facts & figures

Eawag: Swiss Federal Institute of Aquatic Science and Technology

Eawag's Research Environment

A Guide for New and Prospective Tenure-Track and Tenured Researchers

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Summary

Eawag is recognized world-wide as a leading institute for research, education, and expert consulting in aquatic science and technology. Eawag takes an **integrated view** of the water environment, a view that encompasses the continuum from relatively unperturbed aquatic ecosystems to fully engineered water and wastewater management systems. Eawag focuses on **high-impact research,** that is, on basic research that will lead to fundamental advances in the aquatic sciences and on applied research that addresses important societal needs. Eawag also plays a unique role in working with practitioners to maintain the **bridge between theory and practice** that is needed to implement novel concepts within society.

Eawag's mandate encompasses research, education, and expert consulting. Each of these activities is pursued in collaboration with national partners, particularly the other institutions of the ETH Domain, and also international partners. Key national partners in applied and transdisciplinary research and in expert consulting include the Federal Offices, Cantonal agencies, municipal utilities, consulting firms, and industry. The balance of these interactions reflects Eawag's focus on public, rather than economic, goods.

Eawag researchers enjoy an academic research environment, in which much of the research is driven "bottom-up" by the interests of the researchers themselves. Students at the Bachelor's, Master's and doctoral levels are engaged in many projects. Eawag is well-supported by the federal government, which allows for long-term continuity of research, excellent technical and administrative support and world-class instrumentation and facilities.

Eawag promotes a collaborative research environment with an emphasis on interdisciplinary and transdisciplinary research. Eawag's most valuable competitive advantage is the broad expertise of its research staff, which includes natural and social scientists and engineers.

Eawag researchers have access to numerous sources of research funding. Approximately 25% of Eawag's total budget is supported by external funding, which is primarily used for research projects. For example, in 2012, the breakdown of external funds (by volume) was approximately: 37% from the Swiss National Science Foundation, 26% from private foundations and industry, 22% from Federal Offices, 12% from the EU, 2% from Cantonal Offices, and 1% from CCES/CCEM (ETH Domain Competence Centers). Eawag also provides support for proposal-based internal projects at the level of approximately 1.5 Mio Swiss Francs per year. Since this corresponds to less than 10% of Eawag's external funding, internal funding is used strategically to advance Eawag's competitiveness.

Eawag has a 5-year tenure process in which successful tenure-track researchers are granted tenure (i.e., a permanent position) after an evaluation based on their professional accomplishments, their contributions to Eawag and external reviews. Tenure decisions are made by the Eawag Directorate and are not constrained by internal competition for a limited number of permanent positions. An accelerated tenure process is possible for more senior candidates.

Eawag offers a remarkable environment for research in aquatic science and technology.
It welcomes creative and motivated researchers to join in its research activities.

1. Eawag within the ETH Domain

The ETH Domain comprises six autonomous institutions, which share a common mandate in education, research, and expert consulting. Within the ETH Domain, there are two different types of institutions – the ETHs (ETH Zurich and EPFL) and the Research Institutes (PSI, Empa, Eawag, and WSL).

The ETHs, as the only degree-granting institutions within the ETH Domain, bear the fundamental responsibility for tertiary education. Since the Research Institutes (RIs) cannot grant academic degrees, their educational mandate can only be fulfilled in partnership with the ETHs or other degree-granting institutions. A major way in which this mandate is fulfilled is the supervision of Bachelor's, Master's and doctoral thesis work by Eawag researchers. Eawag researchers also give lectures at the ETHs and Swiss Cantonal Universities.

