TIGM.org
TEXAS A&M INSTITUTE FOR GENOMIC MEDICINE

Questions? Call us
(888) 377-TIGM
or (979) 845-8446

Dear Colleague,

It has been an exciting year for TIGM so far! We remapped our clone library to the latest mouse genome build and added almost 200 new genes to the list of available knockouts. If we did not have your gene in the past now is the time to search our **database** again. Our production efforts are as strong as ever; To date, TIGM has provided more than 290 mouse lines and more than 2,900 ES cell lines to external researchers. TIGM also offers a variety of services to the domestic and international research communities and high-throughput screening of our ES cell library. Important scientific breakthroughs are made with both direct and indirect involvement of TIGM; more than 70 peer-reviewed papers have been published by either TIGM scientists or external researchers who utilized TIGM resources have been published. We now have more than 210 mouse lines in our repository all available at cost recovery rates. These are in addition to 170 NIH- and Wellcome-Trust-subsidized lines which are available as sperm for $5,000.

Sincerely,

Ben Morpurgo, Ph.D.
Executive Director, TIGM

New Genes Available

TIGM clones compare to build 38

We have recently completed a reannotation of the genes found in the TIGM collection. We compared the collection of over 350,000 clones to the NCBI annotated build 38 of the mouse genome. This has resulted in nearly 200 new genes found in the TIGM collection.

Search for your gene at: **http://www.tigm.org/database/**

Website Updated

Easier to find what you are looking for

We've given TIGM.org a whole new look! With quick access to fact sheets, brochures, recent news and other resources, the site serves as springboard for internal and external audiences. We encourage you to visit the site to find our latest news and feature stories, as well as familiarize yourself with the new navigation and resources.

Visit the new site at: **http://www.tigm.org/**

Production Update

TIGM is a major international resource for mice & cells

Since beginning its operation in 2006, TIGM has served as a major resource to the international scientific community. In that time, TIGM has delivered more than 560 mouse and ES cells orders to more than 290 academic and commercial institutions in over 26 countries. Overall, more than 4,600 individual gene trapped ES cell clones have been expanded at TIGM; more than 2,900 of those were provided to external researchers. In addition, a total of over 7,100 individual investigators from more than 900 academic and research institutions and commercial entities representing 40 countries, have queried TIGM with information requests.

High-throughput ES Cell Screening

Use our cells to identify active compounds, antibodies or genes which modulate a particular biomolecular pathway

In addition to creating knockout mice, TIGM's mutant ES repository is a also powerful tool for high throughput target discovery and validation. Researchers are currently screening cells to investigate reaction of these cells to radiation, environmental contaminants, toxins and bacterial and viral pathogens to determine if the mutations found within specific lines mitigate normal response. Lines which are found to show a different reaction to the test material are then grown into mice and tested to validate the initial results. The advantage of using ES cells in gene target screening is that they can model specific tissues/cell types using a totally in vitro system. In partnership with the Texas A&M AgriLife Genomics and Bioinformatics Service Facility(TAGS), TIGM now offers high throughput ES screening as a fee-for service or a collaboration.

Injecting Clones

High success rate injecting KOMP & EUCOMM clones

TIGM has been injecting the C57BL/6 ES cell clones on a daily basis for more than 5 years. Our team has experience and expertise working with the conditional JM8 clones produced by the KOMP and EUCOMM knockout mouse projects. TIGM has a 100% success rate in generating chimeras from the lines we have injected and 87% of those projects acheived germline. If you want your clones to be injected quickly and with high success rate, please contact us to arrange for balsotocyst injection service. You can also request your clones to be shipped directly to TIGM. Additional breeding services include deleting the knockout-first cassettes in the KOMP and EUCOMM alleles as well producing cohorts with tissue-specific knockouts.

For more details about services offered by TIGM please visit: **http://www.tigm.org/services/**

Services

Custom services for your research

In addition to injection of TIGM, EUCOMM or KOMP clones, TIGM also offers many custom services. custom work. If you need to generate a constitutive or conditional knockout TIGM offers a complete knockout package that include vector design and construction, electroporation into C57BL/6 or 129/SvEv cells, clone screening and confirmation of targeted events, blastocyst injection and heterozygous mouse production. Alternatively, each step of this process can be ordered separately.

Other services include:

- Pronuclear Injection
- ES cell services
  - Electroporation
  - Clone isolation and identification of targeted ES cell clones by PCR
- Sperm and Embryo Cryopreservation
- Rederivation
  - via embryo transfer
  - via IVF
- Frozen or Live Embryo Transfer
- Cryostorage
- Breeding services
  - line expansion
  - colony management

We can also perform simple animal studies. TIGM can also perform tissue collections and arrange for analysis using a variety of services available at Texas A&M (such as histology, microarray, blood proteins and hormones, to name a few).

