



Journal of Visualized Experiments

Accelerate Scientific Research and Education

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提纲

- JoVE介绍
 - 创建背景：传统杂志的局限性和实验可重复性
 - 杂志特点：视频作为科学期刊的新形式
 - 主要内容：学科专辑和科教视频
 - 应用举例
- 使用体验分享与收获
 - 临床试验：技能
 - 基础实验：原理、操作、应用
- 投稿经验分享

创建背景：传统文献局限性



JoVE CEO:
Dr. Moshe Pritsker

Moshe Pritsker was a young researcher working in a stem cell lab at Princeton. Unable to complete a crucial experiment from text articles alone and without any local colleagues to show him the intricate steps, he was struck with his “Eureka!” moment: why not complement published experiments with a video showing the steps in vivid detail?

Shortly after finishing his Ph.D., he traded a lab coat for a video camera and JoVE was born, changing 450 years of scientific publishing tradition.

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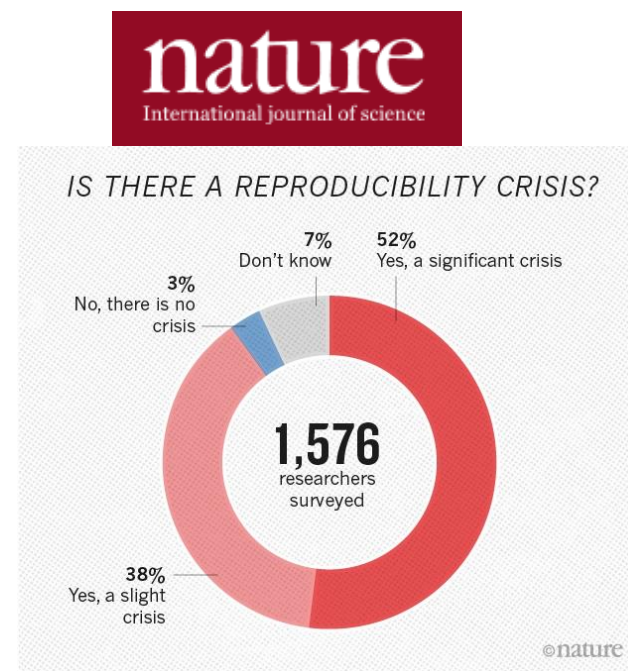
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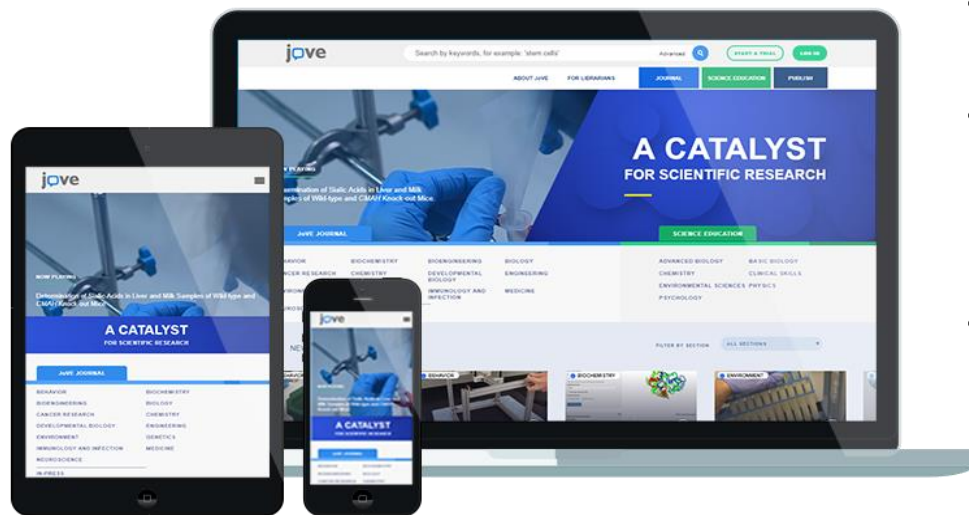
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Abstract

J Vis Exp. 2015 Feb 6;(96). doi: 10.3791/52434.

