

## Biological Resources

Part of the Sanger Institute's mission is to employ high-throughput technologies such as DNA sequencing to develop resources for the research community to accelerate discovery. Key to this agenda is the development of resources that can be disseminated worldwide to allow broad access to cutting edge technologies such as mutant mouse embryonic stem cell lines, mutant Zebrafish and *Xenopus tropicalis* strains and DNA clone resources such as indexed bacterial artificial chromosomes (BACs). All of the resources generated by the institute are distributed free of charge or on a cost recovery basis and are made freely available to the research community prior to publication.

### Mouse resources

The *Sanger High-throughput Gene Targeting* programme is co-funded by the European Union and the US National Institutes of Health to generate many thousands of conditional targeting constructs and targeted mutations in C57BL6 mouse embryonic stem cells as part of an international effort to generate mutations in all mouse genes by 2011. Targeting constructs and mutant ES cells produced at the Sanger are to be distributed to the research community by

designated distribution centres in Europe and in the US (<http://www.eucomm.org>; <http://www.knockoutmouse.org>).

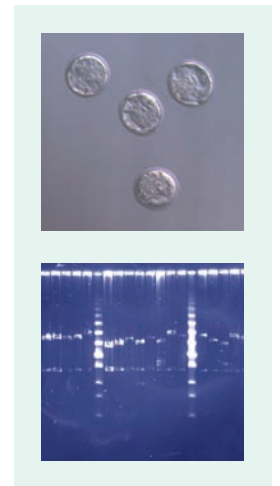
The *Sanger Institute Gene Trap Resource (SIGTR)* provides embryonic stem (ES) cell clones containing *LacZ* tagged mutations within genes (<http://www.sanger.ac.uk/PostGenomics/genetrap/>). These ES cells can be used to generate knockout mice without the need for laborious gene targeting experiments. ES cell lines from SIGTR can also be studied *in vitro*. The SIGTR library contains over 10,000 characterized ES cell lines and several hundred SIGTR ES cell lines have been distributed to investigators worldwide over the last year. Future distribution of this library of mutant ES cells will be done through the Mutant Mouse Regional Resource Center (MMRRC) at the University of California, Davis.

The *Mutagenic Insertion and Chromosome Engineering Resource (MICER)* is a library of indexed targeting vectors. These vectors can be used to generate deletions, duplications, inversions and other rearrangements such as translocations and represent an opportunity to model human

chromosomal disorders in the mouse. In addition to MICER, other mouse clone resources include indexed 129Sv and C57BL6 BAC libraries to facilitate targeting vector construction and tiling path clone sets for the development of comparative genomic hybridization arrays (CGH) arrays. Similarly several hundred MICER and BAC clones were distributed worldwide in the last year. MICER and mouse BAC clones are available from Geneservice (<http://www.geneservice.co.uk/home/>).

### Zebrafish and *Xenopus tropicalis* mutation resource

The Sanger Institute Zebrafish and *Xenopus tropicalis* projects have been using the mutagen ENU to generate random mutations genome-wide and have then been employing high-throughput DNA sequencing to identify truncating intragenic mutations. Researchers can request mutations in genes they are interested in ([http://www.sanger.ac.uk/Projects/D\\_rerio/mutres/](http://www.sanger.ac.uk/Projects/D_rerio/mutres/)) and be supplied with the mutant strain after screening.





## Human Clone Resources

Human DNA clones are a valuable tool for interrogating the nature of pathogenic and non-pathogenic variation in the genome, either by CGH or by fluorescent *in situ* hybridisation (FISH). In the last year we distributed approximately 10,000 localised BAC, PAC and fosmid clones to the research community. For large-scale array CGH studies, a tiling set of clones

covering 93.7% of the euchromatic part of the genome has been assembled at the Institute and made available through the BACPAC Resources Center (<http://bacpac.chori.org/>). This clone set was used to produce the first-generation map of copy-number variation in the genome, a collaborative study led by groups at the Sanger Institute.

### Biological resources and links

#### SIGTR Genetrap Resources

Clones: 11,886

Genome Coverage: 19.9%

<http://www.sanger.ac.uk/PostGenomics/genetrap/>

#### Mouse Chromosome Engineering Resource (MICER)

Indexed Clones: 93,960

<http://www.sanger.ac.uk/PostGenomics/mousegenomics>

#### Mouse 129Sv BAC clones

Indexed Clones: 84,507

#### Zebrafish and *X. tropicalis* mutants

[http://www.sanger.ac.uk/Projects/D\\_rerio/mutres/](http://www.sanger.ac.uk/Projects/D_rerio/mutres/)

#### Human BAC/PAC/Fosmid clone Resources

Indexed tiling path clone sets are available from

<http://bacpac.chori.org/> and

<http://www.geneservice.co.uk/home/>

Individual clones are available from

<http://www.sanger.ac.uk/clones/>