

## MASTER'S THESIS ON MONITORING ESTROGENIC AQUATIC CONTAMINANTS

### **Who are we?**

This Masters project is a collaboration between the European campus of the Korean Institute of Science and Technology (<http://www.kist-europe.de/>) located in Saarbrücken, Germany and the Ecotox Centre Eawag-EPFL (<http://www.oekotoxzentrum.ch>) based in Dübendorf, Switzerland.

### **The Project**

Mixtures of organic pollutants with estrogenic activity enter aquatic ecosystems where they result in adverse effects such as intersex in fish. Therefore, protecting aquatic environments requires careful monitoring of these mixtures of endocrine contaminants, and here passive sampling can play a useful role. This involves introducing a sorbing passive sampling phase (often a polymer) into waters, such that the estrogenic contaminants accumulate in the polymer. Advantages include sampling contaminant mixtures and targeting the dissolved concentrations driving organism uptake and toxicity. These same properties also make passive sampling useful for the initial sampling of endocrine mixtures to later determine their combined activity using bioassays. However, this requires that sampler uptake kinetics are well-defined in order to reliably translate the accumulated levels into environmental dissolved concentrations.

The sampling campaign will be conducted at the Ecotox Centre using their unique channel system. Here, mixtures of environmentally relevant estrogens will be added to the inflowing river water, and their dissolved concentrations monitored using a combination of passive samplers and water samples taken with an automatic sampler. Concentrations of the different estrogens will then be quantified using LC-MS/MS, and in parallel the combined endocrine activity of the sampled mixtures determined using *in vitro* bioassays. In this way, the project will provide the information on passive sampler uptake kinetics, and also further explore the possibilities of combining passive sampling with bioassays.

### **What about you?**

If you are interested in investigating a pressing environmental problem, are keen to gain experience in the important fields of chemical analyses and toxicity testing using bioassays, but are also enthusiastic to learn about different cultures then please apply by sending a letter of motivation and C.V. with grades to either [k.smith@kist-europe.de](mailto:k.smith@kist-europe.de) or [etienne.vermeirssen@oekotoxzentrum.ch](mailto:etienne.vermeirssen@oekotoxzentrum.ch). An allowance covering living and related expenses is included in the project.