The CNIO Transgenic Mice Unit is dedicated to the generation, cryopreservation and derivation of genetically engineered mouse strains. We have created over 200 mutant strains, including knockout, knockin and conditional alleles, by gene targeting in embryonic stem (ES) cells, and over 100 mouse strains by conventional transgenesis. The Unit currently maintains a cryopreserved stock of over 1000 mouse strains, frozen at the Unit as sperm or embryos. This stock represents an invaluable resource of engineered strains for modelling and studying cancer in the mouse. Through our Unit, the CNIO shares part of this stock with EMMA (the European Mouse Mutant Archive) in order to make these models more accessible to the wider scientific community. We acknowledge the CNIO Animal Facility for their constant help and collaboration to make all these achievements possible.

The CRISPR/Cas9 system of *Streptococcus pyogenes* has expanded the currently available set of mammalian genome engineering tools, providing an easy, efficient and versatile method for creating targeted mutations in mammalian genes. We use the CRISPR/Cas9 system to generate knockout and knockin mice by introducing the components of the system, the guide CRISPR RNA and the Cas9 nuclease (either as messenger RNA or as protein) directly into mouse zygotes (FIGURE). In our experience, this system has proven to be extremely efficient for introducing new additional mutations in strains that are already carrying several engineered alleles, such as some mouse models of lung and pancreatic cancer that are used at the CNIO.

In 2016, the Unit generated over a dozen GEM strains containing knockout and knockin mutations, using the CRISPR/Cas9 system of *S. Pyogenes*. The Unit contributed to 8 peer-reviewed articles, in collaboration with CNIO and external collaborators. The Unit also provides support and collaborates with CNIO researchers in many aspects related to research with embryonic stem (ES) cells, induced pluripotent stem (iPS) cells, and embryo- and mouse model-based research. Finally, the Unit also leads its own research projects focused on the generation of mouse models to study tumour biology, as well as on the screening of cancer-related genes.