<u>Detailed standard operating procedure for the collection, processing and storage of ectopic endometrium samples</u>

NOTES

- This SOP does not cover safety procedures for the collection and processing of these samples and personnel must follow institutional biosafety guidelines.
- For a summary version of this protocol with side-by-side standard vs. minimal protocol step comparisons, please see "WERF EPHect SOP Tissue Collection Table".
- As this protocol applies to different processing and storage methods (e.g. the use of RNA stabilising solution; immediate snap freezing in theatre), keep a copy of the exact step-by-step protocol used in your lab.

Processing and storage materials

- 1. Biospecimen questionnaire (page 21);
- 2. Log sheet to record sample-related data;

Frozen tissues:

- 3. Labels suitable for long-term freezer storage, and IDs printed using 2D barcoding.
- 4. Aliquot vials with screw top gasket closure; liquid nitrogen.
- 5. Buffers: phosphate buffered saline (PBS);
- 6. RNA stabilizer solution (optional if planning RNA studies)
- 7. Freezers: -80C or liquid nitrogen (LN₂)

Fixed tissues:

- 8. Labels with IDs printed using 2D barcoding;
- 9. Neutral buffered formalin, universal molecular fixative, paraffin;
- 10. HistokinetteTM cassette

1. Ectopic endometrium collection

- 1.1 Pr_ior to tissue collection at surgery, prepare as many of the materials required for storage of the samples and recording of the data (log sheet, storage vials and labels).
- 1.2. Preparation of vials/tubes for surgical collection (NB. If samples are to be snap-frozen immediately in liquid nitrogen in/near theatre in their final storage vials, which is recommended, adopt the final labelling guidelines in section 2 of this protocol).

1.2.1. Standard collection: Pre-label each collection vial with a 2D barcode in addition to a huma
readable unique identifier, participant ID, date of collection and type of sample. Record on the lo
sheet the date and time of sample collection (Date:// and:am/pm).

1.2.2. <i>Required minimum:</i> Pre-label each collection vial with a unique identifier, participant ID, date	of
collection, and type of sample. Record on the log sheet the date and time of sample collection (Date:	:
// and:am/pm).	

- 1.3. For guidance on surgical excision of ectopic endometrium biopsies, please refer to Becker *et al.*, (Becker *et al.*, Fertil Steril 2014) and complete biospecimen questionnaire for each study recruit (page 21).
- 1.4. Deposit tissues in prepared, labelled vials/tubes. These should be kept on ice from the time of collection until preservation/storage (minimise the time held at ambient temperature). NB. If transport from theatre to the processing laboratory is >15 minutes, consider the possibility of processing the samples in/near the theatre (e.g. through snap-freezing in liquid nitrogen, or immersion in an RNA stabiliser solution if required, prior to transport).

2. Sample processing

- 2.1. Preparation of vials/tubes for collection and storage. Use labels and ink suitable for long-term freezer storage. Do not use laser printers or most ink-jet printers as the ink can crack and fall off the label when frozen at ultra-low temperature.
 - 2.1.1. **Standard collection**: Pre-label the aliquot vials with the participant ID number followed by a unique aliquot ID number. Include date of sample creation and sample type. For example: ENDO-123456-U654321-EL: Center identifier (ENDO), participant ID (123456), unique aliquot vial ID (U654321), and sample type (EL for ectopic endometrium). Further, include the above information in human readable format and in a 2D barcode on the label.
 - 2.1.2. **Required minimum:** Pre-label the aliquot vials with the participant ID followed by the sample aliquot number. Also include date of sample creation and sample type on the label. For example: ENDO-123456-EL-01: Center identifier (ENDO), participant ID (123456), type of sample (EL for ectopic endometrium), aliquot number (01).
- 2.2. Record time of starting sample processing on log sheet.
- 2.3. Rinse tissue with PBS (except for RNA studies).
- 2.4. Weigh tissue samples. If tissue size and weight allows storage in separate pieces, prioritize in the following order before freezing for long-term storage.: 1st snap freezing, 2nd RNA stabilizing solution followed by freezing, 3rd universal molecular fixative or formalin fixation. *NB. If RNA is of key interest, and time to freezing is likely to take more than 5 minutes, consider immediate immersion in an RNA stabilizer solution as the first priority.*

2.5. Fresh Tissues

- 2.5.1. **Standard collection**: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C. Transfer to waterbath (37°C) to keep cells alive for cell culture.
- 2.5.2. Required minimum: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C.

2.6. Frozen Tissues

- 2.6.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen within 15 minutes, record time, and transfer to freezers for long-term storage (see section 3).
- 2.6.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen as soon as possible, record time, and transfer to freezers for long-term storage (see section 3).

2.7. RNA stabilizing solution

[commercially available products: Allprotect Tissue Reagent® (Qiagen, Venlo, Netherlands); DNA / RNA Shield™ (Zymoresearch, Irvine, USA); ProtectRNA™ (Sigma-Aldrich, St.Louis, USA); RiboLock™ (Thermoscientific, Waltham, USA); RNAlater® (Qiagen, Venlo, Netherlands); Ambion® RNAsecure™ Reagent (Life-technologies, Carlsbad, USA); SUPERase•In™ (Life-technologies, Carlsbad, USA); PAXgene Tissue Containers (Qiagen, Venlo, Netherlands)]

Before immersion in RNA stabilizing solution, cut large tissue samples to size according to manufacturer's protocol.