Unlike the RIs, the scope of the activities of the ETHs in science and engineering is not subject to any thematic constraints. Thus, the ETHs must maintain the capacity to meet the needs of education, research, and service in a broad range of fields. The RIs, however, are legally constrained in the thematic scope of their activities. These thematic constraints reflect political decisions regarding the importance of certain thematic areas to Switzerland. Eawag is legally responsible for the following thematic areas [1]:

- Chemistry, physics, biology and microbiology of water
- Ecology of aquatic systems
- Drinking water and wastewater treatment technologies
- Sustainable management of water supply and resources and of the water environment

Together, the ETHs and the RIs share the responsibility to fulfill the mandate of the ETH Domain in education, research, and service. The ETHs and RIs are the operational units of the ETH Domain. As autonomous institutions, the ETHs and RIs develop strategies for each individual institution; they also participate in and support the development of the shared strategy of the ETH Domain.

2. Resources at Eawag

Resources at Eawag fall into four main categories: human resources, facilities and instrumentation, internal funding and library and computer resources. Statistics on personnel and finances for 2012 are available at www.eawag.ch/about/zahlen/index_EN.

2.1 Human resources

In Eawag's collaborative research environment, researchers benefit greatly from the skills and expertise of their professional colleagues in the 12 research departments and the Eawag-EPFL Center of Applied Ecotoxicology. Eawag strongly encourages interdisciplinary and transdisciplinary research by promoting the integration of natural, engineering and social sciences and stimulating inter-departmental collaboration through its allocation of internal project funding. Eawag researchers are supported in their work by an outstanding technical and administrative staff.

1 According to the Verordnung des ETH-Rates uber die Forschungsanstalten des ETH-Bereichs (414.161), these areas are: Chemie Physik, Biologie und Mikro biologie des Wassers; Ökologie aquatischer Systeme; Wasser- und Abwasser technologie; Beziehungen zwischen Wasser, Gesellschaft und Natur; nachhaltige Bewirtschaftung des Wassers und der Gewässer. The German text is legally binding.

2 www.eawag.ch/forschung/abt/index_EN

3 www.oekotoxzentrum.ch/index_EN

The ratio of research staff (including Ph.D. students) to technical and administrative staff is approximately: 5.1: 1.3: 1 (on an FTE basis for 2012). Eawag benefits greatly from the presence of students and their participation in research. Bachelor's and Master's students, mainly from the ETH Zurich and the Universities of Zurich and Bern, conduct projects and thesis research at Eawag. Ph.D. students conducting their dissertation research at Eawag are matriculated at both Swiss and international universities.

2.2 Facilities and instrumentation

Eawag has two locations, one in Dubendorf near Zurich and the other in Kastanienbaum near Luzern. Both offer state-of-the-art laboratories. Facilities include pilot-scale wastewater treatment facilities in Duebendorf and mesocosms as well as cold- and warm-water aquaria in Kastanienbaum. Field experimental facilities and experimental flumes will be constructed in the next 2-3 years.

Advanced analytical instrumentation is available for organic, inorganic and isotopic analysis as well as proteomics and molecular biology. Additional genomic analysis is available through the ETH Genetic Diversity Center [4] and Functional Genomics Center. [5] For a list of major instrumentation, see Appendix A. Eawag also has boats and equipment for field work as well as the corresponding technical support.

2.3 Internal funding

Eawag has a proposal-based process for funding internal projects. In addition to an annual call, time-sensitive proposals can be submitted on an ad hoc basis. The total amount of funding available for internal projects is approximately 1.5 M Swiss Francs per year. The Eawag Directorate also accepts requests for support for conference organization and sabbatical visitors. Requests for acquisition of major instrumentation are reviewed by the Directorate based on the recommendation of the analytics committee ANAKOM; additional funds are available through the Research Departments for smaller instrumentation. Approximately 1 M Swiss Francs per year are allocated through this process. Because of the availability of this funding and the excellent analytical support available at Eawag (see Appendix A), no "start-up" funds are granted to tenure-track researchers. All researchers, however, have access to internal funds distributed through the Research Departments (corresponding to approximately 18 K Swiss Francs per permanent position for departments conducting laboratory or field experiments).

