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# 2016 Mouse Pathobiology and Phenotyping Short Course

July 25-29, 2016

Short Course & Workshop on *Mouse Biology, Pathology, Genetics for Phenotyping and Translational Research*

[\[concurrent with graduate school course ME 680.712\]](#)

At Johns Hopkins University School of Medicine,

Baltimore, MD USA

**TARGET AUDIENCE:** Scientists, faculty, postdocs, graduate students, veterinarians, pathologists who use or expect to use mice in translational research.

**AIMS:** To provide information, practical tools and skills essential to the optimal use of mice in translational research.

**FORMAT & TOPICS:** 5 day short-course on mouse biology, pathology, genetics, practical and multidisciplinary phenotyping for translational research, including lectures, 3 hands on laboratory session, exhibits, tours, poster session, pathology slide conference.

**DVM/VMD RACE approved provider**

**SYLLABUS:** [MOUSE PATHOBIOLOGY & PHENOTYPING MANUAL](#) is the core syllabus material, [several sections can be downloaded \(free\)](#)

Additional syllabus/lecture material is uploaded before the course, and provided at the course.

### **JHU REGISTRATION**

**(Grad Students, Postdocs, Faculty and Staff)**

After June 1, call or email for availability of laboratory sessions.

For Graduate students and Postdocs, this is [JHUSOM graduate school course ME:680.712](#)

[Faculty/Staff Tuition Remission information/registration](#)

### **NON-JHU REGISTRATION**

**Early registration (before June 15):**

\$800 for Lectures + Hands on Laboratory Sessions, \$600 for Lectures Only.

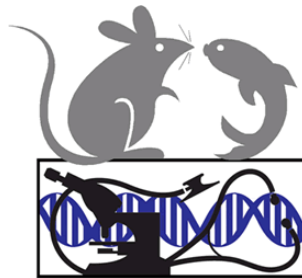
**After Jun 15:** \$1,000 for Lectures and Lab Sessions (call or email for availability),  
\$800 for Lectures Only.

**BWI is the closest airport**

**BAL is the closest Amtrak station**

[Local Hotel Information](#) (this course is at Johns Hopkins Hospital or East Baltimore Campus;  
733 North Broadway; Baltimore, MD 21205))

[Visitor Parking \(McElderry or Caroline are Closest Garages\)](#)



**Visit Exhibits 9am Monday to 5pm Tuesday.**

**Contact [Welza1@jhmi.edu](mailto:Welza1@jhmi.edu) for 2016 Exhibit Information**

**2016 EXHIBITORS**

**CRC Press**

2016 Programs

**JHU CORES**

**PHENOTYPING CORE**

**BRB BEHAVIOR CORE**

**CMOR CENTER FOR METABOLISM AND OBESITY RESEARCH**

**SAIRP Small Animal Imaging Resource Program**

**Comprehensive Oncology Tissue Services Core**

**Transgenic & ES Cell Core**

**IACUC**

**MONDAY  
July 25**

**INTRODUCTION to Mouse Pathobiology & Phenotyping  
+ EXHIBITS + POSTERS**

8am-5pm

*Registration - Turner Concourse*

9-10am

Brayton - Introduction: Phenotyping & Famous Mice (PDF)

*Addl.Resources: Online etc resources (PDF)*

10-11

Brayton - Common Phenotypes and Diseases (NON infectious) (PDF)

11-12

Watson - Environmental influences on phenotypes 1

What is in your mouse environment? (PDF)

12-1

**LUNCH - Posters, Meet the Cores**

1-2

**KEYNOTE LECTURE: Judith A. Hewitt, Ph.D - Chief, Research Resources Section, Office of Biodefense, Research Resources, and Translational Research/DMID/NIAID/NIH  
"Enhancing Reproducibility through Rigor & Transparency" (PDF)**

2-3

Watson - Environmental influences on phenotypes 2

More impacts on research and phenotypes: Your Surveillance Program (PDF)

3-4

Brayton - Microbiome & infectious phenotypes in our research ( PDF)

4-5

Brayton - Immunovariability in (immune sufficient and immune deficient) mice (PDF)

