AUTHOR-PROVIDED FOOTAGE

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Title: Is My Mouse Pregnant? High-Frequency Ultrasound Assessment

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Introduction

1. Introductory Interview Statements

REQUIRED:

1.1. High-resolution ultrasound can help streamline experiments requiring timed-pregnant mice by determining the state of pregnancy, gestational age, and pregnancy losses. This protocol demonstrates how to assess mouse pregnancies and identify potential image artifacts that may mimic pregnancy.

1.1.1. LAB MEDIA: IMG_3396.MOV

Ethics Title Card

1.2. Procedures involving animal subjects have been approved by the Institutional Animal Care and Use Committee (IACUC) or at New York University Grossman School of Medicine.

NOTE: All APF uploaded to AWS

2. Transabdominal Imaging of the (Presumed) Pregnant Mouse

2.1. To begin, identify the bladder on the screen **[1]**. Scanning caudally from the bladder, identify the vagina. Then, scanning slowly and smoothly in a cranial direction, identify the bifurcation of the vagina into the left and right uterine horns **[2]**.

2.1.1. LAB MEDIA: IMG_3394.MOV.

2.1.2. LAB MEDIA: IMG_3399.MOV.

2.2. Survey the left and right uterine horns. Up to mid-gestation, the mouse embryos will be positioned along the right and left peripheries **[1]**. As they grow, the more distal portions of the uterus and their corresponding embryos will turn outwards and posteriorly **[2]**.

2.2.1. LAB MEDIA: Colin Phoon - VIDEO 2-LEFT UTERUS SWEEP_2020-08-06-11-30-06-406.avi.

2.2.2. LAB MEDIA: VIDEO 3-EMBRYO E9.5_2019-06-20-10-57-38-328.avi. **TEXT: E10.5 or E11.5**

Results

3. Results: High-frequency Ultrasound Assessment

3.1. This protocol is especially useful when breeding genetically engineered mice. Typically, heterozygous with heterozygous crosses **[1]** to yield homozygous offspring lead to failure of proper development, causing prenatal lethality **[2]**.

3.1.1. LAB MEDIA: Figure 1.

3.1.2. LAB MEDIA: Figure 4.

3.2. Mouse embryos at various stages of development are shown here **[1]**.

3.2.1. LAB MEDIA: Figure 5.

3.3. Early-stage mouse embryos, dead embryos, or resorbed embryos may resemble other organs in the abdomen or feces in the intestines **[1]**, while intestinal loops may mimic the non-gravid uterus **[2]**.

3.3.1. LAB MEDIA: Video 5 and/or Figure 10.

3.3.2. LAB MEDIA: Video 4 and/or Figure 9.

Conclusion

4. Conclusion Interview Statements

4.1. This method can also be used for mapping and monitoring the embryos as the pregnancy progresses. In this way, the optimal timing for embryo harvest can be determined.

4.1.1. LAB MEDIA: IMG_3395.MOV