- 2.7.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution within 15 minutes of collection, and stored at 4°C for 24 hours prior to freezing (see section 3).
- 2.7.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution, and stored at room temperature for 24 hours prior to freezing (see section 3).

2.8. Fixed Tissues

- 2.8.1. *Standard collection:* Tissue samples should be mounted flat in a Histokinette[™] cassette into 20ml of 10% neutral buffered formalin (NBF), within 15 minutes (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.
- 2.8.2. *Required minimum:* Tissue samples should be mounted flat in a HistokinetteTM cassette containing 20 ml of 10% neutral buffered formalin (NBF), within 1 hour (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.

3. Storage and data recording

Collection, processing, and storage of tissue biospecimens in endometriosis research

- 3.1. Date and time of storage should be recorded on the log sheet. Also record the type, number of aliquots prepared.
 - 3.1.1. *Standard collection:* Store samples in liquid nitrogen (LN_2) freezers, as they have less temperature fluctuations than -80°C freezers.
 - 3.1.2. *Required minimum:* Store samples in -80°C or lower freezers.
- 3.5. Record on the log sheet any variations or deviations from the SOP, problems, or issues (e.g. vial cracked during processing).
- 3.6. Record the location of each sample into the freezer including freezer number, rack, box, and spot in the box along with all other sample attributes in a database. If possible, avoid using a spreadsheet format, but use a relational database.
- 3.7. Keep a record of any freeze-thaw that occurs with a sample for any reason.
- 3.8. Track any change of location of a sample, including sending a sample out to an assay lab for processing.
- 3.9. Track any new samples created from the original sample (i.e., a sub-sample) in the same manner as described above. Ensure that each sub-sample/aliquot is labelled as described in section 2, with a unique ID.

4. Freezer check

- 4.1.1. **Standard collection:** Check freezers bi-weekly and keep a written-log of checks. Have alarm systems setup on all freezers in addition to human bi-weekly checks.
- 4.1.2. Required minimum: Manually check freezers bi-weekly and keep a written log of checks.

5. Data recording check list

- 5.1. Record protocol, specifying which steps are adhered to (standard or minimum).
- 5.2. For each sample, record:
 - 5.2.1. Date and time of collection (Date: __/__/_ and __:__am/pm).
 - 5.2.2. Start time of sample processing in the laboratory (Date: __/__/ and __:__am/pm).
 - 5.2.3. Type and number of lesions prepared.
 - 5.2.4. Date and time sample is stored into freezer (Date: __/__/_ and __:__am/pm).

- 5.2.5. Any variations or deviations from the SOP, problems, or issues.
- 5.2.6. Any freeze-thaw event that occurs with a sample for any reason.
- 5.7. Keep a log of bi-weekly freezer checks.

<u>Detailed standard operating procedure for the collection, processing and storage of eutopic endometrium samples</u>

NOTES

- This SOP does not cover safety procedures for the collection and processing of these samples and personnel must follow institutional biosafety guidelines.
- For guidance on surgical excision of eutopic endometrium biopsies, please refer to Becker *et al.*, (Becker *et al.*, Fertil Steril 2014).
- For a summary version of this protocol with side-by-side standard vs. minimal protocol step comparisons, please see "WERF EPHect SOP Tissue Collection Table".
- As this protocol applies to different processing and storage methods (e.g. the use of RNA stabilising solution; immediate snap freezing in theatre), keep a copy of the exact step-by-step protocol used in your lab.

Processing and storage materials

- 1. Biospecimen questionnaire (page 21);
- 2. Log sheet to record sample-related data;

Frozen tissues:

- 3. Labels suitable for long-term freezer storage, and IDs printed using 2D barcoding.
- 4. Aliquot vials with screw top gasket closure; liquid nitrogen.
- 5. Buffers: phosphate buffered saline (PBS);
- 6. RNA stabilizer solution (optional if planning RNA studies)
- 7. Freezers: -80C or liquid nitrogen (LN₂)

Fixed tissues:

- 8. Labels with IDs printed using 2D barcoding;
- 9. Neutral buffered formalin, universal molecular fixative, paraffin;
- 10. HistokinetteTM cassette

1. Eutopic endometrium collection

- 1.1 Pr_ior to tissue collection at surgery, prepare as many of the materials required for storage of the samples and recording of the data (log sheet, storage vials and labels).
- 1.2. Preparation of vials/tubes for surgical collection (NB. If samples are to be snap-frozen immediately in liquid nitrogen in/near theatre in their final storage vials, which is recommended, adopt the final labelling guidelines in section 2 of this protocol).

1.2.1. Standard collection: Pre-label each collection vial with a 2D barcode in addition to a human
readable unique identifier, participant ID, date of collection and type of sample. Record on the lo
sheet the date and time of sample collection (Date:// and:am/pm).

