidates, enhances the quality of education at Swiss universities and universities of applied sciences.

PSI preserves Swiss know-how in the field of nuclear energy.

- PSI is the home of the Swiss Competence Center for Nuclear Energy and Safety. This ensures Switzerland's expertise relevant to current and future global issues in the field of nuclear energy and reactor safety.
- Together with ETH Zurich and EPFL, the Swiss Federal Institute of Technology Lausanne, PSI offers the Master in Nuclear Engineering degree programme.



“PSI has united five large-scale particle accelerator-based research facilities on one campus, more than almost any other research institution in the world: accelerator facilities using protons, neutrons and muons, a synchrotron, and an X-ray free-electron laser. That makes PSI a sought-after partner for a wide range of research projects in the international science community.”

Dr. Caterina Biscari,
Director of the synchrotron ALBA in Barcelona, Spain

5. We're an innovation engine for the Canton of Aargau.

With PSI, Aargau is the home of the largest Swiss research institute.

- Building on decades of positive experience, the Canton of Aargau invests in the development and infrastructure of PSI, including individual large projects.
- Aargau is a canton traditionally known for its energy production. PSI's research in the areas of energy and climate helps Aargau actively contribute to achieving the energy and climate policy goals of the canton itself and the entire Swiss Confederation.

PSI is an important and first-rate employer in Aargau.

- With 2,300 employees, PSI is one of the largest employers in the region. As most employees live in the vicinity, they contribute to the purchasing power of the surrounding area.
- PSI is a respected employer and has been recognised as one of the best employers in Switzerland by the newspapers Handelszeitung and Le Temps, several years in succession. It is a magnet that attracts top-level workers and their families to the region.

Having PSI nearby spurs on the SMEs in Aargau.

- PSI and its surrounding network of contractors, clients, and collaboration partners strengthen the region. This gives the local SMEs such a competitive edge that the WTO-compliant calls for tenders by PSI are regularly awarded to companies in the region. In 2023, PSI awarded companies in Aargau contracts amounting to CHF 48.5 million in total. For all of Switzerland, that figure amounted to CHF 128 million.

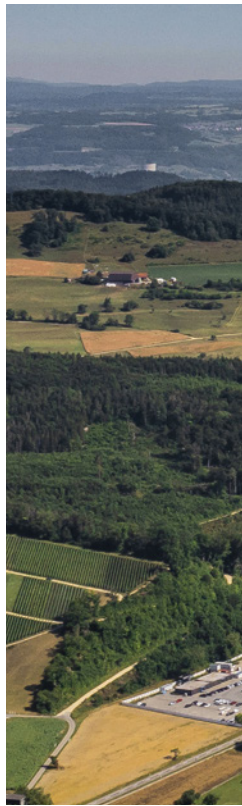
PSI's cutting-edge research stimulates innovation and business growth in the region.

- 18 existing spin-offs have emerged from research at PSI. They include Dectris AG in Baden-Dättwil, Aargau, with currently 160 employees.
- ANAXAM and SwissPIC are two technology transfer centres that are already established in proximity to PSI. They facilitate access to PSI's competencies for industry and SMEs. There is particularly strong demand from Swiss SMEs for the use of large research facilities and the associated expertise.



“As a second-generation family business, we are proud of our home, Aargau: It is the fourth most attractive canton in Switzerland in terms of business – just behind the well-known economically strong city cantons. Every day, we experience how much PSI contributes to this and enhances the status of the region. We ourselves can look back on many years of successful cooperation with the research institute.”

Erwin Baumgartner,
CEO of Heinz Baumgartner AG, Tegerfelden





“ANAXAM offers small and medium-sized enterprises like us access to first-rate know-how and analytical methods. Thanks to our partnership with ANAXAM, we have been able to significantly improve our technology. We see great potential for further optimisation of our existing industrial processes, as well as for developing new processes.”

Tobias Füeg,
CTO of SpectraFlow Analytics Ltd in Spreitenbach

Together with PSI, Park Innovaare brings high tech and deep tech to the region.

- The communities of Villigen and Würenlingen, each of which is home to part of the PSI campus, particularly appreciate and nurture their status as PSI's neighbours.
- Since 2024, the community of Villigen is also home to Park Innovaare, a site of “Switzerland Innovation” right next to PSI.
- Park Innovaare promotes exchanges between research and industry so that scientific innovations can be quickly transformed into marketable products and services. In this process, the resident companies profit from their direct access to PSI and its expertise.
- Park Innovaare is also attracting international companies, including the Dutch high-tech company VDL Enabling Technologies Group (VDL ETG).
- The European Space Agency ESA and PSI are establishing a European Space Deep-Tech Innovation Center which is located at Park Innovaare.
- The Canton of Aargau is planning a high-tech zone in the community of Würenlingen. The proximity to PSI and Park Innovaare was a decisive factor in the Canton's choice of location. The high-tech zone is intended for industrial companies with high-quality technologies and a high level of innovation that have a thematic connection to PSI and Park Innovaare.

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