Please contact us at info@tigm.org or (979) 845-TIGM to discuss your project needs or find out how we can help you with your research.

For more details about services offered by TIGM please visit: **http://www.tigm.org/services/**

International Mouse Repository

TIGM adds an additional 60 lines

After producing a mouse line, TIGM cryopreserves the sperm and makes those lines available to the international community in compliance with most publishers and NIH resource sharing requirements. We also ask our ES cell customers to ship the mouse lines back to us because we value each knockout line and want to ensure every single mutation is preserved for future use by the scientific community. In addition to contributing to the scientific community, by depositing your mouse in TIGM the line will be available to you or your colleagues anytime in the future should you need it. Should someone contact you to obtain the published mouse, you can send them to us and we will take care of the rest. Depositing your lines at TIGM also means significant cost savings to you as it allows to eliminate the colony once your research is complete and you can be confident that it will be available should you decide to revisit the work. The TIGM International Mouse Repository currently has 159 C57/BL6N and 52 129/SvEv x C57BL6/N cryopreserved lines most of which are available to the public on a cost recovery basis ($3,500 USD per mouse line) under the same Terms and Conditions as any of our other lines. We also provide access to 48 Wellcome Trust- and 125 NIH-subsidized lines in 129/SvEv x C57BL6/N background, which are available as sperm ($5,000 USD) to academic and non-profit institutions and can be rederived at an extra cost.

The current list of lines in the repository can be found at **http://www.tigm.org/repository/**.

Thanks everyone who returns the mouse lines to TIGM International Mouse Repository. Your contributions continue to benefit the international research community.

Publications

70 peer-reviewed publications; 17 in 2012

TIGM gene-trapped stable alleles can provide excellent models for various research. In a recent paper published by Dr. Yang-Yi Fan in the July, 2012 issue of The Journal of Lipid Research, mice with the Fads1 gene disrupted by gene trapping display reduced levels of dihomo-γ-linolenic and arachidonic (AA) acids in mouse tissues, resulting in a profound increase in 1-series-derived and a concurrent decrease in 2-series-derived prostaglandins (**Characterization of an arachidonic acid-deficient (Fads1 knockout) mouse model., Fan YY, et al**) The lack of AA-derived eicosanoids was associated with perturbed intestinal crypt proliferation, immune cell homeostasis, and a heightened sensitivity to acute inflammatory challenge. In addition, null mice failed to thrive, dying off by 12 weeks of age. Dietary supplementation with AA extended the longevity of null mice to levels comparable to wild-type mice. Therefore, this new mouse model can expand our understanding of how AA and its metabolites mediate inflammation and promote malignant transformation.

We look forward to listing your publication acknowledging the use of TIGM mouse models on our website. More than 70- peer-reviewed research papers have been published by TIGM scientists or using mice derived from TIGM resources. Below is a selection of the most recent publications:

Publications by TIGM scientists:

Initial characterization of mice null for Lphn3, a gene implicated in ADHD and addiction. Wallis D, Hill DS, Mendez IA, Abbott LC, Finnell RH, Wellman PJ, Setlow B. Brain Res. 2012 May 7.

The mammalian gene function resource: the international knockout mouse consortium. Bradley A, Anastassiadis K, Ayadi A, Battey JF, Bell C, Birling MC, Bottomley J, Brown SD, Bürger A, Bult CJ, Bushell W, Collins FS, Desaintes C, Doe B, Economides A, Eppig JT, Finnell RH, Fletcher C, Fray M, Frendewey D, Friedel RH, Grosveld FG, Hansen J, Hérault Y, Hicks G, Hörlein A, Houghton R, Hrabé de Angelis M, Huylebroeck D, Iyer V, de Jong PJ, Kadin JA, Kaloff C, Kennedy K, Koutsourakis M, Kent Lloyd KC, Marschall S, Mason J, McKerlie C, McLeod MP, von Melchner H, Moore M, Mujica AO, Nagy A, Nefedov M, Nutter LM, Pavlovic G, Peterson JL, Pollock J, Ramirez-Solis R, Rancourt DE, Raspa M, Remacle JE, Ringwald M, Rosen B, Rosenthal N, Rossant J, Ruiz Noppinger P, Ryder E, Schick JZ, Schnütgen F, Schofield P, Seisenberger C, Selloum M, Simpson EM, Skarnes WC, Smedley D, Stanford WL, Francis Stewart A, Stone K, Swan K, Tadepally H, Teboul L, Tocchini-Valentini GP, Valenzuela D, West AP, Yamamura KI, Yoshinaga Y, Wurst W. Mamm Genome. 2012 Sep 12.