5-7pm

**RECEPTION & Raffle, Posters, Meet the Cores**

**TUESDAY  
July 26**

**GEM & Multidisciplinary Phenotyping  
+ EXHIBITS, Core Tours**

9-10

Reeves – Making Mice - traditional and new transgenic technologies (PDF)

10-11

Crawford / Pletnikov – Emotional / Cognitive Phenotyping (PDF)

11-12

Mitzner – Pulmonary/Respiratory Phenotypes & Phenotyping (PDF)

12-1

**LUNCH (on your own) & Tours - CMOR (metabolic) & BRB Imaging, Behavioral + EXHIBITS + POSTERS**

1-2

Doyle - Ophthalmic Phenotyping (PDF)

2-3

Aja - Metabolic Phenotypes & Phenotyping (PDF)

3-4

Schrode / Lauer - Auditory/acoustic Phenotyping (PDF)

4-5

Foss - IMAGING for Phenotyping (PDF)

**WEDNESDAY  
July 27**

**Practical Phenotyping 1 DOWNLOAD LAB MANUAL - [50p PDF](#)**

9-10

Watson - Clinical / Physical Exam - Modified SHIRPA ([Lab Manual - 50p PDF](#)) (PDF)

- 10-11 Brayton - Clinical Pathology - oversimplified (PDF)  
 11-12 Brayton & al - Online & other Resources ( PDF)  
 12-1 **LUNCH (on your own) & Tours - CMOR (metabolic) & BRB Imaging, Behavioral**  
 Watson / Forbes & al  
 130-3pm LAB 1: Clinical Examination ([Lab Manual - 50p PDF](#))  
 Forbes / Brayton & al  
 315-5pm LAB 2: Clinical Pathology and Specimen collection ([Lab Manual - 50p PDF](#))

**THURSDAY**  
**July 28**

**Practical Phenotyping 2 DOWNLOAD LAB MANUAL - [50p PDF](#)**

- 9-10 Brayton - Anatomic Pathology Phenotyping - Necropsy ([Lab Manual - 50p PDF](#)) (PDF)  
 10-11 Brayton - Anatomic Pathology Phenotyping - Trimming ([Lab Manual - 50p PDF](#))  
 11-12 Brayton - Microscopic Anatomy & Pathology by Virtual Microscopy ([Lab Manual - 50p PDF](#))  
 12-1 **LUNCH (on your own)**  
 Forbes / Brayton et al.  
 1-4 LAB 3: Anatomic Pathology - Necropsy ([Lab Manual - 50p PDF](#))  
 4-5pm Mangus - Basic Immunohistochemistry - principles and protocol development (PDF)

**FRIDAY**  
**July 29**

**Practical Phenotyping 3**  
**Advanced Pathology for Phenotyping & Translational Research**

- 9-11 Forbes / Brayton et al.  
 LAB 4: Anatomic Pathology - Trimming ([Lab Manual - 50p PDF](#))  
 11-1 **LUNCH (on your own) (+ Slide Conference )**  
 1-2 J Ward - Evaluation of Embryonic & Perinatal Lethality In Mice (PDF)  
 2-3 D Haines - NCI Pathology Core Support for Basic and Translational Research: GEM, Xeno, TMAs and Nano (PDF)  
 3-4 A Baras - An introduction to digital whole slide imaging and whole slide image analysis (PDF)

**Electronic/ Take home / Must be completed by Midnight Sun**  
**EXAM ! July 31!**

**JHU Honor code applies.**

# **MOUSE PATHOBIOLOGY & PHENOTYPING MANUAL**

1st ed. 2009 and later selected sections available to download here.  
 Register for this course, or contact Dr. Brayton for updated revisions.

