

Histology of Rhesus Macaque Uterine Wall Cross Sections: Masson's Trichrome Stain

The accompanying .svs files contain scanned histology sections of the Rhesus macaque uterine wall stained with Masson's Trichrome. This data accompanies the manuscript Fodera et al. Time-Dependent Material Properties and Composition of the Nonhuman Primate Uterine Layers Through Gestation.

Slides were imaged with a Leica Aperio AT2 whole slide scanner up to 20x magnification. All .svs files can be opened and visualized with the Aperio250 ImageScope software (v12.3.1.6002, Leica Microsystems, Wetzler, Germany).

- Aperio ImageScope is free to download from the following website:
<https://www.leicabiosystems.com/us/digital-pathology/manage/aperio-imagescope/>

Files are labeled as follows: MonkeyID.GestationalState.AnatomicRegion

The relevant methods are described below:

Tissue Collection

Following approval by the University of Wisconsin Institutional Animal Care and Use Committee (IACUC), NHP uterine tissue was collected from nonpregnant (N = 3) and pregnant Rhesus macaques following total hysterectomies. PG uterine tissue was collected at three gestational time points corresponding approximately to the early 2nd (E2, N = 3), early 3rd (E3, N = 3), and late 3rd (L3, N = 7) trimesters. Detailed animal subject information, including age, gestational age, gravidity (number of previous pregnancies), placenta location, and past obstetric history, are noted in Table 1. Uterine specimens contained all three tissue layers (i.e., endometrium-decidua, myometrium, and perimetrium) and were sampled from three anatomic regions: anterior, fundus, and posterior. Samples were flash-frozen on dry ice and stored at -80°C until further processing.

Histology

Uterine cross-sections containing all three tissue layers were fixed in 10% formalin solution for 24 hrs and subsequently transferred to 70% ethanol solution. Samples were paraffin-embedded and sectioned to a thickness of 5 µm by the Molecular Pathology Core Facilities at Columbia University Irving Medical Center (CUIMC). To observe histomorphology, all samples were stained for Hematoxylin & Eosin (H&E) and Masson's Trichrome using standard protocols. Samples were imaged under brightfield microscopy with a Leica Aperio AT2 whole slide scanner and visualized with the Aperio250 ImageScope software (v12.3.1.6002, Leica Microsystems, Wetzler, Germany). All slides were reviewed by a board-certified pathologist (X.C.) who specializes in gynecologic pathology and cytopathology; a summary of notable findings is listed in Table 2.

Monkey ID	Gestational State	Animal ID	Age (yrs)	Gestational Age (days)	Gravidity	Placenta Disc Locations (Primary & Secondary)	Past Obstetric History
	NP	NP-1	4.1	N/A	0	N/A	None
r05038	NP	NP-2	15.2	N/A	5	N/A	VDx4, CSx1
r08059	NP	NP-3	11.8	N/A	5	N/A	VDx5
r05050	E2	E2-1	15.2	72	7	Unknown	VDx4, CSx3
r11091	E2	E2-2	8.9	71	3	Posterior Lateral & Anterior Lateral	VDx2, CSx1
r09059	E2	E2-3	11	73	1	Anterior & Posterior	VDx1
r11087	E3	E3-1	8	110	3	Anterior & Posterior	VDx3
r01047	E3	E3-2	18	112	3	Fundo-Anterior & Posterior	VDx5, CSx3
rh2509	E3	E3-3	17.8	119	4	Anterior & Posterior	VDx1, CSx3
r03155	L3	L3-1	16	161	8	Anterior Lateral & Posterior Lateral	VDx5, CSx3
r10093	L3	L3-2	9.7	158	4	Anterior & Posterior-Fundus	CSx4
rh2825	L3	L3-3	18.4	152	2	Anterior Lateral & Posterior Lateral	VDx1, CSx1
r07031	L3	L3-4	12	157	5	Anterior & Posterior	VDx3, CSx2
rh2528	L3	L3-5	14.2	154	4	Unknown	VDx2, CSx2
r0039	L3	L3-6	19.8	161	10	Dorsal & Ventral	VDx7, CSx3
r04034	L3	L3-7	16.8	151	7	Anterior & Posterior	VDx6, CSx1

Table 1. Detailed Summary of Individual Nonhuman Primate Characteristics. KEY: VD = Vaginal delivery; CS = Cesarean Section

Animal ID	Estimated Menstrual Cycle Stage	Additional Pathological Findings
NP-1	Proliferative	Nodular and disorganized myometrium
NP-2	Unknown – Basalis tissue only	Fibrous basalis tissue; Fibrosis of serosa
NP-3	Late Proliferative / Early Secretory	Adenomyosis
E2-1	N/A. Decidua Parietalis	None
E2-2	N/A. Decidua Parietalis	None
E2-3	N/A. Decidua Parietalis	None
E3-1	N/A. Decidua Parietalis	None
E3-2	N/A. Decidua Parietalis	Endosalpingiosis; Notable fibrotic scar tissue that extends vertically from serosa to decidua – indicative of a previous C-section incision
E3-3	N/A. Decidua Parietalis	Focal thickening of serosa
L3-1	N/A. Decidua Parietalis	None
L3-2	N/A. Decidua Parietalis	None
L3-3	N/A. Decidua Parietalis	None
L3-4	N/A. Decidua Parietalis	None
L3-5	N/A. Decidua Parietalis	None

Table 2. Summary of histological findings for all NHP subjects with estimated menstrual cycle stage for NP individuals.