文摘

Use of the Open Field Maze to Measure Locomotor and Anxiety-like Behavior in Mice.

Seibenhener ML¹, Wooten MC².

Author information

Abstract

Animal models have proven to be invaluable to researchers trying to answer questions regarding the mechanisms of behavior. The Open Field Maze is one of the most commonly used platforms to measure behaviors in animal models. It is a fast and relatively easy test that provides a variety of behavioral information ranging from general ambulatory ability to data regarding the emotionality of the subject animal. As it relates to rodent models, the procedure allows the study of different strains of mice or rats both laboratory bred and wild-captured. The technique also readily lends itself to the investigation of different pharmacological compounds for anxiolytic or anxiogenic effects. Here, a protocol for use of the open field maze to describe mouse behaviors is detailed and a simple analysis of general locomotor ability and anxiety-related emotional behaviors between two strains of C57BL/6 mice is performed. Briefly, using the described protocol we show Wild Type mice exhibited significantly less anxiety related behaviors than did age-matched Knock Out mice while both strains exhibited similar ambulatory ability.

PMID: 25742564 [PubMed - in process]



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Behavioral profile of wild mice in the elevated plus-maze test for anxiety. [Physiol Behav. 2000]

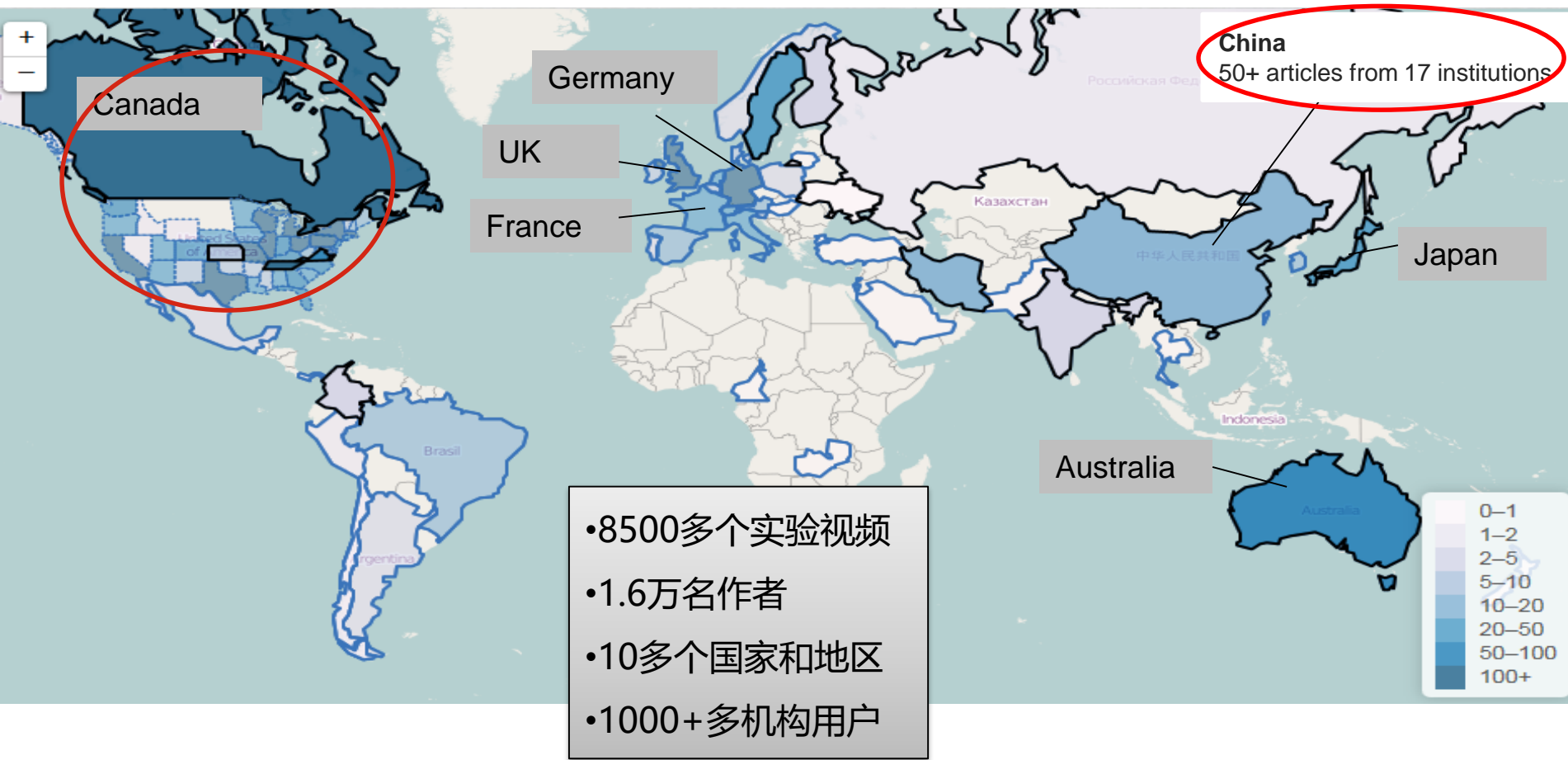
General and social anxiety in the BTBR T+ tf/J mouse strain. [Behav Brain Res. 2011]