1.2.2. Required minimum: Pre-label each collection vial with a unique identifier, participant ID, da	ate of
collection, and type of sample. Record on the log sheet the date and time of sample collection (D	ate:
// and:am	

- 1.3.1. **Standard collection:** Record whether eutopic endometrium is collected: wet weight and method used (curettage, endometrial sampling device, hysterectomy and hysteroscopy specimen and Tao brush (Cook, Bloomington, USA)).
- 1.3.2. *Required minimum:* Record whether eutopic endometrium is collected and method used (curettage, endometrial sampling device, and Tao brush TM(Cook, Bloomington, USA)).
- 1.4.1. Standard collection: Collect eutopic endometrium before anaesthesia induction.
- 1.4.2. *Required minimum*: Record whether eutopic endometrium is collected 1) prior to anaesthesia, 2) after sedation but before anaesthesia, or 3) after anaesthesia.
- 1.5. Deposit tissues in prepared, labelled vials/tubes. These should be kept on ice from the time of collection until preservation/storage (minimise the time held at ambient temperature). NB. If transport from theatre to the processing laboratory is >15 minutes, consider the possibility of processing the samples in/near the theatre (e.g. through snap-freezing in liquid nitrogen, or immersion in an RNA stabiliser solution if required, prior to transport).

2. Sample processing

- 2.1. Preparation of vials/tubes for collection and storage. Use labels and ink suitable for long-term freezer storage. Do not use laser printers or most ink-jet printers as the ink can crack and fall off the label when frozen at ultra-low temperature.
 - 2.1.1. **Standard collection**: Pre-label the aliquot vials with the participant ID number followed by a unique aliquot ID number. Include date of sample creation and sample type. For example: ENDO-123456-U654321-EB: Center identifier (ENDO), participant ID (123456), unique aliquot vial ID (U654321), and sample type (EB for eutopic endometrium). Further, include the above information in human readable format and in a 2D barcode on the label.
 - 2.1.2. *Required minimum:* Pre-label the aliquot vials with the participant ID followed by the sample aliquot number. Also include date of sample creation and sample type on the label. For example: ENDO-123456-EB-01: Center identifier (ENDO), participant ID (123456), type of sample (EB for eutopic endometrium), aliquot number (01).
- 2.2. Record time of starting sample processing on log sheet.
- 2.3. Rinse tissue with PBS before storage (except for RNA studies).
- 2.4. Weigh tissue samples. If tissue size and weight allows storage in separate pieces, prioritize in the following order before freezing for long-term storage.: 1st snap freezing, 2nd RNA stabilizing solution followed by freezing, 3rd universal molecular fixative or formalin fixation. *NB. If RNA is of key interest, and time to freezing is likely to take more than 5 minutes, consider immediate immersion in an RNA stabilizer solution as the first priority.*

2.5. Fresh Tissues

- 2.5.1. **Standard collection**: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C. Transfer to waterbath (37°C) to keep cells alive for cell culture.
- 2.5.2. Required minimum: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C.

2.6. Frozen Tissues

- 2.6.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen within 15 minutes, record time, and transfer to freezers for long-term storage (see section 3).
- 2.6.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen as soon as possible, record time, and transfer to freezers for long-term storage (see section 3).

2.7. RNA stabilizing solution

[commercially available products: Allprotect Tissue Reagent® (Qiagen, Venlo, Netherlands); DNA / RNA Shield™ (Zymoresearch, Irvine, USA); ProtectRNA™ (Sigma-Aldrich, St.Louis, USA); RiboLock™ (Thermoscientific, Waltham, USA); RNAlater® (Qiagen, Venlo, Netherlands); Ambion® RNAsecure™ Reagent (Life-technologies, Carlsbad, USA); SUPERase•In™ (Life-technologies, Carlsbad, USA); PAXgene Tissue Containers (Qiagen, Venlo, Netherlands)]

Before immersion in RNA stabilizing solution, cut large tissue samples to size according to manufacturer's protocol.

- 2.7.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution within 15 minutes of collection, and stored at 4°C for 24 hours prior to freezing (see section 3).
- 2.7.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution, and stored at room temperature for 24 hours prior to freezing (see section 3).

2.8. Fixed tissues

- 2.8.1. **Standard collection**: Tissue samples should be mounted flat in a Histokinette[™] cassette into 20ml of 10% neutral buffered formalin (NBF), within 15 minutes (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.
- 2.8.2. *Required minimum:* Tissue samples should be mounted flat in a HistokinetteTM cassette containing 20 ml of 10% neutral buffered formalin (NBF), within 1 hour (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.

3. Storage and data recording

- 3.1. Date and time of storage should be recorded on the log sheet. Also record the type, number of aliquots prepared.
 - 3.1.1. **Standard collection**: Store samples in liquid nitrogen (LN₂) freezers, as they have less temperature fluctuations than -80°C freezers.
 - 3.1.2. *Required minimum:* Store samples in -80°C or lower freezers.
- 3.5. Record on the log sheet any variations or deviations from the SOP, problems, or issues (e.g. vial cracked during processing).
- 3.6. Record the location of each sample into the freezer including freezer number, rack, box, and spot in the box along with all other sample attributes in a database. If possible, avoid using a spreadsheet format, but use a relational database.
- 3.7. Keep a record of any freeze-thaw that occurs with a sample for any reason.
- 3.8. Track any change of location of a sample, including sending a sample out to an assay lab for processing.
- 3.9. Track any new samples created from the original sample (i.e., a sub-sample) in the same manner as described above. Ensure that each sub-sample/aliquot is labelled as described in section 2, with a unique ID.

4. Freezer check

- 4.1.1. *Standard collection:* Check freezers bi-weekly and keep a written-log of checks. Have alarm systems setup on all freezers in addition to human bi-weekly checks.
- 4.1.2. Required minimum: Manually check freezers bi-weekly and keep a written log of checks.

