



The **European Zebrafish Resource Center (EZRC)** is located at the KIT, which houses the largest experimental fish facility in Europe with a capacity of more than 300.000 fish. This center will be unique as it will not only maintain and distribute a large number of existing mutant and transgenic zebrafish lines but will also provide screening services and technologies such as imaging and high-throughput sequencing. In close interaction with physicists, engineers and IT specialists, the EZRC is actively expanding the medium/high throughput screening technologies that have been recently established at KIT. Furthermore, computational methods pave the way for virtual screens where researchers anywhere in the world will be able to link into the EZRC database to access the high resolution models of wild-type, transgenic, mutant and chemically exposed embryos for particular traits of interest.

The EZRC functions as the coordinator and central hub of **ZF-HEALTH** ("Zebrafish Regulomics for Human Health"), a large-scale Integrated Project in the EC's 7th Framework Programme. Over 1,000 knock-out mutations, generated mainly by the Sanger Institute (UK), will be distributed and / or phenotyped by the EZRC. Moreover, the EZRC will host shelf screens and chemical screens conducted on these lines by guest researchers.

The EZRC will also be tightly integrated with the existing international e-infrastructure for the zebrafish, in particular with the **ZFIN** database providing a central repository for genetic and phenotypic data; **Ensembl**, which provides genome annotation; and the **EuFishBioMed** network, also coordinated by ITG, which will provide a platform for collaborative research and community discussions.

Zebrafish Lines

Currently, EZRC maintains approximately 70 mutant and 160 transgenic lines and is importing additional lines, including the mutants produced by the Sanger Institute (UK) and the Max Planck Institute for Developmental Biology (GER), as well as popular lines from the Zebrafish International Resource Center (USA).

Resources – EZRC Zebrafish Core Facility:

- Storage and distribution of living zebrafish lines (ENU mutants, KO mutants, transgenic lines, wildtype lines; currently available: 32 lines)
- Establishment and maintenance of a sperm bank
- Establishment and maintenance of a stock database (linked to ZFIN)
- Provision of expertise and training on sperm freezing and IVF methods

Website: <http://www.itg.kit.edu/ezrc>

Plasmids

EZRC organizes the distribution of plasmids provided by the Helmholtz Repository of BioParts (HeRBI) of KIT. HeRBI is a community action of the Helmholtz Initiative on Synthetic Biology and provides a non-profit repository for storage and distribution of plasmids containing BioParts for synthetic biology applications, such as the construction of complex biological devices and systems.

Website: <http://www.herbi.kit.edu/>

Screening

EZRC is planning to organize collaborative screens where KIT will provide the facilities (including our high-throughput screening pipeline), biological material, software and coordination, while guests bring their own assays. We expect to screen mainly TILLING mutants which will be continuously supplied by the Sanger Institute (approx. 4 families representing a total of 60 KOs per week) from 2013 onward.

Resources – Screening Facility:

- Automated sample handling, image acquisition and processing
- Robotic systems for behavioral studies
- Multi-camera systems for high throughput imaging

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Chemical Libraries

The Combinatorial Chemistry Platform (Complat) service platform at KIT is a facility for library generation and the design and re-synthesis of chemical compounds. Complat offers small entity libraries for lead identification and the optimisation of structure-function studies.

Resources – Complat:

- Design of small chemical entities (200 to 1000 Da)
- Library production (96 to 1000 compounds)
- Compound and data handling
- Research and development of novel synthetic methods
- (Re)-synthesis unit for in-house delivery of small compounds

Website: <http://www.complat.kit.edu/english/26.php>

Next Generation Sequencing

The Massive Parallel Sequencing Core Facility at KIT proposes a wide range of deep sequencing applications, from library preparation to data analysis. These services are available to the scientific community in Germany and world-wide.

A robust framework of technologies for the generation of sequencing libraries (Covaris S220, QuBit2, Bioanalyser and LabChipXT) combined with the latest Illumina sequencer (HiSeq) allow us to produce high quality sequencing data.

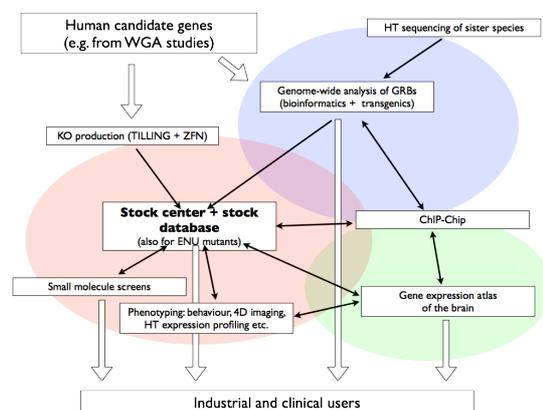
Resources – Massive Parallel Sequencing Core Facility:

- Transcriptome sequencing (mRNAseq and RNAseq)
- Small RNA sequencing
- Genome resequencing: DNAseq
- ChIPseq
- Targeted exome enrichment followed by DNAseq
- De novo genome and transcriptome sequencing

Website: <http://www.itg.kit.edu/ngs.php>

ZF-HEALTH

"ZF-HEALTH - Zebrafish Regulomics for Human Health" is a Large-scale Integrating Project funded by the European Commission as part of its 7th Framework Programme



Participating organisations:

1. Karlsruher Institut fuer Technologie, Germany (KIT)
2. Albert-Ludwigs-Universität Freiburg, Germany (ALU-FR)
3. CNRS Gif-sur-Yvette, Centre National de la Recherche Scientifique, Paris, France (CNRS)
4. Wellcome Trust Sanger Institute, Genome Research Ltd, London, UK (GRL)
5. Hubrecht Institute, KNAW, Amsterdam, NL (KNAW)
6. Institut National de la Santé et de la Recherche Médicale, Paris, France (INSERM)
7. King's College, London, UK (KCL)
8. Universiteit Leiden, The Netherlands (UL)
9. Max Planck Institute for Developmental Biology, Germany (MPG)
10. Technische Universität Dresden, Germany (TUD)
11. The University of Sheffield, UK (USFD)
12. Università degli Studi di Padova, Italy (UNIPD)
13. Universität zu Köln, Germany (UCO)
14. Universität Zuerich, Switzerland (UZH)
15. University College London, UK (UCL)
16. Uni Research AS, Bergen, Norway (UR) (until June 30, 2011)
17. The University of Birmingham, UK (BHAM)
18. The University of Sydney, Australia (USYD)
19. ZF Biolabs SL, Tres Cantos, Spain (ZFB)
20. Imperial College London, UK (IMPERIAL) (since July 1, 2011)

Website: <http://zf-health.org/>