Systematic analysis of emotionality in consomic mouse strains establishes. [Genes Brain Behav. 2008]

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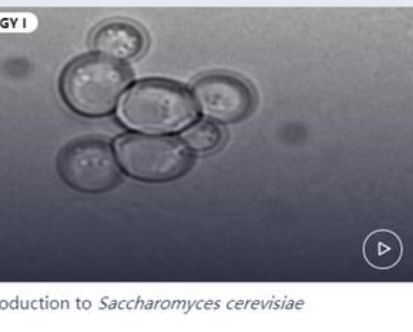
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Murine Echocardiography of Left Atrium, Aorta, and Pulmonary Artery



Alejandro Granillo¹, Celia A Pena¹, Thuy Pham¹, Lavannya M Pandit², George E. Taffet¹

¹Huffington Center on Aging, **Baylor College of Medicine**, ²Pulmonary/Critical Care/Sleep Medicine, **Michael E. DeBakey Veterans Affairs Medical Center**

MEDICINE

Calcification of Vascular Smooth Muscle Cells and Imaging of Aortic Calcification and Inflammation



Caitlin O'Rourke¹, Georgia Shelton^{1,2}, Joshua D. Hutcheson^{3,4}, Megan F. Burke², Trejeeve Martyn¹, Timothy E. Thayer², Hannah R. Shakartz¹, Mary D. Buswell¹, Robert E. Tainsh¹, Binglan Yu^{1,4}, Aranya Bagchi^{1,4}, David K. Rhee^{2,4}, Connie Wu^{1,2,4}, Matthias Derwall⁵, Emmanuel S. Buys^{1,4}, Paul B. Yu^{3,4}, Kenneth D. Bloch^{1,2,4}, Elena Aikawa^{3,4}, Donald B. Bloch^{1,5,6}, Rajeev Malhotra^{2,4}

¹Anesthesia Center for Critical Care Research of the Department of Anesthesia, Critical Care, and Pain Medicine, **Massachusetts General Hospital**, ²Cardiovascular Research Center and **Cardiology** Division of the Department of Medicine, **Massachusetts General Hospital**, ³Cardiovascular Division, **Brigham** **ard Medical School**, ⁵Department of Anesthesiology, **Uniklinik RWTH** **city**, ⁶Center for Immunology and Inflammatory Diseases and the Division of Immunology of the Department of Medicine, **Massachusetts General**

MEDICINE

atic Plaque Model to Study Lesion Biology



Hakimi², Andreas Doesch¹, Thomas J. Dengler³, Hugo A. Katus¹, Christian A. Gleissner¹