**Section 1**

Spontaneous Phenotypes and Conditions in Common Mouse Strains & Stocks - 2009 1st ed (75pp)

Spontaneous Phenotypes and Conditions in Common Mouse Strains & Stocks - 2013 3rd ed (84pp)

## **Section 2**

Infectious Agents and Phenotypes in Mice - 2009 1st ed

Infectious Agents and Phenotypes in Mice - 2012 2nd ed

## **Section 3**

Mouse Pathology Glossary: Non Neoplastic; Neoplastic - 2009 1st ed

## **Section 4**

Anatomic Pathology - Necropsy & Trimming Protocol - 2009 1st ed

Anatomic Pathology - Necropsy & Trimming Protocol - 2013 3rd ed (in 2013 Lab Manual)

## **Section 5**

(Relatively) Non Invasive Phenotyping

## **Section 6**

Clinical Pathology Resources

## **Section 7**

Metabolic Phenotyping Resources

## **Section 8**

Pregnancy, embryo, pup evaluation

# **Previous Courses & Symposia**

[2015 JHU Short Course](#)  
[2013 JHU Short Course](#)  
[2012 JHU Short Course](#)  
[2011 JHU Short Course](#)  
[2010 JHU Short Course](#)  
[2009 JHU Symposium](#)  
[2008 JHU Symposium](#)  
[2007 JHU Symposium](#)  
[2006 JHU Symposium](#)  
[2008 ME 680.712 course schedule](#)  
[2007 ME 680.712 course schedule](#)

# **Additional Lecture/Syllabus Material**

## **2014**

**JHU Small Animal Imaging Workshop, Mar 11-13, 2014**

Brayton - Pathology Imaging PDF

**2014 BTCure Workshop Vienna**

Brayton - Immune Variation Among Inbred Strains and Sources PDF of PPT

[2014 Mouse Models; Wellcome Trust](#)

Immunodeficient Mice: Pathology, Phenotypes PDF of PPT

[Brayton, C. \(2014\). Spontaneous diseases in commonly used mouse strains and stocks. MPD:Brayton1. Mouse Phenome Database web site <http://phenome.jax.org>. Bar Harbor, Maine USA, The Jackson Laboratory.](#)

[Brayton, C., C. Mckerlie, and S. Brown, \(2014\). CH 16. Analysis of Phenotype. Transgenic Animal Technology, A Laboratory Handbook, 3rd Ed. C. A. Pinkert: 431-488. Elsevier.](#)

## 2013

### 2013 ECVP Summer School

Mouse Pathology (Spontaneous + Infectious) text + refs 50p PDF

Mouse Pathology summary tables - 14p docx

Rat Pathology summary tables - 11p docx

### 2013 FELASA Practical Pathology Workshop

Practical Pathology Protocol PDF 15 pages Practical Pathology PPT PDF 15 pages

Sample Submission Forms (<http://www.hopkinsmedicine.org/mcp/PHENOCORE/TESTpath.html> )

## 2012

[Brayton, C.F., P.M. Treuting, and J.M. Ward, \*Pathobiology of Aging Mice and GEM: Background Strains and Experimental Design\*. Vet Path. 2012. \*\*49\*\*\(1\): p. 85-105.](#)

[Treuting, P.M., C.B. Clifford, R.S. Sellers, and C.F. Brayton, \*Of mice and microflora: considerations for genetically engineered mice\*. Vet Pathol, 2012. \*\*49\*\*\(1\): p. 44-63.](#)

[Sellers, R. S., C.B. Clifford, P.M. Treuting, and C.F. Brayton. \(2012\). "Immunological variation between inbred laboratory mouse strains: points to consider in phenotyping genetically immunomodified mice." \*Veterinary pathology\* 49\(1\): 32-43.](#)

### Brayton 2012 Mouse Cancer Models Lecture

### Brayton 2012 Mouse Ageing Models Lectures

[Brayton, C. and P. Treuting \(2012\). \*Phenotyping. Comparative Anatomy and Histology: A Mouse and Human Atlas\* P. Treuting and S. Dintzis. London, Elsevier \(Academic Press\): 361-381.](#)

[Danneman, P., Suckow, M.A., and Brayton, C.F. \(2012\). \*THE LABORATORY MOUSE\*. 2nd Ed. Boca Raton, FL, Taylor and Francis, CRC Press.](#)

## 2011

[Brayton, C. \(2011\). \*Nature and Nurture: impacts on mouse phenotypes and translational research. THE MOUSE AS A MODEL ORGANISM\*. T. Pihlajaniemi and C. Brakebusch, Springer.](#)

For additional Course information, or to provide feedback or suggestions - contact [Dr. Brayton](#).

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