

NIH Knockout Mouse Meeting – September 28-29, 2011

The NIH Knockout Mouse Meeting brought together many groups from the international mouse community. The first session consisted of the NIH KOMP (Knockout Mouse Project) final meeting and allowed grantees to reflect on the past five years of the program. The KOMP was launched in 2006 by NIH with the goal of creating 8,500 ES cell lines. Regeneron Pharmaceuticals, Inc. and CSD (Children's Hospital of Oakland Research Institute, (CHORI)-The Wellcome Trust Sanger Institute-University of California Davis consortium) served as the production centers for KOMP; UC Davis served as the repository; and JAX served as the data coordination center. Regeneron was tasked with creating definitive null alleles for 3,500 genes, and they accomplished this goal early in June 2011. CSD was tasked with creating conditional-ready alleles for 5,000 genes, and they met this target. As the repository, UC Davis imported and performed QC on vectors, ES cells, and mice from the production centers, created an online catalog and ordering system, and distributed and advertised the KOMP products to the scientific community. JAX created the online database and website for KOMP which has now transformed into the online portal for the International Knockout Mouse Consortium (IKMC). This international effort has jointly produced 14,000 mutant ES cell lines and made them available to the scientific community from public repositories.

The second session gave the grantees of the new NIH Common Fund Program, KOMP² (Knockout Mouse Phenotyping Project), the opportunity to present their plans for the award period. The mouse production centers will convert a total of 2,500 IKMC ES cell lines to mouse strains. The mouse phenotyping centers will subsequently phenotype those 2,500 mouse strains over the five year period. The production-phenotyping centers are DTCC (UC Davis-the Toronto Center for Phenogenomics,(TCP)-Charles River Laboratories, Inc.-CHORI consortium; [production abstract](#), [phenotyping abstract](#)), BaSH (Baylor College of Medicine-Sanger-MRC, Harwell consortium; [production abstract](#), [phenotyping abstract](#)), and JAX ([production abstract](#), [phenotyping abstract](#)). The data coordination center and database (DCCDB), will develop, organize, and maintain the appropriate databases to track progress of the production pipelines, phenotype data, SOPs, QA/QC, as well as data visualization tools. At the same time, they will coordinate these efforts with the International Mouse Phenotyping Consortium (IMPC) with a goal to integrate all data via single web portal. The awardee for the DCCDB for KOMP² is the European Bioinformatics Institute (EBI) ([abstract](#)).

The second day marked the launch of the IMPC effort. Various centers from around the globe presented their past work, challenges, and ideas for the future of mouse phenotyping, not only for their own center, but for the international effort, as a whole. The IMPC will provide a coordinated plan for the international phenotyping effort, including common and standardized phenotyping platforms and common QC standards. It will be a global resource of KO mice and the associated database of gene function (www.mousephenotype.org).

The final session of the meeting was broken down into five sections meant to stimulate discussion regarding those key aspects of the phenotyping endeavor: (1) embryonic phenotyping and imaging, (2) gene list and mouse production coordination, (3) Cre drivers, (4) phenotyping pipelines, and (5) expression analysis.

Moving forward with the phenotyping effort, the key challenges that need to be addressed are collaboration and coordination among the research network, project tracking transparency, and creating an interactive interface for the community, including clear data visualization. The KOMP² DCCDB will curate the gene production list and create a gene tracking database for the IMPC. This gene production list will take into account the 2+ years of nominations previously collected by www.komp.org and www.knockoutmouse.org. There will be a basic set of around 17 core phenotypic tests that will be performed at each KOMP² production-phenotyping center, as part of a coordinated plan with the international phenotyping effort. A brief overview of these common and standardized phenotyping platforms will be available on the IMPC website within the next few months.