2.4 Library and computer resources

Eawag maintains a joint library with the other three Research Institutes of the ETH Domain, which provides access to a wide range of journals, books and other reference material as well as excellent service and support. [6] In addition, researchers have access to other collections through inter-library agreements. Eawag has in-house capabilities for GIS and provides IT support, including software licenses, and hardware. Specialized bioinformatics support is available through collaboration with the GDC (see section 2.2). Eawag researchers also have access to a computer cluster [7] at the neighboring research institute Empa and can apply for time on the Swiss National Supercomputing Center. [8]

4 www.gdc.ethz.ch
5 www.fgcz.ch
6 www.lib4ri.ch
7 ipazia.empa.ch
8 www.cscs.ch

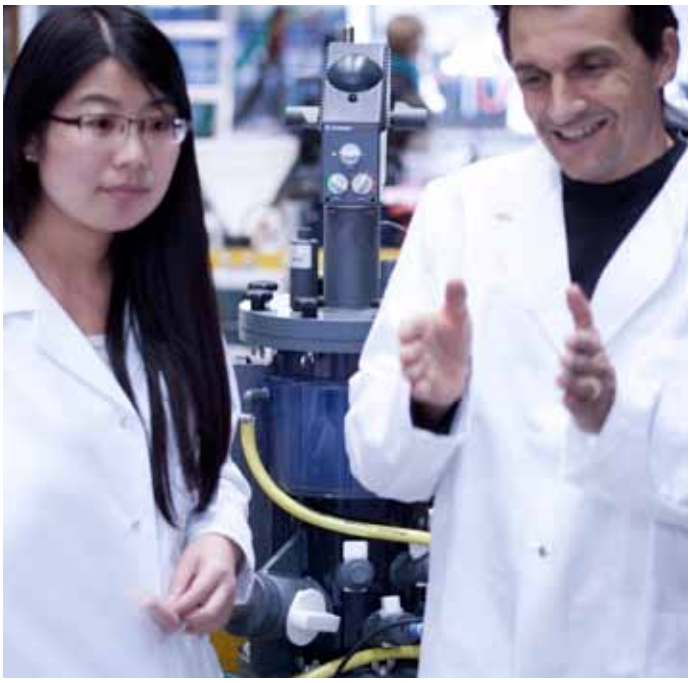
3. External funding opportunities

As a nation that sees its current and future economic success to be linked to innovation, Switzerland invests heavily in research and education. Research investment in 2008 corresponded to 3% of GDP in comparison with the OECD average of 2.3% and EU average of 1.8%.[9] In 2011, the success rate for proposals submitted to the Swiss National Science Foundation was 40%.[10] More applied research at Eawag is often funded by the Federal Offices of Environment, Energy and Public Health. Eawag researchers are also eligible to apply for EU funding, including ERC grants. Information on Eawag's external funding can be found in the Annual Report.[11]

4. The tenure process at Eawag

4.1 Tenure-track appointments

The tenure evaluation period at Eawag is five years. The initial contract is for two years with a three-month probation period. After the probation period, each tenure-track researcher meets with the Director for an informal "0th" career discussion. This is an opportunity to clarify the tenure process and expectations and to answer questions. Annually, the tenure-track researcher has a personnel discussion to review his or her progress and set goals for the coming year with his or her Department Head and one member of the Directorate, who attends in the capacity of coach for the Department. After 1.5 years, the tenure-track researcher has a formal first career discussion with the Director to provide input for the Directorate's discussion on the re-appointment. If the re-appointment is approved, the tenure-track researcher's contract is extended for an additional three years. The candidate must submit his or her tenure package approximately fife months before the end of the contract.



Our staff includes people from over 35 different countries.

Eawag promotes a collaborative research environment with an emphasis on interdisciplinary and transdisciplinary research.