5. Data recording check list

- 5.1. Record protocol, specifying which steps are adhered to (standard or minimum).
- 5.2. For each sample, record:
 - 5.2.1. Date and time of collection (Date: __/__/ and __:__am/pm).
 - 5.2.2. Start time of sample processing in the laboratory (Date: __/__/__ and __:__am/pm).
 - 5.2.3. Record type and number of biopsies prepared.

- 5.2.4. Date and time sample is stored into freezer (Date: __/__/__ and __:__am/pm).
- 5.2.5. Any variations or deviations from the SOP, problems, or issues.
- 5.2.6. Any freeze-thaw event that occurs with a sample for any reason.
- 5.7. Keep a log of bi-weekly freezer checks.

<u>Detailed standard operating procedure for the collection, processing and storage of myometrium samples</u>

NOTES

- This SOP does not cover safety procedures for the collection and processing of these samples and personnel must follow institutional biosafety guidelines.
- For guidance on surgical excision of myometrium biopsies, please refer to Becker *et al.*, (Becker *et al.*, Fertil Steril 2014). For a summary version of this protocol with side-by-side standard vs. minimal protocol step comparisons, "WERF EPHect SOP Tissue Collection Table".
- As this protocol applies to different processing and storage methods (e.g. the use of RNA stabilising solution; immediate snap freezing in theatre), keep a copy of the exact step-by-step protocol used in your lab.

Processing and storage materials

- 1. Biospecimen questionnaire (page 21);
- 2. Log sheet to record sample-related data;

Frozen tissues:

- 3. Labels suitable for long-term freezer storage, and IDs printed using 2D barcoding.
- 4. Aliquot vials with screw top gasket closure; liquid nitrogen.
- 5. Buffers: phosphate buffered saline (PBS);
- 6. RNA stabilizer solution (optional if planning RNA studies)
- 7. Freezers: -80C or liquid nitrogen (LN₂)

Fixed tissues:

- 8. Labels with IDs printed using 2D barcoding;
- 9. Neutral buffered formalin, universal molecular fixative, paraffin;
- 10. HistokinetteTM cassette

1. Myometrium collection

- 1.1 Pr_ior to tissue collection at surgery, prepare as many of the materials required for storage of the samples and recording of the data (log sheet, storage vials and labels).
- 1.2. Preparation of vials/tubes for surgical collection (NB. If samples are to be snap-frozen immediately in liquid nitrogen in/near theatre in their final storage vials, which is recommended, adopt the final labelling guidelines in section 2 of this protocol).

1.2.1. Standard collection: Pre-label each collection vial with a 2D barcode in addition to a human
readable unique identifier, participant ID, date of collection and type of sample. Record on the log
sheet the date and time of sample collection (Date:// and:am/pm).

1.2.2. Required minimum: Pre-label each collection vial with a unique identifier, participant ID, date of
collection, and type of sample. Record on the log sheet the date and time of sample collection (Date:
// and:am/pm).

1.3. Deposit tissues in prepared, labelled vials/tubes. These should be kept on ice from the time of collection until preservation/storage (minimise the time held at ambient temperature). NB. If transport from theatre to the processing laboratory is >15 minutes, consider the possibility of processing the samples in/near the theatre (e.g. through snap-freezing in liquid nitrogen, or immersion in an RNA stabiliser solution if required, prior to transport).

2. Sample processing

- 2.1. Preparation of vials/tubes for collection and storage. Use labels and ink suitable for long-term freezer storage. Do not use laser printers or most ink-jet printers as the ink can crack and fall off the label when frozen at ultra-low temperature.
 - 2.1.1. **Standard collection**: Pre-label the aliquot vials with the participant ID number followed by a unique aliquot ID number. Include date of sample creation and sample type. For example: ENDO-123456-U654321-MB: Center identifier (ENDO), participant ID (123456), unique aliquot vial ID (U654321), and sample type (MB for myometium). Further, include the above information in human readable format and in a 2D barcode on the label.
 - 2.1.2. *Required minimum:* Pre-label the aliquot vials with the participant ID followed by the sample aliquot number. Also include date of sample creation and sample type on the label. For example: ENDO-123456-MB-01: Center identifier (ENDO), participant ID (123456), type of sample (MB for myometrium), aliquot number (01).
- 2.2. Record time of starting sample processing on log sheet.
- 2.3. Rinse tissue with PBS (except for RNA studies).
- 2.4. Weigh tissue samples. If tissue size and weight allows storage in separate pieces, prioritize in the following order before freezing for long-term storage.: 1st snap freezing, 2nd RNA stabilizing solution followed by freezing, 3rd universal molecular fixative or formalin fixation. *NB. If RNA is of key interest, and time to freezing is likely to take more than 5 minutes, consider immediate immersion in an RNA stabilizer solution as the first priority.*

2.5. Fresh Tissues

- 2.5.1. **Standard collection**: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C. Transfer to waterbath (37°C) to keep cells alive for cell culture.
- 2.5.2. Required minimum: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C.

2.6. Frozen Tissues

- 2.6.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen within 15 minutes, record time, and transfer to freezers for long-term storage (see section 3).
- 2.6.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen as soon as possible, record time, and transfer to freezers for long-term storage (see section 3).

