

Oct 11, 2022

Post-Surgical Dissection of Cervix

DOI

<https://dx.doi.org/10.17504/protocols.io.5jyl89467v2w/v1>

Stephen Fisher¹, Marielena Grijalva¹, Rong Guo¹, sarahjoh¹, Hieu Nguyen¹, John Renz², Jean G Rosario¹, Steven Rudich², Brian Gregory¹, Junhyong Kim¹, Kate O'Neill¹

¹University of Pennsylvania; ²Gift of Life Donor Program



Stephen Fisher

University of Pennsylvania

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.5jyl89467v2w/v1>

Protocol Citation: Stephen Fisher, Marielena Grijalva, Rong Guo, sarahjoh, Hieu Nguyen, John Renz, Jean G Rosario, Steven Rudich, Brian Gregory, Junhyong Kim, Kate O'Neill 2022. Post-Surgical Dissection of Cervix. **protocols.io**

<https://dx.doi.org/10.17504/protocols.io.5jyl89467v2w/v1>

License: This is an open access protocol distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: Working

We use this protocol and it's working

Created: August 05, 2022

Last Modified: October 11, 2022

Protocol Integer ID: 68276

Keywords: fibromuscular portion of the cervix, cervix, dissection of the ectocervix, endocervix in preparation, endocervical canal, cylindrical lower part of the uterus, endocervix, uterus to the vagina, glandular epithelium, epithelium, uterus, thin layer of glandular epithelium, ectocervix, dissection, fibromuscular portion, endocervical sample, fibromuscular in structure, endocervical samples in order, vagina, pathology, pathology review, preparation for 10x visium, 10x visium

Funders Acknowledgements:

NIH

Grant ID: U54HD104392

Abstract

This protocol describes dissection of the ectocervix and endocervix in preparation for 10X Visium, 10X Multiomics, pathology review, and biobanking. The cervix is the cylindrical lower part of the uterus which connects the uterus to the vagina. It is typically 3-4cm in length is largely fibromuscular in structure. The endocervical canal is lined with a thin layer of glandular epithelium. In this protocol we debulk the fibromuscular portion of the cervix for endocervical samples in order to ensure cells lining the endocervical canal are represented.

Materials

- Ice
- Clean cutting surface
- Disposable scalpels
- Kimwipes
- Disposble rulers (with centimeter measurements)
- Ice bucket
- Biohazard bags and container
-  Nuclease-free Water
-  DMEM/F-12 **Thermo Fisher Catalog #11320033**
-  RPMI 1640 Medium **Thermo Fisher Catalog #11875085**
-  MACS® Tissue Storage Solution **Miltenyi Biotec Catalog #130-100-008**
-  DPBS (10X), no calcium, no magnesium **Thermo Fisher Scientific Catalog #14200075** - dilute to 1X with nuclease-free water
-  Marking dye **Cancer Diagnostics Catalog #03000P**