¹Department of **Cardiology**, **University of Heidelberg**, ²Department of Vascular Surgery, **University of Heidelberg**, ³Department of **Cardiology**, **SLK Hospital am Plattenwald**

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Ground State Depletion Super-resolution Imaging in Mammalian Cells



Rose E. Dixon¹, Oscar Vivas¹, Karen I. Hannigan¹, Eamonn J. Dickson¹

¹Department of Physiology and Membrane Biology, **University of California School of Medicine, Davis**

In Vivo Detection and Analysis of Rb Protein SUMOylation in Human Cells



Fengxi Meng^{1,2}, Xiaofeng Li^{1,2}, Hui Ren^{1,2}, Jiang Qian^{1,2}

¹Department of Ophthalmology, **Eye and ENT Hospital of Fudan University**, ²Shanghai Key Laboratory of Visual Impairment and Restoration, **Fudan University**

BIOLOGY

Isolation of Intact, Whole Mouse Mammary Glands for Analysis of Extracellular Matrix Expression and Gland Morphology



Christopher Thompson¹, Katherine Keck², Abigail Hielscher²

¹Department of Biochemistry and Molecular Biology, **University of Nebraska Medical Center**, ²Department of Biomedical Sciences, **CA-PCOM**

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 Hiroshi Niiyama¹, Ngan F. Huang¹, Mark D. Rollins², John P. Cooke¹


¹Division of Cardiovascular Medicine, **Stanford University**, ²Department of Anesthesiology, **University of California, San Francisco**

Methods for Acute and Subacute Murine Hindlimb Ischemia

 Michael E. Padgett¹, Timothy J. McCord¹, Joseph M. McClung¹, Christopher D. Kontos¹

¹Division of Cardiology, Department of Medicine, **Duke University Medical Center**

Murine Spinotrapezius Model to Assess the Impact of Arteriolar Ligation on Microvascular Function and Remodeling

 Alexander Michael Guendel^{*1}, Kyle S. Martin^{*1}, Joshua Cutts², Patricia L. Foley³, Alexander M. Bailey¹, Feilim Mac Gabhann⁴, Trevor R. Cardinal², Shayn M. Peirce¹

¹Department of Biomedical Engineering, **University of Virginia**, ²Department of Biomedical Engineering, **California Polytechnic State University**, ³Office of Animal Welfare, **University of Virginia**, ⁴Department of Biomedical Engineering & Institute for Computational

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Murine Model of Hindlimb Ischemia



Hiroshi Niiyama¹, Ngan F. Huang¹, Mark D. Rollins², John P. Cooke¹

¹Division of Cardiovascular Medicine, **Stanford University**, ²Department of Anesthesiology, **University of California, San Francisco**


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Embryonic Stem Cell-Derived Endothelial Cells for Treatment of Hindlimb Ischemia

Ngan F. Huang¹, Hiroshi Niiyama¹, Abhijit De², Sanjiv S. Gambhir², John P. Cooke¹

¹Division of Cardiovascular Medicine, **Stanford University**, ²Department of Radiology, **Stanford University**

Murine Model of Hindlimb Ischemia

Hiroshi Niiyama¹, Ngan F. Huang¹, Mark D. Rollins², John P. Cooke¹

¹Division of Cardiovascular Medicine, **Stanford University**, ²Department of Anesthesiology, **University of California, San Francisco**

BIOLOGY

Murine Model of Hindlimb Ischemia

Hiroshi Niiyama¹, Ngan F. Huang¹, Mark D. Rollins², John P. Cooke¹

¹Division of Cardiovascular Medicine, Stanford University, ²Department of Anesthesiology, University of California, San Francisco

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Murine Model of Hindlimb Ischemia

Hiroshi Niiyama, Ngan F. Huang,
Mark Rollins, John P. Cooke

Stanford University¹
Division of Cardiovascular Medicine,
University of California San Francisco²