2.7. RNA stabilizing solution

[commercially available products: Allprotect Tissue Reagent® (Qiagen, Venlo, Netherlands); DNA / RNA Shield™ (Zymoresearch, Irvine, USA); ProtectRNA™ (Sigma-Aldrich, St.Louis, USA); RiboLock™ (Thermoscientific, Waltham, USA); RNAlater® (Qiagen, Venlo, Netherlands); Ambion® RNAsecure™ Reagent (Life-technologies, Carlsbad, USA); SUPERase•In™ (Life-technologies, Carlsbad, USA); PAXgene Tissue Containers (Qiagen, Venlo, Netherlands)]

Before immersion in RNA stabilizing solution, cut large tissue samples to size according to manufacturer's protocol.

- 2.7.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution within 15 minutes of collection, and stored at 4°C for 24 hours prior to freezing (see section 3).
- 2.7.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution, and stored at room temperature for 24 hours prior to freezing (see section 3).

2.8. Fixed Tissues

- 2.8.1. *Standard collection:* Tissue samples should be mounted flat in a Histokinette[™] cassette into 20ml of 10% neutral buffered formalin (NBF), within 15 minutes (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.
- 2.8.2. *Required minimum:* Tissue samples should be mounted flat in a HistokinetteTM cassette containing 20 ml of 10% neutral buffered formalin (NBF), within 1 hour (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.

3. Storage and data recording

Collection, processing, and storage of tissue biospecimens in endometriosis research

- 3.1. Date and time of storage should be recorded on the log sheet. Also record the type, number of aliquots prepared.
 - 3.1.1. *Standard collection:* Store samples in liquid nitrogen (LN_2) freezers, as they have less temperature fluctuations than -80°C freezers.
 - 3.1.2. *Required minimum:* Store samples in -80°C or lower freezers.
- 3.5. Record on the log sheet any variations or deviations from the SOP, problems, or issues (e.g. vial cracked during processing).
- 3.6. Record the location of each sample into the freezer including freezer number, rack, box, and spot in the box along with all other sample attributes in a database. If possible, avoid using a spreadsheet format, but use a relational database.
- 3.7. Keep a record of any freeze-thaw that occurs with a sample for any reason.
- 3.8. Track any change of location of a sample, including sending a sample out to an assay lab for processing.
- 3.9. Track any new samples created from the original sample (i.e., a sub-sample) in the same manner as described above. Ensure that each sub-sample/aliquot is labelled as described in section 2, with a unique ID.

4. Freezer check

- 4.1.1. **Standard collection:** Check freezers bi-weekly and keep a written-log of checks. Have alarm systems setup on all freezers in addition to human bi-weekly checks.
- 4.1.2. Required minimum: Manually check freezers bi-weekly and keep a written log of checks.

5. Data recording check list

- 5.1. Record protocol, specifying which steps are adhered to (standard or minimum).
- 5.2. For each sample, record:
 - 5.2.1. Date and time of collection (Date: __/__/__ and __:__am/pm).
 - 5.2.2. Start time of sample processing in the laboratory (Date: __/__/ and __:__am/pm).
 - 5.2.3. Record type and number of biopsies prepared.
 - 5.2.4. Date and time sample is stored into freezer (Date: __/__/_ and __:__am/pm).

- 5.2.5. Any variations or deviations from the SOP, problems, or issues.
- 5.2.6. Any freeze-thaw event that occurs with a sample for any reason.
- 5.7. Keep a log of bi-weekly freezer checks.

Detailed standard operating procedure for the collection, processing and storage of peritoneum samples

NOTES

- This SOP does not cover safety procedures for the collection and processing of these samples and personnel must follow institutional biosafety guidelines.
- For guidance on surgical excision of peritoneal biopsies, please refer to Becker *et al.*, (Becker *et al.*, Fertil Steril 2014). For a summary version of this protocol with side-by-side standard vs. minimal protocol step comparisons, please see "WERF EPHect SOP Tissue Collection Table".
- As this protocol applies to different processing and storage methods (e.g. the use of RNA stabilising solution; immediate snap freezing in theatre), keep a copy of the exact step-by-step protocol used in your lab.

Processing and storage materials

- 1. Biospecimen questionnaire (page 21);
- 2. Log sheet to record sample-related data;

Frozen tissues:

- 3. Labels suitable for long-term freezer storage, and IDs printed using 2D barcoding.
- 4. Aliquot vials with screw top gasket closure; liquid nitrogen.
- 5. Buffers: phosphate buffered saline (PBS);
- 6. RNA stabilizer solution (optional if planning RNA studies)
- 7. Freezers: -80C or liquid nitrogen (LN₂)

Fixed tissues:

- 8. Labels with IDs printed using 2D barcoding;
- 9. Neutral buffered formalin, universal molecular fixative, paraffin;
- 10. HistokinetteTM cassette

1. Peritoneum collection

- 1.1 Pr_ior to tissue collection at surgery, prepare as many of the materials required for storage of the samples and recording of the data (log sheet, storage vials and labels).
- 1.2. Preparation of vials/tubes for surgical collection (NB. If samples are to be snap-frozen immediately in liquid nitrogen in/near theatre in their final storage vials, which is recommended, adopt the final labelling guidelines in section 2 of this protocol).

1.2.1. Standard collection: Pre-label each collection vial with a 2D barcode in addition to a humar
readable unique identifier, participant ID, date of collection and type of sample. Record on the log
sheet the date and time of sample collection (Date:// and:am/pm).