4.2 Tenure evaluation process

As a world-leading research institute, Eawag expects its tenured researchers to be leaders in the field of aquatic science and technology. The tenure period provides tenure-track researchers with the opportunity to develop their own research directions, build their own research groups and produce results that establish their standing and visibility in their fields. The Directorate takes the tenure evaluation process very seriously; the granting of tenure is a long-term commitment made by Eawag to individual researchers. It is expected that all researchers will demonstrate excellence in their contributions to Eawag's mandate in research, education and expert consulting but not that every researcher will have the same profile. There are different needs and opportunities in the various fields in which Eawag is active, and individual researchers have different talents, skills, and interests, which may also evolve over the course of their careers. Eawag is small enough to allow the Directorate to consider each tenure case in detail. Each tenure package is evaluated by the Directorate based on the candidate's professional accomplishments, his or her contributions to Eawag and external reviews. It is not the practice at Eawag that multiple tenure-track candidates are in competition with each other for a limited number of positions.

4.3 Accelerated tenure evaluation and appointments with tenure

In the case of more senior candidates or of truly outstanding performance, the Directorate can make an initial appointment with a shorter tenure evaluation period or accelerate the tenure process. Appointments at the level of Department Head are usually made with tenure.

4.4 Target-of-opportunity appointments

The Directorate can consider "target-of-opportunity" appointments on a case-by-case basis. Such appointments are limited to exceptional individuals and must be of compelling interest to Eawag. The expertise and capacity of the individual must meet a significant need within Eawag. The process must be fair to the individual and defensible both internally and externally. External review is generally required.

5. Diversity and other working conditions

In addition to providing outstanding support for research, Eawag strives to provide excellent working conditions for all its employees. This includes respect and accommodation for all types of diversity.

5.1 Culture and language

Eawag's staff includes people from over 35 different countries of origin with diverse backgrounds and cultures. This creates a rich and interesting environment but also one that requires sensitivity and cooperation. Many researchers will find that their working activities are principally conducted in English, even though English is not one of the four official languages of Switzerland. For official documents, the German version is binding, but English translations are generally provided.

Researchers with a long-term employment outlook in Switzerland (i.e., tenured and tenure-track researchers) should realize that the ability to communicate in one of the national languages (ideally German) will be very valuable, not only in conducting their daily business but also in communicating with local stakeholders. Eawag provides support for language instruction, including on-site classes.

5.2 Equal opportunity

Eawag is committed to promoting equal opportunity for men and women in the workplace. Eawag has programs and/or offers support for: improvement of standard hiring and promotion practices; promotion of networking and mentoring; and prevention of sexual discrimination and harassment. The Equal Opportunity Committee (EOC) includes members from all levels of the institution and provides a platform for discussion of issues related to all types of diversity and novel measures to address them. Recommendations from the EOC are taken up by the Eawag Directorate. On-site childcare facilities are available in Dubendorf. [12]

5.3 Ethics

Scientific integrity is the sine qua non for all scientific activities. Eawag follows the guidelines of the Swiss Academies of Arts and Sciences. [13] Together with the other Research Institutes in the ETH Domain, Eawag has developed institute-specific guidelines, which are available at www.eawag.ch/jobs/arbeiten/index_EN. [14]

5.4 General working conditions

Eawag offers competitive salaries on a scale defined by the ETH Domain.[15] Information on general working conditions is available on-line.[16] Both Zurich and Luzern offer an excellent quality of life. Further information for foreign nationals is available on-line.[17]

Forum Chriesbach, Eawag's main building, is one of the worlds greenest buildings.

12 www.kinderpavillon.eawag-empa.ch

13 www.akademien-schweiz.ch/en/index/Portrait/Kommissionen-AG/Wissenschaftliche-Integritaet.html

14 As of 19.09.2013, the Eawag guidelines are only available internally www.internal.eawag.ch/ueberblick/dir/rechtsgrundlagen/doc/integritaet_forschung.pdf

15 www.admin.ch/opc/de/classified-compilation/20010654/201307010000/172.220.113.pdf (see p. 36 for salary scale) Note that tenure-track researchers generally start at salary class (Funktionsstufe) 9.