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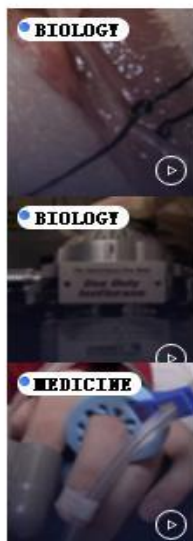
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Murine Model of Hindlimb Ischemia

Hiroshi Niiyama¹, Ngan P. Huang¹, Mark D. Rollins², John P. Cooke¹

¹Division of Cardiovascular Medicine, Stanford University; ²Department of Anesthesiology, University of California, San Francisco

The surgical procedure for induction of unilateral hindlimb ischemia is demonstrated, with confirmation of ischemia by laser Doppler perfusion imaging.

Embryonic Stem Cell-Derived Endothelial Cells for Treatment of Hindlimb Ischemia

Ngan P. Huang¹, Hiroshi Niiyama¹, Abhijit De², Sanjiv S. Gambhir², John P. Cooke¹

¹Division of Cardiovascular Medicine, Stanford University; ²Department of Radiology, Stanford University

The surgical procedure for delivery of embryonic stem cell-derived endothelial cells to the ischemic hindlimb is demonstrated, with non-invasive tracking by bioluminescence imaging.

Assessing Endothelial Vasodilator Function with the Endo-PAT 2000

Andrea L. Axtell¹, Parameh A. Gomar¹, John P. Cooke¹

¹Department of Cardiovascular Medicine, Stanford University

A noninvasive procedure to assess endothelial function is demonstrated using the Endo-PAT 2000.

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Executive Summary: Pivotal Research in Cardiovascular Syndromes in the Elderly

The American Journal of Geriatric Cardiology. Oct, 2000 | Pubmed ID: 11416575

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Am J Geriatr Cardiol. 2000 Oct;9(5):243-250.

Executive Summary: Pivotal Research in Cardiovascular Syndromes in the Elderly.

McKay CR¹, Rich MW, Vlietstra RE, Kitzman DW, Fleg JL, Krumholz HM, Lakatta EG, Cooke JP, Cannon CP, Ezekowitz MD, Frohlich ED, Jalife J, Kass DA, Kottke BA, Muller JE, Salton B, Shen WK, Somers VK.

Author information

Abstract

The PRICE-1 conference was designed to identify near term priorities for funding cardiovascular research in the elderly. Twenty topics were identified with either break throughs in fundamental mechanisms of aging with cardiovascular systems or with critical importance to cardiovascular care of the elderly. (c) 2000 by CVRR, Inc.

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SUMMARY

The surgical perfusion in

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ABSTRACT

In the United States, medical therapies for symptomatic relief are limited. Surgical or endovascular interventions are useful for some individuals, but long-term results are often disappointing. As a result, there is a need for developing new therapies to treat PAD. The murine hindlimb ischemia preparation is a model of PAD, and is useful for testing new therapies. When compared to other models of tissue ischemia such as coronary or cerebral artery ligation, femoral artery ligation provides for a simpler model of ischemic tissue. Other advantages of this model are the ease of access to the femoral artery and low mortality rate.

Video Article

Murine Model of Hindlimb Ischemia

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URL: <https://www.jove.com/video/1035>

DOI: [doi:10.3791/1035](https://doi.org/10.3791/1035)

Keywords: Medicine, Issue 23, hindlimb ischemia, peripheral arterial disease, vascular disease, regenerative medicine, perfusion, mouse model

Date Published: 1/21/2009

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Abstract

In the United States, peripheral arterial disease (PAD) affects about 10 million individuals, and is also prevalent worldwide. Medical therapies for symptomatic relief are limited. Surgical or endovascular interventions are useful for some individuals, but long-term results are often disappointing. As a result, there is a need for developing new therapies to treat PAD. The murine hindlimb ischemia preparation is a model of PAD, and is useful for testing new therapies. When compared to other models of tissue ischemia such as coronary or cerebral artery ligation, femoral artery ligation provides for a simpler model of ischemic tissue. Other advantages of this model are the ease of access to the femoral artery and low mortality rate.