1.2.2. Required minimum: Pre-label each collection vial with a unique identifier, participant ID, date of
collection, and type of sample. Record on the log sheet the date and time of sample collection (Date:
// and:am/pm).

- 1.3.1. *Standard collection:* Record whether peritoneum is collected: wet weight, method used (excised through sharp dissection, or Tao brush^{TM,1}(Cook, Bloomington, USA)) and location [lateral on pelvic brim, other location in the pelvis (to be specified)].
- 1.3.2. *Required minimum:* Record whether peritoneum is collected: method used (excised by sharp dissection, laser, diathermy or cells collected using a Tao brush[™] (Cook, Bloomington, USA)) and location [lateral on pelvic brim, within Pouch of Douglas].
- 1.4. Deposit tissues in prepared, labelled vials/tubes. These should be kept on ice from the time of collection until preservation/storage (minimise the time held at ambient temperature). NB. If transport from theatre to the processing laboratory is >15 minutes, consider the possibility of processing the samples in/near the theatre (e.g. through snap-freezing in liquid nitrogen, or immersion in an RNA stabiliser solution if required, prior to transport).

2. Sample processing

- 2.1. Preparation of vials/tubes for collection and storage. Use labels and ink suitable for long-term freezer storage. Do not use laser printers or most ink-jet printers as the ink can crack and fall off the label when frozen at ultra-low temperature.
 - 2.1.1. **Standard collection**: Pre-label the aliquot vials with the participant ID number followed by a unique aliquot ID number. Include date of sample creation and sample type. For example: ENDO-123456-U654321-PB: Center identifier (ENDO), participant ID (123456), unique aliquot vial ID (U654321), and sample type (PB for Peritoneum). Further, include the above information in human readable format and in a 2D barcode on the label.
 - 2.1.2. **Required minimum:** Pre-label the aliquot vials with the participant ID followed by the sample aliquot number. Also include date of sample creation and sample type on the label. For example: ENDO-123456-PB-01: Center identifier (ENDO), participant ID (123456), type of sample (PB for peritoneum), aliquot number (01).
- 2.2. Record time of starting sample processing on log sheet.
- 2.3. Rinse tissue with PBS (except for RNA studies).
- 2.4. Weigh tissue samples. If tissue size and weight allows storage in separate pieces, prioritize in the following order before freezing for long-term storage.: 1st snap freezing, 2nd RNA stabilizing solution followed by freezing, 3rd universal molecular fixative or formalin fixation. *NB. If RNA is of key interest, and time to freezing is likely to take more than 5 minutes, consider immediate immersion in an RNA stabilizer solution as the first priority.*

2.5. Fresh Tissues

- 2.5.1. **Standard collection**: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C. Transfer to waterbath (37°C) to keep cells alive for cell culture.
- 2.5.2. Required minimum: Fresh tissue can be stored in fluid (eg. media or PBS) up to 24 hours at 4°C.

2.6. Frozen Tissues

- 2.6.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen within 15 minutes, record time, and transfer to freezers for long-term storage (see section 3).
- 2.6.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure. Snap freeze in liquid nitrogen as soon as possible, record time, and transfer to freezers for long-term storage (see section 3).

2.7. RNA stabilizing solution

[commercially available products: Allprotect Tissue Reagent® (Qiagen, Venlo, Netherlands); DNA / RNA Shield™ (Zymoresearch, Irvine, USA); ProtectRNA™ (Sigma-Aldrich, St.Louis, USA); RiboLock™ (Thermoscientific, Waltham, USA); RNAlater® (Qiagen, Venlo, Netherlands); Ambion® RNAsecure™ Reagent (Life-technologies, Carlsbad, USA); SUPERase•In™ (Life-technologies, Carlsbad, USA); PAXgene Tissue Containers (Qiagen, Venlo, Netherlands)]

Before immersion in RNA stabilizing solution, cut large tissue samples to size according to manufacturer's protocol.

- 2.7.1. **Standard collection**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution within 15 minutes of collection, and stored at 4°C for 24 hours prior to freezing (see section 3).
- 2.7.2. **Required minimum**: Tissue samples should be stored in an aliquot vial with screw top gasket closure containing RNA stabilizing solution, and stored at room temperature for 24 hours prior to freezing (see section 3).

2.8. Fixed Tissues

- 2.8.1. **Standard collection**: Tissue samples should be mounted flat in a Histokinette[™] cassette into 20ml of 10% neutral buffered formalin (NBF), within 15 minutes (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.
- 2.8.2. *Required minimum*: Tissue samples should be mounted flat in a HistokinetteTM cassette containing 20 ml of 10% neutral buffered formalin (NBF), within 1 hour (record time). The sample is transported at room temperature or can be placed on ice. The tissue should remain in NBF for no more than 24 hours before transfer to graded alcohol solutions and paraffin embedding. Alternative fixatives include universal molecular fixative, which may better preserve RNA.