Publications featuring mice created and provided by TIGM:

Phospholipid Scramblase 1 Mediates Type I Interferon-Induced Protection against Staphylococcal α-Toxin. Lizak M, Yarovinsky TO. Cell Host Microbe. 2012 Jan 19;11(1):70-80.

Analysis of Gga Null Mice Demonstrates a Non-Redundant Role for Mammalian GGA2 during Development. Govero J, Doray B, Bai H, Kornfeld S. PLoS One. 2012;7(1):e30184.

FLASH is essential during early embryogenesis and cooperates with p73 to regulate histone gene transcription. De Cola A, Bongiorno-Borbone L, Bianchi E, Barcaroli D, Carletti E, Knight RA, Di Ilio C, Melino G, Sette C, De Laurenzi V. Oncogene. 2012 Feb 2;31(5):573-82.

Endogenous IL-33 Is Highly Expressed in Mouse Epithelial Barrier Tissues, Lymphoid Organs, Brain, Embryos, and Inflamed Tissues: In Situ Analysis Using a Novel Il-33-LacZ Gene Trap Reporter Strain. Pichery M, Mirey E, Mercier P, Lefrancais E, Dujardin A, Ortega N, Girard JP. J Immunol. 2012 Feb 27.

Differential Specificity of Endocrine FGF19 and FGF21 to FGFR1 and FGFR4 in Complex with KLB. Yang C , Jin C , Li X , Wang F , McKeehan WL , Luo Y. (2012). PLoS ONE 7(3): e33870.

Phospholipid Scramblase 1 regulates Toll-like receptor 9-mediated type I interferon production in plasmacytoid dendritic cells. Talukder AH, Bao M, Kim TW, Facchinetti V, Hanabuchi S, Bover L, Zal T, Liu YJ. Cell Res. 2012 Mar 27.

Immunofluorescent localization of the Rab-GAP protein TBC1D4 (AS160) in mouse kidney. Lier N, Gresko N, Di Chiara M, Loffing-Cueni D, Loffing J. Histochem Cell Biol. 2012 Mar 31.

Characterization of an arachidonic acid-deficient (Fads1 knock-out) mouse model. Fan YY, Monk JM, Hou TY, Callaway E,

Vincent L, Weeks B, Yang P, Chapkin RS. J Lipid Res. 2012 Apr 25.

Protective role of antithrombin in mouse models of liver injury. Jose A. Guerrero, Raul Teruel, Constantino Martínez, Isabel Arcas, Irene Martínez-Martínez, Maria Eugenia de la Morena-Barrio, Vicente Vicente, Javier Corral. Journal of Hepatology. 26 June 2012.

Complement Factor C7 Contributes to Lung Immunopathology Caused by Mycobacterium tuberculosis. Kerry J. Welsh, Cole T. Lewis, Sydney Boyd, Michael C. Braun, and Jeffrey K. Actor. Clinical and Developmental Immunology. Volume 2012 (2012)

Alkbh1 and Tzfp repress a non-repeat piRNA cluster in pachytene spermatocytes. Nordstrand LM, Furu K, Paulsen J, Rognes T, Klungland A. Nucleic Acids Res. 2012 Sep 10.

Alanine-Glyoxylate Aminotransferase-2 Metabolizes Endogenous Methylarginines, Regulates NO, and Controls Blood Pressure. Caplin B, Wang Z, Slaviero A, Tomlinson J, Dowsett L, Delahey M, Salama A; The International Consortium for Blood Pressure Genome-Wide Association Studies, Wheeler DC, Leiper J. Arterioscler Thromb Vasc Biol. 2012 Sep 27.

The synaptic protein encoded by the gene Slc10A4 suppresses epileptiform activity and regulates sensitivity to cholinergic chemoconvulsants. Zelano J, Mikulovic S, Patra K, Kühnemund M, Larhammar M, Emilsson L, Leao R, Kullander K. Exp Neurol. 2012 Sep 26.

Age-Dependent MicroRNA Control of Synaptic Plasticity in 22q11 Deletion Syndrome and Schizophrenia. Earls LR, Fricke RG, Yu J, Berry RB, Baldwin LT, Zakharenko SS. J Neurosci. 2012 Oct 10;32(41):14132-44.

For the most up to date listing please see our website at

http://www.tigm.org/publications/

With Best Regards,

Ben Morpurgo, Ph.D. Executive Director	Andrei Golovko, Ph.D. Production Manager	Michael McLeod, Ph.D. Director of Scientific Computing

TIGM is a research institute of **Texas A&M AgriLife Research**