In this video, we demonstrate the methodology for the murine model of unilateral hindlimb ischemia. The specific materials and procedures for creating and evaluating the model will be described, including the assessment of limb perfusion by laser Doppler imaging. This protocol can also be utilized for the transplantation and non-invasive tracking of cells, which is demonstrated by Huang *et al.*¹.

Video Link

The video component of this article can be found at <https://www.jove.com/video/1035/>

Protocol

1. Induction of Unilateral Hindlimb Ischemia

1. The surgical tools needed for this operation include: fine pointed forceps, pointed forceps, spring scissors, surgical scissors, needle holder,

注：视频只可在线观看，不可下载。

视频

提供在线文章中参考文献的Pubmed链接

References

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3. Niiyama, H., Kai, H., Yamamoto, T., Shimada, T., Sasaki, K., Murohara, T., Egashira, K., Imaizumi, T. Roles of endogenous monocyte chemoattractant protein-1 in ischemia-induced neovascularization. *J. Am. Coll. Cardiol.* **44**, 661-666 (2004).

4. Dokun, A. O., Keum, S., Hazarika, S., Li, Y., Lamonte, G. M., Wheeler, F., Marchuk, D. A., Annex, B. H. A quantitative trait locus (LSq-1) on mouse chromosome 7 is linked to the absence of tissue loss after surgical hindlimb ischemia. *Circulation.* **117**, 1207-1215 (2008).

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A quantitative trait locus (LSq-1) on mouse chromosome 7 is linked to the absence of tissue loss after surgical hindlimb ischemia.

Dokun AO¹, Keum S, Hazarika S, Li Y, Lamonte GM, Wheeler F, Marchuk DA, Annex BH.

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Materials

提供实验材料清单

Name	Type	Company	Catalog Number	Comments
Surgical Tools	Tool	Fine Science Tools		
Constix Cotton Swabs	Tool	Contec	SC-4	
Betadine (Povidone-iodine)	Reagent	PDI		
70% alcohol	Reagent	Kendall		
Phosphate Buffered Saline	Reagent	Invitrogen		
7-0 silk suture	Tool	Genzyme		
5-0 vicryl suture	Tool	Ethicon Inc.		
Electric shaver	Tool	GE Healthcare		
Cautery	Tool	Baxter International Inc.		
Laser Doppler and PeriScan PIM 3 System	Equipment	Perimed		



0:00	Title
1:23	Introduction
2:15	Induction of Unilateral Hindlimb Ischemia
7:11	Laser Doppler Blood Perfusion
10:21	Representative Results/Outcome
11:29	Conclusion

COMMENTS

43 COMMENTS

[↩ REPLY](#)

Is there really "8-10 months old" mice, in your discussion section ? Or it should be 8-10 weeks old? Thank you.

POSTED BY: ANONYMOUS APRIL 16, 2009 - 4:58 AM

[↩ REPLY](#)

Dear Chris, As indicated in the discussion, we prefer using old mice (8-10 months old) to mimic the population of patients who tend to suffer from peripheral arterial disease (>60 years). Young mice (<8 weeks old) have a faster recovery rate than old mice (8-10 months old) and more easily recover without any therapeutic intervention. Therefore, the fast recovery rate of young mice may interfere with studies to assess the therapeutic effect of new treatments. Thank you for your inquiry. Sincerely, Ngan Huang, PhD

POSTED BY: ANONYMOUS APRIL 16, 2009 - 6:34 PM

[↩ REPLY](#)

We do observed the fast recovery rate of young mice. Thank you for your answer, it help us a lot. Thank you again!

POSTED BY: ANONYMOUS APRIL 17, 2009 - 3:24 AM

[↩ REPLY](#)































Dear Sir or Madam,
I study in University of Thessaly (Greece), department of Biochemistry & Biotechnology. I have to make a presentation about hindlimb Ischemia and your video above would help me a lot. So, I would like to know if there is any possibility to obtain this video. Thank you in advance for your time.