3. Storage and data recording

- 3.1. Date and time of storage should be recorded on the log sheet. Also record the type, number of aliquots prepared.
 - 3.1.1. *Standard collection*: Store samples in liquid nitrogen (LN₂) freezers, as they have less temperature fluctuations than -80°C freezers.
 - 3.1.2. *Required minimum:* Store samples in -80°C or lower freezers.
- 3.5. Record on the log sheet any variations or deviations from the SOP, problems, or issues (e.g. vial cracked during processing).
- 3.6. Record the location of each sample into the freezer including freezer number, rack, box, and spot in the box along with all other sample attributes in a database. If possible, avoid using a spreadsheet format, but use a relational database.
- 3.7. Keep a record of any freeze-thaw that occurs with a sample for any reason.
- 3.8. Track any change of location of a sample, including sending a sample out to an assay lab for processing.
- 3.9. Track any new samples created from the original sample (i.e., a sub-sample) in the same manner as described above. Ensure that each sub-sample/aliquot is labelled as described in section 2, with a unique ID.

4. Freezer check

- 4.1.1. **Standard collection:** Check freezers bi-weekly and keep a written-log of checks. Have alarm systems setup on all freezers in addition to human bi-weekly checks.
- 4.1.2. Required minimum: Manually check freezers bi-weekly and keep a written log of checks.

5. Data recording check list

- 5.1. Record protocol, specifying which steps are adhered to (standard or minimum).
- 5.2. For each sample, record:
 - 5.2.1. Date and time of collection (Date: __/__/ and __:__am/pm).
 - 5.2.2. Start time of sample processing in the laboratory (Date: __/__/ and __:__am/pm).
 - 5.2.3. Record type of biopsy prepared.

- 5.2.4. Date and time sample is stored into freezer (Date: __/__/_ and __:__am/pm).
- 5.2.5. Any variations or deviations from the SOP, problems, or issues.
- 5.2.6. Any freeze-thaw event that occurs with a sample for any reason.
- 5.7. Keep a log of bi-weekly freezer checks.

Footnote:

¹For the Tao brushTM(Cook, Bloomington, USA), a sweep is made over the peritoneal surface, rotating the brush to obtain surface epithelial cells carefully avoiding the ovary, and subsequently immersing in warm (close to 37°C) HOSE medium [40% Medium 199, 40% MCDB 105 supplemented with 15% fetal bovine serum, 0.5% penicillin-streptomycin mix and 1% L-glutamine] while agitating to remove the cells.

EPHect BIOSPECIMEN COLLECTION FORM (to be completed by research nurse)
Date and time sample collected: (DD/MM/YYYY)/ Time:: AM/PM
What was the first day of your last menstrual period? (DD/MM/YYYY)/
Are your periods regular? (Predictable within one week) U Yes No
Specify range of days : [regular range: 21-35days]
If you have not had a menstrual period in the past 90 days, please tell us why:
☐ Taking hormones continuously (e.g. the Pill, injections, Mirena, HRT) ☐ Pregnant ☐ Breastfeeding ☐ Unsure ☐ Other (Please describe)
Are you currently having a menstrual period/vaginal bleeding (including spotting for which you only need a panty liner)? □ No □ Yes, menstrual period □ Yes, irregular bleeding/spotting
Do you currently have a coil [IUD] in place? ☐ No ☐ Yes → If yes, what kind of IUD? ☐ Progesterone containing IUD (Mirena) ☐ Other coil/intrauterine device
When was the last time you had something to eat?: am/pm □ Today □ Yesterday
When was the last time you had something to drink (other than plain water) and what did you drink? : am/pm □ Today □ Yesterday
Clinical Measurements:
Height: in cm, or in inches
Weight: in kg, or in pounds
Hip circumference: in cm, or in inches
Waist circumference: in cm, or in inches
See WHO guidelines on how to take measurements (also included on page 27): www.who.int/nutrition/publications/obesity/WHO_report_waistcircumference_and_waisthin_ratio/en/

If <u>saliva</u> samples are being collected:
Please indicate whether or not you have used the following in the last 24 hours and what time you used each item.
Toothpaste ☐ No ☐ Yes → : AM/PM ☐ Today ☐ Yesterday Gum ☐ No ☐ Yes → : AM/PM ☐ Today ☐ Yesterday Cigarettes ☐ No ☐ Yes → : AM/PM ☐ Today ☐ Yesterday
Alcohol □ No □ Yes → : AM/PM □ Today □ Yesterday
In the past 24 hours have you eaten: Spicy food? □ No □ Yes Fish? □ No □ Yes
If <u>urine</u> samples are being collected:
When did you last urinate (prior to providing the sample)?: am/pm □ Today □ Yesterday
What time was the urine sample produced? : am/pm
Is this urine sample your first morning void? $\hfill \square$ No $\hfill \square$ Yes $\hfill \rightarrow$ If yes, did you get up during the night to urinate? $\hfill \square$ No $\hfill \square$ Yes
In collecting this sample, did you follow a clean catch protocol? ☐ No ☐ Yes
If undergoing an operation:
Was any pre-med taken before blood, urine, saliva, endometrial fluid and eutopic endometrium/ myometrium collection? (NB. EPHect recommends sample taking <u>prior to</u> pre-med administration) Output Description:
If yes, tick which samples were taken after pre-med administration: Blood Urine Saliva Endometrial fluid Eutopic endometrium/ myometrium
Time pre-med was administered:am/pm
Please specify the type of pre-med was administered