Equipment

VWR® Pour-Boat Weighing Dishes

NAME

flat-bottomed dish

TYPE

VWR International

BRAND

10803-166

SKU

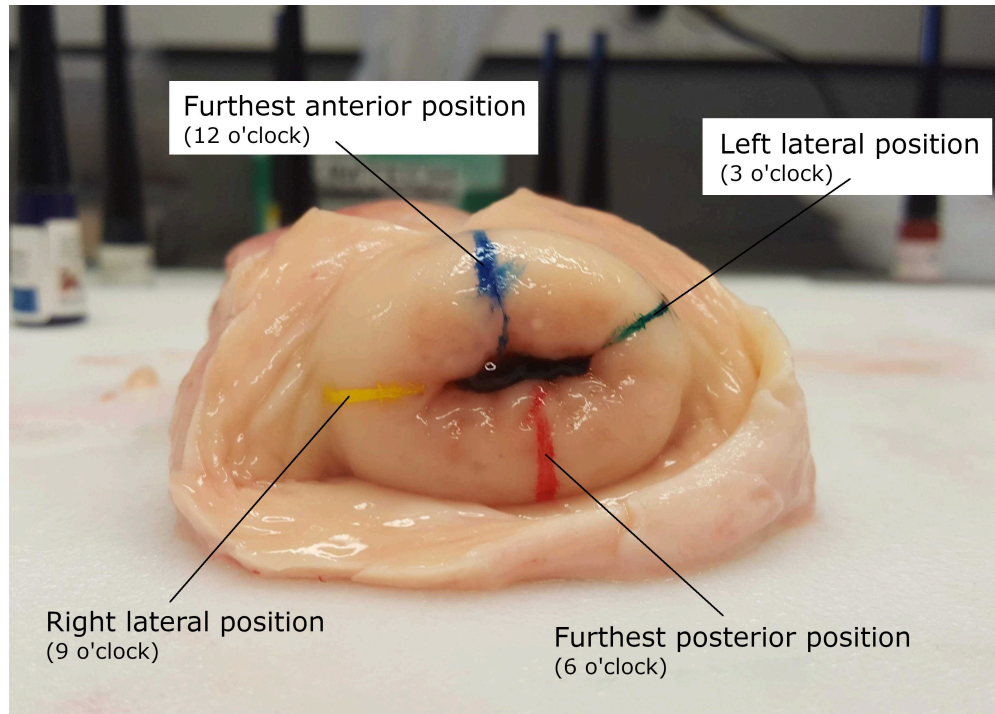
Before start

Dilute phosphate buffered saline (Gibco; 14200-075) to 1X with nuclease-free water.



Dissection of Ectocervix

- 1 Remove uterus from ice and dry the cervix.
- 2 Using a large grossing knife with a fresh blade, remove the most distal portion (1cm length) of the cervix which contains the ectocervix
- 3 Place the remainder of the cervix and uterus back on ice.
- 4 Weigh and measure this distal portion of cervix.
- 5 Lay down cervix with the external cervical os facing up, with the 12 o'clock anterior position furthest away from you.



Orienting the Cervix for Dissection. The ectocervix is the portion of the uterus covered with squamous epithelium that extends into the vagina. The ectocervix can be seen inside the vagina during a gynecologic exam. The opening in the center of the ectocervix is the external os. The external cervical os is the opening to the endocervix, a tunnel through the cervix lined with glandular cells that leads to the uterine cavity. Knowing position of tissue sample with respect to its clock-like position in the cervix will assist with registering the wedge on 3D representations of the organ as is done on HuBMAP's registration user interface (RUI).

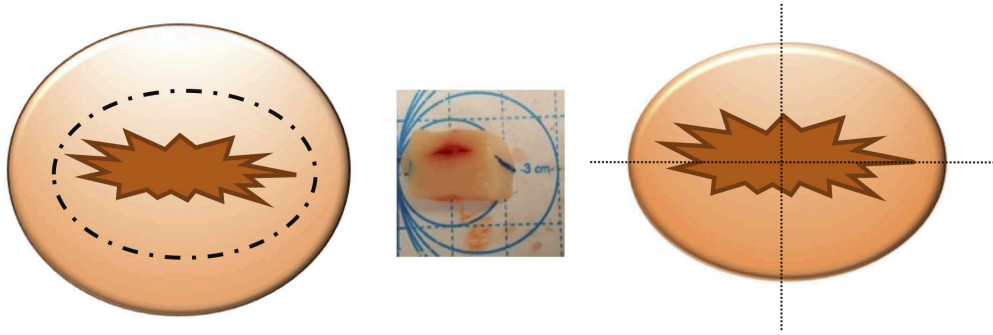
- 6 Dry the ectocervix and label with marking dyes at 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock.
- 7 Moving clockwise, slice the cervix vertically from 12 to 6 o'clock and horizontally from 9 to 3 o'clock so there are 4 equally sized pieces.
- 8 Divide each piece into four additional sections radially.
- 9 Using disposable weigh boats, weigh each tissue specimen.
- 10 For later 3D anatomical positioning, track the quadrant and radial section of each piece of tissue.



- 11 Tissue can be processed with protocols [OCT-Embedded Tissue Preparation](#), [Tissue Fixation Preparation](#), or [Snap-Frozen Tissue Preparation](#) depending on the desired downstream processing.

Dissection of Endocervix

- 12 Remove uterus and remaining cervix from ice and dry.
- 13 Using a large grossing knife with a fresh blade, remove the most distal 1cm of the cervix (previously the middle 1cm of cervix, prior to removal of ectocervical sample).
- 14 Return uterus to ice.
- 15 Trim ~1/2 of the eccentric cervical stroma.
- 16 Dry the endocervix and mark using marking dyes at 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock.
- 17 Lay the cervix down with the external cervical os facing up, with the 12 o'clock anterior position furthest away from you.
- 18 Moving clockwise, slice the cervix in sections as was done above with ectocervix.
- 19 Divide each section into 4 additional sections radially.



Orienting the Endocervix for Dissection. The endocervical canal is tunnel lined with glandular cells surrounded by fibrous muscular tissue that connects the vagina and uterine cavity. Excess fibromuscular tissue is removed to ensure signal from the endocervical canal is not obscured by the abundant stromal tissue.

- 20 Using disposable weigh boats, take the weight of each tissue specimen.
- 21 For later 3D anatomical positioning, track the quadrant and radial section of each piece of tissue.
- 22 Tissue can be processed with protocols [OCT-Embedded Tissue Preparation](#), [Tissue Fixation Preparation](#), or [Snap-Frozen Tissue Preparation](#) depending on the desired downstream processing.