JOVE使用心得































提纲

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- ☐  Essentials of Biology 2 Mouse, Zebrafish, and Chick 模式生物II 小鼠, 斑马鱼和鸡
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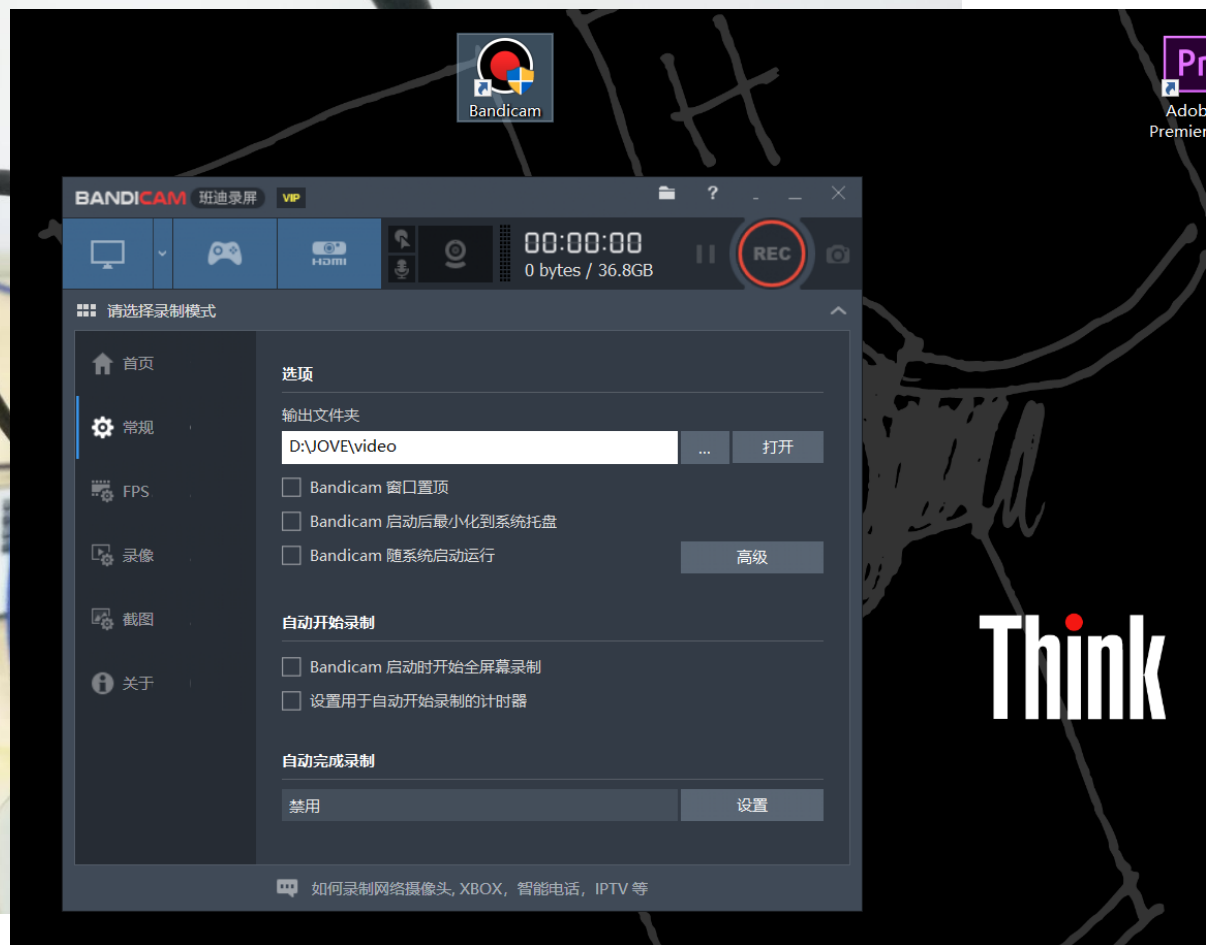