16 www.eawag.ch/jobs/arbeiten/index_EN

17 www.ch.ch/en/living-switzerland-foreign-national

Appendix A: Major Instumentation

Molecular Biology

Instrument	Department
CAP Gen Analyzer	Eco
DNA Sequenzierer (CEQ 8000)	FishEc, Eco
Genetic Analyzer	FishEc, Eco

Microscopy

Instrument	Department
Scanning Tunneling Microscope NanoScope III Atomic Force Microscope	W+T
Laser Scanning confocal Microscope	Utox, Eng, Umik
Nanoscope IIIa, Multimode Scanning Probe Microscope	SWW
Inverted Fluorescence Microscope (DMI 6000 B Leica)	Eco, Surf, FishEc
Inverted Fluorescence Microscope (DMI 6000 B Leica)	Utox

Biological Analysis / Flow Cytometry

Instrument	Department
Automated profilling system (Idronaut)	Eco
CytoBuoy	Eco
Cytosense	Eco
Flow-Cytometer	Umik
Flow-Cytometer (CyFlow Space)	Umik

Inorganic Analysis

Instrument	Department
HR-CS Flames and Graphite Tube - AAS (ContrAA700)	BB Teaching Lab
ICP-MS (high resolution, Element 2)	Utox
LC-ICP-MS (Agilent 1200, Agilent 7500)	W+T
ICP-OES (Spectro - Arcos)	Ecotox Center
ICP-OES (Spectro - Ciros)	Utox
Mass Spectrometer for the quantification of 3He / 4He in water and environmental samples	W+T
Mass Spectrometer for the quantification of He, Ne, Ar, Kr, Xe in water and environmental samples	W+T
Mass Spectrometer for the quantification of HE isotopes	W+T
Cavity RingDown Spectrometer (Picarro L 1102-i)	W+T
XRF Spectrometer (Spectro Xepos XRF)	W+T

Organic analysis

GC-MS(/MS)

Instrument	Department
GC-MS	Surf
GC-MS (DSQ II, GC 6)	W+T
GC-MS (DSQ II) PTV-Injector	W+T
GC-MS (Trace DSQ EI 250)	W+T
GC-MS/MS (ITQ 900)	Umik
GC-MS (Trace GC/DSQII)	Uchem
GC/IRMS (Delta XL)	Uchem
GC/IRMS/MS (Delta V/DSQII)	Uchem
LC/DI/IRMS (Delta V)	Uchem

LC-MS/MS

Instrument	Department
Agilent 6495 Triple Quadrupole (1290 Infinity)	Utox, Uchem
Vantage (online SPE - Rheos)	Utox, Uchem
LTQ Orbitrap XL (Dionex UltiMate 3000RSLC)	Utox, Uchem
Q Exactive (online SPE - Rheos)	Utox, Uchem
Q Exactive Plus (online SPE - Rheos)	Utox, Uchem

Advanced analytical instrumentation is available for organic, inorganic and isotopic analysis as well as proteomics and molecular biology.

HPLC

Instrument	Department
High-temperature HPLC-DAD/Asamp (Dionex UltiMate 3000 RSLC)	Uchem
HPLC-DAD/Fz/Sc/Asamp (Agilent 1100)	Utox
HPLC-DAD/Asamp (Dionex)	Utox
HPLC-DAD/Fz/Asamp (Dionex)	Utox
HPLC-DAD/Asamp (Dionex)	Umik
HPLC-DAD/Asamp (Gynkotec)	Umik
HPLC-System for protein purification (Biorad)	Umik
HPLC-System for protein purification (Biorad)	Umik
HPLC-DAD/Asamp (Dionex Ultimate 3000)	W+T
HPLC-DAD/Fz/Asamp (Agilent 1100)	W+T
HPLC-DAD/Fz/Asamp (Dionex Ultimate 3000)	W+T
HPLC-DAD/Asamp (Dionex Ultimate 3000)	W+T
HPLC-Asamp/Electrochemical Detector (Dionex)	Surf
HPLC-UV/Fz/Asamp (Jasco)	Surf
Preparative HPLC-UV/Asamp (Jasco) **& Fraction Collector** (Gilson)	Surf

DAD = diode array detector
Fz = fluorescence detector
Sc = scintillation detector
Asamp = autosampler