Was anaesthetic administered before blood, endometrial fluid and eutopic endometrium collection? □ No □ Yes	
If yes, tick which samples were taken after anaesthesia administration: Blood Endometrial fluid Eutopic endometrium	
If yes, time anaesthetic was administered:am/pm	
Please specify the type of pre-med was administered:	
Method(s) of excision:	
Ectopic endometrium Electrosurgery Harmonic scalpel Laser [CO2, NdYag and others] Cold scissors/scapels Eutopic endometrium Endometrial sampling device Curettage with cervical dilation Brushing Myometrium Laser [CO2, NdYag and others] Electrosurgery Cold scissors/scapels TruCut biopsy	
Peritoneum I laser [CO ₂ , NdYag and others] Electrosurgery Ultrasound energy Harmonic scalpel Cold scissors/scapels Brushing	
Method(s) of collection:	
Peritoneal fluid No lavage. Amount collectedml Lavage method with 10ml sterile saline solution. Amount of peritoneal lavage fluid (PLF)	nl
Endometrial fluid I No lavage. Amount collectedml Lavage method with 4ml sterile saline solution. Amount of uterine lavage fluid (ULF)ml	

Use of prescription drugs, non-prescription drugs, vitamins or supplements in the past 30 days.

Type of drug	Have you ever taken this drug every day for over a month?	At what age did you first take this drug every day for over a month?	In total, how many years you have taken this drug? Please estimate, and enter "0 total years" if less than 1 year.	Are you currently taking this drug every day?	Please write down the specific <u>name</u> of the drug you have used <u>most recently</u> if known:
PRESCRIPTION DRUGS	✓ if yes	Age 1 st	Years taken:	✓ if yes	Name of drug:
a. Hormonal medications					
Birth control pill					
Progestin injection/shot					
Transdermal patch/dot					
Vaginal ring					
Progesterone containing coil/IUD					
Hormonal implant					
Oral progestins to regulate cycle					
GnRH agonist infection/shot					
Norethindrone acetate					
Danazol					
Hormone replacement therapy (HRT)					
Other:					
b. Pain medications					
Paracetamol/acetaminophen					
Aspirin					
Ibuprofen					
COX-2 inhibitors (e.g. celebrex, vioxx)					
Other anti-inflammatory analgesics (e.g. naproxen, mefanamic acid, aleve, naprosyn, relafen, keoprofen, anaprox)					
Narcotic analgesics (e.g. hydrocodone+ paracetamol, codeine, morphine)					
Muscle relaxants (e.g. diazepam/ temazepam, buscopan)					
Other:					
c. Diuretic (water pill)					
d. Diabetic tablets					
e. Insulin					
f. Thyroid drugs					
g. Drugs for epilepsy					
h. Sleeping tablets / tranquilisers					
i. Anti-depressants					
j. Other drugs to treat mental illness					
k. Drugs for osteoporosis ("brittle bones")					

I. Drugs for rheumatoid arthritis			
m. Antibiotics for a month or more			
n. Antacids			
o. Drugs for stomach ulcer / gastritis			
p. Drugs for high cholesterol			
q. Drugs for allergies (antihistamines)			
r. Steroids (oral, inhaled, or nasal)			
s. Chemotherapy for cancer			
t. Tamoxifen for cancer			
u. Blood pressure drugs			
v. Drugs for angina (chest pain)			
w. Other drugs for a heart condition			
x. Inhaler for asthma			
y. Warfarin / heparin to thin blood			
z. Migraine tablets/injections			
Other 1:			
Other 2:			
Other 3:			
Other 4:			
Other 5:			

Type of drug	Have you Have you		In the past 30	Please write down
	taken this	taken this	days, on how	the specific name of
	drug in the	drug in the	many days have	the drug
	past <u>30</u>	past 48 hours	you taken this	if known:
	days?	(2 days)?	drug?	
NON-PRESCRIPTION DRUGS	✓ if yes	✓ if yes	Number of days:	Name of drug:
a. Aspirin			days	
b. Paracetamol			days	
c. Ibuprofen			days	
d. Other anti-inflammatory analgesics			days	
(e.g. naproxen)				
e. Herbal pain medication:			days	
f. Other pain medication:				
g. Migraine tablets			days	
h. Antihistamine for allergies			days	
i. Cold medicine / lemsip			days	
j. Decongestant			days	
k. Cough syrup			days	
I. Antacids			days	
m. Sleeping tablets			days	
n. Eye drops			days	
o. Vaginal thrush treatments (cream or			days	
tablets)				
p. Cystitis treatments / cymalon			days	
q. Mouth ulcer treatments			days	
r. Nicotine replacement treatments			days	
Other 1:			days	
Other 2:			days	
Other 3:			days	
Other 4:			days	
Other 5:			days	
VITAMINS & SUPPLEMENTS				
			dave	
#1:			days	
#2:			days	
#3:			days	
#4:			days	
#5:			days	
#6:			days	
#7:			days	
#8:			days	
#9:			days	
#10:			days	

Measurement of waist and hip circumference

- **I. Waist circumference** should be measured at the midpoint between the lower margin of the least palpable rib and the top of the iliac crest, using a stretch-resistant tape that provides a constant 100 g tension;
- **II. Hip circumference** should be measured around the widest portion of the buttocks, with the tape parallel to the floor.

For both measurements, the subject should stand with feet close together, arms at the side and body weight evenly distributed, and should wear little clothing. The subject should be relaxed, and the measurements should be taken at the end of a normal expiration. Each measurement should be repeated twice; if the measurements are within 1 cm of one another, the average should be calculated. If the difference between the two measurements exceeds 1 cm, the two measurements should be repeated.