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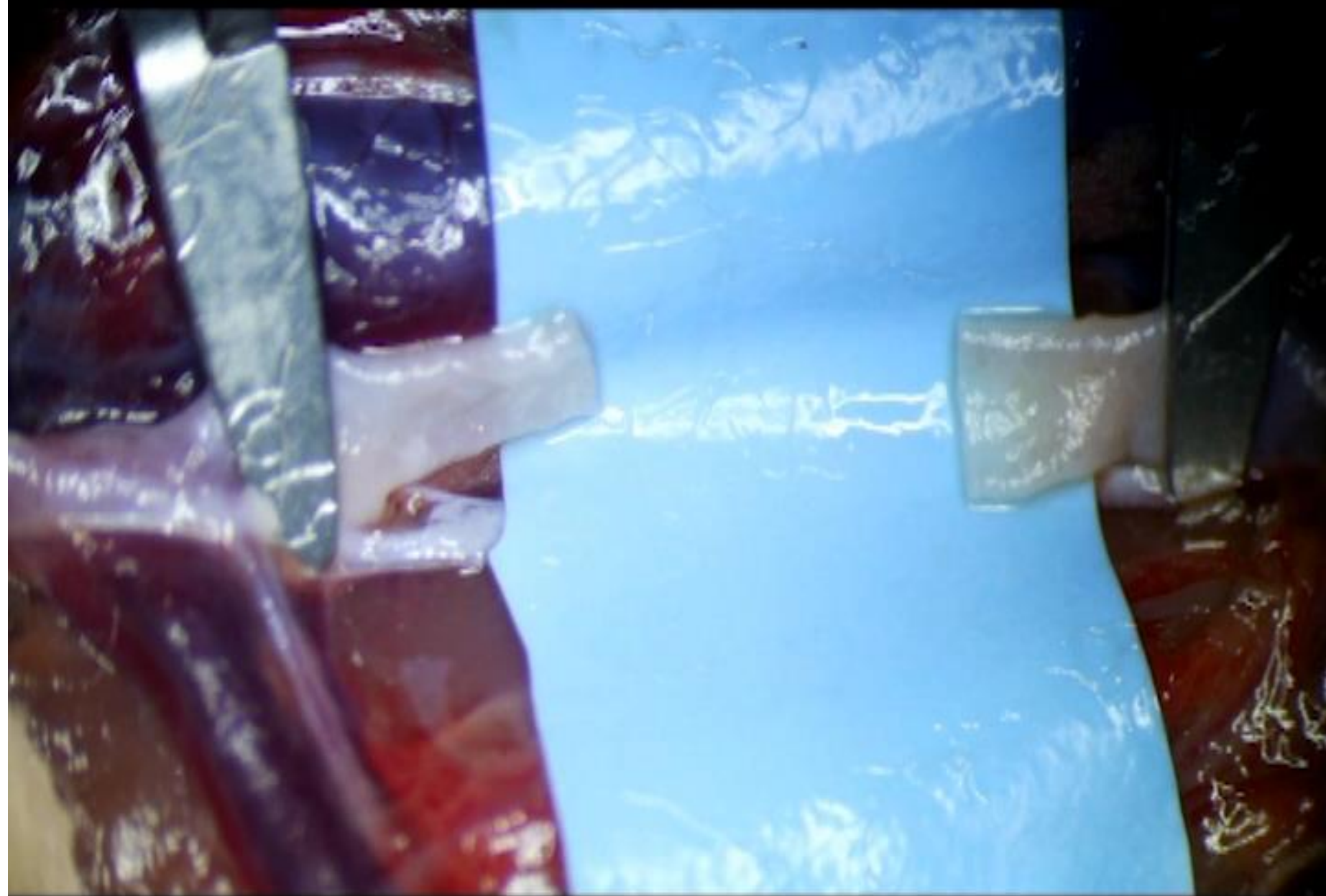
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Thank you!

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